**A Review of Nuclear Waste Forms and their Impact on the Study of Actinides**

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A nuclear waste form is a stable, solid matrix for the immobilization of radioactive and hazardous constituents present in nuclear waste. There are a variety of waste forms currently in use and many more being studied for potential use. In this seminar, the features of a good waste form will be highlighted via the discussion of three papers in the literature, to show how the study of these characteristics, such as durability and radiation damage resistance, help guide our actinide waste form research.1 Two papers focused on the hollandite2 and garnet3 structures as potential waste forms will be presented to highlight the techniques used for the characterization and evaluation of waste forms. A report on the recent synthesis and characterization of a series of quaternary plutonium compounds as potential high waste loading crystalline waste forms will also be discussed.4

The investigation of new actinide compounds helps to expand our knowledge of the crystal chemistry of actinides and, thus, help guide our research targeting the synthesis and evaluation of new potential waste forms. As an illustration, our recent results on new neptunium fluoride materials will be presented.

**References:**

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