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Cs containing borosilicate waste glasses

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Abstract

Vitrification has been recognized as the best method of the neutralization and immobilization of the radioactive and toxic waste. Toxic elements are introduced into the structure of chemically durable glasses (waste glass). $\text{SiO}_2\text{-B}_2\text{O}_3\text{-Al}_2\text{O}_3\text{-Na}_2\text{O}$ glass is one of the most commonly used waste glass. Radioactive ^{137}Cs is often a dangerous contaminant of hospital and laboratory waste. Incineration of these waste and vitrification of ash by its co-melting with borosilicate glass is the perspective method of immobilization of this nuclide for safety waste storing. The influence of the partial substitution of Na by Cs and of the introduction of CaO as the main waste incineration ash component in the $\text{SiO}_2\text{-B}_2\text{O}_3\text{-Al}_2\text{O}_3\text{-Na}_2\text{O}$ waste glass on the change of its structure, crystallization ability, and physical properties were studied.



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