

Disturbing effects in spent fuel assay using CR-39 detectors

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Abstract: Neutron emission of spent reactor fuel assemblies was studied with CR-39 solid state track detectors in a nuclear power plant. To reduce the effect of disturbing events, a shape selection method was used. For typical exposures the η -dose fell in the interval of 0.5-3 kGy. The sensitivity decrease was found to be 23-25%/kGy η -dose. The overall effect of neighbouring assemblies was within the statistical uncertainty (5%), i.e. negligible.

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

Index Keywords: Assays; Dosimetry; Gamma rays; Neutron detectors; Nuclear power plants; Particle beam tracking; Polycarbonates; Spent fuels; Polyallyldiglycol carbonate; Polymeric track detectors; Shape selection method; Solid state track detectors; Neutron emission

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