

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

(19) World Intellectual Property
Organization
International Bureau

(43) International Publication Date
29 June 2023 (29.06.2023)



(10) International Publication Number
WO 2023/122032 A1

(51) International Patent Classification:

C04B 14/28 (2006.01) C04B 40/00 (2006.01)
C04B 28/04 (2006.01) C01F 11/18 (2006.01)

(21) International Application Number:

PCT/US2022/053394

(22) International Filing Date:

19 December 2022 (19.12.2022)

(25) Filing Language:

English

(26) Publication Language:

English

(30) Priority Data:

63/291,767 20 December 2021 (20.12.2021) US

(71) Applicant: **BLUE PLANET SYSTEMS CORPORATION** [US/US]; 100 Cooper Court, Suite A, Los Gatos, California 95032 (US).

(72) Inventors: **CONSTANTZ, Brent R.**; 100 Cooper Court, Suite A, Los Gatos, California 95032 (US). **KANG, Seung-Hee**; 100 Cooper Court, Suite A, Los Gatos, Califor-

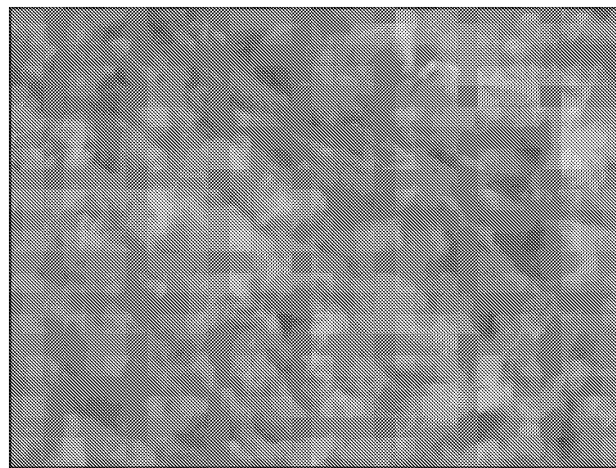
nia 95032 (US). **LEVEY, Catherine**; 100 Cooper Court, Suite A, Los Gatos, California 95032 (US). **SCHNEIDER, Jacob**; 100 Cooper Court, Suite A, Los Gatos, California 95032 (US).

(74) Agent: **FIELD, Bret E.**; 201 Redwood Shores Parkway, Suite 200, Redwood City, California 94065 (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, 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: METHODS OF PRODUCING A BUILDING MATERIAL

FIG. 2



TM3030_1917

14.56 NL D6.0 x7.0k 10µm

(57) Abstract: Methods of producing a building material are provided. Methods of interest include preparing a carbonate precipitate comprising an undifferentiated pluripotent polymorph precursor (i.e., a polymorph precursor) and processing the carbonate precipitate under conditions sufficient to produce the building material. The disclosed polymorph precursors exist in an intermediate state between an disordered state (e.g., amorphous calcium carbonate (ACC)) and an ordered state (e.g., a polymorph of calcium carbonate or of calcium magnesium carbonate). Aspects of the invention also include building materials (e.g., aggregates) as well as compositions (e.g., concrete dry composites, setttable compositions and built structures) that include building materials produced via the subject methods.

[Continued on next page]



WO 2023/122032 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, 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).

Published:

- *with international search report (Art. 21(3))*
- *before the expiration of the time limit for amending the claims and to be republished in the event of receipt of amendments (Rule 48.2(h))*