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D E C I S I O N
of 12 January 2005

Case Number: T 0906/03 - 3.4.2

Application Number: 93915341.7

Publication Number: 0727038

IPC: G01N 21/21

Language of the proceedings: EN

Title of invention:
Devices and methods for detection of an analyte based upon light interference

Applicant:
Thermo BioStar, Inc.

Opponent:
-

Headword:
-

Relevant legal provisions:
EPC Art. 84, 56

Keyword:
"Independent claims - clarity and inventive step (yes, after amendment)"

Decisions cited:
-

Catchword:
-

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Case Number: T 0906/03 - 3.4.2

D E C I S I O N
of the Technical Board of Appeal 3.4.2
of 12 January 2005

Appellant: Thermo BioStar, Inc.
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Representative: Viering, Jentschura & Partner
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Decision under appeal: **Decision of the Examining Division of the European Patent Office posted 12 March 2003 refusing European application No. 93915341.7 pursuant to Article 97(1) EPC.**

Composition of the Board:

Chairman: A. G. Klein
Members: M. A. Rayner
M. J. Vogel

Summary of Facts and Submissions

I. The patent applicant has appealed against the decision of the examining division refusing European patent application number 93 915 341.7 (= published international application WO94/03774), involving detecting analyte on a surface. In the decision under appeal, reference was made, amongst others, to the following documents:

D1 EP-A-0 067 921

D6 Geometrical and Physical Optics, Longhurst, published by Longmans, Green and Co, London, 1964, pp. 464-465.

II. In its decision, the division considered a lack of clarity to be caused by defining the claimed instrument in terms of a substrate to be tested, functional details and results to be achieved. In considering substantive patentability, so far as it could understand the claim presented, the division referred to page 9, lines 9-15 of document D1 in relation to incident, monochromatic, plane polarised light, drawing attention to page 10, lines 28-29 mentioning the vicinity of, which implies not exactly, the Brewster angle. The division explained that once measurement commences, in both the teaching of the application and document D1, the detector monitors change in intensity of light. The skilled person knew for example from document D6 that an analyser can be employed with or without a compensator. The division thus reached the view that the subject matter of claim 1 as presented to

it, so far as understood, did not involve an inventive step.

III. During the appeal proceedings, the appellant requested oral proceedings on an auxiliary basis. Consequent to this request, oral proceedings were appointed during which the appellant requested that the decision under appeal be set aside and that a patent be granted on the basis of

- claims 1-14 filed during the oral proceedings;
- description, pages 1-146 filed during the oral proceedings;
- drawings, pages 1-21, figures 1-18, as originally filed.

IV. In support of its request, the appellant argued that although settings of the optical components of the instrument are partly claimed in functional terms to explain their orientation with respect to a surface to be tested, this does not render the claim unclear because the skilled person knows a sample is held in conformity with the settings of the optical component as claimed and as shown in Figure 14A. Moreover, the independent claims are directed to an instrument without use of a result to be achieved in relation to the setting of the analysing polarizer. With respect to inventive step, the analysing polarizer is in a set position. Therefore operation of the instrument is in a steeper and thus more useful part of the performance curve. The device is factory set for various values and tests.

V. Claims 1 and 11, the only independent claims, are, according to the request of the appellant, worded as follows:

"1. An instrument to detect the presence or amount of an analyte on a test surface of a substrate, that participates in the generation of an optical effect, wherein said analyte reacts with said substrate surface, comprising:
a source (#1 in fig. 14A) of linearly polarized, monochromatic incident light that impinges on said substrate surface at an angle of incidence other than Brewster's angle relative to a normal to said surface, wherein said incident light is linearly polarized light comprising a first component polarized parallel to the plane of incidence and a second component polarized perpendicular to the plane of incidence;
an analyzing polarizer (#4 in fig. 14A) comprising an optical axis that is positioned at an angle of reflection that is equal to said angle of incidence, whereby elliptically polarized light reflected from said surface is received by said analyzing polarizer;
and a detector (#5 in fig. 14A) positioned to receive light from said analyzing polarizer, wherein the rotational angle of the analyzing polarizer is from 2° to 15° above the setting which aligns the polarizer for total extinction of light that is reflected from a blank test surface through the analyzing polarizer.

