

## Atomic Layer Deposition of YSZ on the Cathode to Improve the Performance of Low-temperature Molten Carbonate Fuel Cell

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Molten carbonate fuel cell (MCFC) is a large-capacity power generation system that uses molten carbonate electrolytes. MCFC, unlike PEMFC or PAFC, is operated at high temperatures to keep the electrolytes in a liquid state for ion transfer between the electrodes. However, at the general MCFC operating temperature of 650°C, the cell life is limited due to the thermal degradation of cell components. Therefore, it is needed to operate at lower temperatures to increase cell life. However, the lower the operating temperature, the greater the resistance of the cathode, so it is necessary to reduce the resistance of the cathode. By coating the cathode, it is possible to reduce the resistance by improving the oxygen reduction reaction (ORR) occurring in the cathode. In this study, to improve the ORR, YSZ having oxygen ion conductivity was coated and the cell performance was analyzed. YSZ was coated thinly and uniformly on the cathode by atomic layer deposition. When YSZ-coated cathode cells were operated, YSZ-coated cathode cells showed higher performance than the uncoated cathode cell. In particular, the highest performance was obtained when the thickness of YSZ coating was 7nm.