

Abstract Submitted
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Interpretation of Hydrocarbon (CD) Imaging and Chemical Sputtering in the Lower Divertor of DIII-D¹ M. GROTH, M.E. FENSTERMA-
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tional Laboratory, 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 hydro-
carbon 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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