IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

FUJIFILM Corporation
Petitioner
v.
Sony Corporation
Patent Owner

Case No: IPR2017-00360
Patent No. 6,979,501

PETITIONER'S NOTICE OF APPEAL

Director of the United States Patent and Trademark Office
c/o Office of the General Counsel
Madison Building East, 10B20
600 Dulany Street
Alexandria, VA 22314

Notice is hereby given, pursuant to 37 C.F.R. § 90.2(a), that Petitioner FUJIFILM Corporation appeals to the United States Court of Appeals for the Federal Circuit from the Final Written Decision of the Patent Trial and Appeal Board in Case No. IPR2017-00360, dated May 16, 2018 (Paper No. 39). In accordance with 37 C.F.R. § 90.2(a)(3)(ii), Petitioners indicate that the issues on appeal include, but are not limited to the following:

1. Whether the PTAB erred in finding that Petitioner has not shown by a preponderance of the evidence that claims 1-10 of U.S. Patent No. 6,979,501 (the "'501 Patent") are unpatentable.

2. Whether the PTAB erred in finding that Takahashi and Meguro do not disclose a "biaxially tensilized substrate."

3. Whether the PTAB erred in finding that Takahashi and Meguro do not disclose values for coefficient of thermal expansion and coefficient of hygroscopic expansion applicable over a temperature range of 35 degrees Celsius and a humidity range of 70% relative humidity.

4. Whether the PTAB erred in finding that Takahashi does not anticipate claims 1, 2, and 4-10 of the '501 Patent.

5. Whether the PTAB erred in finding that Meguro does not anticipate claims 1, 2, and 4-10 of the '501 Patent.

6. Whether the PTAB erred in finding that claims 1-10 of the '501 Patent are not obvious over Takahashi in view of NSIC Roadmap.

7. Whether the PTAB erred in finding that claims 1-10 of the '501 Patent are not obvious over Takahashi in view of Ahn.

8. Whether the PTAB erred in finding that claims 1-10 of the ’501 Patent are not obvious over Meguro in view of NSIC Roadmap.

9. Whether the PTAB erred in finding that claims 1-10 of the ’501 Patent are not obvious over Meguro in view of Ahn.

Simultaneous with this submission, a copy of this Notice of Appeal is being filed with the Patent Trial and Appeal Board. In addition, this Notice of Appeal, along with the required docketing fees, are being filed with the Clerk’s Office for the United States Court of Appeals for the Federal Circuit.

Respectfully submitted,

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CERTIFICATE OF SERVICE

Pursuant to 37 C.F.R. §§ 42.6(e), I hereby certify that on July 18th, 2018, the foregoing document was filed electronically with the PTAB through its E2E system and filed electronically with the Clerk's Office of the United States Court of Appeals for the Federal Circuit through that Court's CM/ECF system. The foregoing document was also served via email on attorneys of record for the Patent owner at the following address:

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Paper No. 39
Entered: May 16, 2018

BOARD AND PARTIES ONLY

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

FUJIFILM CORPORATION,
Petitioner,

v.

SONY CORPORATION,
Patent Owner.

Case IPR2017-00360
Patent 6,979,501 B2

Before KRISTINA M. KALAN, CHRISTOPHER M. KAISER, and JEFFREY W. ABRAHAM, *Administrative Patent Judges.*

KALAN, *Administrative Patent Judge.*

FINAL WRITTEN DECISION

Finding Claims 1–10 Not Unpatentable
35 U.S.C. § 318(a); 37 C.F.R. § 42.73

Addressing Patent Owner's Motion to Exclude
37 C.F.R. § 42.64(c)

Granting Petitioner's and Patent Owner's Motions to Seal
37 C.F.R. § 42.54

I. INTRODUCTION

Fujifilm Corporation ("Petitioner") filed a Petition requesting *inter partes* review of claims 1–10 of U.S. Patent No. 6,979,501 B2 (Ex. 1001, "the '501 patent"). Paper 1 ("Pet."). Sony Corporation ("Patent Owner") did not file a Preliminary Response. We instituted an *inter partes* review of claims 1–10 on all grounds of unpatentability alleged in the Petition. Paper 5 ("Dec.").

After institution of trial, Patent Owner filed a Patent Owner Response. Paper 11 ("PO Resp."). Petitioner filed a Reply. Paper 18 ("Reply" (public version)). Patent Owner, with Board authorization, filed a paper identifying alleged new arguments in the Reply (Paper 26), to which Petitioner responded (Paper 32). An oral hearing was held on February 22, 2018. A transcript of the hearing is included in the record. Paper 38 ("Tr.").

We have jurisdiction under 35 U.S.C. § 6. This Final Written Decision is issued pursuant to 35 U.S.C. § 318(a) and 37 C.F.R. § 42.73. For the reasons that follow, we determine that Petitioner has not established by a preponderance of the evidence that claims 1–10 of the '501 patent are unpatentable.

A. Related Proceedings

The parties identify the following proceeding as related: *Sony Corp. v. Fujifilm Holdings Corp.*, No. 1:16-cv-05988 (S.D.N.Y.). Pet. 1; Paper 12, 2.

B. The '501 Patent

The '501 patent, titled "Magnetic Recording Medium Having a Smooth Biaxially Tensilized Film Substrate," issued on December 27, 2005. Ex. 1001, at [54], [45]. The '501 patent relates to a "magnetic recording

medium which includes a non-magnetic substrate having a front side and a backside, a longitudinal direction and a crossweb direction, with a particulate/binder magnetic layer formed over the front side of the substrate." *Id.* at [57]. More particularly, the patent relates to "magnetic recording media such as a magnetic tape having a Wyko Ra smoothness of less than 10 nanometers (nm), more specifically to a biaxially tensilized substrate for such a recording medium." *Id.* at 1:7–11. According to the '501 patent, it is "desirable to have a biaxially tensilized substrate that would maximize the dimensional stability of the magnetic recording medium formed thereon." *Id.* at 2:3–5. The magnetic recording medium "has a cross web dimensional difference from the magnetic recording head used therewith of less than 900 microns/meter over a 35 degree temperature range, and over a 70% relative humidity range." *Id.* at 2:39–42. The various components and properties of certain embodiments are described in the specification of the patent. *Id.* at 4:24–9:34.

C. Illustrative Claim

Of challenged claims 1–10, only claim 1 is independent. Ex. 1001, 11:21–12:37. Claims 2–10 depend directly from claim 1. *Id.* Claim 1 recites:

> 1. A magnetic recording medium comprising a biaxially tensilized substrate having a front side and a backside, a longitudinal direction and a crossweb direction, said substrate having a magnetic layer formed over said front side of said substrate comprising magnetic pigment particles, and a binder system therefor; said magnetic recording medium having a cross web dimensional difference from a substrate wafer of an Al_2O_3–TiC bi-phase ceramic formed from aluminum oxide and titanium carbide of less than 900 microns/meter over a temperature range of about 35 degrees, and over a relative humidity range of about

> 70%, and a coefficient of thermal expansion having a value said magnetic recording medium having a coefficient of thermal expansion of from about 5 ppm/C to about 10 ppm/C, said coefficient of thermal expansion being from about 50% to about 150% of the coefficient of thermal expansion for the substrate wafer.

Id. at 11:21–37.

