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**The Design and Evaluation of High Efficiency Release
Targets for Radioactive Ion Beam Generation¹**

GERALD D. ALTON, YUAN LIU, D. W. STRACENER, Physics Division, Oak Ridge National Laboratory, Oak Ridge, TN USA — In order to provide experimentally useful radioactive ion beams (RIBs), radioactive isotopes produced by the ISOL technique must be diffused from the interior of solid or liquid target materials, effusively transported to the ion source, ionized, mass separated and accelerated to research energies in a time commensurate with the lifetime of the species. The speeds at which these processes must take place impose stringent requirements on the design of fast diffusion-release, highly permeable targets and on the design of fast vapor transport systems. Since the average time required to diffuse a species from a target material is proportional to the square of the dimension in the direction of diffusion, production targets can be engineered to ensure release of the species of interest within its lifetime. In this report, we define criteria for designing mechanically stable, short diffusion-length, highly permeable targets and illustrate the viability of the concept by providing release data for a number of short-lived radioactive ion species from targets based on this design philosophy.

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Prefer Oral Session
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