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Datasheet for the decision of 19 February 2021

Case Number: T 1707/17 - 3.4.03

Application Number: 05794506.5

Publication Number: 1812948

IPC: H01J37/32

Language of the proceedings: EN

Title of invention:
MATERIAL DEPOSITION APPARATUS AND METHOD

Applicant:
Applied Multilayers LLC

Headword:

Relevant legal provisions:
EPC Art. 123(2)
RPBA 2020 Art. 13(1), 13(2)

Keyword:
Amendments of main and 1st auxiliary request - allowable (no)
Amendment after summons (2nd auxiliary request) - taken into account (no)

Decisions cited:
T 1033/10

Catchword:
Article 13(2) RPBA 2020 requires the party not only to explain why the case involves exceptional circumstances, but also to explain why its amendment, in terms of both content and timing, represents a justified response to these circumstances. In particular, where a party seeks to amend its case at a very late stage in the proceedings, the cogent reasons referred to in Article 13(2) RPBA 2020 should include reasons why it was not possible to file such an amendment earlier (Reasons, point 2.4).

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Case Number: T 1707/17 - 3.4.03

D E C I S I O N
of Technical Board of Appeal 3.4.03
of 19 February 2021

Appellant: (Applicant)	Applied Multilayers LLC 2710 Thomes Avenue, Suite 1092 Cheyenne, WY 82001 (US)
Representative:	Wood, Graham Bailey Walsh & Co LLP 1 York Place Leeds, LS1 2DR (GB)
Decision under appeal:	**Decision of the Examining Division of the European Patent Office posted on 24 February 2017 refusing European patent application No. 05794506.5 pursuant to Article 97(2) EPC.**

Composition of the Board:

Chairman	G. Eliasson
Members:	S. Ward
	G. Decker

Summary of Facts and Submissions

I. The appeal is against the decision of the Examining Division to refuse European patent application No. 05 794 506 on the grounds that the subject-matter of the main request did not involve an inventive step within the meaning of Article 56 EPC and the subject-matter of the auxiliary request was not clear within the meaning of Article 84 EPC.

II. Oral proceedings were held before the Board by videoconference at the request of the appellant. At the end of the oral proceedings the appellant requested that the decision under appeal be set aside and that a patent be granted on the basis of the claims according to the main request filed with the letter dated 12 December 2016 or the (first) auxiliary request filed with the statement of grounds of appeal or the second auxiliary request filed at the oral proceedings on 19 February 2021.

III. The following document is referred to:

D5: US 6 537 428 B1

IV. Claim 1 of the main request reads as follows:

"A method for the application of one or a number of layers of Si and/or Nb material by reactive sputtering onto at least one optical substrate to form a coating thereon, said method comprising the steps of;
placing the optical substrates to be coated onto a holder,

placing said holder so as to be moved within a deposition chamber,
providing control means for at least first and second unbalanced magnetrons mounted within the deposition chamber by controlling the target voltage,
introducing at least one reactive gas,
moving said substrate holder within said deposition chamber and selectively operating said unbalanced magnetrons within the chamber to deposit material from a target associated with each of said magnetrons onto the substrate by reactive sputtering so as to form an optical coating of the required type, said unbalanced magnetrons arranged in a closed field configuration,
monitoring a coating or at least one of the coating layers to determine a hysteresis curve for the Si and/or Nb material being applied by varying the magnetron voltage as a function of reactive gas flow and corresponding voltage level which is required to be supplied to each magnetron to achieve the required control of deposition of Si and/or Nb material from the magnetron within the deposition chamber and,
storing in a database the particular corresponding voltage level which is required to control the deposition of material from each unbalanced magnetron; and
during the subsequent operation of said magnetrons when sputter depositing the same Si and/or Nb material onto the substrate, to form said coating or at least one coating layer, said unbalanced magnetrons are operated with the said voltage level which has been determined for each of said magnetrons and the control of the reactive gas flow is achieved via feedback of the stored voltage level obtained with reference to the previously determined hysteresis curve during the application of the Si and/or Nb coating material,

wherein each of the at least first and second magnetrons is operable independently during coating deposition, and
wherein the particular voltages of the Si and/or Nb materials stored in the database are with reference to said coating or coating layer being deposited such that those voltage levels are subsequently used for the formation of the same coating or coating layer without the need for the monitoring step to be repeated when said Si and/or Nb material coating or coating layer is to be formed subsequently."