D. Instituted Grounds of Unpatentability

We instituted an *inter partes* review of claims 1–10 of the ’501 patent on the following grounds. Dec. 15.

Reference(s)	Statutory Basis	Claims Challenged
Takahashi[1]	§ 102	1, 2, and 4–10
Meguro[2]	§ 102	1, 2, and 4–10
Takahashi and NSIC Roadmap[3]	§ 103	1–10
Meguro and NSIC Roadmap	§ 103	1–10
Takahashi and Ahn[4]	§ 103	1–10
Meguro and Ahn	§ 103	1–10

Petitioner relies on the declaration of Shan Wang, Ph.D. (Ex. 1010). Patent Owner relies on the declaration of Professor Bharat Bhushan (Ex. 2005).

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[1] Japanese Pat. Pub. No. 2002-123928 A, published April 26, 2002 (Ex. 1003) (“Takahashi”).
[2] Japanese Pat. Pub. No. 2003-141708 A, published May 16, 2003 (Ex. 1004) (“Meguro”).
[3] National Storage Industry Consortium, *Magnetic Tape Storage Roadmap*, February 2002 (Ex. 1005) (“NSIC Roadmap”).
[4] U.S. Patent No. 6,252,741 B1, issued June 26, 2001 (Ex. 1006) (“Ahn”).

II. ANALYSIS

A. Claim Construction

In an *inter partes* review, claim terms in an unexpired patent are interpreted according to their broadest reasonable constructions in light of the specification of the patent in which they appear. *See* 37 C.F.R. § 42.100(b); *Cuozzo Speed Techs., LLC v. Lee*, 136 S. Ct. 2131, 2144–46 (2016) (upholding the use of the broadest reasonable interpretation standard). Under the broadest reasonable construction standard, claim terms are presumed to have their ordinary and customary meaning, as would be understood by one of ordinary skill in the art in the context of the entire disclosure. *In re Translogic Tech., Inc.*, 504 F.3d 1249, 1257 (Fed. Cir. 2007). Only those terms which are in controversy need to be construed, and only to the extent necessary to resolve the controversy. *See Nidec Motor Corp. v. Zhongshan Broad Ocean Motor Co.*, 868 F.3d 1013, 1017 (Fed. Cir. 2017) ("we need only construe terms 'that are in controversy, and only to the extent necessary to resolve the controversy'") (quoting *Vivid Techs., Inc. v. Am. Sci. & Eng'g, Inc.*, 200 F.3d 795, 803 (Fed. Cir. 1999)).

Petitioner proposes that we construe the terms "biaxially tensilized," "tensilized," "longitudinal direction" and "crossweb direction," "degrees," and "ferromagnetic pigment." Pet. 14–16. For purposes of our Institution Decision, we determined that no claim term required express construction. Dec. 5. Patent Owner, in its Response, proposes that we construe the preamble and the term "tensilized." PO Resp. 7–10. For purposes of this Decision, we determine that the terms "longitudinal direction" and

"crossweb direction," "degrees," and "ferromagnetic pigment" are not in controversy, and require no express construction.

We discuss, here, the terms "biaxially tensilized" and "tensilized." We note, first, that the specification of the '501 patent expressly defines the term "biaxially tensilized" as "having been subjected to tensilization in both the machine direction and the crossweb direction." Ex. 1001, 3:33–35. Petitioner asks us to construe the term "biaxially tensilized" as it is defined in the specification. Pet. 14. Because Patent Owner has acted as its own lexicographer for the term "biaxially tensilized," we accept the express definition set forth in the specification. *In re Paulsen*, 30 F.3d 1475, 1480 (Fed. Cir. 1980).

The specification does not, however, expressly define the term "tensilized." Petitioner proposes that we construe the term "tensilized" to mean "stretched." Pet. 14. Patent Owner proposes that we construe the term "tensilized" to mean "subjected to a process of heating and stretching, followed by heat setting or stabilization." PO Resp. 8–10. Petitioner replies that the inventor did not act as his own lexicographer for the term "tensilized," and that Patent Owner's proposed construction is contradicted by extrinsic evidence. Reply 1–4.

Applying the broadest reasonable interpretation, we construe the term "tensilized" to mean "stretched." The specification defines "biaxially tensilized" as "having been subjected to tensilization in both the machine direction and the crossweb direction," indicating that tensilization has a directional component, *i.e.*, that tensilization can occur in a machine direction, or in a crossweb direction, or both. Ex. 1001, 3:33–35. No other properties such as heating or heat setting are mentioned in the specification's

definition of "biaxially tensilized." Attempting to substitute the term "heating" or "heat setting" for the term "tensilized" in the definition of "biaxially tensilized" is nonsensical—it does not appear that a substrate could be, for example, "heated" in a machine direction or "heat set" in a crossweb direction. The specification's paragraph describing "film production," upon which both parties rely, does not mention tensilization *ipsissimis verbis*. Ex. 1001, 5:18–31. This paragraph's description states that film production "typically involves" the steps identified in the paragraph, indicating that not all steps are required at all times. *Id.* Dictionary evidence indicates that "tensile," the root word at issue, means "capable of being stretched." *See* Ex. 1026, 6. Extrinsic evidence indicates that substrates can be cold-stretched, *i.e.*, stretched without heat. *See generally* Ex. 1022. Construing "tensilized" to mean "stretched," in view of broadest reasonable interpretation standards, does not mean that a heating or a heat-setting component must be absent, but allows for the presence of other steps without requiring them to be part of the construction. Thus, we construe the term "tensilized" to mean "stretched."

B. Level of Ordinary Skill in the Art

For the purpose of the Institution Decision, we accepted Petitioner's undisputed contention that a person of ordinary skill in the art

> would have been a person with (1) a bachelor's degree in materials science, physics, electrical engineering, mechanical engineering, chemistry, or a closely related field, and at least five years of experience in the field of magnetic recording or (2) a master's degree or higher in those fields, or a closely related field, with an emphasis in magnetic recording, and at least three years of experience in the field of magnetic recording.

Pet. 13. Patent Owner does not, in its Response, appear to dispute this definition. In light of the evidence before us, we adopt Petitioner's definition of one of ordinary skill in the art. We also find that Petitioner's proposed level of skill in the art is reflected by the references themselves. *See Okajima v. Bourdeau*, 261 F.3d 1350, 1355 (Fed. Cir. 2001) ("the absence of specific findings on the level of skill in the art does not give rise to reversible error 'where the prior art itself reflects an appropriate level and a need for testimony is not shown.'"); *In re GPAC, Inc.*, 57 F.3d 1573, 1579 (Fed. Cir. 1995) (finding that the Board of Patent Appeals and Interferences did not err in concluding that the level of ordinary skill in the art was best determined by the references of record).

C. Overview of the Asserted References

1. Takahashi

Takahashi relates to a magnetic tape "suitable for the magnetic recording and reproducing system in which a linear recording method will be utilized and a magneto-resistive reproducing head will be incorporated." Ex. 1003, at [57]. Takahashi indicates that "it will be preferable that the dimension of the magnetic tape in the width direction will not change" (*id.* ¶ 6) and that its magnetic tape "will have a higher mechanical strength than ever before with respect to its longitudinal direction" (*id.* ¶ 7). Takahashi's magnetic tape has "a substantially non-magnetic layer containing a non-magnetic powder and a binding agent, and a magnetic layer containing a strongly magnetic powder and a binding agent," arranged "in this sequence on one surface of the supporting base and a back coat layer containing the carbon black on the other surface of this supporting base." *Id.* ¶ 20. Takahashi provides additional details about the composition of the various

Embodiments and Comparative Examples, and Tables contrasting the Embodiments with Comparative Examples. *Id.* ¶¶ 66–71, 84–89.

