*synroc*ANSTO

Low-risk nuclear waste forms

Low-Risk Tailored Waste Forms to Lock Up Nuclear Waste

OVERVIEW

Overall cost and processing schedule savings worth billions of dollars are achievable via the use of tailored waste forms for the cleanup and disposal of radioactive wastes difficult to incorporate in glass.

The key to immobilizing problematic waste streams is the ability to design a waste form and use the appropriate process technology to suit the unique characteristics of the waste, ensuring maximum waste loadings and optimal chemical durability at minimum cost.

Waste loadings 10% to 30+% higher than glass are achievable with no loss in chemical durability.

Commercial Applications

Tailored flexible titanate ceramic and glass-ceramic waste form solutions incorporate innovative processing technology, for problematic radioactive waste streams including:

- Actinides, and actinide residue wastes;
- INEEL sodium bearing wastes and HLW calcines; and
- Niche wastes including technetium, cesium, and strontium.

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*synroc*ANSTO *Advantages*

By integrating existing, industry-proven technologies, together with *synroc*ANSTO's state-of-the-art waste form design chemistry, significant cost and schedule savings can be realized for the cleanup and disposal of problematic wastes.

The crystalline phases lock-up the radioactive species in *synroc*ANSTO's ceramic and glass-ceramic waste forms in very durable mineral phases that have demonstrated their survival over geological timeframes.

*synroc*ANSTO *Capabilities*

ANSTO, has 25 years experience in the development of low-risk, reduced-cost, titanate-based ceramic and glass-ceramic waste forms.

*synroc*ANSTO's unique capabilities position it as a global leader in alternative waste forms. They include:

- Extensive experience in waste form design;
- Integrated process development, and
- Waste form characterization.

US Track Record

- Titanate ceramic waste form developed by ANSTO, in conjunction with Lawrence Livermore National Laboratory and Savannah River Site, was competitively selected by the US DOE to immobilize excess impure weapons plutonium in 1997;
- Developed glass-ceramic solutions for INEEL liquid sodium bearing waste & HLW calcines that are projected to save over US$2 billion and cut processing schedules by 7 years compared to borosilicate glass.

*synroc*ANSTO *Business Team*

- Dr Bruce Begg (Acting General Manager)
- Dr Arthur Day (Waste Form Design)
- Sam Moricca (Process Development)
- Dr Lou Vance (Waste Form Design)
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