

Abstract Submitted
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Investigating TwinSol Gas Cell Windows¹ KIMMY CUSHMAN, University of Notre Dame, TWINSOL EXPERIMENTAL GROUP COLLABORATION — In order to study reactions with unstable nuclei, radioactive-ion beams must be used. One method for producing radioactive beams is the TwinSol experimental setup at the University of Notre Dame. At TwinSol, stable and unstable isotope beams bombard a gas target, where one atmosphere of gas must be confined from the surrounding vacuum. Thin foil windows are used to contain the gas in the cell. In order to optimize the quality of secondary beams from TwinSol, it is necessary to understand and minimize the effects of energy loss and straggling in the windows. We have investigated five different materials to test the strength and durability under typical TwinSol beam conditions. Preliminary results indicate that two of the materials are potential candidates for future TwinSol experiments. We have calculated the beam scattering, stopping powers and equilibrium foil window temperatures, which will help in determining the metrics needed to compare outcomes in future experiments. This work is the beginning of a process to improve the TwinSol design so that secondary beams produced with heavier ions such as Oxygen, Fluorine, and Neon can be pursued.

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Kimmy Cushman
University of Notre Dame

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