Abstract Submitted for the DNP11 Meeting of The American Physical Society

Development of Single-Sided Enriched Oxygen-16 and 18 Targets for Exotic Beam Studies MICHAEL FEBBRARO, FREDERICK BECCHETTI, MITAIRE OJARUEGA, RAMON TORRES-ISEA, University of Michigan, JAMES KOLATA COLLABORATION, AMY ROBERTS COLLABORATION — A technique for the preparation of large reasonably uniform single-sided enriched oxygen targets for radioactive nuclear beam (RNB) experiments using anodization of thin tantalum foils in enriched water is currently being developed. Targets with an active area of 25 mm diameter (and larger) have been prepared using a constant-current source in $H_2^{16}O$ with an additional electrolyte. Currently, work is being done on developing a pulsed-current method for anodization. It is proposed that the pulsed current (a technique used in commercial applications) will increase surface uniformity by replenishing ions lost locally from the redox reaction, as well as reduce pin-holes in the Ta_2O_5 layer by periodic "flushing" of hydrogen gas produced at the surface. The highly exothermic nature of the ${}^{16}O({}^{7}Be, {}^{3}He)$ reaction planned. allows for single-sided targets on relativity thin supporting foil to be utilized since, the energetic ³He ions produced will lose minimal energy in the support foil. Testing of the targets will be conducted at the UM-UND TwinSol RNB facility as a joint project between the University of Michigan and the University of Notre Dame funded by grants from the NSF.

> Michael Febbraro University of Michigan

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