

Cu、Ti掺杂的SrFeO_{3-δ}基混合导体透氧材料的制备与性能研究

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摘要 利用柠檬酸络合法制备了SrFe(Cu,Ti)O_{3-δ}系列混合导体透氧材料. 采用TG-DSC、XRD和透氧测试等手段分别考察了材料的晶体结构、稳定性及透氧能力. 结果表明, Cu和Ti的掺杂量对材料的晶相组成和透氧量有重要影响, 掺杂Cu能够使晶体内部产生大量的氧空位, 从而使材料具有高透氧量; 掺杂Ti能够提高材料的结构稳定性. SrFe_{0.6}Cu_{0.3}Ti_{0.1}O_{3-δ}.

同时具备较高的透氧量和稳定性, 在900℃时的透氧量达到0.7mL·min⁻¹·cm⁻² (STP)

关键词 [透氧](#) [钙钛矿](#) [混合导体](#) [柠檬酸](#)

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Preparation and Properties of SrFeO_{3-δ} Based Mixed Conducting Membrane Material Doped with Cu and Ti

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Abstract A series of SrFe(Cu,Ti)O_{3-δ} membrane materials were synthesized by a citric acid complex method. The crystal structures and phase stabilities of the materials were studied by TG-DSC and XRD. It is found that Cu and Ti doping content has great effects on the phase component and the oxygen permeability of the materials. The addition of Cu can increase the oxygen vacancy concentration and the addition of Ti can enhance the structure stability.

SrFe_{0.6}Cu_{0.3}Ti_{0.1}O_{3-δ} has pure perovskite structure and exhibits high stability and high oxygen permeation flux which is 0.7mL·min⁻¹·cm⁻² (STP) under air/He gradient at 900℃.

Key words [oxygen permeation](#) [perovskite](#) [mixed conductor](#) [citric acid](#)

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