Abstract Submitted
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Impurities in the Lithium Tokamak Experiment[1] D.P. BOYLE, R.E. BELL, R. KAITA, R. MAJESKI, PPPL, T.M. BIEWER, T.K. GRAY, ORNL, K. TRITZ, JHU, K. WIDMANN, LLNL — The Lithium Tokamak Experiment (LTX) is designed to study the low-recycling regime through the use of close-fitting, lithium-coated, heatable shell quadrants surrounding the plasma volume. Lithium coatings can getter and bury impurities, but they can also become covered by impurity compounds. Liquefied coatings can both dissolve impurity compounds and bring them to the surface, while sputtering and evaporation rates increase strongly with temperature. Here, we use spectroscopic measurements to assess the effects of varying wall conditions on plasma impurities, mainly Li, C, and O. A passive Doppler spectroscopy system measures toroidal and poloidal impurity profiles using fixed-wavelength and variable-wavelength visible spectrometers. In addition, survey and high-resolution extreme ultraviolet spectrometers detect emission from higher charge states. Preliminary results show that fresh Li coatings generally reduced C and O emission. C emission decreased sharply following the first solid Li coatings. Inverted toroidal profiles in a discharge with solid Li coatings show peaked Li III emissivity and temperature profiles. Recently, experiments with fresh liquid coatings led to especially strong O reduction. Results from these and additional experiments will be presented.

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