amount of N2 gas of the solid electrolyte layer at room temperature is not more than 10-5 cc/g.second. A permeation coefficient of the solid electrolyte layer is preferably not more than 10-7 cm4/g.second at room temperature. The solid electrolyte layer includes at least one metal element selected from manganese, iron, cobalt, nickel,copper and zinc, in an average amount of not less than 1 atom % and not more than 15 atom % based on a sum of amounts of all metal elements contained in the solid electrolyte layer.

5527634

MULTIPLE MANIFOLD FUEL CELL

Meacham G B Kirby Shaker Heights, OH, UNITED STATES assigned to Electric Power Research Institute Inc

PCT No. PCT/US93/01409 Sec. 371 Date Oct. 12, 1994 Sec. 102(e) Date Oct. 12, 1994 PCT Filed Feb. 17, 1993 PCT Pub. No. WO93/17465 PCT Pub. Date Sep. 2, 1993. The invention provides fuel cells and fuel cell stacks having a plurality of manifolds for providing reactive gases to cell layers. The manifolds are distributed across the planar area of the cells whereby the flow path lengths are reduced to the point that current collectors are not required. Substantial stack volume, cost and contact resistance reductions are also realized.

5527635

SOLID-ELECTROLYTE FUEL CELL ELECTRODE MATERIAL AND ELECTRODE USING SAME

Tsukamoto Koichi; Uchiyama Futoshi; Yanagisawa Takeshi; Okuo Takayasu; Kaga Yasuo Tokyo, JAPAN assigned to Agency of Industrial Science & Technology Ministry of International Trade & Industry

Solid-electrolyte fuel cell electrode material in the form of a membrane formed on a solid electrolyte surface from a powder obtained by pulverizing a sintered body obtained by sintering a mixture of lanthanum-based electrode material and 5 to 50 mol % platinum.

529855

STRUCTURE FOR WETTING DIAPHRAGM OF SOLID POLYMER ELECTOLYTE ELECTROCHEMICAL CELL AND PROCESS OF PREPARING SAME

Watanabe Masahiro Wadamachi, Kofu shi, Yamanashi, JAPAN assigned to Tanaka Kikinzoku Kogyo K K; Watanabe Masahiro

Disclosed is a structure for wetting a diaphragm of a solid polymer electrolyte fuel cell in which one or more hollow paths are provided in or on the diaphragm for supplying water to the solid polymer electrolyte. According to the structure of this invention, the elevation of performances of the above cell is achieved by wetting the diaphragm at a desired level. Since the water can be supplied through the hollow paths with substantially no resistance, the amount to be supplied can be freely controlled.

5529856

FUEL CELL HAVING SOLIDIFIED PLASMA COMPONENTS

Petri Randy J; Ong Estela T Crete, IL, UNITED STATES assigned to Electric Power Research Institute

Fuel cells, fuel cell components, and other electrochemical devices and components fabricated by plasma spraying. Devices such as fuel cells may be made by plasma spraying and then assembling individual components or by plasma spraying components on other components to form a laminate.

5531019

SOLID OXIDE FUEL CELL AND MANUFACTURING METHOD THEREOF

Taira Hiroak; Iha Michiaki; Takagi Hiroshi Nagaokakyo, JAPAN assigned to Murata Manufacturing Co Ltd

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.

5531956

RIBBED ELECTRODES FOR MOLTEN CARBONATE FUEL CELLS

Ong Estela T; Burton-Gorman Nelli Chicago, IL, UNITED STATES assigned to Institute of Gas Technology

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.

5532071

PROCESS FOR SEALING HIGH-TEMPERATURE FUEL CELLS

Pal Uday; Landes Harald; Greiner Horst Needham, MA, UNITED STATES assigned to Siemens Aktiengesellschaft

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.

5532072

SERIALLY ARRANGED FUEL CELLS FOR LARGE SCALE POWER GENERATION

Spaeh Richard; Westphal Manfred; Erdle Erich; Zurell Klaus-Peter Ueberlingen, GERMANY assigned to Dornier GmbH

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.

5532073

FUEL CELL

Hirata Haruhiko; Hori Michio; Umiji Toru Kanagawa ken, JAPAN assigned to Kabushiki Kaisha Toshiba