

GI-MS46-P01 | ESTABLISHMENT OF A HIGH CAPACITY X-RAY SOURCE IN AUSTRIA FOR THE USE IN MATERIALS SCIENCE

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Constantly increasing demand on modern solutions for development of industrial technologies and high-performance analytical methods accelerates the competition between interdisciplinary research groups targeting new insights into the nature of materials. An innovative development combines laser and electron-beam interaction (inverse Compton scattering) to design a specific laboratory-sized X-ray source (Compact Light Source, CLS). Despite its small size, the CLS offers the favourable features of synchrotron radiation, such as a continuously tuneable energy spectrum and high spatial resolution due to small beam size and angular divergence at high brilliance. Focusing the beam enables the operation with uniform area section within a distance of several meters from the input area. These properties make the CLS a promising solution for a wide range of X-ray applications related to tomography, diffraction, scattering and elemental analyses experiments. An installation of such a CLS facility in Austria opens new perspectives for a wide range of applications for multiple users in Austria including universities, scientific companies and research divisions of local high-tech industry. In-situ, non-destructive analysis of materials and related phenomena, such as (re-)crystallization, films and coatings as well as corrosion and wear processes, will be possible. Additionally, the assignment of the CLS for education purposes in combination with pre-characterization and evaluation of samples and experimental setups in preparation for a measurement at a large scale European synchrotron facility cannot be underestimated. The installation of a CLS system will enable the flexible and tailored training for young scientists and professionals in research and industry.