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Measuring Recombination Coefficient of Fusion Relevant Material Deposits

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In fusion devices plasma facing components are eroded and the material is deposited in remote parts of the reactor. Deposits cover the original material of the wall and thus change its probability coefficient for recombination of neutral hydrogen atoms. We have performed experiments in plasma afterglow in order to determine the recombination coefficients of carbon and tungsten deposits. Radiofrequency plasma created in a mixture of argon and hydrogen was used as a source of hydrogen radicals. Hydrogen atom densities were measured by Fiber Optic Catalytic Probe. Recombination coefficients were determined by Smith’s side arm diffusion model.

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