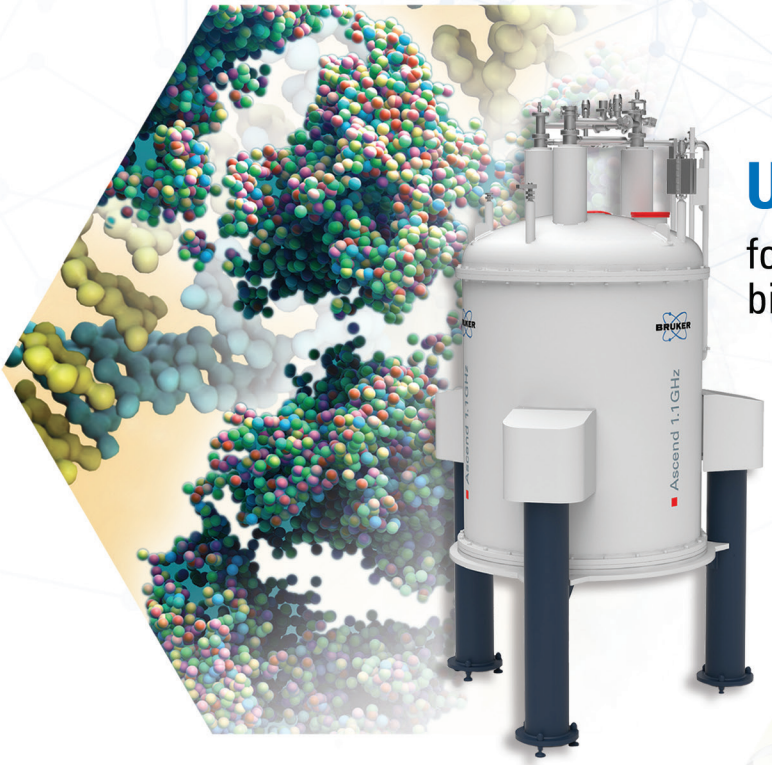
2019 Annual Report

Bruker Corporation

Innovation with Integrity

Blazing a Trail of Significant Innovation...

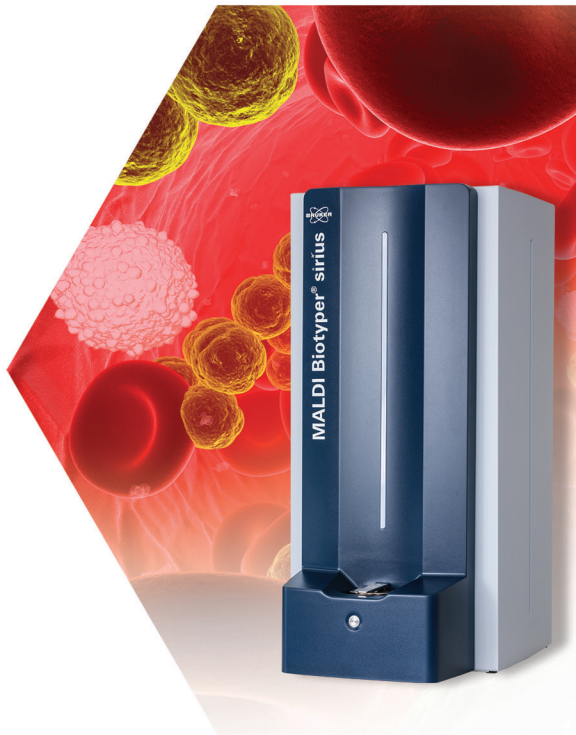


Ultra High Field NMR

for *functional* structural biology research

Mass Spectrometry Solutions

that reveal new dimensions in the science of the proteome



Microbiology & Diagnostics

for faster and more accurate infectious disease detection

...To Enable Scientific Discoveries and Improve the Quality of Human Life

Bruker Overview

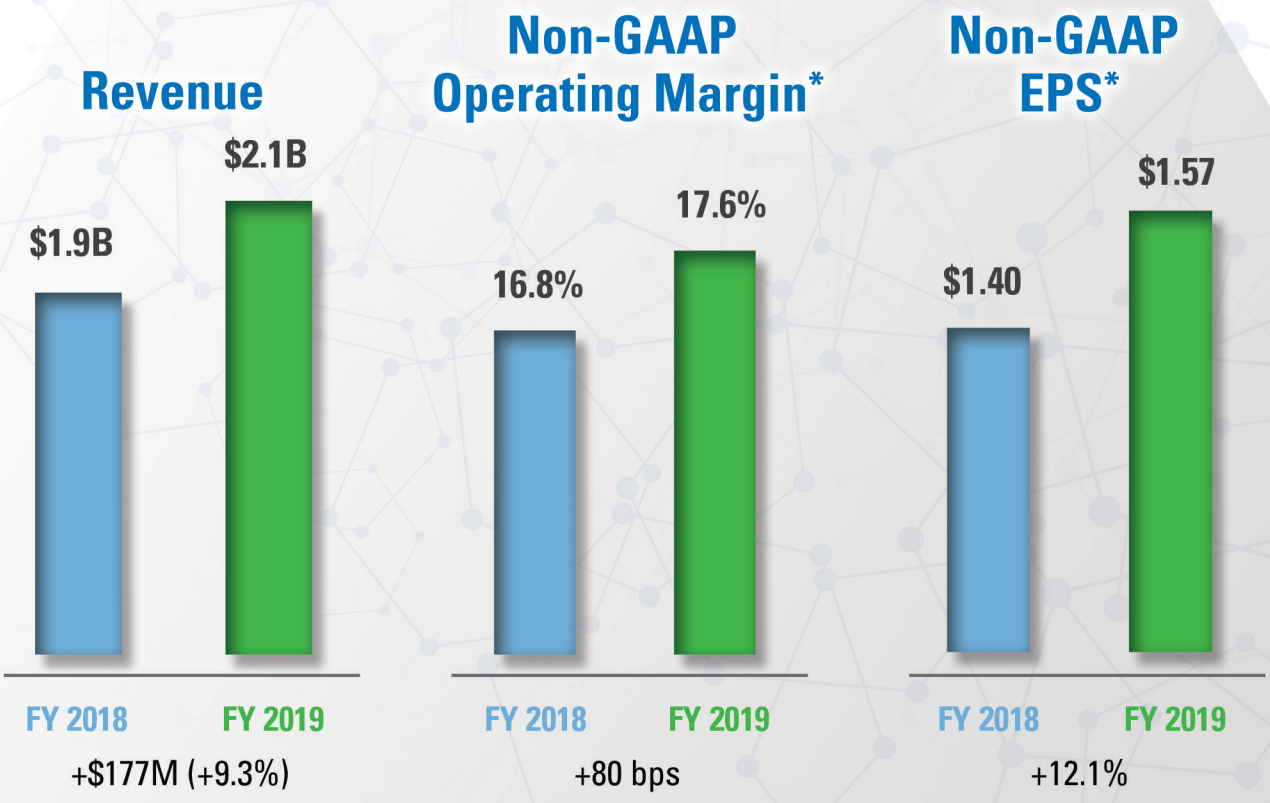
1,200
EMPLOYEES
DEDICATED TO R&D

7,200
EMPLOYEES

14
MAJOR MANUFACTURING
SITES IN N. AMERICA, EUROPE AND ASIA

4,000+
PATENTS PENDING OR GRANTED

2019 Financial Highlights



*Reconciliations of non-GAAP financial measures to the most directly comparable GAAP financial measures are included at the end of this report.

Dear Fellow Bruker Shareholders,

The year 2019 was an important year for Bruker as we further accelerated our organic revenue growth rate, continued the roll-out of our novel and unique *timsTOF™* Pro mass spectrometry platform for 4D proteomics and metabolomics research, and ramped up our cutting-edge GHz-class NMR systems. We continued to drive significant innovation throughout our product portfolio, introducing exciting new platforms in areas as diverse as infectious disease diagnostics and new fluorescence and atomic force microscopy systems for cell biology and neuroscience research. We continued to invest for the long-term in our high-growth, high-margin Project Accelerate initiatives, as well as in operational excellence within all of our businesses. We are positioning Bruker for above-industry growth over the medium term, and we continue to deliver differentiated systems and solutions that enable scientists to make breakthrough discoveries and develop new applications that improve the quality of human life.

With the backdrop of an unprecedented COVID-19 pandemic, 2020 is off to a challenging start for the ecosystems in which Bruker operates and for society at large. Our first concern is for the health and safety of our more than 7,000 employees worldwide and their families, as well as for that of our valued customers and partners. With our enabling life science and diagnostic tools, Bruker is providing essential research and service support for infectious disease research, for anti-viral vaccine and therapeutic drug discovery and development, as well as for clinical microbiology and viral testing in support of the fight against the current and future pandemics. Our clinical microbiology solutions are of crucial importance for the early identification of bacterial and fungal diseases, that can affect patients with weakened immune systems, including those suffering complications from COVID-19.

It is important to remember that fundamentally our Company contributes, directly or indirectly, to global healthcare, food supply, information technology infrastructure, and homeland security. We support customers in their important research and development, analytical and diagnostic testing, as well as product safety and quality assurance, which are and will remain high priorities for our societies. We remind ourselves of the crucial role we play in society and it is the driving force that motivates us to work even harder to deliver enabling tools and solutions to customers around the world.

FY 2019 Financial Results

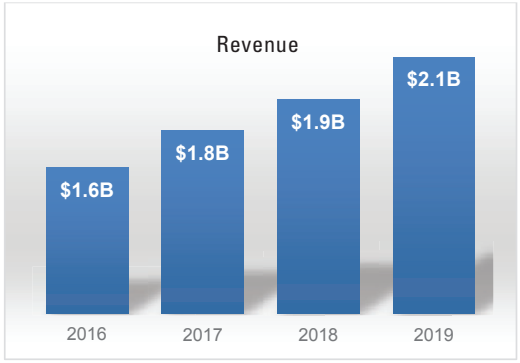
In 2019, Bruker's revenue increased 9.3% year-over-year, exceeding the $2 billion mark for the first time in our history. On a year-over-year basis, organic revenue growth accelerated to 5.7%, growth from acquisitions was 6.3%, while foreign currency translation had a negative effect of 2.7%. On a constant currency basis, our revenue grew 12.0% over fiscal year 2018.

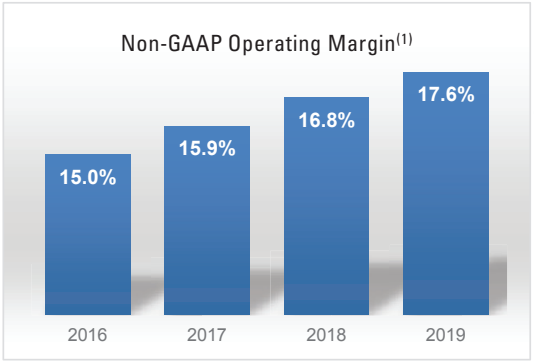
Our solid organic revenue growth performance was driven in particular by strong results in our Bruker CALID and Bruker BioSpin Groups, which grew organically 11.7% and 5.8% respectively, as well as in the BEST segment which was up 4.9% on an organic basis, net of intercompany eliminations. Product innovation and healthy market conditions for CALID, BioSpin and BEST, together with our high-growth initiatives, all contributed to these results. Our Bruker NANO Group's organic revenue was approximately flat compared to 2018, due to challenging conditions in NANO's semiconductor metrology markets and

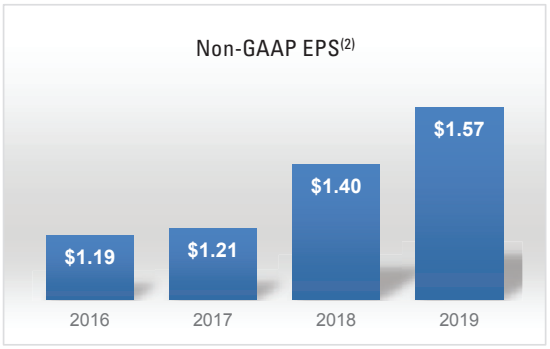
softening industrial research demand in the second half of 2019. NANO revenue increased 13.4% in constant currency with the addition of strategic, tuck-in acquisitions.

We exited 2019 with a non-GAAP operating margin of 17.6%, an 80 basis point improvement compared to 16.8% in 2018. Our 2019 non-GAAP EPS of $1.57 increased approximately 12% compared to non-GAAP EPS of $1.40 in 2018, driven primarily by our revenue growth and higher gross and operating profit, which more than offset a higher effective tax rate in 2019.

We are pleased with our financial results in 2019, which continued our robust track record of revenue, margin and EPS improvements in recent years.







Capital Deployment

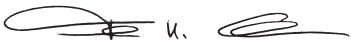
During 2019, we invested $90 million in strategically-focused acquisitions. Some of our more notable transactions in 2019 included the acquisition of RAVE LLC, a leading provider of nanomachining and laser photomask repair equipment for semiconductor applications and several software additions (PMOD, Arxspan) to continue to build out our scientific software business. We also returned capital to shareholders with share repurchases totaling $142 million and dividend payouts totaling $25 million.

(1)(2)Non-GAAP operating margin and non-GAAP EPS are non-GAAP measures. Reconciliations of these measures to the most directly comparable GAAP measures are available at the end of this Annual Report and on Bruker's IR website at https://ir.bruker.com/financial-info/quarterly-results/default.aspx

We ended 2019 with $678 million of cash and cash equivalents, and a solid liquidity position, following our December 2019 debt refinancing, which expanded our borrowing capacity and enhanced our financial flexibility to fund our business and corporate strategic objectives.

I want to thank our valued customers, my Bruker colleagues, our shareholders and our collaborators and business partners for their commitment and support. I look forward to reporting on our future progress.

Sincerely,



Frank H. Laukien, Ph.D.
Chairman, President and Chief Executive Officer
April 22, 2020

NOTE: Certain non-GAAP measures are referenced in this shareholder letter. A reconciliation of these non-GAAP measures to our reported GAAP results can be found at the end of this 2019 Annual Report.

This Letter and our Annual Report include forward looking statements about our future results of operations, business strategies, plans and objectives, and business environment. These statements are subject to risks and uncertainties (including those identified in the "Risk Factors" section of the Form 10-K included in this Annual Report), and our actual results could be materially different. Forward looking statements represent our beliefs and assumptions only as of the date of this Annual Report and we have no obligation to update them.

UNITED STATES
SECURITIES AND EXCHANGE COMMISSION
Washington, D.C. 20549

Form 10-K

☒ **ANNUAL REPORT PURSUANT TO SECTION 13 OR 15(d) OF THE SECURITIES EXCHANGE ACT of 1934**

For the fiscal year ended December 31, 2019

☐ **TRANSITION REPORT PURSUANT TO SECTION 13 OR 15(d) OF THE SECURITIES EXCHANGE ACT OF 1934**

Commission File Number 000-30833

BRUKER CORPORATION
(Exact name of registrant as specified in its charter)

Delaware	**04-3110160**
(State or other jurisdiction of Incorporation or organization)	(I.R.S. Employer Identification No.)
40 Manning Road, Billerica, MA	**01821**
(Address of principal executive offices)	(Zip Code)

Registrant's telephone number, including area code: **(978) 663-3660**

Securities registered pursuant to Section 12(b) of the Act:

Title of each class	Trading Symbol(s)	Name of each exchange on which registered
Common Stock	BRKR	Nasdaq Global Select Market

Securities registered pursuant to Section 12(g) of the Act:
None

Indicate by check mark if the registrant is a well-known seasoned issuer, as defined in Rule 405 of the Securities Act. Yes ☐ No ☒

Indicate by check mark if the registrant is not required to file reports pursuant to Section 13 or Section 15(d) of the Act. Yes ☐ No ☒

Indicate by check mark whether the registrant (1) has filed all reports required to be filed by Section 13 or 15(d) of the Securities Exchange Act of 1934 during the preceding 12 months (or for such shorter period that the registrant was required to file such reports), and (2) has been subject to such filing requirements for the past 90 days. Yes ☒ No ☐

Indicate by check mark whether the registrant has submitted electronically every Interactive Data File required to be submitted pursuant to Rule 405 of Regulation S-T (§ 232.405 of this chapter) during the preceding 12 months (or for such shorter period that the registrant was required to submit such files). Yes ☒ No ☐

Indicate by check mark whether the registrant is a large accelerated filer, an accelerated filer, a non-accelerated filer, smaller reporting company, or an emerging growth company. See the definitions of "large accelerated filer," "accelerated filer," "smaller reporting company," and "emerging growth company" in Rule 12b-2 of the Exchange Act.

Large Accelerated Filer ☒ Accelerated filer ☐ Non-accelerated filer ☐ Smaller reporting company ☐
Emerging growth company ☐

If an emerging growth company, indicate by check mark if the registrant has elected not to use the extended transition period for complying with any new or revised financial accounting standards provided pursuant to Section 13(a) of the Exchange Act. ☐

Indicate by check mark whether the registrant is a shell company (as defined in Rule 12b-2 of the Exchange Act). Yes ☐ No ☒

The aggregate market value of the voting and non-voting stock held by non-affiliates of the registrant as of June 30, 2019 (the last business day of the registrant's most recently completed second fiscal quarter) was $5,068,256,820 based on the reported last sale price on the Nasdaq Global Select Market. The number of shares of the registrant's common stock outstanding as of March 20, 2020 was 154,201,496.

DOCUMENTS INCORPORATED BY REFERENCE

Portions of the information required by Part III of this report (Items 10, 11, 12, 13 and 14) are incorporated by reference from the registrant's Definitive Proxy Statement on Schedule 14A for its 2020 Annual Meeting of Stockholders to be filed within 120 days of the close of the registrant's fiscal year.

BRUKER CORPORATION

ANNUAL REPORT ON FORM 10-K

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Any statements contained in this Annual Report on Form 10-K that are not statements of historical fact may be deemed to be forward-looking statements within the meaning of Section 21E of the Securities Exchange Act of 1934 and Section 27A of the Securities Act of 1933. Without limiting the foregoing, the words "believes", "anticipates", "plans", "expects", "seeks", "may", "will", "intend", "estimates", "should" and similar expressions are intended to identify forward-looking statements. Any forward-looking statements contained herein are based on current expectations, but are subject to a number of risks and uncertainties. Forward looking statements include, but are not limited to, statements regarding our intentions regarding our intellectual property, the impact of government contracts and government regulation, the impact of our material weaknesses in internal controls and the timing to remedy them, our working capital requirements and sufficiency of cash, our competition, seasonality of our business, sufficiency of our facilities, our employee relations, the impact of legal proceedings, the impact of changes to tax and accounting rules and changes in law, our anticipated tax rate, our expectations regarding cash dividends, share repurchases, interest rate swap agreements,

expenses and capital expenditures, the impact of foreign currency exchange rates and changes in commodity prices, the impact of our restructuring initiatives and our expectations regarding backlog and revenue. The factors that could cause actual future results to differ materially from current expectations include, but are not limited to, risks and uncertainties related to adverse changes in the economic and political conditions in the countries in which we operate, the integration of businesses we have acquired or may acquire in the future, our restructuring and cost-control initiatives, changing technologies, product development and market acceptance of our products, the cost and pricing of our products, manufacturing and outsourcing, competition, dependence on collaborative partners, key suppliers and third party distributors, capital spending and government funding policies, changes in governmental regulations, the impact of the COVID-19 coronavirus, intellectual property rights, litigation, exposure to foreign currency fluctuations, our ability to service our debt obligations and fund our anticipated cash needs, the effect of a concentrated ownership of our common stock, loss of key personnel, payment of future dividends, climate change and other factors. Many of these factors are described in more detail in this Annual Report on Form 10-K under Item 1A. "Risk Factors" and from time to time in other filings we may make with the Securities and Exchange Commission. While we may elect to update forward-looking statements in the future, we specifically disclaim any obligation to do so, even if our estimates change, and readers should not rely on those forward-looking statements as representing our views as of any date subsequent to the date of the filing of this report.

References to "we," "us," "our," "management" or the "Company" refer to Bruker Corporation and, in some cases, its subsidiaries, as well as all predecessor entities.

Our principal executive offices are located at 40 Manning Road, Billerica, MA 01821, and our telephone number is (978) 663-3660. Information about Bruker Corporation is available at *www.bruker.com*. The information on our website is not incorporated by reference into and does not form a part of this report. All trademarks, trade names or copyrights referred to in this report are the property of their respective owners.

PART I

ITEM 1 *BUSINESS*

Our Business

We are a developer, manufacturer and distributor of high-performance scientific instruments and analytical and diagnostic solutions that enable our customers to explore life and materials at microscopic, molecular and cellular levels. Many of our products are used to detect, measure and visualize structural characteristics of chemical, biological and industrial material samples. Our products and solutions address the rapidly evolving needs of a diverse array of customers in life science research, pharmaceuticals, biotechnology, applied markets, cell biology, clinical research, microbiology, in-vitro diagnostics, nanotechnology and materials science research. Our technology platforms include magnetic resonance technologies, mass spectrometry technologies, gas and liquid chromatography, triple quadrupole mass spectrometry technologies, X-ray technologies, spark-optical emission spectroscopy, atomic force microscopy, stylus and optical metrology technology, fluorescence optical microscopy, and infrared and Raman molecular spectroscopy technologies. Our product portfolio also includes testing solutions used in microbiology and infectious disease diagnostics, including our MALDI Biotyper rapid pathogen identification platform and related test kits, DNA test strips and fluorescence-based polymerase chain reaction (PCR) technology for selected infectious disease applications. We develop, manufacture and distribute a range of field analytical systems for chemical, biological, radiological, nuclear and explosives, or CBRNE, detection. We also develop, manufacture and market low temperature superconducting materials and devices based primarily on metallic low temperature superconductors. Our corporate headquarters are located in Billerica, Massachusetts. We maintain major technical and manufacturing centers in Europe, North America and Southeast Asia, and have sales offices located throughout the world.

We originally were incorporated in Massachusetts in February 1991, as Bruker Federal Systems Corporation. In February 2000, we reincorporated in Delaware as Bruker Daltonics Inc. In July 2003, we merged with Bruker AXS Inc., and we were the surviving corporation in that merger. In connection with that merger, we changed our name to Bruker BioSciences Corporation and formed two operating subsidiaries, Bruker Daltonics and Bruker AXS. In July 2006, we acquired Bruker Optics Inc. In February 2008, we acquired the Bruker BioSpin group of companies and changed our name to Bruker Corporation.

Business Segments

We have four operating segments, *Bruker BioSpin Group, Bruker CALID Group, Bruker Scientific Instruments (BSI) NANO Segment* and *Bruker Energy & Supercon Technologies (BEST)*. We have three reportable segments, *BSI Life Science*, *BSI NANO*, and *BEST*. For financial reporting purposes, the Bruker BioSpin and Bruker CALID Groups are aggregated into the BSI Life Science reportable segment because they have similar economic characteristics, production processes, service offerings, types and classes of customers, methods of distribution and regulatory environments.

BSI Life Science Segment

Bruker BioSpin Group

The Bruker BioSpin Group comprises the Bruker Magnetic Resonance, Applied Industrial and Clinical, Preclinical Imaging and Service and Lifecycle Support Divisions and designs, manufactures and distributes enabling life science tools based on magnetic resonance technology. Magnetic resonance is a natural phenomenon occurring when a molecule placed in a magnetic field gives off a signature radio frequency. The signature radio frequency is characteristic of the particular molecule and provides a

multitude of precise chemical and structural information. Depending on the intended application, we market and sell to our customers an NMR system or an EPR system (each as defined below).

Bruker BioSpin also manufactures and sells single and multiple modality systems using MRI, PET, SPECT, CT and MPI technologies (each as defined below). Bruker BioSpin's products, which have particular application in structural proteomics, drug discovery, pharmaceutical and biotechnology research and production, and the food and materials science fields, provide customers with the ability to determine the structure, dynamics, and function of specific molecules, such as proteins, and to characterize and determine the composition of mixtures.

The majority of Bruker BioSpin's customers are academic and government research facilities. Other customers include pharmaceutical and biotechnology companies; chemical, food and beverage, clinical and polymer companies; and nonprofit laboratories.

During 2019, we ramped up installation and began to recognize revenue on a new class of NMR systems, which we refer to as GHz class systems. In 2019, our GHz class system installations and customer acceptances included 1.0 GHz and 1.1 GHz NMR systems. We also achieved major technical milestones in the manufacturing of 1.2 GHz NMR systems. During 2019, we launched a number of new products and technologies, including a revolutionary benchtop magnetic resonance spectrometer. We also installed a high-field 9.4 Tesla small animal MRI (described below) system with integrated in-line PET (described below).

Bruker BioSpin Group's instruments are based on the following technology platforms:

- **NMR**—Nuclear magnetic resonance;
- **EPR**—Electron paramagnetic resonance;
- **MRI**—Magnetic resonance imaging;
- **MPI**—Magnetic particle imaging;
- **PET**—Positron emission tomography;
- **SPECT**—Single photon emission tomography; and
- **CT**—Computed tomography.

NMR is a qualitative and quantitative analytical technique that is used to determine the molecular structure and purity of a sample. Molecules are placed in a magnetic field and give off a radio frequency signature that is recorded by a sensitive detector. Analysis software helps to determine the molecular structure of the sample. The NMR technique is used in academia, pharmaceutical, biotechnology, food and beverage and clinical companies, and by other industrial users in life science and material science research.

EPR is a process of absorption of microwave radiation by paramagnetic ions or molecules with at least one unpaired electron that spins in the presence of a static magnetic field. EPR detects unpaired electrons unambiguously, whereas other techniques can only provide indirect evidence of their presence. In addition, EPR can identify the paramagnetic species that are detected, which present information on the molecular structure near the unpaired electron and give insight into dynamic processes such as molecular motions or fluidity. Our EPR instruments are used for a wide range of applications, including advanced materials research, materials analysis and quality control.

MRI is a process of creating an image from the manipulation of hydrogen atoms in a magnetic field. In the presence of an external magnetic field, atoms will align with or against the external magnetic field. Application of a radio frequency causes the atoms to jump between high and low energy states. MRI and magnetic resonance spectroscopy, or MRS, include many methods including diffusion-weighted, perfusion-weighted, molecular imaging and contrast-enhance. MRI offers high resolution

morphologic information, as well as functional, metabolic or molecular information. Customers use our MRI systems in pharmaceutical research, including metabolomics, to study a number of diseases, including diabetes, neurology, oncology and cardiovascular disorders.

MPI is a process of creating an image from magnetic particles administered to the body of an animal. The magnetic particles are manipulated in a combination of oscillating magnetic fields exhibiting a field free zone. The response of the particles allows a real time 3D data set acquisition of the whole body of an animal, showing the contrast agent distributing in and flowing through the body. This imaging modality is used to detect cardiovascular disorders.

PET is a process of creating an image from positrons after administration of a positron emitting radionuclide to the body of an animal. Annihilation of the positron produces two photons which show an angle of 180° between them, distinguishing these photons from photons originating from other sources. The PET tracer enriches in certain regions of interest within the body and gains molecular information from the animal *in vivo*. This has widespread applications, most importantly for oncology, inflammation, neurology and cardiovascular disorders, as well as metabolic disease, drug discovery and bone disease.

SPECT uses a contrast agent containing radionuclides which directly emit single photons. The contrast agent enriches in certain parts of the body of an animal and generates images of the radionuclide distribution in the body. SPECT has widespread application in animal investigations *in vivo*, most importantly in oncology, neurology and cardiovascular disorders.

CT is a technology based on X-rays which are used to generate a complete 3D data set. The most important applications are tissue sample analysis or non-invasive *in vivo* animal imaging. CT offers the highest spatial resolution of all preclinical imaging modalities and is especially useful to generate morphological information about the object or animal under investigation. CT is being used in a wide range of preclinical investigations such as bone-orthopedics, cardiovascular, pulmonary, oncology, metabolism and others.

The Bruker BioSpin Group also offers a range of services, product lifecycle support, scientific software and workflow solutions to customers who use Bruker BioSpin products.

Bruker CALID Group

The Bruker CALID Group comprises the Bruker Daltonics and Bruker Optics Divisions. The Bruker Daltonics Division primarily designs, manufactures and distributes life science mass spectrometry, or MS, instruments that can be integrated and used along with sample preparation or chromatography instruments to design an analytical workflow and mass spectrometry-based and molecular diagnostic solutions for microbiology and infectious disease diagnostics. Bruker CALID's life science mass spectrometry products are used in research, pharmaceutical and biotechnology development. Bruker CALID's microbiology and infectious disease solutions are used primarily in the human and veterinary clinical diagnostic and food microbiology settings.

Mass spectrometers are sophisticated devices that measure the mass or weight of a molecule and can provide accurate information on the identity, quantity and primary structure of the molecule. Mass spectrometry based solutions often combine advanced mass spectrometry instrumentation, automated sampling and sample preparation robots, reagent kits and other disposable products used in conducting tests, or assays, and bioinformatics software. We offer mass spectrometry systems and integrated solutions for applications in multiple existing and emerging life science markets and chemical and applied markets, including expression proteomics, clinical proteomics, metabolic and peptide biomarker profiling, drug discovery and development, molecular diagnostics research and molecular and systems biology, as well as basic molecular medicine research. Our MALDI Biotyper mass spectrometry solution and test kits, DNA test strips and fluorescence-based PCR technologies are designed for in vitro

diagnostic (IVD) use in clinical microbiology markets in certain configurations and certain countries, where regulatory approvals have been achieved. In addition to culture-based microbial identification with the MALDI Biotyper platform, the Genotype and Fluorotype molecular diagnostics (MDx) kits enable a culture-free detection and analysis of microbes and viruses directly from patient sample with a special focus on tuberculosis, transplant diagnostics and sexually-transmitted diseases.

The Bruker Optics Division manufactures and distributes research, analytical and process analysis instruments and solutions based on infrared and Raman molecular spectroscopy technologies. These products are utilized in industry, government and academia for a wide range of applications and solutions for life science, pharmaceutical, food and agricultural analysis, quality control and process analysis applications. Infrared and Raman spectroscopy are widely used in both research and industry as simple, rapid, nondestructive and reliable techniques for applications ranging from basic sample identification and quality control to advanced research. The Bruker Optics Division also utilizes Fourier transform and dispersive Raman measurement techniques on an extensive range of laboratory and process spectrometers. The Bruker Optics Division's products are complemented by a wide range of sampling accessories and techniques, which include, among others, microanalysis and high-throughput screening to help users find suitable solutions to analyze their samples effectively.

Customers of our Bruker CALID Group include pharmaceutical, biotechnology and diagnostics companies, contract research organizations, academic institutions, medical schools, nonprofit or for-profit forensic laboratories, agriculture, food and beverage safety, environmental and clinical microbiology laboratories, hospitals and government departments and agencies.

During 2019, we launched a number of new mass spectrometry-based product solutions and additional workflows, including the timsTOF fleX™ system featuring both electrospray ionization and MALDI on the same mass spectrometry system for the study of spatial molecular distributions and spatially resolved 'omics' molecular expression. We also introduced additional analytical workflows for the timsTOF Pro™ system for proteomics and metabolomics research. In clinical microbiology markets, we introduced the MALDI Biotyper sirius platform and our first assay in a novel Liquid Array™ format for the in-depth diagnosis of tuberculosis, on our new Fluorocycler-XT real-time PCR platform.The Bruker CALID Group's instruments are based on the following technology platforms:

- **MALDI-TOF**—Matrix-assisted laser desorption ionization time-of-flight mass spectrometry, including tandem time-of-flight systems (MALDI-TOF/TOF);
- **ESI-TOF**—Electrospray ionization time-of-flight spectrometry, including tandem mass spectrometry systems based on ESI-quadrupole-TOF mass spectrometry (ESI-Q-q-TOF);
- **MRMS**—Magnetic resonance mass spectrometry, including hybrid systems with a quadrupole front end (Q-q-MRMS);
- **ITMS**—Ion trap mass spectrometry;
- **GC-MS**—Gas chromatography-mass spectrometry systems utilizing triple-quadrupole time-of-flight mass spectrometry;
- **LC-MS**—Liquid chromatography-mass spectrometry systems utilizing triple-quadrupole time-of flight mass spectrometry;
- **FT-IR**—Fourier transform-infrared spectroscopy;
- **NIR**—Near-infrared spectroscopy; and
- **Raman**—Raman spectroscopy.

MALDI-TOF mass spectrometers utilize an ionization process to analyze solid samples using a laser that combines high sample throughput with high mass range and sensitivity. Our MALDI-TOF

mass spectrometers are particularly useful for applications in clinical diagnostics, environmental and taxonomical research and food processing and quality control. Specific applications include: oligonucleotide and synthetic polymer analysis; protein identification and quantification; peptide de novo sequencing; determination of post-translational modifications of proteins; interaction proteomics and protein function analysis; drug discovery and development; and fast body fluid and tissue peptide or protein biomarker detection. MALDI mass spectrometry allows users to classify and identify microorganisms quickly and reliably with minimal sample preparation efforts and life cycle costs. Our MALDI Biotyper solution, which serves the clinical microbiology market, enables identification, taxonomical classification or dereplication of microorganisms like bacteria, yeasts and fungi.

ESI-TOF mass spectrometers utilize an electrospray ionization process to analyze liquid samples. This ionization process, which does not dissociate the molecules, allows for rapid data acquisition and analysis of large biological molecules. ESI-TOF mass spectrometers are particularly useful for: identification, protein analysis and functional complex analysis in proteomics and protein function; molecular identification in metabolomics, natural product and drug metabolite analysis; combinatorial chemistry high throughput screening; and fast liquid chromatography mass spectrometry, or liquid chromatography mass spectrometry (LC-MS), in drug discovery and development.

MRMS systems utilize high-field superconducting magnets to offer the highest resolution, selectivity, and mass accuracy currently achievable in mass spectrometry. Our systems based on this technology often eliminate the need for time-consuming separation techniques in complex mixture analyses. In addition, our systems can fragment molecular ions to perform exact mass analysis on all fragments to determine molecular structure. MRMS systems are particularly useful for: the study of structure and function of biomolecules, including proteins, DNA and natural products; complex mixture analysis including body fluids or combinatorial libraries; high-throughput proteomics and metabolomics; and top-down proteomics of intact proteins without the need for enzymatic digestion of the proteins prior to analysis. We offer next-generation hybrid MRMS systems that combine a traditional external quadrupole mass selector and hexapole collision cell with a high-performance MRMS for further ion dissociation, top-down proteomics tools and ultra-high resolution detection.

ITMS systems collect all ions simultaneously, which improves sensitivity relative to previous quadrupole mass spectrometers. Ion trap mass spectrometers are particularly useful for sequencing and identification based on peptide structural analysis, quantitative liquid chromatography mass spectrometry, identification of combinatorial libraries and generally enhancing the speed and efficiency of the drug discovery and development process.

GC-MS systems combine the features of gas chromatography and mass spectrometry to identify different substances within a test sample. The two components, used together, allow for a finer degree of substance identification than either system when used separately. The result is a quantitative analysis of the components and the mass spectrum of each component. Our GC-MS systems are available in triple quadrupole configurations and can be configured with a variety of options to suit a range of applications. Our GC-MS systems have applications in food and product safety, forensics, clinical and toxicology testing and environmental, pharmaceutical and chemical analysis.

LC-MS systems combine the separation features of liquid chromatography with the molecular identification features of mass spectrometry to separate, identify and quantify different substances within a test sample. As a complementary technique to GC-MS, which analyzes volatile compounds, LC-MS can be used to analyze a wide range of non-volatile compounds in complex samples. Our LC-MS systems are available in a wide range of configurations to suit a user's specific needs. Although primarily used for life science applications, our LC-MS systems also have applications in food and product safety, forensics and clinical and toxicology testing, as well as environmental, pharmaceutical and chemical analysis.

FT-IR spectrometers utilize the mid- and far-infrared regions of the electromagnetic spectrum. Our FT-IR systems are commonly used for various quality control and materials research applications.

NIR spectrometers utilize the near-infrared region of the electromagnetic spectrum. Our NIR instruments are primarily used for quality and process control applications in the pharmaceutical, food and agriculture and chemical industries. The pharmaceutical industry is the leading user of NIR instruments, and applications include quality control, research and development and process analytical technology. The food and agricultural industry is the second largest user of NIR instrumentation, with an increasing demand for food, feed and beverage quality control.

Raman spectroscopy provides information on molecular structure. The mechanism of Raman scattering is different from that of infrared absorption, in that Raman and IR spectra provide complementary information. Raman is useful for the identification of both organic and inorganic compounds and functional groups. It is a nondestructive technique, and can be used for the analysis of both liquids and solids. Raman is well suited for use in the polymer and pharmaceutical industries, and has applications in the metals, electronics and semiconductors industries. The technique also has applications in life sciences, forensics and artwork authentication.

Additionally, the Bruker Detection product line offers a wide range of portable analytical and bioanalytical detection systems and related products for CBRNE detection. Our customers use these devices for nuclear, biological agent and chemical agent defense applications, anti-terrorism, law enforcement and process and facilities monitoring. Our CBRNE detection products use many of the same technology platforms as our life science products, as well as additional technologies, including infrared stand-off detection and ion mobility spectrometry, for handheld chemical detectors. We also provide integrated, comprehensive detection suites that include our multiple detection systems, consumables, training and simulators.

BSI NANO Segment

The BSI Nano

Segment comprises the Bruker AXS, Bruker Nano Surfaces, Bruker Nano Analytics and Bruker Semiconductor Divisions. The Bruker AXS Division designs, manufactures and distributes advanced X-ray instruments that use electromagnetic radiation with extremely short wavelengths to determine the characteristics of matter and the three-dimensional structure of molecules. This includes a product portfolio of instruments based on X-ray fluorescence spectroscopy (XRF), X-ray diffraction (XRD) and X-ray micro computed tomography (μCT), as well as spark optical emission spectroscopy systems (S-OES) used to analyze the concentration of elements in metallic samples.

Bruker Nano Surfaces Division's products include atomic force microscopy instrumentation (AFM). Such instruments provide atomic or near atomic resolution of surface topography and mechanical, electrical and chemical information using nano scale probes. In addition, the Bruker Nano Surfaces Division provides advanced fluorescence optical microscopy instruments for multi-photon, multipoint scanning confocal and high-speed 3D super-resolution studies in life science applications. The Bruker Nano Surfaces Division also provides non-contact nanometer resolution topography through white light interferometry and stylus profilometry.

The Bruker Nano Analytics Division manufactures and markets analytical tools for electron microscopes, including energy-dispersive X-ray spectrometers (EDS), electron backscatter diffraction systems (EBSD) and μCT accessories, as well as mobile and bench-top micro X-ray fluorescence (μXRF), total reflection X-ray fluorescence spectrometers (TXRF) and handheld, portable and mobile X-ray fluorescence (HMP-XRF) spectrometry instruments.

The Bruker Semiconductor Division manufactures and markets X-ray metrology, automated AFM defect-detection and photomask repair and cleaning equipment for semiconductor process control.

Customers of our BSI NANO Segment include academic institutions, governmental customers, nanotechnology companies, semiconductor companies, raw material manufacturers, industrial companies, biotechnology and pharmaceutical companies and other businesses involved in materials analysis.

During 2019, we launched several new products for the life science research market, including an advanced high-speed Bio-AFM system the Nano Wizard® ULTRA speed 2 and a new large-format high-resolution Bio-AFM system for nanoscale life science applications. In addition, we launched the TrueLive 3D light-sheet microscope for multiplex live 3D cell culture imaging (the first ever tailorable next generation lattice light sheet), the InVi SPIM Lattice Pro (a light sheet clearing module), the InVi LCS for Neuroscience, and a next generation Ultima 2Pplus multiphoton system. Addressing materials science applications, we launched the S8 JaguarTM versatile WDXRF spectrometer, the SKYSCANTM 1273 3D benchtop X-ray microscope, the G6 LEONARDOTM gas fusion analyzer, and the new Dimension XR state-of-the-art large-sample scanning AFM. We acquired RAVE, LLC, a provider of nanomachining and laser photomask repair and cleaning equipment for semiconductor process control. We also acquired Anasys Instruments Corp., a developer and manufacturer of nanoscale infrared spectroscopy and thermal measurement instruments, JPK Instruments AG, which adds in-depth expertise in live-cell imaging, cellular mechanics, adhesion, and molecular force measurements, optical trapping, and biological stimulus-response characterization to Bruker's capabilities and Alicona Imaging GmbH, a provider of optical based dimensional metrology products.

The BSI NANO Segment systems are based on the following technology platforms:

- **XRD**—Polycrystalline X-ray diffraction, often referred to as X-ray diffraction;
- **XRF**—X-ray fluorescence, also called X-ray spectrometry, including handheld XRF systems;
- **SC-XRD**—Single crystal X-ray diffraction, often referred to as X-ray crystallography;
- **μCT**—X-ray micro computed tomography;
- **EDS**—Energy dispersive X-ray spectroscopy on electron microscopes;
- **EBSD**—Electron backscatter diffraction on electron microscopes;
- **S-OES**—Spark optical emission spectroscopy;
- **CS/ONH**—Combustion analysis for carbon, sulfur, oxygen, nitrogen, and hydrogen in solids;
- **AFM**—Atomic force microscopy;
- **FM**—Fluorescence microscopy;
- **SOM**—Stylus and optical metrology;
- **TMT**—Tribology and mechanical test systems for analysis of friction and wear;
- **NanoIR**—Nanoscale infrared spectroscopy; and
- **Alicona**—Focus variation optical technology for non-contact dimensional metrology.

XRD systems investigate polycrystalline samples or thin films with single wavelength X-rays. The atoms in the polycrystalline sample scatter the X-rays to create a unique diffraction pattern recorded by a detector. Computer software processes the pattern and produces a variety of information, including stress, texture, qualitative and quantitative phase composition, crystallite size, percent crystallinity and layer thickness, composition, defects and density of thin films and semiconductor material. Our XRD systems contribute to a reduction in the development cycles for new products in the catalyst, polymer, electronic, optical material and semiconductor industries. Customers also use our XRD systems

academic and government research facilities, as well as a variety of other fields, including forensics, art and archaeology.

XRF systems determine the elemental composition of a material and provide a full qualitative and quantitative analysis. Our XRF systems direct X-rays at a sample, and the atoms in the sample absorb the X-ray energy. The elements in the sample then emit X-rays that are characteristic for each element. The system collects the X-rays, and the software analyzes the resulting data to determine the elements that are present. Our XRF products provide automated solutions on a turn-key basis for industrial users that require automated, controlled production processes that reduce product and process cost, increase output and improve product quality. Our XRF products cover substantially all of the periodic table and can analyze solid, powder or liquid samples.

SC-XRD systems determine the three-dimensional structures of molecules in a chemical, mineral, or biological substance being analyzed. SC-XRD systems have the capability to determine structure in both small chemical molecules and larger biomolecules. SC-XRD systems direct an X-ray beam at a solid, single crystal sample. The atoms in the crystal sample scatter the X-rays to create a precise diffraction pattern recorded by an electronic detector. Software then reconstructs a model of the structure and provides the unique arrangement of the atoms in the sample. This information on the exact arrangement of atoms in the sample is a critical part of molecular analysis and can provide insight into a variety of areas, including how a protein functions or interacts with a second molecule. Our SC-XRD systems are designed for use in the life sciences industry, academic research and a variety of other applications.

μCT is X-ray imaging in 3D, by the same method used in hospital CT scans, but on a small scale with massively increased resolution. 3D microscopy allows users to image the internal structure of objects non-destructively on a very fine scale. Bruker μCT is available in a range of easy-to-use desktop instruments, which generate 3D images of the sample's morphology and internal microstructure with resolution down to the sub-micron level. Our μCT systems are used for numerous applications in materials research and in the life sciences industry.

EDS systems analyze the chemical composition of materials under investigation in electron microscopes by utilizing the fact that atoms of different chemical elements, when exposed to the high energy electron beam generated by the microscope, irradiate X-rays of different characteristic energy. The evaluation of the energy spectrum collected by our spectrometer allows the determination of the qualitative and quantitative chemical sample composition at the current beam position. EDS systems allow for simultaneous analysis of all elements in the periodic table, beginning with atomic number 4 (beryllium). Our EDS systems are used for a range of applications, including nanotechnology and advanced materials research, as well as materials analysis and quality control. Customers for EDS systems include industrial customers, academia and government research facilities.

EBSD systems are used to perform quantitative microstructure analysis of crystalline samples in electron microscopes. The microscope's electron beam strikes the tilted sample and diffracted electrons form a pattern on a fluorescent screen. This pattern is characteristic of the crystal structure and orientation of the sample region from which it was generated. It provides the absolute crystal orientation with sub-micron resolution. EBSD can be used to characterize materials with regard to crystal orientation, texture, stress, strain and grain size. EBSD also allows the identification of crystalline phases and their distribution, and is applied to many industries such as metals processing, aerospace, automotive, microelectronics and earth sciences.

S-OES instruments are used for analyzing metals. S-OES covers a broad range of applications for metals analysis from pure metals trace analysis to high alloyed grades, and allow for analysis of a complete range of relevant elements simultaneously. S-OES instruments pass an electric spark onto a sample, which burns the surface of the sample and causes atoms to jump to a higher orbit. Our detectors quantify the light emitted by these atoms and help our customers to determine the elemental

composition of the material. This technique is widely used in production control laboratories of foundries and steel mills.

CS/ONH carrier gas systems incorporate a furnace and infrared or thermal conductivity detection to analyze inorganic materials for the determination of carbon, sulfur, nitrogen, oxygen and hydrogen. Combustion and inert gas fusion analyzers are used for applications in metal production and processing, chemicals, ceramics and cement, coal processing, oil refining and semiconductors.

AFM systems provide atomic or near-atomic resolution of material surface topography using a nano-scale probe that is brought into light contact with the sample being investigated. In addition to presenting a surface image, AFM can also provide quantitative nano-scale measurements of feature sizes, material properties, electrical information, chemical properties and other sample characteristics. Our AFM systems are used for applications in academic and governmental materials and biological research and semiconductor, data storage hard drive, LED, battery, solar cells, polymers, and pharmaceutical product development and manufacturing.

FM products use fluorescence microscopy to determine the structure and composition of life science samples. Our products include two-photon microscopes, multipoint scanning confocal microscopes, laser illumination sources, photoactivation, photostimulation and photoablation accessories and synchronization and analysis software. Two-photon microscopes allow imaging deep into tissues and cells and are used widely in neuroscience. Multipoint scanning confocal systems allow live cell imaging with rapid acquisition of images for structural and composition analysis. We also offer super-resolution and single-molecule localization microscopy products which can break the optical diffraction limit by an order of magnitude.

SOM systems provide atomic or near-atomic two dimensional and three dimensional surface resolution using white light interferometry, confocal optical and stylus profilometry methods. SOM profilers range from low-cost manual tools for single measurements to advanced, highly automated systems for production line quality assurance and quality control applications where the combination of throughput, repeatability and reproducibility is essential. SOM profilers support a range of applications in research, product development, tribology, quality control and failure analysis related to materials and machining in the automotive, orthopedic, ophthalmic, high brightness LED, semiconductor, data storage, optics and other markets.

TMT systems provide a platform for all types of common mechanical, friction, durability, scratch and indentation tests for a wide spectrum of materials. Tribology systems are utilized for both academic research of the fundamental material properties and industrial applications in the semiconductor, aerospace, petroleum, automotive and other industries.

NanoIR systems perform infrared (IR) spectroscopy at the nanoscale. Our systems use nanoprobe technology similar to what is used in our atomic force microscopes to deliver quantitative chemical information from the nanoscale to the sub-micron and macro scales. The NanoIR measurement gives the user varying physical and chemical properties with nanoscale spatial resolution in a diverse range of fields, including polymers, 2D materials, materials science, life science and micro-electronics industry. Our systems allow nanoscale IR absorption spectroscopy with interpretable IR spectra that directly correlates to FTIR as well as the complementary technique of nanoscale s-SNOM. With our broadband sources, these systems allow broadband scientific spectroscopy.

Alicona systems combine the functionalities of a micro coordinate measurement machine (CMM) with those of a surface measurement system. These dimensional metrology systems are based on the pioneering development of optical Focus-Variation measurement algorithms and provide the noncontact measurement of form and roughness of complex, miniaturized geometries. These systems serve many quality assurance application areas requiring precision measurement and dimensional metrology, including aerospace, automotive, precision medical products, additive manufacturing, and micro precision manufacturing.

BEST Segment

BEST designs, manufactures and distributes superconducting materials, primarily metallic low temperature superconductors, for use in magnetic resonance imaging, nuclear magnetic resonance, fusion energy research and other applications. Additionally, BEST develops, manufactures and markets sophisticated devices and complex tools based primarily on metallic low temperature superconductors that have applications in "big science" research, including radio frequency accelerator cavities and modules, power couplers and linear accelerators. BEST also manufactures and sells non-superconducting high technology tools, such as synchrotron and beamline instrumentation, principally to customers engaged in materials research and "big science" research projects.

