

Abstract Submitted
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Unresolved problems in cesiation processes of negative hydrogen ion sources MOTOI WADA, School of Science and Engineering, Doshisha University — Attempts are being made to optimize negative hydrogen (H^-) ion current by introducing Cs into an ion source, but there are some unanswered questions in properly handling Cs to realize stable extraction of H^- ion beams. For example, Cs amount to optimize H^- production often becomes much larger than the amount predicted to realize partial monolayer of Cs on the source wall. Additional charge of Cs into a source to recover reduced H^- current by continuous operation does not necessarily realize the original value. Beam intensity of H^- changes with the impurity content in the ion source. The purpose of the present paper is to list up these uncertainties and unknown factors in negative ion source performance operated with Cs. The paper tries to identify possible mechanisms causing these problems by running a simulation code ACAT (Atomic Collision in Amorphous Target). The code predicts that glancing injection of hydrogen ions doubles the numbers of both reflection coefficients and ion induced desorption yields from those for the normal incidence. It also indicates smaller hydrogen desorption yields for thick layer of adsorbed hydrogen on the surface. These results are compared with experimental data obtained in UHV conditions.

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