I08-SXM: The Scanning X-ray Microscopy Facility at the Diamond Light Source

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Scanning X-ray microscopes find applications in all major research fields, in many cases approaching ultimate diffraction-limited lateral resolutions and with unprecedented performance limited in the past by X-ray source properties, optics and detectors schemes. Missing in the general portfolio of scanning X-ray microscopes worldwide, and addressed by I08-SXM is an instrument that covers a broader photon energy range providing access to all major K- and L-absorption edges for SXM elemental and chemical analysis, combined with complementary imaging and spectro-microscopic techniques and cryogenic specimen environments.

The central theme of the beamline is the ability to obtain morphological and chemically-specific information on a full range of materials (inorganic/organic) under real conditions. I08 uses radiation in the 250 to 4400 eV photon energy range, generated by an Apple II type insertion device. The operating energy range encompasses a significant number of K and L absorption edges of low- and medium-Z elements important for the analysis of the interaction of organic and inorganic matter.

I08-SXM entered user operation in July 2014 and faced recently its first major upgrade. The potential of the facility will be described and underlined with examples from different scientific research fields.