

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

(19) World Intellectual Property
Organization
International Bureau

(43) International Publication Date
25 April 2019 (25.04.2019)



(10) International Publication Number
WO 2019/078735 A1

(51) International Patent Classification:
C22B 3/18 (2006.01) C22B 11/00 (2006.01)
(21) International Application Number:
PCT/NZ2018/050144

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).

(22) International Filing Date:
17 October 2018 (17.10.2018)

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

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:
736489 17 October 2017 (17.10.2017) NZ
737908 30 November 2017 (30.11.2017) NZ

(71) Applicant: MINT INNOVATION LIMITED [NZ/NZ];
24 Balfour Road, Parnell, Auckland, 1052 (NZ).

(72) Inventors: CRUSH, Oliver; c/o Mint Innovation Limited,
24 Balfour Road, Parnell, Auckland, 1052 (NZ). WHITBY,
Reece; c/o Mint Innovation Limited, 24 Balfour Road, Par-
nell, Auckland, 1052 (NZ). SMITH, Ryan; c/o Mint Inno-
vation Limited, 24 Balfour Road, Parnell, Auckland, 1052
(NZ).

(74) Agent: CATALYST INTELLECTUAL PROPERTY;
Level 5, 45 Johnston Street, Wellington, 6011 (NZ).

(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, SM, ST, SV, SY, TH, TJ, TM, TN,
TR, TT, TZ, UA, UG, US, UZ, VC, VN, 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,

(54) Title: A PROCESS FOR RECOVERING METAL FROM ELECTRONIC WASTE

(57) Abstract: The invention relates to a method for recovering precious metals from electronic waste. In particular, biometallurgical techniques are utilised during the process. In a first aspect, the invention provides a method of recovering one or more target metals from electronic waste, the method comprising (a) a pre-processing step comprising removing at least a portion of non-target material from the electronic waste or grinding to a preselected size particle to give pre-processed electronic waste; (b) a dissolving step comprising contacting the pre-processed electronic waste with a lixiviant such that at least a portion of the target metal(s) dissolve into the lixiviant to produce a pregnant solution; (c) a biosorption step comprising contacting a microorganism with the pregnant solution such that at least a portion of the target metal(s) ions biosorb to the microorganism wherein the microorganism becomes metal laden and the pregnant solution becomes barren; (d) a separating step comprising substantially separating the metal laden microorganism from the barren solution; and (e) a recovery step comprising recovery of the target metal(s) from the metal laden microorganism. In particular embodiments, the target metal is gold.

WO 2019/078735 A1