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**Datasheet for the decision
of 24 January 2024**

Case Number: T 0828/20 - 3.3.10

Application Number: 13196046.0

Publication Number: 2821459

IPC: C09K11/06, C07D209/82,
H01L51/00, H01L51/50, H05B33/20

Language of the proceedings: EN

Title of invention:

COMPOSITION AND ORGANIC OPTOELECTRIC DEVICE AND DISPLAY DEVICE

Patent Proprietor:

Cheil Industries Inc.

Opponent:

Dehns Limited

Headword:

Relevant legal provisions:

EPC R. 76(2) (c)
EPC Art. 111(1), 56, 112(1) (a)
RPBA 2020 Art. 12(4), 12(6)

Keyword:

Admissibility of opposition - (yes)

Referral to the Enlarged Board of Appeal - (no)

Inventive step - (no) - main request and auxiliary requests 1
to 4 - (yes) - auxiliary request 5

Decisions cited:

T 0882/17, T 1178/04

Catchword:



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Case Number: T 0828/20 - 3.3.10

D E C I S I O N
of Technical Board of Appeal 3.3.10
of 24 January 2024

Appellant: Dehns Limited
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Decision under appeal: **Interlocutory decision of the Opposition
Division of the European Patent Office posted on
20 January 2020 concerning maintenance of the
European Patent No. 2821459 in amended form.**

Composition of the Board:

Chair M. Kollmannsberger
Members: R. Pérez Carlón
F. Blumer

Summary of Facts and Submissions

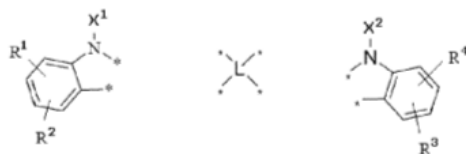
I. The appellant (opponent) appealed against the opposition division's decision concerning maintenance of European patent No. 2 821 459 in the form of the first auxiliary request then pending, which is the respondent's (patent proprietor's) main request in appeal.

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

1. A composition, comprising

a first host compound including moieties represented by the Chemical Formulae 1 to 3 that are sequentially bonded with each other,

[Chemical Formula 1] [Chemical Formula 2] [Chemical Formula 3]



wherein, in the Chemical Formulae 1 to 3,

X¹ is *-Y¹-ET,

X² is *-Y²-Ar¹,

ET is a substituent capable of accepting an electron when electric field is applied,

Ar¹ is a substituted or unsubstituted C₆ to C₃₀ aryl group, a substituted or unsubstituted C₂ to C₃₀ heteroaryl group, or a combination thereof,

Y¹ and Y² are each independently a single bond, a substituted or unsubstituted C₁ to C₂₀ alkylene group, a substituted or unsubstituted C₂ to C₂₀ alkenylene group, a substituted or unsubstituted C₆ to C₃₀ arylene group, a substituted or unsubstituted C₂ to C₃₀ heteroarylene group, or a combination thereof,

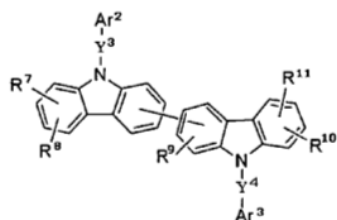
L is a substituted or unsubstituted C2 or C3 alkenylene group or a substituted or unsubstituted C6 to C20 arylene group, and

R¹ to R⁴ are each independently hydrogen, deuterium, a substituted or unsubstituted C1 to C20 alkyl group, a substituted or unsubstituted C6 to C30 aryl group, a substituted or unsubstituted C2 to C30 heteroaryl group, or a combination thereof.

and

a second host compound represented by one of the Chemical Formula 4 to 6:

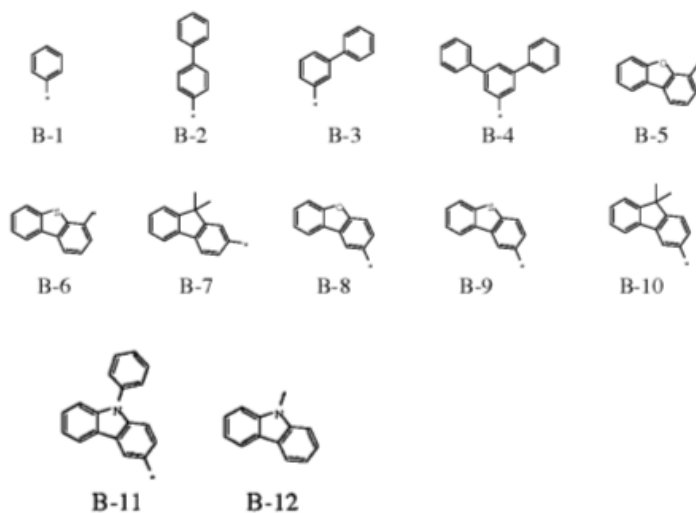
[Chemical Formula 4]



wherein, in the Chemical Formula 4,

*-Y³-Ar², *-Y⁴-Ar³ is one of substituents listed in Group 3.

