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D E C I S I O N
of 27 April 2006

Case Number: T 0776/05 - 3.4.03

Application Number: 86904884.3

Publication Number: 0269624

IPC: H01S 3/06

Language of the proceedings: EN

Title of invention:
Fibre-optic lasers and amplifiers

Patentee:
UNIVERSITY OF SOUTHAMPTON

Opponent:
Koheras A/S

Headword:

-

Relevant legal provisions:
EPC Art. 56, 88, 100, 113(2)
RPBA Art. 11(3), (6)

Keyword:
"Entitlement to priority (no)"
"Inventive step (no)"

Decisions cited:
G 0002/98, T 0986/00

Catchword:
Priority documents of even date are not to be read as a single document (point 2.8)



Case Number: T 0776/05 - 3.4.03

D E C I S I O N
of the Technical Board of Appeal 3.4.03
of 27 April 2006

Appellant: UNIVERSITY OF SOUTHAMPTON
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Decision under appeal: Decision of the Opposition Division of the
European Patent Office posted 29 April 2005
revoking European patent No. 0269624 pursuant
to Article 102(1) EPC.

Composition of the Board:

Chairman: R. G. O'Connell
Members: V. L. P. Frank
U. Tronser

Summary of Facts and Submissions

I. This is an appeal against the revocation of European patent 269 624 for lack of inventive step having regard to the following prior art documents:

D5: S. B. Poole et al, "Fabrication of low-loss optical fibres containing rare-earth ions"; Electronics Letters, 15 August 1985, vol. 21, no. 17, pp. 737-738

D6: J. Mears et al, "Neodymium-doped silica single-mode fibre lasers"; Electronics Letters, 15 August 1985, vol. 21, no. 17, pp. 738-740

The patent claims priority from two applications P1: GB 85 203 00 and P2: GB 85 203 01, both filed on the 13 August 1985, the inventors named in these corresponding to the authors of D5 (save one) and D6 respectively.

II. Claim 1 of the granted patent forming the basis of the appellant proprietor's main request is worded as follows:

"1. A fibre-optic laser or amplifier, being an active device of the type in which gain is provided by the stimulated emission of radiation, this device comprising:
a length of silica glass fibre (1) and an optical pump source (11) coupled thereto to inject optical pumping radiation to propagate along the length of the fibre (1) to stimulate emission therefrom;

said fibre having a core and a cladding and a single-mode geometry capable of sustaining single transverse mode propagation at emission wavelength; said fibre incorporating in its core active dopant ions at a low level uniform concentration of up to 900 ppm; said active dopant ions being of a rare-earth or a transition metal; and said fibre providing an ultra-low transmission loss host for said active dopant ions."

Claim 13 of the granted patent has the following wording:

"13. A device as claimed in any one of claims 1 to 4, wherein the dopant ions comprise erbium."

III. In the decision under appeal the opposition division found that the subject-matter of claim 1 did not relate to the same invention as that disclosed in P1 and P2 and that the patent was therefore not entitled to the priority claimed. Documents D5 and D6 were, consequently, part of the prior art under Article 54(2) EPC. The opposition division revoked the patent on the ground that the claimed fibre-optic laser was obvious to the person skilled in the art when the disclosures of these documents were taken into account.

IV. The appellant proprietor argued essentially as follows:

- The features of claim 1 were labelled as indicated below:

- E1: A fibre-optic laser or amplifier
- E2: being an active device of the type in which gain is provided by the stimulated emission of radiation
- E3: a length of silica glass fibre
- E4: an optical pump source coupled thereto to inject optical pumping radiation to propagate along the length of the fibre to stimulate emission therefrom
- E5: said fibre having a core and a cladding
- E6: a single-mode geometry capable of sustaining single transverse mode propagation at emission wavelength
- E7: said fibre incorporating in its core active dopant ions at a low level uniform concentration of up to 900 ppm
- E8: said active dopant ions being of a rare-earth or a transition metal
- E9: said fibre providing an ultra-low transmission loss host for said active dopant ions.

