Producing Desired Properties From a Broader Spectrum of Compositions for Nuclear Waste Glass

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Abstract

The U.S. Department of Energy, Office of River Protection has an extensive research program to develop low-activity waste and high-level waste glass compositions for the balance of mission of the Waste Treatment and Immobilization Plant (WTP). The fundamental data stemming from this program will support development of advanced glass formulations, key process control models, and processing strategies to ensure safe and successful operations for both the Low-Activity Waste and High-Level Waste facilities with an appreciation toward reducing overall mission life.
The Hanford site in Eastern Washington State contains 210,000 m3 of nuclear waste stored in 177 underground tanks, a result of the production of plutonium from 1943-1987. To immobilize this waste, the Hanford Tank Waste Treatment and Immobilization Plant (WTP) is being constructed onsite. The Department of Energy Office of River Protection has developed an integrated program to increase the waste loading into glass while meeting the melter lifetime, process, regulatory, and product requirements for the WTP.

Keywords: Nuclear Waste Glass, glass properties, glass melting, waste treatment using glass

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