PATENT COOPERATION TREATY

From the INTERNATIONAL SEARCHING AUTHORITY

PCT

To:
Nguyen, Jean
Morrison Foerster
707 Wilshire Boulevard
Los Angeles CA 90017-3543
ETATS-UNIS D'AMERIQUE

INVITATION TO PAY ADDITIONAL FEES
AND, WHERE APPLICABLE, PROTEST FEE

(PCT Article 17(3)(a) and Rule 40.1 and 40.2(e))

	Date of mailing *(day/month/year)*: 14 January 2019 (14-01-2019)
Applicant's or agent's file reference: 750722002440	**PAYMENT DUE** within **ONE MONTH** from the above date of mailing
International application No.: PCT/US2018/053237	International filing date *(day/month/year)*: 27 September 2018 (27-09-2018)
Applicant: MASSETA TECHNOLOGIES LLC	

1. This International Searching Authority

(i) considers that there are 2 *(number of)* inventions claimed in the international application covered by the claims indicated on an extra sheet:

(ii) therefore considers that **the international application does not comply with the requirements of unity of invention** (Rules 13.1, 13.2 and 13.3) for the reasons indicated on an extra sheet:

(iii) [X] has carried out a partial international search (see Annex) [ ] will establish the international search report on those parts of the international application which relate to the invention first mentioned in claims Nos.:

see extra sheet

(iv) will establish the international search report on the other parts of the international application only if, and to the extent to which, additional fees are paid.

2. Consequently, the applicant is hereby **invited to pay,** within the time limit indicated above, the amount indicated below:

EUR 1.775,00	x	1	=	EUR 1.775,00
Fee per additional invention		number of additional inventions		currency/total amount of additional fees

3. The applicant is informed that, according to Rule 40.2(c), **the payment of any additional fee may be made under protest,** i.e., a reasoned statement to the effect that the international application complies with the requirement of unity of invention or that the amount of the required additional fee is excessive, where applicable, subject to the payment of a protest fee.

Where the applicant pays additional fees under protest, the applicant is hereby invited, within the time limit indicated above, to pay a protest fee (Rule 40.2(e)) in the amount of EUR 875,00 *(currency/amount)*

Where the applicant has not, within the time limit indicated above, paid the required protest fee, the protest will be considered not to have been made and the International Searching Authority will so declare.

4. [ ] Claim(s) Nos. _____ have been found to be unsearchable under Article 17(2)(b) because of defects under Article 17(2)(a) and therefore have not been included with any invention.

Name and mailing address of the International Searching Authority	Authorized officer
European Patent Office, P.B. 5818 Patentlaan 2 NL-2280 HV Rijswijk Tel. (+31-70) 340-2040 Fax: (+31-70) 340-3016	SALAüN, Marion Tel: +49 (0)89 2399-2126

Form PCT/ISA/206 (April 2005)

Registered Mail

INVITATION TO PAY ADDITIONAL FEES

International application No.
PCT/US2018/053237

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

1. claims: 1-9, 18-20

System for investigating a sample and a corresponding method for operating the system

---

2. claims: 10-17

Light emitter

---

1. This Authority considers that the application does not meet the requirements of unity of invention and that there are two inventions covered by the claims indicated as follows:
- Invention I [claims 1-9 and 18-20]: System for investigating a sample and a corresponding method for operating the system.
- Invention II [claims 10-17]: Light emitter.
The reasons for which the inventions are not so linked as to form a single general inventive concept, as required by Rule 13.1 PCT, are as follows.
2. The common matter linking together the two inventions [claim 1 and claim 10] can be regarded as: a light emitter.
This common matter is known per se. However, for sake of completeness, reference is made to document D1, which discloses a light emitter in a system for investigating a sample (Fig. 5, par. 47).
In particular, D1 discloses a system comprising:
at least one light emitter that emits light (Fig. 5, par. 47: "light source 30");
a system interface (see Fig. 5: interface between the sample 36 and the element 32) including:
a launch region from which the light emitted by the at least one light emitter is capable of exiting the system (see Fig. 5: launch region 32), wherein the launch region includes a first dimension and a second dimension, the second dimension of the launch region is elongated relative to the first dimension of the launch region, wherein the launch region is configured to form (see Fig. 5: launch region 32), from the light emitted by the at least one light emitter, a first light beam having a second dimension that is elongated relative to a first dimension of the first light beam as the first light beam exits the system (see Fig. 5: the light beam incident on the sample 36, wherein the second dimension of the light beam is the propagation direction of the light beam), and
a detection region through which light is capable of entering the system (see Fig. 5: detection region region 32), wherein the detection region includes a first dimension and a second dimension, the second dimension of the detection region elongated relative to the first dimension of the detection region (see Fig. 5: detection region region 32), wherein the second dimension of the launch region is elongated along a same direction that the second dimension of the detection region is elongated (see Fig. 5), and wherein the detection region is configured to form, from the light entering the system, a second light beam within the system, the

