thus formed is connected in series with one of second switches, and the serial circuits thus formed are parallelly connected to form the fuel cell generation apparatus which is connected to a load. The starting loads are closed at the start of the operation of the fuel cell generation apparatus to drop the output voltages of the fuel cells to a voltage lower than a minimum voltage in no-load open-circuit voltages of the fuel cells. The fuel cell generation apparatus is started by closing the first switches, and then closing the second switches, and finally opening the first switches. This facilitates implementing a large capacity fuel cell generation apparatus whose efficiency is improved by eliminating diodes for preventing reverse currents from flowing.

5480737

SOLID OXIDE ELECTROLYTE FUEL CELL

Satake Tokuki; Miyamoto Hitoshi; Watanabe Kiyoshi; Nanjo Fusayuki; Takenobu Koichi Kobe, JAPAN assigned to Mitsubishi Jukogyo Kabushiki Kaisha

A power generation layer includes three layers of a fuel electrode, a solid oxide electrolyte and an oxygen electrode. Both faces of the power generation layer are formed with a number of dimples that are shaped and arranged so as to satisfy (half dimple height)=3.2* (dimple diameter)-(half dimple pitch)+/-(dimple diameter).

5480738

FUEL CELL MODULE

Elangovan Singaravelu; Khandkar Ashok C; Hartvigsen Joseph J Sandy, UT, UNITED STATES assigned to Ceramatec Inc

A fuel cell module with multiple fuel cell stacks having generally planar cross-flow grooved interconnectors with fuel and air flow channels therein arranged in multi-stack columns wherein adjacent stacks are joined by manifold frames, and pairs of columns are spaced-apart across a central air plenum in fluid communication with the air flow channels, and fuel flows serially through the stacks along the length of the column. In one embodiment, a series of such modules are configured into a multi-module system.

5480739

SOLID OXIDE FUEL CELLS AND PROCESS FOR THE PRODUCTION OF THE SAME

Kawasaki Shinji; Ito Shigenori Nagoya, JAPAN assigned to NGK Insulators Ltd

A solid oxide fuel cell including at least one kind of an electrically conductive film formed by spraying and having a permeability constant of nitrogen gas being not more than 9*10-8cm4/g.sec. A process for producing a solid oxide fuel cell, including the steps of: forming a sprayed film on a substrate by spraying a material for the formation of an electrically conductive film, while a thickness of a sprayed film per one pass of a spraying gun is being suppressed to not more than 10μ, and then forming the electrically conductive film by thermally treating the sprayed film.

5482615

NOBLE METAL/ZN-A1203 REFORMING CATALYSTS WITH ENHANCED REFORMING PERFORMANCE (C-2714)

Meitzner George D; Migone Ruben A; Mykytka William J Pittstown, NJ, UNITED STATES assigned to Exxon Research and Engineering Company

Catalysts for reforming typically contain platinum supported on a high surface area alumina. During reforming reactions, specifically dehydrocyclization, such catalysts produce undesirable light gases. Applicants have found a new catalyst that suppresses undesirable hydrogenolysis reactions thereby decreasing the yields of undesirable light gas make during dehydrocyclization of C6+ hydrocarbons, especially n-heptane. The catalyst comprises a halogen, and catalytically active amounts of nonalloyed noble metal and zinc on an alumina support wherein said noble metal is selected from the group consisting essentially of Pt,Pd, Ir, Os, Ru, Rh, Re, and mixtures thereof and in the absence of cobalt and nickel. As used herein, nonalloyed means that the metallic phase consists of a single metallic element. In the present invention, noble metal. The invention is further directed to the preparation and use of the catalyst in a reforming reaction.