11. A method for analyzing a test surface of a substrate by an instrument to detect the presence or amount of an analyte on the test surface, that participates in the generation of an optical effect,

wherein an analyte on the test surface reacts with the substrate surface, comprising the steps of:
configuring and arranging the instrument to comprise:
a source (#1 in fig. l4A) of linearly polarized, monochromatic incident light that impinges on the substrate surface at an angle of incidence other than Brewster's angle relative to a normal to said surface, wherein said incident light is linearly polarized light comprising a first component polarized parallel to the plane of incidence and a second component polarized perpendicular to the plane of incidence;
an analyzing polarizer (#4 in fig. 14A) comprising an optical axis that is positioned at an angle of reflection that is equal to said angle of incidence, whereby elliptically polarized light reflected from said surface is received by said analyzing polarizer; and a detector (#5 in fig. 14A) positioned to receive light from said analyzing polarizer, wherein the rotational angle of the analyzing polarizer is from 2° to 15° above the setting which aligns the polarizer for total extinction of light that is reflected from the blank test surface through the polarizer."

VI. The board gave its decision at the end of the oral proceedings.

Reasons for the Decision

1. The appeal complies with the provisions referred to in Rule 65(1) EPC and is therefore admissible.

2. *Amendments*

Support for the amended independent claims in the documents as filed is provided by Figure 14A with associated description and example 26. The subject matter of the dependent claims was present in substance in the originally filed claims and the description has been amended for consistency with the claims and compliance with Rule 27 EPC.

3. *Clarity*

3.1 The examining division did not in its decision deal with any independent method claim. With respect to the instrument claim, independent claim 1 as presented to the board is worded differently to that presented to the examining division. The board is satisfied that claim 1 recites the optical parameters needed to define the essential features of the invented instrument, the last feature referring to a blank test surface. While the language of claim 1 as now presented is somewhat functional, in the present case this in itself does not amount to a reason for the claims to be considered unclear. Moreover, it can be observed that, in particular, the rotational angle specified in the last feature of the claim is quantified and can thus readily be checked by the skilled person. The board was therefore satisfied as to compliance of claim 1 with Article 84 EPC. The board reached the same conclusion with respect to independent method claim 11.

4. *Patentability*

4.1 The closest prior art document can be considered to be document D1. A difference between the subject matter of the independent claims and the disclosure of this document lies in the respective lastly claimed feature. Since, according to the appellants, this feature enables a more sensitive part of the response curve to be used, the problem solved can be considered to be that of improving performance.

Document D1 teaches that polarizers should be turned to achieve a minimum transmission (see for example page 9, line 33) and thus does not suggest a rotational angle from 2° to 15° above extinction alignment setting. The other document referred to by the first instance, document D6, was cited only in relation to using or not using an optical compensator. There is nothing in document D6, nor indeed any other document in the file, which suggests modifying the instrument of document D1 so as to have a rotational angle as claimed. Therefore, on the basis of the available prior art, the subject matter of the independent claims cannot be reached in an obvious way. The board is therefore satisfied that the subject matter of the independent claims can be considered to involve an inventive step within the meaning of Article 56 EPC. The same conclusion applies to the remaining claims by virtue of their dependence from independent claims 1 and 11.

5. *Further Procedure*

5.1 Consequent to its examination of the application, the board saw, in view of the foregoing, no reason why grant of a patent could not be envisaged.

Order

For these reasons it is decided that:

1. The decision under appeal is set aside.

2. The case is remitted to the first instance with the order to grant a patent on the basis of the following documents:

- claims 1-14 filed during the oral proceedings;
- description, pages 1-146 filed during the oral proceedings;
- drawings, pages 1-21, figures 1-18, as originally filed.

The Registrar: The Chairman:

P. Martorana A. G. Klein