

Production and Reacceleration of ^{112}In with the Texas A&M Light Ion Guide and Charge-Breeding ECR

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Last year, the first re-accelerated rare isotope beam (RIB) made with the Light Ion Guide (LIG) and Charge-Breeding ECR (CB-ECR) at the Cyclotron Institute at Texas A&M University (TAMU) was produced. The rare isotope beam, ^{112}In , was made with the $^{114}\text{Cd}(p,3n)$ reaction using 28 MeV protons from the TAMU K150 cyclotron. The reaction products were stopped in He gas and extracted into a long Sextupole Ion Guide (SPIG). The SPIG transported the ions directly into the CB-ECR where they were charge-bred to $^{112}\text{In}^{21+}$. This charge state, which is a close charge-to-mass analog with $^{16}\text{O}^{3+}$, was then injected into the TAMU K500 cyclotron for beam purification and acceleration to 14 MeV/u. The resulting re-accelerated beam was identified with the MARS spectrometer and associated silicon detectors. Overall, a rate of about 100 p/s for the ^{112}In was observed at the focal plane. In addition, a similar background rate was also present. We have determined this background is arising from alloys and contamination in the CB-ECR components.

In my presentation, I plan to show results obtained from our test experiment to re-accelerate the ^{112}In . I also plan to present about other beams we have tried to date, while attempting to find ways to reduce or eliminate the background from the CB-ECR components.