Sales and Marketing

We maintain direct sales forces throughout North America, Europe, Russia, China, Japan, and elsewhere in the Asia Pacific region. We also utilize indirect sales channels to reach customers. We have various international distributors, independent sales representatives and various other representatives in parts of Asia, Latin America, Africa, the Middle East and Eastern Europe. These entities augment our direct sales force and provide coverage in areas where we do not have direct sales personnel. In addition, we have adopted a distribution business model in which we engage in strategic distribution alliances with other companies to address certain market segments. The sales cycle for our products is dependent on the size and complexity of the system and budgeting cycles of our customers. Our sales cycle is typically three to twenty-four months for academic and high-end research products and two weeks to six months for industrial products. The sales cycle of our low temperature superconducting materials is typically four to twelve months, with cycles of certain high-end materials exceeding one year. Sales of our high-end NMR and superconducting devices typically take more than one year and certain large, complex contracts can take more than two years to complete.

We have well-equipped applications and demonstration facilities and qualified application personnel who assist customers and provide product demonstrations in specific application areas. We maintain our primary demonstration facilities at our production facilities, as well as in other key market locations.

Seasonal Nature of Business

Historically, we have higher levels of revenue in the fourth quarter and lower levels of revenues in the first quarter of the year, which we believe is influenced by our customers' budgeting cycles.

Major Customers

We have a broad and diversified customer base and we do not depend on any single customer. No single customer accounted for more than 10% of revenue in any of the last three fiscal years or more than 10% of accounts receivable as of December 31, 2019 or 2018.

Competition

Our existing products and solutions and any products and solutions that we develop in the future may compete in multiple, highly competitive markets. In addition, there has been a trend towards consolidation in our industries and many of our competitors have substantially greater financial, technical and marketing resources than we do. Our competitors may succeed in developing and offering products that could render our products or those of our strategic partners obsolete or noncompetitive. Our competitors may also have cost and price advantages based upon the value of their currencies compared with the U.S. Dollar or Euro. In addition, many of these competitors have significantly more experience in the life sciences, chemical and materials markets. Our ability to compete successfully will depend on our ability to develop proprietary products that reach our target markets in a timely manner

and are technologically superior to and/or less expensive, or more cost effective, than products marketed by our competitors. Current competitors or other companies may possess or develop technologies and products that are more effective than ours. Our technologies and products may be rendered obsolete or uneconomical by technological advances or by entirely different approaches developed by one or more of our competitors.

We also compete with companies that provide analytical or automation tools based on technologies other than those we offer. These technologies may prove to be more successful in meeting demands in the markets that our products and solutions are intended to serve. In addition, other companies may choose to enter our fields in the future. We believe that the principal competitive factors in our markets are technology-based applications expertise, product specifications, functionality, reliability, marketing expertise, distribution capability, proprietary patent portfolios and cost effectiveness.

BSI Life Science Segment Competition

The Bruker BioSpin Group competes with companies that offer magnetic resonance spectrometers, mainly JEOL and Oxford Instruments. In the field of preclinical imaging, Bruker BioSpin competes with Perkin Elmer, Mediso, Trifoil, MR Solutions and others. The Bruker CALID Group competes with a variety of companies that offer mass spectrometry-based systems. Bruker CALID's competitors in the life science markets and chemical and applied markets include Danaher, Agilent, GE-Healthcare, Waters, Thermo Fisher Scientific, Shimadzu, Hitachi and JEOL. In the microbiology market, Bruker CALID competes with Biomerieux. Bruker CALID also competes with a variety of companies that offer molecular spectrometry based systems, including Thermo Fisher Scientific, PerkinElmer, Agilent, Foss, ABB Bomem, Buchi, Shimadzu and Jasco. Bruker CALID's CBRNE detection customers are highly fragmented, and it competes with a number of companies in this area, of which the most significant competitor is Smiths Detection.

BSI NANO Segment Competition

The BSI NANO Segment competes with companies that offer analytical X-ray solutions, OES systems, AFM and SOM systems and optical fluorescence systems, primarily Rigaku, Oxford Instruments, Agilent, Thermo Fisher Scientific, Ametek's Spectro and Edax divisions, PANalytical, Park Systems, Olympus, Nikon, Zeiss and Danaher's Leica business.

BEST Segment Competition

BEST competes with Luvata, Western Superconducting Technologies Co., Ltd. (WST), and Jastec Co., Ltd. in low temperature superconducting materials. In addition, BEST competes with Fujikura, SuperPower (a Furukawa company), Superconductor Technologies Inc. and SuNam Co., Ltd. in the market for second generation high temperature superconducting materials. BEST further competes with Zanon, Mitsubishi Electric and AES in the development and supply of accelerator cavities, with Thales, Toshiba and CPI International in the development and supply of radio frequency couplers, with Mitsubishi Heavy Industries in the development and supply of superconducting accelerator modules and with AES and Thales for electron linear accelerators.

Manufacturing and Supplies

Several of our manufacturing facilities are certified under ISO 9001:2008 and ISO 13485, international quality standards. We manufacture and test our magnetic resonance products at our facilities in Faellanden, Switzerland; Wissembourg, France; and Karlsruhe, Germany. We manufacture and test our preclinical imaging products at our facilities in Ettlingen, Germany; Wissembourg, France; Kontich, Belgium; and Faellanden, Switzerland. We manufacture and test our mass spectrometry products, including CBRNE detection products, at our facilities in Bremen, Germany. We principally

manufacture and test our molecular spectroscopy products, including CBRNE detection products, at our facilities in Ettlingen, Germany. We manufacture and test our X-ray, OES and AFM products at our facilities in Penang, Malaysia; Karlsruhe, Germany; Berlin, Germany; Santa Barbara, California, U.S.A.; Kennewick, Washington, U.S.A.; and Migdal Ha'Emek, Israel. We manufacture and test the majority of our energy and superconducting products at our facilities in Hanau, Germany; Bergisch Gladbach, Germany; Perth, Scotland; and Carteret, New Jersey, U.S.A. Manufacturing processes at our facilities in Europe, Israel and California, U.S.A. include all phases of manufacturing, such as machining, fabrication, subassembly, system assembly, and final testing. Our other facilities primarily perform high-level assembly, system integration and final testing. We typically manufacture critical components in-house to ensure key competence and outsource to third party manufacturers non-critical components.

We purchase materials and components from various suppliers that are either standard products or built to our specifications. We obtain some of the components included in our products from a limited group of suppliers or from a single-source supplier for items such as charge coupled device area detectors, X-ray tubes, robotics, infrared optics and others. BEST has an ongoing collaboration and a joint technology development agreement with Allegheny Technologies Incorporated to advance state-of-the-art niobium-based superconductors, including those used in MRI magnets for the medical industry, and preclinical MRI magnets used in the life-science tools industry.

Research and Development

We commit substantial capital and resources to internal and collaborative research and development projects in order to provide innovative products and solutions to our customers. We conduct research primarily to enhance system performance and improve the reliability of existing products, and to develop revolutionary new products and solutions. Our research and development efforts are conducted for the relevant products within each of the operating segments, as well as in collaboration with others on areas such as microfluidics, automation and workflow management software. We have been the recipient of government grants from Germany and the United States for various projects related to early-stage research and development. We have generally retained, at a minimum, non-exclusive rights to any items or enhancements we develop under these grants. The German government requires that we use and market technology developed under grants in order to retain our rights to the technology. We have also accepted some sponsored research contracts from private sources.

BSI Life Science Segment Research and Development

The research and development performed in the Bruker BioSpin Group and in the CALID Group is primarily conducted at our facilities in Bremen, Ettlingen, Germany; Faellanden, Switzerland and Wissembourg, France. The Bruker BioSpin Group maintains technical competencies in core magnetic resonance technologies and single- and multimodal imaging technologies and capabilities, including NMR, EPR, MRI, MPI, PET and CT. The most recent technological innovations included Bruker's ultra-high field NMR GHz-class product line now enabling novel research in functional structural biology of proteins and protein complexes and was followed by the delivery of the world's first for Avance™ NEO 1.2 GHz NMR. These ultra-high field trends in NMR are complemented by preclinical MRI magnet developments of up to 18 Tesla. NMR probe technology now offers low temperature magic angle spinning (MAS) probes for dynamic nuclear polarization NMR for analysis of complex biomolecules and materials as well as new CP/MAS CryoProbes for material science research. Bruker is incorporating artificial intelligence Deep Learning capabilities into its software to improve signal detection and the research instruments are further enhanced by advanced software tools for automated workflows on analytical data and 3D conformational and configurational analysis. Remote monitoring of labs and systems now increases system protection and can provide expert supervision. The

next-generation, high-performance 80 MHz FT-NMR benchtop spectrometer allows new capabilities for organic or medicinal chemistry research, teaching or synthesis verification.

The Bruker CALID Group maintains technical competencies in core mass spectrometry technologies and capabilities, including: MALDI, ESI and EI/CI ion source, TOF, TOF/TOF, ion traps, MRMS, quadrupole and IMS analyzers and bioinformatics. Recent projects include the innovative timsTOF mass spectrometer for separation and analysis of unresolved compounds and conformations. The Bruker CALID Group also maintains technical competencies in core vibrational spectroscopy technologies and capabilities, including FT-IR, NIR and Raman.

BSI NANO Segment Research and Development

The research and development performed in the BSI NANO Segment is primarily conducted at our facilities in Karlsruhe, Germany; Penang, Malaysia; Madison, Wisconsin, U.S.A.; and San Jose and Santa Barbara, California, U.S.A. The BSI NANO Segment maintains technical competencies in core X-ray technologies and capabilities, including detectors used to sense X-ray and X-ray diffraction patterns, X-ray sources and optics that generate and focus the X-rays, robotics and sample handling equipment that holds and manipulates the experimental material, and software that generates the structural data. Recent projects include fluorescence microscopy with simultaneous, all-optical stimulation and imaging platforms for optogenetics neuroscience research and light sheet cell microscopy systems which enable brain research and high-resolution live cell research. The BSI NANO Segment also has competencies in AFM technology, which involve sub-angstrom level position and motion control, as well as sub-pico newton force control. The BSI NANO Segment technologies also include 3D optical inference-based microscopy, stylus profilometry, tribology testing, nano-indentation, optical fluorescence two-photon microscopy, multipoint scanning microscopy and high-speed, 3D super-resolution florescence microscopy. Recent innovations include elemental analyzer systems for advanced applications and research and simultaneous, all-optical stimulation and imaging platforms for neuroscience applications.

BEST Segment Research and Development

The research and development performed in the BEST Segment is primarily conducted at our facilities in Hanau, Bergisch Gladbach and Alzenau, Germany; and Carteret, New Jersey, U.S.A. BEST maintains technical competencies in the production and development of low and high temperature superconducting materials and devices. BEST and CERN (European Organization for Nuclear Research, Geneva, Switzerland) have an ongoing research and development agreement to advance the state of art with niobium-tin based superconductors used in particle accelerators and other large scale scientific magnets systems.

Intellectual Property

Our intellectual property consists of patents, copyrights, trade secrets, know-how, and trademarks. Protection of our intellectual property is a strategic priority for our businesses because of the length of time and expense associated with bringing new products through the development process and to the marketplace. We have a substantial patent portfolio, and we intend to file additional patent applications as appropriate. We believe our owned and licensed patent portfolio provides us with a competitive advantage. This portfolio permits us to maintain access to a number of key technologies. We license our owned patent rights where appropriate. We intend to enforce our patent rights against infringers, if necessary. The patent positions of life sciences tools companies involve complex legal and factual questions. As a result, we cannot predict the enforceability of our patents with certainty. In addition, we are aware of the existence from time to time of patents in certain countries, which, if valid, could impair our ability to manufacture and sell products in these countries.

We also rely upon trade secrets, know-how, trademarks, copyright protection and licensing to develop and maintain our competitive position. We generally require the execution of confidentiality agreements by our employees, consultants, and other scientific advisors. These agreements provide that all confidential information made known during the course of a relationship with us will be held in confidence and used only for our benefit. In addition, these agreements provide that we own all inventions generated during the course of the relationship.

Government Contracts

We are a party to various government contracts. Under some of these government contracts, the government may receive license or similar rights to intellectual property developed under the contract. However, under government contracts we enter we generally receive at least non-exclusive rights to any items or technologies we develop. Although we transact business with various government agencies, we believe that no government contract is of such magnitude that a renegotiation of profits or termination of the contract or subcontracts at the election of the government would have a material adverse effect on our financial results.

Government Regulation

We are required to comply with federal, state, and local environmental protection regulations. We do not expect this compliance to have a significant impact on our capital spending, earnings or competitive position.

Prior to introducing a product in the United States, our Bruker AXS subsidiary provides notice to the U.S. Food and Drug Administration, or FDA, in the form of a Radiation Safety Initial Product Abbreviated Report, which provides identification information and operating characteristics of the product. If the FDA finds that the report is complete, it provides approval in the form of what is known as an accession number. Bruker AXS may not market a product until it has received an accession number. In addition, Bruker AXS submits an annual report to the FDA that includes the radiation safety history of all products it sells in the United States. Bruker AXS is required to report to the FDA incidents of accidental exposure to radiation arising from the manufacture, testing, or use of any of its products. Bruker AXS also reports installations of its products to state government regulatory agencies responsible for the regulation of radiation emitting devices. For sales in Germany, Bruker AXS registers each system with the local authorities. In some countries where Bruker AXS sells systems, Bruker AXS uses the license we obtained from the federal authorities in Germany to assist it in obtaining a license from the country in which the sale occurs.

Our Bruker AXS subsidiary possesses low-level radiation materials licenses from the local radiation safety authority, Gewerbeaufsichtsamt Karlsruhe, for its facility in Karlsruhe, Germany; and from the local radiation safety authority, Kanagawa Prefecture, for its facility in Yokohama, Japan, as well as from various other countries in which it sells its products. Our Bruker Daltonics subsidiary possesses low-level radiation licenses for facilities in Billerica, Massachusetts and Leipzig, Germany. The U.S. Nuclear Regulatory Commission also has regulations concerning the exposure of our employees to radiation.

Certain of our clinical products are subject to regulation in the United States by the FDA and by similar regulatory bodies in other countries where such products are sold. For example, our MALDI Biotyper CA system is subject to regulation by the FDA and our IVD-CE Certified MALDI BioTyper system is subject to regulation in the European Union under the provisions of Directive 98/79/EC. These, and similar local regulations elsewhere in the world, govern a wide variety of product-related activities, from quality management, design and development to labeling, manufacturing, promotion, sales and distribution. As such, we continually invest in our manufacturing infrastructure to gain and maintain certifications necessary for the relevant level of regulatory clearance. The European Union

Directive will be replaced in May 2022 by the IVD Regulation (EU) 2017/746. The regime changes significantly with the new Regulation, which requires clinical evidence to demonstrate the claimed benefits and safety of the device in relation to its stated purpose, stricter classification and CE-marking requirements and ongoing post-market follow-up to ensure conformity. The Regulation requires new databases to be set up to track which devices are CE marked and to register clinical studies and post-market monitoring. In addition tracing is enhanced by a Unique Device Identification (UDI) System and through requirements on other economic operators in the supply chain. Our products currently approved under the Directive, and not already placed on the market or put into service, must be recertified under the Regulation by May 2024.

Working Capital Requirements

During the year ended December 31, 2019, there were no credit terms extended to customers that would have a material adverse effect on our working capital.

We recognize revenue from systems sales upon transfer of control in an amount that reflects the consideration we expect to receive. Transfer of control generally occurs upon shipment, or for certain systems, based upon customer acceptance for a system once delivered and installed at a customer facility. For systems that include customer-specific acceptance criteria, we are required to assess when it can demonstrate the acceptance criteria has been met, which generally is upon successful factory acceptance testing or customer acceptance and evidence of installation. Systems that have been shipped to customers, but not yet accepted by the customer, are included as finished goods in-transit. Finished goods in-transit was $36.0 million and $38.3 million at December 31, 2019 and 2018, respectively. We also have well-equipped applications and demonstration facilities and qualified application personnel who assist customers and provide product demonstrations in specific application areas. In total, we held $77.5 million and $67.9 million of demonstration inventory at December 31, 2019 and 2018, respectively.

Backlog

Our backlog consists of firm orders under non-cancellable purchase orders received from customers. Total system backlog at December 31, 2019 and 2018 was approximately $1,855.3 million and $1,054.4 million, respectively. The increase in our backlog in 2019 when compared to 2018 is due to new long-term contracts within our BEST Segment. We anticipate that approximately 54.2% of the backlog as of December 31, 2019 will be filled in 2020. We generally experience variable and fluctuating revenues in the first three quarters of the year, while our fourth quarter revenues have historically been stronger than the rest of the year. As a result, backlog on any particular date can be indicative of our short-term revenue performance, but is not necessarily a reliable indicator of long-term revenue performance.

Employees

As of December 31, 2019 and 2018, we had approximately 7,230 and 6,870 full-time employees worldwide, respectively. Of these employees, approximately 1,225 and 1,095 were located in the United States as of December 31, 2019 and 2018, respectively. Our employees in the United States are not unionized or affiliated with any labor organizations. Employees based outside the United States are primarily located in Europe, with worker's councils or labor unions primarily in Germany and France. Several of our international subsidiaries are parties to contracts with labor unions and workers' councils. We believe that we have good relationships with our employees and the workers' councils.

As of December 31, 2019, we had approximately 3,505 employees in production and distribution, 1,740 employees in selling and marketing and 1,205 employees in research and development, with general and administrative employees representing the remainder. As of December 31, 2018, we had approximately 3,290 employees in production and distribution, 1,700 employees in selling and marketing and 1,135 employees in research and development, with general and administrative employees representing the remainder.

Available Information

We are subject to the informational requirements of the Securities Exchange Act of 1934 (Exchange Act). Therefore, we file periodic reports, proxy statements and other information with the Securities and Exchange Commission (SEC). Such reports, proxy statements and other information are available on the SEC's website (http://www.sec.gov).

Our website is located at *www.bruker.com*. We make available free of charge through this website our annual reports on Form 10-K, quarterly reports on Form 10-Q, current reports on Form 8-K, and amendments to those reports filed with or furnished to the SEC pursuant to Sections 13(a) or 15(d) of the Exchange Act, as soon as reasonably practicable after they are electronically filed with or furnished to the SEC. The contents of our website are not incorporated into this report.

ITEM 1A *RISK FACTORS*

The following risk factors should be considered in conjunction with the other information included in this Annual Report on Form 10-K. This report may include forward-looking statements that involve risks and uncertainties. In addition to those risk factors discussed elsewhere in this report, we identify the following risk factors, which could affect our actual results and cause actual results to differ materially from those in the forward-looking statements.

Our financial condition and results of operations for fiscal 2020 will be adversely affected by the recent novel coronavirus disease- 2019, or COVID-19, outbreak.

In December 2019, a novel strain of coronavirus, now referred to as COVID-19, surfaced in Wuhan, China. The virus continues to spread globally, has been declared a pandemic by the World Health Organization and has spread to over 100 countries, including the United States. The impact of this pandemic has been and will likely continue to be extensive in many aspects of society, which has resulted in and will likely continue to result in significant disruptions to the global economy, as well as businesses and capital markets around the world.

Impacts to our business include temporary closures of many of our government and university customers and our suppliers, disruptions or restrictions on our employees' and customers' ability to travel, and delays in product installations or shipments to and from affected countries. In an effort to halt the outbreak of COVID-19, a number of countries, including the United States, have placed significant restrictions on travel and many businesses have announced extended closures. For example, a number of states, including California, Massachusetts and New Jersey where we have significant operations, have issued shelter in place or stay-at-home orders which required our employees in that area to work from home and avoid unnecessary travel. In addition, a number of our production facilities have either temporarily closed, plan to temporarily close or are operating on a reduced capacity. Most commercial activity in sales and marketing, and customer demonstrations and applications training, are either being conducted remotely or postponed. Customer purchasing departments are operating at reduced capacity, and many customers could delay or cut capital expenditures and operating budgets. These travel restrictions, business closures and operating reductions at Bruker, our customers, our distributors, and or our suppliers will adversely impact our operations locally and worldwide, including our ability to manufacture, sell or distribute our products, as well as cause temporary closures of our foreign distributors, or the facilities of suppliers or customers. This disruption of our employees, distributors, suppliers or customers will impact our global sales and operating results.

We are continuing to monitor and assess the effects of the COVID-19 pandemic on our commercial operations, including any potential impact on our revenue in 2020. However, we cannot at this time accurately predict what effects these conditions will ultimately have on our operations due to uncertainties relating to the ultimate geographic spread of the virus, the severity of the disease, the

duration of the outbreak, and the length of the travel restrictions and business closures imposed by the governments of impacted countries. In addition, a significant outbreak of contagious diseases in the human population could result in a widespread health crisis that could adversely affect the economies and financial markets of many countries, resulting in an economic downturn or a global recession that could affect demand for our products and likely impact our operating results.

Unfavorable economic or political conditions in the countries in which we operate may have an adverse impact on our business results or financial condition.

Our businesses and results of operations are affected by international, national and regional economic and political conditions. Our businesses or financial results may be adversely impacted by unfavorable changes in economic or political conditions in the countries and markets in which we operate, including, among others, adverse changes in interest rates or tax rates, volatility in financial and commodity markets, contraction in the availability of credit in the marketplace, and changes in capital spending patterns.

Our revenue from U.S. operations represented approximately 26% of total consolidated revenue for both fiscal 2019 and 2018. Our revenue from operations in Europe represented approximately 35% and 37% of total consolidated revenue for the fiscal years 2019 and 2018, respectively. Our revenue from operations in the Asia Pacific region represented approximately 31% and 29% of total consolidated revenue in each of the corresponding periods. Economic factors that could adversely influence demand for our products include uncertainty about global economic conditions leading to reduced levels of investment, changes in government spending levels and/or priorities, the size and availability of government budgets, customers' and suppliers' access to credit and other macroeconomic factors affecting government, academic or industrial spending behavior. Slower economic growth or a deterioration in economic conditions could result in a decrease in government funding for scientific research, a delay in orders from current or potential customers or a reduction in purchases of our products.

We cannot predict how changes in economic conditions or political instability will affect our customers and suppliers or how any negative impact on our customers and suppliers might adversely impact our business results or financial condition.

We derive a significant portion of our revenue from international sales and are subject to the operational risks of doing business in foreign countries.

International sales account, and are expected to continue to account, for a significant portion of our total revenues. Our revenue from non-U.S. operations represented approximately 74% of our total consolidated revenue for both fiscal 2019 and 2018. Our international operations are, and will continue to be, subject to a variety of risks associated with conducting business internationally, many of which are beyond our control. These risks, which may adversely affect our ability to achieve and maintain profitability and our ability to sell our products internationally, include:

- changes in foreign currency translation rates;
- changes in regulatory requirements;
- legislation and regulation, including tariffs, relating to the import or export of high technology products;
- the imposition of government controls;
- political and economic instability, including the impact of the COVID-19 coronavirus, the possibility of an economic recession in certain key markets such as Germany, international

hostilities, acts of terrorism and governmental restrictions, inflation, trade relationships and military and political alliances;

- costs and risks of deploying systems in foreign countries;
- compliance with export laws and controls and trade embargoes in multiple jurisdictions;
- limited intellectual property rights;
- the burden of complying with a wide variety of complex foreign laws and treaties, including unfavorable labor regulations, specifically those applicable to our European operations; and
- compliance with U.S. and local laws affecting the activities of U.S. companies abroad, including the United States Foreign Corrupt Practices Act, or FCPA, and local anti-bribery laws.

The United States has implemented tariffs on certain imported goods. These additional tariffs could include items imported by us from China or other countries. In addition, China has imposed tariffs on a wide range of American products in retaliation for these new American tariffs. There is a concern that the imposition of additional tariffs by the United States, could result in the adoption of additional tariffs by China and other countries as well. Any resulting trade war could negatively impact the global market for scientific instruments and could have a significant adverse effect on our business. The imposition of tariffs on items imported by us from China or other countries could increase our costs and could result in lowering our gross margin on products sold. Conversely, China imposing tariffs on items that we export to China, could adversely impact our customers' ability to purchase our products and our competitive position in China or increase our costs, which could have a material adverse effect on our business and results of operations.

We must also comply with the European Union General Data Protection Regulation (GDPR) which was effective as of May 2018. The goal of the regulation is to increase individual rights and protections for personal data located in or originating from the European Union. GDPR is extraterritorial in that it applies to all business within the European Union and any business located outside of the European Union that processes personal data of individuals located within the European Union. There are significant fines associated with non-compliance.

While the impact of these factors is difficult to predict, any one or more of these factors could adversely affect our operations in the future.

A prolonged downturn in global economic conditions may materially adversely affect our business.

Our business and results of operations are affected by international, national and regional economic conditions. Financial markets in the United States, Europe and Asia have been experiencing extreme disruption in recent months, including, among other things, extreme volatility in security prices. We are unable to predict the likely duration and severity of the current disruptions in financial markets and adverse economic conditions throughout the world. These economic developments affect businesses such as ours and those of our customers in a number of ways that could result in unfavorable consequences to us. Current economic conditions or a deepening economic downturn in the United States and elsewhere, or reductions in the level of government funding for scientific research, may cause our current or potential customers to delay or reduce purchases which could, in turn, result in reductions in sales of our products, materially and adversely affecting our results of operations and cash flows. Volatility and disruption of global financial markets could limit our customers' ability to obtain adequate financing to maintain operations and proceed with planned or new capital spending initiatives, leading to a reduction in sales volume that could materially and adversely affect our results of operations and cash flow. In addition, a decline in our customers' ability to pay as a result of the economic downturn may lead to increased difficulties in the collection of our accounts receivable,

higher levels of reserves for doubtful accounts and write-offs of accounts receivable, and higher operating costs as a percentage of revenues.

We have identified material weaknesses in our internal control over financial reporting which could, if not remediated, result in material misstatements in our consolidated financial statements.

Our management is responsible for establishing and maintaining adequate internal control over our financial reporting, as such term is defined in Rule 13a-15(f) under the Exchange Act. As disclosed in this Annual Report on Form 10-K for the year ended December 31, 2019, management identified material weaknesses in our internal control over financial reporting.

A material weakness is a deficiency, or combination of deficiencies, in internal control over financial reporting, such that there is a reasonable possibility that a material misstatement of our annual or interim financial statements will not be prevented or detected on a timely basis.

We did not design and maintain an effective control environment commensurate with our financial reporting requirements. Specifically, we lacked a sufficient complement of personnel in our corporate tax department and a U.S. subsidiary with an appropriate level of tax and accounting knowledge, training and experience to appropriately analyze, record and disclose tax and accounting matters timely and accurately. This material weakness contributed to the following additional material weaknesses:

- We did not maintain effective internal controls with respect to accounting for income taxes. Specifically, our controls over income taxes did not operate effectively as designed. This control deficiency resulted in immaterial misstatements to the income tax provision, income taxes payable, and uncertain tax position reserves accounts in our consolidated financial statements for the year ended December 31, 2019.
- We did not maintain effective internal controls with respect to accounting for revenue transactions at a U.S. subsidiary. Specifically, our controls over revenue recognition at a U.S. subsidiary did not operate effectively as designed. This control deficiency resulted in immaterial errors to revenue, accounts receivable and deferred revenue accounts in our consolidated financial statements for the year ended December 31, 2019.

These errors did not, individually or in the aggregate, result in a material misstatement of our consolidated financial statements and disclosures as of and for the year ended December 31, 2019. However, these control deficiencies could result in a misstatement of the interim or annual financial statements that would result in a material misstatement to our annual or interim consolidated financial statements that would not be prevented or detected. Accordingly, our management determined that these control deficiencies constitute material weaknesses. If not remediated, these material weaknesses could result in material misstatements in our consolidated financial statements.

We may lose money when we exchange foreign currency received from international sales into U.S. Dollars.

A significant portion of our business is conducted in currencies other than the U.S. Dollar, which is our reporting currency. As a result, currency fluctuations among the U.S. Dollar and the currencies in which we do business have caused, and will continue to cause, foreign currency translation gains and losses. In addition, currency fluctuations could cause the price of our products to be more or less competitive than our principal competitors' products. Currency fluctuations will increase or decrease our cost structure relative to those of our competitors, which could lessen the demand for our products and affect our competitive position. From time to time we enter into certain hedging transactions and/or option and foreign currency exchange contracts which are intended to offset some of the market risk associated with our sales denominated in foreign currencies. We cannot predict the effectiveness of these transactions or their impact upon our future operating results, and from time to time they may negatively affect our quarterly earnings.

Our reported financial results may be adversely affected by fluctuations in currency exchange rates.

In addition to the foreign currency exposure associated with differences between where our products are manufactured and sold by us and our competitors, our exposure to currency exchange rate fluctuations results from the currency translation exposure associated with the preparation of our consolidated financial statements, as well as from the exposure associated with transactions of our subsidiaries that are denominated in a currency other than the respective subsidiary's functional currency. While our financial results are reported in U.S. Dollars, the financial statements of many of our subsidiaries outside the U.S. are prepared using the local currency as the functional currency. During consolidation, these results are translated into U.S. Dollars by applying appropriate exchange rates. As a result, fluctuations in the exchange rate of the U.S. Dollar relative to the local currencies in which our foreign subsidiaries report could cause significant fluctuations in our reported results. Moreover, as exchange rates vary, revenue and other operating results may differ materially from our expectations. The effects of changes in currency exchange rates decreased our 2019 revenue by approximately $50.3 million, or 2.7%, and increased our 2018 revenue by approximately $25.5 million, or 1.4%. Adjustments resulting from financial statement translations are included as a separate component of shareholders' equity. In the years ended December 31, 2019 and 2018, we recorded net losses from currency translation adjustments of $20.0 million and $25.5 million, respectively.

Additionally, to the extent monetary assets and liabilities, including cash and debt, are held in a different currency than the reporting subsidiary's functional currency, fluctuations in currency exchange rates may have a significant impact on our reported financial results, and may lead to increased earnings volatility. We may record significant gains or losses related to both the translation of assets and liabilities held by our subsidiaries into local currencies and the remeasurement of inter-company receivables and loan balances.

If we are not able to successfully integrate the businesses we acquire through mergers, acquisitions or strategic alliances, we may not be able to realize all of the cost savings and other benefits that we expect to result from the transactions and our financial results may be different than expected.

Our strategy includes expanding our technology base and product offerings through selected mergers, acquisitions and strategic alliances. For example, from January 1, 2017 to December 31, 2019, we have acquired 21 businesses to expand our technologies and product offerings.

Successful integration of the businesses we acquire involves a number of risks, including, among others, risks related to:

- coordinating or consolidating geographically separate organizations and integrating personnel with different business backgrounds and corporate cultures;
- integrating previously autonomous departments in sales and marketing, distribution, accounting and administrative functions;
- integrating financial information and management systems;
- the pace of our acquisition activity and the related diversion of already limited resources and management time;
- disruption of our ongoing business;
- potential impairment of relationships with customers as a result of changes in management or otherwise arising out of such transactions; and
- retention of key employees of the acquired businesses within the first one to two years after the acquisition, including the risk that they may compete with us subsequently.

We may have difficulty developing, manufacturing and marketing the products of a newly acquired company or business in a way that enhances the performance of our combined businesses or product lines. As a result, we may not realize the value from expected synergies. Acquisitions have resulted, and may in the future result, in unexpected significant costs and expenses, including disputes over contingent consideration and complicated accounting for complex transaction structures. In the future, we may be required to record charges to earnings during the period if we determine there is an impairment of goodwill or intangible assets, up to the full amount of the value of the assets.

We generally assume the liabilities of businesses we acquire, which could include liability for an acquired business' violation of law that occurred before we acquired it. In addition, we have historically acquired smaller, privately held companies that may not have strong cultures of legal compliance or the robust financial controls of a larger, publicly traded company, and if we fail to implement adequate training, controls, and monitoring of the acquired companies, we could also be liable for post-acquisition legal violations.

It may be difficult for us to implement our strategies for improving margins, profitability and cash flow.

We are pursuing a number of strategies to improve our financial performance, including implementing various productivity improvement initiatives in an effort to streamline our operations. These initiatives include the outsourcing of manufacturing activities; consolidating, transferring or ceasing operations at certain facilities; applying lean manufacturing and six sigma concepts to our operations; implementing ERP and other information technology systems; and applying a shared service approach to various functions.

We may not be able to successfully implement these strategies, and these efforts may not result in the expected improvement in our margins, profitability or cash flow. Anticipated benefits to our operating and financial performance might be reduced or delayed as a result of difficulties in implementing these initiatives, which may include complications in the transfer of assets and production knowledge, loss of key employees and/or customers, the disruption of ongoing business and possible inconsistencies in standards, controls and procedures. Implementation costs also might exceed our expectations and further cost reduction measures might become necessary, resulting in additional future charges. Our ability to successfully implement these strategies and achieve our objectives will also depend on our ability to identify, attract and retain management and other personnel with the skills and experience needed to effectively manage the process and drive our operating performance improvement during and after implementation of our improvement initiatives.

These improvement strategies may also have unintended consequences, such as attrition beyond our intended reduction in workforce, reduced employee morale and loss of customer relationships. We also may undertake additional restructuring activities in the future. Because of these and other factors, we cannot predict whether we will realize the purpose and anticipated benefits of our restructuring and related measures, and if we do not, our business and results of operations may be adversely affected.

Goodwill, intangible assets and other long-lived assets are subject to impairment which could negatively impact our operating results.

We have recorded goodwill, intangible assets and other long-lived assets that must be periodically evaluated for potential impairment. We assess the realizability of the reported goodwill, intangible assets and other long-lived assets annually, as well as whenever events or changes in circumstances indicate that the assets may be impaired. These events or circumstances generally include operating losses or a significant decline in the earnings associated with the reporting unit these assets are reported within. A decline in our stock price and market capitalization may also cause us to consider whether goodwill, intangible assets and other long-lived assets may require an impairment assessment. Our ability to realize the value of these assets will depend on the future cash flows of the reporting

unit in addition to how well we integrate the businesses we acquire. We have recorded impairment losses of $1.7 million, $0.6 million, and $1.1 million for the years ended December 31, 2019, 2018 and 2017, respectively.

If our products fail to achieve and sustain sufficient market acceptance across their broad intended range of applications, we will not generate expected revenue.

Our business strategy depends on our ability to successfully commercialize a broad range of products based on our technology platforms, including magnetic resonance technology, pre-clinical imaging technology, mass spectrometry technology, X-ray technology, atomic force microscopy technology, stylus and optical metrology technology, fluorescence microscopy technology, infrared technology and superconducting magnet technologies for use in a variety of life science, chemistry and materials analysis applications. Some of our products have only recently been commercially launched and have achieved only limited sales to date. The commercial success of our products depends on obtaining and expanding market acceptance by a diverse array of industrial, academic, clinical, pharmaceutical, biotechnology, applied, medical research and governmental customers around the world. We may fail to achieve or sustain substantial market acceptance for our products across the full range of our intended applications or in one or more of our principal intended applications. Any such failure could decrease our sales and revenue. To succeed, we must convince substantial numbers of potential customers to invest in new systems or replace their existing techniques with techniques employing our systems. Limited funding available for capital acquisitions by our customers, as well as our customers' own internal purchasing approval policies, could hinder market acceptance of our products. Our intended customers may be reluctant to make the substantial capital investment generally needed to acquire our products or to incur the training and other costs involved with replacing their existing systems with our products. We also may not be able to convince our intended customers that our systems are an attractive and cost-effective alternative to other technologies and systems for the acquisition, analysis and management of molecular, cellular and microscopic information. Because of these and other factors, our products may fail to gain or sustain market acceptance.

Our products compete in markets that are subject to rapid technological change, and one or more of the technologies underlying our products could be made obsolete by new technology.

The market for discovery and analysis tools is characterized by rapid technological change and frequent new product introductions. Rapidly changing technology could make some or our entire product lines obsolete unless we are able to continually improve our existing products and develop new products. Because substantially all of our products are based on our technology platforms, including magnetic resonance technology, mass spectrometry technology, X-ray technology, atomic force microscopy technology, fluorescence microscopy technology, stylus and optical metrology technology and infrared technology, we are particularly vulnerable to any technological advances that would make these techniques obsolete as the basis for analytical systems in any of our markets. To meet the evolving needs of our customers, we must rapidly and continually enhance our current and planned products and services and develop and introduce new products and services. In addition, our product lines are based on complex technologies that are subject to rapid change as new technologies are developed and introduced in the marketplace. We may have difficulty in keeping abreast of the rapid changes affecting each of the different markets we serve or intend to serve. If we fail to develop and introduce products in a timely manner in response to changing technology, market demands or the requirements of our customers, our product sales may decline, and we could experience significant losses.

Our business could be harmed if our collaborations fail to advance our product development.

Demand for our products will depend, in part, upon the extent to which our collaborations with pharmaceutical, biotechnology and proteomics companies are successful in developing, or helping us to develop, new products and new applications for our existing products. In addition, we collaborate with academic institutions and government research laboratories on product development. We have limited or no control over the resources that any collaborator may devote to our products. Any of our present or future collaborators may not perform their obligations as expected. If we fail to enter into or maintain appropriate collaboration agreements, or if any of these events occur, we may not be able to develop some of our new products, which could materially impede our ability to generate revenue or profits.

We face substantial competition. If we fail to compete effectively, it could harm our business results and materially impact the value of our company.

We face substantial competition in our industries and we expect that competition in all of our markets will increase further. Currently, our principal competition comes from established companies providing products using existing technologies that perform many of the same functions for which we market our products. A number of our competitors have expanded their market share in recent years through business combinations. Other companies also may choose to enter our fields in the future. Our competitors may develop or market products that are more effective or commercially attractive than our current or future products or that may render our products obsolete. Competition has in the past subjected, and is likely in the future to subject, our products to pricing pressure. Many of our competitors have more experience in the market and substantially greater financial, operational, marketing and technical resources than we do, which could give them a competitive advantage in areas such as research and development, production, marketing and distribution. Our ability to compete successfully will depend, in part, on our ability to develop proprietary products that reach the market in a timely manner and are technologically superior to, less expensive than, or more cost-effective than, other currently marketed products.

If we lose our strategic partners, our marketing and sales efforts could be impaired.

A substantial portion of our sales of selected products consists of sales to third parties who incorporate our products into their systems. These third parties are responsible for the marketing and sales of their systems. We have little or no control over their marketing and sales activities or how they use their resources. Our present or future strategic partners may or may not purchase sufficient quantities of products from us or perform appropriate marketing and sales activities. In addition, if we are unable to maintain our relationships with strategic partners, our businesses may suffer. Failures by our present or future strategic partners, or our inability to maintain existing or enter into new arrangements with strategic partners for product distribution, could materially impede the growth of our businesses and our ability to generate sufficient revenue and profits.

We face risks related to sales through distributors and other third parties that we do not control, which could harm our business.

We sell some products through third party agents, including distributors and value-added resellers. This exposes us to various risks, including competitive pressure, concentration of sales volumes, credit risks, and compliance risks. We may rely on one or a few key distributors for a product or market, and the loss of these distributors could reduce our revenue and net earnings. Distributors may also face financial difficulties, including bankruptcy, which could harm our collection of accounts receivables. Risks related to our use of distributors may reduce sales, increase expenses, and weaken our competitive position. Moreover, violations of the FCPA or similar anti-bribery laws by distributors or

other third party agents could materially and adversely impact our business, reputation and results of operations.

Dependence on contract manufacturing may adversely affect our ability to bring products to market and damage our reputation.

As part of our efforts to streamline our operations and reduce our operating costs, we outsource aspects of our manufacturing processes and continue to evaluate additional outsourcing. If our contract manufacturers fail to perform their obligations in a timely manner or at satisfactory quality levels, our ability to bring products to market and our reputation could suffer. For example, during a market upturn, our contract manufacturers may be unable to meet our demand requirements, which may preclude us from fulfilling our customers' orders on a timely basis. The ability of these manufacturers to perform is largely outside our control. Additionally, changing or replacing our contract manufacturers could cause disruptions or delays. Problems with outsourced manufacturing could result in lower revenues and unexecuted efficiencies, and adversely affect our financial condition and results of operations.

If investment in life and material science research spending declines, our ability to generate revenue may suffer.

We are dependent, both directly and indirectly, upon general investment in life science research, particularly in the research and development budgets of the pharmaceutical and biotechnology industries, and in material science research as well as upon the financial condition and funding priorities of various governments and government agencies. Since our inception, both we and our academic collaborators and customers have benefited from various governmental contracts and research grants. Whether we or our academic collaborators will continue to be able to attract these grants depends not only on the quality of our products, but also on general spending patterns of public institutions.

Any reduction in the capital resources or government funding of our customers could reduce our sales and impede our ability to generate revenue.

A significant portion of our sales are capital purchases by our customers. The spending policies of our customers could have a significant effect on the demand for our products. These policies are based on a wide variety of factors, including the resources available to make purchases, the spending priorities among various types of equipment, policies regarding spending during recessionary periods and changes in the political climate. Any changes in capital spending or changes in the capital budgets of our customers could significantly reduce demand for our products. The capital resources of our life science and other corporate customers may be limited by the availability of equity or debt financing. Any significant decline in research and development expenditures by our life science and material science customers could significantly decrease our sales. In addition, a substantial portion of our sales are to non-profit and government entities, which are dependent on government support for scientific research. Any decline in this support could decrease the ability of these customers to purchase our products.

Disruptions at any of our manufacturing facilities could adversely affect our business.

We have manufacturing facilities located in the United States, Europe, Israel and Malaysia. Many of our products are developed and manufactured at single locations, with limited alternate facilities. If we experience any significant disruption of those facilities for any reason, such as strikes or other labor unrest, power interruptions, fire, earthquakes, or other events beyond our control, we may be unable to manufacture the relevant products at previous levels or at all. A reduction or interruption in manufacturing could harm our customer relationships, impede our ability to generate revenues from

our backlog or obtain new orders and could have a material adverse effect on our business, results of operations, financial condition and cash flows.

If employees were to engage in a strike or other work stoppage or interruption, our business, results of operations, financial condition and liquidity could be materially adversely affected.

Many of our employees are represented by workers' councils and labor unions in certain jurisdictions, primarily in Germany and France. If disputes with these employees arise, or if our workers engage in a strike or other work stoppage or interruption, we could experience a significant disruption of, or inefficiencies in, our operations or incur higher labor costs, which could have a material adverse effect on our business, results of operations, financial condition and liquidity.

Our operations are dependent upon a limited number of suppliers and contract manufacturers.

We currently purchase components used in our products from a limited number of outside suppliers. Our reliance on a limited number of suppliers could result in time delays associated with redesigning a product due to an inability to obtain an adequate supply of required components and reduced control over pricing, quality and timely delivery. Any of these factors could adversely affect our revenues and profitability. In particular, our X-ray microanalysis business, which manufactures and sells accessories for electron microscopes, is partially dependent on cooperation from larger manufacturers of electron microscopes. Additionally, our elemental analysis business purchases certain optical detectors from a single supplier, PerkinElmer, Inc., the sole supplier of these detector components. Bruker CALID purchases detectors and power supplies from sole or limited source suppliers and its focal plane array detectors from a single supplier, Lockheed Martin Corporation. Similarly, Bruker BioSpin obtains various components from sole or limited source suppliers and BEST obtains various raw materials and uses key production equipment from sole or limited source suppliers or contract manufacturers. There are limited, if any, available alternatives to these suppliers. The existence of shortages of these components or the failure of delivery with regard to these components could have a material adverse effect upon our revenues and margins. In addition, price increases from these suppliers or contract manufacturers could have a material adverse effect upon our gross margins.

Because of the scarcity of some components, we may be unable to obtain an adequate supply of components, or we may be required to pay higher prices or to purchase components of lesser quality. Any delay or interruption in the supply of these or other components could impair our ability to manufacture and deliver our products, harm our reputation and cause a reduction in our revenues. In addition, any increase in the cost of the components that we use in our products could make our products less competitive and decrease our gross profits. We may not be able to obtain sufficient quantities of required components on the same or substantially the same terms. Additionally, consolidation among our suppliers could result in other sole source suppliers for us in the future. Other events that could affect our ability to source materials, manufacture or distribute our products include fire, natural disaster or extreme weather or a pandemic and the impact of those events on our and our suppliers' and contract manufacturers' operations.

Supply shortages and increasing prices of raw materials could adversely affect the gross profit of the Bruker BioSpin Group and the BEST Segment.

The last few years have seen periodic supply shortages and sharp increases in the prices for various raw materials, in part due to high demand from developing countries. Bruker BioSpin and BEST rely on some of these materials for the production of their products. In particular, for its superconducting magnet production, both for the horizontal and vertical magnet series, Bruker BioSpin relies on the availability of copper, steel and the metallic raw materials for traditional low-temperature superconducting wires. Similarly, BEST relies on the availability of niobium titanium for its production of low-temperature superconducting materials and devices. Higher prices for these commodities will

increase the production cost of superconducting wires and superconducting magnets and may adversely affect gross profits.

The prices of copper and certain other raw materials used for superconductors have increased significantly over the last decade. Since copper is a main constituent of low temperature superconductors, this may affect the price of superconducting wire. This type of increase would have an immediate effect on the production costs of superconducting magnets and may negatively affect the profit margins for those products. In addition, an increase in raw material cost affects the production cost of the superconducting wire produced by BEST and of superconducting wire used by Bruker BioSpin.

Bruker BioSpin and its customers also rely on liquid helium to operate superconducting magnets. Helium is controlled by the Federal Helium Reserve and is subject to price changes. Shortages of liquid helium associated with federal price controls or depleted natural reserves could have an adverse impact on producing and operating BioSpin's superconducting magnets and may also drive increases in helium pricing and negatively impact the profit margins of those products.

Our manufacture and sale of products could lead to product liability claims for which we could have substantial liability.

The manufacture and sale of our products expose us to product liability claims if any of our products cause injury or are found otherwise unsuitable during manufacturing, marketing, sale or customer use. In particular, if one of our CBRNE detection products malfunctions, this could lead to civilian or military casualties in a time of unrest, exposing us to increased potential for high-profile liability. If our CBRNE detection products malfunction by generating a false-positive to a potential threat, we could be exposed to liabilities associated with actions taken that otherwise would not have been required. Additionally, the nuclear magnetic resonance, research magnetic resonance imaging, Fourier transform mass spectrometry and certain electron paramagnetic resonance magnets of Bruker BioSpin utilize high magnet fields and cryogenics to operate at approximately 4 Kelvin, the temperature of liquid helium. There is an inherent risk of potential product liability due to the existence of these high magnetic fields, associated stray fields outside the magnet, and the handling of the cryogens associated with superconducting magnets. In addition, our MALDI Biotyper product has an IVD-CE mark and U.S. FDA approval and is used for the identification of microorganisms. Misidentification or a false-negative of certain viruses, bacteria, yeasts or fungi could lead to inappropriate treatment for patients and could expose us to product liability claims.

A successful product liability claim brought against us in excess of, or outside the coverage of, our insurance coverage could have a material adverse effect on our business, financial condition and results of operations. We may not be able to maintain product liability insurance on acceptable terms, if at all, and insurance may not provide adequate coverage against potential liabilities.

Responding to claims relating to improper handling, storage or disposal of hazardous chemicals and radioactive and biological materials which we use could be time consuming and costly.

We use controlled hazardous and radioactive materials in our business and generate wastes that are regulated as hazardous wastes under U.S. federal, and Massachusetts, California, New Jersey, Washington and Wisconsin state, environmental and atomic energy regulatory laws and under equivalent provisions of law in those and other jurisdictions in which our research and manufacturing facilities are located. Our use of these substances and materials is subject to stringent, and periodically changing, regulation that can impose costly compliance obligations on us and have the potential to adversely affect our manufacturing activities. The risk of accidental contamination or injury from these materials cannot be completely eliminated. If an accident with these substances occurs, we could be held liable for any damages that result, in addition to incurring clean-up costs and liabilities, which can be substantial. Additionally, an accident could damage our research and manufacturing facilities resulting in delays and increased costs.

We are subject to environmental laws and regulations, which may impose significant compliance or other costs on us.

Our manufacturing, product development and research and development operations and processes involve the controlled use of certain hazardous materials. In addition, we own and/or lease a number of facilities, some of which have been in operation for many decades, where we or others may have used substances or generated and disposed of wastes which are considered hazardous or may be considered hazardous in the future. We also have acquired various companies which historically may have used certain hazardous materials and which may have owned and/or leased facilities at which hazardous materials have been used. For all of these reasons, we are subject to federal, state, foreign, and local laws and regulations governing the use, manufacture, storage, transportation, handling, treatment, remediation, and disposal of hazardous materials and certain waste products. We have potential liability under these laws and regulations with respect to the remediation of past contamination in certain of the facilities we now own or lease. Additionally, in the future our facilities and the disposal sites owned by others to which we send or sent waste, may be identified as contaminated and require remediation. Accordingly, we may become subject to additional compliance costs or environmental liabilities which may be significant and could materially harm our results of operations or financial condition.

In addition to the risks applicable to our life science and materials analysis products, our CBRNE detection products are subject to a number of additional risks, including lengthy product development and contract negotiation periods and certain risks inherent in long-term government contracts.

