

19/27

Studies on basic behavior of additives during sintering of UO₂- 7%Gd₂O₃

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Gadolinia (Gd₂O₃) doped UO₂ fuel pellets have been used for improvement of reactor performance and extension of fuel burn up in light water reactors (LWRs). This type of fuel, with 7% Gd₂O₃, is being proposed to be implanted in Brazil according to the future requirements established for Angra II Nuclear Power Plant. Nevertheless, above 1200°C the shrinkage of the UO₂-Gd₂O₃ mixture is delayed, the sintering rate is decreased and as consequence the densification is shifted to higher temperatures. The work aiming at investigating the effects of additives Al(OH)₃ and SiO₂ on the fabrication conditions and properties of the (U,Gd)O₃ pellets. In the presence of additives, which is believed to form a liquid phase such as a silicate, contributing thus, to resolve the densification problems in sintering this nuclear fuels.