

Title (en)

DEPOSITION OF THIN ELECTROCONDUCTIVE POLYMER FILM OF DESIRED RESISTANCE FOR GAS SENSING APPLICATIONS

Title (de)

ABSCHEIDUNG VON DÜNNEN, ELEKTRISCH LEITENDEN POLYMERFILMEN MIT GEWÜNSCHTEM WIDERSTAND, FÜR GASDETEKTIERANWENDUNGEN

Title (fr)

DEPOSITION D'UN FILM POLYMERE MINCE ELECTROCONDUCTEUR D'UNE RESISTANCE DESIREE, UTILISABLE DANS LE DOMAINE DE LA DETECTION DES GAZ

Publication

**EP 0931183 A4 20010307 (EN)**

Application

**EP 97942321 A 19970912**

Priority

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Abstract (en)

[origin: WO9811279A1] Electrodeposition of thin sensing polymers on microelectrodes, grown apparently to the same parameters, show wide resistance variations. Thicker films of more consistent resistance are too slow to respond, because of the time taken for the target gas to diffuse through them. These drawbacks may be overcome by tailoring thin electroconductive polymer films to the resistance required, by measuring the resistance at intervals during deposition and continuing to deposit film, until a high or predetermined resistance is obtained. This may be effected in a time multiplexed fashion, in which an electrodeposition current pulse is applied to the electrodes, followed by a period in which the inter-electrode is measured using a voltage below the threshold, at which electrodeposition occurs. Alternatively, an AC method, capable of measuring high impedance at low voltages may be employed and the measurement of resistance may be carried out simultaneously with the deposition. A typical electroconductive polymer is polypyrrole, which may be deposited at a potential of 750 - 900 mV. Pyrrole forms an oligomer from solution prior to deposition and polymerisation is completed in situ. The substrate is preferably a microelectrode array, with elements about 1000  $\mu$ m long, several  $\mu$ m wide and spaced about 10  $\mu$ m apart, (i.e., within the distance, wherein the concentration decreases by a factor of 3). A counter electrode to supply the required current, in either a potentiometric or galvanostatic mode is also required. In operation as a gas sensor, the power should be as low as possible to ensure that resistance changes represent a gas response alone, unaffected by measurement factors.

IPC 1-7

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IPC 8 full level

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CPC (source: EP)

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- No further relevant documents disclosed
- See references of WO 9811279A1

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