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**Datasheet for the decision
of 9 July 2025**

Case Number: T 1740/23 - 3.4.02

Application Number: 14850023.4

Publication Number: 3051276

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G06T7/11

Language of the proceedings: EN

Title of invention:
ANALYSIS DEVICE, MICROSCOPE DEVICE, ANALYSIS METHOD, AND
PROGRAM

Patent Proprietor:
Nikon Corporation

Opponents:
Carl Zeiss Microscopy GmbH
Leica Microsystems CMS GmbH

Relevant legal provisions:
EPC Art. 54(1), 84, 100(a)

Keyword:

Novelty (no) - main request, 4th, 5th and 9th auxiliary requests

Claims - clarity (no) - 1st to 3rd and 6th to 8th auxiliary requests



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Case Number: T 1740/23 - 3.4.02

D E C I S I O N
of Technical Board of Appeal 3.4.02
of 9 July 2025

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Decision under appeal:

**Interlocutory decision of the Opposition
Division of the European Patent Office posted on
27 July 2023 concerning maintenance of the
European Patent No. 3051276 in amended form.**

Composition of the Board:

Chairman R. Bekkering
Members: A. Hornung
 G. Decker

Summary of Facts and Submissions

- I. The patentee appealed against the interlocutory decision of the opposition division maintaining European patent No. 3051276 in amended form.
- II. Oppositions had been filed by opponent 1 and opponent 2 against the patent as a whole and based on the grounds for opposition under Article 100(a) EPC, together with Articles 54(1) and 56 EPC (opponents 1 and 2), Article 100(b) EPC (opponent 1) and Article 100(c) EPC (opponent 1).
- III. The opposition division had found that the patent as amended according to an auxiliary request 3B then on file and the invention to which it related met the requirements of the EPC.
- IV. Oral proceedings before the board were held on 9 July 2025.
- V. The patentee requested as a main request that the decision under appeal be set aside and that the patent be maintained as granted, i.e. that the oppositions be rejected, or, as an auxiliary measure, that the patent be maintained in amended form on the basis of the claims according to one of auxiliary requests 1 to 3 filed with the letter dated 28 March 2023, or according to auxiliary request 4 filed as auxiliary request 3A during the oral proceedings before the opposition division, or according to one of auxiliary requests 5 to 9 filed with the letter of 15 August 2024. The main request and auxiliary requests 1 to 4 are underlying the appealed decision.

Opponent 1 (respondent; hereafter referred to as "opponent") requested that the appeal be dismissed.

Opponent 2 had not filed any request during the appeal proceedings and was not present during the oral proceedings before the board.

VI. The present decision refers to the following document:

D3: "HIV taken by STORM: Super-resolution fluorescence microscopy of a viral infection", Cândida F Pereira et al., Virology Journal, 2012, 9:84, pages 1 to 6.

The patentee's written submissions are designated P1 to P3 as follows:

P1: statement of grounds of appeal dated 22 November 2023,

P2: letter dated 15 August 2024,

P3: letter dated 17 April 2025.

The opponent's written submissions are designated O1 and O2 as follows:

O1: reply to the patentee's statement of grounds of appeal dated 28 May 2024,

O2: letter dated 6 June 2025.

VII. Claim 1 according to the patentee's main request reads as follows (the features of claim 1 are preceded by the numbering **1A** to **1E** as used in the appealed decision):

"1A An analysis device (10) for performing a quantitative analysis on pictures of high resolution generated through use of stochastic optical reconstruction microscopy, the analysis device comprising:

1B a picture imaging forming unit (142) that is adapted to generate a sample picture from a plurality of fluorescent

pictures by using stochastic optical reconstruction microscopy; and

1C a sample picture image analysis unit (143) that is adapted to perform an analysis based on the generated sample picture image and is provided with

1D an area setting unit (143A) that is adapted to set predetermined areas (C1, C2) relative to bright spots (P1, P2) on the basis of the sample picture image generated by the picture image forming unit (142), and

1E an analysis processing unit (143B) that is adapted to perform quantitative analysis based on the image information representing the predetermined areas (C1, C2) such that states of a plurality of bright spots contained in a plurality of areas set in the fluorescent image in accordance with positions of the plurality of bright spots are quantified as numerical values".

