

Abstract Submitted
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Production of negative ions at graphite surface in hydrogen plas-
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CARRERE, CNRS-Universite de Provence — Production of hydrogen negative ions
is of great interest for controlled fusion. Indeed neutralized beams of negative ions
are used to heat plasma in fusion reactors. Up to now, negative ion sources use
cesium surfaces but an important research effort is undertaken to go towards cesium
free sources. Dissociative attachment on vibrationnally excited hydrogen molecules
is known to be the main H^- formation mechanism. Graphite surfaces are expected
to give an important vibrationnal excitation through H recombination. Therefore
graphite is a good candidate for next generation negative ion sources. In this work
we show that under positive ion bombardment, a huge number of negative ions are
produced on graphite surface. Our goal is to understand this unexpected negative
ion production mechanism. In this aim, we put a graphite sample (HOPG) in a
helicon reactor, in front of a EQP300 mass spectrometer. The sample is negatively
biased with respect to plasma and negative ions energy distribution functions are
recorded and analysed versus sample bias, plasma power and pressure, percentage
of hydrogen in H_2 -Ar mixtures.

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