

## Fabrication of an Anode-Side, Substrate-Supported, Planar-Type SOFC

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The porous 3YSZ support has a suitable mechanical strength with max load of 0.8 kgf.cm<sup>-2</sup> and a proper pore distribution 43% of porosity and 10 μm of pore size, which allows sufficient fuel gas flows through the support to reaction sites for the efficient electrical reactions. Low electrical conductivity of the highly porous support brings to selective-area subsequent coatings of thin anode (NiO-YSZ), electrolyte (8YSZ) and cathode (LSM) layers for easily positioning current collectors at both anode and cathode electrodes as well as gas-sealing the cathode compartment for the dual-chamber mode. Using spin coating and simple, cheap but very effective masking method, three thin layers of the anode, electrolyte and cathode were deposited successfully onto the selective areas of the previous base surface. Appropriate sintering profiles of each components resulted in highly porous components (support, anode and cathode) and relatively dense electrolyte layer. The cell exhibited very low nitrogen permeability at room temperature and no short-circuit even at 900°C.