

Past and Present Applications of Synroc

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Since the year 2000, Synroc has evolved from the titanate full-ceramics developed in the late 1970s to a technology platform that can be applied to produce glass, glass–ceramic, and ceramic waste forms and where there are distinct advantages in terms of waste loading and suppressing volatile losses. Recent efforts have focused strongly on waste form development for plutonium-bearing wastes in the UK, for different options for the immobilization of Idaho calcines and most recently developing an engineered waste form for the intermediate level wastes arising from 99Mo production, for the Australian Nuclear Science and Technology Organisation (ANSTO). A variety of other studies are currently in progress, including engineered waste forms for spent fuel and investigating the proliferation risks for titanate-based waste forms containing highly enriched uranium or plutonium. This paper also attempts to give some perspective on Synroc waste forms and process technology development in the nuclear waste management industry.

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