2. Meguro

Meguro relates to a "magnetic recording medium comprised of a nonmagnetic layer containing nonmagnetic powder and a binding agent as well as a magnetic layer containing ferromagnetic powder and a binding agent on at least one of the planes of a nonmagnetic supporting member in the order given." Ex. 1004, at [57]. For Meguro's magnetic tape, "the difference in the thermal expansion coefficient and humidity expansion coefficient is small between the recording and reproduction of data." *Id.* ¶ 11. Meguro's magnetic tape "comprises at least two layers of coated films (i.e., a nonmagnetic layer, and a magnetic layer formed on said nonmagnetic layer) on at least one of the planes of a nonmagnetic supporting member" and "a back coating layer may be provided on the opposite surface of the nonmagnetic supporting member." *Id.* ¶ 27. Meguro provides additional details about the composition of the Working Examples and Comparative Examples, and Tables contrasting the Working Examples with the Comparative Examples. *Id.* ¶¶ 92–108, 113–114.

3. NSIC Roadmap

NSIC Roadmap is a publication of the National Storage Industry Consortium, focusing on magnetic tape. Ex. 1005. According to Petitioner, the National Storage Industry Consortium was a leading consortium of more than 50 companies and universities in the field of magnetic tape. Pet. 11.

4. Ahn

Ahn is titled "Thin Film Magnetic Recording Head with Treated Ceramic Substrate." Ex. 1006, at [54]. Ahn is directed to providing a

ceramic substrate as part of a method for increasing electrical resistivity of at least a portion of the substrate, which method can be applied in the production of thin film magnetic recording heads and devices incorporating such heads. *Id.* at [57].

D. Analysis

A claim is unpatentable under 35 U.S.C. § 102 if a prior art reference discloses each and every limitation of the claimed invention, either explicitly or inherently. *Glaxo Inc. v. Novopharm Ltd.*, 52 F.3d 1043, 1047 (Fed. Cir. 1995). If the prior art reference does not expressly set forth a particular element of the claim, that reference still may anticipate if that element is "inherent" in its disclosure. *In re Robertson*, 169 F.3d 743, 745 (Fed. Cir. 1999). To establish inherency, the extrinsic evidence "must make clear that the missing descriptive matter is necessarily present," or inherent, in the single anticipating reference. *Continental Can Co. v. Monsanto Co.*, 948 F.2d 1264, 1268 (Fed. Cir. 1991). "Inherency, however, may not be established by probabilities or possibilities. The mere fact that a certain thing *may* result from a given set of circumstances is not sufficient." *Id.* at 1269 (quoting *In re Oelrich*, 666 F.2d 578, 581 (CCPA 1981)).

A claim is unpatentable under 35 U.S.C. § 103(a) if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious to a person of ordinary skill in the art at the time the invention was made. *KSR Int'l Co. v. Teleflex Inc.*, 550 U.S. 398, 406 (2007). Obviousness is resolved based on underlying factual determinations, including: (1) the scope and content of the prior art; (2) any differences between the claimed subject matter and the prior art; (3) the level of ordinary skill in the art; and (4) objective evidence

of nonobviousness, i.e., secondary considerations. *See Graham v. John Deere Co.*, 383 U.S. 1, 17–18 (1966).

Petitioner bears the burden of proving unpatentability of the challenged claims, and the burden of persuasion never shifts to Patent Owner. *Dynamic Drinkware, LLC v. Nat'l Graphics, Inc.*, 800 F.3d 1375, 1378 (Fed. Cir. 2015). Petitioner must demonstrate obviousness by a preponderance of the evidence. 35 U.S.C. § 316(e); 37 C.F.R. § 42.1(d); *see also Harmonic Inc. v. Avid Tech., Inc.*, 815 F.3d 1356, 1363 (Fed. Cir. 2016) (citing 35 U.S.C. § 312(a)(3) (requiring *inter partes* review petitions to identify "with particularity . . . the evidence that supports the grounds for the challenge to each claim")). A party that petitions the Board for a determination of obviousness must show that "a skilled artisan would have been motivated to combine the teachings of the prior art references to achieve the claimed invention, and that the skilled artisan would have had a reasonable expectation of success in doing so." *Procter & Gamble Co. v. Teva Pharm. USA, Inc.*, 566 F.3d 989, 994 (Fed. Cir. 2009) (quoting *Pfizer, Inc. v. Apotex, Inc.*, 408 F.3d 1348, 1361 (Fed. Cir. 2007)). We analyze both parties' arguments, below, in accordance with the above-stated principles.

1. Asserted Anticipation Based on Takahashi

Petitioner challenges claims 1, 2, and 4–10 as anticipated by Takahashi. Pet. 16–33.

Regarding claim 1, Petitioner argues that, to the extent the preamble is a limitation, it is taught by Takahashi. Pet. 17–18 (citing Ex. 1003 ¶¶ 4, 7, 9, 13, 20, 22, 64). As a preliminary matter, we determine that the preamble of the claim ends at "comprising," meaning that "biaxially tensilized" is a limitation of claim 1. *See* PO Resp. 8. Petitioner argues that Takahashi

teaches "biaxially tensilized substrate" with its disclosure that the supporting base of the magnetic tape "was strengthened by appropriately stretching in the width direction and/or in the longitudinal direction." Pet. 17 (citing Ex. 1003 ¶ 22).

Petitioner further argues that Takahashi teaches "said substrate having a magnetic layer formed over said front side of said substrate comprising magnetic pigment particles, and a binder system therefore" with its disclosure of a magnetic layer, magnetic powder, and binding agent. *Id.* at 18 (citing Ex. 1003 ¶¶ 9, 20, 26, 58). Regarding the limitation "said magnetic recording medium having a cross web dimensional difference from a substrate wafer of an Al_2O_3-TiC bi-phase ceramic formed from aluminum oxide and titanium carbide of less than 900 microns/meter over a temperature range of about 35 degrees, and over a relative humidity range of about 70%," Petitioner argues that Takahashi's Embodiment 1 discloses this element, relying on Dr. Wang's testimony to explain the calculations that support this argument. *Id.* at 19–24 (citing Ex. 1003 ¶¶ 15, 85, 90; Ex. 1010 ¶¶ 108–115).

Similarly, Petitioner argues that Takahashi's Embodiment 1 discloses the limitations of "a coefficient of thermal expansion having a value [sic] said magnetic recording medium having a coefficient of thermal expansion from about 5 ppm/C to about 10 ppm/C" with Takahashi's CTE of 6 ppm/°C, and "said coefficient of thermal expansion being from about 50% to about 150% of the coefficient of thermal expansion for the substrate wafer" with Takahashi's CTE of 6 ppm/°C being between 3.5 ppm/°C and 10.5 ppm/°C, which represents 50% and 150% of the 7 ppm/°C CTE of AlTiC, respectively. Pet. 24 (citing Ex. 1003 ¶¶ 85, 90; Ex. 1010 ¶¶ 116–17).

