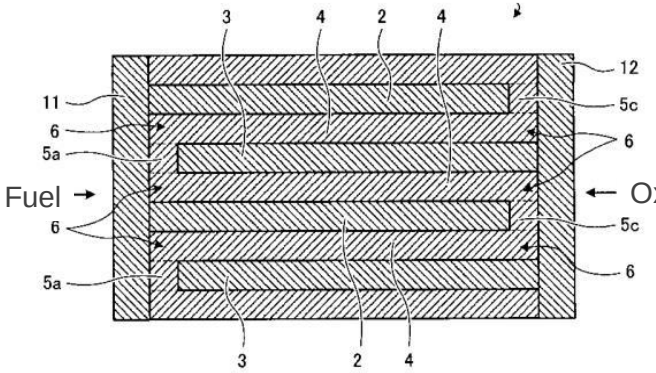
Tohoku Univ. Technology

Solid oxide fuel cell able to miniaturize

Lamination technology that enables high electric power density without compromising power generation efficiency



2. Anode
3. Cathode
4. Solid Electrolyte

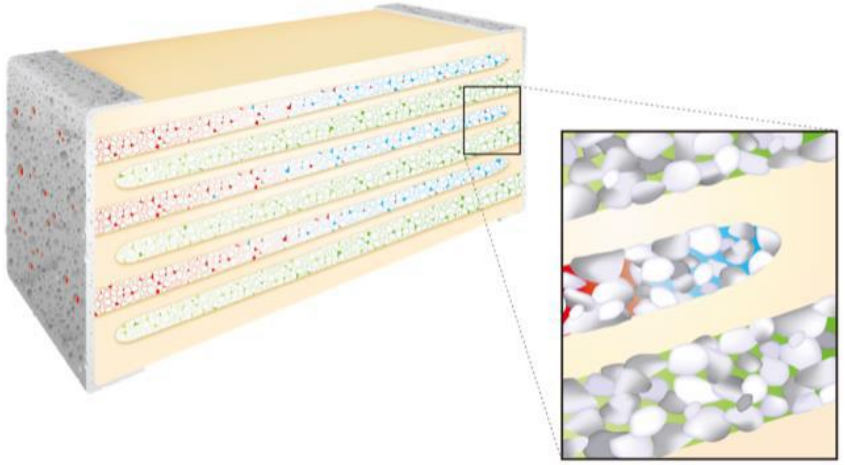
Overview

Fuel cells are attracting attention as an environmentally friendly energy, and various forms are being researched and developed. Solid oxide fuel cells are focused from the energy efficiency perspective.

For a solid oxide fuel cell containing multi-cells, fuel and air are supplied separately from the same direction to the anode and cathode of each cell, which requires a fuel and an air supply unit, respectively. In addition, since the solid oxide fuel cells have a structure in which a solid electrolyte is sandwiched between an anode and a cathode, the fuel and air supply system becomes complicated in order to supply them separately to the anode and cathode which are close to each other. This is the reason why the full cell miniaturization was difficult.

This invention is based on the structure of the electrode layer. By separating the fuel and air input & output respectively, a smooth flow can be achieved and the power generation efficiency can be improved.

Laminated structure



Product Application

- Fuel-cell vehicle
- Cogeneration system for home use
- Compact power supply for portable device

Related Works

[1] T. Kon, A. Kamegawa, H. Takamura, "Preparation of cathode material for co-sintering with electrolyte at high temperature", ECS Transactions, **57** (2013) 1901-1908.

[2] D. Baek, A. Kamegawa, H. Takamura, "Preparation and electrode properties of composite cathodes based on $Bi_{1-x}Sr_xFeO_{3-\delta}$ with Perovskite-type structure", Solid State Ionics, **262** (2014) 691-695.

IP Data

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