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Reaction of Unirradiated High-Density Fuel with Aluminum

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Abstract

Excellent dispersion fuel performance requires that fuel particles remain stable and do not react significantly with the surrounding aluminum matrix. A series of high-density fuels, which contain uranium densities $>12 \text{ g/cm}^3$, have been fabricated into plates. As part of standard processing, all of these fuels were subjected to a blister anneal of 1 h at 485_{\circ} C . Changes in plate thickness were measured and evaluated. From these results, suppositions about the probable irradiation properties of these fuels have been proposed. In addition, two fuels, U-10 wt% Mo and U_2Mo , were subjected to various heat treatments and were found to be very stable in an aluminum matrix. On the basis of the experimental data, hypotheses of the irradiation behavior of these fuels are presented.

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