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Choosing the best preferred orientation model for Rietveld refinement of XRD data of uranium silicide, RAFAEL HENRIQUE LAZZARI GARCIA, ADONIS MARCELO SALIBA SILVA, NELSON BATISTA DE LIMA, *IPEN*

Uranium silicide (U3Si2) is an intermetallic used in powder form as nuclear fuel in most modern MTR - Materials Test Reactor. Dispersed in aluminum, this fuel allows high uranium densities, up to 4.8 gU/cm3. At IPEN, the fabrication of fuel elements based on U3Si2 for the IEA-R1 reactor is carried out in the Nuclear Fuel Center (CCN), by vacuum induction melting of uranium and silicon, followed by grinding. Before employed in a nuclear reactor, U3Si2 must be submitted to a strict quality control, which includes granulometry, density, X-ray radiography for dispersion homogeneity, chemical and crystallographic characterization. Concerning phase composition for a qualified fuel, the fraction of U3Si2 should be higher than 80wt.