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Fuel Cladding Chemical Interaction Tests of Irradiated Metallic Fuel

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To investigate the fuel cladding chemical interaction for the irradiated metallic fuel, high temperature heating tests were performed. The fuel rod consisting of U-10Zr-5Ce fuel with T92 cladding were irradiated in HANARO reactor. After the irradiation, the fuels was cut into cylindrical specimens, and then the top and the bottom plates of the specimens were put into contact with FC92 and HT9 plates, respectively. The specimens were exposed at high temperature in the range of 650–800 oC for one hour. Microstructural examinations were conducted by utilizing optical microscope, scanning electron microscope, and electron prove micro-analysis. Migration phenomena of U, Zr, Fe, and Cr as well as Nd lanthanide fission product were observed at a melting region. Elements distribution at the melting region demonstrates that eutectic melting occurs during high temperature experiment. The penetration depth of the eutectic melting in FC92 and HT9 were compared with that for T92 cladding.

Country/Int. Organization

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