second light beam having a second dimension that is elongated relative to a first dimension of the second light beam (see Fig. 5: the light beam incident on the detector 37, wherein the second dimension of the light beam is the propagation direction of the light beam);
a detector that detects at least a portion of the second light beam and generates one or more signals indicative of the portion of the second light beam (Fig. 5, par. 47: "sensing module 37"; Fig. 2, par. 34: "sensing module 27 senses the plurality of reflected lights to generate a sensing result related to the object to be diagnosed 26"); and
logic that determines one or more sample properties from the one or more signals (Fig. 2, par. 34: "data processing module 28 generates an optical data related to a vertical cross-section of the object to be diagnosed 26 according to the sensing result").
Hence, the subject-matter of claim 1 is not novel over D1.
In addition, D1 discloses the subject-matter of claim 2 (see Fig. 5: launch/detection region 32).
3. Consequently, starting from D1 the special technical feature associated with Invention I can be regarded as [claim 3]: the second dimension of the detection region is longer than the second dimension of the launch region.
The special technical feature of Invention II can be regarded as:
one or more waveguides that output the light emitted by the one or more light sources; and one or more outcouplers that direct the light, output by the one or more waveguides, to a second plane, wherein the light directed by the one or more outcouplers is a first light beam having different properties relative to the light output by the one or more waveguides, the properties including in-plane launch angles, in-plane launch locations, or both; wherein the first light beam has a second dimension that is elongated relative to a first dimension of the first light beam.
Thus, the special technical features of Inventions I and II are not same special technical features.
4. Accordingly, the technical effect associated with Inventions I is: allowing to collect more light that may undergo multiple small-angle scattering events (see par. 67 of the present invention).
The corresponding technical effect of the Invention II is: providing a light emitter.
Thus, the special technical features of Inventions I and II are not corresponding special technical features.
5. Hence, the separate Inventions I and II comprise neither the same, nor corresponding special technical features, so the technical relationship between the subject matter of the separate Inventions I and II required by Rule 13.2 PCT is lacking and the claims are not so linked as to form a single general inventive concept as required by Rule 13.1 PCT.
Consequently the application does not meet the requirement for unity of invention.

Annex to Form PCT/ISA/206
COMMUNICATION RELATING TO THE RESULTS OF THE PARTIAL INTERNATIONAL SEARCH

International Application No
PCT/US2018/053237

1. The present communication is an Annex to the invitation to pay additional fees (Form PCT/ISA/206). It shows the results of the international search established on the parts of the international application which relate to the invention first mentioned in claims Nos.:
see 'Invitation to pay additional fees'
2. This communication is not the international search report which will be established according to Article 18 and Rule 43.

3. If the applicant does not pay any additional search fees, the information appearing in this communication will be considered as the result of the international search and will be included as such in the international search report.

4. If the applicant pays additional fees, the international search report will contain both the information appearing in this communication and the results of the international search on other parts of the international application for which such fees will have been paid.

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category °	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US 2012/033211 A1 (WANG WILLIAM [TW] ET AL) 9 February 2012 (2012-02-09) paragraphs [0032] - [0049]; figures 2, 5, 7	1,2,18, 19
X	WO 2017/040431 A1 (BRIBBLA DYNAMICS LLC [US]) 9 March 2017 (2017-03-09) paragraphs [0064], [0065], [0087] - [0145]; figures 8, 13-17	1,3-6,8, 9,18-20
X	US 2016/091368 A1 (FISH GREGORY ALAN [US] ET AL) 31 March 2016 (2016-03-31) paragraphs [0013] - [0017], [0021], [0026] - [0037]; figures 1A, 1B, 2B, 3	1-6,8,9, 18-20
X	US 2015/177065 A1 (WU XUECHENG [CN] ET AL) 25 June 2015 (2015-06-25) paragraphs [0043] - [0049]; figure 1	1,3-6, 18-20
X	US 6 122 042 A (WUNDERMAN IRWIN [US] ET AL) 19 September 2000 (2000-09-19) figures 2A - 2C column 2, line 61 - line 65 column 12, line 34 - column 13, line 19	1,2,7, 18,19
X,P	WO 2017/184423 A1 (BRIBBLA DYNAMICS LLC [US]) 26 October 2017 (2017-10-26) paragraphs [0029] - [0032]; figure 2	1-9, 18-20

