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**Datasheet for the decision
of 1 October 2010**

Case Number: T 0009/08 - 3.3.10

Application Number: 01302966.5

Publication Number: 1138746

IPC: C09K 11/06

Language of the proceedings: EN

Title of invention:

Polymeric fluorescent substance, production method thereof,
and polymer light-emitting device using the same

Patentee:

Sumitomo Chemical Company, Limited

Opponent:

Merck KGaA

Headword:

Polymeric fluorescent substance/SUMITOMO CHEMICAL COMPANY

Relevant legal provisions:

EPC Art. 54, 106, 107, 108, 113(1), 123
EPC R. 99

Relevant legal provisions (EPC 1973):

EPC R. 64

Keyword:

"Inventive step: findings in decision under appeal - based on
fresh document"

"Right to be heard: violated (yes)"

"Substantial procedural violation (yes)"

"Remittal to first instance"

Decisions cited:

T 0007/81, T 0001/88, T 0194/90, T 0632/91

Catchword:

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Case Number: T 0009/08 - 3.3.10

D E C I S I O N
of the Technical Board of Appeal 3.3.10
of 1 October 2010

Appellant: Merck KGaA
(Opponent) Patents Chemicals, Gebäude F 128
Postfach
D-64271 Darmstadt (DE)

Representative: Kunkel
Merck KGaA
Patents Chemicals, Gebäude F 128
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Respondent: Sumitomo Chemical Company, Limited
(Patent Proprietor) 27-1, Shinkawa 2-chome
Chuo-ku
Tokyo 104-8260 (JP)

Representative: Duckworth, T.J.
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Decision under appeal: Decision of the Opposition Division of the
European Patent Office posted 31 October 2007
rejecting the opposition filed against European
patent No. 1138746 pursuant to Article 102(2)
EPC 1973.

Composition of the Board:

Chairman: R. Freimuth
Members: C. Komenda
D. S. Rogers

Summary of Facts and Submissions

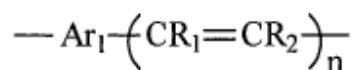
- I. The Appellant (Opponent) lodged an appeal on 21 December 2007 against the decision of the Opposition Division posted on 31 October 2007, which rejected the opposition against European patent Nr. 1 138 746. The European Patent was based on European application Nr. 01 302 966.5.
- II. Notice of Opposition had been filed by the Appellant requesting revocation of the patent as granted in its entirety on the grounds of lack of novelty and lack of inventive step pursuant to Article 100(a) EPC and insufficient disclosure of the invention pursuant to Article 100(b) EPC. *Inter alia* the following documents were submitted in the opposition proceedings:
- (2) J. E. Collins, C. L. Fraser: "Transition Metals as Templates for Multifunctional Initiators: Bulk Atom Transfer Radical Polymerization of Styrene Using Di-, Tetra- and Hexafunctional Ruthenium Tris(bipyridine) Reagents", *Macromolecules* (1998), 31, pages 6715 to 6717 and
- (12) K. Davidson, A. M. Ponsonby: "Synthesis of cross-linked electrically conductive polymers", *Synthetic Metals* 102, (1999), pages 1512 to 1513.
- III. In the decision under appeal the Opposition Division held that the invention was disclosed in a manner sufficiently clear for a skilled person to carry out the invention. Novelty of the subject-matter of the claims was acknowledged, since none of the cited documents disclosed all of the features of granted claim 1. In particular, the cited prior art did not

disclose the molecular weight, the specific percentage of repeating units having branching polymeric chains and the property of the polymeric substances to show fluorescence. Starting from document EP-A-0 964 045 as closest prior art the Opposition Division found that the subject-matter of claim 1 involved an inventive step.

IV. During the oral proceedings held before the Board on 1. October 2010 the Respondent filed a new main request, independent claim 1 of which read as follows:

"1. A polymeric fluorescent substance which emits fluorescence in the solid state, has a polystyrene-reduced number average molecular weight of 10^3 to 10^8 , and comprises in the main chain:

(i) one or more repeating units of formula (1):

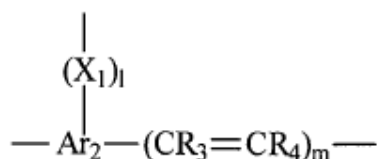


(1)

wherein Ar_1 is selected from an arylene group having 6 to 60 carbon atoms, a heterocyclic group having 4 to 60 carbon atoms and a group comprising a metal complex having, as a ligand, one or more organic compounds containing 4 to 60 carbon atoms; Ar_1 may have one or more substituents; each of R_1 and R_2 independently represents a group selected from hydrogen atom, alkyl groups having 1 to 20 carbon atoms, aryl groups having 6 to 60 carbon atoms, heterocyclic groups having 4 to 60 carbon atoms and cyano group; and n is 0 or 1; and

