

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

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**Powder Metallurgy Molybdenum
Accelerator Target Materials and Assemblies**

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ABSTRACT

Powder metallurgy fabrication of accelerator targets and assemblies is being examined to support the development of Mo-99 production by NorthStar Medical Technologies, LLC. An advantage of powder metallurgy is that very little material is wasted and dense, quality parts are routinely produced using molybdenum powder. The current target design is a stack of thin wafers, 29 mm in diameter with thicknesses of 0.5 to many millimeters and very stringent dimensional tolerances. Combinations of powder morphology, lubricants, pressing technique and sintering conditions have been explored to produce target disks with controlled densities, minimal variations in dimensions and little or no distortion. In addition to the typical “press and sinter” approach for the fabrication of targets, additive manufacturing is being explored to produce complete target assemblies. The effort also includes production of feedstock powders for traditional and additive manufacturing approaches directly from the chemical compounds being used to recover metal from simulated spent radiopharmaceutical solutions.