

# 17<sup>th</sup> Bruker Users' Group Meeting 2010 Single Crystal X-ray Diffraction

21.09.2010  
Karlsruhe

Frank Burgäzy



# 50 Years Of Innovation Bruker Corporation

# The Beginnings



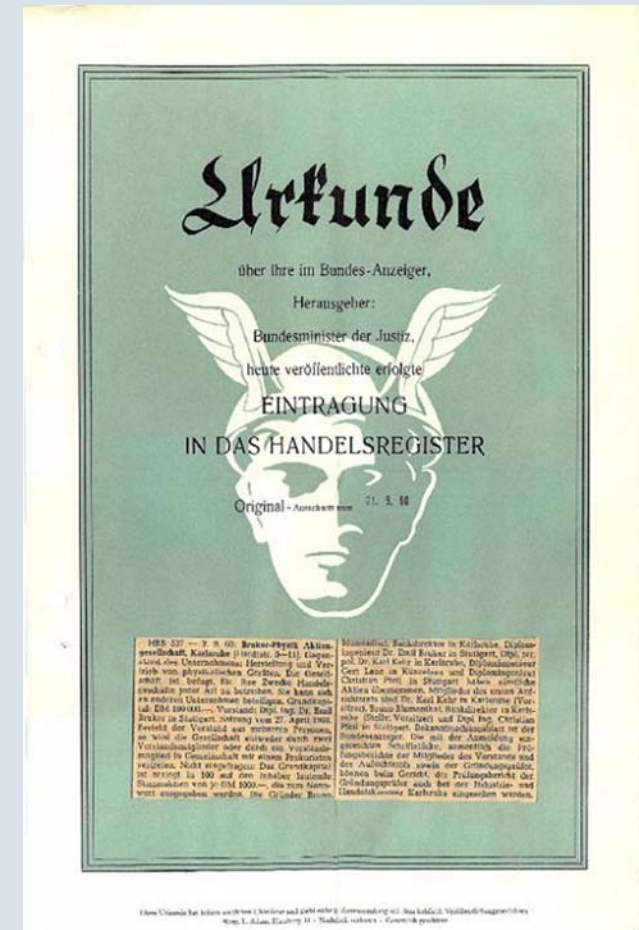
- Bruker was founded by **Prof. Günther Laukien**
- Professor for Experimental Physics
- First high-resolution systems for use in analytical chemistry in the US
- Recognized the power of NMR and the need for an impulse spectrometer
- **Established BRUKER company in 1960**



