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**Amorphization Behavior of the UMo-Al Interaction Layer Produced by
High-Energy Ion Irradiation**

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ABSTRACT

As part of the ongoing effort to convert the European Union High Flux Reactors (EUHFR) from highly-enriched uranium to low-enriched uranium fuels, uranium-molybdenum alloy fuel dispersed in aluminum matrix (UMo-Al dispersion fuel) has become the leading candidate fuel. One of the primary barriers to using this fuel type is the formation of an interaction layer between the UMo fuel particles and Al matrix, which may eventually lead to breakaway swelling. A thorough understanding of the behavior of this interaction layer under irradiation is imperative in order to prevent or delay this undesirable behavior. UMo-Al dispersion samples were irradiated with 80MeV Xe ions at the ATLAS facility to study the radiation behavior in controlled conditions. TEM samples of the resulting crystalline UMo-Al interaction layer were examined at the IVEM-Tandem in-situ irradiation facility in order to determine the conditions under which the interaction layer amorphizes. Results of this study are presented here.