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D E C I S I O N
of 21 March 2003

Case Number: T 0549/00 - 3.3.5

Application Number: 89106332.3

Publication Number: 0336450

IPC: C04B 35/00

Language of the proceedings: EN

Title of invention:
Metal oxide materials

Patentee:
HER MAJESTY THE QUEEN IN RIGHT OF NEW ZEALAND

Opponent:
AG Siemens
AG Hoechst

Headword:
Metal oxide/HER MAJESTY THE QUEEN IN RIGHT OF NEW ZEALAND

Relevant legal provisions:
EPC Art. 100(b)

Keyword:
"Sufficiency of disclosure - yes, preparation of the claimed product disclosed under a different name"

Decisions cited:
-

Catchword:
-

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Beschwerdekammern | Boards of Appeal | Chambres de recours

Case Number: T 0549/00 - 3.3.5

D E C I S I O N
of the Technical Board of Appeal 3.3.5
of 21 March 2003

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Decision under appeal: **Decision of the Opposition Division of the European Patent Office posted 29 March 2000 revoking European patent No. 0 336 450 pursuant to Article 102(1) EPC.**

Composition of the Board:

Chairman: R. K. Spangenberg
Members: G. J. Wassenaar
J. H. Van Moer

Summary of Facts and Submissions

I. The appeal is from the decision of the Opposition Division revoking European patent No. 0 336 450 on the ground of insufficient disclosure within the meaning of Article 100(b) EPC. The patent was based on the European patent application No. 89106332.3, filed on 10 April 1989 with claimed priority dates of 8 April 1988 and 24 February 1989. The patent was granted with 4 claims. Claim 1 thereof reads as follows:

"A metal oxide material having the formula
$Bi_{2.1}Sr_2Ca_2Cu_3O_{10+\delta}$
wherein
Bi can be replaced in a minor part by Pb;
Sr and Ca can be replaced in a minor part by Na, K, Rb, Cs, or Ba or a combination thereof; and
Cu can be replaced in a minor part by Bi, Pb or Tl."

II. The Opposition Division held that the patent did not disclose how the material with the cited formula could be obtained. They considered that it was not evident that the particles with atomic ratios Bi:Sr:Ca:Cu of 2:2:2:3, mentioned in example 1 of the patent in suit, were in fact particles according to claim 1.

III. In the statement of the grounds of appeal, the appellant (patentee) maintained that it was evident from the application as filed that the atomic ratios given in example 1 of the patent in suit were only a conventional shorthand notation and that the real, more accurate, composition of these particles was as claimed. The claimed composition followed from the crystallographic data given in the example and illustrated by Figure 2. This was confirmed by the following article of the same inventors in Nature referred to as

P3: High-T_c superconducting phases in the series $Bi_{2.1}(Ca,Sr)_{n+1}Cu_nO_{2n+4+\delta}$, Nature Vol. 333 (May 1988), pages 153-156,

published before the filing date of the application on which the patent in suit was based.

During oral proceedings, which took place on 21 March 2003, It was further submitted that although the material obtained according to example 1 was not pure the skilled person knew that crystals of the pure phase could be isolated by magnetic levitation, taking advantage of the Meissner effect, as was known for earlier superconducting materials such as yttrium-barium-cuprate.

IV. The respondents (opponents 01 and 02) refuted the arguments of the appellant and maintained that the patent did not disclose a method for obtaining the claimed material. At the earliest priority date it was not evident that the atomic ratios mentioned in example 1 should in fact read as claimed. If a patentee wanted to keep a priority right, the invention should have been sufficiently disclosed so that a skilled person could perform it at the priority date. Documents published after that date could not be used to fill in missing information essential for performing the invention. Thus P3 could not be used to support the appellant's allegations concerning the real composition of the material obtained in example 1. Moreover, the product of example 1 was a mixed phase, not a pure material with a specific composition. During the oral proceedings it was argued that even in the pure 2223 phase the ratio between Bi and Cu was not limited to 2.1 to 3 but could have been eg between 2.0 to 3 and 2.2 to 3. Also the ratios between Bi and Sr, and

between Bi and Ca, were not fixed to one value. In this respect reference was made to Figures 7c and 9 in the following publication:

Zeitschrift für Metallkunde, Vol. 81 (1990), pages 836-840.

It was further argued that even if the product of example 1 contained particles according to claim 1, it was not disclosed how to isolate them.

V. The appellant (patentee) requested that the decision under appeal be set aside and the case be remitted to the first instance for further prosecution.

The respondents (opponents) requested that the appeal be dismissed.

Reasons for the Decision

1. In the patent in suit the claimed material is presented as the preferred material from a homologous series of materials having the approximate formula

$Bi_2(Ca,Sr)_{n+1}Cu_nO_{2n+4+\delta}$

with n=3 (column 1, line 14 to column 2, line 4).

