

(19) World Intellectual Property Organization
International Bureau



(43) International Publication Date
16 February 2006 (16.02.2006)

PCT

(10) International Publication Number
WO 2006/015414 A1

(51) International Patent Classification⁷: **C07F 7/00**,
7/02, 7/22, 7/24, 7/28, 7/30, 1/08, 3/02, 3/06, 5/00, 5/06,
9/00, 13/00, 15/00, 15/02, 15/04, 15/06, C09B 47/04,
47/28, 47/32, G06F 17/30

(21) International Application Number:
PCT/AU2005/001143

(22) International Filing Date: 3 August 2005 (03.08.2005)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:
10/913,381 9 August 2004 (09.08.2004) US

(71) Applicant (for all designated States except US): **SILVERBROOK RESEARCH PTY LTD** [AU/AU]; 393 Darling Street, Balmain, New South Wales 2041 (AU).

(72) Inventors; and

(75) Inventors/Applicants (for US only): **VONWILLER, Simone, Charlotte** [AU/AU]; 393 Darling Street, Balmain, New South Wales 2041 (AU). **STARLING, Scott, Matthew** [AU/AU]; 393 Darling Street, Balmain, New South Wales 2041 (AU). **RIDLEY, Damon, Donald** [AU/AU]; 393 Darling Street, Balmain, New South Wales 2041 (AU). **HALL, Lauchlan, Everett** [AU/AU]; 393

Darling Street, Balmain, New South Wales 2041 (AU). **FIELDER, Simon** [NZ/AU]; 393 Darling Street, Balmain, New South Wales 2041 (AU). **INDUSEGARAM, Sutharsiny** [AU/AU]; 393 Darling Street, Balmain, New South Wales 2041 (AU). **SILVERBROOK, Kia** [AU/AU]; 393 Darling Street, Balmain, New South Wales 2041 (AU). **LAPSTUN, Paul** [NO/AU]; 393 Darling Street, Balmain, New South Wales 2041 (AU).

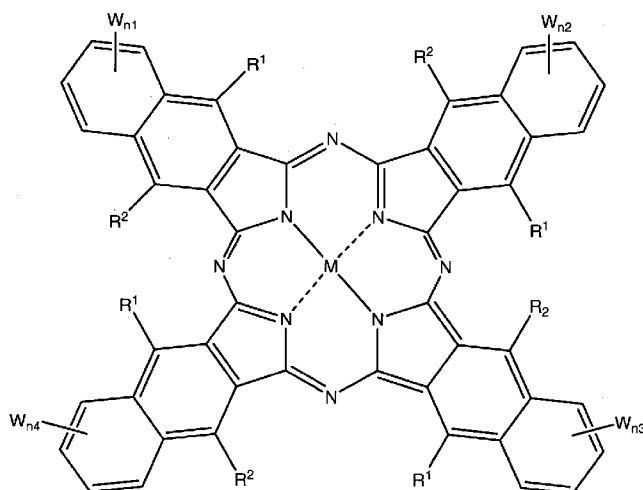
(74) Agent: **SILVERBROOK, Kia**; 393 Darling Street, Balmain, New South Wales 2041 (AU).

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

(84) Designated States (unless otherwise indicated, for every kind of regional protection available): ARIPO (BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IS, IT, LT, LU, LV, MC, NL, PL, PT,

[Continued on next page]

(54) Title: SYNTHETICALLY EXPEDIENT WATER-DISPERSIBLE IR DYES



(57) Abstract: The present invention provides an IR-absorbing naphthalocyanine dye of formula (I): wherein M is selected from Si(A¹)(A²), Ge(A¹)(A²), Ga(A¹), Mg, Al(A¹), TiO, Ti(A¹)(A²), ZrO, Zr(A¹)(A²), VO, V(A¹)(A²), Mn, Mn(A¹), Fe, Fe(A¹), Co, Ni, Cu, Zn, Sn, Sn(A¹)(A²), Pb, Pb(A¹)(A²), Pd and Pt; A¹ and A² are axial ligands, which may be the same or different, and are selected from OH, halogen, OR³, a hydrophilic ligand and/or a ligand suitable for reducing cofacial interactions; R¹ and R² are selected from H or C₁₋₁₂alkoxy; R³ is selected from C₁₋₁₂ alkyl, C₅₋₁₂aryl, C₅₋₁₂ arylalkyl or Si(R^x)(R^y)(R^z); and R^x, R^y and R^z may be the same or different and are selected from C₁₋₁₂ alkyl, C₅₋₁₂ aryl, C₅₋₁₂ arylalkyl, C₁₋₁₂ alkoxy, C₅₋₁₂ aryloxy or C₅₋₁₂ arylalkoxy; W is a hydrophilic group; n1 is 0, 1, 2 or 3; n2 is 0, 1, 2 or 3; n3 is 0, 1, 2 or 3; n4 is 0, 1, 2 or 3; provided that at least one of n1, n2, n3 or n4 is greater than 0. Dyes of this type are especially suitable for use in netpage and Hyperlabel systems.

WO 2006/015414 A1



RO, SE, SI, SK, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

Published:

— with international search report

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.