



(51) International Patent Classification:
G02B 21/33 (2006.01)

(21) International Application Number:
PCT/US2014/067958

(22) International Filing Date:
1 December 2014 (01.12.2014)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:
61/912,748 6 December 2013 (06.12.2013) US

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(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, DK, DM, DO, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, GT, HN, HR, HU, ID, IL, IN, IR, IS, JP, KE, KG, KN, KP, KR, 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,

[Continued on next page]

(54) Title: SEMI-SUBMERSIBLE MICROSCOPE OBJECTIVE WITH PROTECTIVE ELEMENT AND USE OF THE SAME IN MULTIPHOTON IMAGING METHOD

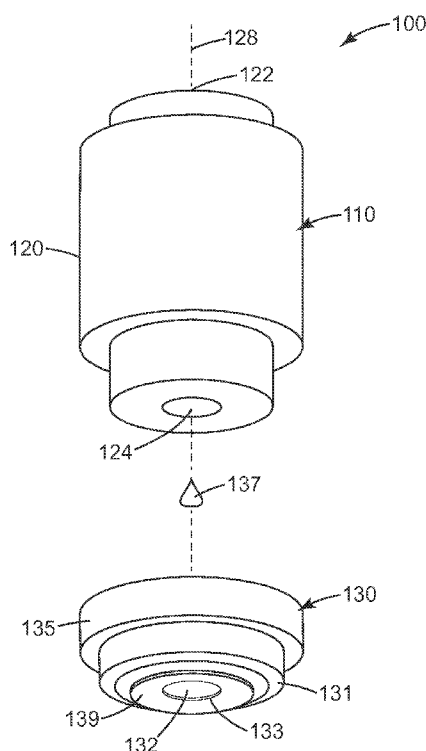


FIG. 1

(57) Abstract: A semi-submersible microscope objective (100) includes a microscope objective having a protective barrel (120) with an optical inlet (122) and optical outlet (124), and a protective element (130) affixed to the microscope objective, sealing the optical outlet (124) but not the optical inlet (122). A transparent portion (132) of the protective element is aligned with the optical exit (124). The protective element is separable from the microscope objective without damaging the microscope objective. Use of the semi-submersible microscope objective in a multiphoton imaging method is also disclosed.



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))*
- *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))*

Declarations under Rule 4.17:

- *as to applicant's entitlement to apply for and be granted a patent (Rule 4.17(ii))*

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

6 August 2015

INTERNATIONAL SEARCH REPORT

International application No
PCT/US2014/067958

A. CLASSIFICATION OF SUBJECT MATTER
INV. G02B21/33
ADD.

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)
G02B G01B G03F

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

EPO-Internal, WPI Data

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US 6 403 966 B1 (OKA MICHIO [JP]) 11 June 2002 (2002-06-11)	1-3
Y	figure 21	9-16

X	US 2006/187430 A1 (DODOC AURELIAN [DE] ET AL) 24 August 2006 (2006-08-24)	1-3
Y	figure 2	9-16

X	US 6 250 512 B1 (SALAMON PETER A [US]) 26 June 2001 (2001-06-26)	4-8
Y	column 1 - column 5	12-15

Y	US 2012/218535 A1 (THIEL MICHAEL [DE] ET AL) 30 August 2012 (2012-08-30) cited in the application figure 1	9-16

	-/-	



Further documents are listed in the continuation of Box C.



See patent family annex.

* Special categories of cited documents :

"A" document defining the general state of the art which is not considered to be of particular relevance

"E" earlier application or patent but published on or after the international filing date

"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)

"O" document referring to an oral disclosure, use, exhibition or other means

"P" document published prior to the international filing date but later than the priority date claimed

"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art

"&" document member of the same patent family

Date of the actual completion of the international search

29 May 2015

Date of mailing of the international search report

09/06/2015

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INTERNATIONAL SEARCH REPORT

International application No

PCT/US2014/067958

C(Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT		
Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	US 2013/183833 A1 (DUAN XUANMING [CN] ET AL) 18 July 2013 (2013-07-18)	9-16
A	paragraphs [0007], [0155] - [0158], [0169]; figure 14	8
A	----- KWANG-SUP LEE ET AL: "Recent developments in the use of two-photon polymerization in precise 2D and 3D microfabrications", POLYMERS FOR ADVANCED TECHNOLOGIES, vol. 17, no. 2, 1 February 2006 (2006-02-01), pages 72-82, XP055192235, ISSN: 1042-7147, DOI: 10.1002/pat.664 the whole document -----	9

INTERNATIONAL SEARCH REPORT

International application No.
PCT/US2014/067958

Box No. II Observations where certain claims were found unsearchable (Continuation of item 2 of first sheet)

This international search report has not been established in respect of certain claims under Article 17(2)(a) for the following reasons:

1. ☐ Claims Nos.:
because they relate to subject matter not required to be searched by this Authority, namely:

2. ☐ Claims Nos.:
because they relate to parts of the international application that do not comply with the prescribed requirements to such an extent that no meaningful international search can be carried out, specifically:

3. ☐ Claims Nos.:
because they are dependent claims and are not drafted in accordance with the second and third sentences of Rule 6.4(a).

Box No. III Observations where unity of invention is lacking (Continuation of item 3 of first sheet)

This International Searching Authority found multiple inventions in this international application, as follows:

see additional sheet

1. ☒ As all required additional search fees were timely paid by the applicant, this international search report covers all searchable claims.
2. ☐ As all searchable claims could be searched without effort justifying an additional fees, this Authority did not invite payment of additional fees.
3. ☐ As only some of the required additional search fees were timely paid by the applicant, this international search report covers only those claims for which fees were paid, specifically claims Nos.:
4. ☐ No required additional search fees were timely paid by the applicant. Consequently, this international search report is restricted to the invention first mentioned in the claims; it is covered by claims Nos.:

Remark on Protest

- ☐ The additional search fees were accompanied by the applicant's protest and, where applicable, the payment of a protest fee.
- ☐ The additional search fees were accompanied by the applicant's protest but the applicable protest fee was not paid within the time limit specified in the invitation.
- ☒ No protest accompanied the payment of additional search fees.

FURTHER INFORMATION CONTINUED FROM PCT/ISA/ 210

This International Searching Authority found multiple (groups of) inventions in this international application, as follows:

1. claims: 1-3

details of a detachable protective element

2. claims: 4-8

protective coatings

3. claims: 9-16

multi-photon imaging method

INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No

PCT/US2014/067958

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
US 6403966	B1	11-06-2002	JP 4438111 B2 24-03-2010
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			EP 2492085 A1 29-08-2012
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