-/--

[X] Further documents are listed in the continuation of box C.

[X] Patent family members are listed in 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 document 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

2

Annex to Form PCT/ISA/206
COMMUNICATION RELATING TO THE RESULTS OF THE PARTIAL INTERNATIONAL SEARCH

International Application No
PCT/US2018/053237

C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category °	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X,P	WO 2017/184420 A1 (BRIBBLA DYNAMICS LLC [US]) 26 October 2017 (2017-10-26) paragraphs [0067] - [0084], [0088] - [0104]; figures 4A, 4I, 5, 6, 7	1-9, 18-20

2

Patent Family Annex

Information on patent family members

International Application No
PCT/US2018/053237

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
US 2012033211 A1	09-02-2012	TW 201207375 A	16-02-2012
		US 2012033211 A1	09-02-2012
WO 2017040431 A1	09-03-2017	AU 2016316933 A1	08-03-2018
		CN 108449957 A	24-08-2018
		EP 3344971 A1	11-07-2018
		KR 20180036757 A	09-04-2018
		US 2018238794 A1	23-08-2018
		WO 2017040431 A1	09-03-2017
US 2016091368 A1	31-03-2016	EP 3002568 A1	06-04-2016
		US 2016091368 A1	31-03-2016
		US 2018045566 A1	15-02-2018
US 2015177065 A1	25-06-2015	AU 2013327811 A1	27-11-2014
		CN 103842797 A	04-06-2014
		US 2015177065 A1	25-06-2015
		WO 2014179976 A1	13-11-2014
US 6122042 A	19-09-2000	NONE	
WO 2017184423 A1	26-10-2017	NONE	
WO 2017184420 A1	26-10-2017	KR 20180123129 A	14-11-2018
		WO 2017184420 A1	26-10-2017

Application no:
Demande nº:
Anmelde-Nr: PCT/US2018/053237

DISCLAIMER

The attached provisional opinion on the patentability of the first invention searched serves only as information.
A reply addressing the points raised in the opinion is **not** required and will **not** be taken into account when issuing the final search report and opinion on patentability.

AVERTISSEMENT

L'avis provisoire ci-joint sur la brevetabilité de la première invention recherchée ne sert qu'à titre d'information.
Une réponse abordant les points soulevés dans l'avis n'est **pas** nécessaire et ne sera **pas** prise en compte lors de l'établissement du rapport final de la recherche et de l'avis sur la brevetabilité.

DISCLAIMER

Die beigefügte vorläufige Stellungnahme zur Patentierbarkeit der ersten geprüften Erfindung dient lediglich zur Information.
Eine Antwort auf die erhobenen Punkte in der Stellungnahme ist **nicht** erforderlich und bleibt bei der Erstellung des endgültigen Recherchenberichts und der Stellungnahme zur Patentierbarkeit **unberücksichtigt**.

1 **Mentioned prior art**

2 Reference is made to the following documents:

D1 US 2012/033211 A1 (WANG WILLIAM [TW] ET AL) 9 February 2012 (2012-02-09)

D2 WO 2017/040431 A1 (BRIBBLA DYNAMICS LLC [US]) 9 March 2017 (2017-03-09)

D3 US 2016/091368 A1 (FISH GREGORY ALAN [US] ET AL) 31 March 2016 (2016-03-31)

D4 US 2015/177065 A1 (WU XUECHENG [CN] ET AL) 25 June 2015 (2015-06-25)

D5 US 6 122 042 A (WUNDERMAN IRWIN [US] ET AL) 19 September 2000 (2000-09-19)

D6 WO 2017/184423 A1 (BRIBBLA DYNAMICS LLC [US]) 26 October 2017 (2017-10-26)

D7 WO 2017/184420 A1 (BRIBBLA DYNAMICS LLC [US]) 26 October 2017 (2017-10-26)

3 **Re Item IV**

Lack of unity of invention

3.1 This Authority considers that the application does not meet the requirements of unity of invention and that there are two inventions covered by the claims indicated as follows:

- Invention I [claims 1-9 and 18-20]: System for investigating a sample and a corresponding method for operating the system.

