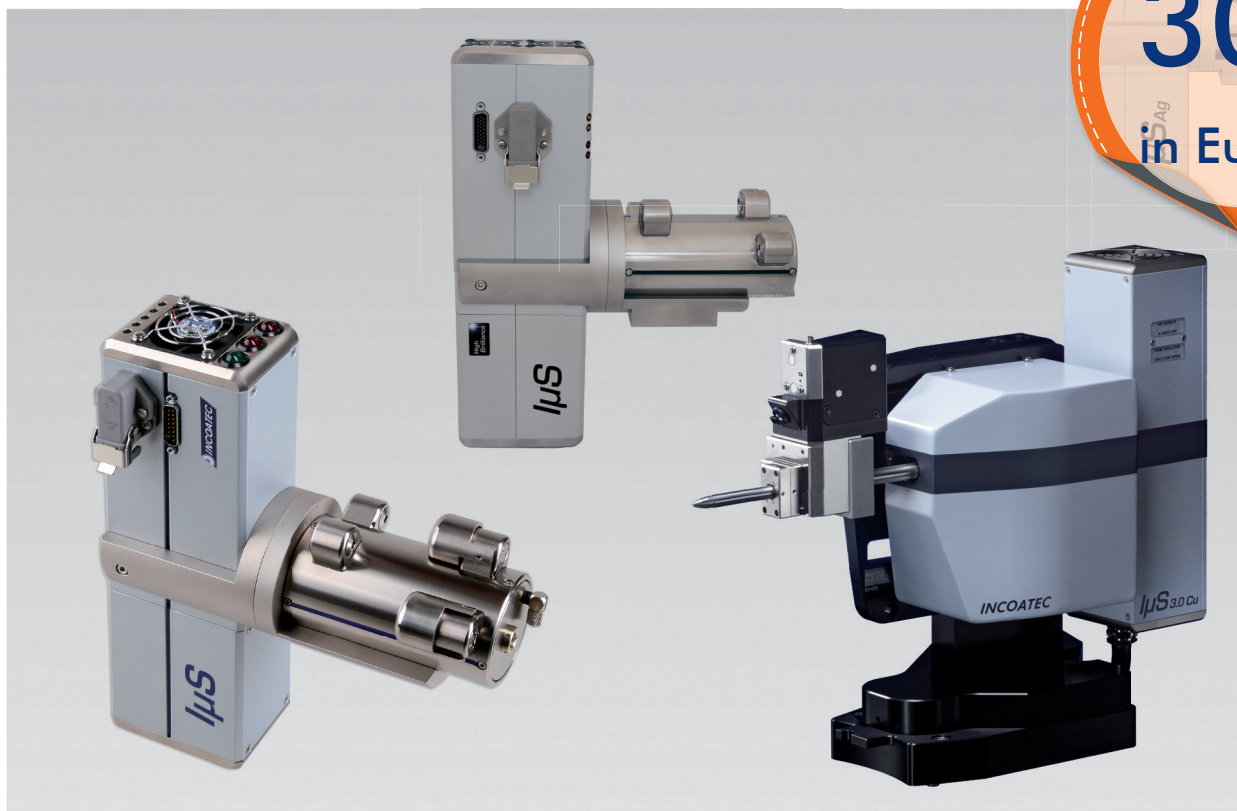


# The $\mu$ S-Story

## 10 Years Incoatec Microfocus Source

more than  
**300**  
sold  
in Europe



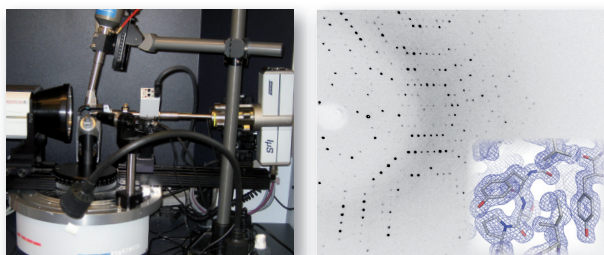
The three generations of Incoatec Microfocus Sources:  $\mu$ S,  $\mu$ S<sup>High Brilliance</sup> and  $\mu$ S 3.0

