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Recent advancements in the “water-window” microscopy with laser-plasma SXR source based on a double stream gas-puff target

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Abstract:

An overview of our recent developments, regarding “water-window” soft X-ray (SXR) microscopy based on a laser-plasma double stream gas puff target sources is presented. The work, presented herein, describes two approaches to SXR microscopy. The first one is a low spatial resolution, achromatic SXR microscopy, employing Wolter type-I objective. The second one is a nanometer spatial resolution SXR microscopy, with the use of a Fresnel zone plate objective, for imaging various objects with quasimonochromatic light, emitted from a double stream gas puff target based short wavelength source. The developments regarding both systems are presented, as well as the possible applications, for which the SXR microscope was already employed. Such compact, table-top size, laboratory type microscopy setups may be employed in the near future for complementary-like studies to other, often used, microscopy techniques.