

制备致密UO₂核燃料芯核的外胶凝方法(I)

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摘要 文章研究了一种由 UO₂(NO₃)₂溶液制备高温气冷核反应堆燃料芯核($\phi 200 \pm 20 \mu\text{m}$)的外胶凝方法,由 UO₂(NO₃)₂、尿素、NH₄NO₃、水、聚乙烯醇、四氢糠醇、乙二醇组成的溶液,经振动喷咀分散成液滴后,先后在氨气和氨水中固化成微球。设计和控制几何因子、物理因子、极限流量、振动频率等四项参数,可获得均匀分散的胶滴。固化后的湿球经陈化、洗涤后即可缓慢干燥。此方法简单、湿球强度高。

关键词 [二氧化铀](#) [微球](#) [均匀分散](#) [外胶凝](#)

分类号

PREPARATION OF DENSE UO₂ FUEL KERNELS BY EXTERNAL GELATION PROCESS (I)

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Abstract A technological process is proposed for the production of dense kernels for the high-temperature reactor. A concentrated uranyl nitrate aqueous solution with urea, ammonium nitrate, polyvinyl alcohol, ethylene glycol, tetrahydrofurfuryl alcohol as additives is dispersed into uniform droplets which are hardened by external gelation. The process is very simple and consists of only a few steps. Since organic polymer is used as sticker, the wet microspheres are very stable. Four parameters: geometrical factor, physical factor, critical flow and vibration frequency must be controlled.

Key words [Uranium dioxide](#) [Microspheres](#) [Uniform spraying](#) [External gelation](#)

DOI

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