Our CBRNE detection products are subject to many of the same risks associated with our life science products, including vulnerability to rapid technological change, dependence on mass spectrometry and other technologies and substantial competition. In addition, our CBRNE detection products and certain FT-IR products are generally sold to government agencies under long-term contracts. These contracts generally involve lengthy pre-contract negotiations and product development. We may be required to devote substantial working capital and other resources prior to obtaining product orders. As a result, we may incur substantial costs before we recognize revenue from these products. Moreover, in return for larger, longer-term contracts, our customers for these products often demand more stringent acceptance criteria. These criteria may also cause delays in our ability to recognize revenue from sales of these products. Furthermore, we may not be able to accurately predict in advance our costs to fulfill our obligations under these long-term contracts. If we fail to accurately predict our costs, due to inflation or other factors, we could incur significant losses. Also, the presence or absence of such contracts may cause substantial variation in our results of operations between fiscal periods and, as a result, our results of operations for any given fiscal period may not be predictive of our results for subsequent fiscal periods. The resulting uncertainty may have an adverse impact on our stock price.

We are subject to existing and potential additional regulation and government inquiry, which can impose burdens on our operations and narrow the markets for our products.

We are subject, both directly and indirectly, to the adverse impact of existing and potential future government regulation of our operations and markets. For example, the exportation of our products is subject to U.S. and non-U.S. export control, sanctions, customs, import and anti-boycott laws and regulations, including, as applicable, the International Traffic in Arms Regulations, the Export Administration Regulations and the sanctions laws, regulations and executive orders administered and enforced by the U.S. Department of the Treasury's Office of Foreign Assets Control, and other laws and regulations adopted by the governments or agencies of other countries relating to the same subject matter as the U.S. laws and regulations described above.

The failure to satisfy export control criteria or obtain necessary clearances could delay or prevent shipment of products, which could adversely affect our revenues and profitability. Failure by us, our

employees or others working on our behalf to comply with these laws and regulations could result in administrative, civil or criminal liabilities, including suspension, debarment from bidding for or performing government contracts, suspension of our export privileges, which could have a material adverse effect on us. We frequently team with international subcontractors and suppliers who are also exposed to similar risks. In some cases, compliance with the laws and regulations of one country could violate the laws and regulations of another country. Violations of these laws and regulations could materially adversely affect our brand, international growth efforts and business.

In addition, as a result of our international operations, we are subject to compliance with various laws and regulations, including the FCPA and local anti-bribery laws in the jurisdictions in which we do business, which generally prohibit companies and their intermediaries or agents from engaging in bribery or making improper payments to foreign officials or their agents. The FCPA also requires proper record keeping and characterization of such payments in our reports filed with the SEC. Despite maintaining policies and procedures that require our employees to comply with these laws and our standards of ethical conduct, we cannot ensure that these policies and procedures will always protect us from intentional, reckless or negligent acts committed by our employees or third party agents.

Moreover, the life sciences industry, which is the market for our principal products, has historically been heavily regulated. Given the evolving nature of this industry, legislative bodies or regulatory authorities may adopt additional regulation that adversely affects our market opportunities. Our business is also directly affected by a wide variety of government regulations applicable to business enterprises generally and to companies operating in the life sciences industry in particular.

Our clinical products are subject to regulation by the FDA. These regulations govern a wide variety of product related activities, from quality management, design and development to labeling, manufacturing, promotion, sales and distribution. If we or any of our suppliers or distributors fail to comply with FDA and other applicable regulatory requirements, or are perceived to potentially have failed to comply, we may face, among other things, warning letters; adverse publicity affecting both us and our customers; investigations or notices of non-compliance, fines, injunctions, and civil penalties; import or export restrictions; partial suspensions or total shutdown of production facilities or the imposition of operating restrictions; increased difficulty in obtaining required FDA clearances or approvals or foreign equivalents; seizures or recalls of our products or those of our customers; or the inability to sell such products. Any such FDA actions could disrupt our business and operations, lead to significant remedial costs and have a material adverse impact on our financial position and results of operations. There are similar foreign regulations. For instance, the coming into force of the European Union Directive in May 2022 by the IVD Regulation (EU) 2017/746 imposes a stricter regime on manufacturers of IVDs and our products currently approved under the Directive must be recertified under the Regulation by May 2024.

We have been, are, and expect to be in the future, subject to inquiries from the government agencies that enforce these regulations, including the U.S. Department of State, the U.S. Department of Commerce, the U.S. FDA, the U.S. Internal Revenue Service, the U.S. Department of Homeland Security, the U.S. Department of Justice, the Securities and Exchange Commission, the Federal Trade Commission, the U.S. Customs and Border Protection and the U.S. Department of Defense, among others, as well as from state or foreign governments and their departments and agencies. As a result, from time to time, the attention of our management and other resources may be diverted to attend to these inquiries. In addition, failure to comply with these regulations or obtain or maintain necessary permits and licenses could result in a variety of fines or other censures or an interruption in our business operations which may have a negative impact on our ability to generate revenues and could adversely affect our financial condition and results of operations.

Our success depends on our ability to operate without infringing or misappropriating the proprietary rights of others.

Our commercial success depends on avoiding the infringement of other parties' patents and proprietary rights as well as avoiding the breach of any licenses relating to our technologies and products. Given that there may be patents of which we are unaware, particularly in the United States where patent applications are confidential, avoidance of patent infringement may be difficult. Various third parties hold patents which may relate to our technology, and we may be found in the future to infringe these or other patents or proprietary rights of third parties, either with products we are currently marketing or developing or with new products which we may develop in the future. If a third party holding rights under a patent successfully asserts an infringement claim with respect to any of our current or future products, we may be prevented from manufacturing or marketing our infringing product in the country or countries covered by the patent we infringe, unless we can obtain a license from the patent holder. We may not be able to obtain a license on commercially reasonable terms, if at all, especially if the patent holder is a competitor. In addition, even if we can obtain the license, it may be non-exclusive, which will permit others to practice the same technology licensed to us. We also may be required to pay substantial damages to the patent holder in the event of infringement. Under some circumstances in the United States these damages could include damages equal to triple the actual damages the patent holder incurs. If we have supplied infringing products to third parties for marketing by them or licensed third parties to manufacture, use or market infringing products, we may be obligated to indemnify these third parties for any damages they may be required to pay to the patent holder and for any losses the third parties may sustain themselves as the result of lost sales or license payments they are required to make to the patent holder. Any successful infringement action brought against us may also adversely affect marketing of the infringing product in other markets not covered by the infringement action, as well as our marketing of other products based on similar technology. Furthermore, we will suffer adverse consequences from a successful infringement action against us even if the action is subsequently reversed on appeal, nullified through another action or resolved by settlement with the patent holder. The damages or other remedies awarded, if any, may be significant. As a result, any successful infringement action against us may harm our business.

If we are unable to effectively protect our intellectual property, third parties may use our technology, which would impair our ability to compete in our markets.

Our continued success will depend in significant part on our ability to obtain and maintain meaningful patent protection for our products throughout the world. We rely on patents to protect a significant part of our intellectual property and to enhance our competitive position. However, our presently pending or future patent applications may not issue as patents, and any patent previously issued to us may be challenged, invalidated, held unenforceable or circumvented. Furthermore, the claims in patents which have been issued, or which may be issued to us in the future, may not be sufficiently broad to prevent third parties from producing competing products similar to our products. In addition, the laws of various foreign countries in which we compete may not protect our intellectual property to the same extent as do the laws of the United States. Failure to obtain adequate patent protection for our proprietary technology could materially impair our ability to be commercially competitive.

In addition to patent protection, we also rely on the protection of trade secrets, know-how and confidential and proprietary information. To maintain the confidentiality of trade secrets and proprietary information, we generally seek to enter into confidentiality agreements with our employees, consultants and strategic partners upon the commencement of a relationship with us. However, we may not obtain these agreements in all circumstances. In the event of unauthorized use or disclosure of this information, these agreements, even if obtained, may not provide meaningful protection for our trade secrets or other confidential information. In addition, adequate remedies may not exist in the event of

unauthorized use or disclosure of this information. The loss or exposure of our trade secrets and other proprietary information would impair our competitive advantages and could have a material adverse effect on our operating results, financial condition and future growth prospects. Furthermore, others may have, or may in the future independently develop, substantially similar or superior know-how and technology.

We may be involved in lawsuits to protect or enforce our patents that are brought by us which could be expensive and time consuming and, if determined adversely, could adversely affect our patent position.

In order to protect or enforce our patent rights, we may initiate patent litigation against third parties, and we may be similarly sued by others. We may also become subject to interference proceedings conducted in the patent and trademark offices of various countries to determine the priority of inventions. The defense and prosecution, if necessary, of intellectual property suits, interference proceedings and related legal and administrative proceedings is costly and diverts our technical and management personnel from their normal responsibilities. We may not prevail in any of these suits. An adverse determination of any litigation or defense proceedings could put our patents at risk of being invalidated or interpreted narrowly and could put our patent applications at risk of not issuing.

Furthermore, because of the substantial amount of discovery required in connection with intellectual property litigation, there is a risk that some of our confidential information could be compromised by disclosure during this type of litigation. In addition, during the course of this kind of litigation, there could be public announcements of the results of hearings, motions or other interim proceedings or developments in the litigation. If securities analysts or investors perceive these results to be negative, it could have a substantial negative effect on the trading price of our common stock.

On September 25, 2019, in a complaint filed in the Düsseldorf, Germany, District Court, Carl Zeiss Microscopy GmbH, a subsidiary of Carl Zeiss AG (Zeiss), sued Luxendo GmbH (Luxendo), a subsidiary of Bruker Corporation, for infringement of a recently registered German utility model patent licensed to Zeiss pertaining to one specific Luxendo product category. We intend to vigorously defend against this claim.

On September 23, 2019, in a complaint filed in the Düsseldorf, Germany, District Court, Micromass UK Limited, a subsidiary of Waters Corporation, sued Bruker Corporation, as well as its affiliate, Bruker Daltonik GmbH, for infringement of a European patent pertaining to our timsTOF product line. On March 6, 2020, Bruker was notified that Micromass has expanded its complaint in Düsseldorf and now asserts another recently granted European patent in Germany. We intend to vigorously defend against these claims.

We rely on information technology to support our operations and reporting environments. A security failure of that technology, including with respect to cybersecurity, could impact our ability to operate our businesses effectively, adversely affect our financial results, damage our reputation and expose us to potential liability or litigation.

We use information systems to carry out our operations and maintain our business records. Some systems are internally managed and some are maintained by third-party service providers. Our ability to conduct business could be materially and adversely affected if these systems or resources are compromised, damaged or fail. This could be a result of a cyber-incident, social engineering scam, hacking, natural disaster, hardware or software corruption, failure or error, telecommunications system failure, service provider error or failure, intentional or unintentional personnel actions or other disruption.

In the ordinary course of business, we collect and store sensitive data, including intellectual property, other proprietary information and personally identifiable information. Despite our security

measures, our information technology and infrastructure may be vulnerable to cyber-attacks by hackers or breached due to employee error, malfeasance, or other disruptions. If this data is compromised, destroyed or inappropriately disclosed, it could have a material adverse effect, including damage to our reputation, loss of customers, significant expenses to address and resolve the issues, fines or litigation or other proceedings by affected individuals, business partners or regulatory authorities.

Our debt may adversely affect our cash flow and may restrict our investment opportunities or limit our activities.

As of December 31, 2019, we had outstanding an aggregate principal amount of debt totaling approximately $813.3 million. We also had the ability to borrow an additional $599.8 million available under our existing credit facility. Most of our outstanding debt is in the United States and there are substantial cash requirements in the United States to service debt interest obligations, fund operations, capital expenditures and our declared dividends and finance potential acquisitions or share repurchases. Our ability to satisfy our debt obligations and meet our other liquidity needs depends on our future operating performance and on economic, financial, competitive and other factors beyond our control. Our business may not generate sufficient cash flow to meet our debt obligations or provide sufficient funds for our other objectives. If we are unable to service our debt or obtain additional financing, we may be forced to delay strategic acquisitions, capital expenditures or research and development expenditures or suspend our dividend payments and share repurchases. We may not be able to obtain additional financing on terms acceptable to us or at all. Furthermore, a majority of our cash, cash equivalents and short-term investments is generated from foreign operations, with $301.1 million, or 44.0% held by foreign subsidiaries as of December 31, 2019. Our financial condition and results of operations could be adversely impacted if we are unable to maintain a sufficient level of cash flow in the United States to address our funding requirements through cash from operations and timely repatriation of cash from overseas or other sources obtained at an acceptable cost.

Additionally, the agreements governing our debt require that we maintain certain financial ratios related to maximum leverage and minimum interest coverage and contain affirmative and negative covenants, including among others, timely provision of audited financial statements, restrictions on liens, indebtedness of the Company and its subsidiaries, asset sales, dividends and transactions with affiliates. Our ability to comply with these financial restrictions and covenants is dependent on our operations and performance, which is subject to prevailing economic conditions and other factors, including factors that are beyond our control such as foreign currency translation rates and interest rates. Our failure to comply with any of these restrictions or covenants may result in an event of default under the applicable debt instrument, which could permit acceleration of the debt under the facility and require us to prepay the debt before its scheduled due date.

The transition away from LIBOR may adversely affect our cost to obtain financing.

On July 27, 2017, the U.K. Financial Conduct Authority announced that it intends to stop persuading or compelling banks to submit London Interbank Offered Rate, or LIBOR, rates after 2021. As a result, LIBOR may be discontinued by 2021. While there is no consensus on what rate or rates may become accepted alternatives to LIBOR, the Alternative Reference Rates Committee, a steering committee comprised of U.S. financial market participants, selected and the Federal Reserve Bank of New York started in May 2018 to publish the Secured Overnight Finance Rate, or SOFR, as an alternative to LIBOR. SOFR is a broad measure of the cost of borrowing cash in the overnight U.S. treasury repo market. At this time, it is impossible to predict whether the SOFR or another reference rate will become an accepted alternative to LIBOR. The manner and impact of this transition may materially adversely affect the trading market for LIBOR-based securities, which may result in an increase in borrowing costs under our credit agreements and term loan agreement. Any replacement

for LIBOR may result in an effective increase in the applicable interest rate on our current or future debt obligations, including our credit agreements and term loan agreement.

Changes in our effective income tax rate could adversely affect our results of operations.

We are subject to income taxes in both the United States and various foreign jurisdictions and our domestic and international tax liabilities are largely dependent upon the distribution of income among these different jurisdictions. Various factors may have favorable or unfavorable effects on our effective income tax rate. These factors include interpretations of existing tax laws, the accounting for stock options and other share-based compensation, changes in tax laws and rates, future levels of research and development spending, changes in accounting standards, changes in the mix of earnings in the various tax jurisdictions in which we operate, the outcome of examinations by the U.S. Internal Revenue Service and other tax authorities, the accuracy of our estimates for unrecognized tax benefits and realization of deferred tax assets and changes in overall levels of pre-tax earnings. A change in tax laws, treaties or regulations, or their interpretation, of any country in which we operate could result in a higher tax rate on our earnings, which could result in a significant negative impact on our earnings and cash flow from operations. In addition to the passage of the Tax Cuts and Jobs Act in the United States, there are currently multiple initiatives for comprehensive tax reform underway in other key jurisdictions where we have operations. We continue to assess the impact of the U.S. Tax Cuts and Jobs Act as well as various international tax reform proposals and modifications to existing tax treaties in all jurisdictions where we have operations that could result in a material impact on our income taxes. We cannot predict whether any other specific legislation will be enacted or the terms of any such legislation. However, if such proposals were enacted, or if modifications were to be made to certain existing treaties, the consequences could have a materially adverse impact on us, including increasing our tax burden, increasing costs of our tax compliance or otherwise adversely affecting our financial condition, results of operations and cash flows.

Various international tax risks could adversely affect our earnings and cash flows.

We are subject to international tax risks. We could be subject to double taxation on income related to operations in certain countries that do not have tax treaties with the country of the trading partner. In addition, we may have a higher effective income tax rate than that of other companies in our industry if losses incurred by one operating company are not available to offset the income of an operating company located in another country. Also, distributions of earnings and other payments received from our subsidiaries may be subject to withholding taxes imposed by the countries where they are operating or are incorporated. If these foreign countries do not have income tax treaties with the United States or the countries where our subsidiaries are incorporated, we could be subject to high rates of withholding taxes on these distributions and payments. Additionally, the amount of the credit that we may claim against our U.S. federal income tax for foreign income taxes paid or accrued is subject to many limitations which may significantly restrict our ability to claim a credit for all of the foreign taxes we pay.

We currently have reserves established for potential tax liabilities. If these reserves are challenged, and we are unable to successfully defend our tax positions, a negative impact to our cash flows could result.

The unpredictability and fluctuation of our quarterly results may adversely affect the trading price of our common stock.

Our revenues and results of operations have in the past and will in the future vary from quarter to quarter due to a number of factors, many of which are outside our control and any of which may cause our stock price to fluctuate. The primary factors that may affect us include the following:

- the timing of sales of our products and services;
- the timing of recognizing revenue and deferred revenue under U.S. GAAP;
- changes in our pricing policies or the pricing policies of our competitors;
- increases in sales and marketing, product development or administration expenses;
- the mix of services provided by us and third-party contractors;
- our ability to attain and maintain quality levels for our products;
- costs related to acquisitions of technology or businesses; and
- the effectiveness of transactions entered into to hedge the risks associated with foreign currency and interest rate fluctuations.

We can experience quarter-to-quarter fluctuations in our operating results as a result of various factors, some of which are outside our control, such as:

- the timing of governmental stimulus programs and academic research budgets;
- the time it takes between the date customer orders and deposits are received, systems are shipped and accepted by our customers and full payment is received;
- foreign currency exchange rates;
- the time it takes for us to receive critical materials to manufacture our products;
- general economic conditions;
- the time it takes to satisfy local customs requirements and other export/import requirements;
- the time it takes for customers to construct or prepare their facilities for our products; and
- the time required to obtain governmental licenses.

These factors have in the past affected the amount and timing of revenue recognized on sales of our products and receipt of related payments and will continue to do so in the future. Accordingly, our operating results in any particular quarter may not necessarily be an indication of any future quarter's operating performance.

Historically we have higher levels of revenue in the fourth quarter of the year compared to the first, second and third quarters, which we believe is primarily the result of our customers' budgeting cycles. Quarter-to-quarter comparisons of our results of operations should not be relied upon as an indication of our future performance. It is likely that in some future quarters, our results of operations may be below the expectations of public market analysts and investors. In this event, the price of our common stock may fall.

The ownership of our shares is highly concentrated, which could cause or exacerbate volatility in our share price as well as have significant influence over us.

As of March 20, 2020, Laukien family members, including our Chairman, President and Chief Executive Officer Frank Laukien and his brother, Joerg Laukien, owned, in the aggregate,

approximately 33% of our outstanding common stock. We may also repurchase shares in the future, which could further increase the concentration of our share ownership. Because of this reduced liquidity, the trading of relatively small quantities of shares by our shareholders could disproportionately influence the price of those shares in either direction. The price for our shares could, for example, decline precipitously if a large number of our shares were sold on the market without commensurate demand, as compared to a company with greater trading liquidity that could better absorb those sales without adverse impact on its share price. These stockholders may also exercise substantial influence over all matters requiring stockholder approval, including the election of directors and approval of significant corporate transactions. This could have the effect of delaying or preventing a change in control of our company and will make some transactions difficult to accomplish without the support of these stockholders.

Other companies may have difficulty acquiring us, even if doing so would benefit our stockholders, due to provisions under our corporate charter and bylaws, as well as Delaware law.

Provisions in our certificate of incorporation, as amended, and our bylaws, as well as Delaware law could make it more difficult for other companies to acquire us, even if doing so would benefit our stockholders. Our certificate of incorporation, as amended, and bylaws contain the following provisions, among others, which may inhibit an acquisition of our company by a third party:

- a staggered Board of Directors, where stockholders elect only a minority of the board each year;
- advance notification procedures for matters to be brought before stockholder meetings;
- a limitation on who may call stockholder meetings; and
- the ability of our Board of Directors to issue up to 5,000,000 shares of preferred stock without a stockholder vote.

The loss of key personnel or an inability to attract and retain additional personnel could affect our ability to successfully grow our business.

We are highly dependent upon the continued service and performance of our CEO and other members of senior management and key technical, scientific and production personnel, any of whom may cease their employment with us at any time with minimal advance notice. Because the expertise of these individuals is highly specific and takes years to develop, we face intense competition for these individuals from many other companies. The loss of one or more of our key employees may significantly delay or prevent the achievement of our business objectives, and our failure to attract and retain suitably qualified individuals or to adequately plan for succession could have an adverse effect on our ability to implement our business plan.

Dividends on our common stock could be reduced or eliminated in the future.

In recent years, we have paid dividends on our common stock. In February 2020, we announced that our Board had declared a quarterly dividend of $0.04 per share that will be payable in March 2020. There is no guarantee that such dividends will continue indefinitely. In the future, our Board may determine to reduce or eliminate our common stock dividend in order to fund investments for growth, repurchase shares or conserve capital resources.

ITEM 1B *UNRESOLVED STAFF COMMENTS*

Not applicable.

ITEM 2 ***PROPERTIES***

We believe that our existing principal facilities are well maintained and in good operating condition and that they are adequate for our foreseeable business needs.

In addition to the principal facilities noted below, we lease additional facilities for sales, applications and service support in various countries throughout the world including Australia, Austria, Belgium, Brazil, China, Czech Republic, France, Germany, Hong Kong, India, Israel, Italy, Japan, Kenya, Malaysia, Mexico, Netherlands, Norway, Poland, Portugal, Russia, Singapore, South Africa, South Korea, Spain, Sweden, Switzerland, Taiwan, Thailand, Turkey, the United Kingdom and the United States. If we should require additional or alternative facilities, we believe that such facilities can be obtained on short notice at competitive rates.

The location and general character of our principal properties by are as follows:

Bruker BioSpin's five principal facilities are located in Rheinstetten and Ettlingen, Germany; Faellanden, Switzerland; and Wissembourg, France. These facilities, which incorporate manufacturing, research and development, application and demonstration, marketing and sales and administration functions for the businesses of Bruker BioSpin, include:

- an owned 475,000 square foot facility in Rheinstetten, Germany;
- an owned 360,000 square foot facility in Ettlingen, Germany;
- an owned 422,000 square foot facility and a leased 129,000 square foot facility in Faellanden, Switzerland; and
- an owned 189,000 square foot facility in Wissembourg, France.

Bruker CALID's three principal facilities are located in Bremen, Ettlingen and Nehren, Germany. These facilities, which incorporate manufacturing, research and development, application and demonstration, marketing and sales and administration functions for the mass spectrometry and CBRNE businesses of Bruker CALID, include:

- an owned 270,000 square foot facility in Bremen, Germany;
- an owned 182,000 square foot facility in Ettlingen, Germany;
- a leased 87,000 square foot facility in Nehren, Germany.

BSI NANO Segment's six principal facilities are located in Karlsruhe and Berlin, Germany; Migdal Ha'Emek, Israel; Graz, Austria; Penang, Malaysia; and Santa Barbara, California, U.S.A. These facilities, which incorporate manufacturing, research and development, application and demonstration, marketing and sales and administration functions for the businesses of the BSI NANO Segment, include:

- an owned 141,000 square foot facility in Karlsruhe, Germany;
- an owned 243,000 square foot facility in Berlin, Germany;
- an owned 100,000 square foot facility in Santa Barbara, California, U.S.A.;
- a leased 29,000 square foot facility in Graz, Austria;
- a leased 29,000 square foot facility in Penang, Malaysia; and
- a leased 22,000 square foot facility in Migdal Ha'Emek, Israel.

BEST's five principal facilities are located in Hanau, Bergisch Gladbach and Alzenau, Germany; Carteret, New Jersey, U.S.A.; and Perth, Scotland. These facilities, which incorporate manufacturing,

research and development, application and demonstration, marketing and sales and administration functions for the business of BEST, include:

- an owned 47,000 square foot facility in Perth, Scotland;
- a leased 138,000 square foot facility in Hanau, Germany;
- a leased 105,000 square foot facility in Bergisch Gladbach, Germany;
- a leased 115,000 square foot facility in Carteret, New Jersey, U.S.A.; and
- a leased 35,000 square foot facility in Alzenau, Germany.

ITEM 3 ***LEGAL PROCEEDINGS***

We are involved in lawsuits, claims, and proceedings, including, but not limited to, patent and commercial matters, which arise in the ordinary course of business. There are no such matters pending that we currently believe are reasonably likely to have a material impact on our business or to our consolidated financial statements.

On September 25, 2019, in a complaint filed in the Düsseldorf, Germany, District Court, Carl Zeiss Microscopy GmbH, a subsidiary of Carl Zeiss AG (Zeiss), sued Luxendo GmbH (Luxendo), a subsidiary of Bruker Corporation, for infringement of a recently registered German utility model patent licensed to Zeiss pertaining to one specific Luxendo product category. We intend to vigorously defend against this claim.

On September 23, 2019, in a complaint filed in the Düsseldorf, Germany, District Court, Micromass UK Limited, a subsidiary of Waters Corporation, sued Bruker Corporation, as well as its affiliate, Bruker Daltonik GmbH, for infringement of a European patent pertaining to our timsTOF product line. On March 6, 2020, Bruker was notified that Micromass has expanded its complaint in Düsseldorf and now asserts another recently granted European patent in Germany. We intend to vigorously defend against these claims.

In addition, we are subject to regulation by national, state and local government agencies in the United States and other countries in which we operate. From time to time, we are the subject of governmental investigations often involving regulatory, marketing and other business practices. These governmental investigations may result in the commencement of civil and criminal proceedings, fines, penalties and administrative remedies which could have a material adverse effect on our financial position, results of operations and/or liquidity.

In August 2018, the Korea Fair Trade Commission (KFTC) informed us that it was conducting an investigation into the public tender bidding activities of a number of life science instrument companies operating in Korea, including Bruker Korea Co., Ltd (Bruker Korea). We cooperated fully with the KFTC and on June 16, 2019, the KFTC announced its decision to impose a fine of approximately $20,000 on Bruker Korea and declined to impose any criminal liability against Bruker Korea in connection with this matter. As a result of the KFTC's decision, the Korea Public Procurement Service (PPS) imposed a three month suspension on Bruker Korea's ability to bid for or conduct sales to Korean government entities, which will end on March 27, 2020. Sales to Korea government entities were less than 3% of our revenue for the year ended December 31, 2019.

In late August 2019, the KFTC informed us that it was conducting a separate investigation into the public tender bidding activities of a number of life science instrument companies operating in Korea, including five public tenders involving Bruker Korea during 2015. We are cooperating fully with the KFTC and a hearing on the matter has been scheduled for April 17, 2020.

ITEM 4 ***MINE SAFETY DISCLOSURES***

Not applicable.

PART II

ITEM 5 *MARKET FOR REGISTRANT'S COMMON EQUITY, RELATED STOCKHOLDER MATTERS AND ISSUER PURCHASES OF EQUITY SECURITIES*

Market Prices

Our common stock is traded on the Nasdaq Global Select Market under the symbol "BRKR."

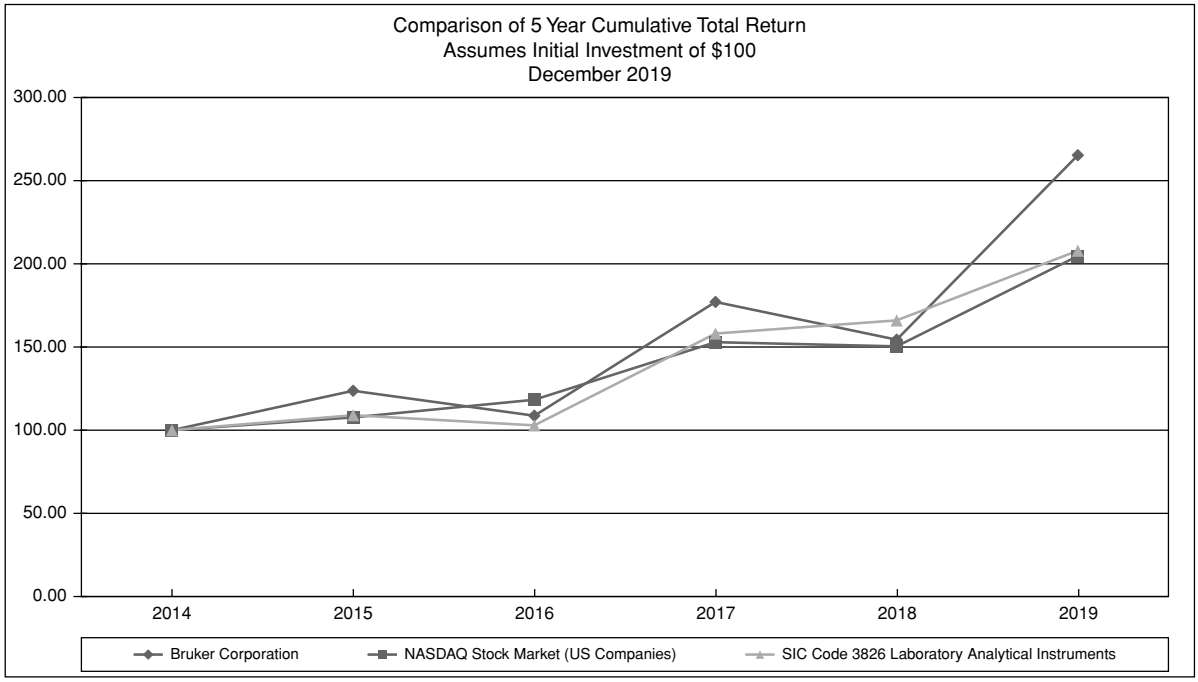
As of March 20, 2020, there were approximately 100 holders of record of our common stock. This number does not include individual beneficial owners of shares held in nominee name or within clearinghouse positions of brokerage firms and banks.

Issuer Purchases of Equity Securities

In May 2019, our Board of Directors approved and we announced a share repurchase program under which repurchases of our common stock of up to $300.0 million may occur from time to time, in amounts, at prices, and at such times as we deem appropriate, subject to market conditions, legal requirements and other considerations (the "2019 Repurchase Program"). In 2019, we repurchased 3,323,104 shares of common stock with an aggregate cost of approximately $142.3 million under the 2019 Repurchase Program. Any future repurchases will be funded from cash on hand, future cash flows from operations and available borrowings under our revolving credit facility. The remaining authorization under the 2019 Repurchase Program is $157.7 million as of March 20, 2020. The 2019 Repurchase Program expires May 13, 2021 and can be suspended, modified or terminated at any time without prior notice. There were no repurchases made in the fourth quarter of 2019.

Stock Price Performance Graph

The graph below shows the cumulative stockholder return, assuming the investment of $100 (and the reinvestment of any dividends thereafter) for the period beginning on December 31, 2014 and ending on December 31, 2019, for our common stock, stocks traded on Nasdaq, and a peer group consisting of U.S. public companies with a Standard Industry Classification, or SIC, code 3826 Laboratory Analytical Instruments. The stock price performance of Bruker Corporation shown in the following graph is not indicative of future stock price performance.



Cumulative Total Return Index for:	2014	2015	2016	2017	2018	2019
Bruker Corporation	$100.0	$123.7	$108.7	$177.1	$154.4	$265.3
Nasdaq Stock Market (US companies)	100.0	107.7	118.3	152.9	150.4	204.7
SIC Code 3826 Laboratory Analytical Instruments	100.0	109.0	102.9	158.1	166.0	207.9

The data for this performance graph was compiled by Zack's Investment Research, Inc. and is used with its permission.

ITEM 6 *SELECTED FINANCIAL DATA*

The following table sets forth selected historical consolidated financial and operating data for the periods indicated. The statement of income and balance sheet data is derived from consolidated financial statements for the years 2019, 2018, 2017, 2016 and 2015. The Company's consolidated financial statements as of December 31, 2019 and 2018, and for each of the three years in the period ended December 31, 2019 are included in Part II, Item 8, Financial Statements and Supplementary Data, of this Form 10-K.

	Year Ended December 31,				
	2019 (1)	2018 (2)	2017 (3)	2016 (4)	2015 (5)
	(in millions, except per share data)				
Consolidated Statements of Income Data:					
Product revenue	$1,744.7	$1,576.6	$1,479.5	$1,345.4	$1,381.1
Service revenue	322.4	311.7	278.2	254.7	235.5
Other revenue	5.5	7.3	8.2	11.2	7.2
Total revenue	2,072.6	1,895.6	1,765.9	1,611.3	1,623.8
Total costs and operating expenses	1,771.7	1,633.2	1,546.4	1,429.5	1,463.6
Operating income	300.9	262.4	219.5	181.8	160.2
Net income attributable to Bruker Corporation	197.2	179.7	78.6	153.6	101.6
Net income per common share attributable to Bruker Corporation shareholders:					
Basic	$ 1.27	$ 1.15	$ 0.50	$ 0.95	$ 0.60
Diluted	$ 1.26	$ 1.14	$ 0.49	$ 0.95	$ 0.60
Cash dividends declared per common share	$ 0.16	$ 0.16	$ 0.16	$ 0.16	$ —

(1) 2019 includes $1.4 million of restructuring costs and $1.7 million of impairment of other long-lived assets.

(2) 2018 includes $9.4 million of restructuring costs and $0.6 million of impairment of other long-lived assets.

(3) 2017 includes $16.2 million of restructuring costs and $1.1 million of impairment of other long-lived assets and includes $68.9 million of incremental income tax provision related to the 2017 Tax Act.

(4) 2016 includes $20.8 million of restructuring costs and $0.8 million of impairment of other long-lived assets.

(5) 2015 includes $29.3 million of restructuring costs and $4.6 million of impairment of goodwill, definite-lived intangible assets and other long-lived assets.

	Year Ended December 31,				
	2019 (1)	2018 (2)	2017	2016	2015
			(in millions)		
Consolidated Balance Sheet Data:					
Cash and cash equivalents	$ 678.3	$ 322.4	$ 325.0	$ 342.4	$ 267.1
Short-term investments	6.6	—	114.2	157.9	201.2
Working capital (3)	1,150.7	705.0	834.3	751.2	677.0
Total assets	2,771.5	2,128.6	1,948.5	1,808.4	1,730.0
Total debt	813.3	341.1	415.6	411.7	265.8
Other long-term liabilities	374.9	279.0	274.9	199.0	177.4
Redeemable noncontrolling interest	21.1	22.6	—	—	—
Total shareholders' equity	917.1	905.1	733.5	693.1	732.9

(1) In 2019, the Company adopted Accounting Standards Update 2016-02, Leases, and requires all leases with terms longer than 12 months to be reported on the balance sheet as right-of-use (ROU) assets and lease liabilities, as well as provide additional disclosures. The adoption of the new standard resulted in recording $75.5 million and $77.9 million of ROU assets and lease liabilities, respectively, as of January 1, 2019 on the Company's balance sheet. The adoption of the new standard did not significantly affect the Company's results of operations.

(2) In 2018, the Company acquired 80% of Hain LifeScience GmbH. As part of the agreement, there is a right to purchase/right to sell the remaining 20% of the entity. In January 2020, the Company acquired the remaining 20% of Hain LifeScience GmbH.

(3) Working capital is defined in the above table as current assets less current liabilities.

ITEM 7 *MANAGEMENT'S DISCUSSION AND ANALYSIS OF FINANCIAL CONDITION AND RESULTS OF OPERATIONS*

The following Management's Discussion and Analysis of Financial Condition and Results of Operations, or MD&A, describes the principal factors affecting the results of our operations, financial condition and changes in financial condition, as well as our critical accounting policies and estimates. Our MD&A is organized as follows:

- *Safe-harbor and Non-GAAP Clarification*. This section provides appropriate disclosures regarding forward looking statements and our use of Non-GAAP financial measures.
- *Overview*. This section provides a brief discussion of our reportable segments' results of operations, significant recent developments in our businesses, and challenges and risks that may impact our businesses in the future.
- *Results of Operations*. This section provides our analysis of the significant line items on our consolidated statements of income and comprehensive income (loss) for the year ended December 31, 2019 compared to the year ended December 31, 2018 and for the year ended December 31, 2018 compared to the year ended December 31, 2017.
- *Liquidity and Capital Resources*. This section provides an analysis of our liquidity and cash flow and a discussion of our outstanding debt and commitments.
- *Critical Accounting Policies and Estimates*. This section discusses the accounting estimates that are considered important to our financial condition and results of operations and require us to exercise subjective or complex judgments in their application. All of our significant accounting policies are summarized in Note 2 to our consolidated financial statements in Item 8 of this Annual Report on Form 10-K.
- *Recent Accounting Pronouncements*. This section provides a summary of recent accounting pronouncements and discusses their potential impact on our consolidated financial statements.

NON-GAAP CLARIFICATION

Although our consolidated financial statements have been prepared in accordance with generally accepted accounting principles in the United States of America (GAAP), we believe describing revenue and expenses, excluding the effects of foreign currency, acquisitions and divestitures, as well as certain other charges, net, provides meaningful supplemental information regarding our performance. Specifically, management believes that organic revenue and free cash flow, both non-GAAP financial measures, as well as non-GAAP gross profit margin and non-GAAP operating margin, provide relevant and useful information that is widely used by equity analysts, investors and competitors in our industry, as well as by our management, in assessing both consolidated and business unit performance. We define the term organic revenue as GAAP revenue excluding the effect of foreign currency translation changes and the effect of acquisitions and divestitures. We define the term non-GAAP gross profit margin as GAAP gross profit margin with certain non-GAAP measures excluded and non-GAAP operating margin as GAAP operating margin with certain non-GAAP measures excluded. These non-GAAP measures exclude costs related to restructuring actions, acquisition and related integration expenses, amortization of acquired intangible assets, costs associated with our global information technology transition initiative, and other non-operational costs that are infrequent or non-recurring in nature and we believe these are useful measures to evaluate our continuing business.

We define free cash flow as net cash provided by operating activities less additions to property, plant, and equipment. We believe free cash flow is a useful measure to evaluate our business as it indicates the amount of cash generated after additions to property, plant, and equipment which is available for, among other things, investments in our business, acquisitions, share repurchases,

dividends and repayment of debt. We use these non-GAAP financial measures to evaluate our period-over-period operating performance because our management believes they provide more comparable measures of our continuing business because they adjust for certain items that are not reflective of the underlying performance of our business. These measures may also be useful to investors in evaluating the underlying operating performance of our business. We regularly use these non-GAAP financial measures internally to understand, manage, and evaluate our business results and make operating decisions. We also measure our employees and compensate them, in part, based on such non-GAAP measures and use this information for our planning and forecasting activities. The presentation of these non-GAAP financial measures is not intended to be a substitute for, or superior to, the financial information prepared and presented in accordance with GAAP and may be different from non-GAAP financial measures used by other companies, and therefore, may not be comparable among companies.

OVERVIEW

We are a developer, manufacturer and distributor of high-performance scientific instruments and analytical and diagnostic solutions that enable our customers to explore life and materials at microscopic, molecular and cellular levels. Our corporate headquarters are located in Billerica, Massachusetts. We maintain major technical and manufacturing centers in Europe and North America, and we have sales offices located throughout the world. Bruker is organized into three reportable segments: the BSI Life Science Segment (comprised of the Bruker BioSpin Group and the Bruker CALID Group), the BSI NANO Segment and the Bruker Energy & Supercon Technologies (BEST) Segment.

For the year ended December 31, 2019, our revenue increased by $177.0 million, or 9.3%, to $2,072.6 million, compared to $1,895.6 million for the year ended December 31, 2018. Included in revenue were increases of approximately $118.4 million attributable to our recent acquisitions and a decrease of approximately $50.3 million from the impact of foreign currency translation in the year ended December 31, 2019 compared to the year ended December 31, 2018. Excluding the effects of foreign currency translation and our recent acquisitions, our organic revenue, a non-GAAP measure, increased by $108.9 million, or 5.7%.

Our gross profit margin increased to 48.0% for the year ended December 31, 2019 as compared to 47.5% during the year ended December 31, 2018. The increase in gross profit margin resulted primarily from operational improvements within our BSI Life Science Segment, accretive acquisitions and favorable foreign currency translation effects.

Our operating margin increased to 14.5% for the year ended December 31, 2019 from 13.8% during the year ended December 31, 2018. Our operating margin increased in the year ended December 31, 2019 due primarily to volume and operational improvements within our BSI Life Science Segment, accretive acquisitions and the positive impact of foreign currency translation, partially offset by continued investments in our strategic growth areas.

The income tax provision in the years ended December 31, 2019 and December 31, 2018 was $82.4 million and $63.7 million, respectively, representing effective tax rates of 29.4% and 26.0%, respectively. The increase in our effective tax rate for the year ended December 31, 2019, compared to 2018, was primarily attributable to a benefit recorded in 2018 associated with the reversal of state and foreign withholding taxes on unremitted earnings that did not recur in 2019 and additional tax reserves for uncertain tax positions in Europe in 2019. Our tax rate may change over time as the amount and mix of jurisdictional income changes. Earnings per share increased to $1.26 per diluted share for the year ended December 31, 2019 compared to $1.14 per diluted share for the year ended December 31, 2018. The increase compared to the prior year was driven primarily by revenue growth, higher gross

and operating profit offset by an increase in the effective tax rate for the year ended December 31, 2019.

Operating cash flow for the year ended December 31, 2019 was a source of cash of $213.4 million. For the year ended December 31, 2019, our free cash flow, a non-GAAP measure, was $140.4 million, calculated as follows:

	Year Ended December 31,		
	2019	2018	2017
Net cash provided by operating activities	$213.4	$239.7	$154.4
Less: Purchases of property, plant and equipment	73.0	49.2	43.7
Free Cash Flow	$140.4	$190.5	$110.7

For the year ended December 31, 2019, our free cash flow was 26% lower than for the year ended December 31, 2018 primarily attributable to higher net earnings adjusted for non-cash items were more than offset by an increase in capital expenditures and the timing of inventory purchases.

On December 11, 2019, we entered into (1) a new revolving credit agreement to establish a new revolving credit facility in the aggregate principal amount of $600 million; (2) a term loan agreement to establish a new term loan facility in the aggregate principal amount of $300 million; and (3) a note purchase agreement to issue and sell CHF 297 million aggregate principal amount of 1.01% senior notes due December 11, 2029. Floating interest rates under the term loan were simultaneously fixed through cross-currency and interest rate swap agreements into Euro ($150 million) and Swiss Franc ($150 million) rates carrying average effective interest rates of 0.94% and hedge our net investment in our Euro and Swiss Franc denominated net assets. The new revolving credit agreement replaced our $500 million five-year revolving credit agreement established on October 27, 2015, that was terminated on December 11, 2019. In addition, we designated our CHF 297 million senior notes as a hedge in our net investment in our Swiss Franc denominated net assets. Proceeds from this financing were used to repay the outstanding borrowings under our prior 2015 revolving credit facility and we intend to use the remaining proceeds for general corporate purposes and to support corporate strategic objectives. During December 2019, we entered into U.S. Dollar to Euro cross-currency swaps on our existing 2012 private placement notes of $105 million 4.31% Series 2012A Senior Notes, Tranche C, due January 18, 2022, and the existing $100 million 4.46% Series 2012A Senior Notes, Tranche D, due January 18, 2024, resulting in an average effective interest rate of 2.25% on these instruments. The cross-currency swaps hedge our net investment in our Euro denominated net assets. As a result of entering into these interest rate and cross currency swap agreements, we reduced our interest expense by $0.6 million during the year ended December 31, 2019. We anticipate these swap agreements will lower net interest expense in future years.

On February 22, 2016, we announced the establishment of a dividend policy and the declaration by our Board of Directors of an initial quarterly cash dividend in the amount of $0.04 per share of our issued and outstanding common stock. Dividends amounting to $25.0 million and $25.1 million were paid during the years ended December 31, 2019 and 2018, respectively. Future dividend payments, if any, are subject to approval of our Board of Directors. We are targeting a cash dividend to our shareholders in the amount of $0.16 per share per annum, payable in equal quarterly installments.

In the years ended December 31, 2019 and 2018, we completed various acquisitions that complemented our existing market offerings and added aftermarket and software capabilities. The impact of the acquired companies on revenues, net income and total assets was not material.

We can experience quarter-to-quarter fluctuations in our operating results as a result of various factors, some of which are outside our control, such as:

- the timing of governmental stimulus programs and academic research budgets;
- the time it takes between the date customer orders and deposits are received, systems are shipped and accepted by our customers and full payment is received;
- foreign currency exchange rates;
- the time it takes for us to receive critical materials to manufacture our products;
- general economic conditions;
- the time it takes to satisfy local customs requirements and other export/import requirements;
- the time it takes for customers to construct or prepare their facilities for our products; and
- the time required to obtain governmental licenses.

These factors have in the past affected the amount and timing of revenue recognized on sales of our products and receipt of related payments and will continue to do so in the future. Accordingly, our operating results in any particular quarter may not necessarily be an indication of any future quarter's operating performance.

As previously disclosed in our Current Report on Form 8-K filed on February 18, 2020, the Audit Committee of the Board of Directors (Audit Committee) initiated an internal investigation into an allegation recently received in connection with our year-end close, primarily relating to income tax matters including the effective income tax rate for 2019 and the related income tax balance sheet accounts. The Audit Committee, with the assistance of independent, experienced external legal counsel, and independent forensic accountants, concluded its investigation in March 2020. The Investigation did not identify any material misstatements or omissions regarding our financial statements, misconduct, violations of our Code of Conduct, or tone at the top failures.

RESULTS OF OPERATIONS

Year Ended December 31, 2019 Compared to the Year Ended December 31, 2018

Consolidated Results

The following table presents our results for the years ended December 31, 2019 and 2018 (dollars in millions, except per share data):

	Year Ended December 31,	
	2019	**2018**
Product revenue	$1,744.7	$1,576.6
Service revenue	322.4	311.7
Other revenue	5.5	7.3
Total revenue	2,072.6	1,895.6
Cost of product revenue	878.5	801.1
Cost of service revenue	198.3	193.4
Cost of other revenue	0.5	1.1
Total cost of revenue	1,077.3	995.6
Gross profit	995.3	900.0
Operating expenses:		
Selling, general and administrative	500.2	444.7
Research and development	187.7	173.4
Other charges, net	6.5	19.5
Total operating expenses	694.4	637.6
Operating income	300.9	262.4
Interest and other income (expense), net	(20.5)	(17.7)
Income before income taxes and noncontrolling interest in consolidated subsidiaries	280.4	244.7
Income tax provision	82.4	63.7
Consolidated net income	198.0	181.0
Net income attributable to noncontrolling interest in consolidated subsidiaries	0.8	1.3
Net income attributable to Bruker Corporation	$ 197.2	$ 179.7
Net income per common share attributable to Bruker Corporation shareholders:		
Basic	$ 1.27	$ 1.15
Diluted	$ 1.26	$ 1.14
Weighted average common shares outstanding:		
Basic	155.2	156.2
Diluted	156.6	157.2

Revenue

For the year ended December 31, 2019, our revenue increased by $177.0 million, or 9.3%, to $2,072.6 million, compared to $1,895.6 million for the year ended December 31, 2018. Our revenues included $118.4 million attributable to our recent acquisitions and a decrease of approximately $50.3 million from the impact of foreign currency translation in the year ended December 31, 2019 compared to the year ended December 31, 2018. Excluding the effects of foreign currency translation and our recent acquisitions, our organic revenue, a non-GAAP measure, increased by $108.9 million, or 5.7%.

Gross Profit

Our gross profit for the year ended December 31, 2019 was $995.3 million, resulting in a gross profit margin of 48.0%, compared to $900.0 million, resulting in a gross profit margin of 47.5%, for the year ended December 31, 2018. Included in gross profit were various charges for amortization of acquisition-related intangible assets and other acquisition-related costs and restructuring costs totaling $41.7 million and $28.7 million for the years ended December 31, 2019 and 2018, respectively. Excluding these charges, our non-GAAP gross profit margin was 50.0% and 49.0% in the years ended December 31, 2019 and 2018, respectively. Our GAAP and non-GAAP gross profit margin increased in the year ended December 31, 2019 primarily due to operational improvements within our BSI Life Science Segment, accretive acquisitions and favorable foreign currency translation effects.

Selling, General and Administrative

Our selling, general and administrative expenses for the year ended December 31, 2019 increased to $500.2 million, or 24.1% of revenue, from $444.7 million, or 23.5% of revenue, for the year ended December 31, 2018. The increase was primarily caused by the addition of recent acquisitions and select investments in strategic growth areas, partially offset by favorable foreign currency translation effects.

Research and Development

Our research and development expenses for the year ended December 31, 2019 increased to $187.7 million, or 9.1% of revenue, from $173.4 million, or 9.1% of revenue, for the year ended December 31, 2018. The dollar increase was driven primarily by the addition of recent acquisitions, partially offset by favorable foreign currency translation effects.

Other Charges, Net

Other charges, net was $6.5 million for the year ended December 31, 2019. The charges consisted primarily of $(3.9) million of restructuring costs related to closing facilities and implementing outsourcing and other restructuring initiatives, $4.6 million of acquisition-related charges related to acquisitions completed in 2019 and 2018, $3.7 million of costs associated with our global IT transformation initiative, and $2.1 million related to professional fees. The restructuring charges included a gain on the sale of a building of $7.7 million.

