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$La_{0.9}Sr_{0.1}Ga_{0.8}Mg_{0.2}O_{3-\alpha}$的微乳液法合成及其质子导电性研究

Proton Conduction in $La_{0.9}Sr_{0.1}Ga_{0.8}Mg_{0.2}O_{3-\alpha}$ Ceramics Prepared by Microemulsion Method

中文关键词：$LaGaO_3$；质子导体；微乳液法

英文关键词：$LaGaO_3$; proton conductor; microemulsion

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中文摘要：

采用微乳液法合成了$La_{0.9}Sr_{0.1}Ga_{0.8}Mg_{0.2}O_{3-\alpha}$的共沉淀前驱体，经初烧和烧结后制得$La_{0.9}Sr_{0.1}Ga_{0.8}Mg_{0.2}O_{3-\alpha}$陶瓷样品，TEM和SEM分析结果表明陶瓷样品具有良好的微观结构，XRD分析结果表明陶瓷样品已形成了单相的$LaGaO_3$钙钛

英文摘要：

The co-precipitate precursor of $La_{0.9}Sr_{0.1}Ga_{0.8}Mg_{0.2}O_{3-\alpha}$ ceramics was prepared by microemulsion method, and the ceramics were obtained by calcining and sintering the precursor. The results of TEM and SEM indicate that the ceramic specimen has a good morphology, and XRD result confirms that the ceramics is belong to a single orthorhombic phase of perovskite-type $LaGaO_3$. The conduction behavior was studied by using gas concentration cell and gas electrochemical permeation methods, and the excellent proton conduction was observed. The experimental values of the hydrogen concentration cell coincides well with the theoretical values, and the ionic transport number is unity. The observed rate of electrochemical hydrogen permeation is close to the theoretical rate, verifying that the ceramics is an excellent proton conductor under hydrogen atmosphere.