FUEL CELL

5518827

INTERNAL REFORMING TYPE FUEL CELL DEVICE AND FUEL CELL GENERATING SYSTEM

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An internal reforming type fuel cell device and a fuel cell generating system utilizing the fuel cell device whose reforming catalysts' lives are long, and whose characteristics are good, and further whose shapes are compact are provided. In the fuel cell device 14 holding reforming catalysts 11 in fuel gas passages 5 positioned at low temperature operating parts or the fuel cell generating system comprising the fuel cell device 14, a preparatory reforming part is arranged in an upper stream fuel gas system feeding a fuel gas to said fuel gas passages 5. As for the fuel cell generating system, a reforming reactor 18 is used as the preparatory reforming part.

5518828

THERMAL INTEGRATION OF AN AIR-COOLED FUEL CELL STACK

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The invention provides a molten carbonate fuel cell system having a plurality of fuel cell stacks, with each fuel cell stack having an anode and a cathode. Each of the anodes includes an anode feed inlet and an anode exhaust outlet, and each cathode includes a cathode feed inlet and a cathode exhaust outlet. A combuster for receiving unreacted fuel from the anode exhaust outlet of a first one of the fuel cell stacks is connected to the cathode feed inlet of a second one of the fuel cell stacks for delivering exhaust from the combuster. An intercooler is disposed between the cathode exhaust outlet of the second fuel cell stack and the cathode feed inlet of the first fuel cell stack for cooling gases passing therebetween.

5518829

SOLID OXIDE ELECTROLYTE FUEL CELL HAVING DIMPLED SURFACES OF A POWER GENERATION FILM

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The invention relates to a solid oxide electrolyte fuel cell (SOFC) which can be used as a cell for water electrolysis, CO2 electrolysis and other electrolyses, as well as for power generation. In a SOFC in which both surfaces of a power generation film comprising three layers of a fuel electrode, a solid electrolyte, and an oxygen electrode are formed with a number of dimples, the thickness of a yttria-stabilized zirconia film that constitutes the solid electrolyte is 5 to 100 mum, and the thickness of an oxygen electrode material that constitutes the oxygen electrode which is provided on one side of the yttria-stabilized zirconia film is 200 to 2,000 mum. As a result, the power generation performance can be greatly improved and a sufficiently strong oxygen electrode material prevents a thin yttria-stabilized zirconia film from being damaged in manual operations.

5518830

SINGLE-COMPONENT SOLID OXIDE BODIES

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Single-component bodies useful in fuel cells and other electrochemical devices are provided. In preferred embodiments, the single-component bodies comprise an anodic region at a first side, a cathodic region at a second, non-adjacent side, and an oxygen ion-conducting region substantially free from anodic or cathodic character disposed between said anodic and cathodic regions. The single-component bodies comprise oxide electrolytes such as yttria-stabilized zirconia doped with multivalent cations such as titanium or terbium.