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**Update on Large-scale Chemical Processing for Neutron Capture, and
Accelerator Driven Production of ⁹⁹Mo**

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ABSTRACT

NorthStar Medical Technologies, LLC (NorthStar) is in final stages of preparing for domestic production of ⁹⁹Mo. Both neutron capture ⁹⁸Mo(n, γ)⁹⁹Mo, and accelerator driven ¹⁰⁰Mo(γ , n)⁹⁹Mo production pathways require a dissolution process that can handle large quantities of Mo material (up to 600g of Mo). After the decay of ⁹⁹Mo, having a recycle process to recover enriched-Mo material with high recovery yields for another irradiation is of great importance. A full-scale dissolution setup for dissolution of sintered Mo disks has been re-designed and built for robustness and durability in hot-cell operations. Testing of the full-scale dissolution setup performed at the Argonne hot-cell mock-up facility will be discussed. Also, experimental results on Mo recycle from the demonstration run using decayed Mo material irradiated at MURR, and scale-up efforts to a full-scale 3-cm additively-manufactured centrifugal contactor design will be presented.

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