Petitioner further argues that Takahashi teaches each of the limitations of each of dependent claims 2 and 4–10. Pet. 24–33 (citing Ex. 1003 ¶¶ 21–24, 30, 34, 36–40, 43, 44, 58, 61, 66, 68, 72; Ex. 1010 ¶¶ 119–35).

Patent Owner responds that Petitioner "has not demonstrated that Takahashi discloses a magnetic recording medium with a biaxially tensilized substrate that also meets the other elements of claim 1 for the embodiment on which it relies: Embodiment 1." PO Resp. 12. Patent Owner argues that, by relying on Embodiment 1 for its calculations of the specific CTE and CHE parameters, Petitioner can only be relying on inherency, which binds Petitioner to its calculations based on Embodiment 1. *Id.* at 13. According to Patent Owner, "Embodiment 1, however, does not use a 'biaxially tensilized substrate.'" *Id.* at 13. Rather, Patent Owner asserts, only one example in Takahashi—Comparative Example 5—expressly discloses a biaxially tensilized substrate. *Id.* at 13–14 (quoting Ex. 1003 ¶ 72 ("The supporting bases of the Embodiments 5 ~ 8 will be obtained after stretch[ing] the supporting base of the Embodiment 1 in the vertical direction. The supporting base of the Comparative Example 5 will be obtained after stretch[ing] the supporting bases of the Embodiments 5 ~ 8 vertically and horizontally." (citations omitted)). Patent Owner notes that Takahashi's paragraph 22, upon which Petitioner relies for its disclosure of "biaxially tensilized substrate," makes only a general statement that the supporting base should be made from material where "the mechanical strength was strengthened by appropriately stretching in the width direction and / or in the longitudinal direction at the time of forming." *Id.* at 18 (citing Ex. 1003 ¶ 22; Ex. 2005 ¶ 44–46). Patent Owner argues that this generally applicable "and/or" formulation "states only that it is preferable to use one

of three possible stretchings: uniaxial longitudinal, uniaxial width, or biaxial." *Id.* This general statement of preference, Patent Owner argues, should not be narrowed to biaxial stretching only. *Id.*

Petitioner replies that, regardless of whether other embodiments of Takahashi were additionally stretched, Dr. Bhushan agreed that typical substrate film production would include the steps of "melt extrusion of the polymer . . . rapid quench to reduce temperature, subsequent heating and stretching of the film, followed by heat setting or stabilization," and therefore the film would be biaxially tensilized. Reply 6 (citing Ex. 1020, 176:15–177:21, 192:9–193:12). Thus, argues Petitioner, "a POSITA would have understood that commercially available substrate films would typically have been biaxially 'tensilized,'" even under Patent Owner's proposed construction. *Id.* at 6–7. Petitioner also argues that it was "within the knowledge of a POSITA to select proper conditions to achieve the preferred polymer chain orientation through tensilization" or that "a POSITA would have ordered a substrate from a manufacturer who would have known the proper conditions." *Id.* at 19–20.

We are persuaded that Petitioner, by relying on Embodiment 1 of Takahashi to inherently disclose other elements of claim 1, must also demonstrate that Embodiment 1 has a "biaxially tensilized substrate" as recited in claim 1. In an anticipation analysis, picking and choosing of elements from different embodiments is improper. *In re Arkley*, 455 F.2d 586, 587 (CCPA 1972) (quoted with approval in *Sanofi-Synthelabo v. Apotex, Inc.*, 550 F.3d 1075, 1083 (Fed. Cir. 2008)) ("Such picking and choosing . . . has no place in the making of a 102, anticipation rejection.").

Petitioner's evidence and arguments do not show that Takahashi expressly or inherently discloses that the film of Embodiment 1 is biaxially tensilized. "[I]t is not enough that the prior art reference . . . includes multiple, distinct teachings that the artisan might somehow combine to achieve the claimed invention." *Net MoneyIN, Inc. v. VeriSign, Inc.*, 545 F.3d 1359, 1371 (Fed. Cir. 2008). Takahashi's Embodiment 1, which does not expressly disclose biaxial tensilization, and Comparative Example 5, which does, are discrete examples, and each has different parameters. For example, Embodiment 1 discloses a coefficient of thermal expansion of 0.0006 and a coefficient of humidity expansion of 0.0012, whereas Comparative Example 5 discloses a coefficient of thermal expansion of 0.0003 and a coefficient of humidity expansion of 0.0010. Ex. 1003 ¶¶ 85, 88. Accordingly, Petitioner's anticipation argument with respect to Takahashi's Embodiment 1 would either lack the required limitation of "biaxially tensilized substrate," or require combining disclosures from separate embodiments, which is not a permissible way to argue anticipation. "[U]nless a reference discloses within the four corners of the document not only all of the limitations claimed but also all of the limitations arranged or combined in the same way as recited in the claim," it "cannot be said to prove prior invention of the thing claimed and, thus, cannot anticipate under 35 U.S.C. § 102." *Net MoneyIN, Inc.* 545 F.3d at 1371. Here, Petitioner does not establish that Takahashi discloses the limitations of claim 1 "arranged or combined in the same way as recited in the claim." Instead, Petitioner relies on a general statement in Takahashi that the substrate may be stretched in the "width direction and / or the longitudinal direction,"

without demonstrating that biaxial tensilization is express or would be inherent in the substrate of Embodiment 1. *See* Ex. 1003 ¶ 22.

Takahashi's general statement about the options for preparing the film used in its various embodiments allows for three possibilities, by virtue of its "and/or" phrasing. Two of the three possibilities—stretching only in the width direction and stretching only in the longitudinal direction—do not constitute biaxial tensilization. Thus, Petitioner's arguments and evidence are based on what Takahashi *teaches* and what a person of skill *understands* Takahashi Embodiment 1 may have included. Reply 6–7, 18–19; Ex. 1020, 176:15–177:21, 192:9–193:12; *see also* Ex. 1024, 61:9–18, 67:6–19 (confidential). Such evidence does not establish by a preponderance of the evidence that Takahashi *discloses* that Embodiment 1 necessarily has a "biaxially tensilized substrate." Thus, Petitioner has not presented evidence to support the rigorous requirements of an inherency finding. Rather, Petitioner attempts to avoid those requirements by asking us to accept expert inferences as to how a skilled artisan would have viewed Takahashi's teachings. In the context of anticipation, this is not proper.

Based on the full record, Petitioner has not shown by a preponderance of the evidence that Takahashi's Embodiment 1 discloses a "biaxially tensilized substrate." Because this limitation appears in each of the challenged claims, Petitioner has not demonstrated by a preponderance of the evidence that claims 1, 2, and 4–10 of the '501 patent are anticipated by Takahashi.

2. Asserted Anticipation Based on Meguro

Petitioner challenges claims 1, 2, and 4–10 as anticipated by Meguro. Pet. 33–47.

Regarding claim 1, Petitioner argues that, to the extent the preamble is a limitation, it is taught by Meguro. Pet. 33–34 (citing Ex. 1004 ¶¶ 1, 20, 27, 74). As discussed above, we determine that the preamble of the claim ends at "comprising," meaning that "biaxially tensilized" is a limitation of claim 1. *See* PO Resp. 8. Petitioner argues that Meguro teaches "biaxially tensilized substrate" with its disclosure that: "Examples of the nonmagnetic supporting member that can be used in the present invention include publicly known, worked or described biaxially drawn polyethylene naphthalate, polyethylene terephthalate, polyamide, polyimide . . . ." Pet. 33–34 (citing Ex. 1004 ¶ 74).

