

Title (en)

METHOD FOR PREPARING SINGLE WALLED CARBON NANOTUBES FROM A METAL LAYER

Title (de)

VERFAHREN ZUR HERSTELLUNG EINWANDIGER KOHLENSTOFFNANORÖHRCHEN AUS EINER METALLSCHICHT

Title (fr)

PROCÉDÉ DE PRÉPARATION DE NANOTUBES DE CARBONE À PAROI SIMPLE À PARTIR D'UNE COUCHE MÉTALLIQUE

Publication

**EP 2001794 A4 20120620 (EN)**

Application

**EP 07868204 A 20070329**

Priority

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Abstract (en)

[origin: WO2008057620A2] Methods of preparing single walled carbon nanotubes are provided. An arrangement comprising one or more layers of fullerene in contact with one side of a metal layer and a solid carbon source in contact with the other side of metal layer is prepared. The fullerene/metal layer/solid carbon source arrangement is then heated to a temperature below where the fullerenes sublime. Alternatively, a non-solid carbon source may be used in place of a solid carbon source or the metal layer may simply be saturated with carbon atoms. A multiplicity of single walled carbon nanotubes are grown on the fullerene side of the metal layer, wherein at least 80% of the single walled carbon nanotubes in said multiplicity have a diameter within  $\pm 5\%$  of a single walled carbon nanotube diameter D present in said multiplicity, said diameter D being in the range between 0.6-2.2 nm.

IPC 8 full level

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Citation (search report)

- [XP] WO 2006110346 A1 20061019 - HYPERION CATALYSIS INT [US], et al
- [XA] JP 2003292314 A 20031015 - TORAY INDUSTRIES, et al
- [XA] JP 2004083293 A 20040318 - FUJITSU LTD
- [A] WO 0238496 A1 20020516 - IBM [US], et al
- [A] US 2002102194 A1 20020801 - SMALLEY RICHARD E [US], et al
- [X] MARUYAMA S ET AL: "Synthesis of singel-walled carbon nanotubes with narrow diameter-distribution from fullerene", CHEMICAL PHYSICS LETTERS, ELSEVIER BV, NL, vol. 375, 10 July 2003 (2003-07-10), pages 553 - 559, XP002979132, ISSN: 0009-2614, DOI: 10.1016/S0009-2614(03)00907-2
- [A] GROBERT N ET AL: "Thermolysis of C60 thin films yields Ni-filled tapered nanotubes", APPLIED PHYSICS A: MATERIALS SCIENCE & PROCESSING, SPRINGER INTERNATIONAL, DE, vol. A67, no. 5, 1 January 1998 (1998-01-01), pages 595 - 598, XP002189383, ISSN: 0947-8396, DOI: 10.1007/S003390050828
- [A] BIRO L P ET AL: "GROWTH OF CARBON NANOTUBES BY FULLERENE DECOMPOSITION IN THE PRESENCE OF TRANSITION METALS", CHEMICAL PHYSICS LETTERS, ELSEVIER BV, NL, vol. 306, no. 3/04, 11 June 1999 (1999-06-11), pages 155 - 162, XP001059428, ISSN: 0009-2614, DOI: 10.1016/S0009-2614(99)00433-9
- See references of WO 2008057620A2

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