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**Burnup Determination of Irradiated U-Mo Dispersion Fuel
by Neodymium Monitor Methods**

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ABSTRACT

Destructive methods were used for the burnup determination of U-Mo dispersion fuel irradiated in the High-flux Advanced Neutron Application Reactor(HANARO) at KAERI. The irradiated U-Mo dispersion fuel specimen was dissolved in 6 M HCl at 90°C for 2 hours followed by a mixed acid condition of 14 M HNO₃ and 1 M HF at 60°C for 4 hours under a reflux. The total burnup was determined from a measurement of the Nd isotope burnup monitors. The method includes a U, Pu, ¹⁴⁸Nd, ¹⁴⁵Nd+¹⁴⁶Nd, and total Nd isotopes determination by the isotope dilution mass spectrometric method(IDMS) using triple spikes(²³³U, ²⁴²Pu and ¹⁵⁰Nd), and two sequential anion exchange resin(AG 1X8 and 1X4) separation precedures. The effective fission yield was calculated from the weighted fission yields averaged over the irradiation period.