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2-D Profiles of Radiating Constituents from D₂ and He Radiative Divertor Plasmas in DIII-D¹ M.E. FENSTERMACHER, R.D. WOOD, S.L. ALLEN, D.N. HILL, C.J. LASNIER, LLNL, A.W. LEONARD, GA, R.C. ISLER, ORNL — Recent radiative divertor (RD) experiments with He plasmas, in which the chemical sputtering of carbon should be greatly reduced, showed substantial differences in the 2-D radiated power and emission from constituent radiators compared with D₂ RD operation. Previous experiments in DIII-D established that nearly uniform outer leg radiation could be produced by a combination of radiation from carbon near the X-point and from deuterium near the outer strikepoint (Physics of Plasma, **4**, 1761 [1997]). Modeling suggested that chemical sputtering of carbon in the divertor could play a significant role in maintaining these conditions. This hypothesis will be tested by comparing 2-D emission from main ion and impurity radiators in He and D₂ induced detached divertors. Differences in the temporal evolution of the 2-D profiles will be discussed. 2-D emission data from multiple Balmer series lines in D₂ RD plasmas will be presented; images of the ratios of emission intensity between these lines can be used to find regions of volume recombination.

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