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Phase transition phenomena in an iron phosphateglass and thermal stability criteria

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Abstract : The thermal stability of an iron phosphate glassdedicated to radioactive waste confinement is a crucialcharacteristic for the integrity of the waste package. In this study,we investigate the thermal stability criteria defined by Hruby,Weinberg and Lu/Liu by measuring the glass transitiontemperature (Tg), the crystallization temperature (T), and themelting temperature (T) of an iron phosphate glass loaded withradioactive waste. These temperatures decrease when loading theglass with the waste: Tg decreases from 623.48 °C to 580.04 °C,Tcmfrom 766.34 to 679.26 °C and Tfrom 932.76 °C to 919.75 °C.Thermal stability criteria show satisfactory values, in the interval0.14 0.69.

Keywords : Iron phosphate glass, Thermal stability, Radioactive waste, XRD, DTA, SEM