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**Datasheet for the decision
of 5 April 2016**

Case Number: T 2324/11 - 3.4.03

Application Number: 05808825.3

Publication Number: 1797597

IPC: H01L33/00

Language of the proceedings: EN

Title of invention:

METHODS OF COATING SEMICONDUCTOR LIGHT EMITTING ELEMENTS BY
EVAPORATING SOLVENT FROM A SUSPENSION

Applicant:

Cree, Inc.

Headword:

Relevant legal provisions:

EPC 1973 Art. 54, 56, 83, 84
EPC Art. 123(2)

Keyword:

Amendments - added subject-matter (yes, auxiliary requests
9-18)
Inventive step - (yes, auxiliary request 20)

Decisions cited:

Catchword:



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Case Number: T 2324/11 - 3.4.03

D E C I S I O N
of Technical Board of Appeal 3.4.03
of 5 April 2016

Appellant: Cree, Inc.
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Representative: Golding, Louise Ann
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Decision under appeal: Decision of the Examining Division of the
European Patent Office posted on 14 June 2011
refusing European patent application No.
05808825.3 pursuant to Article 97(2) EPC.

Composition of the Board:

Chairman G. Eliasson
Members: S. Ward
T. Bokor

Summary of Facts and Submissions

- I. The appeal is against the decision of the Examining Division refusing European patent application No. 05 808 825 on the grounds that:

"Claim 1 of the main and of the first auxiliary request does not satisfy Art. 54(2) EPC and claim 1 of auxiliary requests 2-7 does not satisfy Art. 56 EPC. Furthermore, claim 1 of auxiliary requests 2,3,5,and 7 does not meet the requirements of Art. 84 EPC."

- II. At the end of the oral proceedings held before the Board the appellant requested that the decision under appeal be set aside and that a patent be granted on the basis of any one of auxiliary requests 9 to 18, filed with the letter dated 7 March 2016, or on the basis of:

Description: pages 1, 2, 2a, 3-13 as filed during the oral proceedings before the Board;

Claims: 1-10 as filed during the oral proceedings before the Board as Auxiliary Request 20;

Drawings: sheets 1/4 - 4/4 as published.

The main request and auxiliary requests 1 to 8, filed with letter dated 9 December 2011, and auxiliary request 19 filed in oral proceedings held before the Board were withdrawn by the appellant. The remaining requests have not been renumbered.

- III. The following documents cited by the Examining Division are referred to in this decision:

D3: EP 1 367 655 A1

D5: US 5 813 753

IV. For the requests remaining on file, claim 1 reads as follows:

(a) Auxiliary Request 9

"A method of fabricating a semiconductor light emitting device comprising:

placing a suspension (120) comprising phosphor particles (122) suspended in solvent (124) on a portion of a light emitting surface (110a) of a semiconductor light emitting element (110);

confining the suspension in a cavity for controlled evaporation on a portion of the light emitting surface, said cavity configured to provide a controlled amount and geometry for said suspension; and

evaporating at least some of the solvent (124) to cause the phosphor particles (122) to deposit on the portion of the light emitting surface and form a coating (130) thereon comprising the phosphor particles."

(b) Auxiliary Request 10

"A method of fabricating a semiconductor light emitting device comprising:

placing a suspension (120) comprising phosphor particles (122) suspended in solvent (124) on a portion of a light emitting surface (110a) of a semiconductor light emitting element (110);

confining the suspension in a cavity for controlled evaporation on a portion of the light emitting surface, said cavity configured to provide a controlled amount and geometry for said suspension; and

evaporating at least some of the solvent (124) to cause the phosphor particles (122) to deposit uniformly on the portion of the light emitting surface and form a

coating (130) thereon comprising the phosphor particles."

(c) Auxiliary Request 11

"A method of fabricating a semiconductor light emitting device comprising:

placing a suspension (120) comprising phosphor particles (122) suspended in solvent (124) on a portion of a light emitting surface (110a) of a semiconductor light emitting element (110);

confining the suspension in a cavity for controlled evaporation on a portion of the light emitting surface, said cavity configured to provide a controlled amount and geometry for said suspension, and wherein said cavity is in a mounting substrate; and

evaporating at least some of the solvent (124) to cause the phosphor particles (122) to deposit on the portion of the light emitting surface and form a coating (130) thereon comprising the phosphor particles."

