

Abstract Submitted
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Stable isotope enrichment using a plasma centrifuge¹ MAHADEVAN KRISHNAN, BRIAN BURES, ROBERT MADDEN, Alameda Applied Sciences Corporation — A primary goal of the Department of Energy's Isotope Development and Production for Research and Applications Program (Isotope Program) within the Office of Nuclear Physics (NP) is to produce isotopes that are in short supply in the U.S. and of which there exists no or insufficient domestic commercial production capability. A vacuum arc plasma centrifuge is a rigid rotor column of metal plasma in which centrifugal forces re-distribute ions radially according to their mass/charge ratio. Early work demonstrated rotation at 2 million rpm and separation of various stable isotopes. The spinning plasma column had a Gaussian flux profile, peaked on the rigid rotor axis. This work adopts a more efficient approach, with the plasma created as a hollow column, wherein the flux is concentrated at larger radii where the centrifugal action is highest. By tailoring the vacuum arc discharge geometry, the rotation rate can also be increased to ~ 10 million rpm. Data from Cu, Al and other metal plasmas will be presented and discussed in light of enriched stable isotopes needed for research and medicine.

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