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Datasheet for the decision of 7 November 2012

Case Number: T 2099/10 - 3.4.02

Application Number: 03722730.3

Publication Number: 1493049

IPC: G02B5/32, G03H1/02, G01N21/05, G01N21/47

Language of the proceedings: EN

Title of invention:
METHOD AND DEVICE FOR DETECTING AN ANALYTE IN A FLUID

Applicant:
Smart Holograms Limited

Headword:

Relevant legal provisions:
EPC 1973 Art. 84

Keyword:
Amended claims - Clarity (yes)

Decisions cited:

Catchword:

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Case Number: T 2099/10 - 3.4.02

D E C I S I O N
of the Technical Board of Appeal 3.4.02
of 7 November 2012

Appellant: (Applicant)	Smart Holograms Limited 291 Cambridge Science Park Milton Road Cambridge CB4 0WF (GB)
Representative:	Perry, Robert Edward Gill Jennings & Every LLP The Broadgate Tower 20 Primrose Street London EC2A 2ES (GB)
Decision under appeal:	**Decision of the Examining Division of the European Patent Office posted 31 March 2010 refusing European patent application No. 03722730.3 pursuant to Article 97(2) EPC.**

Composition of the Board:

Chairman: A. Klein
Members: M. Rayner
B. Müller

Summary of Facts and Submissions

I. The patent applicant has appealed against the decision of the examining division concerning European Patent Application number 03722730.3 (=WO-A-03/087899). While the examining division accepted an application based on claims according to a tenth auxiliary request before it, it refused higher order requests. The reasons given for refusal pertained to lack of compliance with Article 84 EPC (clarity) or Article 83 (sufficiency) as the case may be and also referred to Article 56 EPC (inventive step). The patent application concerns detection of an analyte in fluid.

II. Documents including the following have been referred to in the examination and appeal proceedings.-

D1 WO-A-95/26499

III. The appellant requested that the decision under appeal be set aside and a patent granted on the basis of a main or auxiliary request, the latter corresponding to the tenth auxiliary request before the examining division. Oral proceedings were requested on an auxiliary basis.

IV. Independent method claim 1 and device claim 15 according to the main request of the appellant correspond to those presented before the examining division and are worded as follows.

Main Request

"1. A method for the continuous detection of an analyte in a fluid, which comprises contacting the fluid with a

holographic element comprising a medium and a hologram disposed throughout the volume of the medium, wherein the medium incorporates groups which undergo a reversible change upon interaction with the analyte, and cause an expansion or contraction of the medium, and wherein an optical characteristic of the element changes as a result of the expansion or contraction of the medium; and detecting any change of the optical characteristic; wherein
(i) the analyte is glucose and the groups are pendant glucose groups and a lectin, or pendant boronate groups,
(ii) the analyte is oxygen and the groups are Vaskas complex, haemoglobin or myoglobin,
(iii) the analyte is an ionic species and the groups are a crown ether, or
(iv) the analyte is protons and the groups undergo a reversible change on interaction with the protons.

15. A device for the detection of an analyte in a fluid, which comprises a fluid conduit having an inlet, an outlet, and a holographic element over which the fluid can flow, wherein the holographic element is as defined in any of claims 1 to 4 and 8 to 14, and the device also includes a window whereby non-ionising radiation can irradiate the holographic element."

V. The wording of claims according to the auxiliary request of the appellant is not given in section IV above for the reason set out in section 5 of the reasons below.

VI. During oral proceedings before the examining division, according to the last paragraph on page 1 of the minutes, the division observed that auxiliary request 10 specified some groups and analytes in the claimed

method together with adapted description and figures so as to overcome its clarity objection. Any residual objection against patentability or sufficiency against unclear claims of the higher order requests was, by implication, also overcome for the tenth auxiliary request in view of the division's communication under Rule 71(3) EPC with a proposal for grant based on the tenth auxiliary request.

The division expressed doubts, as set out in the last sentence of section 2 of the minutes, about whether Figures 3 and 4 show a reversible behaviour.

