

Title (en)

ELECTRODE SYSTEM FOR AN ELECTROCHEMICAL SENSOR

Title (de)

ELEKTRODENSYSYSTEM FÜR EINEN ELEKTROCHEMISCHEN SENSOR

Title (fr)

SYSTEME D ELECTRODES POUR CAPTEUR ELECTROCHIMIQUE

Publication

EP 1706733 A1 20061004 (FR)

Application

EP 05700314 A 20050117

Priority

- CH 2005000019 W 20050117
- EP 04405039 A 20040121
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Abstract (en)

[origin: EP1557665A1] The substrate (20) is an electrically conducting material and is pierced, on its upper face, with a regular network of cavities (22). The micro-disks (23, 24) forming the measuring electrode are contained in these cavities. A measuring electrode made of a number of electrically conducting micro-disks (23, 24) connected together connected to and near a generating electrode made of an electrically conducting plate (30, 32) pierced with circular openings (31). These openings have a diameter greater than that of the micro-disks and are positioned in such a way that each opening is concentric with a micro-disk. An electrically insulating layer (25) is deposited on the substrate and pierced with a number of circular openings centred on the cavities and with a diameter less than that of the cavities. A thin metallisation (23) is deposited at the bottom of each cavity and with a diameter equal to that of the openings, and possibly a thick metallisation (24) fills the rest of the cavity at least partially. The thin metallisation includes a stack formed of an adherence layer (23a) of titanium and a conducting layer (23b) of platinum. The thick metallisation is made of the desired electrode material, such as an electro-depositable material like platinum, copper, etc. The thick metallisation is flush with the surface of the substrate or is covered with an active layer flush with the surface of the substrate. The generating electrode is of conducting diamond, or has a thickness allowing it to form, around and above the micro- disks, a confining volume protecting the hydrodynamic flux of the solution to be treated. The substrate is silicon made conductive by doping. An independent claim is made for a method of making such a measuring electrode, starting with a conducting substrate; depositing the insulating layer onto it; making a mask on the insulating layer covered with a network of circular openings with the positioning and diameter corresponding to the network of micro-disks to be formed; etching the insulating layer through the mask to obtain the circular openings; deeply etching the substrate through the openings to obtain the cavities; depositing the thin metallisations at the bottom of each cavity and depositing the thick metallisations onto the thin metallisations. The etching is done by plasma. The thin metallisations are deposited by evaporation under vacuum and the thick metallisations are done by galvanic growth.

IPC 8 full level

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