Application of CR-39 detectors in spent reactor fuel assay

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Abstract: Fast neutrons from reactor fuel were monitored with CR-39 track detectors, using energy discrimination by shape selection to reduce the number of disturbing events. The detectors were irradiated in a steel container placed on the top of assemblies. Exposure time was optimized for providing acceptable statistics and keeping ??-dose low enough -below 6 kGy - to prevent the material from damage due to the huge intensity ??-background. As the effect of the adjacent assemblies in a hexagonal lattice of 160 mm storage distance is rather high, individual assay on isolated fuel assemblies is recommendable.

Author Keywords: CR-39; Fast neutrons; Fuel burnup; Near-neighbour effect; Shape selection

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