

Abstract Submitted  
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**Laser-based diagnostics for characterizing materials exposed to a plasma environment**<sup>1</sup> G.C. SHAW, University of Tennessee, T.M. BIEWER, J.B.O. CAUGHMAN, R. GOULDING, K. LEONARD, J. LORE, M. MARTIN, R. MARTIN, J. RAPP, Oak Ridge National Laboratory, B. WIRTH, University of Tennessee — To address the needs of fusion reactors, diagnostic techniques for plasma-material interactions (PMI) are being developed at ORNL. Laser-based diagnostic techniques (LBDT) will be used to both characterize the plasma environment and probe the material surface during plasma exposure. A Nd:YAG laser is needed for LBDT. Initial setup and diagnostic testing of the beam will be performed before installing it onto the ORNL device, PHISX (Prototype High Intensity Source Experiment). Installation of the Nd:YAG laser on PHISX, will enable Thomson Scattering (TS) measurements as well as Laser Induced Ablation/Breakdown/Desorption Spectroscopy (LIAS/LIBS/LIDS) to be performed *in-situ* on material targets. The material targets can be further characterized *ex-situ* by surface techniques available at ORNL; *ex-situ* results will be compared to the *in-situ* characterizations. This poster will show the initial setup and plans for LBDT on PHISX at ORNL.

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