Claim 1 of the auxiliary request comprises all features of claim 1 of the main request, and additionally the following feature:

"wherein independent magnetrons have differing predetermined voltage levels provided for the application of different coating layers to allow variation in the material structure of each layer".

Claim 1 of the second auxiliary request is the same as claim 1 of the main request, except that the following feature of claim 1 of the main request:

"said unbalanced magnetrons are operated with the said voltage level which has been determined for each of said magnetrons and the control of the reactive gas flow is achieved via feedback of the stored voltage level obtained with reference to the previously determined hysteresis curve during the application of the Si and/or Nb coating material"

has been replaced by:

"said unbalanced magnetrons are operated in constant power mode in conjunction with maintaining the said magnetron voltage level which has been determined for each of said magnetrons and hence operating point on the hysteresis curve, via feedback control of the reactive gas flow, with reference to the previously determined hysteresis curve during the application of the Si and/or Nb coating material".

V. Following the summons to oral proceedings, the Board sent the appellant a communication under Article 15(1) RPBA 2020 setting out its provisional view that the subject-matter of the main and auxiliary requests appeared not to involve an inventive step within the meaning of Article 56 EPC 1973 and also appeared to contravene the requirements of Article 123(2) EPC. A clarity objection under Article 84 EPC was also raised.

VI. The appellant's arguments, insofar as they are relevant to the present decision, may be summarised as follows:

Claim 1 of the main request and claim 1 of the first auxiliary request conformed to the requirements of Article 123(2) EPC. In particular, the claimed method of controlling the operating point at a particular point on the hysteresis curve was based on the original application, as could be seen in passages of the description of the published application such as page 7, first paragraph (from "said unbalanced magnetrons" onwards); page 2, third paragraph; page 16, last paragraph; page 4, last paragraph to page 5, first paragraph; and page 6, last paragraph.

The subject-matter of claim 1 of the main request and claim 1 of the first auxiliary request involved an

inventive step within the meaning of Article 56 EPC 1973 over the prior art, in particular D5.

The second auxiliary request addressed the objections of the Board in relation to the requirements of Article 123(2) EPC and should be admitted into the proceedings. This request had not been filed earlier as it had been thought that the above arguments would be sufficient to overcome the objections under Article 123(2) EPC.

Reasons for the Decision

1. *Main and (First) Auxiliary Request: Article 123(2) EPC*

1.1 The invention relates to a method for the deposition of one or more layers on a substrate by reactive sputtering. The method involves *inter alia* initial steps of:

- determining, for the material to be deposited, a hysteresis curve of magnetron voltage as a function of reactive gas flow;
- determining a required voltage level (operating point on the hysteresis curve); and
- storing the required voltage level in a database.

During a subsequent deposition operation, a control process is employed to maintain the deposition at the desired operating point on the hysteresis curve.

1.2 In claim 1 of the main request and claim 1 of the (first) auxiliary request, this control process is defined as follows:

"said unbalanced magnetrons are operated with the said voltage level which has been determined for each of said magnetrons and the control of the reactive gas flow is achieved via feedback of the stored voltage level obtained with reference to the previously determined hysteresis curve during the application of the Si and/or Nb coating material".

1.3 The word "feedback", which is used in this definition, appears only once in the application as originally filed, in the fifth paragraph on page 17:

"The technique developed for the closed field magnetron process is to operate the magnetron power supply in constant power mode in conjunction with maintaining magnetron voltage value, and hence operating point on the hysteresis curve, via feedback control of the reactive gas flow."

The nature of the feedback is further explained in the following paragraph:

"The magnetron voltage is used to supply an electrical signal to the process controller to control reactive gas flow."

1.4 The claimed feature that the control of the reactive gas flow is achieved "via feedback of the stored voltage level" appears nowhere in the application as originally filed, and does not reflect the disclosed teaching that the feedback corresponds to the *measured* magnetron voltage, and not to the stored voltage, a parameter which would already be present in the database. Hence, the claimed "feedback of the stored voltage level" constitutes an inadmissible extension of

subject-matter beyond the content of the application as originally filed.

