

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

(19) World Intellectual Property
Organization
International Bureau

(43) International Publication Date
17 June 2021 (17.06.2021)



(10) International Publication Number
WO 2021/113919 A1

(51) International Patent Classification:

H01M 4/134 (2010.01) H01M 4/38 (2006.01)
H01M 4/1395 (2010.01) H01M 4/62 (2006.01)

(21) International Application Number:

PCT/AU2020/051356

(22) International Filing Date:

11 December 2020 (11.12.2020)

(25) Filing Language:

English

(26) Publication Language:

English

(30) Priority Data:

2019904719 13 December 2019 (13.12.2019) AU

(71) Applicant: **SICONA BATTERY TECHNOLOGIES PTY LTD** [AU/AU]; Unit 1, Level 1, 9 Bowman Street, South Perth, Western Australia 6151 (AU).

(72) Inventors: **GUO, Zaiping**; c/o University of Wollongong, Innovation and Commercial Research, Northfields Avenue, Wollongong, New South Wales 2522 (AU). **MAO, Jianfeng**; c/o University of Wollongong, Innovation and Commercial Research, Northfields Avenue, Wollongong, New South Wales 2522 (AU). **WU, Jingxing**; c/o University of Wollongong, Innovation and Commercial Research, Northfields Avenue, Wollongong, New South Wales 2522 (AU).

(74) Agent: **SHELSTON IP PTY LTD**; Level 9, 60 Margaret Street, Sydney, New South Wales 2000 (AU).

(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, 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).

Published:

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

(54) Title: ANODE FOR LITHIUM-ION BATTERY AND METHOD OF FABRICATING SAME

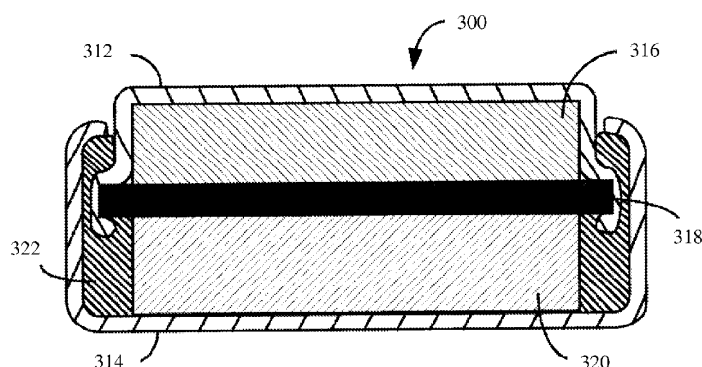


Figure 4

(57) Abstract: Disclosed is a method of fabricating an anode for a lithium-ion battery, including milling a mixture of nano-silicon, one or more carbonaceous materials and one or more solvents, wherein the mixture is retained as a wet slurry during milling. The mixture is carbonised to produce a silicon thinly coated with carbon (Si@C) material. Further milling occurs of a second mixture of the Si@C material, one or more graphite, one or more second carbonaceous materials and one or more second solvents, wherein the second mixture is retained as a second wet slurry during milling. The second mixture is carbonised to produce a Si@C/graphite/carbon material. The anode is formed from the Si@C/graphite/carbon material.



WO 2021/113919 A1