O-07 **Session A, Tuesday, 14.06., 12^{40} - 13^{00}**

Development of EUV and SXR nanoscale imaging systems based on double stream gas puff target sources

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In the last 30 years much effort was made in order to develop compact laser-produced plasma sources emitting short wavelength radiations, especially in the so-called "water window" (λ=2.3-4.4 nm) and in the Extreme Ultraviolet (EUV, λ=1-120 nm) spectral ranges. Investigations in the micrometer scale, employing short wavelengths, open the possibility of developing table-top microscopes, to overpass the limitations imposed by large facilities, such as their high complexity, maintenance costs and the limited access.

The double stream gas puff target source, coupled with Fresnel zone plates (FZPs) represents a suitable platform for microscopy experiments in transmission mode, employing soft X-ray (SXR) and EUV radiations. It represents a valid complementary technique to synchrotrons and free-electron laser facilities. The source, which is very easy to be used by a single user, allows for efficient plasma generation with high EUV/SXR flux. Compact microscopes based on that source allow to capture EUV and SXR images of various samples, with 50-60 nm half-pitch spatial resolution and exposure time of the order of few seconds. Herein, we would like to present our recent developments and progress in compact desk-top SXR/EUV microscopy, including source and microscope optimization, examples of image acquisition and its possible applications.

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