Contribution ID: **282** Type: **Poster presentation**

Metal Ion Filtering of Vacuum Arc Ion Source Through an Inclined-Aperture Extraction Grid

Wednesday 18 October 2017 18:45 (15 minutes)

The paper reports a novel method of increasing the fraction of H ion produced by vacuum arc ion sources with metal hydride cathodes, which applies the ionic selectivity of inclined-aperture extraction grid to separate and filter heavy metal ions. Since H ion and Ti ion produced by vacuum arc discharge have great differences in kinetic energy and mass-to-charge ratio, H ions are easy to pass through the inclined-aperture grid, while most of Ti ions are blocked and absorbed by the grid wall. Using a 2D particle-in-cell simulation, the ionic selectivity of inclined-aperture extraction grid is demonstrated. The numerical simulation results show that after ion filtering through the extraction grid, the fraction of H ion is increased from 39% to more than 80%. The increased amplitude of H ion fraction depends on the thickness of the grid.

Author: Dr LAN, Chaohui (Institute of Fluid Physics, China Academy of Engineering Physics)

Co-authors: Dr LONG, Jidong (Institute of Fluid Physics, China Academy of Engineering Physics); Dr LI, Jie (Institute of Fluid Physics, China Academy of Engineering Physics); Dr ZHENG, Le (Institute of Fluid Physics, China Academy of Engineering Physics); Dr DONG, Pan (Institute of Fluid Physics, China Academy of Engineering Physics); Dr ZHEN, Yang (Institute of Fluid Physics, China Academy of Engineering Physics)

Presenter: Dr LAN, Chaohui (Institute of Fluid Physics, China Academy of Engineering Physics)

Session Classification: Poster Session 3

Track Classification: Beam extraction, transport, and diagnostics