

**2018 Mo-99 TOPICAL MEETING ON  
MOLYBDENUM-99 PRODUCTION TECHNOLOGY DEVELOPMENT**

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**Optimizing Extraction Processes and Fuel Fabrication for Niowave**

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**ABSTRACT**

Niowave will produce Mo-99 by using a superconducting electron linear accelerator to drive a subcritical uranium target assembly. In order to achieve the best yields of Mo-99 and other fission fragments, while also reducing losses of uranium material or processing time, it is essential to use optimized parameters throughout the manufacture and recovery processes. Y-12 National Security Complex will provide guidance to Niowave in uranium processing, including extraction chemistry, precipitation chemistry, oxidation temperatures, and powder handling. Niowave will operate a closed-loop fuel cycle and will need a fuel powder pellet which allows for complete gaseous fission product release from the pellet. Additionally, any modifications to the originally proposed Niowave method require compatibility with Niowave's chemical recovery for Mo-99.