### Incoatec Microfocus Source $\mu$ S- The Air-cooled, Yet Most Powerful Microfocus Sealed Tube X-ray Source

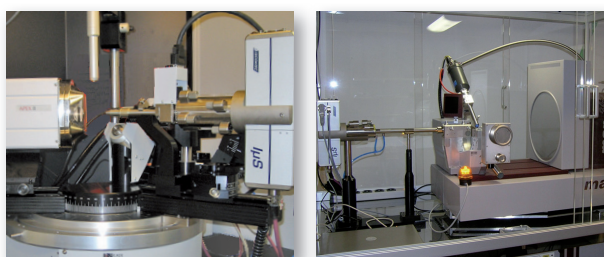
- With Incoatec's X-ray Tube IXT - the first and only microfocus sealed tube optimized for crystallography, designed by Incoatec
- State-of-the-art Montel multilayer mirrors for 2D focusing or collimating
- Available for different energies - Cu, Mo, Ag, Cr and Co radiation
- Superb performance comparable to first generation microfocus rotating anodes
- 3 years warranty
- Long lifetime without maintenance, and low cost of ownership
- Improved user-friendliness
- Highest safety standards and fully compliant with Machinery Directive 2006/42/EC
- Easily adaptable to all common goniometers

**Bright. Brighter. Unique.**

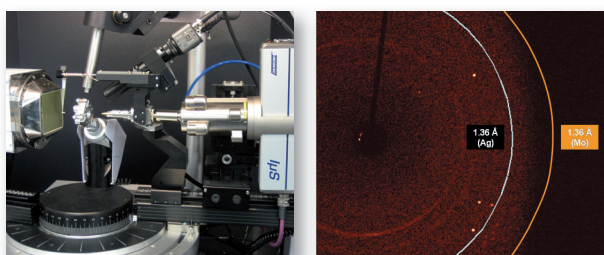
**2006** The Incoatec Microfocus Source  $\mu$ S for protein crystallography and small angle scattering was launched at the ECM 23 meeting in Leuven, Belgium, with the mission to offer an air-cooled and extremely durable microfocus X-ray source with a highly brilliant and stable X-ray beam that combines all advantages of a sealed tube with the performance comparable to rotating anode generators. We set out with the promise to constantly improve this concept over the following years.



**2007** In early 2007, we launched the Mo- $\mu$ S for chemical crystallography at DGK meeting in Bremen, Germany. Later that year, the first Cu- $\mu$ S sources for protein screening were installed at the Center of Biochemistry and Molecular Biology in Kiel, Germany and at the Biocenter Basel, Switzerland.



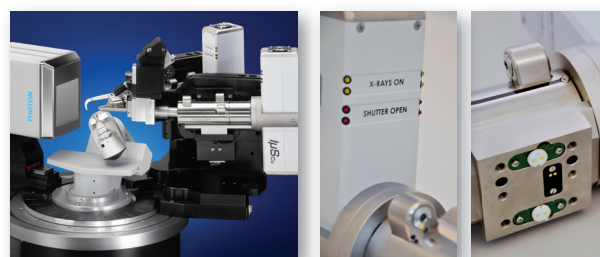
**2009** After a busy year with more than 10  $\mu$ S upgrades, the Ag- $\mu$ S for high pressure crystallography and solid state chemistry was launched at the ACA meeting in Toronto, Canada. The first Ag- $\mu$ S was then installed at the Institute of Inorganic Chemistry in Göttingen, Germany.



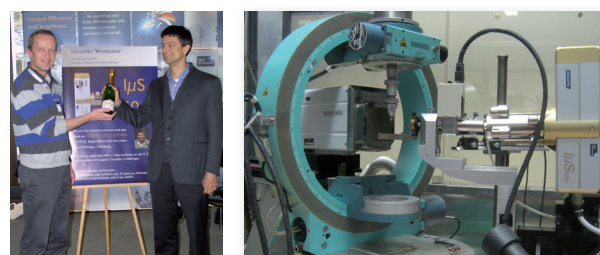
**2010** In October, we celebrated the 100th  $\mu$ S sold as a DUO system to Dr. Pascal Roussel from the CNRS, Lille, France with a special event.