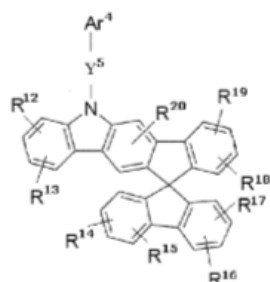
[Group 3]



and

R^7 to R^{11} are independently hydrogen, deuterium, a substituted or unsubstituted C1 to C20 alkyl group, a substituted or unsubstituted C6 to C30 aryl group, a substituted or unsubstituted C2 to C30 heteroaryl group, or a combination thereof

[Chemical Formula 5]



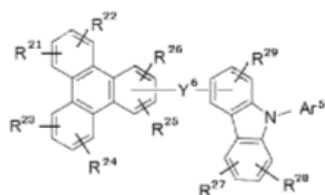
wherein, in the Chemical Formula 5,

Ar^4 is a substituted or unsubstituted C6 to C30 aryl group, a substituted or unsubstituted C2 to C30 heteroaryl group, or a combination thereof,

Y^5 is a single bond, a substituted or unsubstituted C1 to C20 alkylene group, a substituted or unsubstituted C2 to C20 alkenylene group, a substituted or unsubstituted C6 to C30 arylene group, a substituted or unsubstituted C2 to C30 heteroarylene group, or a combination thereof, and

R^{12} to R^{20} are independently hydrogen, deuterium, a substituted or unsubstituted C1 to C20 alkyl group, a substituted or unsubstituted C6 to C30 aryl group, a substituted or unsubstituted C2 to C30 heteroaryl group, or a combination thereof.

[Chemical Formula 6]



wherein, in the Chemical Formula 6

Ar⁵ is a substituted or unsubstituted C6 to C30 aryl group, a substituted or unsubstituted C2 to C30 heteroaryl group, or a combination thereof,

Y⁶ is independently a single bond, a substituted or unsubstituted C1 to C20 alkylene group, a substituted or unsubstituted C2 to C20 alkenylene group, a substituted or unsubstituted C6 to C30 arylene group, a substituted or unsubstituted C2 to C30 heteroarylene group, or a combination thereof, and

R²¹ to R²⁹ are independently hydrogen, deuterium, a substituted or unsubstituted C1 to C20 alkyl group, a substituted or unsubstituted C6 to C30 aryl group, a substituted or unsubstituted C2 to C30 heteroaryl group, or a combination thereof.

III. Notice of opposition had been filed on the grounds of insufficient disclosure (Article 100(b) EPC), and lack of novelty and inventive step (Article 100(a) EPC).

IV. The English versions of the following documents (in brackets) are cited in the present decision. The English version of D3 is not prior art:

- D1 WO 2012/153725 (EP 2 709 181 A1)
- D2 WO 2012/176818 (US 2014/0217378 A1)
- D3 WO 2013/058343 (US 2014/0299865 A1)
- D4 WO 2013/062075 (US 2014/0306207 A1)

The experimental evidence filed includes the following:

- D8 Supplementary Experimental Data filed by the patent proprietor with letter dated 18 November 2019
- D9 Experimental Data Report filed by the opponent with the statement of grounds of appeal dated 29 May 2020

D10 Supplementary Experimental Data filed by the patent proprietor with its reply to the opponent's grounds for appeal dated 20 October 2020

V. The opposition division concluded that the opposition was admissible.

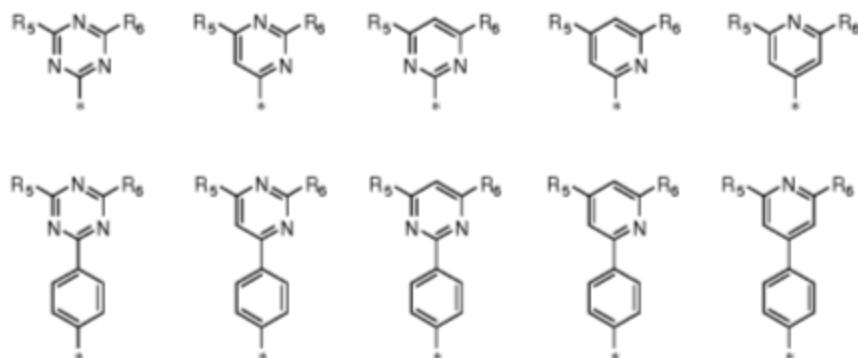
The composition of claim 1 of the first auxiliary request was novel over example 1 of document D3, which was the closest prior art. The problem underlying the claimed invention was to provide an alternative. The claimed solution, characterised by lacking a triazine substituent in the component of formula (4), was not obvious in view of the prior art and was thus inventive.

