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**A Study on the Characteristics of U-(5.4~10 wt%)Mo
Alloy Powders Prepared by Centrifugal Atomization**

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Abstract

The characterization on powders of U-(5.4~10 wt%) Mo alloy depending on Mo content prepared by rotating disk centrifugal atomization process was carried out in order to investigate the phase stability of the atomized U-Mo alloy system. All of atomized U-(5.4~10 wt%)Mo alloy particles exhibits, irrespective of Mo composition, a Mo micro-segregation at grain boundaries as well as fine polycrystalline structures with γ -U grains below 5 μm in size. It revealed from the EDS and neutron scattering analyses that the Mo content at the cell boundaries is about 2~3 at% lower than that in the cell, which corresponds to the existence of two γ -U phases with both having Im3m bcc space groups. As Mo concentration increases, the lattice parameters of both γ_1 -U and γ_2 -U phases become decreasing with increasing the fraction of γ_2 -U phase. The decomposition of γ -U phase at 500°C take place by the cellular mechanism, nucleated at γ cell boundaries due to its somewhat lowered Mo content. Then most γ -U cells were separated into α -U and γ -U platelets by a cellular reaction as the annealing time increases.