1.5 In addition, in the sole passage in the application as originally filed mentioning "feedback" (page 17, fifth paragraph), it is stated that the "technique developed for the closed field magnetron process is to operate the magnetron power supply in constant power mode in conjunction with maintaining magnetron voltage value". The Board sees no justification for basing claim 1 in part on this paragraph, while omitting the cited feature.

1.6 For the above reasons the Board judges that claim 1 of the main request and claim 1 of the (first) auxiliary request do not meet the requirements of Article 123(2) EPC.

2. *Auxiliary Request 2: Article 13(2) RPBA 2020*

2.1 Auxiliary Request 2 was filed at oral proceedings before the Board, hence after the notification of the summons to oral proceedings. Article 13(2) RPBA 2020 therefore applies:

"Any amendment to a party's appeal case made after the expiry of a period specified by the Board in a communication under Rule 100, paragraph 2, EPC or, where such a communication is not issued, after notification of a summons to oral proceedings shall, in principle, not be taken into account unless there are exceptional circumstances, which have been justified with cogent reasons by the party concerned."

Article 13(2) RPBA 2020 represents the third level of the convergent approach set out in the document CA/3/19

(see page 12 and the explanatory notes to Article 13(2)) approved by the Administrative Council at its 160th meeting in June 2019.

2.2 In the contested decision the main request was rejected for lack of inventive step (Articles 52(1) and 56 EPC) and the auxiliary request was rejected for lack of clarity (Article 84 EPC). The Board does not dispute that the above-mentioned objections to the main and auxiliary requests under Article 123(2) EPC were raised for the first time in its communication under Article 15(1) RPBA 2020. The Board therefore has the discretion under Article 13(2) RPBA 2020 to admit amended claims aiming to overcome the newly raised objections (see CA/3/19, page 12, point 59 and the explanatory notes to Article 13(2), paragraph bridging pages 42 and 43).

2.3 In applying Article 13(2) RPBA 2020 the Board may also rely on the criteria set out in Article 13(1) RPBA 2020 (see CA/3/19, page 12, point 60 and the explanatory notes to Article 13(2), page 43, second paragraph). These criteria include the current state of the proceedings and the need for procedural economy. Similar considerations were present in Article 13(1) RPBA 2007, and in applying this provision, the deciding Board in T 1033/10 came to the following conclusion:

"The state of the proceedings and the need for procedural economy taken together imply a requirement on a party to present appropriate requests as soon as possible if such requests are to be admitted and considered" (T 1033/10, Catchword and Reasons, point 5.5).

The Board sees no reason to deviate from this interpretation of these criteria in applying Article 13 RPBA 2020.

2.4 In the Board's view, Article 13(2) RPBA 2020 requires the party not only to explain why the case involves exceptional circumstances, but also to explain why its amendment, in terms of both content and timing, represents a justified response to these circumstances. In particular, where a party seeks to amend its case at a very late stage in the proceedings, the cogent reasons referred to in Article 13(2) RPBA 2020 should include reasons why it was not possible to file such an amendment earlier.

2.5 In the present case, the Board's objections under Article 123(2) EPC were raised in its communication under Article 15(1) RPBA 2020 dated 19 November 2020. The appellant sought to introduce its response to these objections (the second auxiliary request) during oral proceedings before the Board held on 19 February 2021, after the Board had rejected the main and first auxiliary requests, hence at the latest possible stage in the procedure.

The appellant has not indicated any problem with the delivery of the Board's communication, nor was it argued that the objections under Article 123(2) EPC raised by the Board had not been understood. The appellant's response to the question why this request had not been filed earlier was that it thought that the arguments presented would overcome the Board's objections under Article 123(2) EPC. This does not represent a cogent reason why auxiliary request 2 could not have been filed, at least as a back-up, at an earlier stage.

2.6 Admitting auxiliary request 2 into the proceedings would mean that the Board would either have to adjourn the oral proceedings or it would have to deal with a previously unseen request during the oral proceedings. The Board does not consider itself obliged to do either of these things, except in cases where there are genuine reasons why the new request could not have been filed earlier. In this case there are no such reasons.

2.7 Auxiliary request 2 is therefore not admitted into the proceedings pursuant to Article 13(2) RPBA 2020.

Order

For these reasons it is decided that:

The appeal is dismissed.

The Registrar: The Chairman:

S. Sánchez Chiquero G. Eliasson

Decision electronically authenticated