

Abstract Submitted
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Target Implantation for Inverse ($^3\text{He},d$) Reaction Studies¹ D.J. SISSOM, R.L. KOZUB, Tenn. Tech. Univ., D.W. BARDAYAN, D.W. STRACENER, ORNL — Proton transfer reactions such as ($^3\text{He},d$) can provide valuable structure information on proton single particle states and resonances, some of which are very important for the rp process in explosive nucleosynthesis. In stellar explosions, the reactants are often radioactive, so radioactive ion beams and inverse kinematics are needed for such studies. These ($^3\text{He},d$) experiments in inverse kinematics require localized ^3He targets. Since helium gas jet targets are difficult and expensive to produce, implanted targets may be the more practical solution. Helium implanted Al foil targets have been successfully produced in other facilities² up to densities of $\sim 4 \times 10^{17}$ ions/cm². The UNISOR facility at the HRIBF at ORNL can be utilized to implant ^3He ions, but modifications to the UNISOR collection chamber are needed. A new assembly has been designed to accommodate a linear motion feedthrough that attaches to a target ladder on which aluminum foils and a slit for beam profile analysis can be mounted. The targets produced will be used in a number of experiments with stable and unstable beams. A detailed update of the project will be presented.

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²J. E. McDonald *et al.*, Journal of Instr. **1**, 09003 (2006).

Daniel Sissom
Tennessee Tech University

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