(d) Auxiliary Request 12

"A method of fabricating a semiconductor light emitting device comprising:

placing a suspension (120) comprising phosphor particles (122) suspended in solvent (124) on a portion of a light emitting surface (110a) of a semiconductor light emitting element (110);

confining the suspension in a cavity for controlled evaporation on a portion of the light emitting surface, said cavity configured to provide a controlled amount and geometry for said suspension, and wherein said cavity is in a mounting substrate; and

evaporating at least some of the solvent (124) to cause the phosphor particles (122) to deposit solely on the

portion of the light emitting surface and form a coating (130) thereon comprising the phosphor particles."

(e) Auxiliary Request 13

"A method of fabricating a semiconductor light emitting device comprising:

placing a suspension (120) comprising phosphor particles (122) suspended in solvent (124) on a portion of a light emitting surface (110a) of a semiconductor light emitting element (110);
confining the suspension in a cavity for controlled evaporation on a portion of the light emitting surface, said cavity configured to provide a controlled amount and geometry for said suspension, and wherein said cavity is an LED reflector cavity; and
evaporating at least some of the solvent (124) to cause the phosphor particles (122) to deposit on the portion of the light emitting surface and form a coating (130) thereon comprising the phosphor particles."

(f) Auxiliary Request 14

"A method of fabricating a semiconductor light emitting device comprising:

placing a suspension (120) comprising phosphor particles (122) suspended in solvent (124) on a portion of a light emitting surface (110a) of a semiconductor light emitting element (110) on a mounting substrate;
confining the suspension in a cavity for controlled evaporation on a portion of the light emitting surface, said cavity configured to provide a controlled amount and geometry for said suspension, and wherein said cavity is in said mounting substrate; and

evaporating at least some of the solvent (124) to cause the phosphor particles (122) to deposit on the portion of the light emitting surface and form a coating (130) thereon comprising the phosphor particles; wherein said mounting substrate includes electrical traces thereon to provide external connections for the semiconductor light emitting device."

(g) Auxiliary Request 15

*"A method of fabricating a semiconductor light emitting device comprising:
placing a suspension (120) comprising phosphor particles (122) suspended in solvent (124) on a portion of a light emitting surface (110a) of a semiconductor light emitting element (110);
confining the suspension in a cavity for controlled evaporation on a portion of the light emitting surface, said cavity configured to provide a controlled amount and geometry for said suspension, and wherein said cavity is in said semiconductor light emitting device;
and
evaporating at least some of the solvent (124) to cause the phosphor particles (122) to deposit on the portion of the light emitting surface and form a coating (130) thereon comprising the phosphor particles."*

(h) Auxiliary Request 16

*"A method of fabricating a semiconductor light emitting device comprising:
placing a suspension (120) comprising phosphor particles (122) suspended in solvent (124) on a portion of a light emitting surface (110a) of a semiconductor light emitting element (110);*

confining the suspension in a cavity for controlled evaporation on a portion of the light emitting surface, said cavity configured to provide a controlled amount and geometry for said suspension; and evaporating at least some of the solvent (124) to cause the phosphor particles (122) to deposit uniformly on the portion of the light emitting surface and form a coating (130) thereon comprising the phosphor particles, wherein said semiconductor light emitting element (110) is on a mounting substrate."

(i) Auxiliary Request 17

*"A method of fabricating a semiconductor light emitting device comprising:
placing a suspension (120) comprising phosphor particles (122) suspended in solvent (124) on a portion of a light emitting surface (1110a) of a semiconductor light emitting element (110);
confining the suspension in a cavity for controlled evaporation on a portion of the light emitting surface;
and
evaporating at least some of the solvent (124) to cause the phosphor particles (122) to deposit uniformly on the portion of the light emitting surface and form a coating (130) thereon comprising the phosphor particles,
wherein said semiconductor light emitting element (110) is on a mounting substrate which includes electrical traces thereon to provide external connections for the semiconductor light emitting device."*

(j) Auxiliary Request 18

"A method of fabricating a semiconductor light emitting device comprising:

placing a suspension (120) comprising phosphor particles (122) suspended in solvent (124) on a portion of a light emitting surface (110a) of a semiconductor light emitting element (110); and

evaporating at least some of the solvent (124) to cause the phosphor particles (122) to deposit on said portion of the light emitting surface and form a coating (130) thereon comprising the phosphor particles;

wherein the light emitting surface is in a cavity and wherein placing comprises placing the suspension comprising phosphor particles suspended in solvent in the cavity;

wherein placing is preceded by providing a mounting substrate (210) for the semiconductor light emitting device including the cavity therein, and mounting the semiconductor light emitting element in the cavity such that the light emitting element is on the cavity floor and the light emitting surface protrudes away from the cavity floor;

and wherein evaporating at least some of the solvent causes the phosphor particles to uniformly deposit solely on the face of the light emitting surface that is remote from the cavity floor."

