What is SHINE Medical Technologies?

SHINE Medical Technologies is dedicated to being the world leader in the safe, clean and affordable advanced manufacturing of medical isotopes and heart disease and cancer treatment elements.
## Recent Successes

SHINE has achieved a number of significant milestones on the path to commercialization

<table>
<thead>
<tr>
<th>Date</th>
<th>Achievement</th>
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<tr>
<td>May 2015</td>
<td>• Argonne National Laboratory announced it successfully and independently produced Mo-99 using SHINE’s proprietary process</td>
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<td>November 2015</td>
<td>• GE Healthcare tested SHINE’s product and verified that it fully met GE’s supply chain needs and quality standards</td>
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<td>February 2016</td>
<td>• The Nuclear Regulatory Commission formally granted SHINE the first new medical isotope facility construction permit in more than 50 years</td>
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<td>June 2016</td>
<td>• SHINE signed a long-term supply agreement with the largest Mo-99 distributor in China, HTA</td>
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<td>December 2016</td>
<td>• SHINE awarded $20.9 million DOE / NNSA Phase II cooperative agreement</td>
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<td>• Moved to new headquarters in Janesville</td>
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SHINE Technology

A modernized approach to making Mo-99

- Integrated production and refining
- SHINE irradiation unit is a hybrid
  - Accelerator creates D-T neutrons that drive reactions in the target
  - Neutrons multiply in subcritical uranium sulfate solution, allowing for very high yield
- 100% LEU
- Cost effective approach
  - Elimination of reactor results in 100s of times less waste than conventional production
  - Reusable target
Demonstrated Technology

The world’s strongest neutron generators

- Plant-scale accelerator at Wisconsin facility
- March 2016 demonstration
  - 132 consecutive hours of operation
  - 97% uptime
- Thousands of hours of operation logged on similar accelerators
Market Acceptance

Supply chain compatibility

• **Fission-based, high-specific activity**
  • No changes to pharmacy practices
  • Ensures access to other isotopes, including I-131 and Xe-133

• **Supply agreements**
  • 2014 - GE Healthcare and Lantheus Medical Imaging
  • June 2016 - HTA Co., Ltd.
  • Additional supply agreements in negotiation

Mr. Guo Chunsheng, President of HTA and Dr. Greg Piefer, CEO of SHINE
NRC Construction Permit Issued

SHINE noted as model applicant

- NRC issued SHINE Construction Permit February 2016
  - Culmination of over four years of work
  - Only U.S. medical isotope producer with NRC approval to construct

SHINE Testimony at the NRC Hearing (photo by NRC)

SHINE Construction Permit Signing Ceremony (photo by NRC)
Production Facility Design

Designed for logistical efficiency

- SHINE facility to be built in Janesville, Wisconsin, USA
- 43,500 ft² production facility
- Plant capacity of 4000 6-day Ci/week
  - Over 1/3 global demand
- 8 independent irradiation units
  - High reliability
  - Flexible production schedule
- Independent hot cell chains further increase reliability and flexibility
- First production in 2020