

Omegatron ion mass-analyzer in a hydrogen/deuterium recombination plasma

Hiroie MATSUMOTO, Akira TONEGAWA, Takashi NISHIJIMA, Masataka ONO, Kazutaka KAWAMURA
Department of Physics, School of Science, Tokai University 1117 Kitakaname 259-1292 Hiratsuka, Kanagawa Japan

The knowledge of atomic and molecular processes in recombination plasma has become more important for divertor plasma in a fusion reactor. Measurements of the relative concentrations of the molecular and atomic ions were carried out in a hydrogen/deuterium plasma with hydrogen/deuterium gas puff in the linear plasma device, TPD-SheetIV. An “omegatron” mass-analyzer, situated behind a small hole of the endplate with the differential pumping system, is used for analyzing ion species. This analyzer yields signals due to the cyclotron resonances of ion species. The peaks appear in a collector current of the analyzer when a frequency of applied radio frequency (RF) electric field is equal to the ion cyclotron frequencies. The relative concentrations of the molecular and atomic ions were determined from the collector current of the mass-analyzer.

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