The T_c measurements for the n=3 material shown in Fig. 1 and 5 were made with the 2:2:2:3 material obtained in example 1 (column 3, line 30 to column 5, line 13). This is the only material with a T_c above 100 K. It is evident that this material is the most preferred material disclosed in the description and therefore

likely to correspond to the especially preferred n=3 material for which the accurate formula is given in column 1, lines 56 to 57 and claims 1 and 2.

From the diffraction patterns of the n=2 and n=3 materials, showing in both cases the same 19/4 times incommensurate superlattice structure in the b-direction (column 4, lines 21 to 25), it follows that the ratio between Bi and Cu in the said homologous series, and thus also in the so called 2223 material, cannot be a whole number. This situation is confirmed by P3 disclosing that in each structure a 2 x superlattice structure in the c-direction arises as a natural consequence of a 19/4 incommensurate structure in the b direction, which accounts for 2.1 Bi atoms in the unit formula. In P3 it is further observed that following rapidly established convention the three phases discussed here ($Bi_{2.1}CaSrCuO_{4+\delta}$, $Bi_{2.1}CaSr_2Cu_2O_{8+\delta}$ and $Bi_{2.1}Ca_2Sr_2Cu_3O_{10+\delta}$) are referred to as "2111", "2122" and "2223" respectively (page 153, right hand column). The 2223 phase mentioned in P3 has the same T_c of 105 K and the same diffraction pattern as given for the 2223 material obtained according to present example 1; compare Figure 3c of P3 with Figure 2 (n=3).

2. The Board agrees with the respondents that missing information, necessary to perform an invention may not be derived from documents published after the priority date if the invention is claimed to be the same invention as disclosed in the priority document. In the present case however, the information in P3 is not necessary to perform the process of example 1, it only explains the factual situation that the 2223 phase obtained in the example has indeed the composition as claimed. It is just additional evidence showing how the facts mentioned in the patent specification should be interpreted. Giving the same product a different, more correct, name does not change the product.

3. It is also correct that the unit cell dimension of 5.4 x 5.4 x 72 Å given in P3 is slightly different from the dimension of 5.4 x 5.4 x 74 Å mentioned in present example 1. The number 72 in P3 is based on a c-repeat of about 18 Å (4 x 18) based on an X-ray powder diffraction pattern; see page 155, left hand column, lines 12 to 10 from the bottom. Values obtained by powder diffraction are not so accurate as obtained by single crystal diffraction which explains why the c-repeat is indicated as ~18 Å. The size 74 Å (4 x 18,25 Å) is comprised by the expression 4 x ~18 Å. The unit cell dimension given in example 1 is thus within the experimental error identical with that mentioned in P3.

4. The parties agreed that the product obtained by the process according to Example 1 was not the pure product having the composition according to present claim 1. Example 1 discloses, however, that the sintered product comprises more than 70% crystals having said composition and that the product can be pulverised. Since only these crystals have the high T_c it is credible that they can be isolated from the powder by magnetic levitation in liquid nitrogen, making use of the so called Meissner effect, as explained by the appellant during the oral proceedings. It was uncontested that such a separation method for superconductive particles was in itself known in the art for the separation of yttrium-barium-cuprate superconductive particles. The Board, therefore, accepts that it was possible for the skilled person to obtain the claimed product in a substantial pure state without undue burden.

5. The Board cannot accept the respondent's argument that the pure 2223 phase was not strictly limited to the composition as now claimed so that it was not disclosed how the exact composition according to claim 1 could be obtained. In the Board's opinion the phase diagrams Figure 7c and Figure 9 in "Z. Metallkde", on pages 839 to 840, cited by respondent O2 during oral proceedings, show that the composition range for the 2223 phase is very narrow; almost point like. Taking further into consideration that according to claim 1 the atomic ratio between Sr and Ca is limited to 1 there is hardly any variation in the Bi/Cu ratio possible. Said diagrams, therefore, rather support the appellant's position that the superconductive crystals in the product of Example 1 can only have, within the limits of experimental accuracy, the composition as claimed.

6. For these reasons the Board holds that the preparation of the material according to claim 1 has been disclosed in the patent in suit and the original application in a manner sufficiently clear and complete to be carried out by a person skilled in the art. The ground of opposition under Article 100(b) EPC is thus not founded. The grounds of opposition under Article 100(a) EPC have not been dealt with in the contested decision. The Board, therefore, exercises its power under Article 111(1) EPC to remit the case to the Opposition Division to decide on the issues of novelty and 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 first instance for further prosecution.

The Registrar: The Chairman:

U. Bultmann R. Spangenberg