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Datasheet for the decision of 12 March 2013

Case Number: T 0341/08 - 3.3.09

Application Number: 02807702.2

Publication Number: 1547212

IPC: H01S 3/16

Language of the proceedings: EN

Title of invention:
Laser gain medium for solid state dye lasers

Applicant:
BASF SE

Headword:
-

Relevant legal provisions:
EPC Art. 54

Keyword:
"Novelty (no)"

Decisions cited:
-

Catchword:
-

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Beschwerdekammern | Boards of Appeal | Chambres de recours

Case Number: T 0341/08 - 3.3.09

D E C I S I O N
of the Technical Board of Appeal 3.3.09
of 12 March 2013

Appellant: BASF SE
(Applicant) D-67056 Ludwigshafen (DE)

Representative: Reitstötter - Kinzebach
Patentanwälte
Sternwartstrasse 4
D-81679 München (DE)

Decision under appeal: **Decision of the Examining Division of the European Patent Office posted 10 September 2007 refusing European patent application No. 02807702.2 pursuant to Article 97(2) EPC.**

Composition of the Board:

Chairman: W. Sieber
Members: W. Ehrenreich
R. Menapace

Summary of Facts and Submissions

I. European patent application No. 02 807 702.2, filed on 29 August 2002 as international application PCT/EP2002/009657, was refused by the decision of the examining division announced orally on 7 August 2007 and issued in writing on 10 September 2007.

II. The decision was based on an amended set of claims 1 to 10 filed with the letter dated 8 December 2006, Claim 1 reading as follows:

"1. A laser gain medium comprising

at least one active species adapted to be stimulated to emit laser light within a predetermined wavelength range,
optical feedback means defining a resonator for said laser light, said feedback means comprising at least one substantially solid elastomeric cholesteric layer having a substantially planar texture exhibiting selective reflection of light defined by a reflection band tuned to said predetermined wavelength range, said elastomeric cholesteric layer being obtained from reactive cholesteric mixtures selected from mixtures comprising:

a) at least one cholesteric, polymerizable monomer; or

b) at least one achiral, nematic, polymerisable monomer and one chiral compound in an inert diluent; or

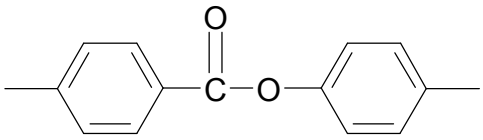
c) at least one cholesteric, crosslinkable oligomer or polymer selected from the group comprising cholesteric cellulose derivatives, propargyl-

terminated cholesteric polyesters or polycarbonates, crosslinkable oligo- or polyorgano- siloxanes; or

d) crosslinkable cholesteric copolyisocyanates in a polymerizable diluent; or

e) chiral nematic polyesters having flexible chains whose cholesteric phase can be frozen in by rapid cooling to below the glass transition temperature.

werein *[sic!]* said mixtures b) do not comprise mixtures of an achiral, nematic, polymerizable monomer having a mesogenic group comprising



and a chiral cholesterylcarbonate and a crosslinking agent."

Claims 2 to 10 are dependent claims.

Claim 1 differs from claim 1 as filed by the incorporation of the feature of claim 5 as filed that the cholesteric layer is elastomeric.

III. In its decision the examining division relied on document

D1 US-A 6 141 367

and gave reasons as to why the claimed subject-matter did not involve an inventive step starting from D1 as the closest prior art.

IV. On 19 November 2007 the applicant (hereinafter: the appellant) filed a notice of appeal and requested that the decision of the examining division be set aside and a patent be granted on the basis of the then pending claims (i.e. the amended claims filed with the letter dated 8 December 2006). The notice of appeal also contained an auxiliary request for oral proceedings. The appeal fee was paid on the same day.

V. The statement of the grounds of appeal was received on 18 January 2008, wherein the appellant provided arguments why, in its view, the subject-matter of claim 1 was not obvious in view of D1.

VI. By its communication dated 25 September 2012, the board summoned the appellant to oral proceedings scheduled for 15 March 2013.