VIII. Claim 1 according to the first auxiliary request reads as follows, differing from claim 1 of the main request by the underlined features:

"1A An analysis device (10) for performing a quantitative analysis on pictures of high resolution generated through use of stochastic optical reconstruction microscopy, the analysis device comprising:

1B a picture imaging forming unit (142) that is adapted to generate a sample picture from a plurality of fluorescent pictures by using stochastic optical reconstruction microscopy; and

1C a sample picture image analysis unit (143) that is adapted to perform an analysis based on the generated

sample picture image and is provided with

1D an area setting unit (143A) that is adapted to set predetermined areas (C1, C2) relative to bright spots (P1, P2) at each of the bright spots on the basis of the sample picture image generated by the picture image forming unit (142), and

1E an analysis processing unit (143B) that is adapted to perform quantitative analysis based on the image information representing the predetermined areas (C1, C2) such that states of a plurality of bright spots contained in a plurality of areas set in the fluorescent image in accordance with positions of the plurality of bright spots are quantified as numerical values representing the states of the predetermined areas in the image information representing the predetermined areas".

IX. Claim 1 of the second auxiliary request differs from claim 1 of the first auxiliary request in that it comprises the following wording at the end of the claim:

"each predetermined area being a spatial window having a range from the position of a reference bright spot to a prescribed predetermined distance".

X. Claim 1 of the third auxiliary request differs from claim 1 of the second auxiliary request in that it comprises the following wording at the end of the claim:

"wherein the predetermined areas are filled in with the numerical values".

XI. Claim 1 according to the fourth auxiliary request reads as follows, differing from claim 1 of the main request by the underlined features:

"**1A** An analysis device (10) for performing a quantitative analysis on pictures of high resolution generated through use of stochastic optical reconstruction microscopy, the analysis device comprising:

1B a picture imaging forming unit (142) that is adapted to generate a sample picture from a plurality of fluorescent pictures by using stochastic optical reconstruction microscopy; and

1C a sample picture image analysis unit (143) that is adapted to perform an analysis based on the generated sample picture image and is provided with

1D an area setting unit (143A) that is adapted to set predetermined areas (C1, C2) relative to bright spots (P1, P2) at each of the bright spots on the basis of the sample picture image generated by the picture image forming unit (142), and

1E an analysis processing unit (143B) that is adapted to perform quantitative analysis based on the image information representing the predetermined areas (C1, C2) such that states of a plurality of bright spots contained in a plurality of areas set in the fluorescent image in accordance with positions of the plurality of bright spots are quantified as numerical values, wherein the predetermined areas are filled in with the numerical values".

XII. Claim 1 according to the fifth auxiliary request reads as follows, differing from claim 1 of the main request by the underlined features:

"1A An analysis device (10) for performing a quantitative analysis on pictures of high resolution generated through use of stochastic optical reconstruction microscopy, the analysis device comprising:

1B a picture imaging forming unit (142) that is adapted to generate a fluorescent sample picture image from a plurality of fluorescent pictures by using stochastic optical reconstruction microscopy; and

1C a sample picture image analysis unit (143) that is adapted to perform an analysis based on the generated fluorescent sample picture image and is provided with

1D an area setting unit (143A) that is adapted to set predetermined areas (C1, C2) relative to bright spots (P1, P2) on the basis of the fluorescent sample picture image generated by the picture image forming unit (142), and

1E an analysis processing unit (143B) that is adapted to perform quantitative analysis based on the image information representing the predetermined areas (C1, C2) such that states of a plurality of bright spots contained in a plurality of areas set in the fluorescent sample picture image in accordance with positions of the plurality of bright spots are quantified as numerical values".

XIII. Claim 1 according to the sixth to ninth auxiliary request differs from claim 1 of the first to fourth auxiliary request, respectively, by the same features as claim 1 of the fifth auxiliary request differs from claim 1 of the main request (see the underlined features in point XII. above).

Reasons for the Decision

1. Main request - novelty

The subject-matter of claim 1 lacks novelty in view of the disclosure of document D3 (Articles 100(a) and 54(1) EPC).