Other charges, net was $19.5 million for the year ended December 31, 2018. The charges consisted primarily of $6.8 million of restructuring costs related to closing facilities and implementing outsourcing and other restructuring initiatives, $3.4 million of acquisition-related charges related to acquisitions completed in 2018 and 2017, $4.8 million of costs associated with our global information technology (IT) transformation initiative and $4.5 million related to professional fees.

In 2020, we expect to incur $10.0 to $15.0 million of expense related to various outsourcing initiatives and other restructuring activities that were implemented in 2019 or will commence in 2020.

At December 31, 2019 and 2018, we performed our annual goodwill and indefinite-lived intangible impairment evaluation and concluded the fair values of each of our reporting units were significantly greater than their carrying amounts, and therefore, no additional impairment is required.

We will continue to monitor goodwill and long-lived intangible assets, as well as long-lived tangible assets, for possible future impairment.

Operating Income

Operating income for the year ended December 31, 2019 was $300.9 million, resulting in an operating margin of 14.5%, compared to operating income of $262.4 million, resulting in an operating

margin of 13.8%, for the year ended December 31, 2018. Included in operating income were various charges for amortization of acquisition-related intangible assets and other acquisition-related costs and restructuring costs totaling $63.1 million and $55.5 million for the years ended December 31, 2019 and 2018, respectively. Excluding these charges, our non-GAAP operating margin was were 17.6% and 16.8% in the years ended December 31, 2019 and 2018, respectively. The increase in GAAP and non-GAAP operating margin was due primarily to volume and operational improvements within our BSI Life Science Segment, accretive acquisitions and the positive impact of foreign currency translation.

Interest and Other Income (Expense), Net

Interest and other income (expense), net during the year ended December 31, 2019 was ($20.5) million, compared to ($17.7) million for the year ended December 31, 2018. The increase in net interest expense in 2019 was primarily attributable to higher outstanding debt balances in 2019 compared to 2018 being marginally offset by interest income from the new 2019 U.S. Dollar-to-Euro and U.S. Dollar to Swiss Franc interest rate cross-currency swap agreements.

During the year ended December 31, 2019, the major components within interest and other income (expense), net were net interest expense of $14.7 million, realized and unrealized losses on foreign currency denominated transactions of $3.3 million, and $2.5 million related to pension plan expenses.

During the year ended December 31, 2018, the major components within interest and other income (expense), net were net interest expense of $11.4 million, realized and unrealized losses on foreign currency denominated transactions of $3.0 million, and $3.9 million related to pension plan expenses.

Income Tax Provision

The income tax provision in the years ended December 31, 2019 and 2018 was $82.4 million and $63.7 million, respectively, representing effective tax rates of 29.4% and 26.0%, respectively. The increase in our effective tax rate for the year ended December 31, 2019, compared to 2018, was primarily attributable to a benefit recorded in 2018 associated with the reversal of state and foreign withholding taxes on unremitted earnings that did not recur in 2019 and additional tax reserves for uncertain tax positions in Europe in 2019. Our tax rate may change over time as the amount and mix of jurisdictional income changes.

Net Income Attributable to Noncontrolling Interests and Redeemable Noncontrolling Interest

Net income attributable to noncontrolling interests and redeemable noncontrolling interest for the year ended December 31, 2019 was $0.8 million compared to $1.3 million for the year ended December 31, 2018. The net income attributable to noncontrolling interests and redeemable noncontrolling interest represented the minority shareholders' proportionate share of the net income recorded by our majority-owned indirect subsidiaries.

Net Income Attributable to Bruker Corporation

Our net income attributable to Bruker Corporation for the year ended December 31, 2019 was $197.2 million, or $1.26 per diluted share, compared to net income of $179.7 million, or $1.14 per diluted share, for 2018. The increase compared to the prior year was driven primarily by revenue growth, higher gross and operating profit offset by an increase in the effective tax rate for the year ended December 31, 2019.

Segment Results

Revenue

The following table presents revenue, change in revenue, and revenue growth by reportable segment for the years ended December 31, 2019 and 2018 (dollars in millions):

	2019	2018	Dollar Change	Percentage Change
BSI Life Science	$1,244.9	$1,138.9	$106.0	9.3%
BSI Nano	632.7	568.1	64.6	11.4%
BEST	209.9	194.8	15.1	7.8%
Eliminations (a)	(14.9)	(6.2)	(8.7)	
	$2,072.6	$1,895.6	$177.0	9.3%

(a) Represents product and service revenue between reportable segments.

For financial reporting purposes, we aggregate Bruker BioSpin Group and Bruker CALID Group as the BSI Life Science Segment. This aggregation reflects the similar economic characteristics, production processes, customer services provided, types and classes of customers, methods of distribution and regulatory environments.

BSI Life Science Segment revenue increased by $106.0 million to $1,244.9 million for the year ended December 31, 2019, compared to $1,138.9 million for the year ended December 31, 2018. The Bruker BioSpin Group revenue increase was primarily due to growth in the system revenue, which included the revenue recognition of three GHz class systems, as well as aftermarket revenue and a small contribution from recent software acquisitions. The increase in Bruker CALID Group revenue was a result of continued strong demand for life science mass spectrometry and microbiology products, growth in molecular spectroscopy FT-IR and NIR products and contributions from an acquisition.

BSI NANO Segment revenue increased by $64.6 million to $632.7 million for the year ended December 31, 2019, compared to $568.1 million for the year ended December 31, 2018. The revenue increase was primarily the result of acquisitions as well as continued demand for advanced X-Ray and nano analysis products, partially offset by a sharp decline in demand for semiconductor metrology products and unfavorable foreign currency translation.

BEST Segment revenue increased by $15.1 million to $209.9 million for the year ended December 31, 2019, compared to $194.8 million for the year ended December 31, 2018. The increase in revenue resulted primarily from shipments of superconductors for healthcare applications offset in part by the impact of unfavorable foreign currency translation.

Operating Income

The following table presents operating income and operating margins on revenue by reportable segment for the years ended December 31, 2019 and 2018 (dollars in millions):

	2019		2018	
	Operating Income	Percentage of Segment Revenue	Operating Income	Percentage of Segment Revenue
BSI Life Science	$290.3	23.3%	$244.0	21.4%
BSI NANO	40.4	6.4%	48.4	8.5%
BEST	16.4	7.8%	14.5	7.4%
Corporate, eliminations and other (a)	(46.2)		(44.5)	
Total operating income	$300.9	14.5%	$262.4	13.8%

(a) Represents corporate costs and eliminations not allocated to the reportable segments.

The operating margin expansion for BSI Life Science and BEST was primarily due to positive operating leverage on higher sales mix and operational improvements as well as favorable foreign currency translation for the BSI Life Science Segment. The decline in operating margin for BSI NANO Segment was due to a decline in semiconductor metrology demand, softness in industrial research markets in the second half of 2019 and the impact of costs related to a recent acquisition.

Year Ended December 31, 2018 Compared to the Year Ended December 31, 2017

Consolidated Results

The following table presents our results for the years ended December 31, 2018 and 2017 (dollars in millions, except per share data):

	Year Ended December 31,	
	2018	**2017**
Product revenue	$1,576.6	$1,479.5
Service revenue	311.7	278.2
Other revenue	7.3	8.2
Total revenue	1,895.6	1,765.9
Cost of product revenue	801.1	787.7
Cost of service revenue	193.4	160.8
Cost of other revenue	1.1	1.4
Total cost of revenue	995.6	949.9
Gross profit	900.0	816.0
Operating expenses:		
Selling, general and administrative	444.7	415.2
Research and development	173.4	161.6
Other charges, net	19.5	19.7
Total operating expenses	637.6	596.5
Operating income	262.4	219.5
Interest and other income (expense), net	(17.7)	(21.7)
Income before income taxes and noncontrolling interest in consolidated subsidiaries	244.7	197.8
Income tax provision	63.7	117.5
Consolidated net income	181.0	80.3
Net income attributable to noncontrolling interest in consolidated subsidiaries	1.3	1.7
Net income attributable to Bruker Corporation	$ 179.7	$ 78.6
Net income per common share attributable to Bruker Corporation shareholders:		
Basic	$ 1.15	$ 0.50
Diluted	$ 1.14	$ 0.49
Weighted average common shares outstanding:		
Basic	156.2	158.1
Diluted	157.2	159.1

Revenue

For the year ended December 31, 2018, our revenue increased by $129.7 million, or 7.3%, to $1,895.6 million, compared to $1,765.9 million for the year ended December 31, 2017. Included in revenue were an increase of approximately $28.2 million attributable to our recent acquisitions and an increase of approximately $25.5 million from the impact of foreign currency translation caused by the weakening of the U.S. Dollar versus the Euro and other currencies. Excluding the effects of foreign currency translation and our recent acquisitions, our organic revenue, a non-GAAP measure, increased by $76.0 million, or 4.3%.

Gross Profit

Our gross profit for the year ended December 31, 2018 was $900.0 million, resulting in a gross profit margin of 47.5%, compared to $816.0 million, resulting in a gross profit margin of 46.2%, for the year ended December 31, 2017. Included in gross profit were various charges for amortization of acquisition-related intangible assets and other acquisition-related costs and restructuring costs totaling $28.7 million and $36.1 million for the years ended December 31, 2018 and 2017, respectively. Excluding these charges, our non-GAAP gross profit margins were 49.0% and 48.3% in the years ended December 31, 2018 and 2017, respectively. Our GAAP and non-GAAP gross profit margin increased in the year ended December 31, 2018 due to positive operating leverage on higher sales volume and favorable product mix, partially offset by unfavorable foreign currency translation effects.

Selling, General and Administrative

Our selling, general and administrative expenses for the year ended December 31, 2018 increased to $444.7 million, or 23.5% of revenue, from $415.2 million, or 23.5% of revenue, for the year ended December 31, 2017. The increase was primarily caused by the effect of recent acquisitions.

Research and Development

Our research and development expenses for the year ended December 31, 2018 increased to $173.4 million, or 9.1% of revenue, from $161.6 million, or 9.2% of revenue, for the year ended December 31, 2017. The increase was primarily caused by the effect of recent acquisitions.

Other Charges, Net

Other charges, net was $19.5 million for the year ended December 31, 2018. The charges consisted primarily of $6.8 million of restructuring costs related to closing facilities and implementing outsourcing and other restructuring initiatives, $3.4 million of acquisition-related charges related to acquisitions completed in 2018 and 2017, $4.8 million of costs associated with our global information technology (IT) transformation initiative and $4.5 million related to professional fees.

Other charges, net was $19.7 million for the year ended December 31, 2017. The charges consisted primarily of $10.6 million of restructuring costs related to closing facilities and implementing outsourcing and other restructuring initiatives, $4.5 million related primarily to additional contingent consideration recognized for the acquisition of Jordan Valley Semiconductors, Ltd. (Jordan Valley) based upon an increase in revenue levels of the acquired business which increased the amount of expected earn out payments, $4.2 million of costs associated with our global IT transformation initiative and impairment charges of $0.2 million comprised of other long-lived assets related to the restructuring actions.

Operating Income

Operating income for the year ended December 31, 2018 was $262.4 million, resulting in an operating margin of 13.8%, compared to income from operations of $219.5 million, resulting in an operating margin of 12.4%, for the year ended December 31, 2017. The operating margin expansion was primarily due to increased revenue, favorable product mix, as well as ongoing operational improvements. This was partially offset by negative foreign currency translation effects, which occurred primarily in the first half of the year. Included in operating income were various charges for amortization of acquisition-related intangible assets and other acquisition-related costs and restructuring costs totaling $55.5 million and $61.4 million for the years ended December 31, 2018 and 2017, respectively. Excluding these charges, our non-GAAP operating margin was 16.8% and 15.9% in the years ended December 31, 2018 and 2017, respectively. Our GAAP and non-GAAP operating margin increased in the year ended December 31, 2018 despite significant unfavorable foreign currency translation effects.

Interest and Other Income (Expense), Net

Interest and other income (expense), net during the year ended December 31, 2018 was ($17.7) million, compared to ($21.7) million for the year ended December 31, 2017.

During the year ended December 31, 2018, the major components within interest and other income (expense), net were net interest expense of $11.4 million, realized and unrealized losses on foreign currency denominated transactions of $3.0 million and $3.9 million related to pension plan expenses.

During the year ended December 31, 2017, the major components within interest and other income (expense), net were net interest expense of $14.6 million, realized and unrealized losses on foreign currency denominated transactions of $5.5 million and $4.8 million related to pension plan expenses, partially offset by $2.1 million of proceeds from a cargo insurance settlement and a gain on acquisition of $0.6 million.

The 2017 interest and other income (expense), net amounts have been revised to reflect the adoption of ASU 2017-07 related to the reclassification of certain pension costs.

Income Tax Provision

The income tax provision in the years ended December 31, 2018 and 2017 was $63.7 million and $117.5 million, respectively, representing effective tax rates of 26.0% and 59.4%, respectively. The decrease in our effective tax rate for the year ended December 31, 2018, compared to 2017, was primarily attributable to the absence of U.S. tax reform related charges in 2017. Our tax rate may change over time as the amount and mix of jurisdictional income changes.

Net Income Attributable to Noncontrolling Interests and Redeemable Noncontrolling Interest

Net income attributable to noncontrolling interests and redeemable noncontrolling interest for the year ended December 31, 2018 was $1.3 million compared to $1.7 million for the year ended December 31, 2017.

Net Income Attributable to Bruker Corporation

Our net income attributable to Bruker Corporation for the year ended December 31, 2018 was $179.7 million, or $1.14 per diluted share, compared to net income of $78.6 million, or $0.49 per diluted share, for 2017. The increase for the year ended December 31, 2018 was primarily driven by higher revenues, operational improvements and the absence of U.S. tax reform related charges that were incurred in 2017, as noted above.

Segment Results

Revenue

The following table presents revenue, change in revenue, and revenue growth by reportable segment for the years ended December 31, 2018 and 2017 (dollars in millions):

	2018	2017	Dollar Change	Percentage Change
BSI Life Science	$1,138.9	$1,070.9	$ 68.0	6.3%
BSI NANO	568.1	513.0	55.1	10.7%
BEST	194.8	191.2	3.6	1.9%
Eliminations (a)	(6.2)	(9.2)	3.0	
	$1,895.6	$1,765.9	$129.7	7.3%

(a) Represents product and service revenue between reportable segments.

The BSI Life Science Segment revenue increased by $68.0 million to $1,138.9 million for the year ended December 31, 2018, compared to $1,070.9 million for the year ended December 31, 2017. The Bruker BioSpin Group revenue increase was primarily attributable to the strong performance in biopharma, clinical research, applied and aftermarket businesses. The Bruker CALID Group revenue increase was primarily the result of strong performance in the microbiology, life science mass spectrometry and FTIR/NIR molecular spectroscopy businesses, together with contributions from our recent microbiology and diagnostics acquisitions. The strong performance in our mass spectrometry and molecular spectroscopy businesses was offset in part by a decline in revenue for CBRNE products.

The BSI NANO Segment revenue increased by $55.1 million to $568.1 million for the year ended December 31, 2018, compared to $513.0 million for the year ended December 31, 2017. The revenue increase was primarily driven by solid performance in academic and industrial materials research markets for our X-Ray, nano surfaces and nano analysis tools, partially offset by lower revenue from semiconductor metrology markets. The BSI NANO Segment also benefited from contributions from recent acquisitions, mainly Anasys Instruments and JPK Instruments

BEST Segment revenue increased by $3.6 million to $194.8 million for the year ended December 31, 2018, compared to $191.2 million for the year ended December 31, 2017. The modest increase in revenue in the year ended December 31, 2018 over the prior year was due to a $5.0 million favorable foreign currency translation effect caused by the fluctuation of the U.S. Dollar versus the Euro.

Operating Income

The following table presents operating income and operating margins on revenue by reportable segment for the years ended December 31, 2018 and 2017 (dollars in millions):

	2018		2017	
	Operating Income	Percentage of Segment Revenue	Operating Income	Percentage of Segment Revenue
BSI Life Science	$244.0	21.4%	$212.2	19.8%
BSI NANO	48.4	8.5%	24.3	4.7%
BEST	14.5	7.4%	7.4	3.9%
Corporate, eliminations and other (a)	(44.5)		(24.4)	
Total operating income	$262.4	13.8%	$219.5	12.4%

(a) Represents corporate costs and eliminations not allocated to the reportable segments.

Our operating margin increased primarily because of the gross profit and operational improvements noted above.

LIQUIDITY AND CAPITAL RESOURCES

We anticipate that our existing cash and credit facilities will be sufficient to support our operating and investing needs for at least the next twelve months. Our future cash requirements could be affected by acquisitions that we may complete, repurchases of our common stock, or the payment of dividends in the future. Historically, we have financed our growth and liquidity needs through cash flow generation and a combination of debt financings and issuances of common stock. In the future, there are no assurances that we will continue to generate cash flow from operations or that additional financing alternatives will be available to us, if required, or if available, will be obtained on terms favorable to us.

During the year ended December 31, 2019, net cash provided by operating activities was $213.4 million, resulting primarily from consolidated net income adjusted for non-cash items of $287.9 million, offset by a net decrease in operating assets and liabilities, net of acquisitions and divestitures, of $74.5 million. The decrease in operating assets and liabilities, net of acquisitions and divestitures, for the year ended December 31, 2019 was primarily caused by an increase in inventory build for 2020 orders.

During the year ended December 31, 2018, net cash provided by operating activities was $239.7 million, resulting primarily from consolidated net income adjusted for non-cash items of $281.9 million, offset by a net decrease in operating assets and liabilities, net of acquisitions and divestitures, of $42.2 million. The decrease in operating assets and liabilities, net of acquisitions and divestitures, for the year ended December 31, 2018 was primarily caused by an increase in accounts receivable caused by proportionately higher sales late in the fourth quarter of 2018 and inventory build for 2019 orders, which were offset in part by cash received from customer advances.

During the year ended December 31, 2019, net cash used in investing activities was $158.4 million, compared to net cash used in investing activities of $123.4 million during the year ended December 31, 2018. The increase in cash used in investing activities during the year ended December 31, 2019 was primarily attributable to net cash paid for acquisitions of $90.0 million, net capital expenditures of $62.0 million and the purchase of short-term investments of $6.4 million.

During the year ended December 31, 2018, net cash used in investing activities was $123.4 million, compared to net cash used in investing activities of $30.2 million during the year ended December 31, 2017. The increase in cash used in investing activities during the year ended December 31, 2018 was primarily attributable to net cash paid for acquisitions of $191.6 million and net capital expenditures of $48.8 million. These activities were offset, in part, by net cash proceeds of short-term investments of $117.0 million.

We expect capital expenditures in 2020 to be approximately $100.0 million.

During the year ended December 31, 2019, net cash provided by financing activities was $300.0 million, compared to net cash used in financing activities of $112.4 million during the year ended December 31, 2018. Cash provided by financing activities during the year ended December 31, 2019 was primarily caused by $597.9 million of new debt borrowings, described below, offset in part by $361.9 million of repayments under revolving lines of credit. Other cash uses were $142.3 million used for the repurchase of common shares, $25.0 million for the payment of dividends and $15.0 million repayment on the 2012 Note Purchase Agreement. Other cash sources borrowings of $250.6 million under the revolving lines of credit and $10.9 million of proceeds from the issuance of common stock in connection with stock option exercises.

On December 11, 2019, we entered into (1) a new revolving credit agreement to establish a new revolving credit facility in the aggregate principal amount of $600 million; (2) a term loan agreement to establish a new term loan facility in the aggregate principal amount of $300 million; and (3) a note purchase agreement to issue and sell CHF 297 million aggregate principal amount of 1.01% senior

notes due December 11, 2029. Floating interest rates under the term loan were simultaneously fixed through cross-currency and interest rate swap agreements into Euro ($150 million) and Swiss Franc ($150 million) rates carrying average effective interest rates of 0.94% and hedge our net investment in our Euro and Swiss Franc denominated net assets. The new revolving credit agreement replaced our $500 million five-year revolving credit agreement established on October 27, 2015, that was terminated on December 11, 2019. In addition, we designated our CHF 297 million senior notes as a hedge in our net investment in our Swiss Franc denominated net assets. Proceeds from this financing were used to repay the outstanding borrowings under our prior 2015 revolving credit facility and we intend to use the remaining proceeds for general corporate purposes and to support corporate strategic objectives. During December 2019, we entered into U.S. Dollar to Euro cross-currency swaps on our existing 2012 private placement notes of $105 million 4.31% Series 2012A Senior Notes, Tranche C, due January 18, 2022, and the existing $100 million 4.46% Series 2012A Senior Notes, Tranche D, due January 18, 2024, resulting in an average effective interest rate of 2.25% on these instruments. The cross-currency swaps hedge our net investment in our Euro denominated net assets. As a result of entering into these interest rate and cross currency swap agreements, we reduced our interest expense by $0.6 million during the year ended December 31, 2019. We anticipate these swap agreements will lower net interest expense in future years.

As of December 31, 2019, we have entered into several cross-currency and interest rate swap agreements with a notional value of $150 million of U.S. Dollar to Swiss Franc and a notional value of $355 million of U.S. Dollar to Euro to hedge the variability in the movement of foreign currency exchange rates on portions of our Euro and Swiss Franc denominated net asset investments. As a result of entering into these agreements, we lowered our net interest expense by $0.6 million during 2019. We anticipate these swap agreements will lower net interest expense by approximately $8.8 million in 2020, $8.8 million in 2021 and $4.8 million in 2022.

During the year ended December 31, 2018, net cash used in financing activities was $112.4 million, compared to net cash used in financing activities of $159.0 million during the year ended December 31, 2017. Cash used in financing activities during the year ended December 31, 2018 was primarily caused by $218.1 million of repayments under revolving lines of credit and $25.1 million used for the payment of dividends. These cash uses were partially offset by borrowings of $129.4 million under the revolving lines of credit and $9.4 million of proceeds from the issuance of common stock in connection with stock option exercises.

In May 2019, our Board of Directors approved the Repurchase Program under which repurchases of common stock in the amount of up to $300.0 million were authorized to occur from time to time, in amounts, at prices, and at such times as we deem appropriate, subject to market conditions, legal requirements and other considerations. In 2019, we repurchased 3,323,104 shares of common stock with an aggregate cost of approximately $142.3 million under the 2019 Repurchase Program. The remaining authorization as of March 20, 2020 is $157.7 million. We intend to fund any additional repurchases from cash on hand, future cash flows from operations and available borrowings under our revolving credit facility. The repurchased shares are reflected within Treasury stock in the accompanying consolidated balance sheet at December 31, 2019.

Cash, cash equivalents and short-term investments at December 31, 2019 and 2018 totaled $684.9 million and $322.4 million, respectively, of which $301.1 million and $280.9 million, respectively, related to cash, cash equivalents and short-term investments held outside of the U.S. in our foreign subsidiaries, most significantly in the Netherlands and Switzerland.

At December 31, 2019 and in accordance with the 2017 Tax Act, we recorded state and foreign withholding taxes, as well as subsequent foreign currency translations on these withholding taxes as they are an obligation of the parent company, on the cash and liquid assets portion of the unremitted earnings and profits (E&P) of foreign subsidiaries expected to be repatriated from our foreign

subsidiaries to the United States. We continue to be indefinitely reinvested in the amount of $477 million of non-cash E&P that is subject to the 2017 Tax Act deemed repatriation. If this E&P is ultimately distributed to the United States in the form of dividends or otherwise we would likely be subject to additional withholding tax. We will continue to evaluate our assertions on the cumulative historical outside basis differences in our foreign subsidiaries as of December 31, 2019. The amount of unrecognized deferred withholding taxes on the undistributed E&P was $58 million at December 31, 2019.

As of December 31, 2019, we had approximately $38.8 million of net operating loss carryforwards available to reduce state taxable income that are expected to expire at various times beginning in 2020; approximately $82.7 million of net operating losses available to reduce German federal income and trade taxes that are carried forward indefinitely and $13.2 million of other foreign net operating losses that are expected to expire at various times beginning in 2020. We also had U.S. state research and development tax credits of $7.7 million. Utilization of these credits and state net operating losses may be subject to annual limitations due to the ownership percentage change limitations provided by the Internal Revenue Code Section 382 and similar state provisions. In the event of a deemed change in control under Internal Revenue Code Section 382, an annual limitation on the utilization of net operating losses and credits may result in the expiration of all or a portion of the net operating loss and credit carryforwards.

Uncertain tax contingencies are positions taken or expected to be taken on an income tax return that may result in additional payments to tax authorities. If a tax authority agrees with the tax position taken or expected to be taken or the applicable statute of limitations expires, then additional payments will not be necessary.

At December 31, 2019 and 2018 we had the following debt outstanding (dollars in millions):

	2019	2018
US Dollar revolving loan under the 2015 Credit Agreement	$ —	$111.6
US Dollar notes under the 2012 Note Purchase Agreement	205.0	220.0
CHF Dollar notes under the 2019 Note Purchase Agreement	306.8	—
US Dollar notes under the 2019 Term Loan	300.0	—
Unamortized debt issuance costs	(2.6)	(0.5)
Other revolving loans	—	2.9
Capital lease obligations and other loans	4.1	7.1
Total debt	813.3	341.1
Current portion of long-term debt	(0.5)	(18.5)
Total long-term debt, less current portion	$812.8	$322.6

There was no amount outstanding under the 2019 Credit Agreement as of December 31, 2019.

The following is a summary of the maximum commitments and the net amounts available to us under the 2019 Credit Agreement and other lines of credit with various financial institutions located primarily in Germany and Switzerland that are unsecured and typically due upon demand with interest payable monthly, at December 31, 2019 (dollars in millions):

	Total Amount Committed by Lenders	Outstanding Borrowings	Outstanding Letters of Credit	Total Amount Available
2019 Credit Agreement	$600.0	$—	$ 0.2	$599.8
Other lines of credit	251.8	—	143.0	108.8
Total revolving loans	$851.8	$—	$143.2	$708.6

As of December 31, 2019, we were in compliance with the covenants, as defined by the 2012 Note Purchase Agreement, 2019 Credit Agreement, 2019 Note Purchase Agreement and 2019 Term Loan.

The following table summarizes maturities for our significant financial obligations as of December 31, 2019 (dollars in millions):

Contractual Obligations	Total	Less than 1 Year	1-3 Years	4-5 Years	More than 5 Years
Other long-term debt, including current portion	$ 813.3	$ 0.5	$112.8	$130.4	$569.6
Interest payable on long-term debt	122.5	21.4	38.5	29.5	33.1
Unconditional purchase commitments (1)	250.2	226.2	23.5	0.5	—
Acquisition-related contingent consideration (2)	15.8	12.6	3.2	—	—
Finance lease obligations	1.6	0.5	0.9	0.2	—
Operating lease liabiltiies	71.4	21.7	25.8	13.0	10.9
Redeemable noncontrolling interest	21.1	21.1	—	—	—
2017 Tax Act impact	28.7	2.5	10.7	15.5	—
Pension liabilities	57.3	2.9	7.2	10.1	37.1
Uncertain tax contingencies	18.5	—	4.5	6.5	7.5
	$1,400.4	$309.4	$227.1	$205.7	$658.2

(1) Unconditional purchase commitments include agreements to purchase goods, services, or fixed assets that are enforceable and legally binding and that specify all significant terms, including: fixed or minimum quantities to be purchased; fixed, minimum or variable price provisions; and the approximate timing of the transaction. Purchase commitments exclude agreements that are cancellable at any time without penalty.

(2) Acquisition-related contingent considerations represents the estimated fair value of future payments to the former shareholders of applicable acquired companies based on achieving annual revenue and gross margin targets in certain years as specified in the purchase and sale agreements.

CRITICAL ACCOUNTING POLICIES AND ESTIMATES

This discussion and analysis of our financial condition and results of operations is based upon our consolidated financial statements, which have been prepared in accordance with accounting principles generally accepted in the United States of America, or U.S. GAAP. The preparation of these financial statements requires that we make estimates and assumptions that affect the reported amounts of assets and liabilities and the disclosure of contingent assets and liabilities at the date of the financial statements and reported amounts of revenues and expenses during the reporting period. On an ongoing basis, management evaluates its estimates and judgments, including those related to: revenue recognition; stock-based compensation expense; restructuring and other related charges; income taxes, including the recoverability of deferred tax assets; allowances for doubtful accounts; inventory reductions for excess and obsolete inventories; estimated fair values of long-lived assets used to measure the recoverability of long-lived assets; intangible assets and goodwill; expected future cash flows used to measure the recoverability of intangible assets and long-lived assets; warranty costs; derivative financial instruments; and contingent liabilities. We base our estimates and judgments on our historical experience, current market and economic conditions, industry trends, and other assumptions that we believe are reasonable and form the basis for making judgments about the carrying value of assets and liabilities that are not readily apparent from other sources. Actual results could differ from these estimates.

We believe the following critical accounting policies and estimates to be both those most important to the portrayal of our financial position and results of operations and those that require the most estimation and subjective judgment.

Revenue recognition.

2019 & 2018 Policy under ASC 606:

We recognize revenue in accordance with Accounting Standards Codification 606, *Revenue from Contracts with Customers* (ASC 606). The key elements of ASC 606 are: 1) identifying a contract with the customer; 2) identifying the performance obligations in the contract; 3) determining the transaction price; 4) allocating the transaction price to the performance obligations in the contract; and 5) recognizing revenue when (or as) each performance obligation is satisfied.

We recognize revenue from systems sales upon transfer of control in an amount that reflects the consideration we expect to receive. Transfer of control generally occurs upon shipment, or for certain systems, based upon customer acceptance for a system once delivered and installed at a customer facility. For systems that include customer-specific acceptance criteria, we are required to assess when it can demonstrate the acceptance criteria has been met, which generally is upon successful factory acceptance testing or customer acceptance and evidence of installation. For systems that require installation and where system revenue is recognized upon shipment, the standalone selling price of installation is deferred until customer acceptance.

When products are sold through an independent distributor or a strategic distribution partner, we recognize the system sale upon transfer of control which is typically on shipment. When we are responsible for installation, the standalone selling price of installation is deferred until customer acceptance. Our distributors do not have price protection rights or rights of return; however, our products are typically warranted to be free from defect for a period of one year.

For contracts that include multiple performance obligations, the transaction price is allocated to each distinct performance obligation based on the relative standalone selling prices of the goods and services being provided to the customer. Our best evidence of standalone selling price is its normal selling pricing and discounting practices for the specific product or service when sold on a standalone basis. Alternatively, we may determine standalone selling price using an expected cost plus a margin approach.

We analyze our selling prices used in the allocation of the transaction price, at a minimum, on an annual basis. Selling prices will be analyzed more frequently if a significant change in our business or other factors necessitate more frequent analysis or we experience significant variances in our selling prices.

Revenue from accessories and parts is generally recognized based on shipment. Service revenue is recognized as the services are performed or ratably over the contractual obligation and includes maintenance contracts, extended warranties, training, application support and on-demand services.

For performance obligations recognized over time, revenue is measured by progress toward completion of the performance obligation that reflects the transfer of control. In particular, we have certain contracts recognized over time for which we apply the cost-to-cost method based on costs incurred to date relative to the total estimated costs for the contract upon completion. Application of the cost-to-cost method requires us to make reasonable estimates of the extent of progress toward completion and the total costs we will incur. Losses are recorded immediately when we estimate that contracts will ultimately result in a loss. Changes in the estimates could affect the timing of revenue recognition.

We include costs incurred in connection with shipping and handling of products within selling, general and administrative costs. Amounts billed to customers in connection with these costs are included in total revenues. When control of the goods transfers prior to the completion of our obligation to ship the products to our customers, we have elected the practical expedient to account for the shipping services as a fulfillment cost. We expense incremental costs of obtaining a contract as and when incurred if the expected amortization period is one year or less or the amount is immaterial. We exclude from the transaction price all taxes assessed by a governmental authority on revenue-producing transactions that are collected by us from a customer.

We require an advance deposit based on the terms and conditions of contracts with customers for many of our contracts. Typically, revenue is recognized within one year of receiving an advance deposit. We do not have any material payment terms that extend beyond one year. For contracts where an advance payment is received greater than one year from expected revenue recognition, or a portion of the payment due extends beyond one year, we determined it does not constitute a significant financing component. There is minimal variable consideration included in the transaction price of our contracts.

Other revenues are primarily comprised of development arrangements recognized on a cost-plus-fixed-fee basis and licensing arrangements recognized either when the licenses are provided or ratably over the contract term depending on the nature of the arrangement.

Contract Assets and Liabilities

Contract assets represent unbilled receivables when revenue recognized exceeds the amount billed to the customer, and the right to payment is not just subject to the passage of time. Contract assets typically result from system revenue recorded where a portion of the transaction price is not billable until a future event, such as customer acceptance, or from contracts recognized on a cost-to-cost or cost-plus-fixed-fee basis as revenue exceeds the amount billed to the customer. Amounts may not exceed their net realizable value. Contract assets are generally classified as current.

Contract liabilities consist of customer advances, deferred revenue and billings in excess of revenue from contracts recognized on a cost-to-cost or cost-plus-fixed-fee basis. Contract liabilities are classified as current or long-term based on the timing of when we expect to recognize revenue. Contract assets and liabilities are reported in a net position on a contract-by-contract basis at the end of each reporting period.

2017 Policy under ASC 605:

We recognize revenue from system sales when persuasive evidence of an arrangement exists, the price is fixed or determinable, title and risk of loss has been transferred to the customer, and collectability of the resulting receivable is reasonably assured. Title and risk of loss generally transfers upon shipment, or for certain systems, based upon customer acceptance for a system that has been delivered to the customer and installed at a customer facility. For systems that include customer-specific acceptance criteria, we are required to assess when we can demonstrate the acceptance criteria has been met, which generally is upon successful factory acceptance testing or customer acceptance and evidence of installation.

When products are sold through an independent distributor or a strategic distribution partner who assumes responsibility for installation, we recognize the system sale when the product has been shipped and title and risk of loss have been transferred to the distributor. Our distributors do not have price protection rights or rights of return; however, our products are typically warranted to be free from defect for a period of one year. Revenue is deferred until cash is received when collectability is not reasonably assured or when the price is not fixed or determinable.

For transactions that include multiple elements, arrangement consideration is allocated to each element using the fair value hierarchy as required by ASU No. 2009-13. We limit the amount of revenue recognized for delivered elements to the amount that is not contingent on the future delivery of products or services, future performance obligations, or subject to customer-specific return or refund privileges.

We determine the fair value of products and services based upon vendor specific objective evidence (VSOE). We determine VSOE based on normal selling pricing and discounting practices for the specific product or service when sold on a stand-alone basis. In determining VSOE, our policy requires a substantial majority of selling prices for a product or service to be within a reasonably narrow range. We also consider the class of customer, method of distribution and the geographies into which products and services are being sold when determining VSOE.

If VSOE cannot be established, we attempt to establish the selling price based on third-party evidence (TPE). VSOE cannot be established in instances where a product or service has not been sold separately, stand-alone sales are too infrequent or product pricing is not within a sufficiently narrow range. TPE is determined based on competitor prices for similar deliverables when sold separately.

When we cannot determine VSOE or TPE, we use estimated selling price (ESP) in our allocation of arrangement consideration. The objective of ESP is to determine the price at which we would typically transact a stand-alone sale of the product or service. ESP is determined by considering a number of factors including our pricing policies, internal costs and gross profit objectives, method of distribution, market research and information, recent technological trends, competitive landscape and geographies. We analyze the selling prices used in our allocation of arrangement consideration, at a minimum, on an annual basis. Selling prices will be analyzed more frequently if a significant change in our business occurs or other factors necessitate more frequent analysis, or if we experience significant variances in our selling prices.

Revenue from accessories and consumable parts is generally recognized upon shipping terms. Service revenue is recognized as the services are performed or ratably over the contractual obligation and includes maintenance contracts, extended warranty, training, application support and on-demand services.

We also have contracts for which we apply the percentage-of-completion model and completed contract model of revenue recognition. Application of the percentage-of-completion method requires us to make reasonable estimates of the extent of progress toward completion of the contract and the total costs we will incur under the contract and losses are recorded immediately when we estimate that contracts will ultimately result in a loss. Changes in the estimates could affect the timing of revenue recognition.

Other revenues are primarily comprised of development arrangements recognized on a cost-plus-fixed-fee basis and licensing arrangements recognized ratably over the term of the related contracts.

Income taxes. The determination of income tax expense requires us to make certain estimates and judgments concerning the annual effective tax rate, the calculation of deferred tax assets and liabilities, the forecasted profitability of our subsidiaries in certain geographic jurisdictions, as well as the deductions, carryforwards and credits that are available to reduce taxable income. Deferred tax assets and liabilities arise from differences in the timing of the recognition of revenue and expenses for financial statement and tax purposes. Deferred tax assets and liabilities are measured using the tax rates in effect for the year in which these temporary differences are expected to be settled. We estimate the degree to which tax assets and loss carryforwards will result in a benefit based on expected profitability by tax jurisdiction, and we provide a valuation allowance for tax assets and loss carryforwards that we believe will more likely than not go unused. If it becomes more likely than not

that a tax asset or loss carryforward will be used for which a valuation allowance has been provided, we reverse the related valuation allowance. If our actual future taxable income by tax jurisdiction differs from estimates, additional allowances or reversals of a valuation allowance may be necessary. In addition, we only recognize benefits for tax positions that we believe are more likely than not of being sustained upon review by a taxing authority with knowledge of all relevant information. We reevaluate our uncertain tax positions on a quarterly basis and any changes to these positions as a result of tax audits, tax laws or other facts and circumstances could result in additional charges or credits to operations. The expiration of statutes of limitations affecting estimates made for uncertain tax positions can cause higher earnings.

On December 22, 2017 (Enactment Date), the President of the United States signed tax reform legislation (2017 Tax Act), which enacted a wide range of changes to the U.S. corporate income tax system, many of which differ significantly from the provisions of the previous U.S. tax law. We have completed the assessment of the tax effects associated with the enactment of the 2017 Tax Act. Changes in the tax rates and laws are accounted for in the period of enactment.

Inventories. Inventories are stated at the lower of cost and net realizable value, with costs determined by the first-in, first-out method for a majority of subsidiaries and by average cost for certain other subsidiaries. We record provisions to account for excess and obsolete inventory to reflect the expected non-saleable or non-refundable inventory based on an evaluation of slow moving products or products no longer offered for sale. Inventories also include demonstration units located in our demonstration laboratories or installed at the sites of potential customers. We consider our demonstration units to be available for sale and have a history of selling these demonstration units. We reduce the carrying value of demonstration inventories for differences between cost and estimated net realizable value, taking into consideration usage in the preceding twelve months, expected demand, technological obsolescence and other information including the physical condition of the unit. If ultimate usage or demand varies significantly from expected usage or demand, additional write-downs may be required, resulting in additional charges to operations.

Goodwill, other intangible assets and other long-lived assets. We evaluate goodwill and other indefinite lived intangible assets for impairment annually and when events occur or circumstances change. We test goodwill for impairment at the reporting unit level, which is the operating segment or one level below an operating segment. Under U.S. GAAP, we have the option of performing a qualitative assessment to determine whether further impairment testing is necessary before performing a two-step quantitative assessment. The qualitative assessment requires significant judgments about macro-economic conditions including the entity's operating environment; its industry and other market considerations; entity-specific events related to financial performance or loss of key personnel; and other events that could impact the reporting unit. If, as a result of our qualitative assessment, it is more-likely-than-not that the fair value of a reporting unit is less than its carrying amount, the quantitative impairment test will be required. Otherwise, no further testing is required. If a quantitative impairment test is performed, the first step involves comparing the fair values of the applicable reporting units with their aggregate carrying values, including goodwill. We generally determine the fair value of our reporting units using a weighting of both the market approach and the income approach methodologies. The income approach valuation methodology includes discounted cash flow estimates. Estimating the fair value of the reporting units requires significant judgment about the future cash flows. If the carrying amount of a reporting unit exceeds the fair value of the reporting unit, we perform the second step of the goodwill impairment test to measure the amount of the impairment. In the second step of the goodwill impairment test, we compare the implied fair value of the reporting unit's goodwill with the carrying value of that goodwill. At December 31, 2019, we performed our annual goodwill and indefinite-lived intangible impairment evaluation using a qualitative and quantitative impairment test and concluded the fair values of each of our reporting units were significantly greater than their carrying amounts, and therefore, no additional impairment was required.

We also review definite-lived intangible assets and other long-lived assets when indications of potential impairment exist. Should the fair value of our long-lived assets decline because of reduced operating performance, market declines or other indicators of an impairment, a charge to operations for impairment may be necessary.

Business Combinations. We account for business combinations under the acquisition method of accounting. Accordingly, at the date of each acquisition, we measure the fair value of all identifiable assets acquired (including intangible assets), liabilities assumed and any remaining noncontrolling interests and allocates the amounts paid to all items measured. The fair value of identifiable intangible assets acquired are based on valuations that use information and assumptions determined by management and which consider management's best estimates of inputs and assumptions that a market participant would use.

RECENT ACCOUNTING PRONOUNCEMENTS

Information regarding recent accounting standard changes and developments is incorporated by reference from Part II, Item 8, Financial Statements and Supplementary Data, of this document and should be considered an integral part of this Item 7. See Note 23 in the Notes to the Consolidated Financial Statements for recently adopted and issued accounting standards.

ITEM 7A *QUANTITATIVE AND QUALITATIVE DISCLOSURES ABOUT MARKET RISK*

We are potentially exposed to market risks associated with changes in foreign currency translation rates, interest rates and commodity prices. We selectively use financial instruments to reduce these risks. All transactions related to risk management techniques are authorized and executed pursuant to our policies and procedures. Analytical techniques used to manage and monitor foreign currency translation and interest rate risk include market valuations and sensitivity analysis.

We have estimated our market risk exposure using sensitivity analysis. To test the sensitivity of our market risk exposure, we have estimated the changes in fair value of market risk sensitive instruments assuming a hypothetical 10 percent adverse change in market prices or rates. The results of the sensitivity analyses are summarized below.

Impact of Foreign Currencies

We generate a substantial portion of our revenues in international markets, principally Germany and other countries in the European Union, Switzerland and Japan, which exposes our operations to the risk of exchange rate fluctuations. The impact of currency exchange rate movement can be positive or negative in any period. Our costs related to sales in foreign currencies are largely denominated in the same respective currencies, limiting our transaction risk exposure. However, for foreign currency denominated sales in certain regions, such as Japan, where we do not incur significant costs denominated in Japanese Yen, we are more exposed to the impact of foreign currency fluctuations. For sales not denominated in U.S. Dollars, if there is an increase in the rate at which a foreign currency is exchanged for U.S. Dollars, it will require more of the foreign currency to equal a specified amount of U.S. Dollars than before the rate increase. In such cases, if we price our products in the foreign currency, we will receive less in U.S. Dollars than we would have received before the rate increase went into effect. If we price our products in U.S. Dollars and competitors price their products in local currency, an increase in the relative strength of the U.S. Dollar could result in our prices not being

competitive in a market where business is transacted in the local currency. In the years ended December 31, 2019 and 2018 our revenue by geography was as follows (dollars in millions):

	2019		2018	
	Revenue	Percentage of Revenue	Revenue	Percentage of Revenue
United States	$ 529.8	25.6%	$ 489.4	25.8%
Europe	718.8	34.7%	701.3	37.0%
Asia Pacific	651.0	31.4%	549.2	29.0%
Rest of world	173.0	8.3%	155.7	8.2%
Total revenue	$2,072.6	100.0%	$1,895.6	100.0%

Changes in foreign currency exchange rates decreased our revenue by approximately 2.7% in the year ended December 31, 2019 and increased our revenue by approximately 1.4% in the year ended December 31, 2018.

Assets and liabilities of our foreign subsidiaries, where the functional currency is the local currency, are translated into U.S. Dollars using year-end exchange rates, or historical rates, as appropriate. Revenues and expenses of foreign subsidiaries are translated at the average exchange rates in effect during the year. Adjustments resulting from financial statement translations are included as a separate component of shareholders' equity. In the years ended December 31, 2019 and 2018, we recorded net losses from currency translation adjustments of $20.0 million and $25.5 million, respectively. A 10% depreciation in functional currencies, relative to the U.S. Dollar, at December 31, 2019, would have resulted in a reduction of shareholders' equity of approximately $188.6 million.

Gains and losses resulting from foreign currency transactions are reported in interest and other income (expense), net in the consolidated statements of income and comprehensive income. Our foreign currency translation losses, net were $3.3 million and $3.0 million for years ended December 31, 2019 and 2018, respectively.

The impact of currency exchange rate movement can be positive or negative in any period. We periodically enter into foreign currency contracts in order to minimize the volatility that fluctuations in currency translation have on our monetary transactions. Under these arrangements, we typically agree to purchase a fixed amount of a foreign currency in exchange for a fixed amount of U.S. Dollars or other currencies on specified dates with maturities of less than twelve months, with some agreements extending to longer periods. These transactions do not qualify for hedge accounting and, accordingly, the instrument is recorded at fair value with the corresponding gains and losses recorded in the consolidated statements of income and comprehensive income.

As of December 31, 2019, we have entered into several cross-currency and interest rate swap agreements with a notional value of $150 million of U.S. Dollar to Swiss Franc and a notional value of $355 million of U.S. Dollar to Euro to hedge the variability in the movement of foreign currency exchange rates on portions of our Euro and Swiss Franc denominated net asset investments. Under the U.S. GAAP hedge accounting guidance, changes in fair value of the derivative that relates to changes in the foreign currency spot rate are recorded in the currency translation adjustment in comprehensive income (loss) and remain in accumulated comprehensive income (loss) in stockholders' equity until the sale or substantial liquidation of the foreign operation. The difference between the interest rate received and paid under the interest rate cross-currency swap derivative agreement is recorded in interest income in the statement of income.

At December 31, 2019 and 2018, we had foreign currency contracts and cross-currency and interest rate swap agreements with notional amounts aggregating $579.4 million and $102.4 million, respectively.

At December 31, 2019 and 2018, we had the following notional amounts outstanding under foreign currency contracts (in millions):

Buy	Notional Amount in Buy Currency	Sell	Maturity	Notional Amount in U.S. Dollars	Fair Value of Assets	Fair Value of Liabilities
December 31, 2019:						
Forward Currency Contracts (1):						
Euro	18.0	U.S. Dollars	January 2020	$ 20.1	$0.1	$ —
Swiss Francs	7.8	U.S. Dollars	January 2020	7.9	0.2	—
Swiss Francs	11.0	Euro	January 2020	11.3	0.1	—
Swedish Krona	26.9	Swiss Francs	January 2020	2.8	0.1	—
Swiss Francs	9.4	Japanese Yen	January 2020	9.5	0.2	—
Singapore Dollar	4.2	U.S. Dollars	January 2020	3.1	—	—
Singapore Dollar	2.7	Euro	January 2020	2.0	—	—
Great Britain Pound	7.7	Euro	January 2020	10.0	0.2	—
Euro	6.4	Great Britain Pound	February 2020 to January 2021	7.7	—	0.4
Cross-Currency and Interest Rate Swap Agreements (2):						
U.S. Dollars	105.0	Euro	January 2022	105.0	—	1.2
U.S. Dollars	100.0	Euro	January 2024	100.0	—	1.3
U.S. Dollars	150.0	Euro	December 2024	150.0	—	1.9
U.S. Dollars	150.0	Swiss Francs	December 2026	150.0	—	2.4
				$579.4	$0.9	$7.2
December 31, 2018:						
Forward Currency Contracts (1):						
Euro	25.4	U.S. Dollars	January 2019	$ 31.1	$ —	$2.1
U.S. Dollars	8.5	Euro	January 2019	8.6	—	0.1
Swiss Francs	11.1	U.S. Dollars	January 2019	11.3	—	—
U.S. Dollars	2.1	Swiss Francs	January 2019	2.1	—	—
Swiss Francs	10.4	Japanese Yen	April 2019	10.8	—	0.2
U.S. Dollars	1.5	Canadian Dollars	January 2019	1.5	—	—
Singapore Dollar	4.3	U.S. Dollars	January 2019	3.1	—	—
Chinese Renminbi	41.1	U.S. Dollars	January 2019	5.9	0.1	—
Great Britain Pound	15.4	Euro	January 2019	20.0	—	0.4
Euro	6.9	Great Britain Pound	May 2019 to October 2020	8.0	0.1	—
				$102.4	$0.2	$2.8

(1) Derivatives not designated as accounting hedges.

(2) Derivatives designated as accounting hedges.

Based on the contractual maturities of these contracts and exchange rates as of December 31, 2019, we anticipate that these contracts will result in net cash outflows of $6.3 million in 2020. At December 31, 2019, assuming all other variables are constant, if the U.S. Dollar weakened by 10%, the market value of our foreign currency contracts would have increased by approximately $2.8 million and

if the U.S. Dollar strengthened by 10%, the market value of our foreign currency contracts would have decreased by approximately $2.8 million.

We will continue to evaluate our currency risks and in the future may utilize foreign currency contracts more frequently as part of a transactional hedging program.

Impact of Interest Rates

We regularly invest excess cash in short-term investments that are subject to changes in interest rates. We believe that the market risk arising from holding these financial instruments is minimal because of our policy of investing in short-term financial instruments issued by highly rated financial institutions.

