

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

(19) World Intellectual Property
Organization
International Bureau

(43) International Publication Date
11 November 2021 (11.11.2021)



(10) International Publication Number
WO 2021/224776 A1

(51) International Patent Classification:

A23L 3/015 (2006.01) A47J 47/14 (2006.01)
D21H 11/12 (2006.01)

(21) International Application Number:

PCT/IB2021/053709

(22) International Filing Date:

04 May 2021 (04.05.2021)

(25) Filing Language:

English

(26) Publication Language:

English

(30) Priority Data:

63/019,845 04 May 2020 (04.05.2020) US
17/241,050 26 April 2021 (26.04.2021) US

(72) Inventors; and

(71) Applicants: CHEN, George Dah Ren [CN/CN]; Unit 319
Biotech Centre 2, 11 Science Park West Ave., Sha Tin, N.T.,
Hong Kong (CN). CHANG, Yiu Wen [CN/CN]; Unit 319

Biotech Centre 2, 11 Science Park West Ave., Sha Tin, N.T.,
Hong Kong (CN).

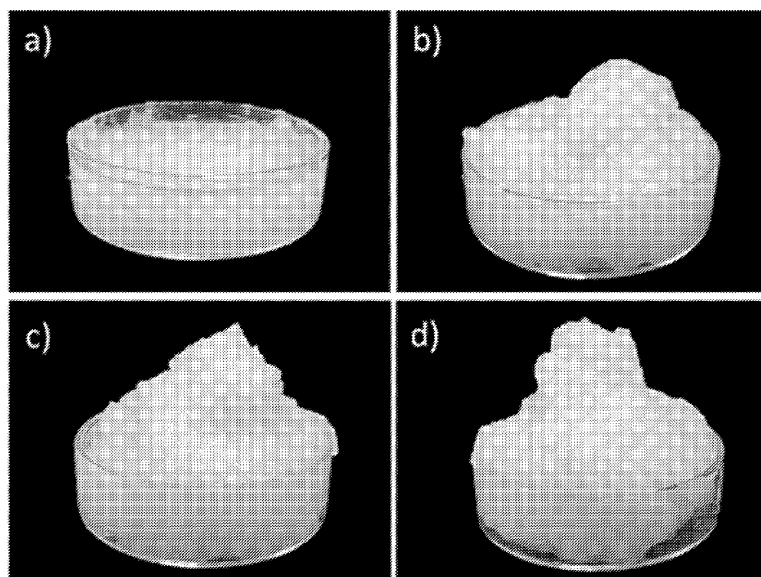
(74) Agent: ARTHUR T. YUAN; Loeb & Loeb LLP, 2206-19
Jardine House, 1 Connaught Place, Hong Kong (CN).

(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,

(54) Title: METHOD AND SYSTEM OF A FIBRILLATED CELLULOSE MATERIAL

FIG. 1



(57) Abstract: Embodiments overcome the shortcomings of prior technologies by infusing nanocellulose in a fibrillated form to enhance the properties of cellulose pulp. These properties may include the mechanical and barrier properties, i.e., tensile strength, liquid, and gas impermeability such as oxygen, carbon dioxide, and oil, can be improved substantially. Some embodiments further provide a fibrillated cellulose composite material that include properties of being a strength-enhancing agent, an oligomer, carboxylic acid, plasticizer, an antimicrobial agent, water repellent, and/or a transparent composite.

[Continued on next page]

WO 2021/224776 A1

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))*