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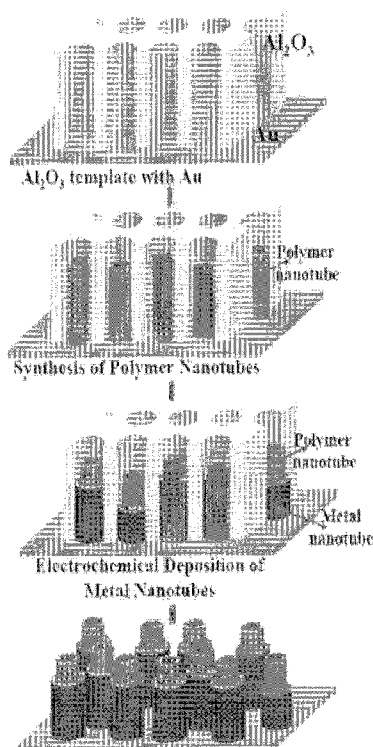
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[Continued on next page]

(54) Title: METAL-POLYMER HYBRID NANOMATERIALS, METHOD FOR PREPARING THE SAME METHOD FOR CONTROLLING OPTICAL PROPERTY OF THE SAME AND OPTOELECTRONIC DEVICE USING THE SAME

[Figure 1]



(57) Abstract: Metal-polymer hybrid nanomaterials are provided. The hybrid nanomaterials comprise nanotubes or nanowires and metal layers formed on the inner or outer surfaces of the nanotubes or the outer surfaces of the nanowires. The nanotubes or nanowires include a light-emitting π -conjugated polymer and the metal layers are composed of a metal whose surface plasmon energy level is close to the energy band gap of the nanotubes or nanowires. Further provided are a method for preparing the hybrid nanomaterials, a method for controlling the optical properties of the hybrid nanomaterials, and an optoelectronic device using the hybrid nanomaterials. Energy transfer and electron transfer based on surface plasmon resonance increases the number of excitons in the conduction band of the nanotubes or nanowires including the light-emitting polymer, resulting in a remarkable increase in the luminescence intensity of the metal-polymer hybrid nanomaterials. The metal-polymer hybrid nanomaterials are easy to prepare and inexpensive while possessing inherent electrical and optical properties of carbon nanotubes. In addition, the electrical and optical properties of the metal-polymer hybrid nanomaterials can be easily controlled. Based on these advantages, the metal-polymer hybrid nanomaterials can be applied to a variety of optoelectronic devices, including light-emitting diodes, solar cells and photosensors.



FR, GB, GR, HR, HU, IE, IS, IT, LT, LU, LV, MC, MT, NL,
NO, PL, PT, RO, SE, SI, SK, TR), OAPI (BF, BJ, CF, CG,
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PCT/KR2008/005460**A. CLASSIFICATION OF SUBJECT MATTER****B82B 3/00(2006.01)i**

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC B82B, C08G

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Korean Utility models and applications for Utility models since 1975

Japanese Utility models and applications for Utility models since 1975

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

eKIPASS (KIPO internal) & Keywords: polymer, nanotube, metal, dopant

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	PARK, D. H. et al., Fabrication and magnetic characteristics of hybrid double walled nanotube of ferromagnetic nickel encapsulated conducting polypyrrole, Applied Physics Letters, 26 February 2007, Volume 90, Issue 9, pp. 093122-1 ~ 093122-3 See Fig. 1	1-23
Y	KR 10-2004-0011178 A (KOREA CHUNGANG EDUCATIONAL FOUNDATION) 05 February 2004 See claims 1-11	1-23
A	KR 10-2003-0082431 A (LG CHEMICAL LTD.) 22 October 2003 See claims 1-8	1-23
A	KR 10-2007-0057602 A (SAMSUNG ELECTRONICS CO., LTD.) 07 June 2007 See claims 1-28	1-23



Further documents are listed in the continuation of Box C.



See patent family annex.

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INTERNATIONAL SEARCH REPORT

Information on patent family members

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KR 10-2007-0057602 A	07.06.2007	CN 101008099 A EP 1792872 A2 JP 2007-152548 A US 2007-128808 A1	01.08.2007 06.06.2007 21.06.2007 07.06.2007