



- (51) **International Patent Classification:**
H01L 51/05 (2006.01) *H01L 29/786* (2006.01)
- (21) **International Application Number:**
PCT/US2011/063745
- (22) **International Filing Date:**
7 December 2011 (07.12.2011)
- (25) **Filing Language:** English
- (26) **Publication Language:** English
- (30) **Priority Data:**
61/420,512 7 December 2010 (07.12.2010) US
- (71) **Applicant (for all designated States except US):** **UNIVERSITY OF FLORIDA RESEARCH FOUNDATION, INC.** [US/US]; 223 Grinter Hall, Gainesville, FL 32611 (US).
- (72) **Inventors; and**
- (75) **Inventors/Applicants (for US only):** **RINZLER, Andrew, Gabriel** [US/US]; 1713 SW 186th St., Gainesville, FL 32669 (US). **MCCARTHY, Mitchell, Austin** [US/US]; 2370 SW Archer Rd., Apt. 44, Gainesville, FL 32608 (US). **LIU, Bo** [CN/US]; 371 Maguire Village, Apt. 7, Gainesville, FL 32603 (US).
- (74) **Agent:** **SCHOEN, Randy, R.**; Thomas, Kayden, Horstemeyer & Risley, LLP, 400 Interstate North Parkway, Suite 1500, Atlanta, GA 30339 (US).

- (81) **Designated States (unless otherwise indicated, for every kind of national protection available):** AE, AG, AL, AM, AO, AT, AU, AZ, BA, BB, BG, BH, BR, BW, BY, BZ, CA, CH, CL, CN, CO, CR, CU, CZ, DE, DK, DM, DO, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, GT, HN, 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.
- (84) **Designated States (unless otherwise indicated, for every kind of regional protection available):** ARIPO (BW, GH, GM, KE, LR, LS, MW, MZ, NA, RW, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European (AL, AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HR, HU, IE, IS, IT, 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).

Published:

- without international search report and to be republished upon receipt of that report (Rule 48.2(g))

(54) **Title:** ACTIVE MATRIX DILUTE SOURCE ENABLED VERTICAL ORGANIC LIGHT EMITTING TRANSISTOR

(57) **Abstract:** Various embodiments are provided for dilute source enabled vertical organic light emitting transistors. In various embodiments, a display panel includes an array of pixels. In one embodiment, among others, at least one pixel includes a switching transistor and a driving transistor coupled to the switching transistor, where the driving transistor is configured to emit light responsive to activation by the switching transistor. The driving transistor may be a dilute source enabled vertical organic light emitting transistor (DS-VOLET). The switching transistor may include a dilute source enabled vertical-field effect transistor (DS-VFET). In another embodiment, a double dilute source enabled vertical-field effect transistor (DS-VFET) includes a first DS-VFET coupled to a second DS-VFET.

