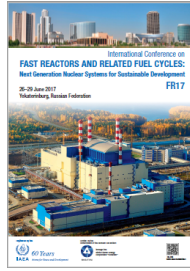


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A High Density Uranium Zirconium Carbonitride LEU Fuel for Application in Fast Reactors

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For many years, Russian researchers have developed and tested a high density, high temperature U-Zr-C-N fuel for potential application in different types of reactors, including fast reactors. As part of this effort, reactor tests have been performed to low burnup. However, reactor-testing data is still needed at high burnup to confirm the optimal performance of the fuel. The SM-3 reactor, which is a high-flux reactor located in Dmitrovgrad, Russia, will be used to test a U-Zr-C-N (U_{0.9}Zr_{0.1}C_{0.5}N_{0.5}) fuel to ~40% burnup. The fuel will then be examined to determine its performance during irradiation. The fuel that will be tested has a density of 11.9 g/cm³ and an enrichment of 19.75% (uranium-235), and the uranium density of this fuel material is 10.8 g/cm³. About 1000 effective days of irradiation will be required to achieve the targeted burnup. This presentation will discuss the details of the planned irradiation, along with results of out-of-pile research that has been performed on the as-fabricated fuel. The positive characteristics of the U-Zr-C-N fuel will be discussed, and comparisons will be made to other fuel types.

Country/Int. Organization

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