

Stoichiometry Drift Behavior of Mixed Oxide Fuel during Air Atmosphere Storage

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Abstract

Stoichiometry drift of americium-containing MOX fuel pellet at ambient temperature was investigated. Changes of weight and X-ray diffraction pattern of Am-MOX pellets were examined for several pellets having different initial O/M ratios at various atmosphere; air, oxygen-controlled Ar and vapor-controlled Ar. Results showed that there were some relationships in stoichiometry drift of the pellets, e.g., between water vapor pressure and final O/M ratio. Water molecule adsorption on the pellet surface could cause the present stoichiometry drift of the pellet at ambient temperature.

As purposes of correct understanding of mechanism on the stoichiometry drift of oxide fuel, a study will be started with experimental and computational science (such as first principal) approaches. Our final goal will be development of reasonable procedures to obtain Oxidization Resistance Oxide Fuel (OROF).

In this presentation, the stoichiometry drift behavior and a plan to develop the procedure will be explained.