

FULL PAPERS

La₂Mo₂O₉在低氧分压条件下的电导率及热膨胀测试

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摘要 通过热电势和热膨胀测量, 分别研究了La₂Mo₂O₉在低氧分压条件下的电学性质和热膨胀行为。在700°C、

氧分压高于10⁻⁷Pa条件下, 离子传导占主导地位, 电子迁移数低于0.05, 而低于这一氧分压时, 电子传导开始变得明显。发生在钼离子格位的缺陷反应及小极化子跃迁可以用来解释电子传导现象。当相转变发生时, 热膨胀急剧增加, 在低氧分压条件下, 这种现象更加严重。用钷离子取代镧离子可以提高样品的电导率, 但化合物的稳定性也降低了。

关键词 [氧分压](#), [电子传导](#), [热膨胀](#)

分类号

Electrical Properties and Dilatometric Measurements of La₂Mo₂O₉ under Low Oxygen Partial Pressure

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Abstract The electrical conductivity and thermal expansion of La₂Mo₂O₉ under low oxygen partial pressure were studied with the help of thermoelectric power and dilatometric measurements, respectively. The ionic conduction of La₂Mo₂O₉ was predominant with the electronic transference number less than 0.05 above an oxygen partial pressure of about $p_{O_2} = 10^{-7}$ Pa at 700 °C, and below this pressure the electronic conduction became obvious. The defect reaction and small polaron hopping among molybdenum sites were proposed to explain the electronic conduction. Accompanying the phase transition, there was a sharp increase of thermal expansion, which became more serious under low oxygen partial pressure. The substitution of lanthanum by neodymium led to the increase of electrical conductivity but the decrease of phase stability.

Key words [oxygen partial pressure](#) [electronic conduction](#) [thermal expansion](#)

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