

Abstract Submitted  
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**A study of negative ion production on surface in H<sub>2</sub> and D<sub>2</sub> plasma** GILLES CARTRY, LOÏC SCHIESKO, JOUNAYD BENTOUNES, MARCEL CARRERE, JEAN-MARC LAYET, PIIM, CNRS - Universite de Provence, PLASMA-SURFACE TEAM — We present a study of negative ion (NI) generation on surface in H<sub>2</sub> and D<sub>2</sub> plasmas. A mass spectrometer (EQP300) is placed in the diffusion chamber of a helicon plasma reactor and faces a one square centimetre sample (graphite, copper...). The sample is negatively biased with respect to the plasma. Positive ions strike the sample in normal incidence and NI formed (H<sup>-</sup> and D<sup>-</sup>) upon bombardment are repelled from the surface toward the plasma and collected by the mass spectrometer. Through the measurement of negative Ion Distribution Function (IDF) we investigate basic mechanisms governing NI production on surfaces in interaction with H<sub>2</sub> plasma. Particularly, we have shown that two electrons capture by incoming positive ions explains IDF tail but is not the main mechanism explaining NI production. On the contrary, we demonstrated sputtering of adsorbed hydrogen atom as NI accounts for most of negative ions created. We also demonstrated NI production on graphite surface is proportional to ion flux and has bell shape dependence with positive ion energy.

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