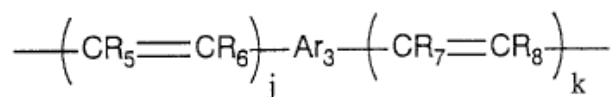
(ii)

(a) one or more repeating units of formula (2):



(2)

wherein Ar_2 is an arylene group having 6 to 60 carbon atoms or a heterocyclic group having 4 to 60 carbon atoms; X_1 is a group of formula (3):

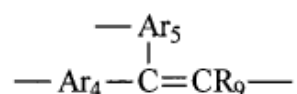


(3)

wherein Ar_3 is an arylene group having 6 to 60 carbon atoms or a heterocyclic group having 4 to 60 carbon atoms; Ar_3 may have one or more substituents; each of R_5 , R_6 , R_7 and R_8 independently represents a group selected from hydrogen atom, alkyl groups having 1 to 20 carbon atoms, aryl groups having 6 to 60 carbon atoms, heterocyclic groups having 4 to 60 carbon atoms and cyano group; and each of j and k is independently 0 or 1; and constitutes a part of the main chain; l is an integer of 1 to 4; Ar_2 may further have one or more substituents; when Ar_2 has a plurality of substituents, they may be the same or different; each of R_3 and R_4 independently represents a group selected from hydrogen atom, alkyl groups having 1 to 20 carbon atoms, aryl groups having 6 to 60 carbon atoms, heterocyclic groups having 4 to 60 carbon atoms and cyano group; and m is 0 or 1; wherein the total amount of

repeating units of formulae (1) and (2) is 50 mol% or more based on the amount of all repeating units, the amount of repeating units of formula (2) is 0.1 to 10 mol% based on the total amount of repeating units of formulae (1) and (2), and the substance has a polymeric chain which is branched at a repeating unit of the formula (2) as a branching point; or

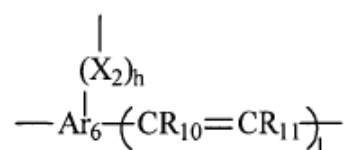
(b) one or more repeating units of formula (4):



(4)

wherein each of Ar₄ and Ar₅ independently represents an arylene group having 6 to 60 carbon atoms or a heterocyclic group having 4 to 60 carbon atoms; Ar₄ and Ar₅ may have one or more substituents; and R₉ represents a group selected from hydrogen atom, alkyl groups having 1 to 20 carbon atoms, aryl groups having 6 to 60 carbon atoms, heterocyclic groups having 4 to 60 carbon atoms and cyano group; wherein the total amount of repeating units of formulae (1) and (4) is 50 mol% or more based on the amount of all repeating units, the amount of repeating units of formula (4) is 0.1 to 10 mol% based on the total amount of repeating units of formulae (1) and (4), and the substance has a polymeric chain which is branched at a repeating unit of the formula (4) as a branching point; or

(c) one or more repeating units of formula (5):



(5)

wherein Ar₆ is a group comprising a metal complex having, as a ligand, an organic compound containing 4 to 60 carbon atoms; said metal complex has two or more ligands connected with the adjacent repeating units, and constitutes a branching point being connected with three or more adjacent repeating units as the whole metal complex; X₂ is a group of formula (6):



(6)

wherein Ar₇ is an arylene group having 6 to 60 carbon atoms or a heterocyclic group having 4 to 60 carbon atoms; Ar₇ may have one or more substituents; each of R₁₂, R₁₃, R₁₄ and R₁₅ independently represents a group selected from hydrogen atom, alkyl groups having 1 to 20 carbon atoms, aryl groups having 6 to 60 carbon atoms, heterocyclic groups having 4 to 60 carbon atoms and cyano group; and each of g and f is independently 0 or 1; and constitutes a part of the polymeric chain; h is an integer of 1 to 4; Ar₆ may further have one or more substituents; when Ar₆ has a plurality of substituents, they may be the same or different; each of R₁₀ and R₁₁ independently represents a group selected from hydrogen atom, alkyl groups having 1 to 20 carbon atoms, aryl

groups having 6 to 60 carbon atoms, heterocyclic groups having 4 to 60 carbon atoms and cyano group; and i is 0 or 1; wherein the total amount of repeating units of formulae (1) and (5) is 50 mol% or more based on the amount of all repeating units, the amount of repeating units of formula (5) is 0.1 to 10 mol% based on the total amount of repeating units of formulae (1) and (5), and the substance has a polymeric chain which is branched at a repeating unit of the formula (5) as a branching point; and wherein 0.05 to 10 mol% of all repeating units in the polymeric fluorescent substance have branching polymeric chains."

