

## **Recent Results of Microstructural Characterization of Neutron-Irradiated U-Mo Fuels Using Advanced Techniques**

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The Material Management and Minimization Program is developing low enriched uranium fuels for application in research and test reactors. One fuel type is a U-Mo monolithic fuel, and the second type is a U-Mo dispersion fuel. To successfully qualify these fuel types, it is important to have good understanding of the fuel performance under different irradiation conditions. Microstructural characterization has been performed on U-Mo fuels that have been irradiated under different conditions in the Advanced Test Reactor. This includes using techniques like transmission electron microscopy, atom probe tomography, electron energy loss spectroscopy, and electron backscattered electron diffraction to uncover the microstructure of U-Mo alloys, and other materials of construction, after irradiation. The data generated using these techniques is imperative for developing a fundamental understanding of the irradiation performance of this fuel under a variety of irradiation conditions. Information like that generated from this work is key for improving computer modeling of the fuel performance under irradiation. This presentation will discuss how recent results can be used to improve understanding of phenomena like recrystallization, grain growth, radiation stability, and swelling of irradiated U-Mo fuel and other fuel plate materials.