Prof. Günther Laukien

# 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**

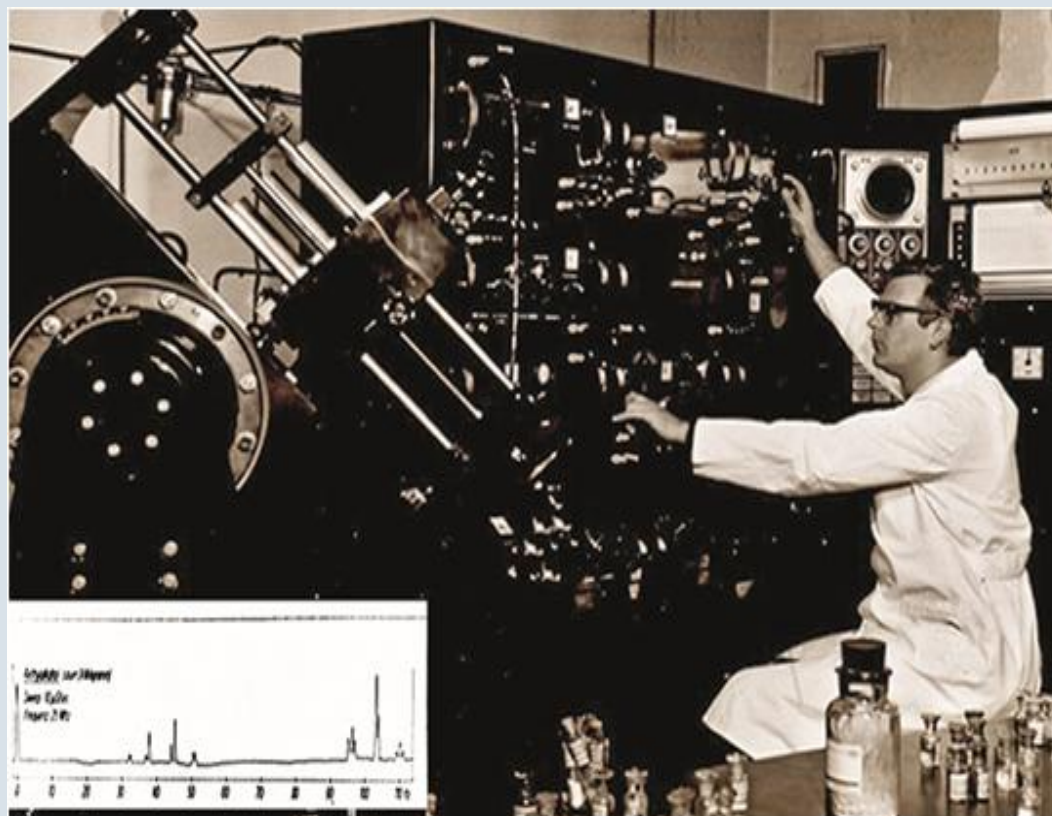


Bruker Physik AG's first operational facility in Hardtstraße, Karlsruhe, Germany.



# 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 with KIS1

# Bruker-Spectrospin Collaboration



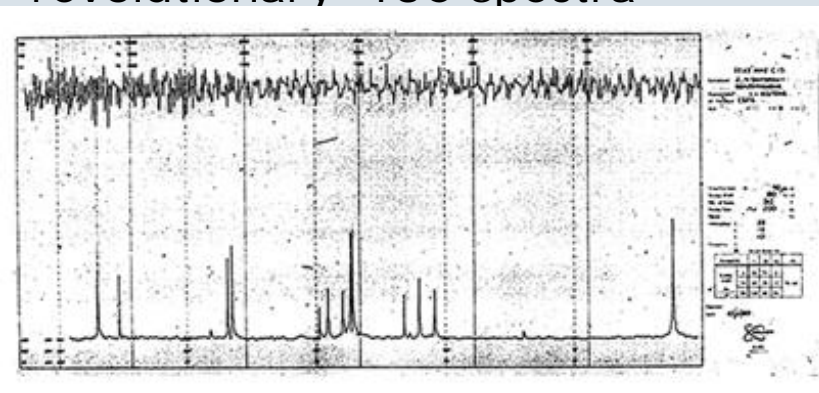
- Establishing **Spectrospin AG** enabled **close cooperation with Bruker**
- Introduction of first fully transistorized NMR instrument, the HFX 90
- First spectrometer to offer three independent channels for detection, decoupling, and lock
- New experiments became possible
- Previously difficult experiments became routine



1967: HFX 90, the first fully transistorized NMR system, equipped with three independent channels

# 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  $^{13}\text{C}$  spectra



1969 : One of the first  $^{13}\text{C}$  FT Spectra.  
Measuring time now reduced to 200 seconds



