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MOLYBDENUM-99 TECHNOLOGICAL DEVELOPMENT**

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**Chemical Processing for a Non-uranium Production of  $^{99}\text{Mo}/^{99\text{m}}\text{Tc}$**

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**ABSTRACT**

A non-uranium pathway for production of hundreds of curies of  $^{99}\text{Mo}/^{99\text{m}}\text{Tc}$  isotope requires enriched  $^{98}\text{Mo}$  or  $^{100}\text{Mo}$  material. An estimated cost for >95% enriched  $^{98/100}\text{Mo}$  is about \$1,000/g. In order to meet supply demands, kilogram quantities are required. Due to the high cost for the enriched target material, it is important that potential manufacturers have a means to efficiently recycle the enriched Mo into new targets as part of the complete production scheme. Impurities present in the enriched material, and those introduced during the post-irradiation processing, or recycling, need to be closely monitored. Experimental results on irradiation of Mo targets, dissolution studies to optimize the target properties, and a solvent extraction approach to recycle enriched Mo material will be presented.