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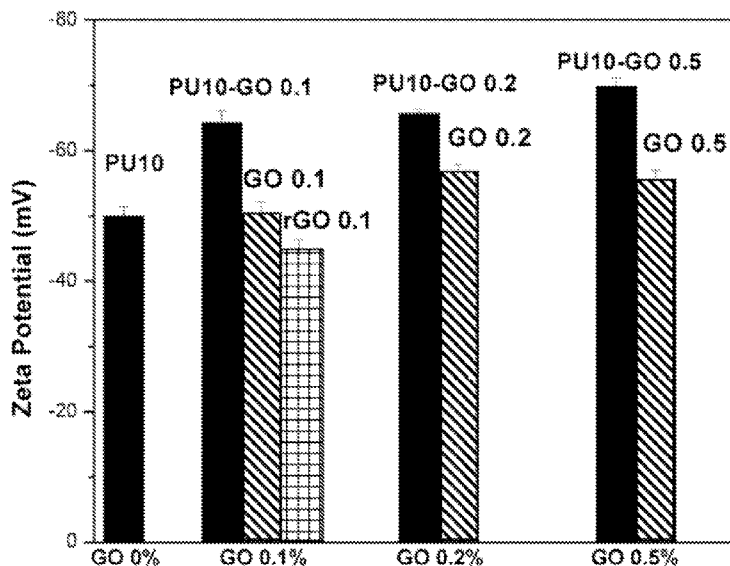
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[Continued on next page]

(54) Title: SELF-ALIGNED GRAPHENE POLYMER NANOCOMPOSITES

Figure 1



(57) Abstract: Highly-oriented graphene polymer nanocomposites are produced from an aqueous dispersion of graphene oxide in polyurethane latex followed by chemical reduction to form graphene sheets.

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HR, HU, ID, IL, IN, IS, JP, KE, KG, KM, KN, KP, KR, KZ, LA, LC, LK, LR, LS, LT, LU, LY, MA, MD, ME, MG, MK, MN, MW, MX, MY, MZ, NA, NG, NI, NO, NZ, OM, PE, PG, PH, PL, PT, QA, RO, RS, RU, RW, SC, SD, SE, SG, SK, SL, SM, ST, SV, SY, TH, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, ZA, ZM, ZW.

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LT, LU, LV, MC, MK, MT, NL, NO, PL, PT, RO, RS, SE, SI, SK, SM, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

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**A. CLASSIFICATION OF SUBJECT MATTER*****B82B 1/00(2006.01)i, C08K 3/04(2006.01)i, C08L 75/04(2006.01)i, C08J 5/18(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)

B82B 1/00; H01B 1/12; C01B 31/02; C08K 3/18; C08K 3/04; H01M 4/58

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

Japanese utility models and applications for utility models

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

eKOMPASS(KIPO internal) &amp; Keywords: graphene, nanocomposite, polyurethane, reducing agent

**C. DOCUMENTS CONSIDERED TO BE RELEVANT**

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	Kim, H. et al. "Graphene/Polyurethane Nanocomposites for Improved Gas Barrier and Electrical Conductivity", Chem. Mater. 2010, Vol. 22, pp 3441-3450. 17 May 2010 See Abstract; Scheme 1; Composite Processing in page 3443;	1-3
A	Left column in page 3447	4-7
A	WO 2009-143405 A2 (THE UNIVERSITY OF NORTH CAROLINA AT CHAPEL HILL et al.) 26 November 2009 See Abstract; Claims 35, 36; Paragraphs [39], [43], [68]-[70], [73]	1-7
A	US 2010-0096597 A1 (PRUD'HOMME, R. K. et al.) 22 April 2010 See Abstract; Claims 1, 11; Paragraph [82]	1-7
A	US 2010-0021819 A1 (ZHAMU, A. et al.) 28 January 2010 See the whole document	1-7

 Further documents are listed in the continuation of Box C. See patent family annex.

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"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

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"&amp;" document member of the same patent family


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**INTERNATIONAL SEARCH REPORT**

Information on patent family members

International application No.

**PCT/US2012/026550**

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
WO 2009-143405 A2	26.11.2009	US 2011-186789 A1 WO 2009-143405 A2 WO 2009-143405 A3	04.08.2011 26.11.2009 11.03.2010
US 2010-0096597 A1	22.04.2010	CN 101558455 A EP 2070093 A1 EP 2070093 A4 JP 2010-506014 A KR 10-2009-0086536 A US 7745528 B2 WO 2008-045778 A1	14.10.2009 17.06.2009 23.03.2011 25.02.2010 13.08.2009 29.06.2010 17.04.2008
US 2010-0021819 A1	28.01.2010	None	