5521018

EMBOSSED FLUID FLOW FIELD PLATE FOR ELECTROCHEMICAL FUEL CELLS

Wilkinson David P; Lamont Gordon; Voss Henry H; Schwab Clemens North Vancouver, CANADA assigned to Ballard Power Systems Inc; Daimler-Benz

An embossed fluid flow field plate for electrochemical cells comprises two sheets of compressible, electrically conductive material. Each sheet has two oppositely facing major surfaces. At least one of the major surfaces has an embossed surface which has a fluid inlet formed therein. The embossed surface has at least one open-faced channel embossed therein extending from the fluid inlet for conducting pressurized fluid introduced at the fluid inlet. A metal sheet is interposed between each of the compressible sheets. The compressible, electrically conductive sheet preferably comprises graphite foil.

5523175

PLATE-SHAPED FUEL CELL COMPONENT

Beal Daniel; Martin Ronald G; Gorman Michael East Hartford, CT, UNITED STATES assigned to International Fuel Cells Corporation

A fuel cell component that includes a porous fuel cell plate and a solid frame contiguously extending all around the fuel cell plate is made by first forming an integral plate-shaped porous body including a central portion constituting the fuel cell plate and a peripheral portion integral with and circumferentially completely surrounding the central portion, and then impregnating the pores of only the peripheral portion with a quantity of initially flowable but solidifiable impregnating material such that the impregnating material is accommodated in and completely fills such pores and makes the peripheral portion solid and completely fluid-impermeable upon solidification of the impregnating material to constitute the frame.

5523176

APPARATUS FOR GENERATING ELECTRICITY

Fonda-Bonardi Los Angeles, CA, UNITED STATES

An apparatus for generating electric current which includes an integrated system comprising a fuel cell which is interconnected with two or more turbocompressors in a manner so as to increase the pressure of atmospheric oxygen fed to a fuel cell by utilizing the potential energy of the exhaust of the fuel cell as well as the potential energy of a source of fuel under pressure.

5523177

MEMBRANE-ELECTRODE ASSEMBLY FOR A DIRECT METHANOL FUEL CELL

Kosek John A; Cropley Cecelia C; Laconti Anthony B Danvers, MA, UNITED STATES assigned to Giner Inc

A direct methanol fuel cell (DMFC) contains a membrane electrode assembly (MEA) including an anode porous electrode structure which can operate on a liquid or vapor methanol/water feed in the absence of a liquid electrolyte such as sulfuric acid, a proton-exchange membrane electrolyte, and a porous gas-diffusion cathode. The anode porous electrode structure includes a three-dimensional reduced (Pt-Ru)Ox catalyst particle-ionomer composite structure, whereby the ionomer coats the individual particles and provides a mechanism for continuous proton transport throughout the composite structure, eliminating the need for a liquid acidic electrolyte. The partially reduced (Pt-Ru)Ox particles are individually ionomer coated prior to anode fabrication. The anode porous electrode structure is subsequently bonded to one side of a thin sheet of a solid proton-conducting ionomer membrane and a cathode structure bonded to the opposite side of the membrane, to form a MEA. Insertion of the MEA into appropriate hardware results in fuel cell fabrication.