(k) Auxiliary Request 20

"A method of fabricating a semiconductor light emitting device comprising:

placing a suspension (120) comprising phosphor particles (122) suspended in solvent (124) on at least a portion of a light emitting surface (110a; 110b) of a semiconductor light emitting element (110);

wherein the light emitting surface (110a; 110b) is in a cavity (212) and wherein placing comprises placing the

suspension (120) comprising phosphor particles (122) suspended in solvent (124) in the cavity (212), wherein said cavity (212) is an LED reflector cavity and the semiconductor light emitting element is mounted in said cavity (212); and evaporating at least some of the solvent (124) to cause the phosphor particles (122) to deposit on the at least a portion of the light emitting surface and form a coating (130) thereon comprising the phosphor particles (122), wherein said semiconductor light emitting element (110) is a light emitting diode."

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

Concerning the Board's objection under Article 123(2) EPC that in auxiliary requests 9-17, claim 1 comprised what appeared to be three separate steps (placing, confining and evaporating), it would be clear to the skilled person in the context of the invention that the first two referred to the same step. Nevertheless, if the Board considered it necessary, this matter could be clarified by further amendment, e.g. using the wording of claim 2 as filed.

Claim 1 of auxiliary request 18 also complied with the requirements of Article 123(2) EPC. This claim was directed at the subject-matter depicted in Figs. 2A and 2B, and uniformly depositing the phosphor particles "solely on the face of the light emitting surface that is remote from the cavity floor" found a basis in these drawings.

Claim 1 of auxiliary request 20 was based on claims 1 and 2 as filed and on the passage on page 12, lines

4-8, and clearly complied with the requirements of Article 123(2) EPC.

Furthermore, the subject-matter of claim 1 of auxiliary request 20 clearly overcame the novelty objection of the contested decision, which was based on the embodiment of paragraphs [0363]-[0368] and Figs 52(a) to 52(d) of document D3, at least for the reason that document D3 did not disclose a process involving placing a suspension in an LED reflector cavity.

This subject-matter was also inventive. The cavity 501 in document D3 was a mold cavity used at an intermediate manufacturing stage, but not present in the final device, which was of an entirely different type to that which would be achieved by the claimed method.

Document D5 disclosed (embodiment 16, Fig. 5) an LED device with a phosphor layer deposited thereon which was mounted in a reflector cavity. No particular method for depositing the phosphor was disclosed, however, it was clear from the absence of phosphor on the reflector that such deposition must precede the mounting of the LED device in the reflector cup. The skilled person would not consider a method according to claim 1 of auxiliary request 20, as this would not lead to the required product.

The claimed method was a simple *in situ* procedure for providing a phosphor coating for an LED device. It was true that phosphor particles would also be deposited on the reflecting surface, but even if this would result in a light distribution different from that of document D5, this difference might be acceptable or desirable, depending on circumstances.

VI. The findings of the Examining Division, insofar as they are relevant for the present decision, may be summarised as follows:

Claim 1 of the second auxiliary request contained the feature "in a mounting substrate cavity" and therefore its subject-matter was novel with respect to D3 because the suspension in D3 was confined in a mold, and after the deposition of the phosphor particles, the LED was taken out from the mold.

The objective technical problem with respect to D3 was that an additional process step was needed in which the phosphor particles are immobilized on the semiconductor light emitting element with a resin because the semiconductor element is taken out of the cavity after evaporation of the solvent.

The solution to this problem was to fabricate the semiconductor element in a cavity of a substrate from which it is not removed. Such a method step was known from D5 (Fig. 2; column 3, lines 17-43). Consequently, a combination of the teachings of D3 and D5 would lead the skilled person to a method of fabricating a semiconductor light emitting device according to claim 1.

It was also possible to consider D5 as the closest prior art document. D5 disclosed (Fig. 5) a coating of phosphor particles on an LED in a cavity of a mounting substrate. The objective technical problem with respect to D5 was that there was no indication in D5 as to how to deposit the phosphor particles. The solution to this problem was to place a suspension comprising phosphor particles suspended in a solvent on the LED and

evaporate the solvent which was known from D3 (see Fig. 52). The subject-matter of claim 1 was therefore not inventive with respect to a combination of D5 and D3.