- Invention II [claims 10-17]: Light emitter.

The reasons for which the inventions are not so linked as to form a single general inventive concept, as required by Rule 13.1 PCT, are as follows.

3.2 The common matter linking together the two inventions [claim 1 and claim 10] can be regarded as: *a light emitter*.

This common matter is known *per se*. However, for sake of completeness, reference is made to document **D1**, which discloses *a light emitter* in a system for investigating a sample (Fig. 5, par. 47).

In particular, **D1** discloses a system comprising:
at least one light emitter that emits light (Fig. 5, par. 47: "light source 30");
a system interface (see Fig. 5: interface between the sample 36 and the element 32) including:
a launch region from which the light emitted by the at least one light emitter is capable of exiting the system (see Fig. 5: launch region 32), wherein the launch region includes a first dimension and a second dimension, the second dimension of the launch region is elongated relative to the first dimension of the launch region, wherein the launch region is configured to form (see Fig. 5: launch region 32), from the light emitted by the at least one light emitter, a first light beam having a second dimension that is elongated relative to a first dimension of the first light beam as the first light beam exits the system (see Fig. 5: the light beam incident on the sample 36, wherein the second dimension of the light beam is the propagation direction of the light beam), and
a detection region through which light is capable of entering the system (see Fig. 5: detection region 32), wherein the detection region includes a first dimension and a second dimension, the second dimension of the detection region elongated relative to the first dimension of the detection region, wherein the second dimension of the launch region is elongated along a same direction that the second dimension of the detection region is elongated (see Fig. 5), and wherein the detection region is configured to form, from the light entering the system, a second

light beam within the system, the second light beam having a second dimension that is elongated relative to a first dimension of the second light beam (see Fig. 5: the light beam incident on the detector 37, wherein the second dimension of the light beam is the propagation direction of the light beam);
a detector that detects at least a portion of the second light beam and generates one or more signals indicative of the portion of the second light beam (Fig. 5, par. 47: "sensing module 37"; Fig. 2, par. 34: "sensing module 27 senses the plurality of reflected lights to generate a sensing result related to the object to be diagnosed 26"); and
logic that determines one or more sample properties from the one or more signals (Fig. 2, par. 34: "data processing module 28 generates an optical data related to a vertical cross-section of the object to be diagnosed 26 according to the sensing result").

Hence, the subject-matter of **claim 1** is not novel over **D1**.

In addition, **D1** discloses the subject-matter of **claim 2** (see Fig. 5: launch/ detection region 32).

3.3 Consequently, starting from **D1** the special technical feature associated with **Invention I** can be regarded as [claim 3]: *the second dimension of the detection region is longer than the second dimension of the launch region.*

The special technical feature of **Invention II** can be regarded as:
one or more waveguides that output the light emitted by the one or more light sources; and
one or more outcouplers that direct the light, output by the one or more waveguides, to a second plane,
wherein the light directed by the one or more outcouplers is a first light beam having different properties relative to the light output by the one or more waveguides, the properties including in-plane launch angles, in-plane launch locations, or both;
wherein the first light beam has a second dimension that is elongated relative to a first dimension of the first light beam.

Thus, the special technical features of **Inventions I** and **II** are not same special technical features.

3.4 Accordingly, the technical effect associated with **Inventions I** is: allowing to collect more light that may undergo multiple small-angle scattering events (see par. 67 of the present invention).

The corresponding technical effect of the **Invention II** is: providing a light emitter.

Thus, the special technical features of **Inventions I** and **II** are not corresponding special technical features.

3.5 Hence, the separate **Inventions I** and **II** comprise neither the same, nor corresponding special technical features, so the technical relationship between the subject matter of the separate **Inventions I** and **II** required by Rule 13.2 PCT is lacking and the claims are not so linked as to form a single general inventive concept as required by Rule 13.1 PCT.

Consequently the application does not meet the requirement for unity of invention.

