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## **Argonne National Laboratory Demonstration of SHINE Process Produces Commercial-Grade Medical Isotopes**

**Monona, WI** – Argonne National Laboratory (Argonne) and SHINE Medical Technologies, Inc. announced today that Argonne successfully demonstrated the production, separation and purification of molybdenum-99 (Mo-99) from SHINE’s innovative liquid target. The resulting Mo-99 product purity was equivalent to the Mo-99 used in the supply chain today. The demonstration—known as Mini-SHINE—uses the same process flows that will be used in the SHINE manufacturing facility and further validates SHINE’s technical approach.

"This key demonstration proves that SHINE’s innovative target and processing chemistry produces Mo-99 that has the same purity as what customers are purchasing today," said Greg Piefer, CEO of SHINE. "It is essentially a pilot demonstration of one of the two novel parts of our plant. Argonne has worked tirelessly to provide this demonstration, which otherwise would not be available until after the plant is operational. I’d like to thank Argonne’s top-notch scientists for taking on this very meaningful effort."

Phoenix Nuclear Labs has previously demonstrated the other novel part of the SHINE process by operating the particle accelerator at full-scale production levels.

Earlier tests performed by Los Alamos National Laboratory found near-complete recovery of the Mo-99 from SHINE’s liquid target, and that this yield did not change when the target solution was recycled.

Now, Argonne has taken testing of the liquid target a step further by building a tip-to-tail pilot demonstration. The Mini-SHINE test validates every step of the production chemistry: from plant-relevant irradiation conditions through purification of the Mo-99 to current industry standards. The work is supported by the Department of Energy’s National Nuclear Security Administration’s Mo-99 Program.

"Developing a domestic supply of medical isotopes is critical to US patient well-being, and Argonne is proud to play an important role in accelerating development of that capability," said George Vandegriff, Distinguished Fellow at Argonne. "The Argonne team is proud to be assisting SHINE in the development of this innovative technology, and I look forward to the day I can visit the full-scale manufacturing facility."

Mo-99 is used in over 40 million medical imaging procedures each year, primarily in stress tests to detect heart disease and bone scans to determine the stage of cancer progression. Despite constituting approximately half of the world's demand for Mo-99, the US does not produce any Mo-99 domestically and imports 100 percent of its supply from foreign nuclear reactors. Many of these reactors are beyond their original design life and scheduled to be shut down in the coming years. If they are not replaced, this could lead to medical isotope shortages and deny patients access to life-saving procedures.

The SHINE facility is expected to begin commercial production in 2018 and will be able to produce enough Mo-99 every year to supply two-thirds of the US patient population.

**About SHINE Medical Technologies, Inc.**

Founded in 2010, SHINE is a development-stage company working towards becoming a manufacturer of radioisotopes for nuclear medicine. The SHINE system uses a patented proprietary manufacturing process that offers major advantages over existing and proposed production technologies as it does not require a nuclear reactor, uses less electricity, generates less waste and is compatible with the nation's existing supply chain for moly-99. Learn more at <http://shinemed.com>.