- V. The Respondent in its letter dated 6 October 2008 objected to the admissibility of the appeal, as the notice of Appeal did not contain any request. Further, he objected to document (12) being admitted to the appeal proceedings, which objection was no longer maintained at the oral proceedings held before the Board. In view of novelty of the subject-matter of present claim 1 he stated that crosslinking was not a particular kind of branching, as it resulted in a three-dimensional network, whereas the concept of branching always required the branches to have open ends. In view of document (2) he submitted that the polymeric branches were not attached to the main chain as required according to present claim 1. Therefore, none of documents (2) or (12) anticipated the subject-matter of present claim 1. With letter dated 18 March 2010 he filed auxiliary requests 1 to 5.
- VI. In its statement of the Grounds for Appeal dated 7 March 2008 the Appellant objected to the subject-

matter of the patent in suit not being disclosed in a manner sufficiently clear and complete for it to be carried out by a skilled person and to the novelty of the subject-matter of the claims as granted. Due to the amendments made by the Respondent during the oral proceedings before the Board these objections were no longer maintained.

VII. In a communication pursuant to Article 15 RPBA the Board informed the Parties of the issues to be discussed during Oral Proceedings. In particular, the Board noted that document EP-A-0 964 045, which the decision under appeal found to represent the closest prior art, had been introduced by the Opposition Division for the first time in the decision under appeal. Further, the parties were informed that on a preliminary view the appeal was deemed to be admissible.

VIII. The Appellant requested that the decision under appeal be set aside and that the patent be revoked.

The Respondent requested that the appeal be rejected as being not admissible; or subsidiarily that the decision under appeal be set aside and that a patent be maintained upon the basis of claims 1 to 14 of the Main Request submitted at the oral Proceedings on 1 October 2010 or upon the basis of any of Auxiliary Requests 2 to 5 submitted with letter dated 18 March 2010.

IX. At the end of the oral proceedings the decision of the Board was announced.

Reasons for the Decision

1. *Admissibility of the appeal*

1.1 The decision under appeal was posted on 31 October 2007.

1.2 With letter dated 21 December 2007 an appeal was filed by Merck KGaA. In its letter the Appellant indicated that it appealed against the above mentioned decision of the Opposition Division to reject the opposition. The payment of the appeal fee was ordered in the same letter. In its statement of the grounds for appeal the Appellant requested that the decision under appeal be set aside and that the patent be revoked.

1.3 The Respondent argued that the appeal had to be regarded as being inadmissible, since the notice of appeal did not contain any request and would thus not satisfy the requirements of Rule 99 EPC 2000.

1.4 Rule 99 EPC 2000, which corresponds to Rule 64 EPC 1973, does not introduce any new requirements that go beyond those of Rule 64 EPC 1973. The only differences from the old rule are the adaptation of the numbering of the internally cited references and the different layout: the criteria of paragraph (b) of Rule 64 EPC 1973 have been split up into paragraphs (b) and (c) in corresponding Rule 99 EPC 2000. These changes do not result in any different requirements or criteria to be met for filing an admissible appeal. Consequently, the principles developed according to the established case law of the Boards of appeal on Rule 64 EPC 1973 still apply to Rule 99 EPC 2000 in the present case.

1.5 The content of the decision under appeal is simply the rejection of the opposition. Thus, the wording "Hiermit legen wir gegen die Entscheidung der Einspruchsabteilung [.....] Beschwerde gemäß Artikel 106 EPÜ ein" has to and can only be construed as a request to set aside the decision under appeal in its entirety and to revoke the patent in suit. Therefore, the Board concludes, in accordance with the established case law of the Boards of Appeal, that the appeal fulfils the requirements of Rule 99 EPC 2000. Hence, it is admissible (see T 7/81, OJ EPO 1983, 98, 99, paragraph 1 of the Reasons; T 1/88, paragraph 1.1 of the Reasons; T 194/90, paragraph 1 of the Reasons; T 632/91, paragraph 1 of the Reasons ; the latter three not published in the OJ EPO).