Claim 1 of the fourth auxiliary request comprised the additional feature of confining the suspension "in an LED reflector cavity" [hence it broadly corresponds to auxiliary request 20 filed in appeal]. Such an LED reflector cavity was described in D5 (column 2, line 28 and lines 35-36). Following the argumentation given above (starting from D3 or D5), the subject-matter of claim 1 did not meet the requirements of Article 56 EPC.

Reasons for the Decision

1. The appeal is admissible.
2. *Auxiliary requests 9-17*
 - 2.1 Claim 1 of the request labelled "Auxiliary Request 9" (the current effective main request) defines a method of fabricating a semiconductor light emitting device comprising *inter alia* the following two steps:
 - "*placing a suspension (120) comprising phosphor particles (122) suspended in solvent (124) on a portion of a light emitting surface (110a) of a semiconductor light emitting element (110)*"; and
 - "*confining the suspension in a cavity for controlled evaporation on a portion of the light emitting surface, said cavity configured to provide*

a controlled amount and geometry for said suspension".

While such a formulation might - arguably - include embodiments in which the steps of "placing" and "confining" are in fact one and the same step, the Board sees no way in which this claim can be reasonably read to the exclusion of embodiments in which these steps are separate and distinct.

In the application as filed, however, for those embodiments involving a cavity, placing the suspension on the light emitting surface and confining it in the cavity are disclosed as aspects of a single method step (see e.g. claim 2 as filed). Nowhere in the original application is there any description or hint that these are, or could be, separate steps.

- 2.2 The appellant's argument that, within the context of the present invention, the skilled person would read claim 1 as defining placing and confining the suspension to represent a single method step is not persuasive, as it effectively requires ignoring the plain, intelligible and unambiguous meaning of the claim.

Where an amended claim, on the basis of its literal wording, includes subject-matter having no basis in the application as filed, an objection under Article 123(2) EPC arises. The argument that the claim should be read, in the light of the description, as excluding this subject-matter would render Article 123(2) EPC pointless.

Consequently the Board judges that claim 1 of auxiliary request 9 does not satisfy the requirements of Article 123(2) EPC.

2.3 Since the independent claims according to auxiliary requests 10-17 comprise the same formulation (separate placing and confining steps), these requests also fail to meet the requirements of Article 123(2) EPC.

2.4 During the oral proceedings it was discussed whether any of auxiliary requests 9-17, if suitably amended to overcome the objection under Article 123(2) EPC, might be considered to satisfy the other requirements of the EPC. The Board was of the view that the wording of the independent claims of these requests was such as to give concern that the requirements of support in the description (Article 84 EPC) and disclosure (Article 83 EPC) were not met.

However, no amendments to auxiliary requests 9-17 were filed, and the objection under Article 123(2) EPC therefore remains. Consequently it is unnecessary for the Board to further discuss the other matters.

3. *Auxiliary request 18*

3.1 Claim 1 of auxiliary request 18 defines *inter alia* the following feature:

- *"and wherein evaporating at least some of the solvent causes the phosphor particles to uniformly deposit solely on the face of the light emitting surface that is remote from the cavity floor."*

3.2 This feature is not literally disclosed in the application as filed, and indeed the word "solely"

appears nowhere in the description. According to the appellant, the basis is in Figs. 2A and 2B (and the associated text), the "face of the light emitting surface that is remote from the cavity floor" referring to the upper surface 110a of the semiconductor light emitting element 110 depicted in these drawings.

3.3 Fig. 2A discloses a suspension 120 comprising phosphor particles 122 suspended in solvent 124 being placed in the cavity 212, the suspension thereby being in contact with the upper face 110a of the light emitting element 110 and with the side-walls of the cavity. After evaporation, Fig. 2B shows that a coating 130 of phosphor particles has been deposited on the upper face 110a of the light emitting element 110. However, the coating has also clearly been deposited on portions of the side-walls of the cavity, and the Board therefore doubts that these drawings represent a disclosure of depositing the phosphor particles "solely" on the face claimed.

3.4 Moreover, even if it were accepted *arguendo* that Fig. 2B represents an example of a coating of phosphor particles deposited solely on the face 110a, it would have to be asked whether Figs. 2A and 2B represent a sufficient basis for the level of generality at which this feature is claimed.