VII. In its subsequent communication dated 22 January 2013 the board informed the appellant of its preliminary opinion on the claimed subject-matter. In this context, the board introduced the following documents into the appeal proceedings:

D2 H. Finkelmann et al. *"Tunable Mirrorless Lasing in Cholesteric Liquid Crystalline Elastomers"*, Advanced Materials 2001, 13, No. 14, July 18, pages 1069-1072;

D3 WO-A 99/11733.

Both documents were already cited in the description as filed. D2 was cited in the last paragraph on page 3 under the heading "Background of the invention". D3 was

cited under the heading "Summary of the invention" on page 6, first paragraph and it is stated there that its disclosure is incorporated by reference.

The board provided arguments why, in its view, embodiment a) of claim 1 was anticipated by the disclosure in D2 (point 3 of the communication).

Furthermore, the board expressed its view that a skilled person starting from D2 as the closest prior art, would know that cholesteric liquid crystal polymers in elastomeric form are generally suitable as laser gain media which are tuneable by external mechanical deformation. In the oral proceedings arranged for 15 March 2013 it would have to be discussed as to whether or not it would have been obvious to use other cholesteric polymerizable monomers or oligomers, like those of D3, for the manufacture of laser gain media which are tuneable by external mechanical deformation in the sense of D2.

VIII. By letter dated 26 February 2013 the appellant informed the board that the application would not be actively prosecuted further. Therefore, neither the applicant nor the undersigned representative would attend the oral proceedings.

Rather it was requested that a decision be taken according to the state of the file.

Reasons for the Decision

1. The appeal is admissible.

2. By the board's preliminary observations in its communication dated 22 January 2013 the appellant was made aware that a novelty problem arose for embodiment a) of claim 1 with respect to document D2 and that the presence of an inventive step was questionable in view of a combination of D2 with D3, and of the reasons for that view of the board. In reaction, the appellant did not provide any arguments against these observations and, instead, decided not to attend the oral proceedings and to request that a decision be taken on the appeal according to the state of the file.

   Under these circumstances the board is in a position to take a decision based on the observations made in its communication, also as regards the requirements of Article 113 (1) EPC.

   Consequently, the oral proceedings previously appointed for 15 March 2013 were cancelled.

3. Novelty

3.1 The document D2 discloses a laser gain medium comprising

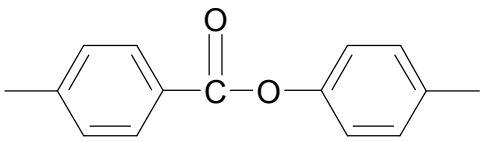
- an active species adapted to be stimulated to emit laser light (i.e. a dye like DCM);
- an optical feedback means defining a resonator for the laser light comprising a solid elastomeric

cholesteric liquid crystal layer (LSCE) having a planar texture which allows tuning of the wave length of the laser emission by mechanical deformation of the LSCE;

cf. D2, page 1069, third paragraph of the right column to page 1070, left column and Figure 3 on page 1071. According to page 1069, right column to page 1070, first paragraph of the left column, an LSCE elastomer is synthesized in analogy to example 1 of the application via hydrosilylation reaction of poly[oxy(methylsilylene)] with an achiral nematogenic monomer (2), a chiral cholesterylcarbonate (3) and a crosslinking agent (4), including crosslinking reaction in two steps. The chiral cholsterylcarbonate (3) according to D2 has a polymerizable C=C double bond and therefore represents a cholesteric, polymerizable monomer in the sense of mixtures a) and b) of claim 1 of the application.

3.2 The board notes that the disclaimer in claim 1

"werein *[sic]* said mixtures b) do not comprise mixtures of an achiral, nematic, polymerizable monomer having a mesogenic group comprising



and a chiral cholesterylcarbonate and a crosslinking agent"

excludes a combination of the monomer (2) with the cholesterylcarbonate (3) from embodiment b). However, such a combination is also encompassed by embodiment a) of claim 1 for which this disclaimer does not apply.

3.3 The disclosure in D2 thus anticipates embodiment a) of the laser gain medium claimed in claim 1 of the application under consideration, which, for that reason alone, does not fulfil the requirements of the EPC.

3.4 It is then not necessary to discuss any further issue, in particular not that of inventive step.

Order

For these reasons it is decided that:

The appeal is dismissed.

The Registrar The Chairman

M. Cañueto Carbajo W. Sieber