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Implanted Helium Targets for Use in Inverse Kinematics Reactions J.L. WHEELER, R.L. KOZUB, D.J. SISSOM, Tenn. Tech.Univ., D.W. STRACENER, D.W. BARDAYAN, ORNL, C. JOST, Mainz/ORAU — Proton transfer reactions, such as (^{3}He,d), are extremely important for gathering information about single particle states and resonances. For example, near-threshold resonances, which may be important in the rp process of explosive nucleosynthesis, cannot be measured via resonance scattering directly. However, measurements involving proton transfer reactions with radioactive ion beams (RIBs) in inverse kinematics also involve a number of experimental challenges. For the (^{3}He,d) reaction, for example, it is necessary to use localized ^{3}He targets, and gas jet targets are expensive and difficult to construct. This problem can be alleviated by implanting ^{3}He into aluminum foils. We have begun the process of implanting ^{3}He and ^{4}He into aluminum foils of two different thicknesses (0.65 and 0.8 μm) at the On-Line Test Facility at ORNL. Target profiles will be analyzed using Rutherford backscattering to determine the concentration and distribution of the implanted He on the foils. These results and a detailed description of the technique will be presented. This research is supported by the U.S. Department of Energy.

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