Petitioner further argues that Meguro teaches "said substrate having a magnetic layer formed over said front side of said substrate comprising magnetic pigment particles, and a binder system therefore" with its disclosure of a magnetic layer, ferromagnetic powder, and binding agents. *Id.* at 34–35 (citing Ex. 1004 ¶¶ 27, 35, 41). Regarding the limitation "said magnetic recording medium having a cross web dimensional difference from a substrate wafer of an Al_2O_3-TiC bi-phase ceramic formed from aluminum oxide and titanium carbide of less than 900 microns/meter over a temperature range of about 35 degrees, and over a relative humidity range of about 70%," Petitioner argues that Meguro Working Example 9 discloses this element by disclosing "a magnetic tape with a CTE of '7.0' ppm/°C in the 'TD direction', and a CHE of '5.5' ppm/%RH in the TD direction," and relies on Dr. Wang's testimony to explain the calculations that support this argument. *Id.* at 35–38 (citing Ex. 1004 ¶ 114; Ex. 1010 ¶¶ 109, 140–146).

Similarly, Petitioner argues that Meguro Working Example 9 discloses the limitations of "a coefficient of thermal expansion having a

value [sic] said magnetic recording medium having a coefficient of thermal expansion from about 5 ppm/C to about 10 ppm/C" with Meguro's CTE of 7 ppm/°C, and "said coefficient of thermal expansion being from about 50% to about 150% of the coefficient of thermal expansion for the substrate wafer" with Meguro's CTE of 7 ppm/°C being between 3.5 ppm/°C and 10.5 ppm/°C, which represent 50% and 150% of the 7 ppm/°C CTE of AlTiC, respectively. Pet. 38–39 (citing Ex. 1004 ¶¶ 114; Ex. 1010 ¶¶ 147–148).

Petitioner argues that Meguro teaches each of the limitations of each of dependent claims 2 and 4–10. Pet. 39–47 (citing Ex. 1004 ¶¶ 41, 48, 51, 55, 62, 74, 75, 86, 101, 104, 109, 114; Ex. 1010 ¶¶ 132, 149–160).

Patent Owner responds that Petitioner has not demonstrated that Meguro teaches a "biaxially tensilized" substrate, as required by claim 1. PO Resp. 35. Patent Owner argues that, through its reliance on Working Example 9 for its calculations of the specific CTE and CHE parameters, Petitioner can only be relying on inherency, which binds Petitioner to its calculations based on Working Example 9. *Id.* at 35–36. According to Patent Owner, Petitioner "has not shown that Working Example 9 is biaxially drawn." *Id.* at 36. Rather, Patent Owner asserts, Meguro's paragraph 74, upon which Petitioner relies for its disclosure of "biaxially tensilized substrate," makes only a general statement that biaxially drawn substrates are "examples" that "can be used" in the invention, not that biaxial drawing must be or is used in the Embodiments." *Id.* at 36 (citing Ex. 1004 ¶ 74; Ex. 2005 ¶ 73). Patent Owner also argues that Meguro's disclosure that Working Example 9's magnetic recording medium was changed "by appropriately adjusting the degree of crystallinity and the drawing amount of the nonmagnetic supporting member" makes it

"impossible to determine" whether Working Example 9's substrate is necessarily or inherently biaxially tensilized." *Id.* at 37 (citing Ex. 1004 ¶ 104; Ex. 2005 ¶ 72).

Petitioner relies on Dr. Bhushan's testimony that a standard substrate film such as the PET substrates used in Meguro would have been biaxially tensilized, and even under Patent Owner's proposed construction of "tensilized," Working Example 9 of Meguro at least discloses tensilization in both directions. Reply 12 (citing Ex. 1020, 176:15–177:21, 192:9–193:12). Particularly, Petitioner argues that the data in Meguro shows that the CTE and CHE values in both directions decreased for Working Example 9, meaning that the substrate would have to be tensilized in both directions. *Id.* at 12–13 (citing Ex. 1004 ¶ 114; Ex. 1020, 248:13–24).

We are persuaded that Petitioner, by relying on Working Example 9 of Meguro to inherently disclose other elements of claim 1, must also demonstrate that Working Example 9 has a "biaxially tensilized substrate" as recited in claim 1. *See Arkley*, 455 F.2d at 587. As noted above, "it is not enough that the prior art reference . . . includes multiple, distinct teachings that the artisan might somehow combine to achieve the claimed invention." *Net MoneyIN, Inc.*, 545 F.3d at 1371. "[U]nless a reference discloses within the four corners of the document not only all of the limitations claimed but also all of the limitations arranged or combined in the same way as recited in the claim," it "cannot be said to prove prior invention of the thing claimed and, thus, cannot anticipate under 35 U.S.C. § 102." *Id.* Here, Petitioner does not establish that Meguro discloses the limitations of claim 1 "arranged or combined in the same way as recited in the claim." More particularly,

Petitioner does not demonstrate persuasively that biaxial tensilization would be express or inherent in the substrate of Working Example 9.

Working Example 9 is based on Working Example 6. Ex. 1004 ¶ 104 ("The magnetic tapes were fabricated through the same method as that was used for the working example 6."). Working Example 6 is based on Working Example 1. *Id.* ¶ 101 ("The working example was fabricated through the same method used for the working example 1."). Polyethylene-terephthalate is identified as the substrate in Meguro's Working Example 1. Ex. 1004 ¶ 94 ("magnetic-layer coating material was applied . . . onto a polyethylene-terephthalate supporting member"). The polyethylene terephthalate used in these Working Examples, however, is not expressly identified as being "biaxially tensilized." Instead, to disclose the "biaxially tensilized substrate" of claim 1, Petitioner relies on a general statement in Meguro that: "Examples of the nonmagnetic supporting member that can be used in the present invention include publicly known, worked or described biaxially drawn polyethylene naphthalate, polyethylene terephthalate, polyamide, polyimide, polyamide-imide, aromatic polyamide, polybenzoxidazole, etc." Pet. 33–34 (citing Ex. 1004 ¶ 74). The "biaxially drawn" modifier could be directed to polyethylene naphthalate alone, or to some or each of the identified examples; it is unclear from a plain reading of Meguro. Even if the modifier "biaxially drawn" applied to polyethylene terephthalate, this list of "examples" merely provides options that could be used in the present invention, without requiring that any of them be used in any particular working example. Thus, this general statement does not establish that the polyethylene terephthalate in Working Example 9 is necessarily biaxially tensilized.

