The MetalJet X-ray source with indium anode. High brightness at 24 keV.

Björn A. M. Hansson[1]

1. Excillum AB, Torshamnsgatan 35, 164 40 Kista, bjorn.hansson@excillum.com

The power and brightness of electron-impact micro-focus X-ray tubes have long been limited by thermal damage in the anode. This limit is overcome by the liquid-metal-jet anode (MetalJet). This is possible due to the regenerative nature of this anode and the fact that the anode is already molten, which allows for significantly higher e-beam power density than on conventional solid anodes.

Over the last years, the MetalJet technology has developed from prototypes into fully operational and stable X-ray tubes, such as the MetalJet D2 seen in Fig. 1, running in many labs over the world. Key applications include X-ray diffraction and scattering but also advanced X-ray imaging such as phase-contrast imaging.

This presentation will review the current status of the technology specifically in terms of stability, lifetime, flux and brightness. It will specifically discuss performance using indium rich anode alloys, offering a bright home-lab X-ray source with K-alpha emission at 24 keV.

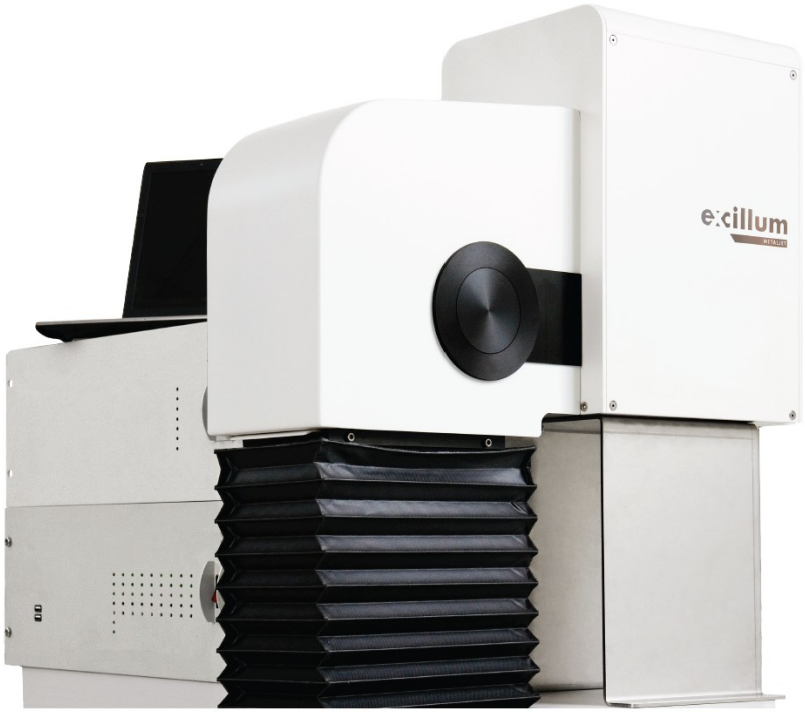

Figure 1 The MetalJet D2 X-ray tube