

Conversion strategy for the FRM II compact core

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To support the global nonproliferation efforts, FRM II is actively working towards the conversion of its compact fuel element to a uranium enrichment, which is significantly lower than its current enrichment of 93%. Thereby, it is of utmost importance that the scientific performance does not suffer and that such new fuel element fits in the current core geometry to provide a continuous operation. This cannot be achieved with the currently available fuel systems, which therefore, requires a new high-density fuel to be developed and qualified to be used in high performance research reactors. Based on a preliminary parameter study, two promising core designs are presented: One using dispersed, high-density U_3Si_2 and a more promising one using a monolithic uranium-molybdenum alloy. Not only new fuel fabrications methods have to be developed, also, the changed material properties like thermal conductivity have to be measured.

Primary author: Dr REITER, Christian (FRM II)

Co-authors: Mr BAUMEISTER, Bruno (FRM II); Mr STEYER, Christian (FRM II); Prof. PETRY, Winfried (FRM II)

Presenter: Dr REITER, Christian (FRM II)

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