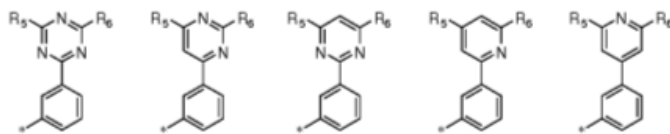
The opposition division's conclusion on the issue of sufficiency of disclosure is not challenged in appeal.

VI. With the reply to the grounds of appeal, the respondent filed six auxiliary requests.

Auxiliary request 1 requires substituent ET of the first host component to be selected from those of Group 1.

[Group 1]





wherein, in the Group 1,

R⁵ and R⁶ are each independently hydrogen, deuterium, a substituted or unsubstituted C1 to C20 alkyl group, a substituted or unsubstituted C6 to C30 aryl group, a substituted or unsubstituted C2 to C30 heteroaryl group, or a combination thereof.

Claim 1 of auxiliary request 2 differs from claim 1 of the first auxiliary request in that residues R⁵ and R⁶ do not include "C2 to C30 heteroaryl group".

According to claim 1 of auxiliary request 3, residues R⁵ and R⁶ can only be substituted or unsubstituted C6 to C30 aryl groups.

Claim 1 of auxiliary request 4 has the features of claim 1 of auxiliary request 3 and further requires the residue X² of the first host compound of formulae (1) to (3) to be one of the substituents in Group 3 as defined in claim 1 of the main request.

Claim 1 of auxiliary request 5 requires a first host compound as defined in claim 1 of the main request and a second host compound of formula (5) or (6).

VII. The appellant's arguments were as follows.

In view of the diverging conclusions in T 882/17 and T 1178/04, the appellant agreed with the respondent that the question of whether examination of the admissibility of an opposition or the principle of "no

reformatio in peius" took precedence in appeal should be referred to the Enlarged Board of Appeal.

The notice of opposition was sufficiently substantiated and the opposition was thus admissible.

The arguments on the issue of novelty should be admitted into the proceedings even if they represented an amendment of its case. The issue was a legal one and did not require appraisal of technical evidence, and the objections on novelty had been withdrawn at the oral proceedings before the opposition division only because the discussion should focus on inventive step.

As the opposition division took no decision on the admissibility of experimental evidence D8, it was not automatically part of the appeal proceedings and should not be admitted into the proceedings, as it had been late filed. D9 was a reply to D8 filed at the earliest opportunity and should be admitted into the proceedings. In view of the experimental flaws in document D10, it could not put the results in D9 into question and should not be admitted into the proceedings.

Example 1 of D3 was the closest prior art for the composition of claim 1 of the main request. It disclosed a composition having a first host compound as required by claim 1 and a second host compound which differed from those of formula (4) by lacking a substituent of Group 3. Even if the composition tested in D8 were superior to the composition in D3, the improvement could not have been achieved by every embodiment of claim 1 and the problem underlying the claimed invention was the mere provision of an alternative. D1, D2 and D3 disclosed compounds of

formula (4) as suitable components of compositions for electroluminiscent applications; these components would have been obvious to a skilled person seeking an alternative. The compositions of claim 1 of the main request were thus not inventive. The same argument applied to those of claim 1 of the first to fourth auxiliary requests.

The respondent's auxiliary requests should not be admitted into the proceedings. Firstly since the grounds for opposition had not changed in the proceedings and the auxiliary requests should have been filed earlier, and secondly as they could not solve the issues in main request.

Examples 29 to 31 of D1 were the closest prior art for the compositions of claim 1 of auxiliary request 5. The second host compound in these examples differed from that required by claim 1 by having a sulfur instead of a nitrogen moiety. The problem underlying the claimed invention was the provision of alternative compositions suitable for electroluminescent applications. The claimed solution, characterised by the structure of the second host compound, would have been obvious to a skilled person in view of its structural similarity and was thus not inventive.

