

## La部分替代Ba对YBa<sub>2</sub>Cu<sub>3</sub>O<sub>7-d</sub> 氧传感器性能的影响

作者: 赵宇1, 张献图2,3, 郝好山3, 胡行3

单位: 1周口师范学院计算机科学系, 周口466001 2周口师范学院物理与电子工程系, 周口466001 3郑州大学物理工程学院, 郑州 450052

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摘要:

在Al<sub>2</sub>O<sub>3</sub>衬底上制备了YBa<sub>2</sub>-xLaxCu<sub>3</sub>O<sub>7-d</sub> ( $0 \leq x \leq 0.15$ )厚膜, 研究了La部分替代Ba对YBa<sub>2</sub>Cu<sub>3</sub>O<sub>7-d</sub> 氧传感器性能的影响。La掺杂显著减小了恢复时间, 但灵敏度稍有下降。进一步研究得到了x=0.1样品的电阻随氧分压和温度的变化关系, 利用此关系可以来计算某一温度下的环境氧分压。

关键词: 氧传感器; YBa<sub>2</sub>-xLaxCu<sub>3</sub>O<sub>7-d</sub>; 恢复时间; 灵敏度

## Effect of La partial substitution for Ba on the properties of YBa<sub>2</sub>Cu<sub>3</sub>O<sub>7-d</sub> oxygen sensor

**Author's Name:** ZHAO Yu1, ZHANG Xian-Tu2, 3, HAO Hao-Shan3, HU Xing3

**Institution:** 1 Department of computer science, Zhoukou Normal University, Zhoukou 466001 2 Department of physics and electronic engineering, Zhoukou Normal University, Zhoukou 466001 3 School of physical engineering, Zhengzhou University, Zhengzhou 450052

**Abstract:**

YBa<sub>2</sub>-xLaxCu<sub>3</sub>O<sub>7-d</sub> ( $0 \leq x \leq 0.15$ ) thick films on Al<sub>2</sub>O<sub>3</sub> substrate were prepared and the effect of La partial substitution for Ba on the properties of YBa<sub>2</sub>Cu<sub>3</sub>O<sub>7-d</sub> oxygen sensor was investigated. The recovery time is remarkably reduced due to La doping, but the sensitivity is also reduced. The relationship of resistance with oxygen partial pressure and temperature for x=0.1 sample was also obtained in this paper, and using the equation one can calculate the oxygen partial pressure at a temperature.

**Keywords:** Oxygen sensor; YBa<sub>2</sub>-xLaxCu<sub>3</sub>O<sub>7-d</sub>; Recovery time; Sensitivity

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