Contribution ID: **142** Type: **Poster**

Pyrochemical and electrochemical separations studies on plutonium (Part 2)

Thursday, 22 April 2010 12:00 (20 minutes)

Pyrochemical separations , involving molten salt and metal media , by liquid/liquid extraction or electrorefining are studies for nuclear defense and civil applications. The electrochemical properties of plutonium have been studied in molten salt-ternary eutectic mixture NaCI-KCI-BaCI2, equimolar mixture NACI-KCI and pure CaCI2 - and in liquid gallium at 1073 k. These processes concern actinide separations , However , lanthanides , such as cerium, are often used as surrogates.The first steps of a pyrochemical process development consist in the solvent media.Activity coefficients of the solutes in the two phases, that described the solvent-solute interaction , are important thermochemical parameters to predict separations efficiency and to assess the solvents influence . As nuclear defense scientist, I discuss the advanced developments to separate plutonium by electrochemical method that has been supporting the developments of pyrochemical processes involving plutonium as main goal and actinides separations.

Keywords/ Electrochemical reactions, Molten salt ,Metal media, Activity coefficient of plutonium.

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Session Classification: Poster Session - Chemistry of Nuclear Fuel Cycle, Nuclear Waste Management

Track Classification: Chemistry of Nuclear Fuel Cycle, Radiochemical Problems in Nuclear Waste Management