Abstract Submitted
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VUV/XUV measurements of impurity emission in plasmas with liquid lithium surfaces on LTX[1] KEVIN TRITZ, M. FINKENTHAL, D. STUTMAN, Johns Hopkins University, R.E. BELL, D.P. BOYLE, R. KAITA, T. KOZUB, M. LUCIA, R. MAJESKI, E. MERINO, J.C. SCHMITT, Princeton Plasma Phys Lab, P. BIERSDORFER, J. CLEMENTSON, LLNL, S. KUBOTA, UCLA — The VUV/XUV spectrum has been measured on the Lithium Tokamak eXperiment (LTX) using a spatially-resolved transmission grating imaging spectrometer (TIGS) coupled to a direct-detection X-ray CCD camera. TGIS data show significant changes in the ratios between the lithium and oxygen impurity line emission during the discharges with different lithium wall conditions. Lithium coatings that have been semi-passivated by lengthy exposure to significant levels of impurities contribute to a large O/Li ratio measured during LTX plasma discharges. Furthermore, results from previous experiments have indicated that a passivated lithium film on the boundary shells can function as a stronger impurity source when in the form of a liquid layer compared to a solid lithium layer. However, recent TGIS measurements of plasma discharges in LTX with hot stainless steel boundary shells and a fresh liquid lithium coating show significantly lower O/Li impurity line ratios when compared to discharges with a solid lithium film on cooler shells. These new line ratio measurements help clarify the somewhat contradictory results of the effects of solid and liquid lithium on plasma confinement observed in previous experiments.

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