

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

(19) World Intellectual Property
Organization
International Bureau

(43) International Publication Date
04 May 2023 (04.05.2023)



(10) International Publication Number
WO 2023/075694 A3

(51) International Patent Classification:
G01N 29/34 (2006.01) G01N 21/17 (2006.01)

(21) International Application Number:
PCT/SG2022/050770

(22) International Filing Date:
26 October 2022 (26.10.2022)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:
10202112031V 28 October 2021 (28.10.2021) 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, Lei**; c/o Institute of Materials Research and Engineering, 2, Innovis, Fusionopolis Way, #08-03, Singapore 138634 (SG). **KE, Lin**; c/o Institute of Materials Research and Engineering, 2, Innovis, Fusionopolis Way, #08-03, Singapore 138634 (SG).

(74) Agent: **DONALDSON & BURKINSHAW LLP**; 24 Raffles Place, #15-00 Clifford Centre, Singapore 048621 (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, CV, CZ, DE, DJ, DK, DM, DO, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, GT, HN, HR, HU, ID, IL, IN, IQ, IR, IS, IT, JM, JO, JP, KE, KG, KH, KN, KP, KR, KW, KZ, LA, LC, LK, LR, LS, LU, LY, MA, MD, 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,

(54) Title: A SYSTEM AND METHOD OF NON-CONTACT MEASUREMENT OF ONE OR MORE MECHANICAL PROPERTIES OF A MATERIAL

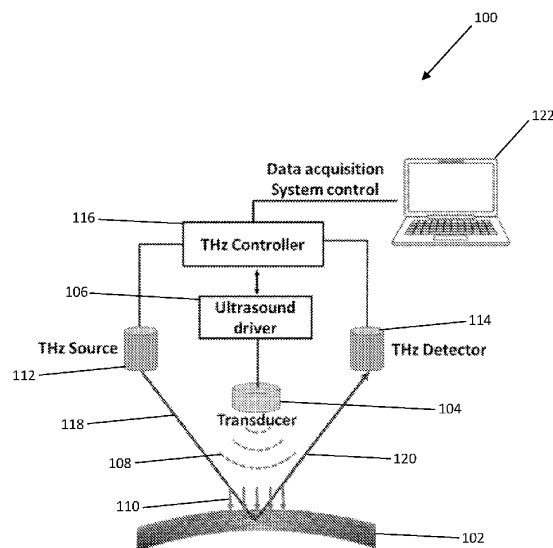


FIG. 1

(57) Abstract: There is provided a system and a method of non-contact measurement of one or more mechanical properties of a material, the system comprising an ultrasonic module comprising an ultrasonic applicator configured to apply ultrasonic pressure on a target region of the material; a detection module comprising an electromagnetic wave emitter and an electromagnetic wave detector, said electromagnetic wave emitter being configured to emit an incident beam of electromagnetic waves towards the target region of the material, and said electromagnetic wave detector being configured to detect an emergent beam of electromagnetic waves reflected from the target region and/or transmitted through the target region; and a processing module configured to determine one or more measures corresponding to the one or more mechanical properties of the material, based on changes in the emergent beam of electromagnetic waves.

[Continued on next page]

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, CV, 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, ME, 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))*
— *before the expiration of the time limit for amending the claims and to be republished in the event of receipt of amendments (Rule 48.2(h))*

(88) Date of publication of the international search report:

06 July 2023 (06.07.2023)