

Second Generation Degradar Foil for the CARIBU Project

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The Californium Rare Ion Breeder Upgrade (CARIBU) project utilizes ^{252}Cf to access species not produced in the low-energy fission of uranium as well as producing elements that are difficult to extract using standard ISOL techniques. CARIBU provides beams of neutron rich species to the Argonne Tandem Linear Accelerator System (ATLAS) which are accelerated up to ~ 10 MeV/u for nuclear physics experiments. The electroplated ^{252}Cf source is positioned in front of a large helium gas catcher, where the incoming particles are stopped and stripped of electron(s) to a 1+ or 2+ ion. Within this gas catcher, the ions first pass through a gold cover foil to contain self-sputtering recoil emissions. The ions next pass through an aluminum degrader foil where much of their residual energy is reduced so as to be stopped in the gas catcher. In the past, a less than ideal cylindrical shaped degrader was utilized due to production limitations. This resulted in non-uniform energy loss as the ions passed through the degrader. With the advent of 3D printing, a new hemispherical degrader was prepared to enable a more uniform energy loss. The design, production, and assembly of the new degrader will be discussed.

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