

(12) INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(19) World Intellectual Property
Organization
International Bureau

(43) International Publication Date
26 October 2023 (26.10.2023)



(10) International Publication Number
WO 2023/205310 A1

(51) International Patent Classification:

C09K 9/02 (2006.01) G02F 1/1516 (2019.01)
C07D 417/00 (2006.01)

(21) International Application Number:

PCT/US2023/019228

(22) International Filing Date:

20 April 2023 (20.04.2023)

(25) Filing Language:

English

(26) Publication Language:

English

(30) Priority Data:

63/333,182 21 April 2022 (21.04.2022) US
18/133,559 12 April 2023 (12.04.2023) US

(71) Applicant: **VITRO FLAT GLASS LLC** [US/US]; 400
Guys Run Road, Cheswick, Pennsylvania 15024 (US).

(72) Inventors: **CHRISTIANSEN, Dylan, Thomas**; 110 Lex-
ington Avenue, Pittsburgh, Pennsylvania 15215 (US).

SOKOL, Ivan, Alexandrovich; 6105 Riverfront Dr., Pitts-
burgh, Pennsylvania 15238 (US).

(74) Agent: **WOLSKI, Thomas, C.** et al.; The Webb Law Firm,
One Gateway Center, 420 Fort Duquesne Blvd., Ste. 1200,
Pittsburgh, Pennsylvania 15222 (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, BN, BR, BW, BY, BZ,
CA, CH, CL, CN, CO, CR, CU, CV, CZ, DE, DJ, DK, DM,
DO, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, GT,
HN, HR, HU, ID, IL, IN, IQ, IR, IS, IT, JM, JO, JP, KE, KG,
KH, KN, KP, KR, KW, KZ, LA, LC, LK, LR, LS, LU, LY,
MA, MD, MG, MK, MN, MU, MW, MX, MY, MZ, NA,
NG, NI, NO, NZ, OM, PA, PE, PG, PH, PL, PT, QA, RO,
RS, RU, RW, SA, SC, SD, SE, SG, SK, SL, ST, SV, SY, TH,
TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, WS,
ZA, ZM, ZW.

(54) Title: ELECTROCHROMIC DEVICES AND COMPOSITIONS INCLUDING ANODIC COMPONENT ANIONS

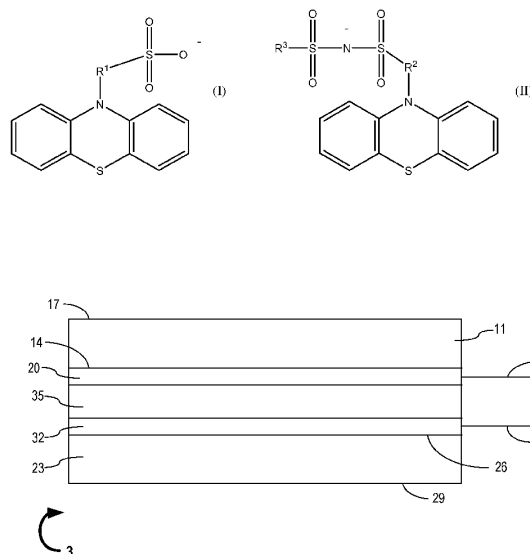


FIG. 1

(57) Abstract: The present invention relates to electrochromic devices and compositions, in which the anodic component thereof includes an anodic component anion selected from at least one anodic component anion represented by the following Formulas (I) or (II). With reference to Formulas (I) and (II), R¹ and R² are each independently selected from divalent linear or branched alkane linking group. With reference to Formula (II), R³ is selected from fluorine, linear or branched fluorinated alkyl, or linear or branched perfluorinated alkyl. The present invention also relates to salts including an anion represented by Formula (II). The present invention further relates to a neutral compound corresponding to Formula (II), in which hydrogen (H) is bonded to the nitrogen anion.

[Continued on next page]

WO 2023/205310 A1

(84) Designated States (*unless otherwise indicated, for every kind of regional protection available*): ARIPO (BW, CV, GH, GM, KE, LR, LS, MW, MZ, NA, RW, SC, SD, SL, ST, SZ, TZ, UG, ZM, ZW), Eurasian (AM, AZ, BY, KG, KZ, 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, ME, MK, MT, NL, NO, PL, PT, RO, RS, SE, SI, SK, SM, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, KM, ML, MR, NE, SN, TD, TG).

Declarations under Rule 4.17:

- *as to applicant's entitlement to apply for and be granted a patent (Rule 4.17(ii))*
- *as to the applicant's entitlement to claim the priority of the earlier application (Rule 4.17(iii))*

Published:

- *with international search report (Art. 21(3))*