



- (51) **International Patent Classification:**
C09K 5/10 (2006.01) *H01M 10/613* (2014.01)
H01M 10/6567 (2014.01)
- (21) **International Application Number:**
PCT/IB2022/051608
- (22) **International Filing Date:**
24 February 2022 (24.02.2022)
- (25) **Filing Language:** English
- (26) **Publication Language:** English
- (30) **Priority Data:**
63/153,148 24 February 2021 (24.02.2021) US
- (71) **Applicant:** **CASTROL LIMITED** [GB/GB]; Technology Centre, Whitchurch Hill, Pangbourne, Reading, Berkshire RG8 7QR (GB).
- (72) **Inventors:** **GARRETT, James**; c/o BP Corporation North America, 501 Westlake Park Blvd, Houston, Texas 77079 (US). **DEELEY, Jon**; Technology Centre, Whitchurch Hill, Pangbourne, Reading RG8 7QR (GB). **ARMITAGE, Gareth**; Technology Centre, Whitchurch Hill, Pangbourne, Reading RG8 7QR (GB). **WEST, Kevin**; Technology Centre, Whitchurch Hill, Pangbourne, Reading RG8 7QR (GB). **FILIP, Sorin**; Technology Centre, Whitchurch Hill, Pang-

bourne, Reading RG8 7QR (GB). **PRENTICE, Giles**; Technology Centre, Whitchurch Hill, Pangbourne, Reading RG8 7QR (GB).

- (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, CZ, DE, DJ, DK, DM, DO, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, GT, HN, HR, HU, ID, IL, IN, IR, IS, IT, JM, JO, JP, KE, KG, KH, KN, KP, KR, KW, KZ, LA, LC, LK, LR, LS, LU, LY, MA, MD, ME, MG, MK, MN, 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.

- (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, 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, 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).

- (54) **Title:** DIELECTRIC THERMAL MANAGEMENT FLUIDS AND METHODS FOR USING THEM

(57) **Abstract:** This disclosure relates generally to thermal management fluids. More particularly, this disclosure relates to a dielectric thermal management fluid suitable for use managing heat in battery systems through direct cooling, such as lithium-ion batteries used in electric vehicles, electric motors, and power electronics, methods of using such thermal management fluids, and systems including such thermal management systems.

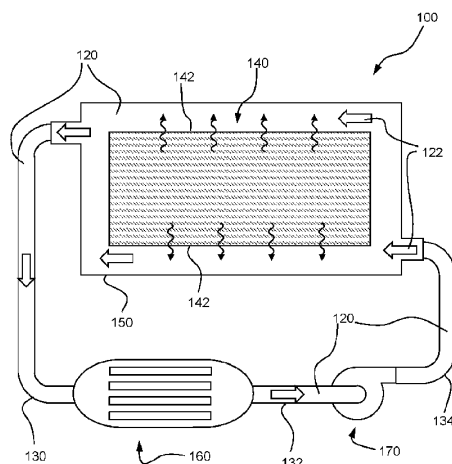


FIG. 1

Published:

— with international search report (Art. 21(3))