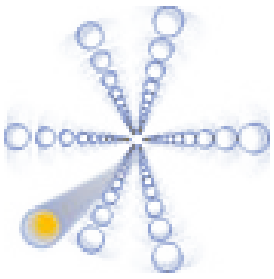

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Non-Proliferation Research with Laser Backscattered X-rays.

Laser-Compton Scattering (LCS) is the exchange of energy between a relativistic electron beam and a laser beam. Laser photons interact with high-energy moving electrons (in the MeV region or higher) and the electrons scatter these low energy photons to a higher energy at the expense of the electrons'kinetic energy. This interaction results in the emission of highly directed, quasi-monochromatic, highly polarized and tunable x-ray beams. LCS x-ray energy tunability can be achieved by either changing the electron beam energy, the laser wavelength, interaction or observation angle. This allows LCS to be a truly versatile x-ray source for a variety of applications. We have shown in previous articles that LCS x-rays can be used for electron beam diagnostics and biomedical imaging. We will show in this presentation that LCS as an x-ray source can also be used as a non-invasive means for identification and quantification of actinide elements in Liquid Samples.

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