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Category Number and Subject: 5.6.2 DIII-D Tokamak

[ ] Theory [x] Experiment

$^{13}CH_4$ Injection Studies in DIII-D: the Tritium Retention Issue* A.G. McLean, J.D. Elder, P.C. Stangeby, *U.~Toronto,* S.L. Allen, R. Ellis, *LLNL*, W.R. Wampler, *SNL*, D.G. Whyte, *U. Wisc.*, A.S. Bozek, N.H. Brooks, W.P. West, *GA*, D.L. Rudakov, *UCSD*, V. Phillips, *Juelich*, G.F. Matthews, *JET*, A. Nagy, *PPPL.* – The ultimate choice of the first wall material for ITER and follow-on machines depends critically on the ability to control the tritium retention, which can be co-deposited with carbon. On the DIII-D experiment, we injected $^{13}CH_4$ for 3~s on each shot with a toroidally-symmetric gas system into twenty-two identical L-mode discharges. The plasma shape was a low triangularity ($\delta \sim 0.3$), lower single-null divertor, with short duration NBI for diagnostics. At the beginning of the subsequent machine vent, ~30 carbon tiles, distributed toroidally and poloidally, were removed for NRA analysis at Sandia Labs [1]. Most of the measured ^{13}C was in tiles close to the inner strike point. DIVIMP modeling reproduced the ^{13}C deposition pattern assuming a parallel flow in the SOL at Mach ~0.4 toward the inner divertor.

[1] W.R. Wampler, J Nucl Mater, to be published.

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