

FAST DIFFRACTION STUDIES WITH MICROFOCUS SOURCES

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Low power microfocus sealed tube systems with multilayer optics are increasingly used in single crystal diffraction benefiting from the brilliance of the beam for small crystal analysis and low power consumption offering high stability and low maintenance. However use of such systems in powder diffraction or standard thin film XRD applications has been limited up today. We will present the efficient combination of microfocus beam delivery systems with PSD detectors based on different fast diffraction study examples.

High quality optic is a prerequisite for efficient coupling with low power microfocus sealed tubes. We will be presenting the latest developments on the GeniX platform, a beam delivery system combining a low power microfocus tube and a single reflection optic with improved focusing properties. We have been analyzing different source-optical schemes for fast diffraction studies depending on sample size and required resolution. In particular we will be comparing microfocus systems to high power traditional sources when coupled to angle resolved detectors PSD detectors.

The GeniX and PSD detector combination has been tested in different applications. We will review results of diffraction studies on time resolved hydration of clay samples performed at the Natural History Museum of London¹. Application on polycrystalline thin films and photovoltaic samples for rapid data collection strategies will also be presented with examples of measurements performed at CEA-LETI in France².

¹ This work was done at the Department of Mineralogy of Natural History Museum of London, England

² This work was done at the off-line X-ray characterization laboratory in CEA-LETI, MINATEC in Grenoble, France