

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

**AUGUST 31-SEPTEMBER 3, 2015
HILTON BOSTON BACK BAY
BOSTON, MASSACHUSETTS**

**Chemical Processing Activities for ^{99}Mo Production by (γ, n) and (n, γ)
Reactions using Enriched ^{100}Mo and ^{98}Mo Targets**

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ABSTRACT

Recently, several technologies were proposed for the production of $^{99}\text{Mo}/^{99\text{m}}\text{Tc}$ without use of ^{235}U targets. These technologies offer the potential for a lower-cost alternative to fission produced ^{99}Mo , but with lower yields of ^{99}Mo or $^{99\text{m}}\text{Tc}$. Enriched ^{98}Mo or ^{100}Mo targets are necessary for economic production of several thousand Ci of ^{99}Mo . Argonne, in collaboration with Los Alamos and Oak Ridge National Laboratories, are assisting NorthStar Medical Technologies in the development of domestic supply of ^{99}Mo . NorthStar's short-term plan is to produce ^{99}Mo using $^{98}\text{Mo}(n, \gamma)^{99}\text{Mo}$ reaction at MURR, and their long-term solution is to produce ^{99}Mo using an electron accelerator accelerators via the $^{100}\text{Mo}(\gamma, n)^{99}\text{Mo}$ reaction. The latest experimental results from irradiation of enriched ^{100}Mo targets, large-scale dissolution studies, and development of enriched material recycle process will be presented.

Work supported by the U.S. Department of Energy, National Nuclear Security Administration's (NNSA's) Office of Defense Nuclear Nonproliferation, under Contract DE-AC02-06CH11357. Argonne National Laboratory is operated for the U.S. Department of Energy by UChicago Argonne, LLC.