

Abstract Submitted
for the DPP13 Meeting of
The American Physical Society

In-situ studies of stainless steel exposed to hydrogen plasmas in the Lithium Tokamak Experiment (LTX)¹ FELIPE BEDOYA, Department of Nuclear, Plasma and Radiological Engineering, University of Illinois, SEAN GONDERMAN, Purdue University, JEAN PAUL ALLAIN, Department of Nuclear, Plasma and Radiological Engineering, University of Illinois and Purdue University, ROBERT KAITA, MATTHEW LUCIA, CHARLES SKINNER, ROBERT ELLIS, LANE ROQUEMORE, RICHARD MAJESKI, Princeton Plasma Physics Laboratory, PURDUE UNIVERSITY COLLABORATION, PRINCETON PLASMA PHYSICS LABORATORY COLLABORATION — The Materials Analysis Particle Probe (MAPP) is an in situ characterization device for diagnosing samples exposed to fusion reactor plasmas. X-ray photoelectron spectroscopy (XPS), ion scattering spectroscopy (ISS), thermal desorption spectroscopy (TDS) and direct recoil spectroscopy (DRS) will allow comprehensive shot-to-shot analysis of the samples. In the summer of 2013, MAPP was attached to a midplane port on LTX. The plasma-facing components (PFCs) in LTX are stainless steel, and MAPP enables evaluation of stainless steel samples before and after exposure to LTX plasmas. Initial studies compare XPS spectra from discharges with and without lithium PFC coatings. These results, combined with future measurements with TDS and ISS, provide unique insights into the relationship between the plasma behavior and the chemical structure of the first wall in fusion devices.

¹Work supported by DOE Contract No. DE-AC02-09CH11466.

Felipe Bedoya
Department of Nuclear, Plasma and Radiological Engineering,
University of Illinois

Date submitted: 12 Jul 2013

Electronic form version 1.4