

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

(19) World Intellectual Property Organization
International Bureau



(43) International Publication Date
4 February 2010 (04.02.2010)

(10) International Publication Number
WO 2010/014730 A1

PCT

(51) International Patent Classification:
G01K 1/02 (2006.01)

(21) International Application Number:
PCT/US2009/052130

(22) International Filing Date:
29 July 2009 (29.07.2009)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:
61/084,675 30 July 2008 (30.07.2008) US

(71) Applicant (for all designated States except US): **TEMP-TIME CORPORATION** [US/US]; 116 American Road, Morris Plains, NJ 07950 (US).

(72) Inventors; and

(75) Inventors/Applicants (for US only): **LENTZ, Carl** [US/US]; Temptime Corporation, 116 American Road, Morris Plains, NJ 07950 (US). **SMITH, Dawn, E.** [US/US]; Temptime Corporation, 116 American Road, Morris Plains, NJ 07950 (US). **TAYLOR, Dene, H.** [US/US]; Temptime Corporation, 116 American Road, Morris Plains, NJ 07950 (US).

(74) Agent: **PITT, Roger**; K&L Gates LLP, 599 Lexington Avenue, New York, NY 10022 (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, RO, RS, RU, SC, SD, SE, SG, SK, SL, SM, ST, SV, SY, 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, 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, HR, HU, IE, IS, IT, LT, LU, LV, MC, MK, MT, NL, NO, PL, PT, RO, SE, SI, SK, SM, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

Published:

- with international search report (Art. 21(3))
- with amended claims and statement (Art. 19(1))

(54) Title: FREEZE INDICATORS, COMPONENTS THEREFOR AND PREPARATIVE PROCESSES

(57) Abstract: Freeze indicators can include an indicator dispersion, a liquid medium, indicator particles dispersed in the liquid medium and a particulate inorganic nucleating agent to inhibit supercooling of the liquid medium. The inorganic nucleating agent can have an ionic surface coating which can help provide a sharp end point. Optionally, freeze indicators can include indicator particles comprising an organic material and a softener to soften the indicator particles and provide the freeze indication with an enhanced visual appearance. Another option is to provide a temperature-sensitive stabilizer to inhibit coagulation of the indicator dispersion at temperatures above the liquid medium frozen state melting point while permitting coagulation of the indicator dispersion at the liquid medium frozen state melting point.



WO 2010/014730 A1