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MOLYBDENUM-99 PRODUCTION TECHNOLOGY DEVELOPMENT**

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**Fabrication of Uranium Oxide Pellets for Efficient Radioisotope  
Production**

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**ABSTRACT**

A central part of Niowave's radioisotope production process is a closed loop fuel cycle to improve uranium resource utilization, minimize waste generation, improve safety, and limit proliferation risk. Niowave's current NRC license allows for operation of the fuel cycle at a demonstration scale via irradiation of a subcritical uranium assembly, radiochemical recycling and purification of irradiated fuel, fabrication of new uranium fuel targets, and reloading of the assembly for reirradiation. This poster will focus on Niowave's current techniques for uranium oxide pellet fabrication, loading the subcritical fuel rod assembly, and production and extraction of radioxenon. Additionally, Niowave is engaged with technical experts at both Argonne National Laboratory and Y-12 National Security Complex, to characterize, optimize, and standardize pellet production processes leading to the commercialization of this type of system. This will ultimately generate pressed oxide fuel pellets that maximize the release of valuable gaseous radioisotopes in kilogram quantities of LEU.