17th Bruker
Users’ Group Meeting 2010
Single Crystal X-ray Diffraction

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Karlsruhe

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50 Years Of Innovation
Bruker Corporation
The Beginnings

• Bruker was founded by Prof. Günther Laukien
• Professor for Experimental Physics
• First high-resolution systems for use in analytical chemistry in the US
• Recognized the power of NMR and the need for an impulse spectrometer
• Established BRUKER company in 1960
Why the Name Bruker?

- At the time Bruker was founded, University professors in Germany were **not allowed to commercialize** their research while still teaching.
- Since Professor Laukien could not be named as a founding member, co-founder **Dr. Emil Bruker** provided his name to the growing start-up.
The Founding of Bruker-Physik AG

- **Bruker Physik-AG** was incorporated on **September 7th, 1960**
- Located **in the backyard of a Karlsruhe residence**
- Development of first NMR spectrometers began with the production of laboratory magnets and power supplies
- Bruker quickly outgrew this facility
- **Moved to Rheinstetten**
Trüb Täuber and Bruker in Switzerland

- **1960** - Trüb Täuber was developing **NMR systems in Zürich**
- Closely collaborating with the ETH Zürich
- First NMR, KIS, operated at 25 MHz using a permanent magnet
- KIS 2 introduced for high-resolution spectroscopy (90 MHz)

1962: NMR laboratory with KIS1
Establishing **Spectrospin AG** enabled *close cooperation with Bruker*

- Introduction of first fully transistorized NMR instrument, the HFX 90
- First spectrometer to offer three independent channels for detection, decoupling, and lock
- New experiments became possible
- Previously difficult experiments became routine
Fourier Transform (FT) NMR

- 1964 - Fourier Transform research led to significant increases in sensitivity
- **1969 - World’s first FT-NMR spectrometer** system that enabled broadband proton decoupling
- Sensational results including revolutionary $^{13}$C spectra

1969: WH 90, the first FT-only NMR Spectrometer

1969: One of the first $^{13}$C FT Spectra. Measuring time now reduced to 200 seconds
Expansion towards North America

- 1968 - Bruker began delivering systems to America (Yale University)
- Systems were shipped by transatlantic air service
- To address growing American demand for these systems, Bruker opened its first US office in Elmsford, NY

1968: First HFX 90 for the United States (Yale Univ.) being loaded onto a Boeing 707
The Global Bruker Group

- Increased global presence needed to become key player in the analytical instrument market
- Sales offices established throughout Europe, including **UK and Italy in early 1970s**
- **1969** - Expansion into **USSR**
- **1972** - Expansion reached **Australia**
- **1975** – Arrival in **China**, with a successful appearance at Exhibition in Beijing

1975: Mr. Fanf Yi, PRC Vice President and President of the Chinese Academy visits the Bruker stand at show in Beijing
FT-IR

- Development of new infrared spectrometers in the 1970s
- **1974** - IFS 110 was Bruker’s first FT-IR spectrometer - the beginning of a very successful product line
- **Foundation of the Bruker Optics** division
- Today, Bruker Optics offers a comprehensive vibrational spectroscopy product-line

1974: IFS 110, Bruker’s first FT-IR spectrometer
Magnetic Resonance Imaging

- Strengths in NMR led to developments in MRI
- **Late 1970s** – Tomography systems for clinical and pre-clinical applications led to **whole-body clinical MRI instrumentation**
- Focus shifted towards pre-clinical systems
- Bruker BioSpin MRI today market leader in the field

1983: One of the first whole body MRI tomographs with air coil magnet
Mass Spectrometry

- **1980** - Bruker founded “Bruker-Franzen Analytik”
- Adding quadrupole mass spectrometers to the Bruker portfolio
- Based on expertise in MR and superconducting magnet technology, Bruker successfully developed a new type of mass spectrometer
- **1982** - First installations of FT-ICR mass spec systems
- **1990** - Foundation of Bruker Saxonia in Leipzig, dedicated to ion mobility spectrometry

1980: MM1, the first mobile detection system
X-ray Technologies

- **1997** - Bruker acquired the **analytical X-ray division of Siemens AG**

- Manufacturing facilities in Karlsruhe and Madison, Wisconsin

- Extended its technology portfolio by complementary **business acquisitions** (Nonius, MacScience, Röntec, PGT, Socabim, Keymaster, Quantron, JuWe, SIS, ...)

- Today Bruker AXS is a global market and technology leader in materials research and quality control instrumentation for elemental and crystalline structure investigations

D8 ADVANCE, new generation of X-ray powder diffraction instrument launched in 1997
Superconductor Technologies

- **Superconducting wire** essential component of several product lines
- **2002** – Acquisition of *Vacuumschmelze Hanau*
- **2008** - Acquisition of *ACCEL*
- **2009** - Formation of *Bruker Energy and Supercon Technologies (BEST)*
- BEST is a leading manufacturer and developer of a broad range of high-performance superconductor wire products and devices

Production of Bruker Energy & Supercon Technologies in Hanau
New Bruker Corporation

- **2000** - Organizational restructuring to meet the needs of modern markets
- **2001** - Bruker Daltonics was the first of to be listed on the NASDAQ, to be followed by Bruker AXS in **2002**
- **2006** - Joined by Bruker Optics
- **2008** - Merger of all Bruker corporate units was complete, with the final addition of Bruker BioSpin, the magnetic resonance division that started it all
Bruker Corporation

Today

- Bruker Corporation is one of the worldwide “top ten” analytical instruments companies with > $1 Billion 2008 revenue
- Bruker Corporation is listed at the NASDAQ (BRKR)
- More than 4500 employees worldwide
Bruker AXS
Worldwide Sales & Service Locations

- Headquarters and R&D and Production Centers
- Technical Competence Centers
- Sales and Service Offices