

Real-Time Monitor for Transuranics in Glass (TechID 2004)

Thermal Emission Spectroscopy (TES) spectra are obtained from the molten glass stream produced by a vitrification process. Concentrations of Americium, Curium, Plutonium, and other metals are obtained from these spectra. Measurements can be made as often as once per second, providing real-time analyses and records of concentrations in the final product. Light from the molten glass stream is conducted through fiber optics to the sensor contained in a personal computer distant from the radiation source, minimizing risk to personnel and generating no secondary waste. This technology was developed for the Savannah River Site's Americium-Curium Stabilization project.



Developers:

- Ames Laboratory

Applications:

- Real-time, on-line analyses of concentrations of Americium, Curium, Plutonium, and other metals in the molten glass stream produced in the stabilization of transuranics.
- Delivered to SRS for deployment in the Americium-Curium Stabilization Project 2/00.

Benefits:

- Hardware cost of monitor is less than \$5K, whereas traditional analyses of highly radioactive samples cost \$50-100K each.
- There is no contact with the material being analyzed; hence, there is minimal risk of exposure and no secondary waste generation.
- On-line real-time analyses (observations available every second, if desired) provide complete record of concentrations in vitrified product, as well as prompt warning of changes in vitrification process conditions.

Status:

- Successfully demonstrated at SRS October 1999.
- Currently available for implementation.
- Delivered to SRS for deployment February 2000.
- Innovative Technology Summary Report Available (www.cmst.org)