VIII. The respondent's arguments were as follows.

The question of whether the admissibility of an opposition or the principle of "no reformatio in peius" took precedence in appeal should be referred to the Enlarged Board of Appeal in view of the different conclusions in T 882/17 and T 1178/04.

The opposition should be rejected as inadmissible, as

it was not sufficiently substantiated. In the notice of opposition it was not clear whether the documents cited were relevant for novelty or inventive step. The sole argument presented on the issue of sufficiency of disclosure was that the claimed subject-matter was overly broad but no serious doubts, substantiated by verifiable facts were put forward. If the board were to conclude that the opposition was admissible, the respondent requested that four questions be referred to the Enlarged Board of Appeal concerning what standards applied for the substantiation of an opposition.

The appellant's arguments on the issue of novelty should not be admitted into the proceedings, as they had been withdrawn at the oral proceedings before the opposition division.

D8 was a reply to the arguments relying on example 1 of D3. Said arguments had been filed shortly before the oral proceedings in opposition and D8 should be admitted into the proceedings. D9 could not question the results in D8 and should have been filed earlier; for these reasons it should not be admitted into the proceedings. If D9 were to be admitted, D10 should also be admitted into the proceedings, as the latter was a reply to former.

Like the appellant, the respondent considered example 1 of D3 to be the closest prior art for the composition of claim 1 of the main request. The problem underlying the claimed invention was to provide improved electroluminescent compositions and the claimed solution was characterised by the chemical structure of the second host compound. In view of D8, the problem was credibly solved. If the problem were to be reformulated as to provide an alternative, the case

should be remitted to the opposition division. Even as the provision of an alternative, the claimed solution would not have been obvious to a skilled person and was inventive.

The respondent acknowledged that the arguments with respect to inventive step would not differ for the compositions of claim 1 of the first to fourth auxiliary request.

Auxiliary request 5 had been filed with the reply to the grounds of appeal and addressed the issue of inventive step, which only became apparent shortly before the oral proceedings in opposition. It should thus be admitted into the proceedings.

With respect to the subject-matter of auxiliary request 5, the respondent did not disagree with the appellant in the choice of closest prior art or in that the problem underlying the invention was to provide an alternative. A skilled person would nevertheless have found no hint at the claimed solution, which was thus inventive.

IX. Oral proceedings before the board of appeal took place on 24 January 2024.

X. The parties' final requests were as follows:

The appellant requested that the decision under appeal be set aside and that the European patent No. 2 821 459 be revoked.

The respondent requested that

- the opposition be rejected as inadmissible, or
- that the appeal be dismissed, or

- that the patent be maintained with the claims of one of auxiliary requests 1 to 6, all as filed with the reply to the grounds of appeal.

XI. At the end of the oral proceedings, the decision was announced.

Reasons for the Decision

1. Admissibility of the opposition

1.1 The respondent requested that the opposition be rejected as inadmissible for lack of substantiation. The opposition is however admissible for the reasons that follow.

1.2 Rule 76(2)(c) EPC requires the notice of opposition to define the extent to which the European patent is opposed, the grounds on which the opposition is based and an indication of the facts and evidence presented in support of these grounds. The fulfilment of the latter requirements in respect of one of the grounds of opposition is enough to render admissible the opposition as a whole (Case Law of the Boards of Appeal, 10th Ed. 2022, IV.C.2.2.8.a).

1.3 Point 3.1.1.c, second paragraph, of the notice of opposition states that "claim 1 of T-Pat does not have novelty in view of D1". Point 3.1.1.a provides the passages of D1 relevant to the second host compound required by claim 1; those regarding the first host compound can be found in point 3.1.1.b.

The notice of opposition thus explains the facts and reasons why the claimed subject-matter should be considered not novel over document D1. The notice of

opposition thus sufficiently substantiates at least the ground of opposition in Article 100(a) EPC with respect to Article 54 EPC. The requirements of Rule 76(2)(c) EPC are fulfilled. The opposition is admissible.

2. Requests to refer questions to the Enlarged Board of Appeal
 - 2.1 On the diverging conclusions in T 882/17 and T 1178/04
 - 2.1.1 The respondent requested that a question be referred to the Enlarged Board of Appeal in view of the diverging conclusions in T 882/17 and T 1178/04 on whether the principle of *no reformatio in peius* should prohibit examination of the admissibility of an opposition in appeal proceedings in which the opponent is the sole appellant. The appellant agreed.
 - 2.1.2 Decision T 1178/04 concluded that the duty of the European Patent Office to *ex officio* examine the status of the opponent at all stages of the proceedings extended to the admissibility of the original opposition. In such case, the doctrine of *no reformatio in peius* was of no application.

