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**Datasheet for the decision
of 29 September 2009**

Case Number: T 0481/07 - 3.2.08

Application Number: 98111849.0

Publication Number: 0893515

IPC: C30B 29/30

Language of the proceedings: EN

Title of invention:

Preconditioned crystals of lithium niobate and lithium tantalate and methods of preparing the same

Patentee:

CRYSTAL TECHNOLOGY, INC.

Opponent:

Shin-Etsu Chemical Co., Ltd.

Headword:

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Relevant legal provisions:

EPC Art. 123(2), 111

Relevant legal provisions (EPC 1973):

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Keyword:

"Added subject-matter (no)"

Decisions cited:

-

Catchword:

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Case Number: T 0481/07 - 3.2.08

D E C I S I O N
of the Technical Board of Appeal 3.2.08
of 29 September 2009

Appellant:
(Patent Proprietor)

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Respondent:
(Opponent)

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Representative:

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Reinhard, Skuhra, Weise & Partner GbR
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Decision under appeal:

Decision of the Opposition Division of the
European Patent Office posted 19 January 2007
revoking European patent No. 0893515 pursuant
to Article 102(1) EPC.

Composition of the Board:

Chairman: T. Kriner
Members: P. Acton
U. Tronser

Summary of Facts and Submissions

I. The appellant (patent proprietor) lodged an appeal, received at the EPO on 19 March 2007, against the opposition division's decision posted on 19 January 2007 revoking European patent No. EP 0 893 515 for contravention of Article 123(2) EPC. The appeal fee was paid simultaneously and the statement of grounds was received on 29 May 2007.

II. The opposition division held that the patent as granted did not fulfill the requirements of Article 123(2) EPC since the originally filed application did not disclose

- (a) a method for preconditioning lithium tantalate crystals,
- (b) the step of cooling the crystal below a second temperature, and
- (c) the step of cooling the crystal under a chemically reducing atmosphere.

Moreover, it also held that the auxiliary requests then on file did not comply with the requirements of Article 123(2) EPC, since claim 1 according to the first auxiliary request still contained steps (b) and (c) and claim 1 according to the second auxiliary request still contained step (c).

III. Oral proceedings took place before the board of appeal on 29 September 2009.

Both parties were duly summoned, but as announced with letter of 28 August 2009, the respondent (opponent) did not attend the oral proceedings.

IV. The appellant requested that the decision under appeal be set aside and that the patent be maintained on the basis of claim 1 according to the main request submitted with the grounds of appeal, and on claims 2 to 4 as granted.

The respondent did not submit any requests.

V. Independent claim 1 reads:

"A method for preconditioning a lithium niobate crystal to increase the crystal's ability to reduce electric charging of the crystal surface comprising:
heating the crystal under a chemically reducing atmosphere to a first temperature; and
cooling the crystal to room temperature under the chemically reducing atmosphere;
wherein the chemically reducing atmosphere and the first temperature are selected so that following heating and cooling, a charge decay time of less than one second is required to reduce the surface charge of the crystal to less than 5.0×10^{-11} coulombs as measured at a temperature of 80° C following heating to a temperature of 125° C."

VI. The appellant's arguments can be summarised as follows:

The applicant admitted that the step of cooling the crystal "under the chemically reducing atmosphere" was not explicitly disclosed in the original application. However, the skilled person would obviously maintain the chemically reducing atmosphere not only during the step of heating, but also during the step of cooling

the crystal. Therefore, this feature was at least implicitly disclosed in the application as originally filed.

This view was supported in particular by the statements at page 2, lines 50 to 52 and at page 3, lines 47 to 49 according to which the crystals are "exposed to heat under a chemically reducing atmosphere". This could only be understood as meaning that whenever the temperature was above room temperature the crystal was kept under the reducing atmosphere. Consequentially, the chemically reducing atmosphere had to be maintained during the heating, the dwell time and the cooling of the crystals to room temperature.

