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THE APPLICATION OF INCT SOL-GEL METHOD TO
FABRICATION OF VARIOUS PRECURSORS OF
NUCLEAR FUELS

Abstract:

In the Sol-Gel Laboratory at the Institute of Nuclear Chemistry and Technology (INCT), studies of synthesis of various advanced ceramic materials by the sol-gel method have been carried out for 50 years. The ceramics products, such as metal oxides, homogeneous mixtures of metal oxides, cermetals and metals, were obtained in various shapes, as irregular powders, monoliths, coatings, fibres or spherical particles with various diameters. Through years some modifications of the classic sol-gel method have been introduced – the Complex Sol-Gel Process (CSGP). This method with combination with original methods of gelation to spherical particles - ICHTJ process and Double Extraction Process allows to obtain final product in the shape of microspheres with diameter below 100 μm . Moreover, the CSGP method combined with Internal Gelation method produce the microspheres with diameter above 400 μm . The combinations of those methods were applied to preparation different types of precursor of nuclear fuels, such as UO_2 , $\text{U}(\text{MA})\text{O}_2$, ThO_2 , $\text{Th}(\text{U})\text{O}_2$, UC, UCO, UN, $\text{Zr}(\text{MA})\text{O}_2$, W- UO_2 , etc.

Serdecznie zapraszamy,
M. Dąbrowski, T. Kwiatkowski