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**Laser driven hard x-ray sources for phase contrast imaging** ZHEN ZHAO, BIXUE HOU, ZHAOHAN HE, JOHN NEES, ALEXANDER THOMAS, KARL KRUSHELNICK, University of Michigan — Phase contrast imaging using x-rays produced by laser-plasma interactions requires a very small source size. High quality images can be obtained by minimizing the source size as well as increasing the source-to-object distance. This experiment studies the properties of hard x-rays generated by the interaction of an ultra intense laser with various solid targets. A 10-mJ, 30-fs laser pulse operating at 0.5 kHz is focused onto a 1.5 micron spot, generating a focal intensity of  $\sim 10^{19}$ W/cm<sup>2</sup>. The targets used are 100-mm diameter, 10-mm thick Ni and Mo discs coated with a thin layer of SiO<sub>2</sub>. The effects of the coating material and thickness on the x-ray source size are investigated. Phase contrast images are subsequently obtained using these sources. Spectroscopic measurements of these targets are also taken with and without the coating material.

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