

Microfocusing X-ray Equipment for the Lab

**Bernd Hasse¹, Steffen Kroth¹, Jörg Wiesmann¹, Carsten Michaelsen¹,
Uwe Preckwinkel², Holger Cordes², Ning Yang²**

¹ Incoatec GmbH, Max-Planck-Strasse 2, 21502 Geesthacht, Germany

² Bruker AXS Inc., 5465 East Cheryl Parkway , Madison, WI 53711-5373, U.S.A.

The increasing importance of X-ray diffractometry with 2-dim detectors has lead to a rising demand for highly intense X-ray sources enabling the analysis of very small and weakly scattering samples in the home-lab within a reasonable time frame. Therefore, various microfocusing sealed tube X-ray sources with focal spot sizes below 100µm are now available.

We present the new low-maintenance Incoatec Microfocus Source IµS, which incorporates an optimized combination of an extremely bright and very durable stationary air-cooled 30 W microfocus source and the newest type of 2-dim beam shaping multilayer optics, the so called Quazar optics. IµS has all the advantages of a sealed tube system, and a performance exceeding combinations of traditional rotating anodes with multilayer optics. With a 2-dim focussing mirror IµS reaches for example a flux above $3 \cdot 10^8$ cps in a 250µm spot with Cu-K α or a flux above 10^7 cps in a 110µm spot for Mo-K α .

With IµS we have collected data of outstanding quality in applications like protein and small molecule crystallography, phase identification, μ -diffraction, screening and small-angle scattering. The applications demonstrate that we achieve much better quality in XRD applications with a 2-dim detector in comparison to the common sealed tube systems. Furthermore, IµS can be a low cost and energy efficient replacement for a few years old traditional rotating anode systems.