Fig. 2B discloses other features in combination with the coating of phosphor particles, in particular a semiconductor light emitting element 110 which extends across the entire cavity floor from one cavity wall to the opposite cavity wall, a feature which has not been imported into claim 1 of auxiliary request 18. The claim thus comprises embodiments in which the coating is deposited solely on the face remote from the cavity

floor, but in which the light emitting element does not extend across the entire cavity. No basis in the application can be seen for such embodiments.

- 3.5 Nor, in the opinion of the Board, can it be legitimately argued that these features have no structural or functional connection with each other, and that the importation into the claimed subject-matter of one without the other should therefore be allowed.

On the contrary, it is precisely the fact that the semiconductor light emitting element in Figs. 2A and 2B extends across the entire cavity floor which results in the coating not being deposited on the side faces of the semiconductor light emitting element, since they are masked by the cavity walls. These two features are therefore disclosed as being inextricably linked, and the importation into claim 1 of one without the other leads to subject-matter not based on the original application documents.

- 3.6 Claim 1 according to auxiliary request 18 therefore fails to meet the requirements of Article 123(2) EPC.

4. *Auxiliary request 20: Article 123(2) EPC*

- 4.1 Claim 1 of auxiliary request 20 is based on claims 1 and 2 as filed and on the passage on page 12, lines 4-8. References to the semiconductor light emitting element being an LED occur throughout the description, for example in the passage from page 8, line 11 to page 9, line 4. Claim 1 of auxiliary request 20 therefore complies with the requirements of Article 123(2) EPC.

5. *Auxiliary request 20: Novelty*

5.1 The subject-matter of claim 1 of auxiliary request 20 comprises (in summary form) the following steps: placing the suspension in an LED reflector cavity in which the semiconductor light emitting element is mounted, and evaporating the solvent to deposit the phosphor particles on the light emitting surface.

5.2 In the contested decision, no objection of lack of novelty was raised against essentially the same subject-matter (claim 1 of auxiliary request 4 as then on file), and the Board also sees no reason to raise such an objection.

6. *Auxiliary request 20: Inventive Step*

6.1 The Examining Division concluded that even where novelty could be acknowledged, the claimed subject-matter lacked inventive step on the basis of a combination of documents D3 and D5 (starting from either document - see Grounds for the decision, point 3), a conclusion which extended to the case where the cavity was defined to be an LED reflector cavity (see Grounds for the decision, point 5).

6.2 The relevant embodiment of document D3 is that of paragraphs [0363]-[0368] and Figs. 52(a) to 52(d). In Fig. 52(a) a suspension 507 containing a solvent 510 and phosphor particles 511 is poured into a cavity of a mold 501, and in Fig. 52(b) the solvent is evaporated to deposit phosphor particles on the LED. Following further process steps, the light-emitting semiconductor device is removed from the mold 501, and the final product is shown in Fig. 52(d).

6.3 Claim 1 of auxiliary request 20 differs in that the "cavity (212) is an LED reflector cavity". The skilled person would understand by "an LED reflector cavity" a concave reflector in which the semiconductor light emitting element is mounted for providing directionality to the emitted light. In other words, the LED reflector cavity would be understood to be part of the final product.

In the contested decision it was argued that it would be obvious to arrive at this distinguishing feature on the basis of document D5 (Fig. 2, column 3, lines 17-43).

6.4 The invention defined by claim 1 of auxiliary request 20 is a method of fabricating a semiconductor light emitting device of a type comprising an LED reflector cavity. Such reflectors are well-known in the art, and have the function of redirecting light from the semiconductor element so that light exiting the device is concentrated, as far as possible, in a single direction (see e.g. document D5, column 1, lines 37-50).

By contrast, the method disclosed in the relevant embodiment of document D3 is for fabricating the device shown in Fig. 52(d), in which the top surface and the side surfaces of the light-emitting diode 502 are coated with a dense distribution of phosphor particles 511, and the LED 502 is surrounded on all sides (other than at the location of the substrate 503) by a base material 512 comprising a translucent resin and a small amount of phosphor particles 511. There is no reflector.

It would be clear to the skilled person that light would emerge from the device of Fig. 52(d) from the top and the side surfaces of the base material 512 over a wide range of angles. In the opinion of the Board, the form and characteristics of devices disclosed in the prior art must be presumed to be the result of a deliberate choice, unless there is a clear indication to the contrary. In the case of document D3, the inventor has chosen a form in which the light can exit the side surfaces, and even part of the lower surface, presumably to achieve emission over a wide range of angles, and the removal of the mold cavity 501 so that light can exit the outer surfaces of the base material 512 is an essential step in achieving such a characteristic.

