

**Mo-99 2015 TOPICAL MEETING ON
MOLYBDENUM-99 TECHNOLOGICAL DEVELOPMENT**

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Development of Accelerator Based Production of Mo-99

S. D. Chemerisov, K. Alford, M. Bennett, D. Bowers, M. A. Brown, J. P. Byrnes, W. L. Ebert, A. Gelis, R. G. Gromov, L. Hafenrichter, A. Hebden, T. Heltemes, J. Jerden, C. D. Jonah, M. Kalensky, J. Krebs, R. H. Lowers, V. Makarashvili, B. Micklich, K. J. Quigley, D. Rotsch, D.C. Stepinski, Z. Sun, P. Tkac, K. E. Wardle, K. A. Wesolowski, and G. F. Vandegrift

Nuclear Engineering Division

Argonne National Laboratory, 9700 S Cass Ave, Argonne, IL 60439 – USA

ABSTRACT

The National Nuclear Security Administration's (NNSA) Office of Materials Management and Minimization, in partnership with commercial entities and the US national laboratories, is working to accelerate the establishment of a reliable domestic supply of Mo-99 for nuclear medicine while also minimizing the civilian use of HEU. Argonne National Laboratory (Argonne) is supporting NorthStar Medical Radioisotopes LLC and SHINE Medical Technologies in their efforts to become domestic Mo-99 producers. NorthStar Medical Radioisotopes, LLC is utilizing the photonuclear reaction in an enriched Mo-100 target for the production of Mo-99. In this approach a high-power electron accelerator is used to produce the required flux of high-energy photons through the bremsstrahlung process. Argonne is assisting in developing the irradiation system, target processing, and enriched-Mo recycle. SHINE Medical Technologies is developing SHINE, a system for producing fission-product ⁹⁹Mo using a D/T-accelerator to produce fission in a non-critical target solution of aqueous uranyl sulfate. Argonne is assisting SHINE in development Mo-99 separation and purification systems using mini-SHINE experimental setup. In this presentation we will review accelerator related aspects of the project.

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