

**RERTR 2017 - 38th INTERNATIONAL MEETING ON
REDUCED ENRICHMENT FOR RESEARCH AND TEST REACTORS**

NOVEMBER 12-15, 2017

EMBASSY SUITES CHICAGO DOWNTOWN MAGNIFICENT MILE HOTEL

CHICAGO, IL USA

Preliminary manufacturing studies of the KUCA LEU conversion fuels

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ABSTRACT

The Kyoto University Critical Assembly (KUCA), at the Kyoto University Research Reactor Institute (KURRI), is currently operating with HEU (93% ²³⁵U enrichment). KUCA is a multi-core type critical assembly consisting of three independent cores: two dry cores and a wet core, for fundamental reactor physics studies and education purposes. The fuel assemblies of the cores are assembled using HEU coupons or HEU fuel plates with various moderator-to-fuel ratio as well as material composition to cope with the wide variety of the targeted core design and experimental purposes. The U.S. Department of Energy (DOE) Office of Material Management and Minimization, KURRI and AREVA NP – CERCA are working together to convert these three cores to use LEU material.

Preliminary fuel developments have been performed using inert materials to assess the technical feasibility of producing fuel coupons for such a conversion. The fuel designs are under evaluation and technical results are very promising.

This paper will present the project status and the preliminary results.