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MOLYBDENUM-99 PRODUCTION TECHNOLOGY DEVELOPMENT**

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**Progress Toward Mitigating Uranyl Peroxide Precipitation and
Controlling Pu Behavior on Titania**

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ABSTRACT

Two concerns for the production of Mo-99 from a fissioning LEU uranyl sulfate solution are the precipitation of uranyl peroxide and the generation of greater-than-class-C (GTCC) waste. Argonne performed a series of irradiation experiments using a 3 MeV Van de Graaff accelerator in an effort to better understand uranyl peroxide formation and precipitation and develop a means to combat it. Conditions were found to prevent uranyl peroxide precipitation at the Van de Graaff, and more experiments will continue at the linac. Additionally, Pu-239 is the main driver for GTCC waste and with no known disposal path, controlling its behavior in the Mo-99 separation is crucial. Argonne found that temperature and post-load acid wash concentration were key parameters to controlling Pu behavior on titania. Results from Van de Graaff experiments and Pu batch and column experiments will be discussed.

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