Thus, the requirements of Articles 106 to 108 EPC, as well as those of Rule 99 EPC were met.

Main Request

2. *Amendments*

Present claim 1 is based on the wording of granted claim 1, which has been amended by incorporation of the definitions of the repeating units (a), (b) and (c), at which the polymeric chain is branched. Thus, at the end of the definition of the repeating units (i) of formula (1) the following definitions of the further repeating units (ii) have been incorporated, which are "(a) one or more repeating units of formula (2) [.....] as a branching point;" based on original claim 2, "or (b) one or more repeating units of formula (4) [.....] as a branching point;" based on original claim 3, "or (c)

one or more repeating units of formula (5) [.....] as a branching point;" based on original claim 3. As original claims 2, 3 and 4 referred back to claim 1 only, they were incorporated in present claim 1 as separate alternatives relating to units of formula (a) or (b) or (c) as branching points. Therefore, the Board is satisfied that the requirements of Article 123(2) EPC are met. As the incorporation of the subject-matter of original dependent claims 2, 3 and 4 results in a further restriction of the scope of granted claim 1 the requirements of Article 123(3) EPC were also fulfilled.

3. *Sufficiency of disclosure of the invention*
(Article 100(b) EPC)

During the oral proceedings before the Board the Appellant dropped his objection relating to insufficiency of disclosure of the invention. As the decision under appeal also found that the invention according to the patent in suit was disclosed in a manner sufficiently clear and complete for it to be carried out by a skilled person, the Board does not see any reason to deviate from this finding.

4. *Novelty (Article 54 EPC)*

Novelty of the claimed subject-matter was not objected to in the decision under appeal and was no longer objected to with regard to the subject-matter of amended claim 1 by the Appellant. The Board on its own sees no reason to take a different view, since document (12) discloses crosslinked polymeric chains forming a three-dimensional network, whereas the concept of branching as claimed in claim 1 requires all the

branches having open tips. Document (2) discloses metal complexes, wherein the polymeric branches are not attached to the main chain as required according to claim 1. Therefore, the Board is satisfied that none of documents (2) or (12) anticipates the subject-matter of claim 1.

5. *Article 113(1) EPC*

5.1 According to Article 113(1) EPC the decisions of the European Patent Office may only be based on grounds or evidence on which the parties concerned have had an opportunity to present their comments.

5.2 In the present case the contested decision found that the subject-matter of claim 1 as granted involved an inventive step. Under the heading "Inventive step (Art. 56 EPC)" the Opposition Division gave in paragraph 20.2) its reasoning on inventive step. It stated that with regard to the problem-solution approach

"[t]he closest prior art is identified in a fluorescent polymer having one or more repeating units of formula 1 and a molecular weight comprised within the claimed range. This polymer is described for example in document EP-A-0 964 045".

Thus, document EP-A-O 964 045 was clearly identified as representing the closest state of the art and starting point for the assessment of inventive step in the decision under appeal.

5.3 The Board, after having inspected the content of the file, noted in its communication pursuant to Article 15 RPBA that the closest prior art document EP-A-0 964 045 had not been introduced into the proceedings before the department of first instance, but was mentioned for the first time in the written decision under appeal. A comparison of the minutes and the decision under appeal further revealed that at the oral proceedings before the Opposition Division held on 16 October 2007 the parties relied on the arguments in their written submissions (see minutes, paragraphs XXVIII, XXIX and XXX; see decision under appeal, paragraph 20), first sentence), so that even at the Oral proceedings before the Opposition Division it had not been discussed with the Parties that the closest state of the art in the assessment of inventive step was this fresh document. Thus, in relying on a closest prior art document which had never been discussed with the parties, and which was cited for the first time in the written decision under appeal, the opposition division's decision violated the parties' right to be heard pursuant to Article 113(1) EPC.

5.4 For the above reasons the Board holds that the opposition division's handling of the case constitutes a substantial procedural violation which justifies the remittal of the case to the first instance for further prosecution.

5.5 The decision under appeal rejects the Appellant's objection against novelty in finding that the subject-matter of the patent in suit according to the then pending claims was novel and that document (12) supporting that objection was not admitted into the

proceedings before the Opposition Division. Therefore, the Appellant in any case had to file an appeal so that the reimbursement of the appeal fee, which was not requested, is not equitable.

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 for further prosecution upon the basis of claims 1 to 14 of the Main Request submitted at the oral proceedings on 1st October 2010.

The Registrar

The Chairman

C. Rodríguez Rodríguez

R. Freimuth