

## **THE VERSATILITY OF THE INCOATEC MICROFOCUS SOURCE IN X-RAY DIFFRACTOMETRY**

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The Incoatec microfocus source I $\mu$ S<sup>TM</sup> incorporates an optimized combination of an extremely bright and very durable stationary air-cooled 30 W microfocus source and the newest type of two-dimensional beam shaping multilayer optics, the so called Quazar optics. The source is available with copper, molybdenum, chrome and silver radiation. The optics can come as focusing or collimating beam optics or as a hybrid optics, where one mirror is focusing and the other mirror is collimating the X-ray beam, resulting in a line focus.

The I $\mu$ S can be used for single crystal diffraction, small angle x-ray scattering, materials characterization, powder diffraction, and many other applications. We will show measurements of the I $\mu$ S equipped with different two-dimensional beam shaping multilayer optics in the fields of powder diffraction and materials characterization like texture measurements or residual stress measurements to name but a few.

Residual stress measurements were done on iron containing samples using an I $\mu$ S with chrome radiation and focusing optics. A stress profile perpendicular to a weld was recorded with a resolution of 1 mm.

In powder diffractometry huge improvements in intensity and data quality with an I $\mu$ S compared to a standard sealed tube system could be observed. In reflection geometry gains in intensity of a factor of 15 were observed, in transmission geometry when focusing to a two dimensional detector the gain was a factor of 100.

The applications and results presented here are showing the versatility of the I $\mu$ S. The source can be used for all kinds of experiments and can easily be integrated in all setups.