1.1 The board maintains the view communicated to the parties in point 6 of the annex to the summons to oral proceedings, namely that, given the vague and broad wording of claim 1, the board concurs with the opposition division that features **1A** to **1E** of claim 1 are disclosed in D3. The reasons are as follows:

D3 discloses an analysis device for performing a quantitative analysis on pictures of high resolution generated through use of stochastic optical reconstruction microscopy

*[Feature **1A** - page 5, left column, lines 3-9 and abstract],*

the analysis device comprising:

a picture imaging forming unit that is adapted to generate a sample picture from a plurality of fluorescent pictures by using stochastic optical reconstruction microscopy

*[Feature **1B** - page 5, left column, lines 19-20]*

and a sample picture image analysis unit that is adapted to perform an analysis based on the generated sample picture image

*[Feature **1C** - page 5, left column, lines 20-22]*

and is provided with an area setting unit that is adapted to set predetermined areas relative to bright spots on the

basis of the sample picture image generated by the picture image forming unit

[Feature 1D - page 3, left column, lines 2-11; figure 2e: the "point distribution of molecular coordinates" shown in figure 2e of D3 represents bright spots; predetermined areas having a "50 nm radius" were implicitly set relative to the bright spots when "the single molecule dSTORM image was converted into a pseudo-colored cluster map"],

and an analysis processing unit that is adapted to perform quantitative analysis based on the image information representing the predetermined areas such that states of a plurality of bright spots contained in a plurality of areas set in the fluorescent image in accordance with positions of the plurality of bright spots are quantified as numerical values

[Feature 1E - page 3, left column, lines 4-11; page 2, right column, lines 8-10; figure 2f: obtaining "the number of other molecules within a 50 nm radius" (D3, page 3, left column, lines 9 and 10) corresponds to "perfor[ming] quantitative analysis based on the image information representing the predetermined areas", as defined in feature 1E. This is because the mere presence of other molecules within a 50 nm radius constitutes image information representing the predetermined areas. By arbitrarily defining the state of a bright spot as information about the number of other molecules within a 50 nm radius, the states of the bright spots in D3 are quantified as numerical values, as defined in feature 1E].

1.2 Patentee's arguments in favour of novelty

In response to the board's observations in the communication pursuant to Article 15(1) RPBA, points 6.2.1

to 6.2.3, as to why features **1C** to **1E** were disclosed in D3, the patentee submitted the following arguments both in writing and orally during the oral proceedings before the board.

1.2.1 Feature **1C**

According to the patentee, feature **1C** defined an analysis based on an image, whereas D3 disclosed an analysis based on sets of localisations. However, a "list of localisations, even if able to be rendered into an image, is accordingly not an image" (P3, page 1, last paragraph). Therefore, feature **1C** was not disclosed in D3.

The board is not convinced by the patentee's argument. Claim 1 uses the term "image" without limiting its scope by any technical feature of the image. In D3, the lists of x-y localisations represent image information of the dSTORM images. As such, the lists of x-y localisations corresponding to the dSTORM images of D3 fall within the term "image" of claim 1 in its broadest sense.

1.2.2 Feature **1D**

The patentee argued that "the molecular clustering analysis performed in D3 and described at page 3, first column, lines 4 to 12, uses a variation on Ripley's K-function analysis. [...] This is a simple sum over points, with a single normalisation factor. There is in D3 thus no unit setting any areas, much less relative to bright spots. [...] [T]herefore this is no reason to find the feature **1D** disclosed in D3" (P3, point 1.2). The patentee further explained during the oral proceedings before the board that the predetermined areas in D3 were merely conceptual areas which were used in the calculation

of Ripley's K-function, but without being "set in an image" as required by the wording of claim 1.

Contrary to the patentee's view, the mere fact that a sum of the points is performed in a predetermined area, namely an area having a radius of 50 nm, implies that an area setting unit has set that predetermined area for carrying out the calculation. Claim 1 contains no further limitation with respect to the setting of the area. In particular, feature **1D** does not require that the boundaries of the predetermined areas are somehow visible. Therefore, feature **1D** is disclosed in D3.

1.2.3 Feature **1E**

The patentee was of the opinion that "no predetermined areas are represented in image information in D3" and that "only a depiction, that is, a geometrical representation would be understood by the skilled reader to qualify as a representation" (P3, page 4, second paragraph). "Further, there is no further processing of these cluster maps which would constitute quantitative analysis" (P3, page 4, third paragraph).