Our exposure related to adverse movements in interest rates is derived primarily from outstanding floating rate debt instruments that are indexed to short-term market rates. We currently have a higher level of fixed rate debt than variable rate debt, which limits the exposure to adverse movements in interest rates.

Impact of Commodity Prices

We are exposed to certain commodity risks associated with prices for various raw materials. The prices of copper and certain other raw materials, particularly niobium-tin, used to manufacture superconductors have increased significantly over the last decade. Copper and niobium-tin are the main components of low temperature superconductors and continued commodity price increases for copper and niobium, as well as other raw materials, may negatively affect our profitability. Periodically, we enter into commodity forward purchase contracts to minimize the volatility that fluctuations in the price of copper have on our sales of these products. At December 31, 2019 and 2018, we had fixed price commodity contracts with notional amounts aggregating $5.6 million and $6.8 million, respectively. The fair value of the fixed price commodity contracts at December 31, 2019 and 2018 was $0.3 million and ($0.5) million, respectively. We will continue to evaluate our commodity risks and may utilize commodity forward purchase contracts more frequently in the future.

Inflation

We do not believe inflation had a material impact on our business or operating results during any of the periods presented.

ITEM 8 *FINANCIAL STATEMENTS AND SUPPLEMENTARY DATA*

Index of Consolidated Financial Statements

Report of Independent Registered Public Accounting Firm

To the Board of Directors and Shareholders of Bruker Corporation

Opinions on the Financial Statements and Internal Control over Financial Reporting

We have audited the accompanying consolidated balance sheets of Bruker Corporation and its subsidiaries (the "Company") as of December 31, 2019 and 2018, and the related consolidated statements of income and comprehensive income, of redeemable noncontrolling interest and shareholders' equity and of cash flows for each of the three years in the period ended December 31, 2019, including the related notes (collectively referred to as the "consolidated financial statements"). We also have audited the Company's internal control over financial reporting as of December 31, 2019, based on criteria established in *Internal Control—Integrated Framework* (2013) issued by the Committee of Sponsoring Organizations of the Treadway Commission (COSO).

In our opinion, the consolidated financial statements referred to above present fairly, in all material respects, the financial position of the Company as of December 31, 2019 and 2018, and the results of its operations and its cash flows for each of the three years in the period ended December 31, 2019 in conformity with accounting principles generally accepted in the United States of America. Also in our opinion, the Company did not maintain, in all material respects, effective internal control over financial reporting as of December 31, 2019, based on criteria established in *Internal Control—Integrated Framework* (2013) issued by the COSO because the following material weaknesses in internal control over financial reporting existed as of that date. The Company (i) did not design and maintain an effective control environment commensurate with its financial reporting requirements due to an insufficient complement of personnel in the Company's corporate tax department and a US subsidiary. This material weakness contributed to additional material weaknesses, as the Company did not maintain effective internal control (ii) over the accounting for income taxes, and (iii) over the accounting for revenue at a US subsidiary of the Company.

A material weakness is a deficiency, or a combination of deficiencies, in internal control over financial reporting, such that there is a reasonable possibility that a material misstatement of the annual or interim financial statements will not be prevented or detected on a timely basis. The material weaknesses referred to above are described in Management's Report on Internal Control over Financial Reporting appearing under Item 9A. We considered these material weaknesses in determining the nature, timing, and extent of audit tests applied in our audit of the 2019 consolidated financial statements, and our opinion regarding the effectiveness of the Company's internal control over financial reporting does not affect our opinion on those consolidated financial statements.

Change in Accounting Principle

As discussed in Note 15 to the consolidated financial statements, the Company changed the manner in which it accounts for leases in 2019.

Basis for Opinions

The Company's management is responsible for these consolidated financial statements, for maintaining effective internal control over financial reporting, and for its assessment of the effectiveness of internal control over financial reporting, included in management's report referred to above. Our responsibility is to express opinions on the Company's consolidated financial statements and on the Company's internal control over financial reporting based on our audits. We are a public accounting firm registered with the Public Company Accounting Oversight Board (United States) (PCAOB) and are required to be independent with respect to the Company in accordance with the U.S. federal securities laws and the applicable rules and regulations of the Securities and Exchange Commission and the PCAOB.

We conducted our audits in accordance with the standards of the PCAOB. Those standards require that we plan and perform the audits to obtain reasonable assurance about whether the consolidated financial statements are free of material misstatement, whether due to error or fraud, and whether effective internal control over financial reporting was maintained in all material respects.

Our audits of the consolidated financial statements included performing procedures to assess the risks of material misstatement of the consolidated financial statements, whether due to error or fraud, and performing procedures that respond to those risks. Such procedures included examining, on a test basis, evidence regarding the amounts and disclosures in the consolidated financial statements. Our audits also included evaluating the accounting principles used and significant estimates made by management, as well as evaluating the overall presentation of the consolidated financial statements. Our audit of internal control over financial reporting included obtaining an understanding of internal control over financial reporting, assessing the risk that a material weakness exists, and testing and evaluating the design and operating effectiveness of internal control based on the assessed risk. Our audits also included performing such other procedures as we considered necessary in the circumstances. We believe that our audits provide a reasonable basis for our opinions.

As described in Management's Report on Internal Control over Financial Reporting, management has excluded Arxspan, LLC, Rave, LLC, PMOD Technologies GmbH, and Magnettech GmbH from its assessment of internal control over financial reporting as of December 31, 2019 because they were acquired by the Company in purchase business combinations during 2019. We have also excluded Arxspan, LLC, Rave, LLC, PMOD Technologies GmbH and Magnettech GmbH from our audit of internal control over financial reporting. Arxspan, LLC, Rave, LLC, PMOD Technologies GmbH, and Magnettech GmbH are wholly-owned subsidiaries whose total assets and total revenues excluded from management's assessment and our audit of internal control over financial reporting collectively represent 1.1% and 1.9%, respectively, of the related consolidated financial statement amounts as of and for the year ended December 31, 2019.

Definition and Limitations of Internal Control over Financial Reporting

A company's internal control over financial reporting is a process designed to provide reasonable assurance regarding the reliability of financial reporting and the preparation of financial statements for external purposes in accordance with generally accepted accounting principles. A company's internal control over financial reporting includes those policies and procedures that (i) pertain to the maintenance of records that, in reasonable detail, accurately and fairly reflect the transactions and dispositions of the assets of the company; (ii) provide reasonable assurance that transactions are recorded as necessary to permit preparation of financial statements in accordance with generally accepted accounting principles, and that receipts and expenditures of the company are being made only in accordance with authorizations of management and directors of the company; and (iii) provide reasonable assurance regarding prevention or timely detection of unauthorized acquisition, use, or disposition of the company's assets that could have a material effect on the financial statements.

Because of its inherent limitations, internal control over financial reporting may not prevent or detect misstatements. Also, projections of any evaluation of effectiveness to future periods are subject to the risk that controls may become inadequate because of changes in conditions, or that the degree of compliance with the policies or procedures may deteriorate.

Critical Audit Matters

The critical audit matter communicated below is a matter arising from the current period audit of the consolidated financial statements that was communicated or required to be communicated to the audit committee and that (i) relates to accounts or disclosures that are material to the consolidated financial statements and (ii) involved our especially challenging, subjective, or complex judgments. The

communication of critical audit matters does not alter in any way our opinion on the consolidated financial statements, taken as a whole, and we are not, by communicating the critical audit matter below, providing a separate opinion on the critical audit matter or on the accounts or disclosures to which it relates.

Goodwill Impairment Assessment—Reporting Unit in BSI NANO Segment

As described in Notes 2 and 9 to the consolidated financial statements, the Company's consolidated goodwill balance was $293.0 million as of December 31, 2019, $208.5 million of which relates to the BSI NANO segment. Management evaluates goodwill for impairment on an annual basis, or on an interim basis when events or changes in circumstances indicate that the carrying value may not be recoverable. Management tests goodwill for impairment at the reporting unit level, which is the operating segment or one level below an operating segment. Management determines fair value of reporting units using a weighting of both the market and the income methodologies. In assessing the recoverability of goodwill, management must make assumptions regarding the estimated future cash flows, including the forecasted revenue growth, projected gross margin and the discount rate to determine the fair value. If the carrying amount of a reporting unit exceeds the fair value of the reporting unit, management performs the second step of the goodwill impairment test to measure the amount of the impairment. In the second step of the goodwill impairment test management compares the implied fair value of the reporting unit's goodwill with the carrying value of that goodwill.

The principal considerations for our determination that performing procedures relating to the goodwill impairment assessment of a reporting unit in the BSI NANO segment is a critical audit matter are there was significant judgment by management when developing the fair value measurement of the reporting unit. This in turn led to a high degree of auditor judgment, subjectivity, and effort in performing procedures to evaluate audit evidence related to management's estimated future cash flows, including the forecasted revenue growth, projected gross margin and the discount rate. The audit effort also involved the use of professionals with specialized skill and knowledge to assist in performing these procedures and evaluating the audit evidence obtained.

Addressing the matter involved performing procedures and evaluating audit evidence in connection with forming our overall opinion on the consolidated financial statements. These procedures included testing the effectiveness of controls relating to management's annual goodwill impairment assessment, including controls over the valuation of the Company's reporting units. These procedures also included, among others, testing management's process for developing the fair value estimate; evaluating the appropriateness of using a weighting of both the market and income methodologies; testing the completeness, accuracy, and relevance of underlying data used in the methodologies; and evaluating the significant assumptions used by management, including the forecasted revenue growth, projected gross margin and the discount rate. Evaluating management's assumptions related to the forecasted revenue growth, projected gross margin and the discount rate involved evaluating whether the assumptions used by management were reasonable considering (i) the current and past performance of the reporting unit, (ii) the consistency with external market and industry data, and (iii) whether these assumptions were consistent with evidence obtained in other areas of the audit. Professionals with specialized skill and knowledge were used to assist in the evaluation of the Company's methodology and certain significant assumptions, including the discount rate.

/s/ PricewaterhouseCoopers LLP
Boston, Massachusetts
March 27, 2020

We have served as the Company's auditor since 2016.

BRUKER CORPORATION

CONSOLIDATED BALANCE SHEETS

(Dollars in millions, except share and per share data)

	December 31,	
	2019	**2018**
ASSETS		
Current assets:		
Cash and cash equivalents	$ 678.3	$ 322.4
Short-term investments	6.6	—
Accounts receivable, net	362.2	357.2
Inventories	577.2	509.6
Other current assets	172.0	115.1
Total current assets	1,796.3	1,304.3
Property, plant and equipment, net	306.1	270.6
Goodwill	293.0	275.7
Intangible assets, net	233.2	218.7
Operating lease assets	65.6	—
Deferred tax assets	60.5	50.9
Other long-term assets	16.8	8.4
Total assets	$2,771.5	$2,128.6
LIABILITIES, REDEEMABLE NONCONTROLLING INTEREST AND SHAREHOLDERS' EQUITY		
Current liabilities:		
Current portion of long-term debt	$ 0.5	$ 18.5
Accounts payable	118.4	104.5
Customer advances	137.9	124.4
Other current liabilities	388.8	351.9
Total current liabilities	645.6	599.3
Long-term debt	812.8	322.6
Long-term deferred revenue	42.8	38.3
Deferred tax liabilities	48.8	51.1
Operating lease liabilities	47.0	—
Accrued pension	122.4	90.5
Other long-term liabilities	113.9	99.1
Commitments and contingencies (Note 15)		
Redeemable noncontrolling interest	21.1	22.6
Shareholders' equity:		
Preferred stock, $0.01 par value 5,000,000 shares authorized, none issued or outstanding at December 31, 2019 and 2018	—	—
Common stock, $0.01 par value 260,000,000 shares authorized, 173,502,375 and 172,634,220 shares issued and 154,155,798 and 156,609,340 outstanding at December 31, 2019 and 2018, respectively	1.7	1.7
Treasury stock at cost, 19,346,577 and 16,024,880 shares at December 31, 2019 and 2018, respectively	(543.8)	(401.5)
Additional paid-in capital	199.7	176.9
Retained earnings	1,274.7	1,102.5
Accumulated other comprehensive (loss) income	(25.5)	17.0
Total shareholders' equity attributable to Bruker Corporation	906.8	896.6
Noncontrolling interest in consolidated subsidiaries	10.3	8.5
Total shareholders' equity	917.1	905.1
Total liabilities, redeemable noncontrolling interest and shareholders' equity	$2,771.5	$2,128.6

The accompanying notes are an integral part of these consolidated financial statements.

BRUKER CORPORATION

CONSOLIDATED STATEMENTS OF INCOME AND COMPREHENSIVE INCOME

(Dollars in millions, except per share data)

	Year Ended December 31,		
	2019	**2018**	**2017**
Product revenue	$1,744.7	$1,576.6	$1,479.5
Service revenue	322.4	311.7	278.2
Other revenue	5.5	7.3	8.2
Total revenue	2,072.6	1,895.6	1,765.9
Cost of product revenue	878.5	801.1	787.7
Cost of service revenue	198.3	193.4	160.8
Cost of other revenue	0.5	1.1	1.4
Total cost of revenue	1,077.3	995.6	949.9
Gross profit	995.3	900.0	816.0
Operating expenses:			
Selling, general and administrative	500.2	444.7	415.2
Research and development	187.7	173.4	161.6
Other charges, net	6.5	19.5	19.7
Total operating expenses	694.4	637.6	596.5
Operating income	300.9	262.4	219.5
Interest and other income (expense), net	(20.5)	(17.7)	(21.7)
Income before income taxes and noncontrolling interest in consolidated subsidiaries	280.4	244.7	197.8
Income tax provision	82.4	63.7	117.5
Consolidated net income	198.0	181.0	80.3
Net income attributable to noncontrolling interest in consolidated subsidiaries	0.8	1.3	1.7
Net income attributable to Bruker Corporation	$ 197.2	$ 179.7	$ 78.6
Net income per common share attributable to Bruker Corporation shareholders:			
Basic	$ 1.27	$ 1.15	$ 0.50
Diluted	$ 1.26	$ 1.14	$ 0.49
Weighted average common shares outstanding:			
Basic	155.2	156.2	158.1
Diluted	156.6	157.2	159.1
Consolidated net income	$ 198.0	$ 181.0	$ 80.3
Foreign currency translation (net of tax of $5.1 million, $4.4 million and $4.0 million, respectively) adjustments	(20.0)	(25.5)	97.1
Pension liability adjustments (net of tax of $6.3 million, $3.8 million and $2.9 million, respectively)	(23.0)	15.3	6.5
Net comprehensive income	155.0	170.8	183.9
Less: Comprehensive income attributable to noncontrolling interests	1.8	1.3	2.4
Less: Comprehensive income attributable to redeemable noncontrolling interest	(1.5)	(0.2)	—
Comprehensive income attributable to Bruker Corporation	$ 154.7	$ 169.7	$ 181.5

The accompanying notes are an integral part of these consolidated financial statements.

BRUKER CORPORATION

CONSOLIDATED STATEMENTS OF REDEEMABLE NONCONTROLLING INTEREST AND SHAREHOLDERS' EQUITY

(Dollars in millions, except share data)

	Redeemable Noncontrolling Interest	Common Shares	Common Stock Amount	Treasury Shares	Treasury Stock Amount	Additional Paid-In Capital	Retained Earnings	Accumulated Other Comprehensive Income (Loss)	Total Shareholders' Equity Attributable to Bruker Corporation	Noncontrolling Interests in Consolidated Subsidiaries	Total Shareholders' Equity
Balance at December 31, 2016	$ —	159,854,695	$1.7	10,698,195	$(249.3)	$124.7	$ 885.2	$(75.9)	$ 686.4	$ 6.7	$ 693.1
Restricted shares terminated	—	(4,053)	—	4,053	—	—	—	—	—	—	—
Stock options exercised	—	1,263,767	—	—	—	20.4	—	—	20.4	—	20.4
Restricted stock units vested	—	58,419	—	—	—	(0.3)	—	—	(0.3)	—	(0.3)
Stock based compensation	—	—	—	—	—	11.0	—	—	11.0	—	11.0
Excess tax benefit related to exercise of stock awards	—	—	—	—	—	—	3.6	—	3.6	—	3.6
Shares issued for acquisition	—	18,110	—	(18,110)	0.5	0.1	—	—	0.6	—	0.6
Shares repurchased	—	(5,318,063)	—	5,318,063	(152.2)	—	—	—	(152.2)	—	(152.2)
Treasury stock acquired	—	(6,898)	—	6,898	(0.2)	—	—	—	(0.2)	—	(0.2)
Distributions to noncontrolling interests	—	—	—	—	—	—	—	—	—	(1.0)	(1.0)
Cash dividends paid to common stockholders ($0.16 per share)	—	—	—	—	—	—	(25.4)	—	(25.4)	—	(25.4)
Consolidated net income	—	—	—	—	—	—	78.6	—	78.6	1.7	80.3
Other comprehensive income (loss)	—	—	—	—	—	—	—	102.9	102.9	0.7	103.6
Balance at December 31, 2017	$ —	155,865,977	$1.7	16,009,099	$(401.2)	$155.9	$ 942.0	$ 27.0	$ 725.4	$ 8.1	$ 733.5
Restricted shares terminated	—	(6,553)	—	6,553	—	—	—	—	—	—	—
Stock options exercised	—	575,372	—	—	—	10.3	—	—	10.3	—	10.3
Restricted stock units vested	—	183,772	—	—	—	(0.6)	—	—	(0.6)	—	(0.6)
Stock based compensation	—	—	—	—	—	11.3	—	—	11.3	—	11.3
Shares returned from 2017 acquisition	—	(2,123)	—	2,123	(0.1)	—	—	—	(0.1)	—	(0.1)
Treasury stock acquired	—	(7,105)	—	7,105	(0.2)	—	—	—	(0.2)	—	(0.2)
Acquired 80% interest in Hain LifeScience GmbH	23.2										
Distributions to noncontrolling interests	—	—	—	—	—	—	—	—	—	(0.9)	(0.9)
Cash dividends paid to common stockholders ($0.16 per share)	—	—	—	—	—	—	(25.1)	—	(25.1)	—	(25.1)
Adoption impact from new revenue standard	—	—	—	—	—	—	5.9	—	5.9	0.2	6.1
Consolidated net income	(0.2)	—	—	—	—	—	179.7	—	179.7	1.3	181.0
Other comprehensive income (loss)	(0.4)	—	—	—	—	—	—	(10.0)	(10.0)	(0.2)	(10.2)
Balance at December 31, 2018	$22.6	156,609,340	$1.7	16,024,880	$(401.5)	$176.9	$1,102.5	$ 17.0	$ 896.6	$ 8.5	$ 905.1
Stock options exercised		626,796	—	—	—	12.0	—	—	12.0	—	12.0
Restricted stock units vested		241,359	—	—	—	(1.1)	—	—	(1.1)	—	(1.1)
Stock based compensation	—	—	—	—	—	11.9	—	—	11.9	—	11.9
Shares issued from 2017 acquisition	—	3,087	—	(3,087)	0.1	—	—	—	0.1	—	0.1
Shares repurchased	—	(3,323,104)	—	3,323,104	(142.3)	—	—	—	(142.3)	—	(142.3)
Treasury stock acquired		(1,680)	—	1,680	(0.1)	—	—	—	(0.1)	—	(0.1)
Cash dividends paid to common stockholders ($0.16 per share)	—	—	—	—	—	—	(25.0)	—	(25.0)	—	(25.0)
Consolidated net income	(1.1)	—	—	—	—	—	197.2	—	197.2	1.9	199.1
Other comprehensive income (loss)	(0.4)	—	—	—	—	—	—	(42.5)	(42.5)	(0.1)	(42.6)
Balance at December 31, 2019	$21.1	154,155,798	$1.7	19,346,577	$(543.8)	$199.7	$1,274.7	$(25.5)	$ 906.8	$10.3	$ 917.1

The accompanying notes are an integral part of these consolidated financial statements.

BRUKER CORPORATION

CONSOLIDATED STATEMENTS OF CASH FLOWS

(Dollars in millions)

	Year Ended December 31,		
	2019	**2018**	**2017**
Cash flows from operating activities:			
Consolidated net income	$ 198.0	$ 181.0	$ 80.3
Adjustments to reconcile consolidated net income to cash flows from operating activities:			
Depreciation and amortization	75.6	64.9	63.9
Stock-based compensation expense	9.6	11.3	11.0
Deferred income taxes	(5.4)	(15.1)	28.2
Impairment and other non-cash expenses, net	10.1	39.8	11.6
Changes in operating assets and liabilities, net of acquisitions:			
Accounts receivable	(5.0)	(30.5)	(55.5)
Inventories	(60.2)	(35.5)	(6.6)
Accounts payable and accrued expenses	15.9	5.0	33.7
Income taxes payable	13.1	4.0	5.2
Deferred revenue	7.3	7.1	4.0
Customer advances	4.2	3.5	(27.8)
Other changes in operating assets and liabilities	(49.8)	4.2	6.4
Net cash provided by operating activities	213.4	239.7	154.4
Cash flows from investing activities:			
Purchase of short-term investments	(6.4)	—	(118.5)
Maturity of short-term investments	—	117.0	186.8
Cash paid for acquisitions, net of cash acquired	(90.0)	(191.6)	(66.3)
Purchases of property, plant and equipment	(73.0)	(49.2)	(43.7)
Proceeds from sales of property, plant and equipment	11.0	0.4	11.5
Net cash used in investing activities	(158.4)	(123.4)	(30.2)
Cash flows from financing activities:			
Proceeds from 2019 Note Purchase Agreement	297.9	—	—
Proceeds from 2019 Term Loan Agreement	300.0	—	—
Repayments of revolving lines of credit	(361.9)	(218.1)	(130.0)
Proceeds from revolving lines of credit	250.6	129.4	154.0
Repayment of 2012 Note Purchase Agreement	(15.0)	—	(20.0)
Repayment of other debt, net	(4.6)	(4.8)	(0.9)
Payment of deferred financing costs	(4.4)	—	—
Proceeds from issuance of common stock, net	10.9	9.4	20.0
Payment of contingent consideration	(6.2)	(2.3)	(3.5)
Payment of dividends to common stockholders	(25.0)	(25.1)	(25.4)
Repurchase of common stock	(142.3)	—	(152.2)
Cash payments to noncontrolling interests	—	(0.9)	(1.0)
Net cash provided by (used in) financing activities	300.0	(112.4)	(159.0)
Effect of exchange rate changes on cash, cash equivalents and restricted cash	0.6	(6.5)	17.8
Net change in cash, cash equivalents and restricted cash	355.6	(2.6)	(17.0)
Cash, cash equivalents and restricted cash at beginning of year	326.3	328.9	345.9
Cash, cash equivalents and restricted cash at end of year	$ 681.9	$ 326.3	$ 328.9
Supplemental cash flow information:			
Cash paid for interest	$ 16.0	$ 11.7	$ 15.2
Cash paid for taxes	$ 61.3	$ 60.5	$ 53.1

The accompanying notes are an integral part of these consolidated financial statements.

Note 1—Description of Business

Bruker Corporation, together with its consolidated subsidiaries (Bruker or the Company), develops, manufactures and distributes high-performance scientific instruments and analytical and diagnostic solutions that enable its customers to explore life and materials at microscopic, molecular and cellular levels. Many of the Company's products are used to detect, measure and visualize structural characteristics of chemical, biological and industrial material samples. The Company's products address the rapidly evolving needs of a diverse array of customers in life science research, pharmaceuticals, biotechnology, applied markets, cell biology, clinical research, microbiology, in-vitro diagnostics, nanotechnology and materials science research.

The Company has four operating segments, *Bruker BioSpin Group, Bruker CALID Group, Bruker Scientific Instruments (BSI) Nano Segment* and *Bruker Energy & Supercon Technologies (BEST)*. The Company has three reportable segments, *BSI Life Science Segment, BSI NANO* Segment and *BEST*.

For financial reporting purposes, the Bruker BioSpin Group and Bruker CALID Group operating segments are aggregated into the reportable BSI Life Science Segment because each has similar economic characteristics, production processes, service offerings, types and classes of customers, methods of distribution and regulatory environments.

Bruker BioSpin—The Bruker BioSpin Group designs, manufactures and distributes enabling life science tools based on magnetic resonance technology. Bruker BioSpin Group's revenues are generated by academic and government research customers, pharmaceutical and biotechnology companies and nonprofit laboratories, as well as chemical, food and beverage, clinical and other industrial companies.

Bruker CALID (Chemicals, Applied Markets, Life Science, In-Vitro Diagnostics, Detection)—The Bruker CALID Group designs, manufactures and distributes life science mass spectrometry and ion mobility spectrometry solutions, analytical and process analysis instruments and solutions based on infrared and Raman molecular spectroscopy technologies and radiological/nuclear detectors for Chemical, Biological, Radiological, Nuclear and Explosive (CBRNE) detection. Customers of the Bruker CALID Group include: academic institutions and medical schools; pharmaceutical, biotechnology and diagnostics companies; contract research organizations; nonprofit and for-profit forensics laboratories; agriculture, food and beverage safety laboratories; environmental and clinical microbiology laboratories; hospitals and government departments and agencies.

The BSI NANO Segment designs, manufactures and distributes advanced X-ray instruments; atomic force microscopy instrumentation; advanced fluorescence optical microscopy instruments; analytical tools for electron microscopes and X-ray metrology; defect-detection equipment for semiconductor process control; handheld, portable and mobile X-ray fluorescence spectrometry instruments; and spark optical emission spectroscopy systems. Customers of the BSI NANO Segment include academic institutions, governmental customers, nanotechnology companies, semiconductor companies, raw material manufacturers, industrial companies, biotechnology and pharmaceutical companies and other businesses involved in materials analysis.

The Company's BEST reportable segment develops and manufactures superconducting and non-superconducting materials and devices for use in renewable energy, energy infrastructure, healthcare and "big science" research. The segment focuses on metallic low temperature superconductors for use in magnetic resonance imaging, nuclear magnetic resonance, fusion energy research and other applications.

Note 2—Summary of Significant Accounting Policies

Principles of Consolidation

The accompanying consolidated financial statements include the accounts of the Company and all majority and wholly-owned subsidiaries. All intercompany accounts and transactions have been eliminated.

Noncontrolling Interests

Noncontrolling interests represents the minority shareholders' proportionate share of the Company's majority-owned subsidiaries. The portion of net income or net loss attributable to non-controlling interests is presented as net income attributable to noncontrolling interests in consolidated subsidiaries in the consolidated statements of income and comprehensive income, and the portion of other comprehensive income of these subsidiaries is presented in the consolidated statements of shareholders' equity.

Redeemable Noncontrolling Interests

The Company has an agreement with noncontrolling interest holders that provides the Company with the right to purchase, and the noncontrolling interest holders with the right to sell, their remaining minority interest at a contractually defined redemption value. These rights are accelerated in certain events. As the redemption is contingently redeemable at the option of the noncontrolling interest shareholders, the Company classifies the carrying amount of the redeemable noncontrolling interest in the mezzanine section on the consolidated balance sheet, which is presented above the equity section and below liabilities. Subsequent to the acquisition, the redeemable noncontrolling interest is measured at the greater of the amount that would be paid if settlement occurred as of the balance sheet date based on the contractually defined redemption value and its carrying amount adjusted for net income (loss) attributable to the noncontrolling interest. Adjustments to the carrying value of the redeemable noncontrolling interest are recorded through retained earnings.

Business Combinations

The Company accounts for business combinations under the acquisition method of accounting. Accordingly, at the date of each acquisition, the Company measures the fair value of all identifiable assets acquired (including intangible assets), liabilities assumed and any remaining noncontrolling interests and allocates the amounts paid to all items measured. The fair value of identifiable intangible assets acquired are based on valuations that use information and assumptions determined by management and which consider management's best estimates of inputs and assumptions that a market participant would use.

Subsequent Events

The Company has evaluated all subsequent events and determined that there are no material recognized or unrecognized subsequent events, other than as described in Note 24, or any subsequent events required to be mentioned in the footnotes to the consolidated financial statements.

Cash and Cash Equivalents

Cash and cash equivalents primarily include cash on hand, money market funds and time deposits with original maturities of three months or less at the date of acquisition. Time deposits represent amounts on deposit in banks and temporarily invested in instruments with maturities of three months or less at the time of purchase. Certain of these investments represent deposits which are not insured

by the FDIC or any other government agency. Cash equivalents are carried at cost, which approximates fair value.

Short-term Investments

Short-term investments represent time and call deposits with original maturities of greater than three months at the date of acquisition. Short-term investments are classified as available-for-sale and are reported at fair value. There were no unrealized gains (losses) recorded as of December 31, 2019 and 2018, as cost approximates current fair value. There were no short-term investments held by the Company as of December 31, 2018.

Restricted Cash

Restricted cash is included as a component of cash, cash equivalents, and restricted cash on the Company's consolidated statement of cash flows. The Company has certain subsidiaries that are required by local laws and regulations to maintain restricted cash balances to cover future employee benefit payments. Restricted cash balances are classified as non-current unless, under the terms of the applicable agreements, the funds will be released from restrictions within one year from the balance sheet date. The current and non-current portion of restricted cash is recorded within other current assets and other long-term assets, respectively, in the accompanying consolidated balance sheets.

The inclusion of restricted cash increased the balances of the consolidated statement of cash flows as follows (dollars in millions):

	2019	2018	2017
Beginning Balance	$3.9	$3.9	$3.5
Ending Balance	3.6	3.9	3.9

Derivative Financial Instruments and Hedging Activities

All derivatives, whether designated in a hedging relationship or not, are recorded on the consolidated balance sheets at fair value. The accounting for changes in fair value of a derivative instrument depends on whether it has been designated and qualifies as part of a hedging relationship and further, on the type of hedging relationship. For those derivative instruments that are designated and qualify as hedging instruments, the Company must designate the hedging instrument, based on the exposure being hedged, as a fair value hedge, cash flow hedge, foreign currency hedge or a hedge of a net investment in a foreign operation. If a derivative is designated as a hedge, depending on the nature of the hedge, changes in the fair value of the derivative are either offset against the change in fair value of the hedged item through earnings or recognized in other comprehensive income until the hedged item is recognized in earnings. Derivatives that are not designated as hedges are recorded at fair value through earnings.

Fair Value of Financial Instruments

The Company applies the following hierarchy to determine the fair value of financial instruments, which prioritizes the inputs used to measure fair value into three levels and bases the categorization within the hierarchy upon the lowest level of input that is available and significant to the fair value measurement. The levels in the hierarchy are defined as follows:

- *Level 1:* Inputs to the valuation methodology are quoted prices (unadjusted) for identical assets or liabilities in active markets.

- *Level 2:* Inputs to the valuation methodology include quoted prices for similar assets and liabilities in active markets, and inputs that are observable for the asset or liability, either directly or indirectly, for substantially the full term of the financial instrument.
- *Level 3:* Inputs to the valuation methodology are unobservable and significant to the fair value measurement.

The valuation techniques that may be used by the Company to determine the fair value of Level 2 and Level 3 financial instruments are the market approach, the income approach and the cost approach. The market approach uses prices and other relevant information generated by market transactions involving identical or comparable assets or liabilities. The income approach uses valuation techniques to convert future amounts to a single present value based on current market expectations about those future amounts, including present value techniques, option-pricing models and the excess earnings method. The cost approach is based on the amount that would be required to replace the service capacity of an asset (replacement cost).

The Company's financial instruments consist primarily of cash equivalents, short-term investments, restricted cash, derivative instruments consisting of forward foreign exchange contracts, cross-currency interest rate swap agreements, commodity contracts, derivatives embedded in certain purchase and sale contracts, derivatives embedded within noncontrolling interests, accounts receivable, accounts payable, contingent consideration and long-term debt. The carrying amounts of the Company's cash equivalents, short-term investments and restricted cash, accounts receivable, borrowings under a revolving credit agreement and accounts payable approximate fair value because of their short-term nature. Derivative assets and liabilities are measured at fair value on a recurring basis. The Company's long-term debt consists principally of a note purchase agreement entered into in 2012 and a revolving credit agreement, long term loan agreement and note purchase agreement entered into in 2019.

The Company has evaluated the estimated fair value of financial instruments using available market information and management's estimates. The use of different market assumptions and/or estimation methodologies could have a significant effect on the estimated fair value amounts.

Concentration of Credit Risk

Financial instruments that subject the Company to credit risk consist of cash, cash equivalents, short-term investments, derivative instruments, accounts receivables and restricted cash. The risk with respect to cash, cash equivalents and short-term investments is minimized by the Company's policy of investing in short-term financial instruments issued by highly-rated financial institutions. The risk with respect to derivative instruments is minimized by the Company's policy of entering into arrangements with highly-rated financial institutions. The risk with respect to accounts receivables is minimized by the creditworthiness and diversity of the Company's customers. The Company performs periodic credit evaluations of its customers' financial condition and generally requires an advanced deposit for a portion of the purchase price. Credit losses have been within management's expectations and the allowance for doubtful accounts totaled $3.4 million and $3.8 million as of December 31, 2019 and 2018, respectively. As of December 31, 2019 and 2018, no single customer represented 10% or more of the Company's accounts receivable. For the years ended December 31, 2019, 2018 and 2017, no single customer represented 10% or more of the Company's total revenue.

Inventories

Components of inventory include raw materials, work-in-process, demonstration units and finished goods. Demonstration units include systems which are located in the Company's demonstration laboratories or installed at the sites of potential customers and are considered available for sale. Finished goods include in-transit systems that have been shipped to the Company's customers, but not yet installed and accepted by the customer. All inventories are stated at the lower of cost and net

realizable value. Cost is determined principally by the first-in, first-out method for a majority of subsidiaries and by average-cost for certain other subsidiaries. The Company reduces the carrying value of its inventories for differences between cost and estimated net realizable value, taking into consideration usage in the preceding twelve months, expected demand, technological obsolescence and other information including the physical condition of demonstration inventories. The Company records a charge to cost of product revenue for the amount required to reduce the carrying value of inventory to net realizable value. Costs associated with the procurement of inventories, such as inbound freight charges and purchasing and receiving costs, are capitalized as part of inventory and are also included in the cost of product revenue line item within the consolidated statements of income and comprehensive income.

Property, Plant and Equipment

Property, plant and equipment are stated at cost less accumulated depreciation and amortization. Major improvements that extend the useful lives are capitalized while expenditures for maintenance, repairs and minor improvements are charged to expense as incurred. When assets are retired or otherwise disposed of, the assets and related accumulated depreciation and amortization are eliminated from the accounts and any resulting gain or loss is reflected in the consolidated statements of income and comprehensive income. Depreciation and amortization are calculated on a straight-line basis over the estimated useful lives of the assets as follows:

Buildings	25-40years
Machinery and equipment	3-10years
Computer equipment and software	3-5years
Furniture and fixtures	3-10years
Leasehold improvements	Lesser of 15 years or the remaining lease term

Goodwill and Intangible Assets

Goodwill and indefinite-lived intangible assets are not amortized, but are evaluated for impairment on an annual basis, or on an interim basis when events or changes in circumstances indicate that the carrying value may not be recoverable. In assessing the recoverability of goodwill and indefinite-lived intangible assets, the Company must make assumptions regarding the estimated future cash flows, including forecasted revenue growth, projected gross margin and the discount rate to determine the fair value of these assets. If these estimates or their related assumptions change in the future, the Company may be required to record impairment charges against these assets in the reporting period in which the impairment is determined.

The Company tests goodwill for impairment at the reporting unit level, which is the operating segment or one level below an operating segment. The Company has the option of performing a qualitative assessment to determine whether further impairment testing is necessary before performing the two-step quantitative assessment. If as a result of the qualitative assessment, it is more-likely-than-not that the fair value of a reporting unit is less than its carrying amount, a quantitative impairment test will be required. Otherwise, no further testing will be required. If a quantitative impairment test is performed, the first step involves comparing the fair values of the applicable reporting units with their aggregate carrying values, including goodwill. The Company determines fair value of reporting units using a weighting of both the market and the income methodologies. Estimating the fair value of the reporting units requires significant judgment by management. If the carrying amount of a reporting unit exceeds the fair value of the reporting unit, the Company performs the second step of the goodwill impairment test to measure the amount of the impairment. In the second step of the goodwill impairment test the Company compares the implied fair value of the reporting unit's goodwill with the carrying value of that goodwill.

In process research and development, or IPR&D, acquired as part of business combinations under the acquisition method represents ongoing development work associated with enhancements to existing products, as well as the development of next generation products. IPR&D is initially capitalized at fair value as an intangible asset with an indefinite life and assessed for impairment on an annual basis, or when indicators of impairment are identified. When the IPR&D project is complete, it is reclassified as a finite-lived intangible asset and is amortized over its estimated useful life. If an IPR&D project is abandoned before completion or is otherwise determined to be impaired, the value of the asset or the amount of the impairment is charged to the consolidated statements of income and comprehensive income in the period the project is abandoned or impaired.

Intangible assets with a finite useful life are amortized on a straight-line basis over their estimated useful lives as follows:

Existing technology and related patents	3-15years
Customer and distributor relationships	5-15years
Trade names	5-15years

Impairment of Long-Lived Assets

Impairment losses are recorded on long-lived assets used in operations when indicators of impairment are present and the quoted market price, if available or the estimated fair value of those assets are less than the assets' carrying value and are not recoverable. Determination of recoverability is based on an estimate of undiscounted future cash flows resulting from the use of the asset and its eventual disposition. In the event that such cash flows are not expected to be sufficient to recover the carrying amount of the assets, the assets are written-down to their fair values. Impairment losses are charged to the consolidated statements of income and comprehensive income for the difference between the fair value and carrying value of the asset.

Warranty Costs and Deferred Revenue

The Company typically provides a one year parts and labor warranty with the purchase of equipment. The anticipated cost for this warranty is accrued upon recognition of the sale and is included as a current liability on the accompanying consolidated balance sheets. The Company's warranty reserve reflects estimated material and labor costs for potential product issues for which the Company expects to incur an obligation. The Company's estimates of anticipated rates of warranty claims and costs are primarily based on historical information. The Company assesses the adequacy of the warranty reserve on a quarterly basis and adjusts the amount as necessary. If the historical data used to calculate the adequacy of the warranty reserve is not indicative of future requirements, additional or reduced warranty reserves may be required.

The Company also offers to its customers extended warranty and service agreements extending beyond the initial warranty for a fee. These fees are recorded as deferred revenue and recognized ratably into income over the life of the extended warranty contract or service agreement.

Income Taxes

Deferred tax assets and liabilities are recognized for the expected future tax consequences of temporary differences between the financial statement carrying amounts and the income tax basis of assets and liabilities. A valuation allowance is applied against any net deferred tax asset if, based on the available evidence, it is more likely than not that some or all of the deferred tax assets will not be realized.

The Company records liabilities related to uncertain tax positions in accordance with the guidance that clarifies the accounting for uncertainty in income taxes recognized in a Company's financial

statements. This guidance prescribes a minimum recognition threshold and measurement attribute for the financial statement recognition and measurement of a tax position taken or expected to be taken in a tax return. The Company includes accrued interest and penalties related to unrecognized tax benefits and income tax liabilities, when applicable, in income tax expense.

Customer Advances

The Company typically requires an advance deposit under the terms and conditions of contracts with customers. These deposits are recorded as a current or long-term liability until revenue is recognized on the specific contract in accordance with the Company's revenue recognition policy.

Revenue Recognition

2019 & 2018 Policy under ASC 606:

The Company recognizes revenue in accordance with ASC 606, *Revenue from Contracts with Customers*. The key elements of ASC 606 are: 1) identifying a contract with the customer; 2) identifying the performance obligations in the contract; 3) determining the transaction price; 4) allocating the transaction price to the performance obligations in the contract; and 5) recognizing revenue when (or as) each performance obligation is satisfied.

A performance obligation is a promise in a contract to transfer a distinct good or service to the customer. A contract's transaction price is allocated to each distinct performance obligation and recognized as revenue when, or as, the performance obligation is satisfied. Some of the Company's contracts have multiple performance obligations, most commonly due to providing additional goods or services along with a system, such as installation, accessories, parts and services. For contracts with multiple performance obligations, the Company allocates the contract's transaction price to each performance obligation using the best estimate of the standalone selling price of each distinct good or service being provided to the customer. The Company's best evidence of standalone selling price is its normal selling pricing and discounting practices for the specific product or service when sold on a standalone basis. Alternatively, when not sold separately, the Company may determine standalone selling price using an expected cost plus a margin approach.

The Company's performance obligations are typically satisfied at a point in time, most commonly either on shipment or customer acceptance. Certain performance obligations, such as maintenance contracts and extended warranty, are recognized over time based on the contractual obligation period. In addition, certain arrangements to provide more customized deliverables may be satisfied over time based on the extent of progress towards completion. For performance obligations recognized over time, revenue is measured by progress toward completion of the performance obligation that reflects the transfer of control. Typically, progress is measured using a cost-to-cost method based on cost incurred to date relative to total estimated costs upon completion as this best depicts the transfer of control to the customer. Application of the cost-to-cost method requires the Company to make reasonable estimates of the extent of progress toward completion and the total costs the Company expects to incur. Losses are recorded immediately when the Company estimates that contracts will ultimately result in a loss. Changes in the estimates could affect the timing of revenue recognition.

The Company includes costs incurred in connection with shipping and handling of products within selling, general and administrative costs. Amounts billed to customers in connection with these costs are included in total revenues. When control of the goods transfers prior to the completion of the Company's obligation to ship the products to its customers, the Company has elected the practical expedient to account for the shipping services as a fulfillment cost. The Company expenses incremental costs of obtaining a contract as and when incurred if the expected amortization period is one year or less or the amount is immaterial. The Company excludes from the transaction price all taxes assessed by a governmental authority on revenue-producing transactions that are collected by the Company from a customer.

The Company recognizes revenue from systems sales upon transfer of control in an amount that reflects the consideration it expects to receive. Transfer of control generally occurs upon shipment, or for certain systems, based upon customer acceptance for a system once delivered and installed at a customer facility. For systems that include customer-specific acceptance criteria, the Company is required to assess when it can demonstrate the acceptance criteria has been met, which generally is upon successful factory acceptance testing or customer acceptance and evidence of installation. For systems that require installation and where system revenue is recognized upon shipment, the standalone selling price of installation is deferred until customer acceptance. Revenue from accessories and parts is generally recognized based on shipment. Service revenue is recognized as the services are performed or ratably over the contractual obligation and includes maintenance contracts, extended warranties, training, application support and on-demand services.

When products are sold through an independent distributor or a strategic distribution partner, the Company recognizes the system sale upon transfer of control which is typically on shipment. When the Company is responsible for installation, the standalone selling price of installation is deferred until customer acceptance. The Company's distributors do not have price protection rights or rights of return; however, the Company's products are typically warranted to be free from defect for a period of one year.

The Company requires an advance deposit based on the terms and conditions of contracts with customers for many of its contracts. Typically, revenue is recognized within one year of receiving an advance deposit. The Company does not have any material payment terms that extend beyond one year. There is minimal variable consideration included in the transaction price of the Company's contracts.

Other revenues are primarily comprised of development arrangements recognized on a cost-plus-fixed-fee basis and licensing arrangements recognized either when the licenses are provided or ratably over the contract term depending on the nature of the arrangement.

Contract Assets and Liabilities

Contract assets represent unbilled receivables when revenue recognized exceeds the amount billed to the customer, and the right to payment is not just subject to the passage of time. Contract assets typically result from system revenue recorded where a portion of the transaction price is not billable until a future event, such as customer acceptance, or from contracts recognized on a cost-to-cost or cost-plus-fixed-fee basis as revenue exceeds the amount billed to the customer. Amounts may not exceed their net realizable value. Contract assets are generally classified as current.

Contract liabilities consist of customer advances, deferred revenue and billings in excess of revenue from contracts recognized on a cost-to-cost or cost-plus-fixed-fee basis. Contract liabilities are classified as current or long-term based on the timing of when the Company expects to recognize revenue. Contract assets and liabilities are reported in a net position on a contract-by-contract basis at the end of each reporting period.

2017 Policy under ASC 605:

The Company recognized revenue from systems sales when persuasive evidence of an arrangement exists, the price is fixed or determinable, title and risk of loss has been transferred to the customer and collectability of the resulting receivable is reasonably assured. Title and risk of loss generally transfers upon shipment, or for certain systems, based upon customer acceptance for a system that has been delivered and installed at a customer facility. For systems that include customer-specific acceptance criteria, the Company is required to assess when it can demonstrate the acceptance criteria has been met, which generally is upon successful factory acceptance testing or customer acceptance and evidence of installation.

When products are sold through an independent distributor or a strategic distribution partner who assumes responsibility for installation, the Company recognizes the system sale when the product has been shipped and title and risk of loss have been transferred to the distributor. The Company's distributors do not have price protection rights or rights of return; however, the Company's products are typically warranted to be free from defect for a period of one year. Revenue is deferred until cash is received when collectability is not reasonably assured or when the price is not fixed or determinable.

For transactions that include multiple elements, arrangement consideration was allocated to each element using the fair value hierarchy as required by ASU No. 2009-13. The Company limits the amount of revenue recognized for delivered elements to the amount that is not contingent on the future delivery of products or services, future performance obligations, or subject to customer-specific return or refund privileges.

The Company determines the fair value of its products and services based upon vendor specific objective evidence (VSOE). The Company determines VSOE based on its normal selling pricing and discounting practices for the specific product or service when sold on a stand-alone basis. In determining VSOE, the Company's policy requires a substantial majority of selling prices for a product or service to be within a reasonably narrow range. The Company also considers the class of customer, method of distribution and the geographies into which products and services are being sold when determining VSOE.

If VSOE cannot be established, the Company attempts to establish the selling price based on third-party evidence (TPE). VSOE cannot be established in instances where a product or service has not been sold separately, stand-alone sales are too infrequent or product pricing is not within a sufficiently narrow range. TPE is determined based on competitor prices for similar deliverables when sold separately.

When the Company cannot determine VSOE or TPE, it uses estimated selling price (ESP) in its allocation of arrangement consideration. The objective of ESP is to determine the price at which the Company would typically transact a stand-alone sale of the product or service. ESP is determined by considering a number of factors including the Company's pricing policies, internal costs and gross profit objectives, method of distribution, market research and information, recent technological trends, competitive landscape and geographies. The Company analyzes the selling prices used in its allocation of arrangement consideration, at a minimum, on an annual basis. Selling prices will be analyzed more frequently if a significant change in the Company's business or other factors necessitate more frequent analysis or if the Company experiences significant variances in its selling prices.

Revenue from accessories and parts is generally recognized based on shipping terms. Service revenue is recognized as the services are performed or ratably over the contractual obligation and includes maintenance contracts, extended warranty, training, application support and on-demand services.

The Company also has contracts for which it applies the percentage-of-completion model and completed contract model of revenue recognition. Application of the percentage-of-completion method requires the Company to make reasonable estimates of the extent of progress toward completion of the contract and the total costs the Company will incur under the contract and losses are recorded immediately when we estimate that contracts will ultimately result in a loss. Changes in the estimates could affect the timing of revenue recognition.

Other revenues are primarily comprised of development arrangements recognized on a cost-plus-fixed-fee basis and licensing arrangements recognized ratably over the term of the related contracts.

Shipping and Handling Costs

The Company includes costs incurred in connection with shipping and handling of products within selling, general and administrative expenses in the accompanying consolidated statements of income and comprehensive income. Shipping and handling costs were $27.0 million, $25.2 million and $23.2 million in the years ended December 31, 2019, 2018 and 2017, respectively. Amounts billed to customers in connection with these costs are included in total revenues.

Research and Development

The Company commits substantial capital and resources to internal and collaborative research and development projects in order to provide innovative products and solutions to their customers. The Company conducts research primarily to enhance system performance and improve the reliability of existing products, and to develop revolutionary new products and solutions. Research and development costs are expensed as incurred and include salaries, wages and other personnel related costs, material costs and depreciation, consulting costs and facility costs.

Capitalized Software

Purchased software is capitalized at cost and is amortized over the estimated useful life, which is generally three years. Software developed for use in the Company's products is expensed as incurred to research and development expense until technological feasibility is achieved. Subsequent to the achievement of technological feasibility, amounts are capitalizable; however, to date such amounts have not been material.

Advertising

The Company expenses advertising costs as incurred. Advertising expenses were $15.4 million, $14.4 million and $14.0 million during the years ended December 31, 2019, 2018 and 2017, respectively.

Stock-Based Compensation

The Company recognizes stock-based compensation expense in the consolidated statements of income and comprehensive income based on the fair value of the share-based award at the grant date. The Company's primary types of share-based compensation are stock options, restricted stock awards and restricted stock units. The Company recorded stock-based compensation expense for the years ended December 31, 2019, 2018 and 2017, as follows (dollars in millions):

	2019	2018	2017
Stock options	$ 2.7	$ 4.2	$ 6.2
Restricted stock awards	0.3	0.8	1.4
Restricted stock units	8.9	6.3	3.4
Total stock-based compensation	$11.9	$11.3	$11.0

	2019	2018	2017
Costs of product revenue	$ 1.8	$ 1.7	$ 1.7
Selling, general and administrative	8.3	7.9	7.6
Research and development	1.8	1.7	1.7
Total stock-based compensation	$11.9	$11.3	$11.0

In addition to the awards above, the Company recorded stock-based compensation related benefit of $2.3 million in the year ended December 31, 2019 and additional expense of $0.5 million in the year ended December 31, 2018 related to the 2018 acquisition of Mestrelab Research, S.L.

