

# The NSLS-II Deposition Laboratory

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## ABSTRACT

The new NSLS-II<sup>[1]</sup> deposition laboratory has been commissioned to include various thin-film characterization equipment and a specialized deposition system with the primary goal of producing wedged multilayer Laue lens<sup>[2,3]</sup> (MLL), a new type of x-ray optic with the potential for an unprecedented level of x-ray nanofocusing. This unique deposition system contains many design features in order to facilitate growth of combined depth-graded and laterally-graded multilayers with precise thickness control over many thousands of layers, providing total film growth in one run of up to 100 $\mu$ m thick or greater. This machine design expounds on the positive features of a rotary deposition system<sup>[4]</sup> constructed previously for MLLs and contains multiple stationary, horizontally-oriented magnetron sources. A precision linear motion system raster scans a substrate over shaped apertures at well-defined velocities to affect a multilayer coating. An overview of the various types of MLL and current status, a plan forward, and the deposition laboratory equipment will be discussed.

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