

Abstract Submitted
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Impurity and transport measurements in LTX plasmas fully surrounded by liquified lithium surfaces¹ D.P. BOYLE, R.E. BELL, P.E. HUGHES, M. LUCIA, R. MAJESKI, E. MERINO, J.C. SCHMITT, PPPL, R. KAITA, A. MAAN, UT-K, F. SCOTTI, LLNL, S. KUBOTA, UCLA, C. HANSEN, UW-Seattle, T.M. BIEWER, D.B. ELLIOTT, T.K. GRAY, ORNL — The first successful operation of a tokamak almost fully surrounded by liquified lithium surfaces was achieved in the Lithium Tokamak Experiment (LTX), prior to its upgrade to LTX- β . While early attempts at operating with lithium coatings above the lithium melting temperature suffered poor performance due to excessive impurities, improved techniques for lithium evaporation and wall/vacuum-conditioning allowed for operation at 260 °. Here we present new analysis of lithium, carbon, and oxygen impurity profiles in the experiments with liquified lithium coatings, and compare them to measurements with solid coatings. Analysis shows similar, but modestly higher impurity concentrations with liquified Li. Enhanced diagnostics in LTX- β , including improved spectroscopy and Thomson scattering systems, now enable detailed measurements in a wider parameter space of plasma and surface conditions. Analysis and comparison of impurity profiles and transport will be presented for LTX, as well as for new experiments in LTX- β .

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