- 6.5 The Examining Division appear to have regarded the technical problem as being essentially to provide a simplified fabrication method. While the Board accepts that a realistic technical problem might be to simplify the manufacture of the device of Fig. 52(d), this problem would not be solved by the distinguishing feature, as incorporating an LED reflector cavity would lead to an entirely different type of device.

Any formulation of a "problem" which is solved by placing the suspension in an LED reflector cavity would inevitably amount to something like: how to convert the method of Fig. 52 of document D3 into a method for manufacturing an LED device of a different type having a different light distribution characteristic.

This is the type of contrived problem which has been consistently rejected by the boards as unrealistic, and having to formulate a problem in these terms is a clear

indication that document D3 is not a suitable choice of closest prior art.

- 6.6 The Board therefore takes document D5 to be the closest prior art, and in particular "embodiment 16" depicted in Fig. 5, in which phosphor is deposited as a layer on the LED stack 51. The method by which the phosphor particles are deposited is not stated. Claim 1 differs in providing the following features (in summary form): placing a suspension comprising phosphor particles in an LED reflector cavity in which the LED is mounted and evaporating the solvent to cause the phosphor particles to deposit on the light emitting surface of the LED and form a phosphor coating.
- 6.7 The stated technical effect of these features is to deposit a phosphor coating on the light emitting surface of the LED, and hence the technical problem may be seen as furnishing a method for providing such a coating.
- 6.8 The difference mentioned under point 6.3, above, is not disclosed in any of the available prior art. In particular, document D3 discloses placing a suspension in a mold cavity which is subsequently removed to form an LED device which has no reflector.

In essence, it appears to be argued in the contested decision that the skilled person would arrive at the claimed subject-matter starting from Fig. 5 of document D5 by adapting the method of document D3 in such a manner that the suspension is placed not in a mold cavity but in the LED reflector cavity of document D5.

The Board doubts whether such an adaptation could be considered obvious. Document D5 discloses that an LED

reflecting cavity serves an optical function, namely redirecting light rays emitted from the side surfaces of the LED element. The suggested adaptation would require the skilled person to recognise that the LED reflecting cavity could serve an additional and quite different function as a receptacle for evaporating a suspension, despite there being no disclosure of an LED reflecting cavity serving such a function in the available prior art.

- 6.9 Moreover, even if the skilled person were to hit upon this idea, it would be clear that such an adaptation would result in a coating of phosphor particles on all surfaces with which the suspension was in contact, including at least the lower parts of the UV and visible mirror 53 on the cavity wall. In other words, such a method would not result in the device shown in Fig. 5 of document D5.

The resulting coating of phosphor particles on the mirror would clearly degrade its specular reflecting properties, and it is not plausible that the skilled person would regard such a degradation as being insignificant, given the importance attached to the mirror throughout document D5 (see e.g. column 2, lines 26-28; column 4, lines 12-17). Hence, even if the distinguishing feature somehow occurred to the skilled person, it is implausible that, within the context of the disclosure of document D5, the skilled person would regard it as a suitable solution to the above problem.

- 6.10 LED light sources are used to provide many different light distributions depending on circumstances. The appellant accepted that document D5 taught the use of a reflecting cavity with a UV/visible specular mirror surface, and that having phosphor particles on (at

least the lower part of) the reflecting surface might well result in a different light distribution. However, the appellant essentially argued that, depending on circumstances and requirements, a deviation from the light distribution of document D5 might be tolerable or even preferred. In such cases the claimed subject-matter represented a simple *in situ* method for providing a phosphor coating on an LED device. The Board sees no reason to disagree.

6.11 In the light of the above considerations, the Board concludes that the subject-matter of claim 1 of auxiliary request 20 involves an inventive step within the meaning of Article 52(1) EPC and Article 56 EPC 1973. Claims 2-10 are directly or indirectly dependent on claim 1, and hence the subject-matter defined therein is also considered to involve an inventive step.

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 with the following documents:

Description: pages 1, 2, 2a, 3-13 as filed during the oral proceedings before the Board;

Claims: 1-10 as filed during the oral proceedings before the Board as Auxiliary Request 20;

Drawings: sheets 1/4 - 4/4 as published.

The Registrar:

The Chairman:



S. Sánchez Chiquero

G. Eliasson

Decision electronically authenticated