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Experimental and Numerical Characterization of the TRIUMF-FEBIAD Cathode Used to Produce Radioactive Ions

The FEBIAD ion source is routinely used to produce radioactive ions of halogens, molecules, and noble gases in several ISOL facilities worldwide. At TRIUMF, an extensive numerical and experimental campaign has been performed to fundamentally understand the source while improving its reliability and overall performance. Particularly, the cathode temperature has been studied by pyrometric measurements and numerical simulations. The temperature found in and around the cathode face explains the electron emission profile, and why not all the emitted electrons are available for the ionization process. The main findings have been used on a numerical ionization model for more realistic electron emission.

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Email Address

maldonado@trimf.ca

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Yes

Presenter if not the submitter of this abstract

Primary author: MALDONADO MILLAN, Fernando Alejandro (UVIC/TRIUMF)

Co-authors: GOTTBURG, Alexander (TRIUMF); BABCOCK, Carla (TRIUMF); DAY GOODACRE, Tom (TRIUMF)

Presenter: MALDONADO MILLAN, Fernando Alejandro (UVIC/TRIUMF)

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