- The subject-matter of claim 1 was known from P1 alone, ie all the features of the claim were disclosed either explicitly (E1, E3, E5 to E9) or implicitly (E2, E4) in this document. Thus claim 1 was entitled to the claimed priority on the basis of P1 alone.
- The opposed patent validly claimed priority to all of the subject-matter contained in both simultaneously-filed priority documents P1 and P2, by virtue of the priority claim itself, and notwithstanding the presence or absence of any

express cross-referencing between P1 and P2. In particular, the Enlarged Board of Appeal decision G 2/98 was primarily concerned with the effective priority dates of claims when more and more new matter was added with successively filed priority applications and was not applicable to priority applications of even date. Article 88(2) EPC provided for multiple priorities to be claimed and Article 88(3) EPC provided that *"the right of priority shall cover only those elements of the European patent application which are included in the application or applications whose priority is claimed"*. It did not require however that the elements be in a single one of the applications whose priority was claimed. Consequently, when determining whether a patent was entitled to priority on the basis of two simultaneously-filed complementary priority applications, what was required was that the priority applications as a whole when read fairly together disclosed all the elements claimed in the patent.

- The skilled person would have appreciated that P1 disclosed a method of making optical fibres suitable for use in the device described in P2, and P2 disclosed devices using optical fibres fabricated according to the method described in P1. It was thus self evident to the skilled person that the two priority documents provided a single technical teaching, namely the provision of devices according to claim 1 of the granted patent, and were to be read together.

- Even if the skilled person would not have read P1 and P2 as a single document, he would nonetheless had been able to derive the subject-matter of claim 1 directly and unambiguously by virtue of the cross-references between P1 and P2 provided in these documents. When the sentence in P1 containing the reference to P2 was read in its proper context, it was clear that all rare-earth and transition metals were contemplated as dopants in a fibre laser, and that the principles set out in P2 had been used to fabricate a laser based on neodymium by way of example only. The skilled person would not have interpreted the reference to P2 to mean that only neodymium doped fibres made according to the principles taught in P2 were contemplated, but he would have appreciated that neodymium was merely a particular example that was made before the priority date.

- Although document P1 disclosed a dopant concentration of 0.25 wt% (900 ppm) of erbium, the skilled person would not have considered this value to have some special significance for erbium (to the extent that it determined the effect of the erbium embodiment in a unique manner and to a significant degree), but would have recognized that it was merely an example of fibres having a low dopant concentration. Nowhere in P1 was there any suggestion that any of the examples had any special significance. The disclosure of 900 ppm could be generalized therefore to other rare-earth or transition metals without loss of priority.

- Having regard to the valid claim of priority from applications P1 and P2, documents D5 and D6 were not prior art under Article 54(2) EPC and the laser device of claim 1 accordingly involved an inventive step.
- V. The respondent opponent argued essentially as follows:
- Some of the features of claim 1 of the main request were disclosed in document P1, but only in isolation from each other; nowhere in document P1 were all the features of the laser of claim 1 disclosed in combination with each other. The subject-matter of the claim therefore was not directly and unambiguously derivable from P1. Furthermore, the generalization of a dopant amount of 0.25 wt% of erbium to an amount of 900 ppm of a rare earth or transition metal was not permissible. Although 0.25 wt% of erbium corresponded to 900 ppm of erbium in a pure silica core, this was not true for a different ion dopant or for a different core material (P1 disclosed *inter alia* SiO₂, P₂O₆ and GeO₂ as core forming materials and referred to the core of the neodymium and erbium lasers as a 'high silica host glass', ie not pure silica. Fig 1 showed SiCl₄ and GeCl₄ as the forming gases used for the core).
 - The term "element of the European application" used in Article 88(3) EPC had been construed in G 2/98, point 6.2, as an embodiment of the invention and not as a feature thereof. It was thus clear that the combination of features had to be disclosed in the priority document. The argument that the priority documents P1 and P2 were filed at the same date did

not change the fact that the priority applications at the time of their filing date were two separate and independent applications apart from the cross-references in their texts.