According to T 882/17 if the opponent was the sole appellant against an interlocutory decision maintaining a patent in amended form, an objection related to the inadmissibility of the opposition was subject to the principle of the prohibition of *reformatio in peius*. The board was thus prohibited from ordering the maintenance of the patent as granted due to the inadmissibility of the opposition.
 - 2.1.3 According to the case law, a question referred to the Enlarged Board of Appeal must not have a merely

theoretical significance for the case at hand. This would be the case if the referring board were to reach the same decision regardless of the answer to the referred question (Case Law of the Boards of Appeal, 10th edn. 2022 V.B.2.3.3).

2.1.4 For the reasons in point 1. above, the opposition is admissible and thus the question of whether the principle of *no reformatio in peius* or the duty to examine the admissibility of an opposition should take precedence is not relevant for the outcome of the present appeal proceedings. The requests to refer a question to the Enlarged Board of Appeal on this issue cannot thus be allowed.

2.2 Respondent's request for referral on the standards for substantiation of an opposition

2.2.1 The respondent also requested that four questions be referred to the Enlarged Board of Appeal if the board concluded that the opposition was sufficiently substantiated. The questions concern the standards required for the substantiation of an opposition (see point 3.b of the respondent's letter dated 11 March 2022). This request is not allowed, either, for the reasons that follow.

The first of the questions presupposes that it cannot be clearly seen which evidential support corresponds to which ground of appeal. As the board concluded that at least the link between the ground for opposition of lack of novelty and the required evidence could be identified, this question does not need to be referred.

The second and third questions were linked to a negative answer to the first question and thus do not

need to be referred either.

The fourth of the respondent's questions is whether for an opposition to be admissible on the grounds set by Article 100(a) and (b) EPC would be enough to argue that the claims are too broad or serious doubts, substantiated by verifiable facts are needed.

The board concluded that at least the ground of opposition of lack of novelty was sufficiently substantiated and the opposition thus admissible. The fourth question of the respondent, related to the standard of substantiation on the issues of inventive step and sufficiency of disclosure, does not need to be referred to the Enlarged Board of Appeal in the context of the present appeal proceedings, as it does not have a bearing on their outcome.

3. Arguments on lack of novelty - admissibility

3.1 At the oral proceedings before the opposition division the opponent had no objection of lack of novelty (point 23 of the minutes of the oral proceedings, point 19.1 of the appealed decision).

3.2 The appellant did not dispute that the arguments on novelty filed in appeal were an amendment of its case. It requested that the board make use of its discretion under Article 12(6) RPBA to admit it into the proceedings.

The appellant argued that the objection was not pursued at the oral proceedings before the opposition division because it was felt that the discussion should focus on the issue of inventive step. It further argued that the novelty issue hinged on whether a generic combinatorial

disclosure was novelty destroying for an equally generic definition of a combination of compounds, was thus a legal one and did not require examination and appraisal of technical evidence.

- 3.3 The board decided not to admit this objection (see minutes of the oral proceedings), but the board does not need to elaborate on the reasons in the present decision, as the compositions containing a second host material of formula (4) which were not novel in the appellant's view are not inventive for the reasons that follow.

4. Inventive step

- 4.1 Claim 1 of the main request relates to a composition comprising a first and a second host compound.

The first host compound has the structure arising from the combination of chemical formulae (1), (2) and (3) as defined in claim 1, which can be a substituted indolocarbazol.

The second host compound is of formula (4), (5) or (6) and has a carbazol moiety.

4.2 Closest prior art

It was undisputed that example 1 of D3 was a suitable starting point for examining inventive step. Like the patent, D3 relates to compositions for electro-luminescent devices (abstract). Example 1 of D3 discloses a composition including

- PH21, which is compound 1-705 in the patent and is a first host compound required by claim 1, and
- PH11, which differs from the second host compounds represented by formula (4) in that one of the residues Y^3-Ar^2 or Y^4-Ar^3 is diphenyltriazinyl-phenyl-, which is not a residue of Group 3 in claim 1.

4.3 Problem underlying the claimed invention

The respondent formulated the problem underlying the claimed invention as to provide compositions for organic optoelectronic devices with improved efficiency and life-span.

4.4 Solution

The claimed solution is the composition comprising a first host compound and a second host compound of claim 1, which is characterised by the second host component having formula (4), (5) or (6).

