

5482680**ELECTROCHEMICAL FUEL CELL ASSEMBLY WITH INTEGRAL SELECTIVE OXIDIZER**

Wilkinson David; Voss Henry H; Dudley James; Lamont Gordon J; Basura Vesn Vancouver, CANADA assigned to Ballard Power Systems Inc

A method and apparatus selectively oxidizes, within the fuel cell assembly, the carbon monoxide present in a fuel stream fed to the assembly. A quantity of catalyst is contained within at least a portion of a fuel stream passageway within the stack. The carbon monoxide is selectively oxidized by the catalyst to carbon dioxide, and carbon monoxide produced by the reverse water-shift reaction is also oxidized.

5482790**FUEL CELL POWER GENERATION SYSTEM**

Yamada Shuji; Kanda Motoya; Yoshizawa Hiroyasu; Sonai Atsuo Yokoyama, JAPAN assigned to Kabushiki Kaisha Toshiba

To generate electric energy to a load such as an electric car or the like, a fuel cell power generation system includes a fuel cell composed of a fuel electrode and an oxygen electrode with an electrolytic layer interposed therebetween so as to continuously supply electric power to the load, a secondary cell for supplying a required quantity of electric energy to the load at least during the initial time until the generation of electric energy is started with the fuel cell and a shifting unit serving to shift the power source of electric energy to the load from the fuel cell main body to the secondary cell or from the secondary cell to the fuel cell. An electrolytic layer constituting the fuel cell is composed of a film of high molecular material having ionic conductivity, and the secondary cell is a secondary lithium cell consisting of a nonaqueous solution based material or a solid electrolyte based material as an electrolyte.

5482791**FUEL CELL/GAS TURBINE COMBINED POWER GENERATION SYSTEM AND METHOD FOR OPERATING THE SAME**

Shingai Hiroshi; Nishigaki Hideo Kawasaki, JAPAN assigned to Fuji Electric Co Ltd

A combined fuel cell/gas turbine power generation system includes a fuel cell, a reformer connected to the fuel cell for producing a hydrogen rich reformed gas by steam reforming and feeding the reformed gas to the fuel cell, an air compressor having an electric motor which drives the air compressor, the air compressor compressing air taken from open air and feeding a pressurized air to the fuel cell, a gas turbine which is connected to the fuel cell and generates power using, as a working fluid, an exhaust combustion gas from the reformer obtained by burning an off gas and off air from the fuel cell, and a generator which is coaxially connected to the gas turbine and driven by the axial output power of the gas turbine, the generator generating power with the axial output power of the generator, the output power of the generator driving the electric motor in the air compressor.

5482792**ELECTROCHEMICAL CELL PROVIDED WITH ION EXCHANGE MEMBRANES AND BIPOLAR METAL PLATES**

Faita Giuseppe; Mantegazza Claudio Novara, ITALY assigned to De Nora Permelec S p A

A membrane electrochemical cell, in particular a fuel cell, of an improved type comprising a multiplicity of cell elements, each element made up of bipolar plates, current collectors, electrodes and membranes, wherein the function of electric current transmission through the cell elements, the release of heat towards the outside environment, the distribution of electric current to the electrodes and membranes, the removal of heat from the electrodes and membranes and the distribution of the reactants and products are performed by distinct components, in particular bipolar plates for the first two and porous electroconductive collectors for the others.

The bipolar plates may have flat surfaces without grooves and are preferably manufactured with aluminum, titanium or alloys thereof, through cheap mass productions techniques; the bipolar plates are used together with collectors provided with deformability, residual resiliency and high porosity. Said collectors advantageously act also as distributors of the gaseous reactants and of the products.

BATTERY MATERIALS

5475082

USE OF POLY(ALKYLPYRIDINE-2,5-DIYL)

Yamamoto Takakazu; Maruyama Tsukasa Yokohama, JAPAN assigned to Tokyo Institute of Technology

A process of producing a device which is one of a battery, an electrochromic device, an electronic device, an n-type conductor, or an electroluminescent device includes fabricating at least one constituent of the device from a polymer comprised of poly(alkylpyridine-2,5-diyl) having a chemical formula: (*See Patent for Chemical Structure*) wherein R is an alkyl group having not less than 3 carbon atoms, and n is a degree of polymerization and is not less than 30. Preferably R is an alkyl group having 4 to 20 carbon atoms and n is a degree of polymerization and is not less than 30. Most preferably R is an alkyl group selected from the group consisting of a hexyl group, a pentyl group, an octyl group, a decyl group, and a dodecyl group.

5476679

METHOD FOR MAKING A GRAPHITE COMPONENT COVERED WITH A LAYER OF GLASSY CARBON

Lewis Irwin C; Pirro Terrence; Miller Douglas Strongsville, OH, UNITED STATES assigned to UCAR Carbon Technology Corporation

Method for making a component, graphite component, such as a graphite crucible, for use in the production of

silicon crystal growth from molten silicon wherein the graphite component has an outer coated layer of glassy carbon formed from a thermoset organic resin that prevents contamination of the molten silicon by carbon from the graphite component.

5476684

HIGH TEMPERATURE CERAMIC COMPOSITE

Smith Robert St Paul, MN, UNITED STATES assigned to Minnesota Mining and Manufacturing Company

This invention provides a shaped ceramic composite article comprising ceramic oxide fiber(s), a first coating comprising a carbonaceous matrix which includes boron nitride particles in contact therewith, and a second coating comprising silicon carbide. The inventive composite article is useful in applications requiring good heat resistance and mechanical properties, such as gas fired radiant burner tubes, gas burner nozzle liners, heat exchangers, thermowells, core busters or flame dispersers, and other gas fired furnace components.

5476826

PROCESS FOR PRODUCING CARBON BLACK HAVING AFFIXED NITROGEN

Greenwald Anton C; Jalan Vinod North Andover, MA, UNITED STATES assigned to Gas Research Institute

A catalyst material of carbon black powder having nitrogen affixed to its surface and process for its production by contacting carbon black powder particles with a plasma or low energy beam of nitrogen containing ions affixing the nitrogen ions to the surface of the particles in a concentration of about 0.1 to about 10 percent, based upon the total number of surface atoms. The catalysts are particularly suited for use in phosphoric acid fuel cells.