

Abstract Submitted
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Phase Contrast Imaging using Sub-mJ, KiloHertz Femto-Second Laser produced Cu-K $_{\alpha}$ Source JUZER ALI CHAKERA, ATIF ALI, YING TSUI, ROBERT FEDOSEJEVS, Electrical and Computer Engineering, University of Alberta, Edmonton Canada — We present an efficient Cu-K $_{\alpha}$ x-ray source produced by a commercial kilohertz fs laser system. The source has a high x-ray conversion of well over 10^{-5} into K $_{\alpha}$ line emission at 8.05 keV. The micro plasma x-ray source is produced by focusing 260 μ J laser pulses of 130 fs (FWHM) on a moving Cu-wire target. The source has a size of $< 10\mu\text{m}$ providing sufficient spatial coherence for phase contrast imaging applications. An average x-ray photon flux of $> 10^9$ ph/sr/s is achieved in the exposure to record the in-line phase contrast images of test samples. This compact source can be developed into a durable low cost operating system for phase contrast imaging of biological specimens. Detailed characterization of the source and analysis of example exposures will be presented.

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