

研究报告

## 二次自蔓延高温合成钙钛矿固化<sup>90</sup>Sr

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**摘要** 采用二次自蔓延高温合成(SHS)技术制备钙钛矿固化高放废物<sup>90</sup>Sr, 通过XRD, SEM和PCT粉末浸泡法, 研究了钙钛矿固化体的微观组织、浸出率以及其对高放废物<sup>90</sup>Sr的最大包容量。结果表明, 固化体样品密度高、孔隙率小, 浸出率都小于0.1 g/(m<sup>2</sup>·d), 对SrO的包容量可达36%(质量分数); 表明自蔓延高温合成的钙钛矿人造岩石固化体化学稳定性好、包容量大, 是固化高放废物的理想固化体。

**关键词** [钙钛矿](#) [高放废物\(HLW\)](#) [固化](#) [自蔓延高温合成](#) [浸出率](#)

分类号

## Synthesis of Perovskite by Double-SHS for Immobilization of <sup>90</sup>Sr

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**Abstract** Perovskite synroc samples containing high level radioactive waste (HLW)<sup>90</sup>Sr were synthesized by double self propagating high temperature synthesis (SHS) and their properties, including leach rate, density, microhardness and the maximum content of high level radioactive waste in the samples, were tested by X-ray diffraction, scanning electron microscope and PCT powder immersion analysis. The results indicate that the high density Sr<sup>2+</sup>-CaTiO<sub>3</sub> composite are formed, and leaching rates are less than 0.1 g/(m<sup>2</sup>·d), and the maximum SrO content in the composite can reach 36% in mass. It can be concluded that the perovskite synroc is a perfect material to immobilize HLW.

**Key words** [perovskite](#) [high level radioactive waste immobilization](#) [self-propagating high-temperatures synthesis](#) [leaching rate](#)

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