

Abstract Submitted
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Production of negative ions at graphite (HOPG) surface in H_2 and D_2 plasmas AHMAD AHMAD, MARCEL CARRERE, JEAN-MARC LAYET, Univ. Provence - CNRS, PRAVIN KUMAR, Inter University Accelerator Centre (IUAC), GILLES CARTRY, Univ. Provence - CNRS — Negative ion formation by dissociative attachment on molecules in low pressure plasmas has been largely studied, whereas, negative ion formation on surfaces has been few investigated. In this work we show that under positive ion bombardment, a huge number of negative ions are produced on a graphite surface placed in low pressure H_2/D_2 plasma. Our goal is to identify the negative ion production mechanisms. In this aim, the graphite sample (HOPG) is put in a helicon reactor, in front of a Hidden EQP mass spectrometer. The sample was exposed to single positive ion dominated H_2/D_2 plasma (H_3^+/H_2^+ , D_3^+/D_2^+) at low pressures (0.2-1 Pa). The sample is biased negatively with respect to plasma and negative ion energy distribution functions are recorded and analysed. Two surface production mechanisms have been identified: sputtering of adsorbed hydrogen atom as negative ion and backscattering of a positive ion as a negative ion.

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