Regarding the disclosure of Working Example 9, we are not persuaded that Petitioner's analysis of the data in Table 2, in which the CTE and CHE values of Working Example 9 decreased in both the machine direction and transverse direction relative to the CTE and CHE values of Working Example 6, is sufficient to demonstrate that Working Example 9's substrate was inherently biaxially tensilized. Reply 12–13. Petitioner relies on the testimony of Patent Owner's expert to argue that for "the CTE and CHE values to drop in *both* directions, the substrate would have to be tensilized in both directions as well." Reply 13 (citing Ex. 1020, 248:13–24). This testimony, however, does not clearly demonstrate inherency. In response to a question about whether the "reduction in CTE and CHE values in both directions would require stretching of the tape in both the MD and TD directions," Dr. Bhushan replies: "And/or improvement in crystallinity." Ex. 1020, 248:15–18. Earlier in his testimony, though, when directly asked "given the changes would a person of ordinary skill in the art consider the drawing for working example 9 to have been done in both the MD and TD directions?" Dr. Bhushan replied "I don't see that" and "[t]he change clearly is in one axis and not in both axis." Ex. 1020, 246:3–20. Given these ambiguities, we are unpersuaded by Petitioner's argument based on Table 2 and Dr. Bhushan's testimony.

Additionally, Petitioner's arguments and evidence are based on what Meguro *teaches* and what a person of skill *understands* Meguro Working Example 9 may have included. Reply 6–7, 11–13; Ex. 1020, 176:15–177:21, 192:9–193:12; *see also* Ex. 1024, 61:9–18, 67:6–19 (confidential). Such evidence does not establish by a preponderance of the evidence that Meguro *discloses* that Working Example 9 necessarily has a "biaxially

tensilized substrate." Thus, Petitioner has not presented evidence to support the rigorous requirements of an inherency finding. Rather, Petitioner attempts to avoid those requirements by asking us to accept expert inferences as to how a skilled artisan could have viewed Meguro's teachings. In the context of anticipation, this is not proper.

On the complete record, Petitioner's evidence and arguments do not show that Meguro expressly or inherently discloses that the substrate of Working Example 9 is biaxially tensilized. Because this limitation appears in each of the challenged claims, Petitioner has not demonstrated by a preponderance of the evidence that claims 1, 2, and 4–10 of the '501 patent are anticipated by Meguro.

3. Cross Web Dimensional Difference

Patent Owner argues that Petitioner has not demonstrated that Takahashi or Meguro inherently meet the claim 1 limitation of "cross web dimensional difference," i.e., the "magnetic recording medium having a cross web dimensional difference from a substrate wafer of an Al_2O_3–TiC bi-phase ceramic formed from aluminum oxide and titanium carbide of less than 900 microns/meter over a temperature range of about 35 degrees, and over a relative humidity range of about 70%." PO Resp. 22, 38. More particularly, Patent Owner argues that CTE, which is an input to the calculations of cross web dimensional difference, changes considerably with temperature, and Petitioner's calculations did not even attempt to account for these changes in CTE over the claimed temperature range. *Id.* at 25, 38 (referring to PO Resp. Section III.A.2). Patent Owner relies on the testimony of Dr. Wang, who stated that "if you want to assume that CTE is constant, you have to define the temperature range, the material considered,

et cetera." *Id.* at 26 (citing Ex. 2001, 41:19–42:2). Patent Owner also presents evidence that the CTE of substrates (not tapes) varies by up to a factor of ten over different temperature ranges. *Id.* at 28, 39. Patent Owner argues that, without accounting for temperature, "it is impossible to conclude" that either Takahashi's Embodiment 1 or Meguro's Working Example 9 "'necessarily' discloses the cross web dimensional difference limitation." *Id.* at 29, 39.

In its Reply, Petitioner critiques Patent Owner's arguments on a number of grounds. First, Petitioner argues that Patent Owner "presents data for *substrates* varying from about 40°C to 70°C to argue that the CTE of the composite *tape* would have varied over a 35-degree range from about 10 to 45°C." Reply 8. Thus, argues Petitioner, Patent Owner's evidence is not applicable to the tape measurements in the prior art and the '501 patent. *Id.* Although we agree that Patent Owner's evidence merely indicates that the CTE of a substrate can vary widely when the range is 40°C to 70°C, the evidence introduces doubt about Petitioner's calculations based on Takahashi's Embodiment 1 and Meguro's Working Example 9, which appear to assume that CTE is constant. A tape includes a substrate component, and although the coating properties may contribute to the overall tape properties, Patent Owner presents evidence that people of ordinary skill in the art believed that the contribution from the substrate dominated the CTE of magnetic tape. Tr. 33:9–10; Ex. 2001, 33:18–35:19. Petitioner's assertion about the contribution of the coating properties (Reply 8, citing Ex. 1020, 125:4–126:16) does not squarely address Patent Owner's assertion that CTE may vary over a temperature range. Petitioner also does not

present any updated calculations that account for possible temperature variance of CTE.

Second, Petitioner argues, the ’501 patent “fails to disclose a temperature range over which its reported values were measured,” and “the data from the ’501 Patent were *not* in fact measured over a 35-degree range,” as claim 1 requires. Reply 8. Petitioner points to the testimony of Dr. Merton that the measurements of the tape in the ’501 patent were actually measured from 23°C–45°C, and at a fixed dew point or humidity, rather than over a 35 degree range. *Id.* (citing Ex. 1024, 73:23–74:5; 78:4–13). Petitioner also relies on Dr. Merton’s testimony that the CTE of the tape would remain “uniform” from 23–45°C, the range measured in the ’501 patent, and down to 10°C. *Id.* at 8–9 (citing Ex. 1024, 74:13–23; Ex. 1025, 287–290). Regarding the substrate alone, Petitioner relies on the similarity of the disclosures among Table 1 of the ’501 patent and Table 12 of the NSIC Roadmap to argue that the CTE of the substrate in Table 1 was taken from Table 12 of the NSIC roadmap, which only measured the substrate from 40–50°. *Id.* at 9–10. Thus, argues Petitioner, “the reported CTE values in Takahashi and Meguro are at least as reliable as those in the Patent . . . for purposes of calculating the dimensional difference.” *Id.* at 11.

Petitioner’s cross-web dimensional difference calculations, for which CTE was an input, were based on the presumption that CTE remained constant over the claimed “about 35 degrees.” Petitioner must demonstrate that the “about 35 degrees” limitation is met, expressly or inherently, by the relied-upon prior art. Petitioner notes that the “prior art temperature ranges” over which CTE were measured are “20-30°C and 23-50°C.” Reply 8. We understand this to refer to the measurements made in Takahashi and

Meguro, respectively. In Takahashi, "the dimensional changes were measured at the temperature of 20 ~30 °C, and the coefficient of thermal expansion was determined." Ex. 1003 ¶ 76. In Meguro, "the respective dimensional changes at the temperatures of 23°C and 50°C were measured to thereby obtain the thermal expansion coefficient." Ex. 1004 ¶ 110. Thus, the prior art references Petitioner relies upon disclose that their CTE was measured over temperature ranges of 10°C and 27°C, respectively. We cannot be certain based on the evidence submitted by Petitioner that Takahashi's CTE would not vary outside of the 10°C over which it was measured, or that Meguro's CTE would not vary outside of the 27°C range over which it was measured, particularly in light of the Patent Owner's evidence concerning the possibility of variation of CTE due to changes in temperature. Nor are we persuaded by Petitioner's argument that the CTE values in Takahashi and Meguro are "at least as reliable as those in the Patent" when the '501 patent does not expressly provide a temperature range over which its CTE values were measured, and when "at least as reliable as" is not the standard for anticipation, whether express or inherent. *See* Reply 11. Accordingly, we are not persuaded that Petitioner's calculations, which do not account for the possible effects of temperature on CTE, demonstrate that Takahashi or Meguro expressly or inherently anticipate the challenged claims.