- A disclosure of a document may be supplemented by a reference to another document. However, the information incorporated by reference was restricted to the specific information referred to in the reference to the incorporated documents. There was no reason to depart in the present case from the principles already developed on this issue. As the reference to document P2 found in document P1 referred as an example to a neodymium fibre laser for which a fibre produced according to P1 could be used; if anything was to be incorporated into P1, it was only this subject-matter.
- VI. In response to a communication accompanying the summons to oral proceedings the appellant proprietor submitted further arguments, withdrew his request for oral proceedings and announced that he would not attend the oral proceedings appointed.
- VII. At the oral proceedings before the board the appellant proprietor was as foreshadowed not present. In his written submissions he requested, as main request, that the decision under appeal be set aside and that the patent be maintained as granted, and, as auxiliary request, that the patent be maintained in amended form on the basis of claim 13, ie that the feature E8 "said active dopant ions being of a rare-earth or transition metal" in claim 1 be replaced by the feature "said active dopant ions being of erbium".

The respondent opponent requested that the appeal be dismissed.

Reasons for the Decision

1. The appeal is admissible.
2. *Main request*
 - 2.1 The main issue in this appeal is the priority of claim 1, as it is uncontested that its subject-matter is not inventive over documents D5 and D6 in the event that the claimed priority date is held to be ineffective (cf appellant proprietor's letter of 27 March 2006, point 7).
 - 2.2 The appellant proprietor argued that the subject-matter of claim 1 was disclosed (i) in document P1 alone, (ii) in documents P1 and P2 which should be read together so as to form a single disclosure and (iii) in document P1 by virtue of the incorporation by reference of document P2 (cf point IV).
 - 2.3 Document P1 discloses, as its title correctly states, a method of fabrication of optical fibres. It discloses that the ability to introduce small amounts of impurity dopants into the core or cladding of an optical fibre is useful for the fabrication of optical fibre amplifiers or lasers, magnetic field sensors, temperature sensors, scintillation counters and to increase the Kerr effect and the non-linear optical coefficients of the glass (cf P1, page 1, lines 4 to

26). It describes further a method, which is an extension of modified chemical vapour deposition (MCVD), for obtaining optical fibres containing controllable, low (< 1 wt%) amounts of one or more impurity dopant ions in one or both of the core or cladding glass of an optical fibre (cf. page 1, lines 27 to 30). In one embodiment optical absorption and fluorescence measurements were made on a fibre in which the core was doped with 0.3 to 300 ppm of neodymium (cf page 5, line 16 to page 7, line 21; Figs. 2 and 3). In another embodiment a fibre core was doped with up to **0.25 wt% of erbium** in a similar manner and its absorption spectrum measured (cf page 6, lines 22 to 30; Fig. 5). Finally, in a further embodiment a fibre core containing terbium and erbium ions was manufactured in a similar manner and its absorption spectrum measured (cf page 7, lines 6 to 17; Fig. 6).

- 2.4 The board however agrees with the respondent opponent that the features of the laser of claim 1 are not disclosed in combination in document P1. In particular, no disclosure of the manufacturing of an optical amplifier or laser is found in P1 other than a brief mention on the first page that the fibres thus obtained could *inter alia* be used in such a device. Although the technical problem of using the optical fibres in a laser is disclosed in P1, the solution is not. The opposed patent discloses detailed information on how the optical fibres obtained by the method of P1 can be used to make a laser, but this information is not in P1. Because of this lack of specific disclosure of the making of a laser in document P1, the priority right based only on the disclosure of P1 cannot be accorded to the opposed patent.

2.5 Moreover, as further argued by the opponent respondent, the composition of the core of the optical fibre is not disclosed in P1. P1 discloses *inter alia* that SiO_2 , P_2O_6 and GeO_2 are possible core forming materials, that the core of the neodymium doped fibre is a high silica host glass, ie not pure silica, and that the fibre's core is manufactured by codeposition of silica and germania (cf page 4, line 24; page 5, line 34 and Fig. 1). Although the skilled person would understand that a silica/germania glass might be referred to as a 'silica glass' (ie feature E3 of claim 1), the composition of the core itself is required for converting the dopant's weight percentage into molar percentage. Thus 0.25 wt% of erbium corresponds to 900 ppm in a pure silica matrix, but corresponds to a different molar amount in a matrix with a different composition. It follows, that document P1 does not disclose a dopant concentration of up to 900 ppm of erbium much less a concentration of up to 900 ppm of an unspecified rare earth or transition metal, as these elements have different molar weights form each other and the conversion from 0.25 wt% would therefore result in values different from 900 ppm for each metal (features E7 and E8 of claim 1).