4.5 Admissibility of experimental evidence D8, D9 and D10

4.5.1 D8

D8 was filed by the respondent shortly before the oral proceedings in opposition.

The opposition division concluded that it did not need to decide on the admissibility of D8. Its content was not relevant for the decision and no party was disadvantaged by not considering it (see point 20 of the appealed decision).

According to both parties, the opposition division should have decided on the admissibility of D8.

The opposition division concluded that the claimed composition was inventive as an alternative to the composition in example 1 of D3. D8, which aimed at showing an improvement over example 1 of D3, was thus not relevant for the appealed decision. The lack of conclusion on its admittance is therefore not objectionable.

In case D8 was admissibly filed before the opposition division the board has no discretion not to admit it into appeal proceedings, Article 12(4) RPBA.

The appellant focused for the first time on example 1 of D3 in the context of novelty in its letter dated 1 October 2019 (see point 9 of the appealed decision). The objection of lack of novelty over example 1 of D3 was admitted (point 16 of the decision) and led to the opposition division's conclusion that the ground of opposition in Article 100(a) EPC precluded the maintenance of the patent as granted.

D8, filed on 18 November 2019, compares example 1 of D3 with one embodiment according to claim 1. Although D8 was filed only a fortnight before the oral proceedings, it was triggered by the opponent focusing the discussion for the first time on example 1 of D3 less than two weeks earlier.

Admission of the appellant's arguments relying on example 1 of D3 into the proceedings inevitably implies that the other party should be given the opportunity to reply to them. Any embodiment novel over example 1 of D3 needed to be inventive over it too. For this reason,

D8 would have had to be admitted by the opposition division if an improvement over D3 would have been decisive for the assessment of inventive step.

As D8 was admissibly filed before the opposition division, it is part of the appeal proceedings.

4.5.2 D9

Experimental evidence D9 was filed with the statement of grounds of appeal.

The respondent requests that D9 not be admitted into the proceedings. D9 sought to provide evidence that the claims were too broad, which had been an issue throughout the opposition proceedings, and should have been filed earlier. D9 could not be considered a reply to D8, as it did not compare any of the compositions tested in D8 with that of the closest prior art.

However, D9 aims at showing that even if the composition according to claim 1 in D8 were to be superior to the composition in example 1 of D3, such effect would not be achieved by every embodiment of claim 1. The respondent had not relied on an improvement over D3 prior to the filing of D8. The statement of grounds of appeal is arguably the earliest opportunity for filing evidence which could question such alleged improvement.

The board thus uses its discretion to admit D9 into the proceedings (Article 12(4) RPBA).

4.5.3 D10

Admission of D10 into the proceedings was requested conditional to the admission of D9.

The appellant argued that D10 had a number of technical flaws, could not question the experimental evidence filed as D9, and should thus not be admitted into the proceedings.

D10 seeks to question the results filed with the statement of grounds of appeal, and has been filed at the earliest opportunity, namely with the reply to said grounds. For reasons of equity, the board admits D10 into the proceedings (Article 12(4) RPBA).

4.6 Success

It is undisputed that experimental evidence D8 shows that there is at least one composition according to claim 1 which has an optoelectronic performance superior to that in example 1 of D3.

The issue is however whether such improvement may be extrapolated to the whole of claim 1.

The respondent argued that examples A1 and A2 of D8 sought to test a composition as similar as possible to that in example 1 of D3. The improvement achieved by this composition must be shared by compositions less similar to that of D3, in particular as no evidence of the contrary was available.

However, for the same reasons that small modifications of the substituents of a biscarbazol moiety can lead to better efficiency and life-span, as shown by D8, there is no reason why such improvement could be achieved by any other biscarbazol compound of formula (4) according

to claim 1. Claim 1 allows large variations not only of the substituents linked to the nitrogen atoms but also those linked to the carbon atoms of the biscarbazol core, R⁷, R⁸, R⁹, R¹⁰ and R¹¹. There is no special structural element shared by all compounds (4) of claim 1 which could underlie the alleged improvement. D9 also shows that small changes in the substitution of a compound (in that case of the first host compound) can largely vary the sought effect.

Thus, the problem as formulated by the respondent cannot be considered solved throughout the whole scope of claim 1.

4.7 Request for remittal to the opposition division

The respondent requested that the case be remitted to the opposition division if the problem of providing an improved composition for optoelectronics application were to be considered not credibly solved. Objections in this respect were neither part of the opposed decision nor of the board's communication and the respondent should be given the opportunity to provide further experimental evidence, if required.