VII. The decision under appeal contains the following subject matter relevant to the present appeal.

The independent claims of the main request and auxiliary requests 1 to 9 are obscure in scope and thus lack clarity because they rely on the declaration that the reaction and the variation are reversible without indicating how this effect might be achieved. Moreover, all possible analytes and reversible binding partners are encompassed, whereas the examples concern a very limited number, so the skilled person would not be able to extend their teaching to the entire claimed subject matter using routine methods.

VIII. In support of its main request, the appellant advanced arguments including the following.

The only difference to the claims accepted by the examining division is the addition of option (iv) in claim 1, for which basis may be found at page 5, line 12. The skilled person is readily aware of suitable "groups". Detection of pH is illustrated in Example 4.

While the applicant had cancelled passages including page 5, line 12 and example 4 in the documents amended before the examining division, it was not done because of doubts about reversible behaviour, but consequent to the examining division's requirement to bring the description into agreement with the claims that had been accepted. It is maintained that the examples illustrate the invention. In particular, Figures 3 and 4 show reversible behaviour, and example 4 provides sufficient information to support feature (iv) of claim 1 of the main request. With regard to feature (iv), the description gives monomers that are all weak acids. A skilled person understands that a weak acid dissociates incompletely in aqueous solution and as a result is only partially ionized, donating only a fraction of the protons available to the solution. Weak acids typically have pKa values lying between -2 and 12. As a result, they are only significantly dissociated above a certain pH value. At the pKa, 50% of the molecules are ionized and ionization increases as the pH of the solution increases. It is common knowledge that, as the pH of the solution changes, the extent of ionization of a weak acid correspondingly changes, and that this equilibrium is rapid and reversible in response to changes in pH. Correspondingly, the extent of ionization of the conjugate acid of a weak base (BH+) decreases as the pH increases. The curves shown in Figure 6 of the application reflect the titration of the pH-sensitive monomer molecules in the matrix as the extent of ionization changes, and the Donan potential change causes swelling and contraction in response. A skilled person concludes from the above knowledge that such curves would be followed in either direction of pH change.

IX. During oral proceedings appointed by the board consequent to the auxiliary request of the appellant, the appellant explained, with reference to Figure 13 of document D1, that the reason a curve like that shown in Figure 13 is produced is because gelatin contains an ill-defined mixture of components.

X. At the end of the oral proceedings, the board gave its decision.

Reasons for the Decision

1. The appeal is admissible.

2. So far as options (i), (ii) and (iii) of claim 1 of the main request are concerned, the board has not been offered, nor does it see, any reason to disagree with the positive position of the examining division.

3. So far as option (iv) of claim 1 is concerned, the claim specifies protons as analyte and the groups undergo a reversible change on interaction with the protons. Accordingly, this option can be considered clear for reasons corresponding to those existing for options (i) to (iii), the board also concurring with the submissions of the appellant including those referring to Figures 3 and 4. The board is, moreover, satisfied that cancellation of passages including page 5, line 12 and example 4 in the documents amended before the examining division, was not done because of doubts about reversible behaviour, but consequent to the examining division's requirement to bring the description into agreement with the claims that had at that time been accepted.

4. The board is also persuaded by the appellant as to patentability having regard to document D1, particularly concerning reference to pH Figure 13. Furthermore, patentability is not considered to be called into question by any other document in the file.

5. Accordingly, the board is satisfied as to acceptability of the main request. It is not therefore necessary further to consider the auxiliary request of the appellant.

Order

For these reasons it is decided that:

1. The decision under appeal is set aside.

2. The case is remitted to the department of first instance with the order to grant a patent in the following version:

Description:

Pages 3, 4 and 9 to 12 as originally filed.
Pages 1, 2 and 5 to 8 as filed during the oral proceedings of 12 January 2010 before the examining division.

Claims:
Nos. 1 to 15 (Main Request) filed with the letter of 20 September 2012

Drawings:

Sheets 1/5 to 5/5 filed during the oral proceedings on 7 November 2012.

The Registrar: The Chairman:

M. Kiehl A. Klein

Decision electronically authenticated