

Abstract Submitted for the Forty-Seventh Annual
Meeting
Division of Plasma Physics
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Category Number and Subject: 5.6.2 DIII-D tokamak

Theory Experiment

OEDGE Code Interpretation of Carbon Co-deposition Experiments in DIII-D L- and H-Mode Plasmas,* J.D. Elder, A.G. McLean, P.C. Stangeby, *U. Toronto*, S.L. Allen, M.E. Fenstermacher, M. Groth, *LLNL*, B.D. Bray, N.H. Brooks, W.P. West, *GA*, D.L. Rudakov, J.A. Boedo, *UCSD*, W.R. Wampler, J.G. Watkins, *SNL*, D.G. Whyte, *U. Wisc.*, G. Wang, *UCLA*, W.M. Solomon, *PPPL* – A carbon-13 tracer experiment in DIII-D involved injection of C¹³-methane into ITER-like partially detached ELMy H-mode plasmas, as a follow-up to an earlier L-mode experiment. Experimental details are given by McLean et al, this meeting. For the L-mode experiments, the OEDGE interpretive code is able to successfully replicate the C¹³-deposition pattern, edge spectroscopic emissions and the increment to the C-ion density in the main plasma. A fast ($M \sim 0.5$) edge flow toward the inner divertor and no erosion of the C¹³-deposits was assumed in L-mode. OEDGE will be applied to the data set for the H-mode experiments; ELMs and $\sim 10\times$ greater input power make redistribution of the C¹³-deposits by plasma erosion more likely. OEDGE modeling will address the time-varying plasma conditions and carbon re-erosion.

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