

Title (en)

MODIFIED PLANAR CELL AND STACK OF ELECTROCHEMICAL DEVICES BASED THEREON, AND METHOD FOR PRODUCING THE PLANAR CELL AND THE STACK, AND A MOULD FOR PRODUCING THE PLANAR CELL

Title (de)

MODIFIZIERTE PLANARZELLE UND STAPEL VON ELEKTROCHEMISCHEN EINRICHTUNGEN AUF IHRER BASIS SOWIE VERFAHREN ZUR HERSTELLUNG DER PLANARZELLE UND DES STAPELS UND EINE FORM FÜR DIE FERTIGUNG DER PLANARZELLE

Title (fr)

CELLULE PLANAIRE MODIFIÉE ET PILE DE DISPOSITIFS ÉLECTROCHIMIQUES BASÉE SUR LADITE CELLULE, PROCÉDÉ DE FABRICATION DE LADITE CELLULE PLANAIRE ET DE LADITE PILE, ET MOULE UTILISÉ POUR LA FABRICATION DE LADITE CELLULE PLANAIRE

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Application

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Priority

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Abstract (en)

[origin: WO2013093607A2] The invention relates to a modified planar cell with a solid-oxide solid electrolyte, a gas-diffuse anode, a cathode, a metal or oxide current path and a current-gas supply. The supporting solid electrolyte of the cell is in the form of a corrugated plate consisting of corrugations. In cross-section, the corrugations of the plate constitute an isosceles, identical-height trapezium, without a larger lower base with holes. The holes are formed on one side in the upper part of each corrugation, for supplying one of the reagents, e.g. fuel in case of a fuel cell. The corrugations are connected to one another at their base in order to form gas space channels of the cell. The gas space channels are in the form of inverted isosceles trapezia without a larger upper base and the angle alpha at their smaller base is 0.1 to 89.9°. The corrugated plate is connected to two opposing walls, a front wall and a rear wall. The latter is arranged perpendicular to the corrugations of the plate and thus of equal height, and is furnished with holes. The holes in one wall are used for introducing a second reagent, e.g. air in the case of a fuel cell, into each channel of the electrode environment in the form of inverted isosceles trapezia without the larger upper base and the holes of the other opposing wall for discharging the hypoxic mixture. On one side of the gas space channels constituting, in cross-section, an isosceles trapezium without larger lower base, the corrugated plate of the supporting solid electrode is coated with an electrode, e.g. a nickel-cermet anode in the case of a fuel cell. On the side of the gas space channels of the electrode environment, which are shaped in the form of inverted isosceles trapezia without the larger upper base, the plate is coated with a second, counter-electrode, e.g. a cathode based on strontium-lanthanum-manganite. The metallic box-like gas supply duct ensures the supply of reagents and the discharge of reaction products with a series of holes. The width and the length of the gas supply duct coincide with those of the cell. These holes correspond to the holes in the upper parts of the corrugations of the cell that constitute, in cross-section, an isosceles trapezium without a larger lower base and are connected in a gas-tight manner to the periphery of the holes. A gas-tight space is formed in the planar cell for the reagent introduced via a tube, for the uniform distribution thereof via the gas space channels and for the exit of the exhaust gases through a similar discharge gas manifold. The discharge gas manifold is rotated by 180° relative to the vertical axis and is connected in a gas-tight manner to the ceramic part at the periphery. The flat surfaces of the gas manifolds furnished with holes are connected to the electrodes. They are simultaneously used as current collectors and the tubes are used as current terminals of the planar cell.

IPC 8 full level

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