

Abstract Submitted
for the DPP15 Meeting of
The American Physical Society

Preliminary Experiments to Develop a He-W Calibration Standard Using Laser Induced Breakdown Spectroscopy¹ GUINEVERE SHAW, NICOLAS ANDRE, Univ of Tennessee, Knoxville, MARK BANNISTER, THEODORE BIEWER, MADHAVI MARTIN, FRED MEYER, Oak Ridge National Laboratory, BRIAN WIRTH, Univ of Tennessee, Knoxville — To address the needs of future fusion reactors, laser based diagnostic techniques for plasma-material interactions (PMI) are being developed at ORNL. Laser-induced breakdown spectroscopy (LIBS) is a technique for measuring elemental surface composition, and is a possible diagnostic for characterizing elemental concentrations in plasma-facing materials. The purpose of the LIBS system described here is to quantify helium (He) concentration in exposed tungsten (W) targets. To accurately quantify He concentration in situ a calibration standard must be developed, including extensive calibration of the entire LIBS system. To accomplish this, two LIBS setups were explored: *ex-situ* LIBS and *in-situ* LIBS. *Ex-situ* LIBS experiments used W targets exposed to a He+ ion beam to determine laser parameters and calibration settings for in-situ experiments. Results will be discussed. *In-situ* LIBS analysis will be assessed for W targets exposed to He plasma. Preliminary results will be discussed.

¹Research sponsored by the Laboratory Directed Research and Development Program of Oak Ridge National Laboratory, managed by UT-Battelle, LLC, for the U. S. Department of Energy.

Guinevere Shaw
Univ of Tennessee, Knoxville

Date submitted: 23 Jul 2015

Electronic form version 1.4