Abstract Submitted
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Physical sputtering and chemical erosion studies on plain and lithiated graphite samples RAMASAMY RAJU, MARIN RACIC, J. LEE, DAVID RUZIC, University of Illinois at Urbana-Champaign, UNIVERSITY OF ILLINOIS AT URBANA-CHAMPAIGN TEAM — PFC candidate materials must have characteristics allowing for high temperature resilience while limiting deuterium recycling and core contamination from erosion. Graphite is a good choice of material for its high temperature tolerance. However, to reduce deuterium recycling issues of the graphite surface, lithium has been used extensively as a coating on PFC surfaces, though many issues on physical and chemical sputtering still remain. The Ion-surface InterAction Experiment (IIAX) measures the absolute, angular-resolved and self-sputtering yields of many particle/target combinations. Baseline sputtering yield of an untreated ATJ graphite sample is very close to the predicted TRIM estimates with an average of 0.06 +/- 0.02 atoms / ion. Preliminary experiments show that Li was evaporated and deposited with thickness of 320 nm on a Si wafer. Li deposition on a ATJ graphite sample was verified using scanning electron microscopy. Chemical sputtering analysis on a ATJ graphite sample is done, and results confirm the operation of the RGA. Trail experiments on relative levels of Li to C collected during sputtering are analyzed using TOF-SIMS. A deposition rate of 10 nm/min is the most relevant to NSTX. Additional experiments using varying thicknesses and deposition rates of Li are described.

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