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Effect of Molecular Cluster Injector Fueling on Lithium Tokamak Experiment Plasmas with Lithium-Coated Walls[1] D.P. LUNDBERG, E. GRANSTEDT, R. KAITA, R. MAJESKI, PPPL — Lithium Tokamak Experiment (LTX) plasmas with lithium-coated walls have demonstrated low-recycling conditions, with substantially higher fueling requirements and reductions in edge neutral emission. Most fueling systems, such as wall-mounted gas puffers or supersonic gas injectors, are ill-suited for use with low-recycling plasmas, as they primarily source low-density gas into the plasma edge. A Molecular Cluster Injector (MCI) has been installed to improve fueling efficiency by increasing the penetration of neutrals into the plasma core. The MCI molecular density has been measured with an electron beam, with n_{H2}exceeding 10^{16}cm^{-3} more than 15cm from the nozzle. These densities are 100-1000 the LTX n_e, making the MCI suitable for testing high-density fueling. By varying the MCI pressure, temperature, and location relative to the plasma, the relative importance of the molecular density and the degree of cluster formation within the supersonic jet can be studied. The effects of MCI fueling on LTX n_e profiles is discussed.

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