

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

(19) World Intellectual Property
Organization
International Bureau

(43) International Publication Date
07 October 2021 (07.10.2021)



(10) International Publication Number
WO 2021/197207 A1

(51) International Patent Classification:
G01B 11/24 (2006.01)

(21) International Application Number:
PCT/CN2021/083092

(22) International Filing Date:
25 March 2021 (25.03.2021)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:
202010255457.2 02 April 2020 (02.04.2020) CN

(71) Applicant: **ELEMENTARY OPTOMATION CO.LTD**
[CN/CN]; Room 801, Building 4, Creative Industry Park,
No.328 Xinghu Street, Suzhou Industrial Park, Suzhou,
Jiangsu 215123 (CN).

(72) Inventor: **FANG, Zhongping**; Room 801, Building 4, Cre-
ative Industry Park, No.328 Xinghu Street, Suzhou Indus-
trial Park, Suzhou, Jiangsu 215000 (CN).

(74) Agent: **SUZHOU JIAJIE TIANCHENG INTELLEC-
TUAL PROPERTY AGENCY**; Room 204, Building 1,
Jindu Building, Wuzhong Economic Development Zone,
Suzhou City, Jiangsu Province, Suzhou, Jiangsu 215000
(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,
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))

(54) Title: APPARATUS FOR SURFACE PROFILE MEASUREMENT

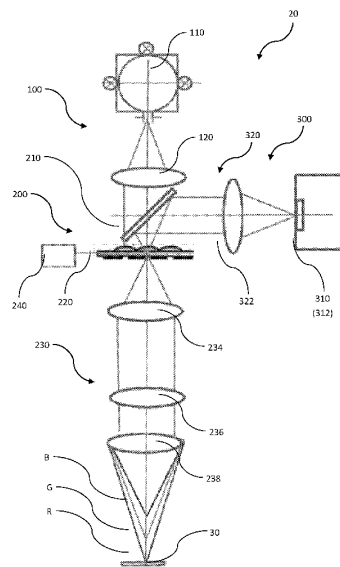


Figure 1

(57) Abstract: An apparatus (20) for measuring a surface profile of an object (30), the apparatus (20) comprising: a light source assembly (100) comprising a broadband light source (110); a confocal microscopy assembly (200) comprising: a beam splitter (210) for directing uniform light from the broadband light source (110) to the object (30); a pinhole device (220) comprising an array of pinholes (222) and an array of microlenses (224), the pinhole device (220) configured for passing the uniform light from the beam splitter (210) to the object (30); a set of incident optical elements (230) for directing the uniform light from the pinhole device (220) to the object (30) and causing chromatic aberration of the uniform light passing through the incident optical elements (230); and the pinhole device (220) configured for passing light reflected from the object (30) to the beam splitter (210); and an optical detection assembly (300) comprising: an optical detector (310); and a set of detection optical elements (320), wherein the surface profile of the object (30) is measurable based on spectral information of the reflected light received by the optical detector (310), the spectral information representing heights across the surface profile.

WO 2021/197207 A1