However, the argument was discussed at the oral proceedings before the opposition division (point 24 of the minutes) and is part of the grounds of appeal (point 6.2.2.2 on page 25). The respondent in fact reacted to this issue in appeal by filing D10. The issue of whether an improvement can be considered credibly achieved is not surprising or unexpected.

In addition, the opposition division examined the issue of inventive step precisely under the assumption that the problem underlying the claimed invention was to

provide an alternative. The opposition division's conclusion on the problem as reformulated is thus part of the appealed decision.

Lastly, whether a claimed solution solves the technical problem underlying the claimed invention is an essential part of the problem-solution approach which parties should expect to be dealt with in appeal proceedings.

Thus, no special reasons exist which could justify a remittal to the opposition division under Article 11 RPBA.

The respondent's request to remit the case to the opposition division is not allowed.

4.8 Reformulation of the technical problem

In accordance with the case law (Case Law of the Boards of Appeal, 10th Ed. 2022, I.D.4.3.1), alleged but unsupported advantages cannot be taken into consideration in determining the problem underlying the invention. As the alleged improvement in terms of efficiency and life span is not credibly achieved over the whole scope of the claimed compositions, the technical problem needs to be reformulated in a less ambitious manner as to provide alternative compositions for optoelectronic applications.

4.9 Solution

The claimed solution was the composition comprising a first host compound and a second host compound with a carbazol moiety of claim 1, characterised in that the

second host compound is of formula (4), (5) or (6).

4.10 Success

It was undisputed that the claimed compositions credibly solved the problem of providing an alternative.

4.11 Obviousness

4.11.1 Seeking an alternative to the composition of D3 suitable for optoelectronic application, a skilled person would have turned to a document such as D2, which deals with the same problem as the patent and D3.

Document D2 discloses compositions having more than one host material. D2 discloses that the first host materials can be of formula (1) [0042], preferably containing an indolocarbazol moiety (see formula (10) on page 6). Among the compounds of formula (1), D2 discloses compound (19), which is compound 1-705 in the patent and PH21 in example 1 of D3.

The compositions of D2 further include a second host compound [0085] having a carbazol structure (2). Paragraph [0097] discloses examples of this second host material; the last two compounds of the left column on page 29 are of formula (4) in claim 1.

Thus, in the context of electroluminescent elements, a skilled person finds in D2 the teaching that indolocarbazol first host compounds such as 1-705 can be suitably combined with compounds of formula (4) and would thus have arrived at the claimed invention without using inventive skills.

Claim 1 relates to a combination of compounds which are known to be suitable in optoelectronics both individually and in combination with others. The claimed composition is thus not inventive.

- 4.12 The respondent argued that there was no pointer towards the specific combination in claim 1. D2 disclosed a large number of compounds and no hint at the specific ones required by claim 1. A skilled person could have arrived at the claimed invention but there was no reason why they would have done so.

However, by hinting at other solutions, the prior art does not teach away from the one in hand. It merely discloses further options which might arguably not be inventive either.

- 4.13 The respondent argued that D3 taught away from the claimed solution. Most of the examples of D3 were carried out by combining compounds very different from those required by claim 1. A skilled person would thus follow that teaching and not consider any of the compounds required by claim 1.

However, seeking an alternative a skilled person would necessarily have to depart from the teaching of D3. Example 1 is the example leading to the best results (see Table 2) and is in any case the starting point for examining inventive step. A skilled person would thus consider similar components known for the same purpose as alternatives. This argument is thus not convincing.

- 4.14 The respondent also argued that a skilled person could have modified any of the two components of example 1 of D3. For that reason, they would not necessarily have arrived at a composition with a compound (4).

However, the issue is not whether other options exist but whether the one in hand would have been obvious, regardless of whether others could also have been envisaged.

4.15 As the composition of claim 1 of the main request is not inventive (Article 56 EPC), the main request is not allowable.

5. Auxiliary requests 1 to 4

5.1 Claim 1 of these auxiliary requests restricts the options embraced by the first host compound. All of them nevertheless include compound PH21 of example 1 of D3 (compound 1-705 of the patent) as first host compound. At the oral proceeding it was undisputed that the issue of inventive step did not differ from that explained above in the context of the main request: claim 1 of auxiliary requests 1 to 4 do not include any feature further distinguishing the claimed invention from example 1 of D3.

Auxiliary requests 1 to 4 are thus not allowable for the same reasons as the main request, regardless of whether they could be admitted into the proceedings.