The board cannot follow the patentee's argumentation. The term "representing" in the expression "image information representing the predetermined areas" has such a broad meaning that any characteristic information of the predetermined areas is to be considered "representing" them. The number of molecules within the predetermined areas and thus the cluster map of figure 2f of D3 is such characteristic information of the predetermined areas "representing" them. Moreover, quantitative analysis is performed in D3, based on that information relating to the number of molecules within predetermined areas, to generate and process a pseudo-coloured cluster map.

1.2.4 Accordingly, the ground for opposition under Articles 100(a) and 54 EPC prejudices the maintenance of the patent as granted.

2. First auxiliary request - clarity

Claim 1 is unclear (Article 84 EPC).

2.1 Claim 1 has been amended with respect to claim 1 as granted by adding *inter alia* the phrase "representing the states of the predetermined areas in the image information representing the predetermined areas" at the end of feature **1E**.

As stated in the board's communication pursuant to Article 15(1) RPBA, page 8, fourth paragraph, the expression "states of the predetermined areas" is unclear in itself. Indeed, it is not clear to which type of characteristics of the predetermined areas this expression actually refers.

2.2 The patentee was of the opinion that the expression "states of the predetermined areas" does not need to be defined in the claim. During oral proceedings, the patentee referred to various passages of the patent description, namely [0081] and [0089] to [0091], explaining what was to be understood under the expression "states of the predetermined areas".

The patentee further submitted both in writing and orally during the oral proceedings before the board that, contrary to the statement in the appealed decision that the added feature "could be interpreted as the size or the location of the areas (...), these understandings are excluded by the wording of the claim, wherein the size

and location of the areas are defined by being already defined both as predetermined and relative to bright spots" (P1, page 16, second paragraph). Therefore, the expression "states of the predetermined areas" had a broad, yet clear, meaning.

- 2.3 The board is not convinced by the patentee's arguments. A claim must be clear in itself. In any case, the cited passages of the patent description do not define the exact meaning of the expression "states of the predetermined areas", but merely state that "[t]he sample picture image analysis unit 143 sets a value based on the information showing the state of the bright spot to be the value representing the state of the predetermined area" (see patent, paragraph [0081]). Given the ambiguous nature of the terms "a value based on" and "the value representing", it is not possible to derive a clear definition of the "states of the predetermined areas" from this sentence of paragraph [0081] of the patent.

While the board acknowledges that the area setting unit in feature **1D** generally sets predetermined areas, their exact size and location are left undefined in feature **1D**. Even if their size and location were considered to be defined, the expression "states of the predetermined areas" could cover further characteristics of the predetermined areas, such as the areas' shape or the number of molecules located within the areas. This lack of definition of the "states of the predetermined areas" renders claim 1 unclear.

3. Second auxiliary request

Claim 1 is unclear (Article 84 EPC).

3.1 Claim 1 of the second auxiliary request comprises the same unclear expression "states of the predetermined areas" as claim 1 of the first auxiliary request. The amendments of claim 1 of the second auxiliary request with respect to claim 1 of the first auxiliary request are not suitable to clarify the "states of the predetermined areas".

3.2 The patentee conceded at the oral proceedings that the amendments of claim 1 of the second auxiliary request did not allow to clarify the "states of the predetermined areas".

4. Third auxiliary request

Claim 1 is unclear (Article 84 EPC).

4.1 Claim 1 of the third auxiliary request comprises the same unclear expression "states of the predetermined areas" as claim 1 of the first and the second auxiliary request. Amending claim 1 of the third auxiliary request with respect to claim 1 of the second auxiliary request by adding the feature "wherein the predetermined areas are filled in with numerical values" does not clarify the "states of the predetermined areas". Indeed, regardless of what the predetermined areas are filled in with, the lack of definition of the "states of the predetermined areas" remains.

4.2 At the oral proceedings, the patentee argued that the numerical values filling in the predetermined areas were clear as they were defined in claim 1 as granted, against which no objection of lack of clarity could be raised. Moreover, it was clear that the state of a predetermined area could only be its size, shape, position or content. There were no other possible parameters of the predetermined area. Therefore, filling in the

predetermined areas with the numerical values clarified the "states of the predetermined areas".

