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Chemical Erosion Studies of Lithiated Graphite[1] PRIYA RAMAN, VIJAY SURLA, DAVID BURNS, DAVID RUZIC, University of Illinois at Urbana Champaign — Lithium evaporation treatments in the National Spherical Torus Experiment (NSTX) have shown dramatic improvements in plasma performance increasing the viability of lithium as Plasma facing Component (PFC) material. In order to understand the complex system of lithiated ATJ graphite, chemical erosion measurements of plain and lithiated ATJ graphite are conducted in the newly built RF plasma facility. A differential pumping scheme is employed and a Residual Gas Analyzer is used for chemical erosion measurements. Target is mounted on a substrate heater (0-500C) and it is connected to a biasing circuitry to allow for temperature dependent studies and energy dependent measurements. To study the effect of lithium on chemical erosion, lithium is evaporated in-situ onto ATJ graphite. The dominant chemical erosion products are known to be CD_4 and C_2D_2. The challenges in measuring C_2D_2, as it interferes with N_2 and CO peaks, are presented. It was found that lithium treatments have suppressed the CD_4 signal, and the effect of lithium on other peaks is presented. The effect of temperature on chemical erosion is also investigated and it was found that temperature increases the erosion of graphite.

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