

Abstract Submitted
for the DPP13 Meeting of
The American Physical Society

Study of lithium and carbon sputtering from lithium-coated graphite plasma facing components in the NSTX divertor¹ FILIPPO SCOTTI, PPPL, V.A. SOUKHANOVSKII, LLNL, J-W. AHN, ORNL, M.A. JAWORSKI, PPPL, A. MCLEAN, E.T. MEIER, LLNL, A.L. ROQUEMORE, R.E. BELL, A. DIALLO, S.P. GERHARDT, R. KAITA, B.P. LEBLANC, M. PODESTA, PPPL — In this work, the behavior of lithium conditioned graphite PFCs in the NSTX divertor is characterized in terms of lithium and carbon sputtering yields and gross impurity influxes during H-mode ELM-free NBI-heated discharges. Impurity influxes and sputtering yield measurements in the NSTX divertor are derived from photometrically calibrated filtered cameras and divertor Langmuir probes via the S/XB method. Neutral lithium sputtering yield Y_{Li} from solid lithium coatings in NSTX is found to be consistent with values reported from test stand experiments (with $Y_{Li} \sim 0.03 - 0.07$). Temperature-enhanced sputtering yield is generally observed for surface temperatures above the lithium melting point (with $Y_{Li} \sim 0.1-0.2$) in the proximity of the divertor strike point, leading to divertor gross lithium influxes of a few 10^{21} atoms/s. A moderate reduction of the carbon sputtering yield is observed with the application of lithium coatings with gross divertor carbon influxes of several 10^{20} atoms/s.

¹This work was supported by U.S. DOE Contracts: DE-AC02-09CH11466, DE-AC52-07NA27344, DE-AC05-00OR22725.

Filippo Scotti
PPPL

Date submitted: 12 Jul 2013

Electronic form version 1.4