

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

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**SHINE Chemistry Overview**

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**ABSTRACT**

As part of the Material Management and Minimization (M<sup>3</sup>) Mo-99 Technology Development program, Argonne is helping to accelerate the domestic production of Mo-99. Today's presentation will focus on the work being done at Argonne to support SHINE Medical Technologies in their efforts to produce fission-product Mo-99 via an accelerator-driven process. Argonne's mini-SHINE experiments will produce 2 Ci (phase 1) and 20 Ci (phase 2) of Mo-99 for shipment to SHINE's potential Tc-99m generator manufacturer partners. Mo-99 will be produced using a low-enriched uranium (LEU) uranyl-sulfate target solution, an electron linac, and a tantalum (phase 1) or depleted-uranium target (phase 2) for neutron production. Results from the phase 1 mini-SHINE experiments show a delay in oxygen generation, indicate no change in Mo oxidation state, and prove that the final Mo-99 product does meet required purity specifications. Once the Mo-99 product is shipped to GE Healthcare, phase 1 equipment will be removed and phase 2 will be installed.

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