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**Preliminary Uranium Manufacturing Studies of the KUCA LEU
Conversion Fuels**

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ABSTRACT

The Kyoto University Critical Assembly (KUCA) at the Institute for Integrated Radiation and Nuclear Science, Kyoto University (KURNS) is a multi-core type critical assembly operating with highly enriched uranium (HEU, 93% ²³⁵U enrichment). It has three independent cores, namely, two solid moderated cores (A and B cores) and one light water-moderated core (C core).

The U.S. Department of Energy (DOE) Office of Material Management and Minimization (M3), KURNS and Framatome – CERCA™ have joined in a project to convert the three KUCA cores to use low enriched uranium (LEU) material: two dry, polyethylene-moderated cores (A and B cores) and one light water-moderated core (C core).

A dedicated research program has been launched to develop the LEU KUCA fuel design. Both parts of the fuel design have been investigated separately prior to the final assembly. First, different cladding technologies have been studied and promising solutions have been selected based on surrogate materials. Second, parametric studies using depleted uranium (DU) coupons have been tested to more precisely establish the fuel meat and cladding design.

This paper will present the project status and the preliminary DU results on KUCA fuel assembly.