

(19) World Intellectual Property
Organization
International Bureau



(43) International Publication Date
8 April 2004 (08.04.2004)

PCT

(10) International Publication Number
WO 2004/029176 A1

(51) International Patent Classification⁷: **C09K 11/06**,
H01B 1/12, H01L 51/20, 51/30, H05B 33/14

(21) International Application Number:
PCT/US2003/030509

(22) International Filing Date:
24 September 2003 (24.09.2003)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:
60/413,114 24 September 2002 (24.09.2002) US

(71) Applicant: **E.I. DU PONT DE NEMOURS AND COMPANY** [US/US]; 1007 Market Street, Wilmington, DE 19898 (US).

(72) Inventor: **HSU, Che-hsiung**; 4803 Mermaid Boulevard, Wilmington, DE 19808 (US).

(74) Agent: **CAPRIA, Mary, Ann**; E.I. Du Pont de Nemours and Company, Legal Patent Records Center, 4417 Lancaster Pike, Wilmington, DE 19805 (US).

(81) Designated States (*national*): AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, UZ, VC, VN, YU, ZA, ZM, ZW.

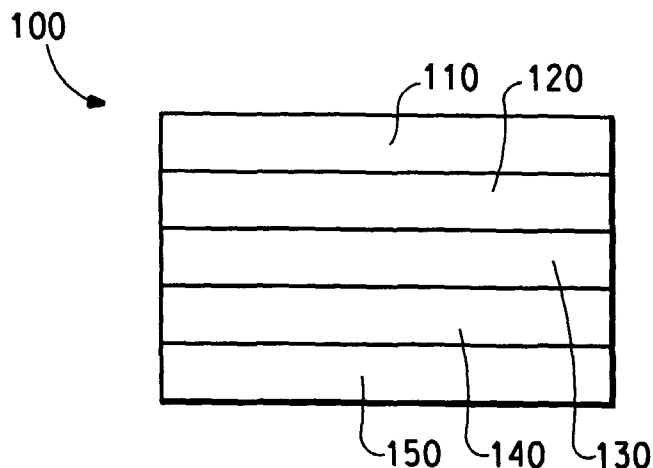
(84) Designated States (*regional*): ARIPO patent (GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PT, RO, SE, SI, SK, TR), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

Published:

- with international search report
- before the expiration of the time limit for amending the claims and to be republished in the event of receipt of amendments

For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.

(54) Title: ELECTRICALLY CONDUCTING ORGANIC POLYMER/NANOPARTICLE COMPOSITES AND METHODS FOR USE THEREOF



(57) Abstract: Compositions are provided comprising aqueous dispersions of electrically conducting organic polymers and a plurality of nanoparticles. Films cast from invention compositions are useful as buffer layers in electroluminescent devices, such as organic light emitting diodes (OLEDs) and electrodes for thin film field effect transistors. Buffer layers containing nanoparticles have a much lower conductivity than buffer layers without nanoparticles. In addition, when incorporated into an electroluminescent (EL) device, buffer layers according to the invention contribute to higher stress life of the EL device.