

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

(19) World Intellectual Property
Organization
International Bureau

(43) International Publication Date
15 April 2021 (15.04.2021)



(10) International Publication Number
WO 2021/068054 A1

(51) International Patent Classification:

C01B 33/021 (2006.01) C30B 29/06 (2006.01)
C30B 23/06 (2006.01) H01M 4/1395 (2010.01)
C30B 25/10 (2006.01)

(21) International Application Number:

PCT/CA2020/000117

(22) International Filing Date:

09 October 2020 (09.10.2020)

(25) Filing Language:

English

(26) Publication Language:

English

(30) Priority Data:

62/913,152 09 October 2019 (09.10.2019) US

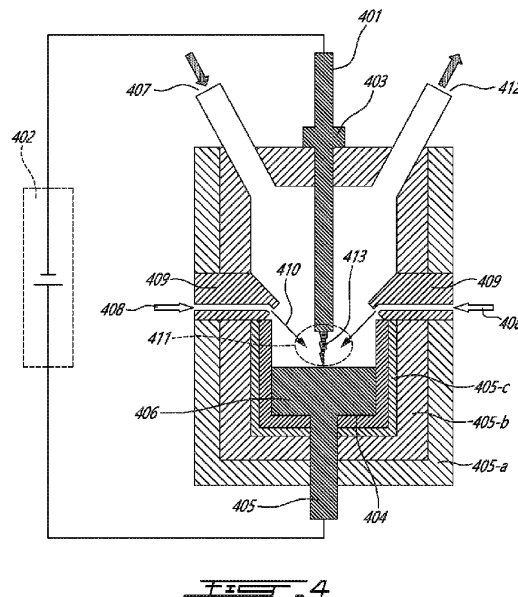
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(81) Designated States (unless otherwise indicated, for every
kind of national protection available): AE, AG, AL, AM,
AO, AT, AU, AZ, BA, BB, BG, BH, BN, BR, BW, BY, BZ,
CA, CH, CL, CN, CO, CR, CU, CZ, DE, DJ, DK, DM, DO,
DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, GT, HN,
HR, HU, ID, IL, IN, IR, IS, IT, JO, JP, KE, KG, KH, KN,

(54) Title: NANO-SILICON PARTICLES/WIRE PRODUCTION BY ARC FURNACE FOR RECHARGEABLE BATTERIES



(57) Abstract: A process and an apparatus using pure silicon as raw material with no other pre-processed material for producing nano-Silicon and/or nano-Silicon-carbon coated composite material in the form of particles, nanowires or a combination of both, for use in a high capacity and high energy efficiency manufacturing of anodes for Lithium-ion batteries. The apparatus comprises a reactor including at least one electrode and adapted to provide at least one arc, e.g. a DC transferred arc, for melting and vaporizing silicon provided in the reactor. A quenching system is provided for delivering a gas for quenching, in the reactor, the so-produced silicon vapour so as to form nano particles and/or nano wires. The reactor is under vacuum. The gas can be injected by a vortex and/or via the electrode that is hollow. The electrode is consumable and vertically movable to control an arc voltage and to compensate for electrode erosion.

[Continued on next page]

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))