

## SOFC용 LYSMO세라믹 IC에서 소결조제 첨가에 따른 소결특성

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### Effect of Sintering aid in LYSMO Ceramic interconnector for SOFC application

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본 연구는 세라믹 연결재로 사용되는 Perovskite 구조의 LYSMO조성의 실제 SOFC stack적용을 위한 소결온도 제어 방법에 관해 연구하였다. SOFC 단전지에서 IC소재는 1300~1400°C의 온도에서 소결이 이루어져만 하나 현재 연구 발표된 IC는 대부분이 1500°C 이상에서 소결이 되므로 실제 stack적용에 문제가 있다. 이러한 문제를 해결하기 위해 IC 소재에 소결조제를 첨가하여 소결온도를 제어코자 하였다. 실험결과 MgB<sub>6</sub>와 LaB<sub>6</sub>등의 불화물계의 첨가가 세라믹 연결재의 소결온도 감소에 효과적인 것으로 나타났다. 소결조제의 첨가는 소결온도의 감소를 이끌었지만 열팽창 계수에는 큰 영향을 끼치지 않는 것이다. 하지만 전기적 특성은 큰 폭으로 감소하여 전기전도도 개선을 위한 다른 방안이 필요함을 확인할 수 있었다.

**Key words** : SOFC(고체산화물연료전지), Interconnector(세라믹연결재), Perovskite, LYSMO

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## 그린홈 보급확대를 위한 건물용 연료전지 보조기기 국산화 기술개발

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### Technology development on localization of BOP components for 1kW stationary fuel cell systems to promote green-home dissemination project

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For stationary 1kW-class fuel cell systems to be used widely, it is essential to achieve dramatic improvements in system durability as well as cost reduction. In order to address this engineering challenge, it is important to develop innovative technologies associated with BOP components. According to this background, in 2009, the Korean Government and “Korea Institute of Energy Technology Evaluation and Planning(KETEP)” launched into the strategic development project of BOP technology for practical applications and commercializations of stationary fuel cell systems, named “Technology Development on Cost Reduction of BOP Components for 1kW Stationary Fuel Cell Systems to Promote Green-Home Dissemination Project”. The objectives of this project are to develop fundamental technologies to meet these requirements, and to improve the performance and functionality of BOP components with reasonable price. The project consortium consists of Korea’s leading fuel cell system manufacturers, BOP component manufacturers which technologically specialized, and several research institutions. This paper is to provide a summary of the project, as well as the achievements made through the 1st period of the project(2009~2010). Several prototypes of BOPs - Cathode air blowers, burner air blowers, preferential oxidation air blowers, fuel blowers, cooling water pumps, reformer water pumps, heat recovery pumps, mass flow meters, valves and power conditioning systems - had been developed through this project in 2010. As results of this project, it is expected that a technological breakthrough of these BOP components will result in a substantial system cost reduction.

**Key words** : Balance Of Plant, BOP(보조기기), Stationary fuel cell system(가정용 연료전지), Localization(국산화), Blower(블로워), Pump(펌프), Mass Flow Meter(유량계), valve(밸브), Power Conditioning System(전력 변환장치)

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