

化学

共沉淀法制备AUGdC的工艺研究

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摘要 本工作试验研究以碳酸铵溶液作沉淀剂从硝酸铀酰和硝酸钆的混合溶液中共沉淀AUGdC的方法。试验结果表明: 控制铀浓度为300~400 g/L、饱和碳酸铵溶液与硝酸铀酰溶液体积比为2.0~2.4等主要工艺参数, 可制备出还原、压制和烧结性能良好的AUGdC粉末; $\text{UO}_2\text{-Gd}_2\text{O}_3$ 芯块烧结密度达理论密度的96%以上, 钆铀分布均匀, 形成 $\text{UO}_2\text{-Gd}_2\text{O}_3$ 固溶体, 平均晶粒尺寸在18 μm 以上。

关键词 [共沉淀](#) [AUGdC](#) [\$\text{UO}_2\text{-Gd}_2\text{O}_3\$ 芯块](#)

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Preparation of AUGdC by Means of Co-precipitation

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Abstract The preparation of ammonium uranyl gadolinium carbonate (AUGdC) using $(\text{NH}_4)_2\text{CO}_3$ solution from the mixed solution of $\text{UO}_2(\text{NO}_3)_2$ and $\text{Gd}(\text{NO}_3)_3$ by means of co-precipitation was investigated. The experiment shows that controlling the feed concentration in the range of 300-400 g/L and the volume ratio of $(\text{NH}_4)_2\text{CO}_3$ and $\text{UO}_2(\text{NO}_3)_2$ solution in the range of 2.0-2.4 is feasible. The deoxidizing, pressing and sintering performances of prepared AUGdC powder are excellent. The sinter density of $\text{UO}_2\text{-Gd}_2\text{O}_3$ pellets is above 96% T.D. (theoretical density), Gd and U distributing equally, forming the $\text{UO}_2\text{-Gd}_2\text{O}_3$ solid solution, the average grain size is above 18 μm .

Key words [co-precipitation](#) [ammonium uranyl gadolinium carbonate](#) [\$\text{UO}_2\text{-Gd}_2\text{O}_3\$ pellets](#)

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