Compensation expense is amortized on a straight-line basis over the underlying vesting terms of the share-based award. Stock options to purchase the Company's common stock are periodically awarded to executive officers and other employees of the Company subject to a vesting period of three to four years. The fair value of each option award is estimated on the date of grant using the Black-Scholes option-pricing model. Assumptions regarding volatility, expected term, dividend yield and risk-free interest rates are required for the Black-Scholes model and are presented in the table below:

	2019	2018	2017
Risk-free interest rates	1.55%	2.80%	1.78%-2.09%
Expected life	5.33 years	5.38 years	5.56 years
Volatility	29.57%	28.46%	30.78%-34.13%
Expected dividend yield	0.38%	0.47%	0.55%-0.74%

Risk-free interest rates are based on the yield on zero-coupon U.S. Treasury securities for a period that is commensurate with the expected life assumption. Expected life is determined through a calculation based on historical experience. Expected volatility is based the Company's historical volatility results. The expected dividend yield was included in the option pricing formula beginning in February 2016 as the Company adopted a dividend policy. The Company utilizes an estimated forfeiture rate derived from an analysis of historical data of 8.3%, 7.5% and 6.7% for the years ended December 31, 2019, 2018 and 2017, respectively.

Earnings Per Share

Net income per common share attributable to Bruker Corporation shareholders is calculated by dividing net income attributable to Bruker Corporation, adjusted to reflect changes in the redemption value of the redeemable noncontrolling interest, by the weighted-average shares outstanding during the period. The diluted net income per share computation includes the effect of shares which would be issuable upon the exercise of outstanding stock options and the vesting of restricted stock, reduced by the number of shares which are assumed to be purchased by the Company under the treasury stock method. There was no redemption value adjustment of the redeemable noncontrolling interest for the year ended December 31, 2019 or 2018.

The following table sets forth the computation of basic and diluted weighted average shares outstanding for the years ended December 31, (dollars in millions, except per share data):

	2019	2018	2017
Net income attributable to Bruker Corporation, as reported	$197.2	$179.7	$ 78.6
Weighted average shares outstanding:			
Weighted average shares outstanding-basic	155.2	156.2	158.1
Effect of dilutive securities:			
Stock options, restricted stock awards and restricted stock units	1.4	1.0	1.0
	156.6	157.2	159.1
Net income per common share attributable to Bruker Corporation shareholders:			
Basic	$ 1.27	$ 1.15	$ 0.50
Diluted	$ 1.26	$ 1.14	$ 0.49

Stock options and restricted stock units to purchase approximately 0.2 million shares, 0.2 million shares and 0.3 million shares were excluded from the computation of diluted earnings per share for the years ended December 31, 2019, 2018 and 2017, respectively, because their effect would have been anti-dilutive.

Post Retirement Benefit Plans

The Company recognizes the over-funded or under-funded status of defined benefit pension and other postretirement defined benefit plans as an asset or liability, respectively, in its consolidated balance sheets and recognizes changes in the funded status in the year in which the changes occur through other comprehensive income.

Other Comprehensive Income (Loss)

Other comprehensive income (loss) refers to revenues, expenses, gains and losses that are excluded from net income as these amounts are recorded directly as an adjustment to shareholders' equity, net of tax. The Company's other comprehensive income (loss) was composed of foreign currency translation adjustments and pension liability adjustments.

Foreign Currency Translation

Assets and liabilities of the Company's foreign subsidiaries, where the functional currency is the local currency, are translated into U.S. Dollars using the current exchange rate as of the consolidated balance sheet date and shareholders' equity is translated using historical rates. Revenues and expenses of foreign subsidiaries are translated at the average exchange rates in effect during the year. Adjustments resulting from financial statement translations are included as a separate component of shareholders' equity. Gains and losses resulting from translation of foreign currency monetary transactions are reported in interest and other income (expense), net in the consolidated statements of income and comprehensive income for all periods presented. The Company has certain intercompany foreign currency transactions that are deemed to be of a long-term investment nature. Exchange adjustments related to those transactions are made directly to a separate component of shareholders' equity.

Risks and Uncertainties

The Company is subject to risks common to its industry including, but not limited to, global economic conditions, rapid technological change, government and academic funding levels, the impact of the COVID-19 coronavirus, changes in commodity prices, spending patterns of its customers, protection of its intellectual property, availability of key raw materials and components, compliance with existing and future regulation by government agencies and fluctuations in foreign currency exchange rates.

In December 2019, a novel strain of coronavirus, now referred to as COVID-19, surfaced in Wuhan, China. The virus continues to spread globally, has been declared a pandemic by the World Health Organization and has spread to over 100 countries, including the United States. The impact of this pandemic has been and will likely continue to be extensive in many aspects of society, which has resulted in and will likely continue to result in significant disruptions to the global economy, as well as businesses and capital markets around the world.

Impacts to the Company's business include temporary closures of many of its government and university customers and suppliers, disruptions or restrictions on its employees' and customers' ability to travel, and delays in product installations or shipments to and from affected countries. In an effort to halt the outbreak of COVID-19, a number of countries, including the United States, have placed significant restrictions on travel and many businesses have announced extended closures. For example,

a number of states, including California, Massachusetts and New Jersey where the Company has significant operations, have issued shelter in place or stay-at-home orders which required the Company's employees in that area to work from home and avoid unnecessary travel. In addition, a number of the Company's production facilities have either temporarily closed, plan to temporarily close or are operating on a reduced capacity. Most commercial activity in sales and marketing, and customer demonstrations and applications training, are either being conducted remotely or postponed. Customer purchasing departments are operating at reduced capacity, and many customers could delay or cut capital expenditures and operating budgets. These travel restrictions, business closures and operating reductions at the Company, its customers, its distributors, and or its suppliers will adversely impact the Company's operations locally and worldwide, including its ability to manufacture, sell or distribute products, as well as cause temporary closures of its foreign distributors, or the facilities of suppliers or customers. Any prolonged material disruption of the Company's employees, distributors, suppliers or customers will impact its global sales and operating results that could lead to impairments.

Loss Contingencies

Loss contingency provisions are recorded if the potential loss from any claim, asserted or unasserted, or legal proceeding related to patents, products and other matters, is considered probable and the amount can be reasonably estimated or a range of loss can be determined. These accruals represent management's best estimate of probable loss. Disclosure is provided when it is reasonably possible that a loss will be incurred or when it is reasonably possible that the amount of a loss will exceed the recorded provision.

Use of Estimates

The preparation of financial statements in conformity with accounting principles generally accepted in the United States of America requires management to make estimates and assumptions that affect the reported amounts of assets and liabilities and disclosure of contingent assets and liabilities at the date of the financial statements and reported amounts of revenues and expenses during the reporting period.

Significant estimates and judgments made by management in preparing these financial statements include revenue recognition, allowances for doubtful accounts, write-downs for excess and obsolete inventory, estimated fair values used to record impairment charges related to intangible assets, goodwill, and other long-lived assets, amortization periods, expected future cash flows used to evaluate the recoverability of long-lived assets and to record intangible assets in business combinations, stock-based compensation expense, warranty allowances, restructuring and other related charges, contingent liabilities and the recoverability of the Company's net deferred tax assets.

Changes in estimates are recorded in the period in which they become known. The Company bases its estimates on historical experience and various other assumptions that it believes to be reasonable under the circumstances. Actual results may differ from management's estimates if these results differ from historical experience or other assumptions prove not to be substantially accurate, even if such assumptions were reasonable when made.

Note 3—Revenue

In May 2014, the Financial Accounting Standards Board (FASB) issued Accounting Standards Update (ASU) No. 2014-09, *Revenue from Contracts with Customers,* which supersedes the revenue recognition requirements under Accounting Standards Codification (ASC) Topic 605. The new guidance was the result of a joint project between the FASB and the International Accounting Standards Board to clarify the principles for recognizing revenue and to develop common revenue standards for U.S. GAAP and International Financial Reporting Standards. The core principle of the new guidance is

that revenue should be recognized to depict the transfer of promised goods or services to customers in an amount that reflects the consideration to which the entity expects to be entitled in exchange for those goods or services. The new guidance was effective as of January 1, 2018 and was applied on a modified retrospective basis. The Company elected the practical expedient and only evaluated contracts for which substantially all revenue had not been recognized under ASC 605 with the cumulative effect of the new guidance recorded as of the date of initial application. The impact of adoption was an increase to beginning retained earnings of $6.1 million, net of $2.1 million related to taxes. The adoption impact was primarily due to the change in license revenue being recognized at a point in time under ASC 606 rather than over time as it was recognized under ASC 605. The difference between ASC 606 and ASC 605 was not material to the year ended December 31, 2018.

The following table presents the Company's revenues by Group for the years ended December 31, 2019 and 2018 (dollars in millions):

	2019	2018
Revenue by Group:		
Bruker BioSpin	$ 621.4	$ 591.1
Bruker CALID	623.5	547.8
BSI NANO	632.7	568.1
BEST	209.9	194.8
Eliminations	(14.9)	(6.2)
Total revenue	$2,072.6	$1,895.6

Revenue for the Company recognized at a point in time versus over time is as follows for the years ended December 31, 2019 and 2018 (dollars in millions):

	2019	2018
Revenue recognized at a point in time	$1,847.4	$1,716.8
Revenue recognized over time	225.2	178.8
Total revenue	$2,072.6	$1,895.6

Remaining Performance Obligations

Remaining performance obligations represent the aggregate transaction price allocated to a promise to transfer a good or service that is fully or partially unsatisfied at the end of the period. As of December 31, 2019, remaining performance obligations were approximately $1,855.3 million. The Company expects to recognize revenue on approximately 54.2% of the remaining performance obligations over the next twelve months and the remaining performance obligations primarily within one to three years.

Contract Balances

The timing of revenue recognition, billings and cash collections results in billed accounts receivable, unbilled receivables (contract assets) and deferred revenue, customer deposits and billings in excess of revenue recognized (contract liabilities) on the Company's consolidated balance sheets.

Contract assets—Most of the Company's long-term contracts are billed as work progresses in accordance with the contract terms and conditions, either at periodic intervals or upon achievement of certain milestones. Billing often occurs subsequent to revenue recognition, resulting in contract assets. Contract assets are generally classified as other current assets in the consolidated balance sheets. The balance of contract assets as of December 31, 2019 and December 31, 2018 was $43.9 million and $25.9 million, respectively. The increase in the contract

asset balance during the year ended December 31, 2019 is primarily a result of foreign currency translation and an increase in contracts that have been recognized as revenue during the year for which billing cannot contractually occur as of December 31, 2019.

Contract liabilities—The Company often receives cash payments from customers in advance of the Company's performance, resulting in contract liabilities. These contract liabilities are classified as either current or long-term in the consolidated balance sheet based on the timing of when revenue recognition is expected. As of December 31, 2019 and December 31, 2018, the contract liabilities were $312.5 million and $288.5 million, respectively. The increase in the contract liability balance during the year ended December 31, 2019 is primarily a result of new performance obligations entered into during the year. Approximately $186.1 million of the contract liability balance on December 31, 2018 was recognized as revenue during the year ended December 31, 2019. Approximately $171.0 million of the contract liability balance on January 1, 2018, the date of adoption of ASC 606, was recognized as revenue during the twelve-month period ended December 31, 2018.

Note 4—Acquisitions

The impact of all acquisitions, individually and collectively, on revenues, net income and total assets was not material. Pro forma financial information reflecting all acquisitions has not been presented because the impact, individually and collectively, on revenues, net income and total assets is not material. Amounts allocated to goodwill that are attributable to expected synergies are not expected to be deductible for tax purposes.

2019

On April 2, 2019, the Company acquired Rave LLC (Rave), a privately held company, for a purchase price of $52.2 million with the potential for additional consideration of up to $5.0 million based on revenue and gross margin achievements in 2019 and 2020. Rave develops and manufactures nanomachining and laser photomask repair equipment. Rave will be integrated into the BSI NANO Segment. The acquisition of Rave was accounted for under the acquisition method. The components and fair value allocation of the consideration transferred in connection with the acquisition were as follows (dollars in millions):

Consideration Transferred:	
Cash paid	$ 55.8
Contingent consideration	4.4
Working capital adjustment	(3.6)
Total consideration transferred	$ 56.6
Allocation of Consideration Transferred:	
Inventories	$ 23.1
Accounts receivable	2.2
Other current and non current assets	0.8
Property, plant and equipment	2.1
Operating lease assets	1.0
Intangible assets:	
Technology	17.9
Customer relationships	15.5
Trade name	1.5
Goodwill	6.4
Liabilities assumed	(13.9)
Total consideration transferred	$ 56.6

The preliminary fair value allocation included contingent consideration in the amount of $4.4 million, which represented the estimated fair value of future payments to the former shareholders of Rave based on achieving revenue and gross margin percentage targets for the period ended April 30, 2020. The Company expects to complete the fair value allocation during 2020. The amortization period for all intangible assets acquired in connection with Rave is ten years.

In addition to the Rave LLC acquisition noted above, in the year ended December 31, 2019, the Company completed various other acquisitions that collectively complemented the Company's existing product offerings or added aftermarket and software capabilities to the Company's existing businesses. The following table reflects the consideration transferred and the respective reportable segment for each of these acquisitions:

Name of Acquisition	Date Acquired	Segment	Consideration	Cash Consideration
Arxspan, LLC	March 4, 2019	BSI Life Science	$16.6	$14.4
Ampegon PPT GmbH	March 7, 2019	BEST	2.0	2.0
PMOD Technologies GmbH	July 1, 2019	BSI Life Science	8.9	7.9
Magnettech GmbH	October 2, 2019	BSI Life Science	9.3	9.3
BioVendor Instruments a.s.	November 1, 2019	BSI Life Science	1.3	1.3
			$38.1	$34.9

2018

In the years ended December 31, 2018 and 2017, the Company completed various acquisitions that collectively complemented the Company's existing product offerings or added aftermarket and software capabilities to the Company's existing businesses.

The following tables reflect the consideration transferred and the respective reportable segment for each of the 2018 acquisitions:

Segment	Anasys	JPK	Mestrelab	Hain	Alicona
	BSI NANO	BSI NANO	BSI Life Science	BSI Life Science	BSI NANO
Consideration Transferred:					
Cash paid	$27.0	$16.6	$ 11.2	$ 76.6	$55.4
Cash acquired	—	(0.2)	(1.9)	(3.4)	(1.4)
Contingent consideration	5.3	4.3	—	—	—
Total consideration transferred	$32.3	$20.7	$ 9.3	$ 73.2	$54.0
Allocation of Consideration Transferred:					
Inventories	$ 2.8	$ 3.0	$ —	$ 9.7	$10.1
Accounts receivable	0.8	1.8	2.4	5.9	3.7
Other current and non-current assets	1.1	0.7	0.8	1.5	2.0
Property, plant and equipment	—	—	0.1	2.3	1.5
Intangible assets:					
Technology	7.3	7.0	4.9	38.1	15.2
Customer relationship	8.0	7.5	4.7	38.6	19.8
Backlog	1.8	1.1	—	—	2.3
Trade name	0.6	0.6	0.5	3.9	1.9
Goodwill	16.6	8.0	12.5	42.3	19.3
Deferred taxes, net	(3.2)	(4.9)	(2.5)	(19.6)	(9.1)
Liabilities assumed	(3.5)	(4.1)	(1.3)	(15.0)	(6.5)
Assumed debt	—	—	—	(11.3)	(6.2)
Redeemable noncontrolling interest	—	—	—	(23.2)	—
Hybrid instrument liability	—	—	(12.8)	—	—
Total consideration transferred	$32.3	$20.7	$ 9.3	$ 73.2	$54.0

Anasys

On April 8, 2018, the Company acquired a 100% interest in Anasys Instruments Corp. (Anasys), a privately held company, for a purchase price of $27.0 million with the potential for additional consideration based on revenue achievements in 2019 and 2020. Anasys develops and manufactures nanoscale infrared spectroscopy and thermal measurement instruments. Anasys was integrated into the BSI NANO Segment.

The fair value allocation included contingent consideration in the amount of $5.3 million, which represented the estimated fair value of future payments to the former shareholders of Anasys based on Anasys achieving annual revenue targets for the years 2019 and 2020. The Company completed the fair value allocation in the fourth quarter of 2018. The amortization period for all intangible assets acquired in connection with Anasys is eight years, except for backlog which will be amortized over one year.

JPK

On July 11, 2018, the Company acquired a 100% interest in JPK Instruments AG (JPK), a privately held company, for a purchase price of Euro 14.2 million (approximately $16.6 million), with the potential for additional consideration based on various operational achievements throughout 2019 and 2020. JPK adds in-depth expertise in live-cell imaging, cellular mechanics, adhesion, and molecular force measurements, optical trapping, and biological stimulus-response characterization to Bruker's capabilities. JPK is located in Berlin, Germany and was integrated into the BSI NANO Segment.

The fair value allocation included contingent consideration in the amount of $4.3 million, which represented the estimated fair value of future payments to the former shareholders of JPK based on JPK achieving various operational achievements for the years 2019 and 2020. The Company completed the fair value allocation in the second quarter of 2019. The amortization period for all intangible assets acquired in connection with JPK is eight years, except for backlog which will be amortized over one year.

Mestrelab

On October 1, 2018, Bruker acquired a 24.9% interest in Mestrelab Research, S.L. (Mestrelab) for a purchase price of Euro 4.7 million (approximately $5.4 million) and acquired an additional 26.1% interest on December 4, 2018 for a purchase price of Euro 5.2 million (approximately $5.9 million). The Company has options that can be exercised after 2022 to acquire the remaining 49%. Mestrelab adds in-depth expertise to assist in advancing chemistry software that handles spectroscopic data and extracts and manages chemical information from a variety of analytical techniques, including, for example, NMR and mass spectrometry. Mestrelab is located in Santiago de Compostela, Spain and was integrated into the BSI Life Science Segment.

The Company completed the fair value allocation in the fourth quarter of 2019. The amortization period for all intangible assets acquired in connection with Mestrelab is nine years, except for customer relationships which will be amortized over ten years.

Concurrent with the acquisition, the Company entered into an agreement with the noncontrolling interest holders that provides the Company with the right to purchase, and the noncontrolling interest holders with the right to sell, the remaining 49% of Mestrelab for cash at a contractually defined redemption value. These rights (embedded derivative) are exercisable beginning in 2022 and can be accelerated, at a discounted redemption value, upon certain events related to post combination services. As the option is tied to continued employment, the Company classified the hybrid instrument (noncontrolling interest with an embedded derivative) as a long-term liability on the consolidated balance sheet. Subsequent to the acquisition, the carrying value of the hybrid instrument is remeasured to fair value with changes recorded to stock-based compensation expense in proportion to the requisite

service period vested. During the year ended December 31, 2019, the fair value remeasurement resulted in a $2.3 million stock compensation benefit.

Hain

On October 15, 2018, Bruker acquired an 80% interest in Hain Lifescience GmbH (Hain) for a purchase price of Euro 66 million (approximately $76.4 million) and has options to acquire the remaining 20% exercisable after 2022. Hain is an infectious disease specialist with a broad range of molecular diagnostics solutions for the detection of microbial and viral pathogens, as well as for molecular antibiotic resistance testing. Hain is located in Nehren, Germany and was integrated into the BSI Life Science Segment.

The Company completed the fair value allocation in the fourth quarter of 2019. The amortization period for all intangible assets acquired in connection with Hain is 15 years.

Concurrent with the acquisition, the Company entered into an agreement with the noncontrolling interest holders that provided the Company with the right to purchase, and the noncontrolling interest holders with the right to sell, the remaining 20% of Hain for cash at a contractually defined redemption value. These rights are accelerated in certain events. As the redemption is contingently redeemable at the option of the noncontrolling interest shareholders, the Company classifies the carrying amount of the redeemable noncontrolling interest in the mezzanine section on the consolidated balance sheet, which is presented above the equity section and below liabilities. The agreement establishes a redemption price floor of Euro 16.7 million. Beginning in 2022, the redemption price is capped at Euro 46 million and increases by Euro 6 million each year thereafter if unexercised by either party.

Subsequent to the acquisition, the redeemable noncontrolling interest is measured at the greater of the amount that would be paid if settlement occurred as of the balance sheet date based on the contractually defined redemption value and its carrying amount adjusted for net income (loss) attributable to the noncontrolling interest. Adjustments to the carrying value of the redeemable noncontrolling interest are recorded through retained earnings. During the year ended December 31, 2019, there were no adjustments to the carrying value of the redeemable noncontrolling interest.

Alicona

On December 17, 2018, Bruker acquired a 100% interest in Agapetus GmbH (Alicona) for a purchase price of Euro 48.9 million (approximately $55.4 million). Alicona is a provider of optical-based metrology products. Alicona is located in Graz, Austria and was integrated into the BSI NANO Segment.

The Company completed the fair value allocation in the fourth quarter of 2019. The amortization period for the intangible assets acquired in connection with Alicona is 8 years for the customer relationships and technology intangible assets, 12 years for the trade name intangible asset and 1 year for the backlog intangible asset.

Other Acquisitions

In addition to the acquisitions noted above, in the year ended December 31, 2018, the Company completed various other acquisitions that collectively complemented the Company's existing product offerings or added aftermarket and software capabilities to the Company's existing businesses. The total consideration transferred for the additional acquisitions was $12.7 million.

2017

The following tables reflect the consideration transferred and the respective reportable segment for each of the 2017 acquisitions:

Name of Acquisition	Date Acquired	Segment	Consideration	Cash Consideration
InVivo Biotech Svs GmbH. . . .	January 2, 2017	BSI Life Science	$ 9.1	$ 9.1
Hysitron, Incorporated	January 23, 2017	BSI NANO	28.8	27.2
Luxendo GmbH	May 5, 2017	BSI NANO	21.9	18.8
XGLab S.r.l.	August 1, 2017	BSI NANO	5.5	5.5
Other	Various	BSI Life Science	6.0	5.7
			$71.3	$66.3

Luxendo

On May 5, 2017, the Company acquired 100% of the shares of Luxendo GmbH (Luxendo), a privately held spin-off of the European Molecular Biology Laboratory, for a purchase price of Euro 17 million (approximately $18.8 million), with the potential for additional consideration based on revenue achievements in 2018 through 2021. Luxendo is a developer and manufacturer of proprietary light-sheet fluorescence microscopy instruments. Luxendo is located in Heidelberg, Germany and was integrated into the BSI NANO Segment.

The fair value allocation included contingent consideration in the amount of $3.1 million, which represented the estimated fair value of future payments to the former shareholders of Luxendo based on achieving annual revenue targets for the years 2018 through 2021. The Company completed the fair value allocation in the third quarter of 2017. The amortization period for intangible assets acquired in connection with the acquisition of Luxendo is 10 years for trade names and 7 years for technology.

Hysitron

On January 23, 2017, the Company acquired 100% of the shares of Hysitron, Incorporated (Hysitron). The acquisition adds Hysitron's nanomechanical testing instruments to the Company's existing portfolio of atomic force microscopes, surface profilometers, and tribology and mechanical testing systems. Hysitron is included in BSI NANO Segment.

The fair value allocation included contingent consideration in the amount of $1.6 million, which represented the estimated fair value of future payments to the former shareholders of Hysitron based on achieving annual revenue targets for the years 2017 through 2018. The Company paid $1.1 million in contingent payments related to this acquisition. The Company completed the fair value allocation in the second quarter of 2017. The maximum potential future payments related to the contingent consideration is $10 million. The amortization period for intangible assets acquired in connection with Hysitron is 7 years for customer relationships, trademarks and other intangibles and 5 years for existing technology.

Note 5—Fair Value of Financial Instruments

The Company measures the following financial assets and liabilities at fair value on a recurring basis. The following tables set forth the Company's financial instruments and presents them within the

fair value hierarchy using the lowest level of input that is significant to the fair value measurement at December 31, 2019 and 2018 (dollars in millions):

December 31, 2019	Total	Quoted Prices in Active Markets Available (Level 1)	Significant Other Observable Inputs (Level 2)	Significant Unobservable Inputs (Level 3)
Assets:				
Interest rate and cross currency swap agreements	$10.1	$—	$10.1	$ —
Foreign exchange contracts	0.9	—	0.9	—
Embedded derivatives in purchase and delivery contracts	0.1	—	0.1	—
Fixed price commodity contracts	0.3	—	0.3	—
Total assets recorded at fair value	$11.4	$—	$11.4	$ —
Liabilities:				
Contingent consideration	$15.8	$—	$ —	$15.8
Hybrid instrument liability	10.6	—	—	10.6
Interest rate and cross currency swap agreements	16.9	—	16.9	—
Foreign exchange contracts	0.4	—	0.4	—
Embedded derivatives in purchase and delivery contracts	0.6	—	0.6	—
Total liabilities recorded at fair value	$44.3	$—	$17.9	$26.4

December 31, 2018	Total	Quoted Prices in Active Markets Available (Level 1)	Significant Other Observable Inputs (Level 2)	Significant Unobservable Inputs (Level 3)
Assets:				
Foreign exchange contracts	$ 0.2	$—	$0.2	$ —
Embedded derivatives in purchase and delivery contracts	—	—	—	—
Fixed price commodity contracts	0.4	—	0.4	—
Total assets recorded at fair value	$ 0.6	$—	$0.6	$ —
Liabilities:				
Contingent consideration	$15.1	$—	$ —	$15.1
Hybrid instrument liability	12.9	—	—	12.9
Foreign exchange contracts	2.8	—	2.8	—
Embedded derivatives in purchase and delivery contracts	0.9	—	0.9	—
Fixed price commodity contracts	0.5	—	0.5	—
Total liabilities recorded at fair value	$32.2	$—	$4.2	$28.0

Derivative financial instruments are classified within level 2 because there is not an active market for each derivative contract. However, the inputs used to calculate the value of the instruments are obtained from active markets.

The fair value of the long-term fixed interest rate debt, which has been classified as Level 2, was $517.4 million and $228.8 million at December 31, 2019 and 2018, respectively, based on market and observable sources with similar maturity dates.

The Company measures certain assets and liabilities at fair value with changes in fair value recognized in earnings.

Excluded from the table above are restricted cash and short-term investments related to time and call deposits. The Company has a program to enter into time deposits with varying maturity dates ranging from one to twelve months, as well as call deposits for which the Company has the ability to redeem the invested amounts over a period of 95 days. The Company has classified these investments within cash and cash equivalents or short-term investments within the consolidated balance sheets based on call and maturity dates and these are not subject to fair value measurement. The following tables set forth the balances of restricted cash and short-term investments as of December 31, 2019 and 2018 (dollars in millions):

	2019	2018
Restricted Cash	$3.6	$3.9
Cash Equivalents	9.0	—
Short-term Investments	6.6	—

On a quarterly basis, the Company reviews its short-term investments to determine if there have been any events that could create an impairment. None were noted for the years ended December 31, 2019 and 2018.

As part of certain acquisitions, the Company recorded contingent consideration liabilities that have been classified as Level 3 in the fair value hierarchy. The contingent consideration represents the estimated fair value of future payments to the former shareholders of certain acquired companies based on the applicable acquired company achieving annual revenue and gross margin targets in certain years as specified in the relevant purchase and sale agreement. The Company initially values the contingent considerations by using a Monte Carlo simulation or an income approach method. The Monte Carlo method models future revenue and costs of goods sold projections and discounts the average results to present value. The income approach method involves calculating the earnout payment based on the forecasted cash flows, adjusting the future earnout payment for the risk of reaching the projected financials, and then discounting the future payments to present value by the counterparty risk. The counterparty risk considers the risk of the buyer having the cash to make the earnout payments and is commensurate with a cost of debt over an appropriate term.

The following table sets forth the changes in contingent consideration liabilities for the years ended December 31, 2019 and 2018 (dollars in millions):

Balance at December 31, 2017	$12.7
Current period additions	9.9
Current period adjustments	(1.9)
Current period settlements	(5.5)
Foreign currency effect	(0.1)
Balance at December 31, 2018	15.1
Current period additions	5.4
Current period adjustments	2.3
Current period settlements	(6.7)
Foreign currency effect	(0.3)
Balance at December 31, 2019	$15.8

As part of the Mestrelab acquisition, the Company entered into an agreement with the noncontrolling interest holders that provides the Company with the right to purchase, and the noncontrolling interest holders with the right to sell, the remaining 49% of Mestrelab for cash at a contractually defined redemption value. These rights (an embedded derivative) are exercisable beginning in 2022 and can be accelerated, at a discounted redemption value, upon certain events related to post combination services. As the option is tied to continued employment, the Company

classified the hybrid instrument (noncontrolling interest with an embedded derivative) as a long-term liability on the consolidated balance sheet. Subsequent to the acquisition, the carrying value of the hybrid instrument is remeasured to fair value with changes recorded to stock-based compensation expense in proportion to the requisite service period vested. The hybrid instrument is classified as Level 3 in the fair value hierarchy.

The following table sets forth the changes in hybrid instrument liability for the year ended December 31, 2019 and 2018 (dollars in millions):

Balance at December 31, 2017	$ —
Current period additions	12.9
Balance at December 31, 2018	12.9
Current period additions	(2.3)
Balance at December 31, 2019	$10.6

Note 6—Accounts Receivable

The following is a summary of accounts receivable, net at December 31, (dollars in millions):

	2019	2018
Gross accounts receivable	$365.6	$361.0
Allowance for doubtful accounts	(3.4)	(3.8)
Accounts receivable, net	$362.2	$357.2

The allowance for doubtful accounts is based on a number of factors, including an evaluation of customer credit worthiness, the age of the outstanding receivable, economic trends and historical experience. Provisions for doubtful accounts are recorded in selling, general and administrative expenses in the accompanying consolidated statements of income and comprehensive income.

The following is a summary of the activity in the Company's allowance for doubtful accounts at December 31, (dollars in millions):

	Balance at Beginning of Period	Additions Charged to Expense	Deductions Amounts Written Off	Foreign Currency Impact	Balance at End of Period
2019	$3.8	$1.3	$(1.9)	$0.2	$3.4
2018	4.7	0.7	(1.7)	0.1	3.8
2017	7.9	0.5	(4.4)	0.7	4.7

Note 7—Inventories

Inventories consisted of the following at December 31, (dollars in millions):

	2019	2018
Raw materials	$188.8	$164.5
Work-in-process	206.4	182.4
Finished goods	104.5	94.8
Demonstration units	77.5	67.9
Inventories	$577.2	$509.6

Finished goods include in-transit systems that have been shipped to the Company's customers but not yet installed and accepted by the customer. As of December 31, 2019 and 2018, inventory-in-transit was $36.0 million and $38.3 million, respectively.

Note 8—Property, Plant and Equipment, Net

The following is a summary of property, plant and equipment, net by major asset class at December 31, (dollars in millions):

	2019	2018
Land	$ 26.5	$ 26.8
Building and leasehold improvements	305.2	299.2
Machinery, equipment, software and furniture and fixtures	400.0	366.4
	731.7	692.4
Less accumulated depreciation and amortization	(425.6)	(421.8)
Property, plant and equipment, net	$ 306.1	$ 270.6

Depreciation expense, which includes the amortization of leasehold improvements, for the years ended December 31, 2019, 2018 and 2017 was $37.3 million, $36.0 million and $34.3 million, respectively.

During the years ended December 31, 2019 and 2017, the Company recorded impairment charges of $0.5 million and $1.1 million, respectively, representing the write down to fair value of certain property, plant and equipment, net related to restructuring and outsourcing activities undertaken during the respective years. These impairment charges are recorded within other charges, net in the accompanying consolidated statements of income and comprehensive income. Please see Note 19—other charges, net, for additional details on the restructuring activities. There were no impairment charges in the year ended December 31, 2018.

Note 9—Goodwill and Intangible Assets

Goodwill

The following table sets forth the changes in the carrying amount of goodwill by segment for the years ended December 31, 2019, 2018 and 2017 (dollars in millions):

	BSI Life Science	BSI NANO	BEST	Total
Balance at December 31, 2016	$ 4.5	$126.1	$ —	$130.6
Current period additions/adjustments	3.7	30.1	—	33.8
Foreign currency impact	0.7	4.7	—	5.4
Balance at December 31, 2017	8.9	160.9	—	169.8
Current period additions/adjustments	64.1	44.9	—	109.0
Foreign currency impact	(1.0)	(2.1)	—	(3.1)
Balance at December 31, 2018	72.0	203.7	—	275.7
Current period additions/adjustments	13.1	6.3	0.3	19.7
Foreign currency impact	(0.9)	(1.5)	—	(2.4)
Balance at December 31, 2019	$84.2	$208.5	$0.3	$293.0

The Company performed its annual impairment evaluation using both a quantitative and qualitative approach at December 31, 2019, a quantitative approach at December 31, 2018 and a qualitative approach at December 31, 2017 and concluded it was more likely than not that goodwill has not been impaired. Based on the most recent quantitative analysis the fair values of each of the Company's reporting units was greater than their carrying amounts and, therefore, no impairment was required.

The Company has recorded $3.1 million in the cumulative impairment of goodwill.

Intangible Assets

The following is a summary of intangible assets at December 31, 2019 and 2018 (dollars in millions):

	2019			2018		
	Gross Carrying Amount	Accumulated Amortization	Net Carrying Amount	Gross Carrying Amount	Accumulated Amortization	Net Carrying Amount
Existing technology and related patents	$300.9	$(182.4)	$118.5	$272.6	$(160.5)	$112.1
Customer relationships	134.7	(30.9)	103.8	112.0	(18.1)	93.9
Non compete conracts	1.8	(1.8)	—	1.8	(1.8)	—
Trade names	13.7	(2.9)	10.8	11.6	(1.6)	10.0
Other	5.5	(5.4)	0.1	5.1	(2.4)	2.7
Intangible assets	$456.6	$(223.4)	$233.2	$403.1	$(184.4)	$218.7

For the years ended December 31, 2019, 2018 and 2017, the Company recorded amortization expense of approximately $38.3 million, $28.9 million and $29.6 million, respectively, in the consolidated statements of income and comprehensive income. During the year ended December 31, 2019, the Company recorded an impairment charge of $1.2 million representing the impairment of the technology within the BSI Life Science Segment. During the year ended December 31, 2018, the Company recorded an impairment charge of $0.6 million representing the impairment of the in-process research and development within the BSI Life Science Segment.

The estimated future amortization expense related to amortizable intangible assets at December 31, 2019 is as follows (dollars in millions):

2020	$ 35.0
2021	32.5
2022	27.3
2023	24.7
2024	22.4
Thereafter	91.3
Total	$233.2

Note 10—Other Current Liabilities

The following is a summary of other current liabilities at December 31, 2019 and 2018 (dollars in millions):

	2019	2018
Deferred revenue	$102.6	$ 96.3
Accrued compensation	105.7	104.2
Accrued warranty	21.1	19.7
Contingent consideration	12.6	7.1
Income taxes payable	52.4	36.8
Other taxes payable	17.5	23.4
Derivative liabilities	1.2	4.2
Operating leases	20.6	—
Other accrued expenses	55.1	60.2
Other current liabilities	$388.8	$351.9

The following table sets forth the changes in accrued warranty for the years ended December 31, 2019, 2018 and 2017 (dollars in millions):

Balance at December 31, 2016	$ 18.7
Accruals for warranties issued during the year	17.0
Settlements of warranty claims	(17.0)
Foreign currency impact	1.9
Balance at December 31, 2017	20.6
Accruals for warranties issued during the year	21.3
Settlements of warranty claims	(21.5)
Foreign currency impact	(0.7)
Balance at December 31, 2018	19.7
Accruals for warranties issued during the year	24.5
Settlements of warranty claims	(22.9)
Foreign currency impact	(0.2)
Balance at December 31, 2019	$ 21.1

Note 11—Debt

The Company's debt obligations consist of the following as of December 31, 2019 and 2018 (dollars in millions):

	2019	2018
US Dollar revolving loan under the 2015 Credit Agreement	$ —	$111.6
US Dollar notes under the 2012 Note Purchase Agreement	205.0	220.0
CHF Dollar notes under the 2019 Note Purchase Agreement	306.8	—
US Dollar notes under the 2019 Term Loan	300.0	—
Unamortized debt issuance costs	(2.6)	(0.5)
Other revolving loans	—	2.9
Capital lease obligations and other loans	4.1	7.1
Total debt	813.3	341.1
Current portion of long-term debt	(0.5)	(18.5)
Total long-term debt, less current portion	$812.8	$322.6

There was no amount outstanding under the 2019 Revolving Credit Agreement as of December 31, 2019.

On December 11, 2019, the Company entered into (1) a new revolving credit agreement to establish a new revolving credit facility in the aggregate principal amount of $600 million; (2) a term loan agreement to establish a new term loan facility in the aggregate principal amount of $300 million; and (3) a note purchase agreement to issue and sell CHF 297 million aggregate principal amount of 1.01% senior notes due December 11, 2029.

The new revolving credit agreement replaces the Company's $500 million five-year revolving credit agreement established on October 27, 2015, which was terminated on December 11, 2019. The existing $105 million 4.31% Series 2012A Senior Notes, Tranche C, due January 18, 2022, and the existing $100 million 4.46% Series 2012A Senior Notes, Tranche D, due January 18, 2024, which the Company issued pursuant to a note purchase agreement dated January 18, 2012, remain in full force and effect.

Each of the revolving credit agreements, term loan agreement and note purchase agreements are described below.

2019 Revolving Credit Agreement

On December 11, 2019, the Company entered into a new credit agreement, referred to as the 2019 Revolving Credit Agreement. The 2019 Revolving Credit Agreement provides for a five-year revolving credit facility in the U.S. Dollar equivalent amount of $600 million, comprised of sub-facilities for revolving loans, swing-line loans, letters of credit and foreign borrowings. The 2019 Revolving Credit Agreement also provides for an uncommitted incremental facility whereby, under certain circumstances, the Company may, at its option, increase the amount of the revolving facility or incur term loans in an aggregate amount not to exceed $250 million. Loans under the 2019 Revolving Credit Agreement will be repayable in full at maturity, and may also be prepaid at the Company's option in whole or in part without premium or penalty. Amounts borrowed under the 2019 Revolving Credit Agreement may be repaid and reborrowed from time to time prior to the maturity date. The obligations under the 2019 Revolving Credit Agreement are unsecured and are fully and unconditionally guaranteed by the Company and certain of its subsidiaries.

Borrowings under the 2019 Revolving Credit Agreement bear interest at a rate equal to, at the Company's option, (a) the London Interbank Offered Rate (LIBOR) applicable to the relevant currency, plus a margin ranging from 1.000% to 1.500%, based on the Company's leverage ratio, or

(b) the highest of (i) the federal funds effective rate plus ½ of 1%, (ii) the prime rate announced by Bank of America, N.A., and (iii) LIBOR, as adjusted, plus 1%, plus, in each case, a margin rate ranging from 0.100% to 0.500%, based on the Company's leverage ratio. The Company has also agreed to pay a quarterly facility fee based on the aggregate unused amount available under the 2019 Revolving Credit Agreement ranging from 0.100% to 0.200%, based on the Company's leverage ratio.

The 2019 Revolving Credit Agreement includes affirmative, negative and financial covenants and events of default customary for financings of this type. The negative covenants include, among others, restrictions on liens, indebtedness of the Company and its subsidiaries, asset and equity sales, dividends, and transactions with affiliates. The financial covenants include maximum leverage ratio and minimum interest coverage ratios of the Company, specifically, the Company's leverage ratio cannot exceed 3.5 and the interest coverage ratio cannot be less than 2.5. The events of default include, among others, payment defaults, defaults in the performance of affirmative and negative covenants, the inaccuracy of representations and warranties, bankruptcy and insolvency related events, certain ERISA events, material judgments, and the occurrence of a change of control.

The following is a summary of the maximum commitments and the net amounts available to the Company under the 2019 Revolving Credit Agreement and other lines of credit with various financial institutions located primarily in Germany and Switzerland that are unsecured and typically due upon demand with interest payable monthly, at December 31, 2019 (in millions):

	Total Amount Committed by Lenders	Outstanding Borrowings	Outstanding Letters of Credit	Total Amount Available
2019 Credit Agreement	$600.0	$—	$ 0.2	$599.8
Other lines of credit	251.8	—	143.0	108.8
Total revolving loans	$851.8	$—	$143.2	$708.6

2015 Revolving Credit Agreement

On October 27, 2015, the Company entered into a revolving credit agreement, referred to as the 2015 Credit Agreement. The 2015 Credit Agreement provided a maximum commitment on the Company's revolving credit line of $500 million and a maturity date of October 2020. The 2015 Revolving Credit Agreement was terminated in December 2019. Borrowings under the revolving credit line of the 2015 Credit Agreement accrued interest, at the Company's option, at either (a) the greatest of (i) the prime rate, (ii) the federal funds rate plus 0.50% and (iii) adjusted LIBOR plus 1.00%, plus margins ranging from 0.00% to 0.30% or (b) LIBOR, plus margins ranging from 0.90% to 1.30%. There was also a facility fee ranging from 0.10% to 0.20%.

Borrowings under the 2015 Credit Agreement were guaranteed by certain of the Company's material subsidiaries. The 2015 Credit Agreement also required the Company to maintain certain financial ratios related to maximum leverage and minimum interest coverage. In addition to the financial ratios, the 2015 Credit Agreement contained negative covenants, including among others, restrictions on liens, indebtedness of the Company and its subsidiaries, asset sales, dividends and transactions with affiliates.

2019 Term Loan Agreement

On December 11, 2019, the Company, together with certain of its subsidiaries, as borrowers, entered into a term loan agreement, referred to as Term Loan Agreement with a bank consortium. The Term Loan Agreement provides for a $300 million seven-year term loan facility subject to terms and conditions substantially consistent with those provisions contained in the 2019 Revolving Credit Agreement. Loans under the Term Loan Agreement will be repayable in full at maturity, subject to

scheduled amortization beginning in 2022, and may also be prepaid at the Company's option in whole or in part without premium or penalty. The obligations under the Term Loan Agreement are unsecured and are fully and unconditionally guaranteed by certain of the Company's subsidiaries.

Amounts outstanding under the Term Loan Agreement bear interest at a rate equal to, at the Company's option, (a) the US Dollar London Interbank Offered Rate (USD LIBOR), plus a margin ranging from 1.000% to 1.500%, based on the Company's leverage ratio, or (b) the highest of (i) the federal funds effective rate plus ½ of 1%, (ii) the prime rate announced by Bank of America, N.A., and (iii) USD LIBOR, as adjusted, plus 1%, plus a margin ranging from 0.100% to 0.500%, based on the Company's leverage ratio.

The other terms of the Term Loan Agreement are substantially similar to the terms of the 2019 Revolving Credit Agreement, including representations and warranties, affirmative, negative and financial covenants, and events of default.

2019 Note Purchase Agreement

On December 11, 2019, the Company entered into a note purchase agreement, referred to as the 2019 Note Purchase Agreement, with a group of institutional accredited investors. Pursuant to the 2019 Note Purchase Agreement, the Company issued and sold CHF 297 million aggregate principal amount of 1.01% senior notes due December 11, 2029, referred to as the 2019 Senior Notes. The obligations under the Note Purchase Agreement are unsecured and are fully and unconditionally guaranteed by certain of the Company's subsidiaries.

Interest on the 2019 Senior Notes is payable semi-annually on June 11 and December 11 of each year, commencing June 11, 2020. The Senior Notes are unsecured obligations of the Company and are fully and unconditionally guaranteed by certain of the Company's subsidiaries. The Company may prepay some or all of the Senior Notes at any time in an amount not less than 10% of the aggregate principal amount of the Senior Notes then outstanding at a price equal to the sum of (a) the principal amount to be prepaid, plus accrued and unpaid interest, (b) any applicable "make-whole" amount, and (c) certain other fees and expenses. In the event of a change in control (as defined in the 2019 Note Purchase Agreement) of the Company, the Company may be required to prepay the Senior Notes at a price equal to 100% of the principal amount thereof, plus accrued and unpaid interest and certain other fees and expenses.

The 2019 Note Purchase Agreement contains customary affirmative and negative covenants, including, among others, restrictions on the Company's ability to incur liens, transfer or sell equity or assets, engage in certain mergers and consolidations, enter into transactions with affiliates, and engage or permit any subsidiary to engage in certain lines of business. The 2019 Note Purchase Agreement also includes customary representations and warranties and events of default.

Additionally, so long as any 2019 Senior Notes are outstanding, the Company may not permit (i) its leverage ratio (as determined pursuant to the 2019 Note Purchase Agreement) as of the end of any fiscal quarter to exceed 3.50 to 1.00 unless a material acquisition causes an adjusted leverage ratio to apply pursuant to the 2019 Note Purchase Agreement, (ii) its interest coverage ratio (as determined pursuant to the 2019 Note Purchase Agreement) as of the end of any fiscal quarter for any period of four consecutive fiscal quarters to be less than 2.50 to 1.00, or (iii) priority Debt at any time to exceed 15% of consolidated total assets (as determined pursuant to the 2019 Note Purchase Agreement).

2012 Note Purchase Agreement

In January 2012, the Company entered into a note purchase agreement, referred to as the 2012 Note Purchase Agreement, with a group of accredited institutional investors. Pursuant to the 2012 Note

Purchase Agreement, the Company issued and sold $240.0 million of senior notes, referred to as the 2012 Senior Notes, which consist of the following:

- $20 million 3.16% Series 2012A Senior Notes, Tranche A, due January 18, 2017;
- $15 million 3.74% Series 2012A Senior Notes, Tranche B, due January 18, 2019;
- $105 million 4.31% Series 2012A Senior Notes, Tranche C, due January 18, 2022; and
- $100 million 4.46% Series 2012A Senior Notes, Tranche D, due January 18, 2024.

On January 18, 2017, the outstanding $20.0 million principal amount of Tranche A of the 2012 Senior Notes was repaid in accordance with the terms of the 2012 Note Purchase Agreement. On January 18, 2019, the outstanding $15.0 million principal amount of Tranche B of the 2012 Senior Notes was repaid in accordance with the terms of the 2012 Note Purchase Agreement.

Under the terms of the 2012 Note Purchase Agreement, interest is payable semi-annually on January 18 and July 18 of each year. The 2012 Senior Notes are unsecured obligations of the Company and are fully and unconditionally guaranteed by certain of the Company's direct and indirect subsidiaries. The 2012 Senior Notes rank pari passu in right of repayment with the Company's other senior unsecured indebtedness. The Company may prepay some or all of the 2012 Senior Notes at any time in an amount not less than 10% of the original aggregate principal amount of the 2012 Senior Notes to be prepaid, at a price equal to the sum of (a) 100% of the principal amount thereof, plus accrued and unpaid interest, and (b) the applicable make-whole amount, upon not less than 30 and no more than 60 days' written notice to the holders of the 2012 Senior Notes. In the event of a change in control of the Company, as defined in the Note Purchase Agreement, the Company may be required to prepay the Notes at a price equal to 100% of the principal amount thereof, plus accrued and unpaid interest.

The 2012 Note Purchase Agreement contains affirmative covenants, including, without limitation, maintenance of corporate existence, compliance with laws, maintenance of insurance and properties, payment of taxes, addition of subsidiary guarantors and furnishing notices and other information. The 2012 Note Purchase Agreement also contains certain restrictive covenants that restrict the Company's ability to, among other things, incur liens, transfer or sell assets, engage in certain mergers and consolidations and enter into transactions with affiliates. The 2012 Note Purchase Agreement also includes customary representations and warranties and events of default. In the case of an event of default arising from specified events of bankruptcy or insolvency, all outstanding 2012 Senior Notes will become due and payable immediately without further action or notice. In the case of payment events of defaults, any holder of 2012 Senior Notes affected thereby may declare all 2012 Senior Notes held by it due and payable immediately. In the case of any other event of default, a majority of the holders of the 2012 Senior Notes may declare all the 2012 Senior Notes to be due and payable immediately. Pursuant to the 2012 Note Purchase Agreement, so long as any 2012 Senior Notes are outstanding the Company will not permit (i) its leverage ratio, as determined pursuant to the 2012 Note Purchase Agreement, as of the end of any fiscal quarter to exceed 3.50 to 1.00, (ii) its interest coverage ratio as determined pursuant to the 2012 Note Purchase Agreement as of the end of any fiscal quarter for any period of four consecutive fiscal quarters to be less than 2.50 to 1 or (iii) priority debt at any time to exceed 25% of consolidated net worth, as determined pursuant to the 2012 Note Purchase Agreement.

As of December 31, 2019, the Company was in compliance with the financial covenants of all debt agreements.