4.3 The board is not convinced by the patentee's argument. As submitted by the opponent at the oral proceedings, filling in the predetermined areas with numerical values, even if the values were clear, has no effect on the definition of the state of the predetermined areas. As further explained by the opponent at the oral proceedings, the state of a predetermined area could refer not only to its size, shape, position or content, but also, for instance, to the type of fluorophores or to the laser wavelength used to illuminate the molecules, both of which influence the state of the predetermined area. Still further, the expression "states of the predetermined areas" could refer to a temporal state of the predetermined area. In conclusion, the expression "states of the predetermined areas" could refer to a plurality of different conditions or states of the predetermined areas and claim 1 leaves open which exact state it refers to, so that referring to such state renders the claim unclear.

5. Fourth auxiliary request

The subject-matter of claim 1 lacks novelty in view of the disclosure of document D3 (Article 54(1) EPC).

5.1 With respect to claim 1 as granted, claim 1 of the fourth auxiliary request has been amended by adding "at each of the bright spots" in feature **1D** and by adding "wherein the predetermined areas are filled in with the numerical values" at the end of feature **1E**.

5.1.1 As stated in the board's communication pursuant to Article 15(1) RPBA, point 9.1.1, the disclosure in D3, figure 2f, in combination with page 3, left column,

lines 6 to 11, implies the existence of a unit setting an area relative to a bright spot in the dSTORM image. Since the entire single molecule dSTORM image is converted into a pseudo-colored cluster map, it is implicit that the unit sets such an area relative to each of the bright spots in the dSTORM image. Therefore, the feature "at each of the bright spots" in feature **1D** is anticipated by D3.

5.1.2 As stated in the board's communication pursuant to Article 15(1) RPBA, point 9.1.2, D3, figure 2f, in combination with page 3, left column, lines 6 to 11, discloses a pseudo-colored cluster map. Each pixel of the map has a colour corresponding to a numerical value (indicating the degree of clustering of molecules). Since the predetermined areas (having a 50 nm radius) are parts of the dSTORM image and since the dSTORM image is converted into the pseudo-colored cluster map, the predetermined areas in D3 are "filled in" with the numerical values (indicating the degree of clustering of molecules). Therefore, the feature "wherein the predetermined areas are filled in with the numerical values" in feature **1E** is also anticipated by D3.

5.2 In the written proceedings (P3, point 4) and in the oral proceedings before the board, the patentee argued that the expression "filled in with the numerical values" in claim 1 meant that the numerical values "extend in a contiguous fashion throughout the area to the edge of the area" (P3, sentence bridging pages 5 and 6). In D3, the predetermined areas were not "filled by the values representing the state of the bright spot. Each pixel has its own unique value, representing the degree of clustering around that pixel, nothing more" (P3, page 6, second paragraph). In other terms, while each pixel of the cluster map in figure 2f of D3 corresponded to a numerical value, this numerical value was not the unique numerical

value quantifying the state of the corresponding bright spot, as required by the claim. Due to the systematic use of the plural throughout the wording of feature **1E**, it was clear to the skilled person that in claim 1 there was a one-to-one correspondence between the numerical value quantifying a bright spot and the numerical value filling in the entire predetermined area which has been set relative to that bright spot: the state of a bright spot was quantified by a single numerical value filling in the entire predetermined area.

The board is not convinced by the patentee's argument. As submitted by the opponent at the oral proceedings, claim 1 does not define a precise assignment between specific numerical values and the predetermined areas, but only that the numerical values generally quantify the state of a bright spot. In particular, claim 1 leaves open whether the state of a bright spot is determined by a single value or by several values. In D3, the pixels of a predetermined area set relative to a bright spot correspond to different numerical values obtained via interpolation of the numerical values corresponding to neighbouring bright spots. Therefore, the situation in D3 where the state of a bright spot is quantified by several numerical values falls under the wording of the amended feature **1E**.

6. Fifth to ninth auxiliary requests

It can be left open whether the fifth to ninth auxiliary requests should be admitted to the proceedings, because in any case they are not allowable for the same reasons as set out for the main request and the first to fourth auxiliary requests, respectively.

At the oral proceedings before the board, the patentee admitted that the fifth to ninth auxiliary requests could

not overcome the objections raised against the main request and the first to fourth auxiliary requests.

7. For the above reasons the board comes to the conclusion that none of the patentee's requests is allowable and that the appeal must be dismissed.

Order

For these reasons it is decided that:

The appeal is dismissed.

The Registrar:

The Chairman:



L. Gabor

R. Bekkering

Decision electronically authenticated