Analysis of thermal conductivity of U-Mo/Al and U-Mo/Al-5Si dispersion fuel

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ABSTRACT

This paper describes the analysis results of the thermal conductivity of U-7Mo/Al and U-Mo/Al-5Si dispersion fuel. Using laser flash and differential scanning calorimetry analysis, the thermal diffusivity and heat capacity of U-Mo/Al dispersion fuel were measured with different U-Mo volume fractions. Empirical equations were obtained as functions of temperature and U-Mo volume fraction. Using the thermal diffusivity, heat capacity, and density, the thermal conductivity was obtained. In a similar way, the thermal conductivity of U-7Mo/Al-5Si was obtained for a comparison with that of U-7Mo/Al, which showed that the addition of Si to the Al matrix led to an overall decrease in the thermal conductivity.