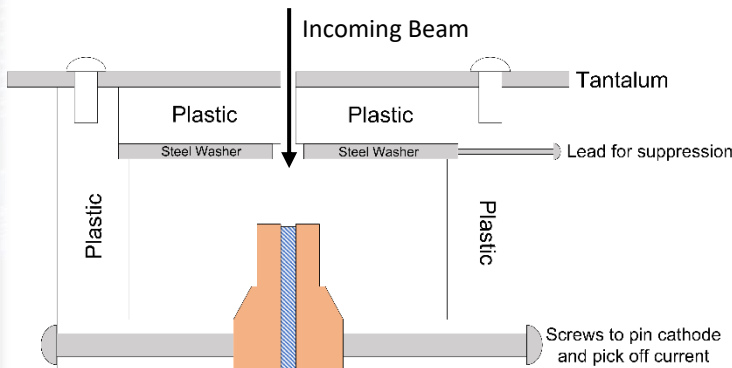
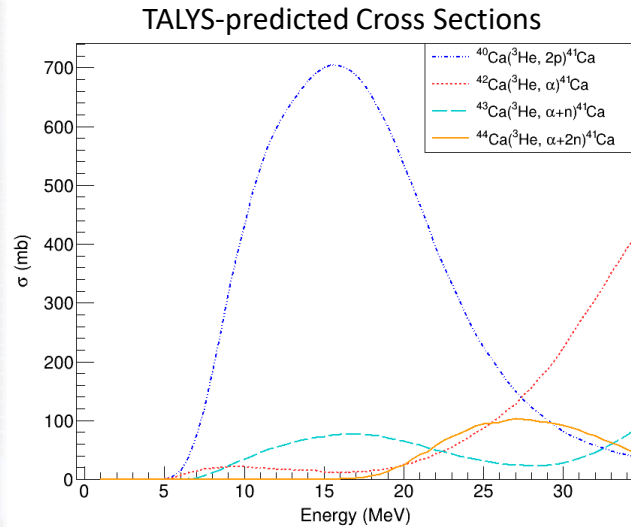


A Novel Activation Technique for Integrated Cross Section Measurements using Accelerator Mass Spectrometry



^{41}Ca ($t_{1/2} = 9.94 \times 10^4$ yrs) is an important stellar radionuclide and its production in the Early Solar System from various irradiation scenarios can help determine the viability of models of early stellar processes. A novel reaction technique has been under development and recently tested at the Nuclear Science Laboratory at the University of Notre Dame. This technique utilizes an “in-cathode” reaction method, where natural CaF_2 material is packed into an ion source sample holder (cathode) and then irradiated and subsequently measured using Accelerator Mass Spectrometry (AMS) without the need for chemical processing afterward. The setup for the irradiation was performed using a ^3He beam to measure the reaction $^{\text{nat}}\text{Ca}(^3\text{He}, x)^{41}\text{Ca}$. Initial AMS results suggest additional complexity due to ion source sputtering rates and geometry, which will need to be explored further.