1971: WH 90, the first FT-only NMR Spectrometer



## 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 headquarters in Billerica, Massachusetts, USA

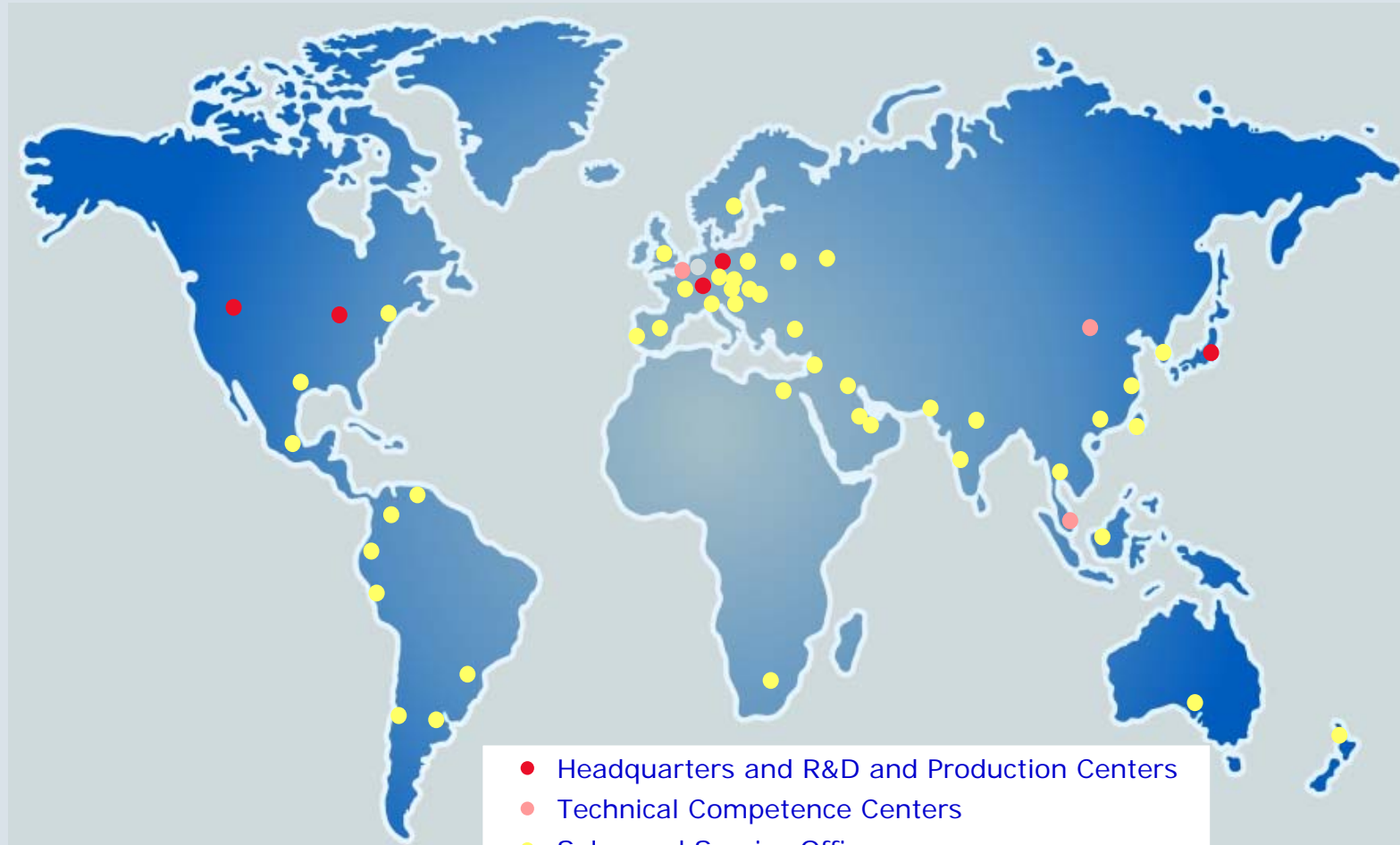


# Bruker Corporation Today

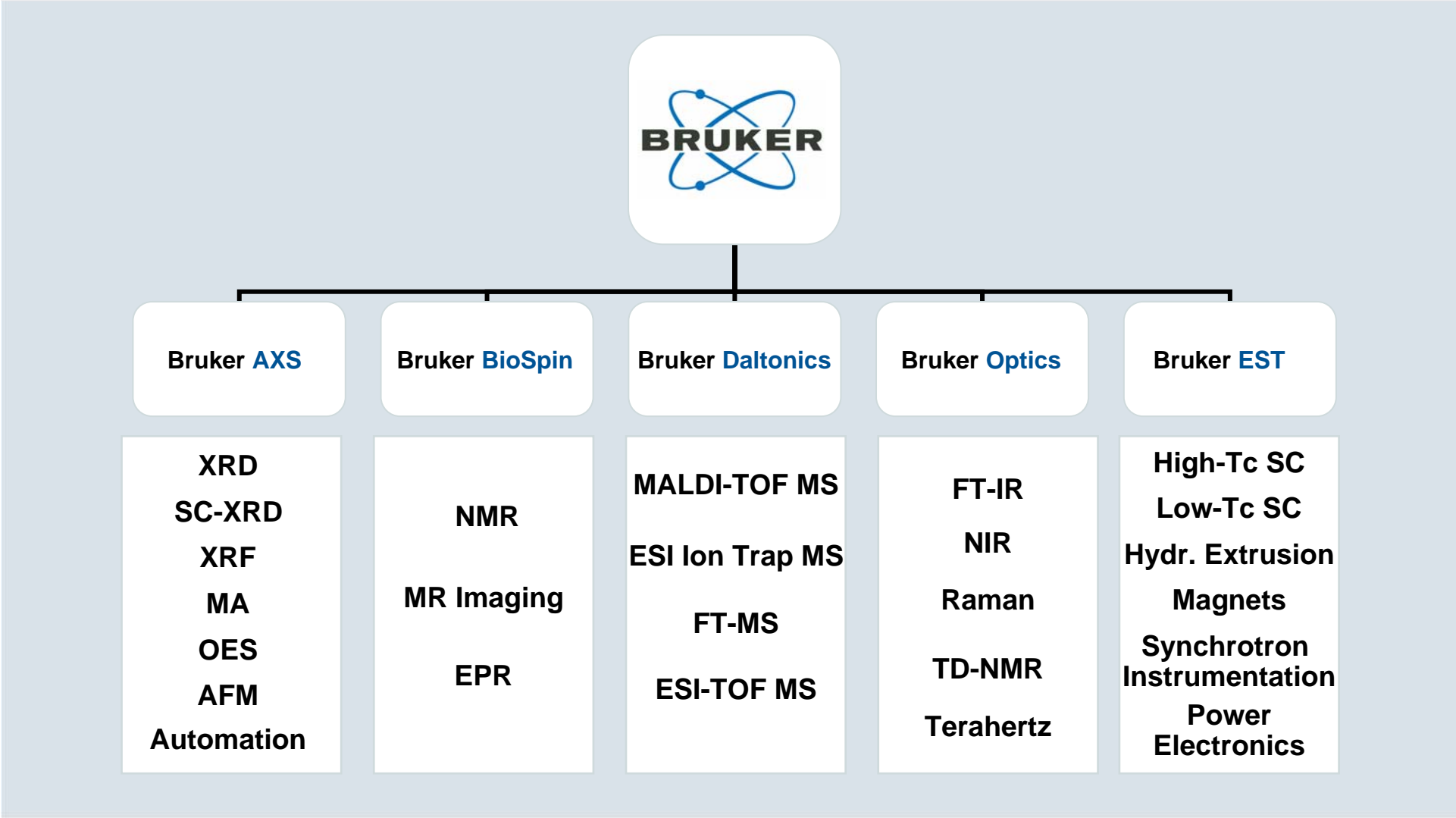


- Bruker Corporation is one of the **worldwide “top ten”** analytical instruments companies with > \$ 1 Billion 2008 revenue
- Bruker Corporation is listed at the **NASDAQ (BRKR)**
- More than **4500 employees** worldwide

# Bruker AXS Worldwide Sales & Service Locations



# Bruker Corporation





# BRUKER

**50** years of  
innovation