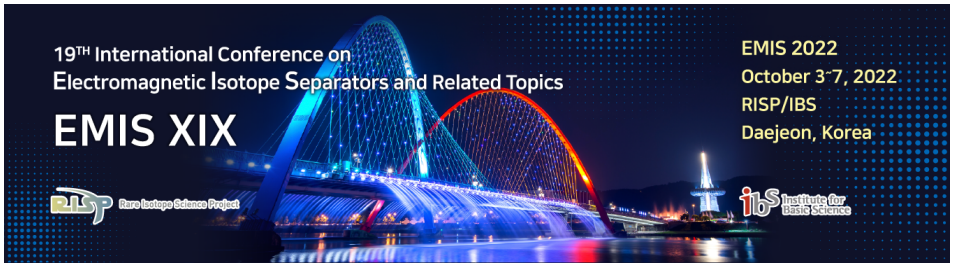

Contribution ID: **103** Type: **Poster Session**

Characterization of release properties from ISOL target

Monday, 3 October 2022 20:14 (8 minutes)

Several offline tests have been performed to investigate release properties of ISOL target materials and their geometric configurations, with the objective of understanding and improving the radioisotope release performance of online ISOL targets.
This contribution gives an overview of the general procedure which has been implemented at TRIUMF, consisting of activating ISOL target material samples with high-energy protons, heating up the material in a resistive oven and measuring the activity of selected isotopes before and after the heating stage to estimate their release fraction at the set temperature. Several tests were performed on metal, graphite and carbide samples produced with different synthesis procedures, highlighting the effects of their microstructure on the release fraction. The results of these experiments will be presented, which proved to be a reliable source of information that feeds into the choice of target materials to be used or studied further in limited online beam time devoted to target and ion source development.
A second set of experiments was performed to investigate the macroscopic effusion of isotopes through the macroscopic voids inside an ISAC target container, to better characterize and understand the driving forces of the effusion processes. Literature resources about effusion in ISOL targets usually refer to mathematical models or extrapolation of results from single pellet experiments, while this work focuses on measuring directly the rate of the effusion process in a macroscopic and representative configuration i.e. the ISOL target itself. An overview of the procedure will be given, and the initial results comparing spatial distribution of isotopes in a metal foil ISOL target will be presented and compared to each other.

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