H and T Uptake and Retention in the JET MkII Divertors *

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Recent H and T species change-over experiments in JET have provided an opportunity to study the link between edge plasma and wall conditions. In consequence, detailed quantitative semi-empirical models have been developed for particle-induced desorption, which governs the dynamic exchange between the recycling surfaces and the edge/pedestal region. The total neutral H, D and T concentrations in the JET sub-divertor and pumping plenum region are measured during uptake (D-to-T or D-to-H changeover) experiments with a novel species selective Penning gauge coupled to a high-resolution spectrometer. At the same time, measurements are made in the plasma edge and strike point region with spectrometers viewing these regions. The sub-divertor concentration measurements, when compared with edge and strike point values, show significant lags during initial uptake which are a sensitive characteristic of the particle-induced desorption rate, once configuration-specific changes have been accounted for. Thus, comparisons have been made between wall loading rates in tritium and several hydrogen changeover campaigns in the MkIIAP and MkIIGB configurations. The charge exchange neutral fluxes which drive dynamic exchange are compared between these configurations, using the neutral transport code EIRENE (developed at FZ-Juelich) and the resulting range of wall hydrogenic recycling coefficients (R_T ,R_D ,R_H) is inferred. The grids needed for the comparison are generated with the Carre code (developed by R. Marchand et al).

*Research sponsored in part by the Office of Fusion Energy, U.S. Department of Energy, under Contract DE-AC05-96OR22464 with Lockheed Martin Energy Research Corporation.