

NEW POSSIBILITIES FOR X-RAY DIFFRACTOMETRY

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The latest developments in new X-ray microfocus sources lead to new possibilities in X-ray diffractometry. Using the new Incoatec Microfocus Source ($I\mu S^{\text{TM}}$) with the latest kind of two dimensional focussing Montel optics, the so called QuazarTM optics, in combination with a two dimensional detector allows high quality diffractometry measurements with very good resolution of very small and weakly scattering samples in the home-lab in short time.

The advantages of the new 30 W air cooled $I\mu S^{\text{TM}}$ with a focal spot size below 50 μm are presented. The use of $I\mu S^{\text{TM}}$ is as easy as for all sealed tube systems and the performance exceeds typical combinations of traditional rotating anodes with multilayer optics. With a focussing optics $I\mu S^{\text{TM}}$ achieves in a single crystal diffraction set-up a flux above $3 \cdot 10^8$ cps in a 250 μm spot with $\text{Cu-K}\alpha$ or a flux above 10^7 cps in an 110 μm spot for $\text{Mo-K}\alpha$ radiation. For SAXS experiments there is also an $I\mu S^{\text{TM}}$ available with a 2 dimensional collimating optics.

Examples of new application measurements on X-ray standard samples and pharmaceutical compounds are shown. The figure shows the X-ray powder diffraction patterns of ibuprofen recorded with a typical parallel beam sealed tube set-up (left) and with $I\mu S^{\text{TM}}$ (right) in transmission setup.

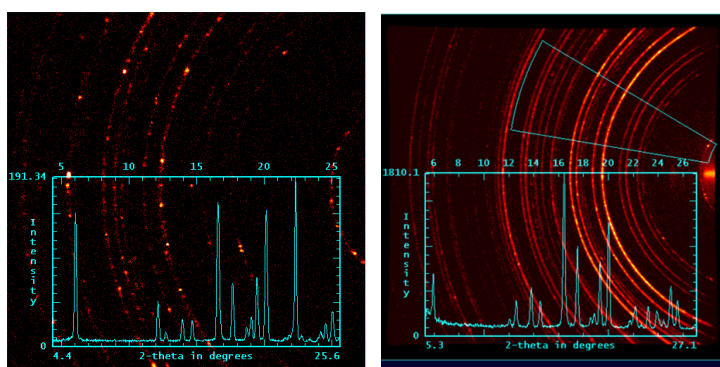


Figure: Diffraction pattern of ibuprofen recorded with a parallel beam sealed-tube set-up (left) and an $I\mu S^{\text{TM}}$ (right), both with a Bruker D8 GADDS. The exposure times were 120 sec (left) and 15 sec (right) respectively.