**2011** Only five years after the successful launch of the  $\mu$ S, we introduced the next generation, the  $\mu$ S<sup>High Brilliance</sup>. Its outstanding performance again raised the standard of low-maintenance sealed tube solutions and made the  $\mu$ S<sup>High Brilliance</sup> the ultimate standard for crystallography. Compared to the original  $\mu$ S, the  $\mu$ S<sup>High Brilliance</sup> shows an increase in intensity of up to 60 %, as the improved heat-management allows for the production of more photons in the same small spot. Furthermore, memory chips, built into the tube, tube mount and the optics, record the real-time status of the components and allow for an easier serviceability and exchange of components.



**2015** We celebrated our 500th  $\mu$ S customer, PD Dr. Birger Dittich from the Institute for Inorganic Chemistry in Göttingen, Germany, who has a specially made golden Mo- $\mu$ S which is used for research in developing new methods for accurate charge density studies.



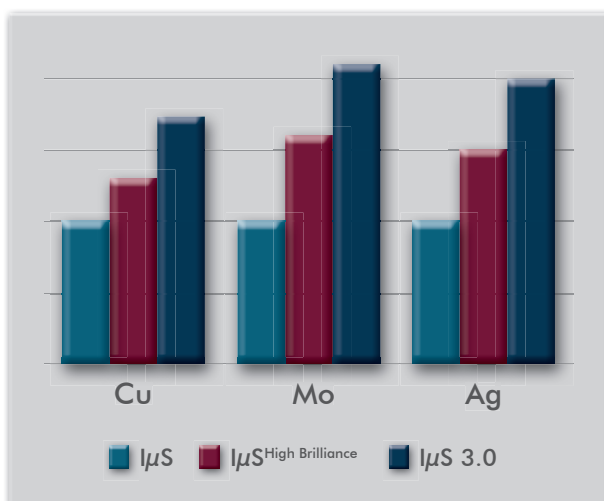


During the AsCA meeting in Kolkata, India, we launched the latest generation of the Incoatec Microfocus Source - the  $\mu$ S 3.0. This time, the benchmark has been set even higher with the design of a new tube - the Incoatec X-ray Tube IXT.



With a further increase in intensity of 30-40 %, the  $\mu$ S 3.0 is available for Cu, Mo and Ag radiation in the latest Bruker AXS solutions for crystallography, the D8 Solutions - Second Generation. Beside the tube, the mechanics, electronics and beam path have also been optimized for improved convenience. The mechanical separation of tube and optics enables easy alignment. With the new Quick-lock concept, the tube and optics can be changed without having to realign the whole instrument. Furthermore, a vacuum pump is no longer needed due to the new sealed optics housing filled with Helium.

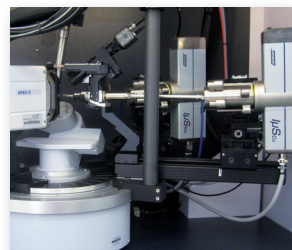
### Comparison of intensity



**UPGRADE** With Incoatec's established highly qualified customer and service support team we offer a unique opportunity of upgrading existing diffractometers with our high-performance  $\mu$ S. Our long-standing experience is based on more than 80 projects worldwide in which we upgraded a wide variety of existing diffractometers and integrated the  $\mu$ S in customized solutions.

### Your upgrade options

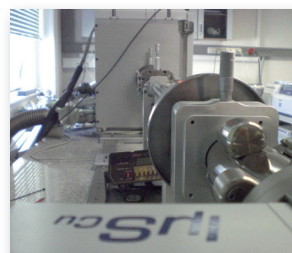
- Bruker AXS, Marresearch, Nonius, STOE, Rigaku, Huber and nearly any other system
- Source, optics and beam conditioning elements
- Single source upgrade for XRD, SCD, XRR, (GI)SAXS and many more applications
- Dual wavelength setup by adding the  $\mu$ S as a complementary source
- Cu, Mo, Ag, Co and Cr radiation (others on request)



