

## 基于LSCM/3YSZ致密扩散障型极限电流氧传感器的研究

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摘要:

摘要: 采用固相法制备了LSCM ( $\text{La}_{0.75}\text{Sr}_{0.25}\text{Cr}_{0.5}\text{Mn}_{0.5}\text{O}_3$ ) 粉体。按不同质量比将其与3%-mol氧化钇稳定氧化锆粉体(3YSZ)混合, 制备得到系列混合导体。根据热膨胀系数、微观形貌等物理特性, 选取合适比例的混合导体。采用Pt浆粘合法将其与8YSZ固体电解质叠层制作成致密扩散障型极限电流氧传感器。经测试, 该传感器在温度973K氧浓度6000ppm~8.01%范围内具有良好的测氧特性, 并且极限电流与氧浓度之间存在良好的线性关系; 其不同氧浓度下的响应时间曲线显示传感器重复性好, 响应时间约数十秒。

关键词: 氧传感器; 混合导体; 极限电流; 致密扩散障; LSCM

## The research of limiting current sensor with LSCM/3YSZ dense diffusion barrier

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Abstract:

Abstract: A limiting current oxygen sensor using 8YSZ (8%-mol yttria stabilized zirconia) as oxygen ion conducting and mixed ion-electron conductor (MIEC) which was compounded by different quality of LSCM ( $\text{La}_{0.75}\text{Sr}_{0.25}\text{Cr}_{0.5}\text{Mn}_{0.5}\text{O}_3$ ) and 3YSZ as dense diffusion barrier was developed successfully through the technology of Pt liquid agglutination. The LSCM was synthesized by solid phase method. The MIECs suited for dense diffusion barrier were chosen by thermal dilatometer and SEM. The I-V curve of oxygen sensor sample was tested at 973K in a mixture of the  $\text{N}_2\text{-O}_2$  with the oxygen concentration being 6000ppm~8.01%, and the data indicated that the limiting current of sensor has good linear relationship with the oxygen concentration; Simultaneously, the response time characteristic of the sensor under the different oxygen concentration was tested, the data indicated that the sensor duplication is good and the response time is about tens of seconds.

Keywords: oxygen sensor; MIEC; limiting current; dense diffusion barrier; LSCM

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