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EXAMINER	
CANTELMO, GREGG	

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BEFORE THE PATENT TRIAL AND APPEAL BOARD

Ex parte ATSUSHI SANO, KEITARO OTSUKI, TOMOHIKO KATO, AKINOBU NOJIMA, and AKIJI HIGUCHI

Appeal 2018-004502
Application 14/005,357
Technology Center 1700

Before GEORGE C. BEST, JEFFREY R. SNAY, and MERRELL C. CASHION, JR., *Administrative Patent Judges.*

SNAY, *Administrative Patent Judge.*

DECISION ON APPEAL

STATEMENT OF THE CASE

Pursuant to 35 U.S.C. § 134(a), Appellant[1] appeals from the Examiner's decision to reject claims 3–7. We have jurisdiction under 35 U.S.C. § 6(b). A hearing was held October 31, 2019, a transcript of which will be made of record in due course.

We REVERSE.

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[1] We use the word Appellant to refer to "applicant" as defined in 37 C.F.R. § 1.42(a). Appellant identifies the real party in interest as TDK Corp. Appeal Br. 1.

BACKGROUND

The subject matter on appeal relates to an electrode active material suitable for use in a lithium ion secondary battery. Spec. ¶¶ 1, 2. Claim 3—the sole independent claim on appeal—reads:

> 3. An active material comprising β-type crystal of $LiVOPO_4$, wherein distortion in <100> direction in the β-type crystal is 1.2% or less.

Appeal Br. A-1 (Claims Appendix).

According to the Specification, an active material having the recited distortion characteristic is formed by hydrothermal reaction of lithium, phosphate, and vanadium at a temperature of 150 to 190 °C to generate a precursor mixture, adjusting pH of the generated precursor mixture to within the range of 6 to 8, and heating the pH-adjusted precursor mixture at a temperature of 425 to 650 °C. Spec. ¶¶ 11, 12.

REJECTIONS

I. Claims 3, 4, and 6 stand rejected under 35 U.S.C. § 103(a) as unpatentable over Sano '545.[2]

II. Claims 3, 4, and 6 stand alternatively rejected under 35 U.S.C. § 103(a) as unpatentable over Sano '545 and Sano '995.[3]

III. Claims 5 and 7 stand rejected under 35 U.S.C. § 103(a) as unpatentable over Sano '545, Okumura,[4] and Cheon.[5]

IV. Claims 5 and 7 stand alternatively rejected under 35 U.S.C. § 103(a) as unpatentable over Sano '545, Sano '995, Okumura, and Cheon.

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[2] US 2010/0233545 A1, published September 16, 2010.
[3] US 2011/0052995 A1, published March 3, 2011.
[4] JP 2007-317583 A, published December 6, 2007, as translated.
[5] US 7,838,152 B2, issued November 23, 2010.

OPINION

Each of the Examiner's rejections is premised on a finding that Sano '545 discloses a process for producing β-type crystals of $LiVOPO_4$ that is the same as that which is described in the Specification and, on that basis, inherently would have produced crystals exhibiting the recited distortion in the <100> direction. Non-Final Act. 6, 9 (citing *In re Best*, 562 F.2d 1252, 1255 (CCPA 1977)).

Appellant argues that the process taught by Sano '545 materially differs from that described in the Specification. Particularly, Appellant points out that the Specification describes adjusting pH to a value in the range of 6 to 8 *after* the hydrothermal reaction that generates the precursor mixture. Appeal Br. 3. *See also* Spec. ¶ 35 ("After the hydrothermal synthesis reaction, the pH of the mixture solution including the precursor is adjusted to be in the range of 6 to 8."). Appellant argues that Sano '545 omits such pH adjustment after hydrothermal treatment and, accordingly, does not support the Examiner's inherency determination. Appeal Br. 3–4.

The Examiner does not dispute that Sano '545 fails to disclose any post-hydrothermal pH adjustment. Rather, the Examiner points to the discussion at paragraph 50 of Sano '545 concerning pH adjustment *prior* to hydrothermal reaction, and concludes that altering the sequence of process steps in Sano '545, so that the noted pH adjustment instead occurred *after* hydrothermal reaction, would not have been significant. Non-Final Act. 4–5; Ans. 16.

Appellant's argument is persuasive of reversible error.

The Examiner has the initial burden of establishing a prima facie case of obviousness based on an inherent or explicit disclosure of the claimed subject matter under 35 U.S.C. § 103. *In re Oetiker*, 977 F.2d 1443, 1445

(Fed. Cir. 1992) ("[T]he examiner bears the initial burden, on review of the prior art or on any other ground, of presenting a *prima facie* case of unpatentability."). Where patentability rests upon a property of the claimed material not disclosed within the art, the PTO has no reasonable method of determining whether there is, in fact, a patentable difference between the prior art materials and the claimed material. *In re Best*, 562 F.2d 1252, 1255 (CCPA 1977). Thus, once the Examiner provides a reasonable basis to believe that the characteristic is inherent, the burden shifts to the applicant to prove that the prior art products do not necessarily possess the characteristics of his claimed product. *Id.* at 125–55 (discussing *In re Swinehart*, 439 F.2d 210 (CCPA 1971) and *In re Ludtke*, 441 F.2d 660 (CCPA 1971)).

Here, the Examiner fails to provide a reasonable basis to believe the recited distortion characteristic would have been inherent in crystals produced in accordance with Sano '545. There is no dispute that Sano '545 discloses a process in which pH of the mixture following hydrothermal reaction is well below 6. *See* Sano '545 Table 2. Nor is there any dispute that Sano '545 fails to provide any step of pH adjustment after hydrothermal reaction and prior to the second heating step. The Examiner's statement that it would have been inconsequential to change the sequence of steps in Sano '545 such that pH adjustment occurs after rather than before hydrothermal reaction is conclusory and not supported by evidence. Moreover, Sano '545 teaches that the β-$LiVOPO_4$ crystals are formed by subjecting the precursor mixture to firing at a temperature of 600 to 700 °C. Sano '545 ¶ 61. Absent supporting evidence, it is unreasonable to presume that a significant change in pH to the precursor mixture being fired would have been inconsequential to the characteristics of the crystals produced.

For the foregoing reasons, we are persuaded that the Examiner fails to provide sufficient basis to conclude that the relied-upon prior art teaches or suggests the recited distortion characteristic. Accordingly, the rejections are not sustained.

CONCLUSION

The Examiner's decision rejecting claims 3–7 is reversed.

DECISION SUMMARY

In summary:

Claims Rejected	**35 U.S.C. §**	**Reference(s)/Basis**	**Affirmed**	**Reversed**
3, 4, 6	103	Sano '545		3, 4, 6
3, 4, 6	103	Sano '545, Sano '995		3, 4, 6
5, 7	103	Sano '545, Okumura, Cheon		5, 7
5, 7	103	Sano '545, Sano '995, Okumura, Cheon		5, 7
Overall Outcome				3–7

REVERSED