Abstract Submitted
for the DPP12 Meeting of
The American Physical Society

Design and implementation of the Materials Analysis Particle Probe (MAPP) plasma-facing component diagnostic[1] C.N. TAYLOR, B. HEIM, S. GONDERMAN, J.P. ALLAIN, Purdue University, R. KAITA, C.H. SKINNER, R.A. ELLIS, A.L. ROQUEMORE, R. MAJESKI, PPPL, PURDUE TEAM, PPPL TEAM — The Materials Analysis Particle Probe (MAPP) is capable of prompt shot-to-shot analysis of plasma-facing components samples exposed to NSTX plasma discharges. MAPP exposes four samples to individual plasma discharges in order to test novel materials and determine the effect on plasma-facing components. Spectroscopic analysis techniques include X-ray photoelectron spectroscopy, ion scattering spectroscopy, direct recoil spectroscopy, and thermal desorption spectroscopy. These techniques assess the chemical state of the near surface ($\sim$10 nm), the surface (1-2 monolayers), quantify hydrogen retention, and measure thermal desorption species, respectively. Characterization is performed during the between-shot time window without perturbing operations or other diagnostics. The present work discusses MAPP's current status, calibration, and implementation within LTX and NSTX.

[1]Work supported by USDOE Contract DE-FG02-09ER55015 and DE-AC02-09CH11466.

Chase Taylor
Purdue University

Date submitted: 30 Jul 2012 Electronic form version 1.4