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Carbon Sources and Fluxes in the DIII-D Divertor¹

R.C. ISLER, Oak Ridge National Laboratory, N.H. BROOKS, W.P. WEST, General Atomics, D.G. WHYTE, University of California, San Diego — Carbon production in the DIII-D divertor has been investigated from spectra of C I atoms and of CD and C₂ molecular bands. The CD bands, which provide a signature for chemical sputtering, are not observed frequently and tend to appear far out in the scrape-off layer near the first wall. C₂ also appears rarely; it is believed to be produced by sublimation of carbon from localized hot spots and not to constitute a large divertor carbon source. Nevertheless, effective C I temperatures vary from 0.5 to 2.0 eV, and the lower end of this range is more consistent with a molecular source, even though the upper end could be indicative of physical sputtering. Calculated influxes of the different ionization stages of carbon indicate that at least 95% of the carbon produced at the plates is retained in the divertor. This result will be correlated with direct measurements of the parallel flows of carbon ions.

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☐ Prefer Oral Session
☒ Prefer Poster Session

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Special instructions: DIII-D Poster Session 2, immediately following DG Whyte

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