4 Re Item VIII

4.1 Insufficiency of disclosure (Article 5 PCT)

The invention such as defined in **claims 1** and **18** is not sufficiently disclosed.

Neither the claim nor the description of the present application provides clear instructions on how to select the first and second dimensions of the launch region, detection region and the first and second light beams. In particular, neither the claim nor the description of the present application clearly defines which physical dimensions are meant by the first and the second dimension of the launch and detection region (height, width, length, diagonal, volume, cross-section?) of of the first and second light beams (dimensions of the cross-section of the beam or radial and propagation dimensions?). Moreover, there is no clear indication in the claim on how to arrange the launch region, detection region and the sample with respect to each other and which sample property is determined.

Due to this severe lack of clarity, the skilled person is not able to carry out the invention such as defined in **claims 1** and **18**.

4.2 Certain defects with regard to Article 6 PCT

4.2.1 The terms "first dimension" and "second dimension" used **claims 1** and **18** are not clear in the context of the claims. In particular, it is not clear to which physical dimension of the launch and detection region the term "dimension" refers (height, width, length, diagonal, volume, cross-section?). Also in the context of the first and second beam it is not clear to which physical dimension of the beam the term "dimension" refers (dimensions of the cross-section of the beam, radial dimension, propagation dimension?)

4.2.2 From the wording of **claims 1** and **18** it is not clear how the sample is arranged with respect to the system, and in particular with respect to the light emitter and the detector. Moreover, it is not clear which light is detected by the detector (transmitted, scattered, reflected, emitted by the sample?).

In order to meet the requirements of Article 6 PCT, it should have been clarified how the sample is arranged and which light is detected.

In addition, the generic terms/expressions "system" used in **claim 1** and "method for using a system" used in **claim 18** should have been clarified such as to clearly claim a system for sample investigation and a method for investigating a sample.

4.2.3 Due to this severe lack of clarity of **claims 1** and **18** the search was based on a system detecting the light scattered/reflected from a sample and on the interpretation of the second dimension of the light beam being the propagation dimension of the light beam.

4.2.4 **Claim 4** is unclear in that it defines the subject-matter with the reference to the light beam, which is a not part of the system. Moreover, from the part of the claim with wording "the second light beam meets a change in angle criteria" it is not clear how the change in the angle criteria is created.

In addition, **claim 4** does not meet the requirements of Article 6 PCT because the claim attempts to define the subject-matter by in terms of the **result to be** achieved, since it only mentions an arbitrary optics without defining which features of the optics make it suitable for selectively allowing a portion of the second light beam to the detector.

4.2.5 **Claim 5** is defined by the reference to the change in the angle criteria and a targeted optical path. However, it is not clear how the change in the angle criteria and/or a certain optical path is created. In

particular, it is not clear which technical features of the system allow for the setting of a certain optical path and/or for the selection of a certain change in angle criteria.

4.2.6 **Claim 6** does not meet the requirements of Article 6 PCT because the matter for which protection is sought is not clearly defined. The claim attempts to define the subject-matter by "the detection region forms the second light beam by selectively allowing light, from the light entering the system, that meets a change in angle criteria" in terms of the **result to be achieved**, which merely amounts to a statement of the underlying problem, without providing the technical features necessary for achieving this result.

4.2.7 From the wording of **claim 7** it is not clear where the reflector is located with respect to the light source, the outcouplers and the launch region.

In addition, **claim 7** claims a specific arrangement of the light source and the detector with respect to the reflector. However, the instructions provided in the claim as well as in the description of the present application are not sufficient to carry out the system of claim 7, especially since the arrangement is defined with reference to a total of a targeted optical path length, which is not clearly defined. Thus, **claim 7** is not sufficiently disclosed (Art. 5 PCT)

5 **Re Item V**

Reasoned statement with regard to novelty and inventive step

The present application does not meet the criteria of Article 33(1) PCT, because the subject-matter of **claims claims 1 - 6** and **18 - 20** is not new in the sense of Article 33(2) PCT, and because the subject-matter of **claims 1 - 9** and **18 - 20** does not involve an inventive step in the sense of Article 33(3) PCT.