2.6 Hence the subject-matter of claim 1 is not directly and unambiguously derivable from the priority document P1 alone.

2.7 The priority can also not be allowed even when both priority documents P1 and P2 are read together as complementary disclosures, as suggested by the appellant proprietor, given that document P2 discloses only a dopant concentration of 300 ppm of neodymium in

a germania/silica core (cf P2, page 2, lines 27 to 28). A dopant concentration of up to 900 ppm either of erbium or of a generic rare earth or transition metal is not disclosed in P2. For this reason the lack of disclosure of document P1 cannot be remedied even by reading it together with document P2.

2.8 The board has moreover serious doubts that the approach presented by the appellant proprietor that simultaneously filed priority documents should be read as a single common disclosure holds in the light of decision G 2/98. When interpreting the relevant provisions of the Paris Convention and the EPC the Enlarged Board of Appeal came to the conclusion that an "element of the invention" in the sense of Article 88(3) and (4) EPC represents subject-matter specifically disclosed explicitly or implicitly in the form of a claim or in the form of an embodiment or example specified in the description (cf point 4 of the reasons). When more than one priority is claimed said "element" has to be disclosed in a single priority document, since otherwise it would not be disclosed at all. This holds true irrespective of the priority documents being of even date or not. A possible exception to this general principle could be the incorporation by reference of a specific passage or part of another document. However, even this approach would have to be applied with caution in order to ensure that priority is claimed for the same invention.

2.9 Document P1 refers to document P2 by stating on page 1, lines 5 to 10, that "the fabrication of optical fibre amplifiers or lasers using for example neodymium or erbium as the impurity dopant is possible. An example

of a neodymium fibre laser is described in our copending Patent Application No. ...". The board considers that this reference to document P2 indeed enables the skilled person to make a laser with the optical fibres obtained by the method disclosed in P1. However, the extension of the disclosure of P1 by this reference is limited to the specific information provided therein, ie to the exemplary neodymium laser. It does not disclose a dopant concentration of 900 ppm of erbium or of a generic rare earth or transition metal which is absent from P1.

2.10 As the priority date is found to be invalid, documents D5 and D6 are comprised in the state of the art under Article 54(2) EPC. The board fully agrees with the reasoning on novelty and inventive step developed by the opposition division at points 4 and 5 of the decision under appeal. The appellant's main request is not allowable, since the laser device of claim 1 is not inventive over these documents.

3. *Auxiliary request*

3.1 In claim 1 of this request the feature E8 is replaced by '*said active dopant ions being of erbium*'. However, as mentioned previously with respect to the main request, a dopant ion concentration of 900 ppm of erbium is not directly and unambiguously derivable from the priority documents P1 and P2 neither alone nor read in combination. In consequence, the auxiliary request cannot be allowed, for the same reasons as for the main request.

3.2 Moreover, the informal auxiliary request filed with the statement of grounds of appeal was not followed by a formal request containing the necessary patent documents, ie an amended set of claims and description pages, on which the maintenance of the patent could have been ordered by the board. The appellant proprietor did not avail himself of the opportunity to file a complete request either before or at the oral proceedings, which he did not attend.

3.3 A proprietor has to make sure, in the event that he decides not to attend oral proceedings, that all the required documents on which the maintenance of the patent could be ordered are on file, so that a decision could be taken by the board at the end of the oral proceedings if a given request should be found allowable, having regard to the fact that the European Patent Office can consider and decide only on the text of the European patent submitted to it, or agreed by the proprietor (Article 113(2) EPC). A proprietor cannot rely on the proceedings being continued in writing or on the case being remitted to the department of the first instance so that the description and the dependent claims can be adapted to the independent claims for the sole reason of his non-appearance at the oral proceedings (cf Article 11(3) and (6) RPBA) (cf T 986/00, OJ 2003, 554). For this reason also the auxiliary request of the appellant proprietor would fall to be refused.

Order

For these reasons it is decided that:

The appeal is dismissed.

Registrar

Chair

S. Sánchez Chiquero

R. G. O'Connell