HIGH BRILLIANCE MICROFOCUS SOURCES WITH SCATTERLESS COLLIMATION FOR IMPROVED SAXS

S. Rodrigues, P. Panine, V.Roger, P. Høghøj,

Xenocs SA, 19 rue François Blumet, F-38360 Sassenage, France

Small Angle X-ray Scattering applications require sample illumination with a high brilliance x-ray beam having a well controlled spatial and angular distribution. Indeed high intensity at the sample is required with small beam expansion towards the detector to achieve low values of wave vector. We have developped a X-ray beam delivery system (the GeniX) made of a low power microfocus tube and incorporating a unique combination of multilayer optics with innovative scatterless collimation for high performance SAXS in the lab.

The coupling of microfocus tube with efficient aspheric multilayer optics (the FOX 3D optics) provides an intense x-ray beam with a well controlled beam propagation. Advantages in term of brightness preservation and range of wave vector reachable in SAXS, both for compact and for long-collimated setups will be reviewed. We will also present the new and innovative scatterless collimation integrated in the GeniX reducing parasitic slit scattering and providing simplified design. Advantages in terms of flux and resolution improvement compared to standard collimation will be detailed.

We will present SAXS data measurements acquired on high Z colloids, and polymer samples with different set-ups (radiation, detectors) illustrating the benefits of the new GeniX configuration.