5.1 **Independent system claim 1**

5.1.1 The subject-matter of **claim 1** is not novel over **D1** (see the comments given in unit 3.2 of this opinion).

5.1.2 The subject-matter of **claim 1** is also not novel over **D2**, which discloses a system comprising *at least one light emitter that emits light* [Fig. 13: light source 1302]*; a system interface* [Fig. 13: interface between the system 1300 and the sample 1320]; *a launch region* [Fig. 13: input region 1382]*, a first light beam having a second dimension that is elongated relative to a first dimension of the first light beam as the first light beam exits the system* [Fig. 13: light beam 1352, wherein the second dimension of the light beam is the propagation direction of the light beam]*; a detection region* [Fig. 13: optics 1310]; *a second light beam within the system, the second light beam having a second dimension that is elongated relative to a first dimension of the second light beam* [Fig. 13: light beam 1354, 1355, wherein the second dimension of the light beam is the propagation direction of the light beam]*; a detector that detects at least a portion of the second light beam and generates one or more signals indicative of the portion of the second light beam* [Fig. 13: detector array 1330, par. 96: "Detector pixel 1333 can detect light 1366 and can generate an electrical signal indicative of the properties of light 1366"]*; and logic that determines one or more sample properties from the one or more signals* [Fig. 13, par. 96: "Controller 1340 can utilize the signal information measured from light 1354 to determine the reflectivity or concentration of the substance located at location 1357 within sample 1320"].

5.1.3 The subject-matter of **claim 1** is also not novel over **D3**, which discloses a system comprising *at least one light emitter that emits light* [Fig. 2B: light sources 202]*; a system interface* [see Fig. 2B: interface between the system and the sample 290]; *a launch region* [Fig. 2B: coupler 204]*, a first light beam having a second dimension that is elongated relative to a first dimension of the first light beam as the first light beam exits the system* [Fig. 2B: first light beam 230, wherein the second dimension of the light beam is the propagation direction of the light beam]*; a detection region* [Fig. 2B: region associated to detectors 211-214]; *a second light beam within the system, the second light beam having a second dimension that is elongated relative to a first dimension of the second light beam* [Fig. 2B: second light beam 235, wherein the second dimension of the light beam is the propagation direction of the light beam]*; a detector that detects at least a portion of the second light beam and generates one or more signals indicative of the portion of the second light beam* [Fig. 2B: detectors 211-214; generating signals is implicit]*; and logic that determines one or more sample properties from the one or more signals*

[follows directly from par. 21: "may be used for spectroscopic processes (e.g., determining aspects of an object based on the interaction of the object with electromagnetic radiation, such as light)" or par. 37: "detect characteristics of the media for sensing"].

5.1.4 Moreover, also **D4** discloses a system according to **claim 1** comprising *at least one light emitter that emits light* [Fig. 1, par. 45: "laser 45"]*; a system interface* [Fig. 1: interface between the system with elements 4, 5 and the sample 11]; *a launch region* [Fig. 1: launch region 4]*, a first light beam having a second dimension that is elongated relative to a first dimension of the first light beam as the first light beam exits the system* [Fig. 1: first beam incident on the sample 11]*; a detection region* [Fig. 1: detection region 5]; *a second light beam within the system, the second light beam having a second dimension that is elongated relative to a first dimension of the second light beam* [Fig. 1: second beam incident on the detector 10]*; a detector that detects at least a portion of the second light beam and generates one or more signals indicative of the portion of the second light beam* [Fig. 1, par. 48: "signal collector 10"; generating signals is implicit]*; and logic that determines one or more sample properties from the one or more signals* [par. 49: "signal processing unit ... obtain the measured values"].

Hence, the subject-matter of **claim 1** is not novel over **D4**.

5.1.5 **D5** also discloses a system according to **claim 1** and comprising *at least one light emitter that emits light* [Fig. 2A, col. 12, l. 37: "LEDs 46"]*; a system interface* [Fig. 2A: interface between the element 50, 56 and the sample 32]; *a launch region* [Fig. 2A, col. 12, l. 38: "clear epoxy 50"]*, a first light beam having a second dimension that is elongated relative to a first dimension of the first light beam as the first light beam exits the system* [Fig. 2A: first beam incident on the sample 32, wherein the second dimension of the light beam is the propagation direction of the light beam]*; a detection region* [Fig. 2A, col. 12, l. 45: "clear epoxy 56"]; *a second light beam within the system, the second light beam having a second dimension that is elongated relative to a first dimension of the second light beam* [Fig. 2A: second beam incident on the detector 48, wherein the second dimension of the light beam is the propagation direction of the light beam]*; a detector that detects at least a portion of the second light beam and generates one or more signals indicative of the portion of the second light beam* [Fig. 2A, col. 12, l. 47: "detectors 48";

generating signals is implicit]*; and logic that determines one or more sample properties from the one or more signals* [follows directly from col. 2, l. 61-65: "identification process for "real time" material/object/property identification"].