4. Asserted Obviousness Grounds

Petitioner challenges claims 1–10 as obvious over Takahashi and NSIC Roadmap, as obvious over Takahashi and Ahn, as obvious over Meguro and NSIC Roadmap, and as obvious over Meguro and Ahn. Pet. 47–66.

i. Obviousness Grounds Relying on NSIC Roadmap

Petitioner argues that NSIC Roadmap "provides the appropriate teaching of using tape with heads and matching their CTE values," and also provides that "'it is desirable to match thermal expansion of the tape substrate with that of the head substrate, typically Al_2O_3-TiC, which is about 7 x 10^{-6}/°C.'" Pet. 47–49, 54–55 (citing Ex. 1005, 13). More particularly, Petitioner argues that one of ordinary skill in the art would have found it obvious to combine "(a) Takahashi's teachings of a biaxially tensilized magnetic tape with a CTE of 6 ppm/°C and a CHE of 12 ppm/%RH, with (b) the NSIC Roadmap's teachings of using magnetic tape with an AlTiC magnetic head and matching the thermal expansion of the magnetic tape to the head." *Id.* at 47. Petitioner also argues that one of ordinary skill in the art would have found it obvious to combine "(a) Meguro's teachings of a biaxially tensilized magnetic tape with a CTE of 7 ppm/°C and a CHE of 5.5 ppm/%RH, with (b) the NSIC Roadmap's teachings of using magnetic tape with an AlTiC magnetic head and matching the thermal expansion of the magnetic tape to the head." *Id.* at 54. Regarding motivation to combine, Petitioner argues that a person of ordinary skill in the art "would have understood that the use of magnetic tape" such as that taught by Takahashi and Meguro "requires a combination with a magnetic tape head, and AlTiC has been the most common substrate material for tape heads since the 1990s." *Id.* at 47 (citing Ex. 1010 ¶ 72), 54 (citing Ex. 1010 ¶ 184). Petitioner briefly argues that "claim 2 is obvious based on the teachings of Takahashi" and also that one of ordinary skill in the art "would have found [claims 4–7 and 9–10] obvious in light of the above-cited disclosures of Takahashi." *Id.* at 51–52, 53–54. Petitioner asserts that one of ordinary skill

in the art "would have found claim 8 obvious" based on Takahashi's disclosure of a CHE of "0.0010%/% RH or less," with a citation to NSIC Roadmap to argue that one ordinary skill would have found it obvious to minimize the CHE of the tape. *Id.* at 53. Petitioner also briefly argues that a person of ordinary skill in the art "would have found claim 2 to be obvious in light of Meguro" and also "would have found [claims 4–10] obvious in light of the above-cited disclosures of Meguro." *Id.* at 56–58.

ii. Obviousness Grounds Relying on Ahn

Petitioner argues that Ahn discloses "an AlTiC magnetic head and further discloses that 'Magnetic recording heads also may be utilized in video or tape devices.'" Pet. 58–59 (citing Ex. 1006, 1:35–43, 2:22–23), 63. Petitioner argues that one of ordinary skill in the art "would have found it obvious to combine (a) Takahashi's teachings of a biaxially tensilized magnetic tape with a CTE of 6 ppm/°C and a CHE of 12 ppm/%RH, with (b) Ahn's teachings of using magnetic tape with an AlTiC magnetic head." *Id.* at 58. Similarly, Petitioner argues that one of ordinary skill in the art "would have found it obvious to combine (a) Meguro's teachings of a biaxially tensilized magnetic tape with a CTE of 7 ppm/°C and a CHE of 5.5 ppm/%RH, with (b) Ahn's teachings of using magnetic tape with an AlTiC magnetic head." *Id.* at 62–63. Regarding motivation to combine, Petitioner argues that a person of ordinary skill in the art "would have found it obvious to combine" Takahashi's or Meguro's "magnetic tape with an AlTiC head because AlTiC has been the most common substrate material for tape heads since the 1990s." *Id.* at 58 (citing Ex. 1010 ¶ 72), 63 (citing Ex. 1010 ¶ 72). Petitioner argues that, to "the extent that claim 1 requires an AlTiC head, or to the extent the CTE and CHE properties of AlTiC were not known in the

art, Ahn provides these teachings." *Id.* at 59, 63. Regarding the remaining challenged claims, Petitioner briefly argues that "claim 2 is obvious based on the teachings of Takahashi," that "Ahn discloses the additional elements of claim 3," and that a person of ordinary skill in the art "would have further found claim 8 obvious based on the teachings of Takahashi" and "would have found [claims 4–7 and 9–10] obvious in light of the above-cited disclosures of Takahashi." *Id.* at 61–62. Petitioner also briefly argues that to "the extent it is not anticipated, claim 2 is obvious based on the teachings of Meguro," the "combination with Ahn discloses the additional elements of claim 3," and also that one of ordinary skill in the art "would have found [claims 4–10] obvious in light of the above-cited disclosures of Meguro." *Id.* at 65.

iii. Analysis

Patent Owner argues that Petitioner's obviousness contentions fail, because (1) it is difficult to determine what Petitioner "contends was obvious beyond the use of Al_2O_3-TiC," an assertion that does not remedy the failings of Takahashi or Meguro; and (2) to the extent Petitioner "intends its obviousness grounds to go beyond mere use of Al_2O_3-TiC, its cryptic assertions are insufficient as a matter of law and fact." PO Resp. 59.

The key to supporting a conclusion of unpatentability under 35 U.S.C. § 103(a) is the clear articulation of reasons why the claimed invention would have been obvious. The Supreme Court has clarified this requirement that must be met to establish a prima facie case of obviousness, emphasizing that the "analysis should be made explicit." *KSR*, 550 U.S. at 418. Although the reasoning may draw from numerous intrinsic and extrinsic sources, conclusions of obviousness "cannot be sustained by mere conclusory

statements; instead, there must be some articulated reasoning with some rational underpinning to support the legal conclusion of obviousness." *Id.* (quoting *In re Kahn*, 441 F.3d 977, 988 (Fed. Cir. 2006)).

We have already determined that the "biaxially tensilized substrate" limitation of claim 1 is not explicitly present in Takahashi or Meguro. *See supra*. Petitioner's presentation of its case regarding obviousness based on Takahashi and Ahn, or Takahashi and NSIC Roadmap, or Meguro and Ahn, or Meguro and NSIC Roadmap does not specifically address this shortcoming. Pet. 47, 54, 58, 62.

Petitioner focuses on the combination of Takahashi or Meguro with one of the two secondary references to disclose the magnetic recording head of claim 3, or the possibility that claim 1 requires an AlTiC head, or as evidence to bolster the obviousness argument for the CHE limitation of claim 8 (for ground 3). Pet. 47–66. Claim 3 requires that the magnetic recording medium of claim 1 be "used with a magnetic recording head formed on a substrate wafer of an Al_2O_3-TiC bi-phase ceramic formed from aluminum oxide and titanium carbide." Ex. 1001, 12:1–5. Claim 1, although it provides Al_2O_3-TiC as a point of reference, does not require an Al_2O_3-TiC head, nor do any of the other challenged claims. *Id.* at 11:21–37.

