



(51) International Patent Classification:
H01M 10/54 (2006.01) *C22B 3/14* (2006.01)
H01M 6/52 (2006.01)

(21) International Application Number:
PCT/SG2021/050670

(22) International Filing Date:
03 November 2021 (03.11.2021)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:
10202010984P 04 November 2020 (04.11.2020) SG

(71) Applicant: **NANYANG TECHNOLOGICAL UNIVERSITY** [SG/SG]; 50 Nanyang Avenue, Singapore 639798 (SG).

(72) Inventors: **WU, Zhuoran**; c/o Nanyang Technological University, 50 Nanyang Avenue, Singapore 639798 (SG). **TAY, Chor Yong**; c/o Nanyang Technological University, 50 Nanyang Avenue, Singapore 639798 (SG). **SRINIVASAN, Madhavi**; c/o Nanyang Technological University, 50 Nanyang Avenue, Singapore 639798 (SG). **DO, Minh Phuong**; c/o Nanyang Technological University, 50 Nanyang Avenue, Singapore 639798 (SG).

(74) Agent: **SPRUSON & FERGUSON (ASIA) PTE LTD**; P.O. Box 1531, Robinson Road Post Office, Singapore 903031 (SG).

(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).

(54) Title: METHOD OF METAL ION RECOVERY FROM BATTERIES

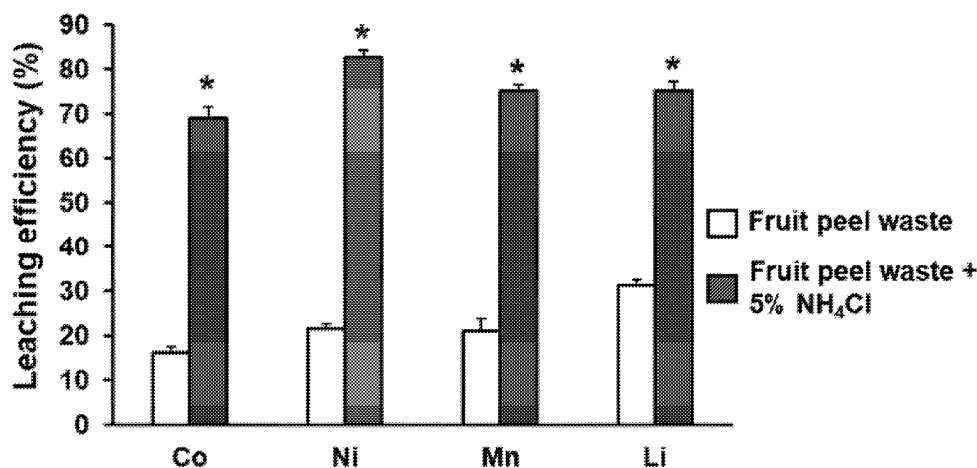


Figure 5a

(57) Abstract: The present disclosure refers to a method of obtaining metal ions from a battery, the method comprising adding a crushed battery to a leaching solution comprising fruit and an ammonium salt, thereby obtaining a leachate comprising metal ions.

[Continued on next page]

Declarations under Rule 4.17:

— *of inventorship (Rule 4.17(iv))*

Published:

— *with international search report (Art. 21(3))*
— *in black and white; the international application as filed
contained color or greyscale and is available for download
from PATENTSCOPE*