Abstract Submitted for the Forty-Seventh Annual Meeting
Division of Plasma Physics
October 24–28, 2005, Denver, Colorado

Category Number and Subject: 5.6.2 DIII-D tokamak

[ ] Theory [X] Experiment

Porous Plug Injection System for Studies of Hydrocarbon Dissociation and Transport in DIII-D,* J.W. Davis, A.G. McLean, P.C. Stangeby, A.A. Haasz, *U. Toronto,* S.L. Allen, R. Ellis, M.E. Fenstermacher, M. Groth, *LLNL,* B.D. Bray, N.H. Brooks, W.P. West, C.P.C. Wong, *GA*, D.G. Whyte, *U. Wisc.*, D.L. Rudakov, *UCSD*, J.G. Watkins, *SNL,* S. Brezinsek, *FZ-Juelich* – Calibrated spectroscopic measurements of hydrocarbon dissociation fragments in a tokamak divertor were obtained by admitting methane through a porous graphite surface, such that fragments of the injected molecules returned to a carbon surface in a similar way to fragments due to natural chemical sputtering. The porous surface was made from a graphite plate with 1004 holes 0.25 mm in diameter spread over a 3 cm region, and was viewed by calibrated spectrometers. The gas flow rate was $7\text{-}40\times10^{17}$ CH_4/s, simulating expected chemical erosion yields. Intensities of CD band and CI and CII line emissions were recorded. It was thereby established that chemical sputtering contributed a minority of the carbon atoms naturally sputtered from the outer target.

*Work supported by U.S. DOE under W-7405-ENG-48, DE-FC02-04ER54698, DE-FG02-04ER54762, DE-FG02-04ER54758, and DE-AC04-94AL85000.

[ ] Oral [X] Poster