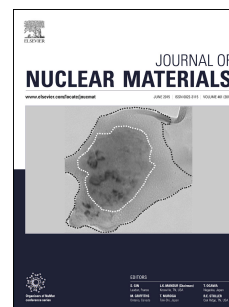


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U-PuO₂, U-PuC, U-PuN Cermet Fuel for Fast Reactor

Sudhir Mishra^{1*}, Santu Kaity¹, Joydipta Banerjee¹, Chiranjeet Nandi¹, G.K.Dey² and K B Khan¹

¹Radiometallurgy Division

²Materials Science Division

Bhabha Atomic Research Centre, Trombay, Mumbai 400 085, India

Abstract

Cermet fuel combines beneficial properties of both ceramic and metal and attracts global interest for research as candidate fuel for nuclear reactors. In the present study, U matrix PuC/ PuN/ PuO₂ cermet for fast reactor have been fabricated on laboratory scale by powder metallurgy route. Characterization of the fuel has been carried out using Dilatometer, Differential Thermal analysis (DTA), X-ray diffractometer and Optical microscope. X ray diffraction study of the fuel reveals presence of different phases. The PuN dispersed cermet was observed to have high solidus temperature as compared to PuC and PuO₂ dispersed cermet. Swelling was observed in U matrix PuO₂ cermet which also showed higher thermal expansion. Among the three cermets studied, U matrix PuC cermet showed maximum thermal conductivity.

Key words: Cermet, fabrication, powder metallurgy, characterization, fast reactors

*E-mail address: sudhir@barc.gov.in

Telephone: +91 22 25595364

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