Furthermore, the example in the originally filed description provided a complete list of all steps of the preconditioning method (see page 5, lines 1 to 10). Since it was evident that these steps were performed sequentially and since no step of interrupting the gas flow or of opening the process tube's caps during the cooling step was described, it was obvious to maintain the chemically reducing atmosphere also during the cooling of the crystal.

Finally, it was so obvious not to change the atmosphere inside the oven during the cooling phase that even the opponent's expert who attempted to carry out the teaching of the example cooled down the wafers "while the hydrogen stream continued to flow through the furnace" (see step (vii) of the Affidavit by Mr Yoshiyuki Shiono filed by the opponent together with his note of opposition on the 25 August 2004 of the Affidavit).

Reasons for the Decision

1. The appeal is admissible.
2. Claim 1 of the present main request, which corresponds to claim 1 of the second auxiliary request underlying the decision of the opposition division, refers to a method of preconditioning lithium niobate only, wherein the cooling step is carried out to room temperature.

The method of preconditioning lithium niobate is indeed disclosed in the example (see page 5, lines 1 to 10) and the fact that the crystal wafers are cooled to room temperature is disclosed at page 3, line 49 as well as in the example (page 5, line 10).

The only feature of the claimed method which is not described explicitly in the originally filed application is the step of cooling the crystals "under a chemically reducing atmosphere". However, when assessing the content of the application as originally filed, also the disclosure implicit in the patent application -i.e. what any person skilled in the art would consider necessarily implied by the patent application as a whole- is relevant. Therefore, the question to be answered is whether the skilled person would as a matter of course understand the complete disclosure of the originally filed application so that the cooling of the crystals has to take place under the chemically reducing atmosphere.

3. According to the example described in the originally filed application, the crystals in form of wafers were placed in a sealed oven through which a mixture of

nitrogen and hydrogen gas was flowed. The gas flow was initiated after the loading of the wafers. Then the furnace temperature was increased to the target temperature, held for a dwell time at this temperature, and finally cooled down to room temperature. After cooling the wafers were removed from the oven. From this description it is clear for the skilled person that there is no reason to change the atmosphere in the oven during the cooling. Under consideration of the additional general teaching according to which the crystals have to be exposed to heat under a chemically reducing atmosphere, there is no doubt that the skilled person would understand the complete disclosure of the originally filed application so that the cooling of the crystals has to take place under the chemically reducing atmosphere which is already present during the heating and holding of the crystals at the first temperature.

This finding is supported by the Affidavit of Mr Yoshiyuki Shiono, filed by the opponent together with his note of opposition on the 25 August 2004

While trying to carry out the method according to the invention, Mr Yoshiyuki Shiono continued flowing the hydrogen stream through the furnace while the wafers were cooled down until the temperature was sufficiently close to room temperature (see steps (vii) and (viii) of the Affidavit).

Since even the expert who was trying to prove that the invention could not be carried out and had in principle every interest to ignore or misinterpret a method step which had not been explicitly described, has cooled the

crystals "under the chemically reducing atmosphere", it has to be concluded that any skilled person would cool down the crystals in this way. Therefore, the step of cooling the crystals under a chemically reducing atmosphere is implicitly disclosed in the application.

4. Since all features of claim 1 according to the main request are disclosed either explicitly or implicitly in the application as originally filed, this claim fulfils the requirements of Article 123(2) EPC.

5. Since the present patent was revoked exclusively for contravention of Article 123(2) EPC, and since the present claims comply with Article 123(2) EPC, it is appropriate to remit the case to the examining division (Article 111 EPC) for examination of the other requirements of the EPC.

Order

For these reasons it is decided that:

The decision under appeal is set aside.

The case is remitted to the department of first instance for further prosecution on the basis of claim 1 according to the main request submitted with the grounds of appeal and claims 2 to 4 as granted.

The Registrar:

The Chairman:

V. Commare

T. Kriner