

The Technical University of Munich operates the Research Neutron Source Heinz Maier-Leibnitz (FRM II) in Garching near Munich as one of the most powerful and modern neutron sources worldwide. As a service facility for science and a service provider for industry, we occupy a leading position in the field of research with neutrons and their technical use.

Starting spring 2022, the working group “High Density Nuclear Fuels” at the research neutron source Heinz Maier-Leibnitz (FRM II) is looking for a:

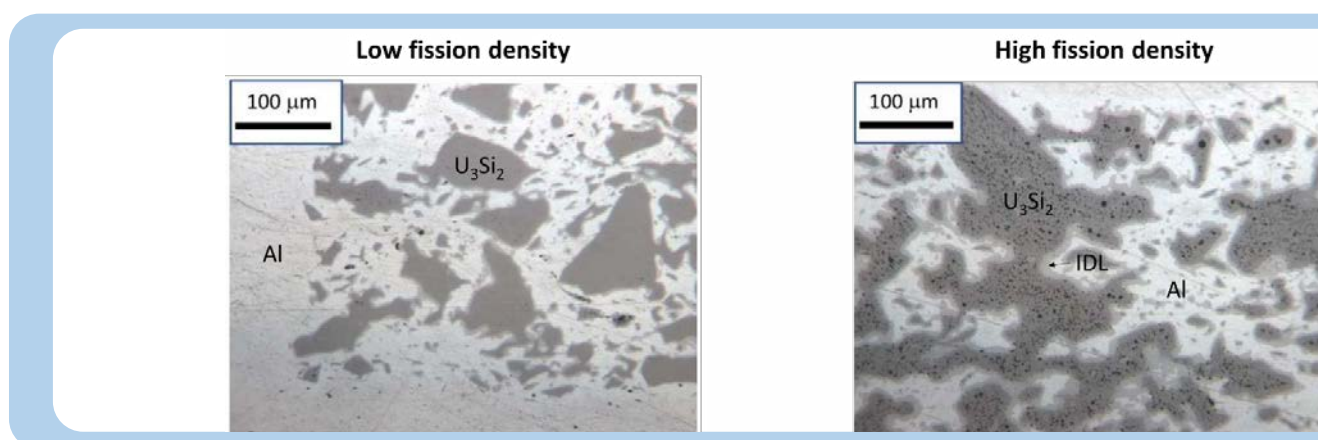
M.Sc. Student - Working Student - Internship (m/f/d) Physics - Engineering - Materials science - Comparable studies

Preparation and investigation of U_3Si_2/Al fuel samples

The research working group “High Density Nuclear Fuels” at the research reactor FRM II is working on the qualification of newly-developed high-density nuclear fuels in Europe. The most promising candidates are a metallic uranium-molybdenum alloy fuel (U-Mo) or high-density uranium silicide (U_3Si_2), both using aluminum-based cladding. Therefore, scientists in the fields of physics, chemistry, engineering, physical technology and computer science are working intensively together on fuel fabrication technologies, the determination of material properties as well as the irradiation behavior of such fuels.

This project aims at gaining insight into the performance of high-density U_3Si_2/Al fuels. The applicant for this topic is supposed to prepare U_3Si_2/Al bilayer samples that can represent the fuel system using the Physical Vapor Deposition (PVD) technique. The thermal properties of this kind of fuel can be investigated by Differential Scanning Calorimetry (DSC) measurements. To predict its irradiation behavior, ion irradiation experiments are expected to be performed under certain conditions that can represent the in-reactor irradiation environment.

The tasks typically involve working in radiation protection areas with open handling of radioactive materials such as uranium. The high security standard of FRM II generally requires a security clearance according to the German atomic law.



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