

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

(19) World Intellectual Property
Organization
International Bureau



(10) International Publication Number
WO 2020/212546 A1

(43) International Publication Date
22 October 2020 (22.10.2020)

(51) International Patent Classification:

C22B 1/00 (2006.01) H01M 6/52 (2006.01)
C22B 3/00 (2006.01) H01M 10/54 (2006.01)

(21) International Application Number:

PCT/EP2020/060806

(22) International Filing Date:

17 April 2020 (17.04.2020)

(25) Filing Language:

English

(26) Publication Language:

English

(30) Priority Data:

19170392.5 19 April 2019 (19.04.2019) EP

(71) Applicant: UMICORE [BE/BE]; Rue du Marais 31, 1000 Brussels (BE).

(72) Inventors: OOSTERHOF, Harald; Klaverstraat 31, 2260 Westerlo (BE). SCOYER, Jean; Bornstraat 22, 2200 Herentals (BE). SCHEUNIS, Lennart; Umicore, Watertorenstraat 33, 2250 Olen (BE). KLAASEN, Bart; Umicore, Watertorenstraat 33, 2250 Olen (BE). CALLEBAUT, Willem; Umicore, Adolf Greinerstraat 14, 2660 Hoboken (BE).

(74) Agent: RATTAT, Dirk; Umicore, Patent Department, Watertorenstraat 33, 2250 Olen (BE).

(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, 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: PROCESS FOR THE PREPARATION OF PRECURSOR COMPOUNDS FOR LITHIUM BATTERY CATHODES

(57) Abstract: The present disclosure concerns the production of precursor compounds for lithium battery cathodes. Batteries or their scrap are smelted in reducing conditions, thereby forming an alloy suitable for further hydrometallurgical refining, and a slag. The alloy is leached in acidic conditions, producing a Ni- and Co-bearing solution, which is refined. The refining steps are greatly simplified as most elements susceptible to interfere with the refining steps concentrate in the slag. Metals such as Co, Ni and Mn are then precipitated from the solution, forming a suitable starting product for the synthesis of new battery precursor compounds.



WO 2020/212546 A1