

**2018 Mo-99 TOPICAL MEETING ON  
MOLYBDENUM-99 PRODUCTION TECHNOLOGY DEVELOPMENT**

**SEPTEMBER 23-26, 2018  
HILTON KNOXVILLE HOTEL  
KNOXVILLE, TN**

**FY18 Update on Large-Scale Dissolution and Recycle Processes for  
Neutron Capture, and Accelerator Driven Production of Mo-99**

P. Tkac<sup>1</sup>, P. Kozak<sup>1</sup>, D. Rotsch<sup>1</sup>, S.D. Chemerisov<sup>2</sup>, M.A. Brown<sup>1</sup>, J. Bailey<sup>2</sup>,  
K. Wesolowski<sup>2</sup>, K. Alford<sup>2</sup>, and G.F. Vandegrift<sup>1</sup>

<sup>1</sup>Chemical and Fuel Cycle Technologies Division

<sup>2</sup>Experimental and Operational Facilities Division

Argonne National Laboratory, 9700 S. Cass Avenue, 60439 Lemont – USA

**ABSTRACT**

Non-uranium production of Mo-99 via neutron capture or by photonuclear reaction using an electron accelerator has received a lot of attention. The main advantages of accelerator production are easier regulatory procedures and waste disposal pathways. However, for larger production yields, use of enriched Mo material in several hundreds of grams per irradiation may be required. Therefore, a robust design and optimization of post-irradiation chemical processes are of great importance for economic production of Mo-99. Here we discuss the latest experimental results on the large-scale dissolution of sintered Mo disks, and potential reasons for significant variability in dissolution rates from batch to batch. For the Mo recycle process – MOEX – an update on chemical and mechanical compatibility of various materials considered for use in centrifugal contactor design will be provided.