

Title (en)
LAYER-BY-LAYER SURFACE FUNCTIONALIZATION OF CATALYST-FREE FULLERENE NANOSTRUCTURES AND THE APPLICATIONS THEREOF

Title (de)
SCHICHTWEISE OBERFLÄCHENFUNKTIONALISIERUNG VON KATALYSATORFREIEN FULLERENNANOSTRUKTUREN UND ANWENDUNGEN DAFÜR

Title (fr)
FONCTIONNALISATION DE SURFACE COUCHE-PAR-COUCHE DE NANOSTRUCTURES DE FULLERÈNE DÉPOURVUES DE CATALYSEUR ET SES APPLICATIONS

Publication
EP 2909135 A1 20150826 (EN)

Application
EP 12841875 A 20121015

Priority

- US 201161548559 P 20111018
- US 2012054399 W 20120910
- US 2012060197 W 20121015

Abstract (en)
[origin: WO2013059107A1] Fullerene nanostructures produced using a catalyst- free Carbo Thermal Carbon Conversion process may be protected and functionalized using a layer-by-layer method whereby functional groups on the nanostructure surface may be further derivatized to incorporate additional functional moieties. Exemplary moieties include redox mediator molecules, crown ethers, catalysts, boric acids, carbohydrates, oligonucleotides, DNA or RNA aptamers, peptide aptamers, proteins such as enzymes and antibodies, quantum dots and nanoparticles, cells, cell organelles, or other cellular components. The density of functional groups or functional moieties on carbon nanostructure surfaces may also be controlled as well as the degree of surface hydrophilicity of the nanostructure. Fullerene nanostructures functionalized using such a layer-by-layer method may be used to disperse, sort, separate and purify fullerene nanostructures and may also be used as sensing elements such as voltametric, amperometric, and potentiometric pH sensors or as biometric sensing elements and electrodes and intracorporeal sensors and electrodes.

IPC 8 full level
C01B 31/02 (2006.01); **B82B 1/00** (2006.01); **B82B 3/00** (2006.01)

CPC (source: EP US)
B82Y 30/00 (2013.01 - EP); **B82Y 40/00** (2013.01 - EP); **C01B 32/154** (2017.07 - EP US); **C01B 32/156** (2017.07 - EP US); **G01N 27/3278** (2013.01 - EP US); **G01N 27/308** (2013.01 - EP)

Citation (search report)
See references of WO 2013059107A1

Cited by
CN109012603A; US11932539B2

Designated contracting state (EPC)
AL AT BE BG CH CY CZ DE DK EE ES FI FR GB GR HR HU IE IS IT LI LT LU LV MC MK MT NL NO PL PT RO RS SE SI SK SM TR

DOCDB simple family (publication)
WO 2013059107 A1 20130425; EP 2909135 A1 20150826

DOCDB simple family (application)
US 2012060197 W 20121015; EP 12841875 A 20121015