

Abstract Submitted for the Forty-Seventh Annual  
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Category Number and Subject: 5.6.2 DIII-D tokamak

Theory     Experiment

**Interpretation of Hydrocarbon (CD) Imaging and Chemical Sputtering in the Lower Divertor of DIII-D,\*** M. Groth, M.E. Fenstermacher, C.J. Lasnier, W.H. Meyer, G.D. Porter, *LLNL*, N.H. Brooks, *GA*, A.G. McLean, *UTIAS* – The measured hydrocarbon emission in the lower DIII-D divertor is toroidally localized near the gaps of adjacent tiles, and shifted, with respect to the tile gaps in the inner divertor leg, in the direction of the toroidal magnetic field. The emission of the CD hydrocarbon radical was imaged at the (0,0) band head at 430.7 nm with tangentially viewing cameras, and spectroscopically resolved using a multi-chord spectrometer. These emission profiles indicate that the production of hydrocarbon by chemical sputtering occurs predominately near the gaps of these faceted tiles, correlating with elevated surface temperatures of, and larger heat and particle fluxes onto the exposed tile edges. Enhanced chemical sputtering in the tile gap region can also be due to formation of amorphous hydrocarbon layers (a:C-D) at the side walls of the tiles, and re-erosion by impinging neutrals.

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Oral     Poster