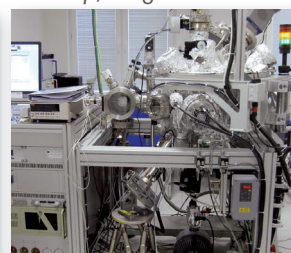
Bruker APEX II DUO  $\mu$ S in Düsseldorf, Germany



Combined XRF/XRD setup for analysing paintings in Antwerp, Belgium



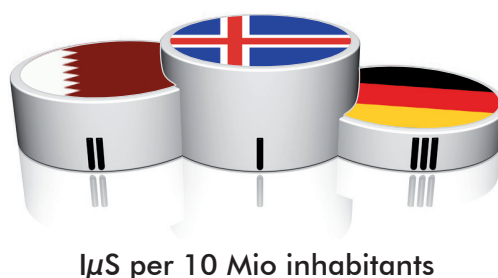
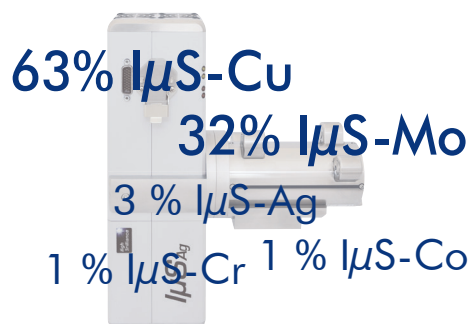
Bruker NANOSTAR in Vienna, Austria



$\mu$ S for in-situ (GI)SAXS during thin film deposition in Bratislava, Slovakia

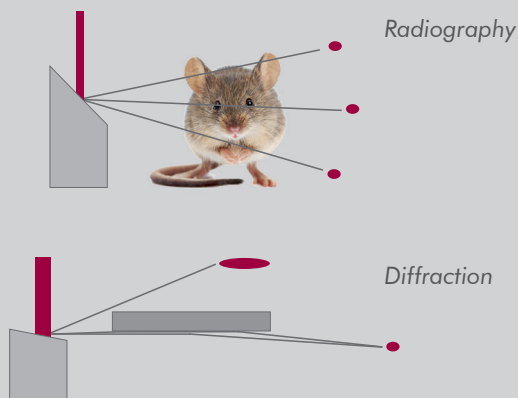
During the last 10 years since its launch, the  $\mu$ S is regarded as the superior X-ray source for single crystal diffraction in the home-lab. More than 700 sources have been sold worldwide as proof of outstanding performance and reliability with best value for money. The compact design makes the  $\mu$ S an attractive component for many academic and industrial research organizations to upgrade existing X-ray analytical instruments to cutting-edge performance. Get the experience of the  $\mu$ S!

10 Years  $\mu$ S stands for ...



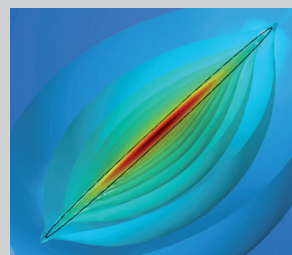
## IXT - The Tube Story

For some time Incoatec has been designing its own tube family - the Incoatec X-ray Tube IXT. IXT is the first and only microfocus sealed tube that is designed and optimized for crystallography. Most microfocus tubes on the market were designed primarily for radiography.

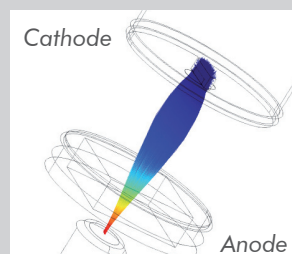


Radiography features high take-off angles in order to preserve resolution over a wide field of view. Diffraction does not require a wide field of view, it only requires intense X-ray beams.

Higher intensities were achieved by a new tube design and the optimization of critical tube parts by changing cathode and anode parameters as well as geometries and take-off angles. An intense beam of X-rays is achieved by reducing the take-off angles and elongating the electron beam on the anode. This new tube technology gives Incoatec the exclusive opportunity to offer the  $\mu$ S with specifications not achievable with other microfocus sealed tubes on the market.



Finite element analysis of the thermal load on the anode.



Electron-optic ray-tracing optimization of the focal spot.

Contact and challenge us!

sales@incoatec.de  
www.incoatec.de

