Abstract Submitted
for the DPP14 Meeting of
The American Physical Society

Examining the temperature behavior of stainless steel surfaces exposed to hydrogen plasmas in the Lithium Tokamak eXperiment (LTX)[1] FELIPE BEDOYA, JEAN PAUL ALLAIN, Univ of Illinois - Urbana, ROBERT KAITA, MATTHEW LUCIA, DENIS ST-ONGE, ROBERT ELLIS, RICHARD MAJESKI, Princeton Plasma Physics Laboratory — The Materials Analysis Particle Probe (MAPP) is an *in-situ* diagnostic designed to characterize plasma-facing components (PFCs) in tokamak devices. MAPP is installed in LTX at Princeton Plasma Physics Laboratory. MAPP's capabilities include remotely operated XPS acquisition and temperature control of four samples. The recent addition of a focused ion beam allows XPS depth profiling analysis. Recent published results show an apparent correlation between hydrogen retention and temperature of Li coated stainless steel (SS) PFCs exposed to plasmas like those of LTX. According to XPS data, the retention of hydrogen by the coated surfaces decreases at above 180 °C. In the present study MAPP will be used to study the oxidation of Li coatings as a function of time and temperature of the walls when Li coatings are applied. Experiments in the ion-surface interaction experiment (IIAX) varying the hydrogen fluence on the SS samples will be also performed. Conclusions resulting from this study will be key to explain the PFC temperature-dependent variation of plasma performance observed in LTX.

[1]This work was supported by U.S. DOE contracts DE-AC02-09CH11466, DE-AC52-07NA27344 and DE-SC0010717.

Felipe Bedoya
Univ of Illinois - Urbana

Date submitted: 11 Jul 2014 Electronic form version 1.4