

A solid oxide fuel cell which has a fuel electrode and an air electrode respectively on a first surface and on a second surface of a solid electrolyte. The interface between the solid electrolyte and the fuel electrode, and the interface between the solid electrolyte and the air electrode are roughened. An exemplary way of roughening the interfaces is as follows: a green sheet of solid electrolyte, a green sheet of fuel electrode and a green sheet of air electrode are laminated with the green sheet of electrolyte in the middle; sandpaper is put on each of the green sheet of fuel electrode and the green sheet of air electrode with a plastic film in-between in such a manner that the rough surfaces of the sandpaper face the green sheets of electrode; the laminate of green sheets is press-fixed, whereby the rough surfaces of the sandpaper roughen the interfaces; and the sandpaper and the plastic films are removed.

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RIBBED ELECTRODES FOR MOLTEN CARBONATE FUEL CELLS

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A method for producing a ribbed electrode for a fuel cell including the steps of depositing a suspension of a powdered electrode metal onto the face of a substantially flat porous electrode metal substrate, forming a plurality of raised structures on the face of the electrode, and sintering the electrode.

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PROCESS FOR SEALING HIGH-TEMPERATURE FUEL CELLS

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A process for sealing leaks gas spaces and/or gas channels between individual components of high-temperature fuel cells, includes introducing at least first and second and optionally further different gases at high temperature from the outside into the gas spaces and/or gas channels to be sealed off from one another,

for flushing every leak with the first gas on one side and with the second or further gas on the other side. The first gas contains at least one gaseous compound that can be oxidized to form a metal ion-conducting and/or an oxygen ion-conducting oxide, and the second and optionally further gas contains oxygen and/or is able to give off oxygen. The first gas contains at least one oxidizable compound of at least one of the metals of an electrolyte material, a bipolar plate and electrodes of the fuel cells, and/or one element of the group including zirconium, nickel, calcium, magnesium, cerium and rare earth metal. A high-temperature fuel cell produced by the process includes individual components having previously leaking points therebetween. Inlays of metal ion-conducting and/or oxygen ion-conducting oxides are disposed in the vicinity of the previously leaking points. The inlays are formed of oxides of at least one of the metals of electrolyte material, a bipolar plate, electrodes, zirconium, nickel, calcium, magnesium, cerium, hafnium and rare earth metal.

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SERIALLY ARRANGED FUEL CELLS FOR LARGE SCALE POWER GENERATION

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A serially arranged construction of individual fuel cells implements large-scale systems for generating power. The fuel cells are packed with high density but in an exchangeable manner. Only the fuel gas is fed to the block of fuel cells by special conduits and connecting elements whereas the oxidation gas (e.g. air) is fed by an outside pressure difference between the front and rear sides of the fuel cell blocks. A large number of blocks can be mounted on a carrier plate in which fuel gas ducts are integrated to form a reinforcement and to directly feed the fuel gas into the blocks via pipe pieces mounted from the outside.

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FUEL CELL

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