

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

(19) World Intellectual Property  
Organization  
International Bureau

(43) International Publication Date  
10 September 2020 (10.09.2020)



(10) International Publication Number  
**WO 2020/180242 A1**

(51) International Patent Classification:

*B01J 13/02* (2006.01) *A01N 25/28* (2006.01)  
*C09D 5/14* (2006.01) *A01P 1/00* (2006.01)

(21) International Application Number:

PCT/SG2020/050025

(22) International Filing Date:

21 January 2020 (21.01.2020)

(25) Filing Language:

English

(26) Publication Language:

English

(30) Priority Data:

10201902068U 07 March 2019 (07.03.2019) SG

(71) Applicant: **AGENCY FOR SCIENCE, TECHNOLOGY AND RESEARCH** [SG/SG]; 1 Fusionopolis Way, #20-10 Connexis North Tower, Singapore 138632 (SG).

(72) Inventors: **ZHANG, Yugen**; c/o Institute of Bioengineering and Nanotechnology, 31 Biopolis Way, Nanos, Singapore 138669 (SG). **WANG, Jinquan**; c/o Institute of Bioengineering and Nanotechnology, 31 Biopolis Way, Nanos, Singapore 138669 (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, 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).

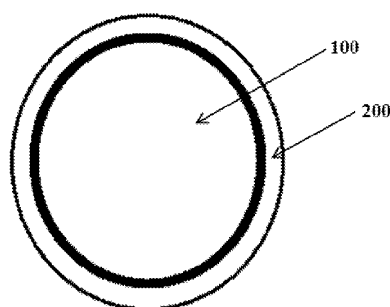
Declarations under Rule 4.17:

— 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

(54) Title: A COMPOSITE AND A METHOD OF PREPARING THE SAME



[Fig. 1]

(57) Abstract: There is provided a composite comprising an inorganic metal or alloy core at least partially covered by a protection layer comprising a carboxylate salt, a metal oxide, a metal oxide salt or a metal-amino acid complex. There is also provided a method of preparing the composite comprising an inorganic metal or alloy core at least partially covered by a protection layer comprising a carboxylate salt, a metal oxide, a metal oxide salt or a metal-amino acid complex, comprising the step of mixing a metal or alloy with an acid, at elevated temperature for a time duration, optionally in the presence of a solvent. There is also provided use of a composite as an antimicrobial agent, and uses of a composite in the treatment or prophylaxis of microbial infection. There is also provided a method of inhibiting microbial activity or treating a microbial infection or disease comprising administering an antimicrobial composition comprising said composite as disclosed herein to a subject or applying the antimicrobial composition on a surface.

WO 2020/180242 A1