Hence, the subject-matter of **claim 1** is not novel over **D5**.

5.2 For analogous reasons as for claim 1 also the subject-matter of the independent method **claim 18** is not new in view of any of **D1** to **D5**.

5.3 Dependent **claims 2 - 9**, **19** and **20** do not appear to contain any additional features which, in combination with the features of any claim to which they refer, meet the requirements of the PCT with respect to novelty and/or inventive step.

In particular, **claim 2** is not new in view of **D1** (see Fig. 5: launch/detection region 32), **D3** (see Fig. 3: launch/detection region 320) and **D5** (see Fig. 2A: launch region 50, detection region 56).

Claim 3 is not new in view of **D2** (see Fig. 13: launch region 1382, detection region 1310) and **D3** (see Fig. 2B: launch region 204, detection region 211-214) and **D4** (see Fig. 1).

The above-mentioned lack of clarity notwithstanding, the subject-matter of **claims 4 - 6** is not new in view of **D2** (see Fig. 16, par. 120: "optics 1616 ... Aperture 1686 can be capable of selecting light with one or more specific path lengths, angles of incidence, or both and rejecting or attenuating light with other path lengths or angles of incidence ... accepting one or more incident light rays with a path length within a range of path lengths and an angle of incidence within a range of angles, and rejecting optical paths with a path length outside the range of path lengths and with an angle of incidence outside the range of angles"; also from Fig. 13 it is clear that light beams 1354 and 1355 are measured separately).

The subject-matter of **claims 4 - 6** is also not new in view of **D3** (see Figs. 2A, 2B and par. 31: "multiple lenses 221-225 to collect light emitted from the media for sensing 290 at different angles"), and in view of **D4** (par. 48: "the range of detecting rainbow angle is 10°-20°").

Claim 7 is not new in view of **D5** (Fig. 2A, col. 12, l. 39-40: "reflective member;" see also the comments regarding the clarity of the claim provided in unit 4.5 of the opinion).

Claims 8, **9** relate to obvious modifications of the system of **D2** or **D3** and are therefore not inventive.

Claim 19 is not new in view of **D2** (see Fig. 8, par. 64: "Filter 806 can be any filter capable of tuning and selecting a single wavelength", par. 65: "chopper 834 can modulate the intensity of light 854"), **D3** (see Figs. 1A, 1B: modulator array 114, multiplexer 170; and par. 13-17) and in view of **D5** (col. 12, l. 37: "sequentially activated LEDs 46").

It is noted that even switching the light source on and off can be regarded as selectively controlling a parameter of the light source. Thus, the subject-matter of claim 19 in also not new in view of **D1** and **D4**.

Claim 20 is not new in view of **D2** (see Fig. 13, par. 89: "lens 1310 ... capable of changing the behavior and properties of the incoming light", see also Figs 14 - 17), **D3** (see Figs. 2A, 2B and par. 31: "multiple lenses 221-225 to collect light emitted from the media for sensing 290 at different angles") and **D4** (par. 48: "the range of detecting rainbow angle is 10°-20°").

6 **Re Item VI**

With entry into European phase also the intermediate documents **D6** and **D7**, which were published after the filing date of the present application, but have earlier priority date, will become relevant with regard to novelty of **claims 1**, **2 - 9** and **18 - 20** (see **D6**: Fig. 2 and par. 29-32; and **D7**: Figs 4A, 4I, 5-7 and par. 67-84, 88-104).

7 **Re Item VII**

Certain defects in the international application

7.1 To meet the requirements of Rule 5.1(a)(ii) PCT, the documents **D1 - D5** should have been identified in the description and the relevant background art disclosed therein should have been briefly discussed.

7.2 The features of claims are not provided with reference signs placed in parentheses (Rule 6.2(b) PCT).

7.3 The statements *"incorporate by reference"* in par. 1 should have been deleted (Art. 5 PCT and PCT/GL/ISPE/6, 4.26).