Annual maturities of debt outstanding, less deferred financing cost amortization, at December 31, 2019 are as follows (dollars in millions):

2020	$ 0.5
2021	1.7
2022	111.1
2023	15.4
2024	115.0
Thereafter	569.6
Total	$813.3

As of December 31, 2019, the Company has entered into several cross-currency and interest rate swap agreements with a notional value of $150.0 million of U.S. to Swiss Franc and a notional value of $355.0 million of U.S. to Euro to hedge the variability in the movement of foreign currency exchange rates on portions of our Euro and Swiss Franc denominated net asset investments. These agreements qualify for hedge accounting and accordingly the change in fair value of the derivative are recorded in other comprehensive income as part of foreign currency translation adjustments and remain in accumulated comprehensive income (loss) attributable to Bruker Corporation in shareholders' equity until the sale or substantial liquidation of the foreign operation. The difference between the interest rate received and paid under the interest rate and cross-currency swap agreements is recorded in interest and other income (expenses) in the consolidated statements of income and comprehensive income. As a result of entering into these agreements, the Company has lowered net interest expense by $0.6 million during 2019. The gains (losses) related to hedges of net asset investments in international operations that were recorded within the cumulative translational adjustment section of other comprehensive income were $6.8 million for the year ended December 31, 2019.

Interest expense for the years ended December 31, 2019, 2018 and 2017, was $16.0 million, $12.6 million and $15.4 million, respectively.

Note 12—Derivative Instruments and Hedging Activities

Interest Rate Risks

The Company's exposure to interest rate risk relates primarily to outstanding variable rate debt and adverse movements in the related market rates. Typically, the most significant component of the Company's interest rate risk relates to amounts outstanding under the 2019 Credit Agreement and the 2019 Term Loan.

Foreign Exchange Rate Risk Management

The Company generates a substantial portion of its revenues and expenses in international markets, principally Germany and other countries in the European Union and Switzerland, which subjects its operations to the exposure of exchange rate fluctuations. The impact of currency exchange rate movement can be positive or negative in any period. The Company periodically enters into foreign currency contracts in order to minimize the volatility that fluctuations in currency translation have on its monetary transactions. Under these arrangements, the Company typically agrees to purchase a fixed amount of a foreign currency in exchange for a fixed amount of U.S. Dollars or other currencies on specified dates with maturities of less than twelve months, with some agreements extending to longer periods. These transactions do not qualify for hedge accounting and, accordingly, the instrument is recorded at fair value with the corresponding gains and losses recorded in the consolidated statements of income and comprehensive income. The Company had the following notional amounts outstanding

under foreign exchange contracts and cross-currency interest rate swap agreements at December 31, (in millions):

Buy	Notional Amount in Buy Currency	Sell	Maturity	Notional Amount in U.S. Dollars	Fair Value of Assets	Fair Value of Liabilities
December 31, 2019:						
Forward Currency Contracts (1):						
Euro	18.0	U.S. Dollars	January 2020	$ 20.1	$0.1	$ —
Swiss Francs	7.8	U.S. Dollars	January 2020	7.9	0.2	—
Swiss Francs	11.0	Euro	January 2020	11.3	0.1	—
Swedish Krona	26.9	Swiss Francs	January 2020	2.8	0.1	—
Swiss Francs	9.4	Japanese Yen	January 2020	9.5	0.2	—
Singapore Dollar	4.2	U.S. Dollars	January 2020	3.1	—	—
Singapore Dollar	2.7	Euro	January 2020	2.0	—	—
Great Britain Pound	7.7	Euro	January 2020	10.0	0.2	—
Euro	6.4	Great Britain Pound	February 2020 to January 2021	7.7	—	0.4
Cross-Currency and Interest Rate Swap Agreements (2):						
U.S. Dollars	105.0	Euro	January 2022	105.0	—	1.2
U.S. Dollars	100.0	Euro	January 2024	100.0	—	1.3
U.S. Dollars	150.0	Euro	December 2024	150.0	—	1.9
U.S. Dollars	150.0	Swiss Francs	December 2026	150.0	—	2.4
				$579.4	$0.9	$7.2
December 31, 2018:						
Forward Currency Contracts (1):						
Euro	25.4	U.S. Dollars	January 2019	$ 31.1	$ —	$2.1
U.S. Dollars	8.5	Euro	January 2019	8.6	—	0.1
Swiss Francs	11.1	U.S. Dollars	January 2019	11.3	—	—
U.S. Dollars	2.1	Swiss Francs	January 2019	2.1	—	—
Swiss Francs	10.4	Japanese Yen	April 2019	10.8	—	0.2
U.S. Dollars	1.5	Canadian Dollars	January 2019	1.5	—	—
Singapore Dollar	4.3	U.S. Dollars	January 2019	3.1	—	—
Chinese Renminbi	41.1	U.S. Dollars	January 2019	5.9	0.1	—
Great Britain Pound	15.4	Euro	January 2019	20.0	—	0.4
Euro	6.9	Great Britain Pound	May 2019 to October 2020	8.0	0.1	—
				$102.4	$0.2	$2.8

(1) Derivatives not designated as accounting hedges.

(2) Derivatives designated as accounting hedges.

In addition, the Company periodically enters into purchase and sales contracts denominated in currencies other than the functional currency of the parties to the transaction. The Company accounts for these transactions separately valuing the "embedded derivative" component of these contracts. The contracts, denominated in currencies other than the functional currency of the transacting parties, amounted to $12.3 million for the delivery of products and $6.1 million for the purchase of products at December 31, 2019 and $113.5 million for the delivery of products and $6.0 million for the purchase of products at December 31, 2018. These purchase and sale contracts are not designated as accounting hedges. The changes in the fair value of these embedded derivatives are recorded in interest and other income (expense), net in the consolidated statements of income and comprehensive income.

Commodity Price Risk Management

The Company has an arrangement with a customer under which it has a firm commitment to deliver copper based superconductors at a fixed price. In order to minimize the volatility that fluctuations in the price of copper have on the Company's sales of these commodities, the Company enters into commodity hedge contracts. These commodity contracts are not designated as accounting hedges. At December 31, 2019 and 2018, the Company has fixed price commodity contracts with notional amounts aggregating $5.6 million and $6.8 million, respectively. The changes in the fair value of these commodity contracts are recorded in interest and other income (expense), net in the consolidated statements of income and comprehensive income.

The fair value of the derivative instruments described above were recorded in the consolidated balance sheets for the years ended December 31, 2019 and 2018 as follows (dollars in millions):

	Balance Sheet Location	2019	2018
Derivative assets:			
Interest rate and cross currency swap agreements	Other current assets	$10.1	$ —
Foreign exchange contracts	Other current assets	0.9	0.2
Embedded derivatives in purchase and delivery contracts	Other current assets	0.1	0.2
Fixed price commodity contracts	Other current assets	0.3	—
Embedded derivatives in purchase and delivery contracts	Other long-term assets	—	0.2
Derivative liabilities:			
Foreign exchange contracts	Other current liabilities	$ 0.4	$2.8
Embedded derivatives in purchase and delivery contracts	Other current liabilities	0.6	0.9
Fixed price commodity contracts	Other current liabilities	—	0.5
Interest rate and cross currency swap agreements	Other long-term liabilities	16.9	—

The impact on net income of unrealized gains and losses resulting from changes in the fair value of derivative instruments for the years ending December 31 are as follows (dollars in millions) and are recorded within interest and other income (expense), net in the consolidated statements of income and comprehensive income:

	2019	2018	2017
Foreign exchange contracts	$3.0	$(7.0)	$ 5.8
Embedded derivatives in purchase and delivery contracts	—	1.5	(5.7)
Fixed price commodity contracts	0.8	(1.3)	0.6
Cross-currency interest rate swap agreements	0.6	—	—
Income (expense), net	$4.4	$(6.8)	$ 0.7

Note 13—Income Taxes

The domestic and foreign components of income before taxes are as follows for the years ended December 31, (dollars in millions):

	2019	2018	2017
Domestic	$ 3.8	$(15.4)	$(14.0)
Foreign	276.6	260.1	211.8
	$280.4	$244.7	$197.8

The components of the income tax provision are as follows for the years ended December 31, (dollars in millions):

	2019	2018	2017
Current income tax expense:			
Federal	$ 0.6	$ 10.1	$ 32.2
State	2.2	1.0	2.0
Foreign	82.1	61.8	42.7
Total current income tax expense	84.9	72.9	76.9
Deferred income tax (benefit) expense:			
Federal	(2.2)	(15.4)	35.5
State	0.3	(0.3)	(0.4)
Foreign	(0.6)	6.5	5.5
Total deferred income tax (benefit) expense	(2.5)	(9.2)	40.6
Income tax provision	$82.4	$ 63.7	$117.5

The income tax provision differs from the tax provision computed at the U.S. federal statutory rate due to the following significant components for the years ended December 31:

	2019	2018	2017
Statutory tax rate	21.0%	21.0%	35.0%
Foreign tax rate differential	5.9	4.6	(11.7)
Permanent differences	1.1	0.7	(0.5)
Mandatory Repatriation	(0.6)	1.7	27.0
Tax contingencies	1.4	0.9	(1.3)
Change in tax rates	0.3	1.1	0.9
Withholding taxes	(0.1)	0.1	2.2
Permanent reinvestment assertion accrual	0.3	(4.9)	7.8
State income taxes, net of federal benefits	0.7	(0.4)	1.3
Purchase accounting	—	0.1	0.5
Tax credits	(0.6)	—	(0.3)
Other	—	0.6	(1.2)
Change in valuation allowance for unbenefitted losses	—	0.5	(0.3)
Effective tax rate	29.4%	26.0%	59.4%

The tax effect of temporary items that give rise to significant portions of the deferred tax assets and liabilities as of December 31, 2019 and 2018 are as follows (dollars in millions):

	2019	2018
Deferred tax assets:		
Accrued expenses	$ 7.5	$ 5.3
Compensation	32.6	26.9
Investments	0.1	—
Deferred revenue	8.4	—
Net operating loss carryforwards	21.2	24.3
Fixed assets	2.9	3.9
Foreign tax and other tax credit carryforwards	11.0	8.3
Unrealized currency gain/loss	6.1	1.1
Lease obligations	16.3	—
Gross deferred tax assets	106.1	69.8
Less valuation allowance	(4.2)	(4.3)
Total deferred tax assets	101.9	65.5
Deferred tax liabilities:		
Accounts receivable	0.6	1.2
Investments	—	0.5
Inventory	13.3	1.8
Deferred revenue	—	5.9
Fixed assets	4.9	—
Foreign statutory reserves	2.2	0.4
Intangibles	40.1	47.6
Accrued expenses	0.9	0.3
Accrued Withholding Tax	5.2	4.8
Right of use asset	15.6	—
Other	7.4	3.2
Total deferred tax liabilities	90.2	65.7
Net deferred tax assets	$ 11.7	$ (0.2)

The Company uses the liability method to account for income taxes. Under this method, deferred income taxes are recognized for the future tax consequences of differences between the tax and financial accounting bases of assets and liabilities at each reporting period. Deferred income taxes are based on enacted tax laws and statutory tax rates applicable to the period in which these differences are expected to affect taxable income. A valuation allowance is established when necessary to reduce deferred tax assets to the expected realizable amounts.

The Company can only recognize a deferred tax asset to the extent this it is "more likely than not" that these assets will be realized. Judgments around realizability depend on the availability and weight

of both positive and negative evidence. Changes in the valuation allowance for deferred tax assets during the years ended December 31, 2019, 2018 and 2017 were as follows:

Balance at December 31, 2016	$ 0.5
Decreases recorded as a benefit to income tax provision	(0.5)
Balance at December 31, 2017	$ —
Increases recorded as a loss to income tax provision	1.3
Increases recorded as part of acquisition purchase accounting	3.0
Balance at December 31, 2018	$ 4.3
Decreases recorded as a benefit to income tax provision	(0.1)
Balance at December 31, 2019	$ 4.2

As of December 31, 2019, the Company has approximately $38.8 million net operating loss carryforwards available to reduce state taxable income that are expected to expire at various times beginning in 2020. The Company also has approximately $82.7 million of German Trade Tax and Corporate Income Tax net operating losses that are carried forward indefinitely. Additionally, the Company has $13.2 million of other foreign net operating losses that are expected to expire at various times beginning in 2020. The Company also has state research and development tax credits of $7.7 million. Utilization of these credits and state net operating losses may be subject to annual limitations due to the ownership percentage change limitations provided by the Internal Revenue Code Section 382 and similar state provisions. In the event of a deemed change in control under Internal Revenue Code Section 382, an annual limitation on the utilization of net operating losses and credits may result in the expiration of all or a portion of the net operating loss and credit carryforwards.

At December 31, 2019 the Company recorded state income and foreign withholding taxes on the cash and liquid assets portion of the unremitted earnings and profits (E&P) of foreign subsidiaries expected to be repatriated from its foreign subsidiaries to the United States, except for amounts from certain subsidiaries, which the Company has asserted to be indefinitely reinvested. Specifically, the Company asserts that a total of $1.6 billion of unremitted foreign earnings is indefinitely reinvested. This figure is comprised of $1.1 billion in unremitted earnings as well as $447 million of non-cash E&P in all jurisdictions not indefinitely reinvested. If this E&P is ultimately distributed to the United States in the form of dividends or otherwise the Company would likely be subject to additional withholding tax. The Company estimates the amount of unrecognized deferred withholding taxes on the undistributed E&P to be approximately $58 million at December 31, 2019.

The Company had gross unrecognized tax benefits, excluding interest, of approximately $15.9 million as of December 31, 2019, that if recognized, would reduce the Company's effective tax rate. In the next twelve months it is reasonably possible that the Company will reduce its unrecognized tax benefits by an immaterial amount due to the expiration of statutes of limitations. A tabular

reconciliation of the beginning and ending amount of unrecognized tax benefits is as follows (dollars in millions):

Gross unrecognized tax benefits at December 31, 2016	$ 6.2
Lapse of statutes	(1.8)
Gross unrecognized tax benefits at December 31, 2017	4.4
Gross increases—tax positions in prior periods	3.1
Lapse of statutes	(0.9)
Gross unrecognized tax benefits at December 31, 2018	6.6
Gross increases—tax positions in prior periods	4.7
Gross increases—current period tax positions	4.7
Lapse of statutes	(0.1)
Gross unrecognized tax benefits at December 31, 2019	$15.9

The Company's policy is to include accrued interest and penalties related to unrecognized tax benefits and income tax liabilities, when applicable, in income tax expense. As of December 31, 2019 and 2018, the Company had approximately $0.4 million and $0.2 million, respectively, of accrued interest and penalties related to uncertain tax positions included in other long-term liabilities in the consolidated balance sheets. The Company recorded a benefit of $0.2 million for penalties and interest related to unrecognized tax benefits in the provision for income taxes during the year ended December 31, 2018. There was no benefit recognized during the year ended December 31, 2019.

The Company files tax returns in the United States, which includes federal, state and local jurisdictions, and many foreign jurisdictions with varying statutes of limitations. The Company considers Germany, the United States and Switzerland to be its significant tax jurisdictions. The majority of the Company's earnings are derived in Germany and Switzerland. Accounting for the various federal and local taxing authorities, the statutory rates for 2019 were approximately 30.0% and 20.0% for Germany and Switzerland, respectively. The mix of earnings in those two jurisdictions resulted in an increase of 5.51% from the U.S. statutory rate of 21% in 2019. The Company has not been a party to any tax holiday agreements. The tax years 2013 to 2016 are open to examination in Germany and Switzerland. In 2016, the Company settled tax audits in Germany and Switzerland. The settlements were immaterial to the consolidated financial statements. Tax years 2013 to 2018 remain open for examination in the United States.

U.S. Tax Reform

On December 22, 2017 (Enactment Date), the President of the United States signed tax reform legislation (2017 Tax Act), which enacted a wide range of changes to the U.S. corporate income tax system, many of which differ significantly from the provisions of the previous U.S. tax law. The 2017 Tax Act contains several key provisions including, among other things:

- A reduction in the corporate tax rate from 35.0% to 21.0% for the tax years beginning after December 31, 2017;
- The introduction of a territorial tax system beginning in 2018 by providing a 100% dividends received deduction on certain qualified dividends from foreign subsidiaries;
- To fund the territorial tax system, a one-time tax on the mandatory deemed repatriation of post-1986 untaxed foreign earnings and profits (E&P), referred to as the "toll charge", and;
- The introduction of a new U.S. tax on certain off-shore earnings associated with so-called "Global Intangible Low-Taxed Income" (GILTI). This tax is imposed at an effective tax rate of

10.5% for tax years beginning after December 31, 2017 (increasing to 13.125% for tax years beginning after December 31, 2025) with a partial offset by foreign tax credits.

Also on December 22, 2017, the Securities and Exchange Commission (SEC) issued Staff Accounting Bulletin (SAB) No. 118, which provides companies with additional guidance on how to implement the provisions of the 2017 Tax Act in their financial statements. The guidance provides for a measurement period, up to one year from the Enactment Date, in which provisional amounts may be adjusted when additional information is obtained, prepared or analyzed about facts and circumstances that existed as of the Enactment Date, if known, which would have impacted the amounts that were initially recorded by the Company.

During the fourth quarter of 2017, the Company recognized within its provision for income taxes an incremental income tax provision of $68.9 million, which is primarily comprised of the following:

- An estimated income tax provision of $55.0 million for the federal and state impacts of the one-time deemed repatriation of pre-2018 E&P. In accordance with the 2017 Tax Act, the federal portion of the toll charge liability may be paid over eight years. Such liability can be reduced by certain credits. Accordingly, we have recorded $30.6 million and $2.7 million in long-term income tax liabilities and accrued income taxes (current), respectively, as of December 31, 2017
- An estimated net income tax benefit of $1.4 million, for the remeasurement of our deferred tax assets and liabilities at the newly enacted tax rate of 21%; and
- As a result of the 2017 Tax Act and our expectations about distributing certain cash balances from its foreign subsidiaries to the United States, we also recorded estimated income tax provisions for estimated state income taxes and foreign withholding taxes of $12.5 million.

During the fourth quarter of 2018, the Company completed its accounting for the elements of U.S. Tax Reform. During 2018, the Company recorded tax adjustments under SAB 118 equal to a net benefit of $5.4 million. Among those adjustments were $6.6 million of additional tax expense related to the toll charge liability that was estimated to be $55.0 million in 2017. In addition, a $12.0 million tax benefit was recorded in 2018 that reduced the estimated liability of $12.5 that the Company recorded in 2017 for expected state income and foreign withholding taxes associated with unremitted foreign earnings. There was no change from the $1.4 million that was recorded in 2017 to the net deferred tax liability related to the reduction on the U.S. federal statutory tax rate from 35% to 21%.

During 2019, the Company recorded a tax adjustment equal to a net benefit of $1.6 million related to the recalculation of the toll charge liability. The Company expects to reflect this change on a 2017 amended tax return. The total toll charge liability as of December 31, 2019 was $34.4 million. Of that amount, approximately $5.8 million has already been paid.

The Company recorded tax expense associated with the GILTI provisions of the 2017 Tax Act as of December 31, 2019. Companies are allowed to adopt an accounting policy to either recognize deferred taxes for GILTI or treat such as a tax cost in the year incurred. The Company has determined to treat such as a tax cost in the year incurred. As such, the Company did not record a deferred income tax expense or benefit related to the GILTI provisions of the 2017 Tax Act in the consolidated statement of income for the year ended December 31, 2019.

Note 14—Post Retirement Benefit Plans

Defined Contribution Plans

The Company sponsors various defined contribution plans that cover certain domestic and international employees. The Company may make contributions to these plans at its discretion. The Company contributed $8.7 million, $8.4 million and $6.4 million to such plans in the years ended December 31, 2019, 2018 and 2017, respectively.

Defined Benefit Plans

Substantially all of the Company's employees in Switzerland, France and Japan, as well as certain employees in Germany, are covered by Company-sponsored defined benefit pension plans. Retirement benefits are generally earned based on years of service and compensation during active employment. Eligibility is generally determined in accordance with local statutory requirements; however, the level of benefits and terms of vesting varies among plans.

The Company records pension service cost within cost of sales, selling, general and administrative, and research and development expenses while non-service related pension costs are recorded within interest and other income (expense), net in the consolidated statements of income and comprehensive income. The components of net periodic benefit costs for the years ended December 31, 2019, 2018 and 2017 were as follows (dollars in millions):

	2019	2018	2017
Components of net periodic benefit costs:			
Service cost	$ 6.4	$ 7.5	$ 7.8
Interest cost	2.6	2.0	1.7
Expected return on plan assets	(2.0)	(1.9)	(1.7)
Amortization of net loss	2.0	3.8	4.8
Net periodic benefit costs	$ 9.0	$11.4	$12.6

The Company measures its benefit obligation and the fair value of plan assets as of December 31st each year. The changes in benefit obligations and plan assets under the defined benefit pension plans, projected benefit obligation and funded status of the plans were as follows at December 31, (dollars in millions):

	2019	2018
Change in benefit obligation:		
Benefit obligation at beginning of year	$ 216.7	$228.0
Service cost	6.4	7.5
Interest cost	2.6	2.0
Plan participant contributions	4.8	4.3
Plan amendments	—	(1.3)
Plan settlements	—	(0.4)
Benefits paid	(2.8)	(2.0)
Actuarial loss (gain)	25.8	(16.2)
Premiums paid	(1.6)	(1.7)
Impact of foreign currency exchange rates	3.1	(3.5)
Benefit obligation at end of year	255.0	216.7
Change in plan assets:		
Fair value of plan assets at beginning of year	124.6	120.3
Return on plan assets	(2.5)	(0.6)
Plan participant and employer contributions	11.6	10.2
Benefits paid	(2.8)	(2.2)
Plan settlements	—	(0.4)
Premiums paid	(1.7)	(1.5)
Impact of foreign currency exchange rates	2.2	(1.2)
Fair value of plan assets at end of year	131.4	124.6
Net under funded status	$(123.6)	$ (92.1)

The accumulated benefit obligation for the defined benefit pension plans is $243.6 million and $206.9 million at December 31, 2019 and 2018, respectively. All defined benefit pension plans have an accumulated benefit obligation and projected benefit obligation in excess of plan assets at December 31, 2019 and 2018.

The following amounts were recognized in the accompanying consolidated balance sheets for the Company's defined benefit plans at December 31, (dollars in millions):

	2019	2018
Current liabilities	$ (1.6)	$ (1.6)
Non-current liabilities	(122.0)	(90.5)
Net benefit obligation	$(123.6)	$(92.1)

The following pre-tax amounts were recognized in accumulated other comprehensive income for the Company's defined benefit plans at December 31, (dollars in millions):

	2019	2018	2017
Reconciliation of amounts recognized in the consolidated balance sheets:			
Prior service cost	$ (6.0)	$ (6.9)	$ (9.7)
Net actuarial loss	(62.3)	(32.0)	(48.9)
Accumulated other comprehensive loss	(68.3)	(38.9)	(58.6)
Accumulated contributions in excess of net periodic benefit cost	(55.3)	(53.2)	(49.1)
Net amount recognized	$(123.6)	$(92.1)	$(107.7)

The amount in accumulated other comprehensive income at December 31, 2019 expected to be recognized as amortization of net loss within net periodic benefit cost in 2020 is $4.7 million.

For the defined benefit pension plans, the Company uses a corridor approach to amortize actuarial gains and losses. Under this approach, net actuarial gains or losses in excess of ten percent of the larger of the projected benefit obligation or the fair value of plan assets are amortized over the average remaining service of active participants who are expected to receive benefits under the plans.

The range of assumptions used for defined benefit pension plans reflects the different economic environments within the various countries. The range of assumptions used to determine the net periodic benefit costs and the projected benefit obligations for the years ended December 31, are as follows:

	2019	2018	2017
Discount rates	0.3%-2.3%	0.2%-2.3%	0.2%-2.1%
Expected return on plan assets	0.0%-3.0%	0.0%-3.0%	0.0%-3.0%
Expected rate of compensation increase	0.0%-3.0%	1.0%-3.0%	1.0%-3.0%

To determine the expected long-term rate of return on pension plan assets, the Company considers current asset allocations, as well as historical and expected returns on various asset categories of plan assets. For the defined benefit pension plans, the Company applies the expected rate of return to a market-related value of assets, which stabilizes variability in assets to which the expected return is applied.

Asset Allocations by Asset Category

The fair value of the Company's pension plan assets at December 31, 2019 and 2018, by asset category and by level in the fair value hierarchy, is as follows (dollars in millions):

December 31, 2019	Total	Quoted Prices in Active Markets Available (Level 1)	Significant Other Observable Inputs (Level 2)	Significant Unobservable Inputs (Level 3)
Plan Assets:				
Group BPCE Life (a)	$ 0.5	$—	$ 0.5	$—
Swiss Life Collective BVG Foundation (b)	130.9	—	130.9	—
Total plan assets	$131.4	$—	$131.4	$—

December 31, 2018	Total	Quoted Prices in Active Markets Available (Level 1)	Significant Other Observable Inputs (Level 2)	Significant Unobservable Inputs (Level 3)
Plan Assets:				
Group BPCE Life (a)	$ 0.8	$—	$ 0.8	$—
Swiss Life Collective BVG Foundation (b)	123.8	—	123.8	—
Total plan assets	$124.6	$—	$124.6	$—

(a) The Company's pension plan in France is invested in a larger fund that invests in a variety of instruments. The assets are not directly dedicated to the French pension plan. The Group BPCE Life fund invests in debt securities of foreign corporations and governments, equity securities of foreign government funds and private real estate funds.

(b) The Company's pension plan in Switzerland is outsourced to Swiss Life AG, an outside insurance provider. Under the insurance contract, the plan assets are invested in Swiss Life Collective BVG Foundation (the Foundation), which is an umbrella fund for which the retirement savings and interest rates are guaranteed a minimum of 1.0% for the years ended December 31, 2019 and 2018 on the mandatory withdrawal portion, as defined by Swiss law, and 0.25% for the years ended December 31, 2019 and 2018 on the non-mandatory portion. The Foundation utilizes plan administrators and investment managers to oversee the investment allocation process, set long-term strategic targets and monitor asset allocations. The target allocations are 75% bonds, including cash, 5% equity investments and 20% real estate and mortgages. Should the Foundation yield a return greater than the guaranteed amounts, the Company, according to Swiss law, shall receive 90% of the additional return with Swiss Life AG retaining 10%. The withdrawal benefits and interest allocations are secured at all times by Swiss Life AG.

Contributions and Estimated Future Benefit Payments

During 2020, the Company expects contributions to be consistent with 2019.The estimated future benefit payments are based on the same assumptions used to measure the Company's benefit obligation

at December 31, 2019. The following benefit payments reflect future employee service as appropriate (dollars in millions):

2020	$ 2.9
2021	3.3
2022	3.9
2023	4.6
2024	5.5
2025-2028	37.1

Note 15—Leases

In February 2016, the FASB issued ASU No. 2016-02, Leases, which provides guidance on the recognition, measurement, presentation and disclosure of leases. The new standard, effective as of January 1, 2019, superseded previous U.S. GAAP guidance on leases and requires all leases with terms longer than 12 months to be reported on the balance sheet as right-of-use (ROU) assets and lease liabilities, as well as provide additional disclosures. The lease liability represents the lessee's obligation to make lease payments arising from a lease and will be measured as the present value of the lease payments. The right-of-use asset represents the lessee's right to use a specified asset for the lease term, and will be measured at the lease liability amount, adjusted for lease prepayment, lease incentives received and the lessee's initial direct costs.

Under ASU No. 2016-02, companies are required to transition to the new standard in the period of adoption at the beginning of the earliest period presented in the financial statements (January 1, 2017 for the Company). In July 2018, the FASB issued ASU No. 2018-11 as an update to ASU No. 2016-02, which in part provided companies the option of transitioning to the new standard as of the adoption date and recognizing a cumulative-effect adjustment to the opening balance of retained earnings in the period of adoption. The Company adopted the new standard as of January 1, 2019 using the alternative transition method under ASU No. 2018-11 and recognized a cumulative-effect adjustment to the opening balance sheet. The Company's prior period financial statements were not adjusted due to adopting the new standard based on the alternative transition method. The Company elected the available package of practical expedients for leases that commenced prior to the effective date that allows it to not reassess: 1) whether any expired or existing contracts are or contain leases; 2) the lease classification for any expired or existing leases; and 3) the accounting treatment of initial direct costs for any expired or existing leases. The Company also elected the practical expedient that allows lessees to treat lease and non-lease components of leases as a single lease component for all asset classes. The adoption of the new standard resulted in recording $75.5 million and $77.9 million of ROU assets and lease liabilities, respectively, as of January 1, 2019 on the Company's balance sheet. The adoption of the new standard did not significantly affect the Company's results of operations.

Starting in the first quarter of 2019, the Company accounts for leases in accordance with ASC 842, Leases. At the inception of an arrangement, the Company determines whether the arrangement is or contains a lease based on the unique facts and circumstances present. Leases with a term greater than 12 months are recognized on the balance sheet as ROU assets with a corresponding lease liability. The Company has elected not to recognize on the balance sheet leases with an initial term of 12 months or less. Leases with an initial term of 12 months or less are directly expensed as incurred. Leases are classified as either operating or finance depending on the specific terms of the arrangement.

The Company's leases mainly consist of facilities, office equipment, and vehicles. The majority of leases are classified as operating. The remaining lease term ranges from 2020 to 2029, with some leases including an option to extend the lease for varying periods of time or to terminate prior to the end of the lease term. Certain lease agreements contain provisions for future rent increases. Lease payments included in the measurement of the lease liability comprise fixed payments, future rent increases tied to

an index or rate, and the exercise price of a Company option to purchase the underlying asset if the Company is reasonably certain to exercise the option. Future rent increases dependent on an index or rate are initially measured at the index or rate at the commencement date. The Company's leases typically do not contain residual value guarantees.

At the commencement date, operating and finance lease liabilities, and their corresponding ROU assets, are recorded based on the present value of lease payments over the expected lease term. The lease term includes the noncancellable period of the lease, plus any additional periods covered by either a Company option to extend (or not to terminate) the lease that the Company is reasonably certain to exercise, or an option to extend (or not to terminate) the lease controlled by the lessor. The interest rate implicit in lease contracts is typically not readily determinable, therefore an incremental borrowing rate is used to calculate the lease liability. The incremental borrowing rate is the rate incurred to borrow on a collateralized basis over a similar term an amount equal to the lease payments in a similar economic environment. Certain adjustments to the ROU asset may be required for items such as prepayments, lease incentives received or initial direct costs paid.

Operating lease cost is recognized over the lease term on a straight-line basis, while finance lease cost is amortized over the expected term on a straight-line basis. Variable lease cost not dependent on an index or rate is recognized when incurred and typically consists of amounts owed by the Company to a lessor that are not fixed, such as reimbursement for common area maintenance and utilities cost.

The components of lease cost for the year ended December 31, 2019 are as follows (dollars in millions):

	2019
Amortization of right-of-use assets	$ 0.3
Interest on lease liabilities	—
Total finance lease cost	$ 0.3
Operating lease cost	$24.9
Short term lease cost	2.2
Variable lease cost	3.5
Sublease income	(1.2)
Total lease cost	$29.7

Supplemental balance sheet information as of December 31, 2019 related to leases was as follows (dollars in millions):

	As Of December 31, 2019
Operating leases	
Operating lease assets, net	$ 65.6
Other current liabilities	20.6
Operating lease liability—long term	47.0
Finance leases	
Property, plant and equipment, net	$ 1.7
Current portion of long-term debt	0.4
Long-term debt	1.1
Weighted average remaining lease term	
Operating leases	5.0 years
Finance leases	3.7 years
Weighted average discount rate	
Operating leases	2.3%
Finance leases	3.0%

Supplemental cash flow information related to leases for the year ended December 31, 2019 was as follows (dollars in millions):

	2019
Cash paid for amounts included in the measurement of lease liabilities	
Operating cash flows from finance leases	$ —
Operating cash flows from operating leases	27.1
Financing cash flows from finance leases	0.4
Right-of-use assets obtained in exchange for lease liabilities	
Operating leases	$19.8
Finance leases	1.2

The maturity analysis of finance lease and operating lease liabilities as of December 31, 2019 are as follows (dollars in millions):

	Operating Leases	Finance Leases
2020	$21.7	$ 0.5
2021	15.9	0.5
2022	9.9	0.4
2023	7.6	0.2
2024	5.4	—
Thereafter	10.9	—
Total undiscounted lease payments	71.4	1.6
Less: Imputed interest	(3.8)	(0.1)
Total lease liabilities	$67.6	$ 1.5

As of December 31, 2018, minimum commitments for the Company's leases as required under prior lease guidance in ASC 840 were as follows (dollars in millions):

	Operating Leases	Finance Leases
2019	$25.3	$ —
2020	19.1	0.1
2021	13.7	0.1
2022	9.3	—
2023	7.3	—
Thereafter	18.4	—
Total	$93.1	$0.2

Total rental expense under operating leases was $25.1 million and $23.7 million during the years ended December 31, 2018 and 2017, respectively.

Note 16—Commitments and Contingencies

In accordance with ASC Topic 450, Contingencies, the Company accrues anticipated costs of settlement, damages, or other costs to the extent specific losses are probable and estimable.

Litigation and Related Contingencies

Lawsuits, claims and proceedings of a nature considered normal to its businesses may be pending from time to time against the Company. Third parties might allege that the Company or its collaborators are infringing their patent rights or that the Company is otherwise violating their intellectual property rights. Loss contingency provisions are recorded if the potential loss from any claim, asserted or unasserted, or legal proceeding is considered probable and the amount can be reasonably estimated or a range of loss can be determined. These accruals represent management's best estimate of probable loss. Disclosure is also provided when it is reasonably possible that a loss will be incurred or when it is reasonably possible that the amount of a loss will exceed the recorded provision. The Company believes the outcome of pending proceedings, individually and in the aggregate, will not have a material impact on the Company's financial statements.

On September 25, 2019, in a complaint filed in the Düsseldorf, Germany, District Court, Carl Zeiss Microscopy GmbH, a subsidiary of Carl Zeiss AG (Zeiss), sued Luxendo GmbH (Luxendo), a subsidiary of Bruker Corporation, for infringement of a recently registered German utility model patent licensed to Zeiss pertaining to one specific Luxendo product category. The Company intends to vigorously defend against this claim.

On September 23, 2019, in a complaint filed in the Düsseldorf, Germany, District Court, Micromass UK Limited, a subsidiary of Waters Corporation, sued Bruker Corporation, as well as its affiliate, Bruker Daltonik GmbH, for infringement of a European patent pertaining to our timsTOF product line. Bruker was notified that Micromass has expanded its complaint in Düsseldorf and now asserts another recently granted European patent in Germany. The Company intends to vigorously defend against these claims.

As of December 31, 2019 and 2018, no material accruals have been recorded for potential contingencies.

Governmental Investigations

The Company is subject to regulation by national, state and local government agencies in the United States and other countries in which it operates. From time to time, the Company is the subject of governmental investigations often involving regulatory, marketing and other business practices. These governmental investigations may result in the commencement of civil and criminal proceedings, fines, penalties and administrative remedies which could have a material adverse effect on the Company's financial position, results of operations and/or liquidity.

In August 2018, the Korea Fair Trade Commission (KFTC) informed the Company that it was conducting an investigation into the public tender bidding activities of a number of life science instrument companies operating in Korea, including Bruker Korea Co., Ltd (Bruker Korea). The Company cooperated fully with the KFTC and on June 16, 2019, the KFTC announced its decision to impose a fine of approximately $20,000 on Bruker Korea and declined to impose any criminal liability against Bruker Korea in connection with this matter. As a result of the KFTC's decision, the Korea Public Procurement Service (PPS) imposed a three month suspension on Bruker Korea's ability to bid for or conduct sales to Korean government entities which will end on March 27, 2020. Sales to Korean government entities were less than 3% of the Company's revenue for the year ended December 31, 2019.

In late August 2019, the KFTC informed the Company that it was conducting a separate investigation into the public tender bidding activities of a number of life science instrument companies operating in Korea, including five public tenders involving Bruker Korea during 2015. The Company is cooperating fully with the KFTC and a hearing on the matter has been scheduled for April 17, 2020.

On October 19, 2017, the Company received a notice of investigation and subpoena to produce documents from the Division of Enforcement of the SEC. The subpoena sought information related to an employee terminated as part of a restructuring and certain matters involving the Company's policies and accounting practices related to revenue recognition and restructuring activities, as well as related financial reporting, disclosure and compliance matters, since January 1, 2013. The subpoena also sought information concerning, among other things, the Company's previously identified material weakness in internal controls over the accounting for income taxes, related financial reporting matters and certain payments for non-employee travel expenses. On April 25, 2019, the Staff notified the Company that it had concluded its investigation and, based on the information received to date, does not intend to recommend an enforcement action by the SEC against the Company.

As of December 31, 2019 and 2018, no material accruals have been recorded for potential contingencies related to these matters.

Internal Investigations

Previously, the Audit Committee of the Company's Board of Directors (Audit Committee) with the assistance of outside counsel, conducted an internal investigation into practices of certain business partners in China and into the conduct of former employees of the Bruker Optics division in China which raised questions of compliance with laws, including the U.S. Foreign Corrupt Practices Act, and/or compliance with the Company's business policies and code of conduct. In April 2019, the Audit Committee concluded its internal investigation.

As previously disclosed in the Company's Current Report on Form 8-K filed on February 18, 2020, the Company's Audit Committee initiated an internal investigation into an allegation recently received in connection with the Company's year-end close, primarily relating to income tax matters including the effective income tax rate for 2019 and the related income tax balance sheet accounts. The Audit Committee, with the assistance of independent external legal counsel and independent forensic accountants, concluded its investigation in March 2020. The Investigation did not identify any material

misstatements or omissions regarding the Company's financial statements, misconduct, violations of the Company's Code of Conduct, or tone at the top failures.

Unconditional Purchase Commitments

The Company has entered into unconditional purchase commitments, in the ordinary course of business, that include agreements to purchase goods, services or fixed assets and to pay royalties that are enforceable and legally binding and that specify all significant terms including: fixed or minimum quantities to be purchased; fixed, minimum or variable price provisions; and the approximate timing of the transaction. Purchase commitments exclude agreements that are cancelable at any time without penalty. The aggregate amount of the Company's unconditional purchase commitments totaled $250.2 million at December 31, 2019 and the majority of these commitments are expected to be settled during 2020.

Unconditional purchase commitments that are fixed and determinable as of December 31, 2019 are as follows (dollars in millions):

2020	$226.2
2021	19.7
2022	3.8
2023	0.3
2024	0.2
Total	$250.2

License Agreements

The Company has entered into license agreements allowing it to utilize certain patents. If these patents are used in connection with a commercial product sale, the Company pays royalties on the related product revenues. Licensing fees for the years ended December 31, 2019, 2018 and 2017, were $2.6 million, $3.7 million and $3.5 million, respectively, and are recorded in cost of product revenue in the consolidated statements of income and comprehensive income.

Letters of Credit and Guarantees

At December 31, 2019 and 2018, the Company had bank guarantees of $143.2 million and $138.3 million, respectively, related primarily to customer advances. These arrangements guarantee the refund of advance payments received from customers in the event that the merchandise is not delivered or warranty obligations are not fulfilled in compliance with the terms of the contract. These guarantees affect the availability of the Company's lines of credit.

Indemnifications

The Company enters into standard indemnification arrangements in the Company's ordinary course of business. Pursuant to these arrangements, the Company indemnifies, holds harmless, and agrees to reimburse the indemnified parties for losses suffered or incurred by the indemnified party. These parties are generally the Company's directors, officers, business partners or customers, in connection with any patent, or any copyright or other intellectual property infringement claim by any third party with respect to its products. The term of these indemnification agreements is generally perpetual any time after the execution of the agreement. The maximum potential amount of future payments the Company could be required to make under these agreements is unlimited. The Company believes the estimated fair value of these agreements is minimal based on historical experiences.

Note 17—Shareholders' Equity

Share Repurchase Program

In May 2019, the Company's Board of Directors approved a share repurchase program under which repurchases of common stock up to $300.0 million may occur from time to time, in amounts, at prices, and at such times as the Company deems appropriate, subject to market conditions, legal requirements and other considerations. A total of 3,323,104 shares were repurchased under the program at an aggregate cost of $142.3 million in the year ended December 31, 2019. Any future repurchases will be funded from cash on hand, future cash flows from operations and available borrowings under the revolving credit facility.

The repurchased shares are reflected within Treasury stock in the accompanying consolidated balance sheet at December 31, 2019 and 2018.

Cash Dividends on Common Stock

On February 22, 2016, the Company announced the establishment of a dividend policy and the declaration by its Board of Directors of an initial quarterly cash dividend in the amount of $0.04 per share of the Company's issued and outstanding common stock. Under the dividend policy, the Company will target a cash dividend to the Company's shareholders in the amount of $0.16 per share per annum, payable in equal quarterly installments.

Subsequent dividend declarations and the establishment of record and payment dates for such future dividend payments, if any, are subject to the Board of Directors' continuing determination that the dividend policy is in the best interests of the Company's shareholders. The dividend policy may be suspended or cancelled at the discretion of the Board of Directors at any time.

Accumulated Other Comprehensive Income (Loss)

The following is a summary of the components of accumulated other comprehensive income (loss), net of tax, at December 31, (dollars in millions):

	Foreign Currency Translation	Pension Liability Adjustment	Accumulated Other Comprehensive Income (Loss)
Balance at December 31, 2016	$(24.1)	$(51.8)	$(75.9)
Other comprehensive income	96.3	1.8	98.1
Realized loss on reclassification	—	4.8	4.8
Balance at December 31, 2017	72.2	(45.2)	27.0
Other comprehensive income (loss)	(25.3)	11.9	(13.4)
Realized loss on reclassification	—	3.4	3.4
Balance at December 31, 2018	46.9	(29.9)	17.0
Other comprehensive income	(19.5)	(25.1)	(44.6)
Realized loss on reclassification	—	2.1	2.1
Balance at December 31, 2019	$ 27.4	$(52.9)	$(25.5)

Note 18—Stock-Based Compensation

On March 9, 2010, the Company's Board of Directors unanimously approved and adopted the Bruker Corporation 2010 Incentive Compensation Plan (the "2010 Plan"), and on May 14, 2010, the 2010 Plan was approved by the Company's stockholders. The 2010 Plan provided for the issuance of up to 8,000,000 shares of the Company's common stock. The 2010 Plan allowed a committee of the Board

of Directors (the "Compensation Committee") to grant incentive stock options, non-qualified stock options and restricted stock awards. The Compensation Committee had the authority to determine which employees would receive the awards, the amount of the awards and other terms and conditions of any awards. Awards granted under the 2010 Plan typically were made subject to a vesting period of three to five years.

In May 2016, the Bruker Corporation 2016 Incentive Compensation Plan (the "2016 Plan") was approved by the Company's stockholders. With the approval of the 2016 Plan, no further grants will be made under the 2010 Plan. The 2016 Plan provides for the issuance of up to 9,500,000 shares of the Company's common stock and permits the grant of awards of non-qualified stock options, incentive stock options, stock appreciation rights, restricted stock, unrestricted stock, restricted stock units, performance shares and performance units, as well as cash-based awards. The 2016 Plan is administered by the Compensation Committee. The Compensation Committee has the authority to determine which employees will receive awards, the amount of any awards, and other terms and conditions of such awards. Stock option awards granted under the 2016 Plan typically vest over a period of one to four years.

Starting in 2017, members of the Company's Board of Directors receive an annual award of restricted stock units which vest over a one-year service period.

Stock option activity for the year ended December 31, 2019 was as follows:

	Shares Subject to Options	Weighted Average Option Price	Weighted Average Remaining Contractual Term (Yrs)	Aggregate Intrinsic Value (in millions) (b)
Outstanding at December 31, 2018	2,593,310	$21.41		
Granted	112,232	44.17		
Exercised	(626,796)	19.22		
Forfeited/Expired	(90,050)	22.50		
Outstanding at December 31, 2019	1,988,696	$23.43	4.9	$54.8
Exercisable at December 31, 2019	1,537,624	$20.97	4.7	$46.1
Exercisable and expected to vest at December 31, 2019 (a)	1,951,167	$23.27	4.9	$54.1

(a) In addition to the options that are vested at December 31, 2019, the Company expects a portion of the unvested options to vest in the future. Options expected to vest in the future are determined by applying an estimated forfeiture rate to the options that are unvested as of December 31, 2019.

(b) The aggregate intrinsic value is based on the positive difference between the fair value of the Company's common stock price of $50.97 on December 31, 2019, or the date of exercises, as appropriate, and the exercise price of the underlying stock options.

The weighted average fair value of options granted was $11.16, $9.50 and $7.61 per share for the years ended December 31, 2019, 2018 and 2017, respectively.

The total intrinsic value of options exercised was $15.2 million, $8.0 million and $16.2 million for the years ended December 31, 2019, 2018 and 2017, respectively.

Unrecognized pre-tax stock-based compensation expense of $2.9 million related to stock options awarded under the 2010 and 2016 Plans is expected to be recognized over the weighted average remaining service period of 2.3 years for stock options outstanding at December 31, 2019.

Restricted shares of the Company's common stock are periodically awarded to executive officers, directors and certain key employees of the Company, subject to service restrictions, which vest ratably over periods of one to four years. The restricted shares of common stock may not be sold or transferred during the restriction period. Stock-based compensation for restricted stock is recorded based on the stock price on the grant date and charged to expense ratably throughout the restriction period.

The following table summarizes information about restricted stock award activity during the year ended December 31, 2019:

	Shares Subject to Restriction	Weighted Average Grant Date Fair Value
Outstanding at December 31, 2018	24,633	$19.82
Vested	(24,633)	19.82
Outstanding at December 31, 2019	—	$ —

The total fair value of restricted stock vested was $0.5 million, $1.8 million and $2.3 million for the years ended December 31, 2019, 2018 and 2017, respectively. There are no restricted stock awards outstanding as of December 31, 2019.

Restricted stock units of the Company's common stock are periodically awarded to executive officers, directors and certain employees of the Company which vest ratably over a service periods of one to four years. Stock-based compensation for restricted stock units is recorded based on the stock price on the grant date and charged to expense ratably throughout the vesting period.

The following table summarizes information about restricted stock unit activity for year ended December 31, 2019:

	Shares Subject to Restriction	Weighted Average Grant Date Fair Value
Outstanding at December 31, 2018	806,249	$29.88
Granted	366,526	41.07
Vested	(268,014)	29.47
Forfeited	(39,660)	30.12
Outstanding at December 31, 2019	865,101	$34.73

The total fair value of restricted stock vested was $7.9 million, $6.9 million, and $2.0 million for the years ended December 31, 2019, 2018 and 2017, respectively.

Unrecognized pre-tax stock-based compensation expense of $23.0 million related to restricted stock units awarded under the 2016 Plan is expected to be recognized over the weighted average remaining service period of 2.9 years for units outstanding at December 31, 2019.

Note 19—Other Charges, Net

The components of other charges, net for the years ended December 31, 2019, 2018 and 2017, were as follows (dollars in millions):

	2019	2018	2017
Acquisition-related expenses (income), net	$ 4.6	$ 3.4	$ 4.5
Professional fees incurred in connection with investigation matters	2.1	4.5	0.2
Information technology transformation costs	3.7	4.8	4.2
Restructuring charges	(3.9)	6.8	10.6
Long-lived asset impairments	—	—	0.2
Other charges, net	$ 6.5	$19.5	$19.7

Restructuring Initiatives

Restructuring charges for the years ended December 31, 2019, 2018 and 2017 included charges for various other programs which were recorded in the accompanying consolidated statements of income and comprehensive income as follows (dollars in millions):

	2019	2018	2017
Cost of revenues	$ 5.3	$2.6	$ 5.6
Other charges, net	(3.9)	6.8	10.6
	$ 1.4	$9.4	$16.2

The restructuring charges included a gain on the sale of a building of $7.7 million in the year ended December 31, 2019.

The following table sets forth the changes in the restructuring reserves for the years ended December 31, 2019, 2018 and 2017 (dollars in millions):

	Total	Severance	Exit Costs	Provisions for Excess Inventory
Balance at December 31, 2016	$ 16.2	$ 4.9	$ 3.7	$ 7.6
Restructuring charges	16.2	7.7	6.2	2.3
Cash payments	(17.1)	(10.1)	(6.8)	(0.2)
Non-cash adjustments	(5.5)	(0.7)	(1.0)	(3.8)
Foreign currency impact	1.0	0.2	—	0.8
Balance at December 31, 2017	$ 10.8	$ 2.0	$ 2.1	$ 6.7
Restructuring charges	9.4	4.1	5.3	—
Cash payments	(9.2)	(4.4)	(4.8)	—
Non-cash adjustments	(3.5)	0.3	(1.2)	(2.6)
Foreign currency impact	(0.2)	—	—	(0.2)
Balance at December 31, 2018	$ 7.3	$ 2.0	$ 1.4	$ 3.9
Restructuring charges	1.4	6.1	(5.0)	0.3
Cash payments	(6.8)	(5.3)	(1.5)	—
Non-cash adjustments	2.9	(0.5)	5.2	(1.8)
Foreign currency impact	(0.2)	(0.1)	—	(0.1)
Balance at December 31, 2019	$ 4.6	$ 2.2	$ 0.1	$ 2.3

Note 20—Interest and Other Income (Expense), Net

The components of interest and other income (expense), net for the years ended December 31, 2019, 2018 and 2017, were as follows (dollars in millions):

	2019	2018	2017
Interest income	$ 1.3	$ 1.2	$ 0.8
Interest expense	(16.0)	(12.6)	(15.4)
Exchange gains (losses) on foreign currency transactions	(3.3)	(3.0)	(5.5)
Pension components	(2.5)	(3.9)	(4.8)
Gain on bargain purchase	—	—	0.6
Other	—	0.6	2.6
Interest and other income (expense), net	$(20.5)	$(17.7)	$(21.7)

Note 21—Business Segment Information

The Company has three reportable segments, BSI Life Science, BSI NANO and BEST, as discussed in Note 1 to the consolidated financial statements.

