High-end x-ray scattering techniques such as BIO-SAXS (e.g. SEC-SAXS), non-ambient SAXS and GISAXS rely heavily on the x-ray source brightness for resolution and exposure time. Traditional solid or rotating anode x-ray tubes are typically limited in brightness by when the e-beam power density melts the anode. The liquid-metal-jet technology has overcome this limitation by using an anode that is already in the molten state.

We have previously demonstrated performance of a metal-jet anode x-ray sources with unprecedented brightness in the range of one order of magnitude above current state-of-the art sources. Over the last years, the liquid-metal-jet technology has further developed and are now operated 24/7 in many labs over the world. Small angle x-ray scattering has been identified as a key application for this x-ray tube technology, since this application benefits greatly from high-brightness and small spot-sizes, to achieve a high flux x-ray beam with low divergence. Multiple users and system manufacturers have since installed the metal-jet anode x-ray source into their SAXS set-ups with successful results. With the high brightness from the liquid-metal-jet x-ray source, time resolved and in-situ SAXS studies can be performed – even in the home laboratory.

This presentation will review the current status of the metal-jet technology specifically in terms of flux and brightness and the impact of SAXS measurement. It will furthermore refer to some recent macro molecular SAXS data from users of metal-jet x-ray tubes.