

化学

榭石固溶体中钕的固溶量

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摘要 以CaCO₃、H₂SiO₃、TiO₂、Nd₂O₃和Al₂O₃为原料, 通过高温固相反应合成榭石固溶体, 借助X射线衍射(XRD)、扫描电子显微镜(SEM)、能谱仪(EDS)等分析手段, 研究钕在榭石固溶体中的固溶情况。结果表明, 引入Al³⁺作为电价补偿时, Nd³⁺能较好地固溶在Ca_{1-y}Nd_yTi_{1-y}Al_ySiO₅固溶体中, 其固溶量为12.3%~13.56%; 不引入电价补偿时, Nd较难在Ca缺位的Ca_{1-3/2y}Nd_yTiSiO₅固溶体中固溶, 其固溶量约为3.5%; 合成掺Nd榭石固溶体的较佳温度为1 270 °C。

关键词 [榭石](#) [固溶体](#) [钕](#) [固溶量](#)

分类号

Solid-Soluted Content of Neodymium in Solid Solution of Sphene

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Abstract The solid-state reaction synthesis of sphene were studied by using CaCO₃, TiO₂, H₂SiO₃, Nd₂O₃ and Al₂O₃ as raw materials to prepare of sphene synroc, and by means of XRD, ED S and SEM analysis as well. The influence of Al³⁺ ion introduction to sphene on the immobilization quantity of neodymium in sphene synroc was studied. When Al³⁺ was introduced to sphene as a compensation of electricity price, Nd³⁺ could be well solidified to Ca_{1-y}Nd_yTi_{1-y}Al_ySiO₅. The immobilization quantity is in the range of 12.3%-13.56%. With no compensation of electricity price, Nd³⁺ would be more difficulty to be solidified to Ca_{1-3/2y}Nd_yTiSiO₅. The immobilization quantity is approximately 3.5%. The appropriate synthesis temperature of sphene solid solution is 1 270 °C.

Key words [sphene](#) [solid solution](#) [neodymium](#) [solid-soluted content](#)

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