Selected reportable segment information is presented below for the years ended December 31, (dollars in millions):

	2019	2018	2017
Revenue:			
BSI Life Science	$1,244.9	$1,138.9	$1,070.9
BSI NANO	632.7	568.1	513.0
BEST	209.9	194.8	191.2
Eliminations (a)	(14.9)	(6.2)	(9.2)
Total revenue	$2,072.6	$1,895.6	$1,765.9
Operating Income:			
BSI Life Science	$ 290.3	$ 244.0	$ 212.2
BSI NANO	40.4	48.4	24.3
BEST	16.4	14.5	7.4
Corporate, eliminations and other (b)	(46.2)	(44.5)	(24.4)
Total operating income	$ 300.9	$ 262.4	$ 219.5

(a) Represents product and service revenue between reportable segments.

(b) Represents corporate costs and eliminations not allocated to the reportable segments.

Total assets by segment as of and for the years ended December 31, are as follows (dollars in millions):

	2019	2018
Assets:		
BSI Life Science, BSI NANO & Corporate	$2,711.6	$2,100.6
BEST	64.6	33.2
Eliminations and other (a)	(4.7)	(5.2)
Total assets	$2,771.5	$2,128.6

(a) Assets not allocated to the reportable segments and eliminations of intercompany transactions.

The Company is unable, without unreasonable effort or expense to disclose the amount of total assets by BSI Life Science and BSI NANO Segments as well as the Corporate function and further, the Company's chief operating decision maker does not receive any asset information by operating segment.

Total capital expenditures and depreciation and amortization by segment are presented below for the years ended December 31, (dollars in millions):

	2019	2018	2017
Capital Expenditures:			
BSI Life Science	$44.4	$27.6	$22.7
BSI NANO	18.5	11.6	10.9
Corporate	4.7	3.6	4.9
BEST	5.4	6.4	5.2
Total capital expenditures	$73.0	$49.2	$43.7
Depreciation and Amortization:			
BSI Life Science	$30.5	$24.0	$22.8
BSI NANO	35.9	32.2	34.0
Corporate	3.8	4.0	3.0
BEST	5.4	4.7	4.1
Total depreciation and amortization	$75.6	$64.9	$63.9

Revenue and long-lived assets (including property, plant and equipment, net and operating lease right of use assets) by geographical area as of and for the year ended December 31, are as follows (dollars in millions):

	2019	2018	2017
Revenue:			
United States	$ 529.8	$ 489.4	$ 434.7
Germany	213.6	201.1	200.2
Rest of Europe	505.2	500.2	465.0
Asia Pacific	651.0	549.2	514.8
Other	173.0	155.7	151.2
Total revenue	$2,072.6	$1,895.6	$1,765.9

	2019	2018	2017
Long-lived assets			
United States	$ 53.2	$ 44.1	$ 46.2
Germany	175.1	137.0	140.9
Rest of Europe	118.3	78.7	71.9
Asia Pacific	16.4	6.3	5.4
Other	8.7	4.5	2.1
Total long-lived assets	$371.7	$270.6	$266.5

Note 22—Related Parties

The Company leases certain office space from certain of its principal shareholders, including a director and executive officer and a former member of the Company's Board of Directors, and members of their immediate families, which have expiration dates ranging from 2019 to 2020. Total rent

expense under these leases was $1.2 million, $1.2 million and $3.5 million for each of the years ended December 31, 2019, 2018 and 2017, respectively.

On February 26, 2020, the Company acquired land and buildings at 15 Fortune Drive and 44 Manning Road, both in Billerica MA, for a total purchase price of $12.3 million. Each property was owned by a trust controlled equally by Bruker's President & CEO, Frank Laukien, and his half-brother, Dirk D. Laukien. Both properties acquired are adjacent to Bruker's headquarters building at 40 Manning Road, a property already owned by the Company. Bruker BioSpin formerly leased the property at 15 Fortune and will continue to occupy the property for the foreseeable future. The property at 44 Manning Road, which is currently fully leased to unrelated third parties, provides for potential expansion of Bruker operations in the future.

The purchase price was allocated between the two properties as follows: $5.6 million for 15 Fortune Drive and $6.7 million for 44 Manning Road. The price for each property was established based on an independent third-party appraisal. The Audit Committee of the Board reviewed, voted on and approved this related party transaction in accordance with Bruker's Related Persons Transactions Policy and the Audit Committee charter.

During the years ended December 31, 2019, 2018 and 2017, the Company recorded revenue of $2.8 million, $2.9 million and $2.6 million, respectively, arising from commercial transactions with a life sciences company in which a member of the Company's Board of Directors is Chairman and Chief Executive Officer.

Note 23—Recent Accounting Pronouncements

In January 2020, the FASB issued ASU 2020-01- *Investments-Equity Securities (Topic 321), Investments-Equity Method and Joint Ventures (Topic 323), and Derivatives and Hedging (Topic 815)-Clarifying the Interactions between Topic 321, Topic 323, and Topic 815 (a consensus of the Emerging Issues Task Force)*, which clarifies the interaction of the accounting for certain equity securities, equity method investments, and certain forward contracts and purchased options. The guidance clarifies that an entity should consider observable transactions that require it to either apply or discontinue the equity method of accounting for the purposes of applying measurement principles for certain equity securities immediately before applying or discontinuing the equity method. The Company expects to adopt this guidance in 2020 using a prospective method. The assessment of the adoption of this ASU is in process and is not expected to have a material impact on the Company's consolidated financial statements.

In December 2019, the FASB issued ASU 2019-12—*Income Taxes (Topic 740): Simplifying the Accounting for Income Taxes*. The guidance simplifies the accounting for income taxes by removing certain exceptions within the current guidance; including the approach for intraperiod tax allocation, the methodology for calculating income taxes in an interim period, and the recognition of deferred tax liabilities for outside basis differences. The amendment also improves consistent application by clarifying and amending existing guidance related to aspects of the accounting for franchise taxes and enacted changes in tax laws or rates and clarifies the accounting for transactions that result in a step up in the tax basis of goodwill. This guidance is effective for annual and interim periods beginning after December 15, 2020 and early adoption is permitted. The assessment of the adoption of this ASU is in process and is not expected to have a material impact on the Company's consolidated financial statements.

In August 2018, the FASB issued ASU No. 2018-13, *Fair Value Measurement (Topic 820), Disclosure Framework—Changes to the Disclosure Requirements for Fair Value Measurement*, which modifies the disclosure requirements of fair value measurements, including the consideration of costs and benefits. This ASU is effective for the Company in fiscal years beginning after December 15, 2019. The

assessment of the adoption of this ASU is in process and is not expected to have a material impact on the Company's consolidated financial statements.

In August 2017, the FASB issued ASU No. 2017-12, *Derivatives and Hedging (Topic 815)*, which provides new guidance intended to improve the financial reporting of hedging relationships to better portray the economic results of an entity's risk management activities in its financial statements. This ASU is effective for the Company in fiscal years beginning after December 15, 2018. The assessment of the adoption of this ASU is in process and is not expected to have a material impact on the Company's consolidated financial statements.

In January 2017, the FASB issued ASU No. 2017-04, *Intangibles-Goodwill and Other (Topic 350): Simplifying the Test for Goodwill Impairment.* The new standard simplifies the subsequent measurement of goodwill by eliminating the second step of the goodwill impairment test. This ASU will be applied prospectively and is effective for annual or interim goodwill impairment tests in fiscal years beginning after December 15, 2019. The assessment of the adoption of this ASU is in process and is not expected to have a material impact on the Company's consolidated financial statements.

In June 2016, the FASB issued ASU 2016-13—*Financial Instruments-Credit Losses (Topic 326): Measurement of Credit Losses on Financial Instruments*. The guidance modifies the recognition of credit losses related to financial assets, such as debt securities, trade receivables, net investments in leases, off-balance sheet credit exposures, and other financial assets that have the contractual right to receive cash. Current guidance requires the recognition of a credit loss when it is considered probable that a loss event has occurred. The new guidance requires the measurement of expected credit losses to be based upon relevant information, including historical experience, current conditions, and reasonable and supportable forecasts that affect the collectability of the asset. As such, expected credit losses may be recognized sooner under the new guidance due to the broader range of information that will be required to determine credit loss estimates. The new guidance also amends the current other-than-temporary impairment model used for debt securities classified as available-for-sale. When the fair value of an available-for-sale debt security is below its amortized cost, the new guidance requires the total unrealized loss to be bifurcated into its credit and non-credit components. Any expected credit losses or subsequent recoveries will be recognized in earnings and any changes not considered credit related will continue to be recognized within other comprehensive income (loss). This guidance is effective for annual and interim periods beginning after December 15, 2019. The assessment of the adoption of this ASU is in process and is not expected to have a material impact on the Company's consolidated financial statements.

Note 24—Subsequent Events

On January 31, 2020, the Company acquired the remaining 20% interest in Hain Lifescience GmbH (Hain) for a purchase price of EUR 20 million (approximately $22.2 million). The Company had previously purchased the first 80% of Hain in October 2018. Hain is located in Nehren, Germany and is integrated into the Bruker CALID Group.

Note 25—Quarterly Financial Data (Unaudited)

A summary of operating results for the quarterly periods in the years ended December 31, 2019 and 2018, is set forth below (dollars in millions, except per share data):

	Quarter Ended			
	March 31	June 30	September 30	December 31
Year ended December 31, 2019				
Net revenue	$461.4	$490.2	$521.1	$599.9
Gross profit	214.7	230.4	253.9	296.3
Operating income	41.9	53.5	87.8	117.7
Net income (loss) attributable to Bruker Corporation	30.8	36.5	61.3	68.6
Net income (loss) per common share attributable to Bruker Corporation shareholders:				
Basic	$ 0.20	$ 0.23	$ 0.40	$ 0.45
Diluted	$ 0.20	$ 0.23	$ 0.39	$ 0.44
Year ended December 31, 2018				
Net revenue	$431.7	$443.7	$466.6	$553.6
Gross profit	199.4	205.2	222.6	272.8
Operating income	38.1	48.8	69.1	106.4
Net income attributable to Bruker Corporation	27.0	31.2	43.4	78.1
Net income per common share attributable to Bruker Corporation shareholders:				
Basic	$ 0.17	$ 0.20	$ 0.28	$ 0.50
Diluted	$ 0.17	$ 0.20	$ 0.28	$ 0.50

ITEM 9 *CHANGES IN AND DISAGREEMENTS WITH ACCOUNTANTS ON ACCOUNTING AND FINANCIAL DISCLOSURE*

None.

ITEM 9A *CONTROLS AND PROCEDURES*

Disclosure Controls and Procedures

We have established disclosure controls and procedures (as such term is defined in Rules 13a-15(e) and 15d-15(e) under the Securities Exchange Act of 1934, as amended (the "Exchange Act")) that are designed to provide reasonable assurance that information required to be disclosed in the reports that we file or submit under the Exchange Act is recorded, processed, summarized and reported within the time periods specified in the rules and forms of the SEC and to ensure that information required to be disclosed is accumulated and communicated to management, including our Chief Executive Officer (principal executive officer) and Chief Financial Officer (principal financial officer), to allow timely decisions regarding required disclosures. Under the supervision and with the participation of our management, including our Chief Executive Officer and Chief Financial Officer, we conducted an evaluation of the effectiveness of our disclosure controls and procedures as of December 31, 2019. Based on this evaluation, our Chief Executive Officer and Chief Financial Officer concluded that our disclosure controls and procedures were not effective as of December 31, 2019 due to material weaknesses in internal control over financial reporting, as further described below.

Management's Report on Internal Control over Financial Reporting

Our management is responsible for establishing and maintaining adequate internal control over financial reporting. Under the supervision and with the participation of our management, including our Chief Executive Officer and Chief Financial Officer, we conducted an evaluation of the effectiveness of our internal control over financial reporting as of December 31, 2019, based on the criteria set forth by the Committee of Sponsoring Organizations of the Treadway Commission (COSO) in *Internal Control—Integrated Framework* (2013). Based on this evaluation, management concluded that the Company did not maintain effective internal control over financial reporting as of December 31, 2019.

A material weakness is a deficiency, or combination of deficiencies, in internal control over financial reporting, such that there is a reasonable possibility that a material misstatement of the Company's annual or interim financial statements will not be prevented or detected on a timely basis.

We did not design and maintain an effective control environment commensurate with our financial reporting requirements. Specifically, we lacked a sufficient complement of personnel in our corporate tax department and a U.S. subsidiary with an appropriate level of tax and accounting knowledge, training and experience to appropriately analyze, record and disclose tax and accounting matters timely and accurately. This material weakness contributed to the following additional material weaknesses:

- We did not maintain effective internal controls with respect to accounting for income taxes. Specifically, our controls over income taxes did not operate effectively as designed. This control deficiency resulted in immaterial misstatements to the income tax provision, income taxes payable and uncertain tax position reserves accounts in our consolidated financial statements for the year ended December 31, 2019.
- We did not maintain effective internal controls with respect to accounting for revenue transactions at a U.S. subsidiary. Specifically, our controls over revenue recognition at a U.S. subsidiary did not operate effectively as designed. This control deficiency resulted in immaterial errors to revenue, accounts receivable and deferred revenue accounts in our consolidated financial statements for the year ended December 31, 2019.

These errors did not, individually or in the aggregate, result in a material misstatement of our consolidated financial statements and disclosures as of and for the year ended December 31, 2019. However, these control deficiencies could result in a misstatement of the interim or annual financial statements that would result in a material misstatement to our annual or interim consolidated financial statements that would not be prevented or detected. Accordingly, our management determined that these control deficiencies constitute material weaknesses.

We excluded Arxspan, LLC, Rave, LLC, PMOD Technologies GmbH, and Magnettech GmbH from our assessment of internal control over financial reporting as of December 31, 2019 because they were acquired by us in business combinations during 2019. The total assets and total revenues of these entities, which are wholly-owned subsidiaries, that are excluded from our assessment of internal control over financial reporting collectively represent 1.1% and 1.9%, respectively, of the related consolidated financial statement amounts as of and for the year ended December 31, 2019.

PricewaterhouseCoopers LLP, our independent registered public accounting firm for the fiscal year ended December 31, 2019, has audited the effectiveness of our internal control over financial reporting as of December 31, 2019, as stated in their report which is included herein.

Changes in Internal Control over Financial Reporting

There were no changes in our internal control over financial reporting that occurred during the quarter ended December 31, 2019 that materially affected, or are reasonably likely to materially affect, our internal control over financial reporting.

ITEM 9B ***OTHER INFORMATION***

None.

PART III

ITEM 10 *DIRECTORS, EXECUTIVE OFFICERS AND CORPORATE GOVERNANCE*

The full text of our code of conduct, which applies to our Principal Executive Officer, Principal Financial Officer, Principal Accounting Officer and Board of Directors is published on our Investor Relations website at *www.bruker.com*. We intend to disclose future amendments to certain provisions of our Code, or waivers of such provisions granted to executive officers and directors, on the website within four business days following the date of such amendment or waiver.

The information required by this item of Form 10-K is incorporated by reference to our definitive proxy statement (which will be filed with the SEC pursuant to Regulation 14A under the Exchange Act) relating to our 2020 Annual Meeting of Stockholders.

ITEM 11 *EXECUTIVE COMPENSATION*

The information required by this item of Form 10-K is incorporated by reference to our definitive proxy statement (which will be filed with the SEC pursuant to Regulation 14A under the Exchange Act) relating to our 2020 Annual Meeting of Stockholders.

ITEM 12 *SECURITY OWNERSHIP OF CERTAIN BENEFICIAL OWNERS AND MANAGEMENT AND RELATED STOCKHOLDER MATTERS*

The following table summarizes information about our equity compensation plans as of December 31, 2019:

Plan Category	Number of Securities to be Issued Upon Exercise of Outstanding Options, Warrants and Rights	Weighted-Average Exercise Price of Outstanding Options, Warrants and Rights	Number of Securities Remaining Available for Future Issuance Under Equity Compensation Plans (excluding securities reflected in column (a))
Equity compensation plans approved by security holders	2,853,797	$26.86	6,996,098
Equity compensation plans not approved by security holders	N/A	N/A	N/A
	2,853,797	$26.86	6,996,098

The Bruker Corporation 2016 Incentive Compensation Plan, or the 2016 Plan, was approved by our stockholders in May 2016. The 2016 Plan has a term of ten years and provides for the issuance of up to 9,500,000 shares of our common stock. With the approval of the 2016 Plan, no additional grants can be made from our 2010 Incentive Compensation Plan. Outstanding awards under the 2010 Incentive Compensation Plan will continue in accordance with their terms.

The information required by this item of Form 10-K is incorporated by reference to our definitive proxy statement (which will be filed with the SEC pursuant to Regulation 14A under the Exchange Act) relating to our 2020 Annual Meeting of Stockholders.

ITEM 13 ***CERTAIN RELATIONSHIPS AND RELATED TRANSACTIONS, AND DIRECTOR INDEPENDENCE***

The information required by this item of Form 10-K is incorporated by reference to our definitive proxy statement (which will be filed with the SEC pursuant to Regulation 14A under the Exchange Act) relating to our 2020 Annual Meeting of Stockholders.

ITEM 14 ***PRINCIPAL ACCOUNTANT FEES AND SERVICES***

The information required by this item of Form 10-K is incorporated by reference to our definitive proxy statement (which will be filed with the SEC pursuant to Regulation 14A under the Exchange Act) relating to our 2020 Annual Meeting of Stockholders.

PART IV

ITEM 15 ***EXHIBITS, FINANCIAL STATEMENTS AND SCHEDULES***

(a) Financial Statements and Schedules

(1) Financial Statements

The following consolidated financial statements of Bruker Corporation are filed as part of this report under Item 8—Financial Statements and Supplementary Data:

Report of PricewaterhouseCoopers LLP, Independent Registered Public Accounting Firm
Consolidated Balance Sheets as of December 31, 2019 and 2018
Consolidated Statements of Income and Comprehensive Income for the years ended December 31, 2019, 2018 and 2017
Consolidated Statements of Redeemable Noncontrolling Interest and Shareholders' Equity for the years ended December 31, 2019, 2018 and 2017
Consolidated Statements of Cash Flows for the years ended December 31, 2019, 2018 and 2017
Notes to Consolidated Financial Statements

(2) Financial Statement Schedules

All schedules have been omitted because they are not required or because the required information is provided in the Consolidated Financial Statements or Notes thereto set forth under Item 8 above.

(3) Exhibits

(b) List of Exhibits

Exhibit No.	Description of Exhibit
3.1**	Restated Certificate of Incorporation of Bruker Corporation
3.2	Bylaws of Bruker Corporation (incorporated by reference to Exhibit 3.2 to the Company's Registration Statement on Form S-1 filed April 14, 2000 (File No. 333-34820))
4.1	Specimen Stock Certificate Representing Shares of Common Stock of Bruker Corporation (incorporated by reference to Exhibit 4.1 to the Company's Annual Report on Form 10-K filed March 1, 2017 (File No. 000-30833))
4.2**	Description of the Registrant's Securities registered pursuant to Section12 of the Securities Exchange Act of 1934
10.1†	Bruker Corporation 2010 Incentive Compensation Plan (incorporated by reference to Appendix A to the Company's Definitive Proxy Statement on Schedule 14A filed April 14, 2010 (File 000-30833))
10.2†	Bruker Corporation 2010 Incentive Compensation Plan Form of Incentive Stock Option Agreement (incorporated by reference to Exhibit 10.1 to the Company's Quarterly Report on Form 10-Q filed August 9, 2010 (File No. 000-30833))
10.3†	Bruker Corporation 2010 Incentive Compensation Plan Form of Non-Qualified Stock Option Agreement (incorporated by reference to Exhibit 10.2 to the Company's Quarterly Report on Form 10-Q filed August 9, 2010 (File No. 000-30833))

Exhibit No.	Description of Exhibit
10.4†	Bruker Corporation 2010 Incentive Compensation Plan Form of Restricted Stock Agreement (incorporated by reference to Exhibit 10.3 to the Company's Quarterly Report on Form 10-Q filed August 9, 2010 (File No. 000-30833))
10.5	Amended and Restated Credit Agreement, dated as of May 24, 2011, by and among the Company, Bruker AXS GmbH, Bruker Daltonik GmbH, Bruker Optik GmbH, Bruker Physik GmbH, Bruker BioSpin Invest AG, Bruker BioSpin AG and Bruker BioSpin International AG, the other foreign subsidiary borrowers from time to time party thereto, the lenders from time to time party thereto, Deutsche Bank Securities Inc., Commerzbank Ag, New York, Grand Cayman And Stuttgart Branches and RBS Citizens, National Association, as Co-Documentation Agents, Bank of America, N.A. as Syndication Agent and JPMorgan Chase Bank, N.A., as Administrative Agent (incorporated by reference to Exhibit 10.1 to the Company's Current Report on Form 8-K filed May 25, 2011 (File No. 000-30833))
10.6*	Note Purchase Agreement, dated January 18, 2012 (incorporated by reference to Exhibit 10.1 to the Company's Current Report on Form 8-K filed January 19, 2012 (File No. 000-30833))
10.7†	Bruker Energy & Supercon Technologies, Inc. 2009 Stock Option Plan (incorporated by reference to Exhibit 10.34 to the Company's Annual Report on Form 10-K filed March 12, 2010 (File No. 000-30833))
10.8†	Bruker Energy & Supercon Technologies, Inc. 2009 Stock Option Plan Form of Incentive Stock Option Agreement (incorporated by reference to Exhibit 10.35 to the Company's Annual Report on Form 10-K filed March 12, 2010 (File No. 000-30833))
10.9†	Bruker Energy & Supercon Technologies, Inc. 2009 Stock Option Plan Form of Non-Qualified Stock Option Agreement (incorporated by reference to Exhibit 10.36 to the Company's Annual Report on Form 10-K filed March 12, 2010 (File No. 000-30833))
10.10†	Employment Offer Letter Agreement, dated June 25, 2012, by and between the Company and Juergen Srega (incorporated by reference to Exhibit 10.1 to the Company's Quarterly Report on Form 10-Q filed May 9, 2013 (File No. 000-30833))
10.11	Credit Agreement, dated October 27, 2015, by and among the Company and certain of its foreign subsidiaries as borrowers, Citizens Bank, N.A., Deutsche Bank Securities Inc. and TD Bank, N.A., as Co-Documentation Agents, Bank of America, N.A. and Wells Fargo Bank, National Association, as Co-Syndication Agents, JPMorgan Chase Bank, N.A., as Administrative Agent for itself and the other lenders party thereto, and the several banks or other financial institutions or entities from time to time party thereto as lenders (incorporated by reference to Exhibit 10.1 to the Company's Current Report on Form 8-K filed October 29, 2015 (File No. 000-30833))
10.12†	Bruker Corporation 2016 Incentive Compensation Plan (incorporated by reference to Appendix A to the Company's Definitive Proxy Statement on Schedule 14A filed April 22, 2016 (File 000-30833))
10.13†	Bruker Corporation 2016 Incentive Compensation Plan Form of Incentive Stock Option Agreement (incorporated by reference to Exhibit 10.1 to the Company's Quarterly Report on Form 10-Q filed August 9, 2019 (File No. 000-30833))

Exhibit No.	Description of Exhibit
10.14†	Bruker Corporation 2016 Incentive Compensation Plan Form of Non-Qualified Stock Option Agreement (incorporated by reference to Exhibit 10.2 to the Company's Quarterly Report on Form 10-Q filed August 9, 2019 (File No. 000-30833))
10.15†	Bruker Corporation 2016 Incentive Compensation Plan Form of Restricted Stock Unit Agreement (incorporated by reference to Exhibit 10.3 to the Company's Quarterly Report on Form 10-Q filed August 9, 2019 (File No. 000-30833))
10.16†	Bruker Corporation 2016 Incentive Compensation Plan Form of Director Restricted Stock Unit Agreement (incorporated by reference to Exhibit 10.48 to the Company's Annual Report on Form 10-K filed March 1, 2017 (File No. 000-30833))
10.17†	Project Completion Agreement, dated March 23, 2017, by and between the Company and Michael Knell (incorporated by reference to Exhibit 10.1 to the Company's Quarterly Report on Form 10-Q filed May 10, 2017 (File No. 000-30833))
10.18†	Bruker Corporation 2019 Short-Term Incentive Compensation Program (incorporated by reference to Exhibit 10.1 to the Company's Current Report on Form 8-K filed February 21, 2019 (File No. 000-30833))
10.19†	Offer Letter, dated March 17, 2018, by and between the Company and Gerald N. Herman (incorporated by reference to Exhibit 10.2 to the Company's Quarterly Report on Form 10-Q filed May 10, 2018 (File No. 000-30833))
10.20†	Offer Letter, dated June 4, 2018, by and between the Company and Gerald N. Herman (incorporated by reference to Exhibit 10.1 to the Company's Quarterly Report on Form 10-Q filed August 9, 2018 (File No. 000-30833))
10.21†	Contract of Employment, dated May 1, 2018, by and between the Company and Falko Busse (incorporated by reference to Exhibit 10.2 to the Company's Quarterly Report on Form 10-Q filed August 9, 2018 (File No. 000-30833))
10.22†	Form of Indemnification Agreement of Officers and Directors (incorporated by reference to Exhibit 10.1 to the Company's Current Report on Form 8-K filed February 11, 2019 (File No. 000-30833))
10.23	Purchase and Sale Agreement between Bruker Corporation and Frank Laukien and Dirk D. Laukien as Trustees of 44 Manning Road Realty Trust and Umbrina Associates, dated October 31, 2019 (incorporated by reference to Exhibit 10.1 to the Company's Quarterly Report on Form 10-Q filed November 4, 2019 (File No. 000-30833))
10.24	Credit Agreement, dated December 11, 2019, by and among the Company and certain of its subsidiaries as borrowers, Deutsche Bank Securities Inc. and Wells Fargo Bank, National Association, as Co-Syndication Agents, Citizens Bank, N.A., Credit Suisse (Switzerland) Ltd., TD Bank, N.A. and U.S. Bank National Association, as Co-Documentation Agents, Bank of America, N.A., as Administrative Agent, Swing Line Lender and Issuing Bank, and the several banks or other financial institutions or entities from time to time party thereto as lenders (incorporated by reference to Exhibit 10.1 to the Company's Current Report on Form 8-K filed December 12, 2019 (File No. 000-30833))

Exhibit No.	Description of Exhibit
10.25	Term Loan Agreement, dated December 11, 2019, by and among the Company and certain of its subsidiaries, and Bank of America, N.A. as Administrative Agent, TD Bank, N.A. and the other banks or other financial institutions or entities from time to time party thereto as lenders (incorporated by reference to Exhibit 10.1 to the Company's Current Report on Form 8-K filed December 12, 2019 (File No. 000-30833))
10.26	Note Purchase Agreement dated as of December 11, 2019 (incorporated by reference to Exhibit 10.1 to the Company's Current Report on Form 8-K filed December 12, 2019 (File No. 000-30833))
10.27†**	Managing Director Employment Contract, dated as of June 28, 2012, by and between Bruker Daltonik GmbH and Juergen Srega, as amended pursuant to the Supplement to the Managing Director Employment Contract, dated as of December 12, 2019
21.1**	Subsidiaries of the Company
23.1**	Consent of PricewaterhouseCoopers LLP, Independent Registered Public Accounting Firm
24.1**	Power of attorney (included on signature page hereto)
31.1**	Certification by Principal Executive Officer pursuant to Section 302 of the Sarbanes-Oxley Act of 2002
31.2**	Certification by Principal Financial Officer pursuant to Section 302 of the Sarbanes-Oxley Act of 2002
32.1**	Certification by Chief Executive Officer and Chief Financial Officer pursuant to 18 U.S.C. Section 1350, as adopted pursuant to Section 906 of the Sarbanes-Oxley Act of 2002
101.INS**	Inline XBRL Instance Document
101.SCH**	Inline XBRL Taxonomy Extension Schema Document
101.CAL**	Inline XBRL Taxonomy Extension Calculation Linkbase Document
101.DEF**	Inline XBRL Taxonomy Extension Definition Linkbase Document
101.LAB**	Inline XBRL Taxonomy Extension Label Linkbase Document
101.PRE**	Inline XBRL Taxonomy Extension Presentation Linkbase Document
104**	The cover page from the Company's Annual Report on Form 10-K for the year ended December 31, 2019 has been formatted in Inline XBRL (included in Exhibit 101)

* Certain portions have been omitted pursuant to an order granting confidential treatment and have been filed separately with the Securities and Exchange Commission.

† Designates management contract or compensatory plan or arrangement.

** Filed or furnished herewith.

No other instruments defining the rights of holders of long-term debt of the registrant or its subsidiaries have been filed as Exhibits because no such instruments met the threshold materiality requirements under Regulation S-K. The registrant agrees, however, to furnish a copy of any such instruments to the Commission upon request.

ITEM 16 ***FORM 10-K SUMMARY***

Not Applicable.

SIGNATURES

Pursuant to the requirements of Section 13 or 15(d) of the Securities Exchange Act of 1934, the registrant has duly caused this report to be signed on its behalf by the undersigned, thereunto duly authorized.

BRUKER CORPORATION

Date: March 27, 2020

By: /s/ FRANK H. LAUKIEN, PH.D.

Name: Frank H. Laukien, Ph.D.
Title: *President, Chief Executive Officer and Chairman*

We, the undersigned officers and directors of Bruker Corporation, hereby severally constitute and appoint Frank H. Laukien, Ph.D. to sign for us and in our names in the capacities indicated below, the report on Form 10-K filed herewith and any and all amendments to such report, and to file the same, with all exhibits thereto and other documents in connection therewith, in each case, with the Securities and Exchange Commission, and generally to do all such things in our names and on our behalf in our capacities consistent with the provisions of the Securities Exchange Act of 1934, as amended, and all requirements of the Securities and Exchange Commission.

Pursuant to the requirements of the Securities Exchange Act of 1934, this report has been signed below by the following persons on behalf of the registrant and in the capacities and on the dates indicated.

Name	Title	Date
/s/ FRANK H. LAUKIEN, PH.D. Frank H. Laukien, Ph.D.	President, Chief Executive Officer and Chairman (Principal Executive Officer)	March 27, 2020
/s/ GERALD N. HERMAN Gerald N. Herman	Chief Financial Officer and Vice President (Principal Financial Officer and Principal Accounting Officer)	March 27, 2020
/s/ CYNTHIA M. FRIEND, PH.D. Cynthia Friend, PH.D.	Director	March 27, 2020
/s/ MARC A. KASTNER, PH.D. Marc A. Kastner, PH.D.	Director	March 27, 2020
/s/ WILLIAM A. LINTON William A. Linton	Director	March 27, 2020
/s/ GILLES G. MARTIN, PH.D. Gilles G. Martin	Director	March 27, 2020

Name	Title	Date
/s/ JOHN ORNELL John Ornell	Director	March 27, 2020
/s/ RICHARD A. PACKER Richard A. Packer	Director	March 27, 2020
/s/ ADELENE Q. PERKINS Adelene Q. Perkins	Director	March 27, 2020
/s/ HERMANN REQUARDT, PH.D. Hermann Requardt, PH.D.	Director	March 27, 2020
/s/ ROBERT ROSENTHAL, PH.D. Robert Rosenthal, PH.D	Director	March 27, 2020

EXHIBIT 23.1

CONSENT OF INDEPENDENT REGISTERED PUBLIC ACCOUNTING FIRM

We hereby consent to the incorporation by reference in the Registration Statements on Form S-8 (Nos. 333-211686, 333-167333, 333-150430, 333-137090, 333-107294, and 333-47836) of Bruker Corporation of our report dated March 27, 2020 relating to the financial statements and the effectiveness of internal control over financial reporting, which appears in this Form 10-K.

/s/ PricewaterhouseCoopers LLP

Boston, Massachusetts
March 27, 2020

EXHIBIT 31.1

CERTIFICATION

I, Frank H. Laukien, certify that:

1. I have reviewed this annual report on Form 10-K of Bruker Corporation;

2. Based on my knowledge, this report does not contain any untrue statement of a material fact or omit to state a material fact necessary to make the statements made, in light of the circumstances under which such statements were made, not misleading with respect to the period covered by this report;

3. Based on my knowledge, the financial statements, and other financial information included in this report, fairly present in all material respects the financial condition, results of operations and cash flows of the registrant as of, and for, the periods presented in this report;

4. The registrant's other certifying officer and I are responsible for establishing and maintaining disclosure controls and procedures (as defined in Exchange Act Rules 13a-15(e) and 15d-15(e)) and internal control over financial reporting (as defined in Exchange Act Rules 13a-15(f) and 15d-15(f)) for the registrant and have:

   a. designed such disclosure controls and procedures, or caused such disclosure controls and procedures to be designed under our supervision, to ensure that material information relating to the registrant, including its consolidated subsidiaries, is made known to us by others within those entities, particularly during the period in which this report is being prepared;

   b. designed such internal control over financial reporting, or caused such internal control over financial reporting to be designed under our supervision, to provide reasonable assurance regarding the reliability of financial reporting and the preparation of financial statements for external purposes in accordance with generally accepted accounting principles;

   c. evaluated the effectiveness of the registrant's disclosure controls and procedures and presented in this report our conclusions about the effectiveness of the disclosure controls and procedures, as of the end of the period covered by this report based on such evaluation; and

   d. disclosed in this report any change in the registrant's internal control over financial reporting that occurred during the registrant's most recent fiscal quarter (the registrant's fourth fiscal quarter in the case of an annual report) that has materially affected, or is reasonably likely to materially affect, the registrant's internal control over financial reporting; and

5. The registrant's other certifying officer and I have disclosed, based on our most recent evaluation of internal control over financial reporting, to the registrant's auditors and the audit committee of the registrant's board of directors (or persons performing the equivalent functions):

   a. all significant deficiencies and material weaknesses in the design or operation of internal control over financial reporting which are reasonably likely to adversely affect the registrant's ability to record, process, summarize and report financial information; and

   b. any fraud, whether or not material, that involves management or other employees who have a significant role in the registrant's internal control over financial reporting.

Date: March 27, 2020

By: /s/ FRANK H. LAUKIEN, PH.D.

Frank H. Laukien, Ph.D.
President, Chief Executive Officer and Chairman
(Principal Executive Officer)

EXHIBIT 31.2

CERTIFICATION

I, Gerald N. Herman, certify that:

1. I have reviewed this annual report on Form 10-K of Bruker Corporation;

2. Based on my knowledge, this report does not contain any untrue statement of a material fact or omit to state a material fact necessary to make the statements made, in light of the circumstances under which such statements were made, not misleading with respect to the period covered by this report;

3. Based on my knowledge, the financial statements, and other financial information included in this report, fairly present in all material respects the financial condition, results of operations and cash flows of the registrant as of, and for, the periods presented in this report;

4. The registrant's other certifying officer and I are responsible for establishing and maintaining disclosure controls and procedures (as defined in Exchange Act Rules 13a-15(e) and 15d-15(e)) and internal control over financial reporting (as defined in Exchange Act Rules 13a-15(f) and 15d-15(f)) for the registrant and have:

   a. designed such disclosure controls and procedures, or caused such disclosure controls and procedures to be designed under our supervision, to ensure that material information relating to the registrant, including its consolidated subsidiaries, is made known to us by others within those entities, particularly during the period in which this report is being prepared;

   b. designed such internal control over financial reporting, or caused such internal control over financial reporting to be designed under our supervision, to provide reasonable assurance regarding the reliability of financial reporting and the preparation of financial statements for external purposes in accordance with generally accepted accounting principles;

   c. evaluated the effectiveness of the registrant's disclosure controls and procedures and presented in this report our conclusions about the effectiveness of the disclosure controls and procedures, as of the end of the period covered by this report based on such evaluation; and

   d. disclosed in this report any change in the registrant's internal control over financial reporting that occurred during the registrant's most recent fiscal quarter (the registrant's fourth fiscal quarter in the case of an annual report) that has materially affected, or is reasonably likely to materially affect, the registrant's internal control over financial reporting; and

5. The registrant's other certifying officer and I have disclosed, based on our most recent evaluation of internal control over financial reporting, to the registrant's auditors and the audit committee of the registrant's board of directors (or persons performing the equivalent functions):

   a. all significant deficiencies and material weaknesses in the design or operation of internal control over financial reporting which are reasonably likely to adversely affect the registrant's ability to record, process, summarize and report financial information; and

   b. any fraud, whether or not material, that involves management or other employees who have a significant role in the registrant's internal control over financial reporting.

Date: March 27, 2020

By: /s/ GERALD N. HERMAN

Gerald N. Herman
Chief Financial Officer and Vice President
(Principal Financial Officer and Principal Accounting Officer)

EXHIBIT 32.1

CERTIFICATION PURSUANT TO 18 U.S.C. SECTION 1350, AS ADOPTED PURSUANT TO SECTION 906 OF THE SARBANES-OXLEY ACT OF 2002

In connection with the Annual Report of Bruker Corporation (the "Company") on Form 10-K for the year ended December 31, 2019, as filed with the Securities and Exchange Commission on the date hereof (the "Report"), each of the undersigned, Frank H. Laukien, President, Chief Executive Officer and Chairman of the Board of Directors of the Company, and Gerald N. Herman, Chief Financial Officer and Vice President of the Company, certifies, pursuant to 18 U.S.C. section 1350, as adopted pursuant to Section 906 of the Sarbanes-Oxley Act of 2002, that to the best of his knowledge:

(1) The Report fully complies with the requirements of section 13(a) or 15(d) of the Securities Exchange Act of 1934; and

(2) The information contained in the Report fairly presents, in all material respects, the financial condition and results of operations of the Company.

Date: March 27, 2020

By: /s/ FRANK H. LAUKIEN, PH.D.

Frank H. Laukien, Ph.D.
President, Chief Executive Officer and Chairman (Principal Executive Officer)

Date: March 27, 2020

By: /s/ GERALD N. HERMAN

Gerald N. Herman
Chief Financial Officer and Vice President (Principal Financial Officer and Principal Accounting Officer)

Bruker Corporation

RECONCILIATION OF GAAP TO NON-GAAP FINANCIAL MEASURES

(unaudited)

(in millions, except per share amounts)

Reconciliation of Non-GAAP Operating Income, Non-GAAP Profit Before Tax, Non-GAAP Net Income, and Non-GAAP EPS	Twelve Months Ended December 31,			
	2016[1]	2017[1]	2018	2019
GAAP Operating Income	$181.8	$219.5	$262.4	$300.9
Non-GAAP Adjustments:				
Restructuring Costs	20.8	16.2	9.4	1.4
Acquisition-Related Costs	11.1	10.2	7.3	16.8
Purchased Intangible Amortization	21.7	29.6	28.9	38.3
Other Costs	7.1	5.4	9.9	6.6
Total Non-GAAP Adjustments:	$60.7	$61.4	$55.5	$63.1
Non-GAAP Operating Income	$242.5	$280.9	$317.9	$364.0
Non-GAAP Operating Margin	*15.0%*	*15.9%*	*16.8%*	*17.6%*
Non-GAAP Interest & Other Expense, net	(13.4)	(22.3)	(17.7)	(20.5)
Non-GAAP Profit Before Tax	229.1	258.6	300.2	343.5
Non-GAAP Income Tax Provision	(35.9)	(64.7)	(78.5)	(96.6)
Non-GAAP Tax Rate	*15.7%*	*25.0%*	*26.1%*	*28.1%*
Minority Interest	(0.9)	(1.7)	(1.3)	(0.8)
Non-GAAP Net Income Attributable to Bruker	192.3	192.2	220.4	246.1
Weighted Average Shares Outstanding (Diluted)	162.2	159.1	157.2	156.6
Non-GAAP Earnings Per Share	$1.19	$1.21	$1.40	$1.57

Reconciliation of GAAP and Non-GAAP Tax Rate				
GAAP Tax Rate	13.0%	59.4%	26.0%	29.4%
Non-GAAP Adjustments:				
Tax Impact of Non-GAAP Adjustments	−1.0%	−0.1%	−0.6%	−1.3%
Tax Authority Settlements	0.1%	0.0%	0.0%	0.0%
Valuation Allowance Release	3.7%	0.0%	0.0%	0.0%
U.S. Tax Reform- Toll Charge	0.0%	−27.8%	−2.7%	0.6%
U.S. Tax Reform- Tax Rate Change	0.0%	−0.6%	0.1%	0.0%
U.S. Tax Reform- Change in APB 23	0.0%	−6.5%	3.5%	0.0%
Other Discrete Items	−0.1%	0.6%	−0.2%	−0.6%
Total Non-GAAP Adjustments:	2.7%	−34.4%	0.1%	−1.3%
Non-GAAP Tax Rate	15.7%	25.0%	26.1%	28.1%

Reconciliation of GAAP and Non-GAAP Earnings Per Share (Diluted)				
GAAP Earnings Per Share (Diluted)	$0.95	$0.49	$1.14	$1.26
Non-GAAP Adjustments:				
Restructuring Costs	0.13	0.10	0.06	0.01
Acquisition-Related Costs	0.07	0.06	0.05	0.11
Purchased Intangible Amortization	0.14	0.19	0.18	0.24
Other Costs	0.04	0.04	0.06	0.04
Bargain Purchase Gain	(0.06)	—	—	—
Income Tax Rate Differential	(0.08)	0.33	(0.09)	(0.09)
Total Non-GAAP Adjustments:	0.24	0.72	0.26	0.31
Non-GAAP Earnings Per Share (Diluted)	$1.19	$1.21	$1.40	$1.57

Bruker Corporation

RECONCILIATION OF GAAP TO NON-GAAP FINANCIAL MEASURES

(unaudited)

(in millions, except per share amounts)

Reconciliation of Non-GAAP Operating Income, Non-GAAP Profit Before Tax, Non-GAAP Net Income, and Non-GAAP EPS	Twelve Months Ended December 31,			
	2016[1]	2017[1]	2018	2019
Reconciliation of GAAP and Non-GAAP Interest & Other Income (Expense), net				
GAAP Interest & Other Income (Expense), net	$(4.2)	$(21.7)	$(17.7)	$(20.5)
Non-GAAP Adjustments:				
Bargain Purchase Gain	(9.2)	(0.6)	—	—
Non-GAAP Interest & Other Income (Expense), net	$(13.4)	$(22.3)	$(17.7)	$(20.5)

Reconciliation of Impact of Adoption of ASU 2017-07				
Cost of revenues	$(2.8)	$(3.0)	$(2.1)	$(1.4)
Selling, general and administrative	(0.7)	(0.7)	(1.1)	(0.8)
Research and development	(1.1)	(1.1)	(0.7)	(0.3)
Interest and other income (expense), net	4.6	4.8	3.9	2.5
Net Impact to Net Income and Earnings per Share:	$—	$—	$—	$—

(1) The Company adopted Accounting Standards Update (ASU) 2017-07 as of January 1, 2018 under the retrospective approach. Accordingly, the 2016 and 2017 income statement accounts have been restated to reflect ASU 2017-07.

Bruker Corporation

REVENUE

(unaudited)

(in millions)

	Twelve Months Ended December 31,			
	2016	**2017**	**2018**	**2019**
Reconciliation of GAAP Reported Revenue Growth to Organic Revenue Growth			**Total Bruker**	
GAAP Revenue as of Prior Comparable Period	$1,623.8	$1,611.3	$1,765.9	$1,895.6
Non-GAAP Adjustments:				
Acquisitions and divestitures	32.4	77.2	28.2	118.4
Organic	(36.6)	57.8	76.0	108.9
Constant Currency Revenue Growth:	(4.2)	135.0	104.2	227.3
Currency	(8.3)	19.6	25.5	(50.3)
Total Non-GAAP Adjustments:	(12.5)	154.6	129.7	177.0
Non-GAAP Revenue	$1,611.3	$1,765.9	$1,895.6	$2,072.6
Revenue Growth	−0.8%	9.6%	7.3%	9.3%
Organic Revenue Growth	−2.3%	3.6%	4.3%	5.7%
Constant Currency Revenue Growth	−0.3%	8.4%	5.9%	12.0%

Reconciliation of GAAP Reported Revenue Growth to Organic Revenue Growth	**Bruker BioSpin**	
GAAP Revenue as of Prior Comparable Period	$571.9	$591.1
Non-GAAP Adjustments:		
Acquisitions and divestitures	0.5	7.9
Organic	12.9	34.5
Constant Currency Revenue Growth:	13.4	42.4
Currency	5.8	(12.1)
Total Non-GAAP Adjustments:	19.2	30.3
Non-GAAP Revenue	$591.1	$621.4
Revenue Growth	3.4%	5.1%
Organic Revenue Growth	2.3%	5.8%
Constant Currency Revenue Growth	2.4%	7.1%

Reconciliation of GAAP Reported Revenue Growth to Organic Revenue Growth	**Bruker CALID**	
GAAP Revenue as of Prior Comparable Period	$499.0	$547.8
Non-GAAP Adjustments:		
Acquisitions and divestitures	10.7	30.6
Organic	29.5	64.2
Constant Currency Revenue Growth:	40.2	94.8
Currency	8.6	(19.1)
Total Non-GAAP Adjustments:	48.8	75.7
Non-GAAP Revenue	$547.8	$623.5
Revenue Growth	9.8%	13.8%
Organic Revenue Growth	5.9%	11.7%
Constant Currency Revenue Growth	8.0%	17.3%

Reconciliation of GAAP Reported Revenue Growth to Organic Revenue Growth	**Bruker NANO**	
GAAP Revenue as of Prior Comparable Period	$513.0	$568.1
Non-GAAP Adjustments:		
Acquisitions and divestitures	17.0	75.2
Organic	32.0	0.9
Constant Currency Revenue Growth:	49.0	76.1
Currency	6.1	(11.5)
Total Non-GAAP Adjustments:	55.1	64.6
Non-GAAP Revenue	$568.1	$632.7
Revenue Growth	10.7%	11.4%
Organic Revenue Growth	6.2%	0.2%
Constant Currency Revenue Growth	9.5%	13.4%

Reconciliation of GAAP Reported Revenue Growth to Organic Revenue Growth	**BEST, net of Intercompany Eliminations**	
GAAP Revenue as of Prior Comparable Period	$182.0	$188.6
Non-GAAP Adjustments:		
Acquisitions and divestitures	—	4.8
Organic	1.6	9.3
Constant Currency Revenue Growth:	1.6	14.1
Currency	5.0	(7.7)
Total Non-GAAP Adjustments:	6.6	6.4
Non-GAAP Revenue	$188.6	$195.0
Revenue Growth	3.6%	3.4%
Organic Revenue Growth	0.9%	4.9%
Constant Currency Revenue Growth	0.9%	7.4%

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Executive Management

Frank H. Laukien, Ph.D.
President & Chief Executive Officer

Gerald N. Herman
Chief Financial Officer

Mark R. Munch, Ph.D.
President, Bruker Nano Group

Juergen Srega
President, Bruker CALID Group

Falko Busse, Ph.D.
President, Bruker BioSpin Group

Burkhard Prause, Ph.D.
President, Bruker Energy & Supercon Technologies (BEST)

Corporate & Investor Information

Corporate Headquarters:
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Common Stock Listing:
Common stock of Bruker Corporation is traded on Nasdaq under the symbol "BRKR"

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Board of Directors

Frank H. Laukien, Ph.D.
Chairman

Cynthia M. Friend, Ph.D.
Director of the Energy Frontier Research Center for Sustainable Catalysis, Harvard University

Gilles G. Martin, Ph.D.
Chairman & Chief Executive Officer, Eurofins Scientific Group

Marc A. Kastner, Ph.D.
Donner Professor of Physics, Emeritus, MIT
Adjunct Professor of Physics, Stanford University

William A. Linton, Ph.D.
Chairman & Chief Executive Officer, Promega Corporation

John Ornell
Former Chief Financial Officer, Waters Corporation

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Primary Executive Officer, Healthcare Business Unit, Asahi Kasei Corporation

Adelene Q. Perkins
Chair & Chief Executive Officer, Infinity Pharmaceuticals, Inc.

Hermann Requardt, Ph.D.
Former Chief Executive Officer, Siemens Healthcare

Robert J. Rosenthal, Ph.D.
Chairman & Former Chief Executive Officer Taconic Biosciences, Inc.

From left to right (back row): Robert J. Rosenthal, Hermann Requardt, Richard A. Packer, Frank H. Laukien, John Ornell
From left to right (front row): Cynthia M. Friend, William A. Linton, Adelene Q. Perkins, Marc A. Kastner
Not pictured: Gilles G. Martin

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