6. Auxiliary request 5

6.1 Admissibility

The appellant requested that none of the respondent's auxiliary requests be admitted into the proceedings. All the auxiliary requests were filed for the first time in appeal.

Example 1 of D3 was mentioned for the first time in opposition proceedings two months before the oral proceedings. The opposition division decided to admit the objections with respect to that embodiment into the proceedings. The board has discretion to admit auxiliary request 5 under Article 12(4) RPBA and admits it, as a reaction to the developments at the end of the opposition procedure for reasons of equity. The amendment in claim 1 of auxiliary request 5 restricts the second host compound to those of formula (5) and (6), i.e. to two of the three original options, excluding the one embracing the compounds known from the prior art cited against the patent. It is not a modification which could be considered unexpected.

The appellant argued that auxiliary request 5 was not suitable to address the issues which led to the decision under appeal within the meaning of Article 12(4) RPBA. It was not correct that this request rendered any patentability objection redundant, as the appellant had focused on claimed embodiments which lacked patentability and did not need to discuss other alternatives to which the respondent might restrict.

However, for the reasons in the following point, auxiliary request 5 solves the patentability issues in the higher ranked requests. This argument of the appellant is thus not convincing.

The appellant also argued that the grounds for opposition did not change during the opposition proceedings and thus the auxiliary requests should have been filed before the opposition division.

The grounds may be the same from the onset, but the

most relevant argument was filed shortly before the oral proceedings in opposition. This argument is not convincing either.

Auxiliary request 5 is admitted into the proceedings.

6.2 Claim 1 of auxiliary request 5 relates to a composition comprising a first host compound which is as defined in claim 1 of the main request, and a second host component of formula (5) or (6).

6.3 Closest prior art

The appellant argued that examples 29 to 31 of D1 were the closest prior art. The board sees no reason to differ.

Examples 29 to 31 of D1 disclose a host material comprising materials H-8 (compound 1-705 of the patent, which is a first host material required by claim 1) and compound H-9, which differs from a compound of formula (6) as in claim 1 by having a -S- instead of a -N(Ar⁵)- moiety.

6.4 Problem underlying the claimed invention

It was undisputed that the problem underlying the claimed invention was to provide alternative compositions suitable for electroluminescent applications.

6.5 Solution

The claimed solution is the composition having two host compounds of claim 1, characterised by having a second

host compound of formula (5) or (6).

6.6 Success

It was undisputed that the claimed compositions credibly solved that problem. Examples 29 to 32 of the patent show that compositions comprising 1-705 as representative of the first host compound in combination with a second host compound of formula (5) or (6) have suitable efficiency and life span.

6.7 Obviousness

The appellant argued that compositions comprising second host compounds of the general formula (6) and first host compounds such as 1-705 would have been obvious for a skilled person in view of the close structural similarity between general formula (6) and compound H-9 of D1. The patent taught no difference between different heterocycles, as it included all of them as "heteroaryl".

However, the cited prior art neither teaches the compounds of formula (5) nor of formula (6) in the context of optoelectronic applications. A skilled person, trying to obtain an alternative, had thus no reason to envisage compounds of formula (5) or (6). Modifications of the conjugate system such as including a -NR- moiety instead of -S- do not necessarily have to keep the properties sought. The appellant itself has shown by D9 that small variation of the components structure could largely change the composition properties. A skilled person would have expected this to be the case if the conjugated unit of the host is modified, too.

In this respect the relevant point is not that the patent groups all heteroaryl substituents together regardless of the heteroatoms, but whether a skilled person would have considered a carbazol as an equivalent of a dibenzothiophene moiety in the context of optoelectronic applications. The structural similarity is not a valid criterion, as the issue is whether it was known that its optoelectric behaviour was similar. There is no available evidence in this respect.

Since the state of the art does not teach either compounds of formula (5) or of formula (6) in the context of compositions for optoelectric devices, the claimed solution is inventive.

6.8 The fifth auxiliary request is thus allowable.

7. Remittal

The description of the patent needs adaptation, see for example paragraph [0059]. The parties agreed that the case be remitted to the opposition division for that purpose (Article 111(1) EPC).

Order

For these reasons it is decided that:

1. The decision under appeal is set aside.
2. The case is remitted to the opposition division with the order to maintain the patent with claims 1 to 15, filed as auxiliary request 5 with the reply to the grounds of appeal on 20 October 2020, and a description to be adapted thereto.

The Registrar:

The Chair:



C. Rodríguez Rodríguez

M. Kollmannsberger

Decision electronically authenticated