

**Mo-99 2016 TOPICAL MEETING ON
MOLYBDENUM-99 TECHNOLOGICAL DEVELOPMENT**

**SEPTEMBER 11-14, 2016
THE RITZ-CARLTON
ST. LOUIS, MISSOURI**

**Remotely Operated Systems for Primary Recovery of ⁹⁹Mo from
Accelerator-Driven Sub-Critical Fission of LEU**

J.F. Krebs, J.P. Byrnes, K.J. Quigley, A.S. Hebden, A.J. Youker,
S.D. Chemerisov, G.F. Vandegrift

Nuclear Chemical Engineering Department
Nuclear Engineering Division
Argonne National Laboratory, 9700 S. Cass Ave., 60439 Argonne – USA

ABSTRACT

Lab-scale, remotely operated process systems have been developed for the primary recovery of ⁹⁹Mo produced by accelerator-driven sub-critical fission of low enriched uranium (LEU) aqueous solutions. Remotely operated systems were required due to the high radiation fields produced from the operation of the linear accelerator and the dose rates from the fission products residing in the LEU target solution. To maximize the quantity of ⁹⁹Mo recovered immediate post-irradiation processing was required thus limiting the time of decay of the accelerator beam area. Equipment selection and testing, design considerations, maintenance operations, and operation experience gained from the 5 L (Phase I) system and applied to the 20 L (Phase II) system will be presented.