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Defect-Chemical Role of Mn in Gd-doped CeO<sub>2</sub>(GDC)  
GDC에서 망간의 결함화학적 역할

Sang-Hyun Park · Han-Il Yoo

Solid State Ionics Research Lab., School of Materials Science and  
Engineering, Seoul National University

It has been observed that the addition of small amount of Mn facilitates sintering of CeO<sub>2</sub>-based electrolytes, namely, promotes densification rate and grain boundary motion in CeO<sub>2</sub>. This fact is explained as being due to Mn as acceptors enhancing the concentration of charge-compensating oxygen vacancies and hence, mass transport. In order to elucidate the defect chemical role of Mn, we examined the equilibrium electrical conductivity on 10m/o Gd-doped CeO<sub>2</sub> and 5m/o Gd and 5m/o Mn-codoped CeO<sub>2</sub> against oxygen partial pressure at elevated temperatures. It has been found that contrary to the proposed explanation, Mn does not work as acceptors indicating Mn being tetra-valent(Mn<sup>4+</sup>). Detailed analyses of the conductivity isotherms are presented.