For the remaining claims, Petitioner appears to rely on the respective primary reference alone. Petitioner relies on its previous calculations for Takahashi's magnetic tape based on Embodiment 1 (Pet. 51, 59–60), and also relies on its prior argument that "Takahashi discloses all elements of claim 1." *Id.* at 50, 59 (citing Section VII.A.I). Similarly, Petitioner relies on its previous calculations for Meguro's magnetic tape based on Working

Example 9 (*id.* at 55, 64), and also relies on its prior argument that "Meguro discloses all elements of claim 1." *Id.* at 55, 63 (citing Section VII.B.I).

Because we have determined that neither Takahashi nor Meguro anticipates claims 1, 2, or 4–10, Petitioner's obviousness arguments based on its anticipation arguments alone cannot prevail. Moreover, Petitioner's reliance on prior arguments does not adequately articulate the required "reasoning with some rational underpinning to support the legal conclusion of obviousness." *See KSR*, 550 U.S. at 418 ("[I]t can be important to identify a reason that would have prompted a person of ordinary skill in the relevant field to combine elements in the way the claimed new invention does."). A petition for *inter partes* review must identify how the challenged claims are unpatentable under the statutory grounds asserted by the petitioner, and must specify where each element of the claims is found in the relied-upon prior art. 37 C.F.R. § 42.104(b)(4). A petition must include "a detailed explanation of the significance of the evidence including material facts, and the governing law, rules, and precedent." *Id.* § 42.22(a)(2).

Petitioner's obviousness grounds are unclear as to the exact basis relied upon for each claim within each ground. For example, even though each of Petitioner's obviousness grounds is ostensibly based on two references, certain claims within each ground rely only on one primary reference, and do not provide either a reason to modify the primary reference or a reason to combine the elements of the primary reference with the secondary reference. Thus, the Petition does not precisely identify how the challenged claims are unpatentable. For example, with respect to claims 4–7 and 9–10 of ground 3, Petitioner states that Takahashi discloses an anticipating magnetic tape, and the "combination with NSIC Roadmap would not alter this

analysis." Pet. 53–54. Petitioner makes similar arguments for the remaining obviousness grounds. *See, e.g., id.* at 57, 62, 65 (the "combination with Ahn would not alter this analysis."). Thus, for these types of arguments, Petitioner appears to rely solely on its anticipation arguments for the primary reference and imply that a combination with the secondary reference "will not alter" that analysis, without providing an articulated reason to combine the references and without addressing why Petitioner believes the combination would have been obvious. This argument does not meet Petitioner's burden to articulate a rational underpinning to support the legal conclusion of obviousness.

Moreover, as pointed out by Patent Owner, Petitioner's obviousness arguments do not address any changes to the "inherency calculation" based on either Takahashi or Meguro. PO Resp. 60–61. Without knowing if the substrates used in Takahashi's Embodiment 1 or Meguro's Working Example 9 are biaxially tensilized or not, we are not apprised of how this calculation might change if, for example, the substrate's tensilization would need to be changed to meet the limitations of the claims.

In its Reply, Petitioner asserts that the NSIC Roadmap teaches a biaxially tensilized substrate as well as matching CTE in the transverse direction, and that teaching establishes obviousness. Reply 24–26. As a preliminary matter, we understood Petitioner's obviousness argument regarding biaxial tensilization in the Petition to rely on Takahashi or Meguro alone, rather than on the combination of Takahashi or Meguro with NSIC Roadmap. "It is of the utmost importance that petitioners in the IPR proceedings adhere to the requirement that the initial petition identify 'with particularity' the 'evidence that supports the ground for the challenge to each

claim.'" *Intelligent Bio-Systems, Inc. v. Illumina Cambridge Ltd.*, 821 F.3d 1359, 1369 (Fed. Cir. 2016) (quoting 35 U.S.C. § 312(a)(3)). Here, Petitioner's new theory and accompanying evidence were not made as a proper response to Patent Owner's arguments; as such, Patent Owner has not had a fair and meaningful opportunity to address Petitioner's new theory. Accordingly, we decline to consider the merits of Petitioner's Reply argument that one of ordinary skill in the art would have found it obvious to use a biaxially tensilized substrate based on NSIC Roadmap. Even if we were satisfied that Petitioner had presented this argument in a timely manner in the Petition, rather than for the first time in its Reply (*see* Paper 26, 2), and even if we were satisfied that Petitioner had shown that the disclosure of Takahashi or Meguro on which it relies sufficiently demonstrates biaxial tensilization, Petitioner's lack of analysis and support on this argument fails to establish that the combination of Takahashi or Meguro with NSIC Roadmap would render the challenged claims obvious.

After considering the parties' arguments and evidence, we are not persuaded that Petitioner has made a sufficient showing that a person having ordinary skill in the art would have combined the teachings in the manner proposed by Petitioner. We conclude that Petitioner has not satisfied its burden of demonstrating, by a preponderance of the evidence, that the subject matter of claims 1–10 of the '501 patent would have been obvious over the combined teachings of Takahashi and NSIC Roadmap, of Takahashi and Ahn, of Meguro and NSIC Roadmap, or of Meguro and Ahn.

III. MOTION TO EXCLUDE

Patent Owner moved to exclude Exhibits 1023–1025 and 1027, which are excerpts of deposition transcripts taken in a related proceeding. Paper

23. Patent Owner subsequently filed a Notice of Withdrawal of Motion to Exclude. Paper 27. In view of the Notice of Withdrawal, which we accept (37 C.F.R. § 42.5), we determine that no Motion to Exclude remains in the record for our consideration, and thus, we do not address it here.

IV. MOTIONS TO SEAL

Patent Owner and Petitioner each filed Motions to Seal portions of certain papers and exhibits. Paper 16 (Petitioner); Paper 28 (Patent Owner); Paper 33 (Petitioner).

In its first Motion to Seal, Petitioner seeks to seal Exhibits 1023–1025, which are excerpts from deposition transcripts in a related proceeding, and portions of the Petitioner's Reply. Paper 16, 1–5. Petitioner represents that it has filed a non-confidential redacted version of its Reply as Paper No. 18. *Id.* at 5. Petitioner also represents that the parties agreed to a modified version of the Board's Default Protective Order, and submits a Proposed Protective Order as Appendix A, along with a redline of the Standing Protective Order as Appendix B. *Id.* at 2.

In its second Motion to Seal, Petitioner seeks to seal Exhibits 1029 and 1030, which contain excerpts from deposition transcripts in a related proceeding, and the unredacted copy of Petitioner's Response to Patent Owner's Observations on ITC Testimony. Paper 33, 1. Petitioner represents that it has filed a non-confidential redacted version of Exhibit 1030 as Exhibit 1031, and a non-confidential redacted version of Petitioner's Response. *Id.* at 4–5.

Patent Owner seeks to seal Exhibit 2011, which contains excerpts from deposition transcripts in a related proceeding, and Patent Owner's Observations on ITC Testimony Filed with Petitioner's Reply (Paper 24).

Paper 28, 1. Patent Owner represents that it filed a redacted version of its Observations. *Id.* at 4.

"There is a strong public policy for making all information filed in a quasi-judicial administrative proceeding open to the public, especially in an *inter partes* review which determines the patentability of claims in an issued patent and therefore affects the rights of the public." *Garmin Int'l v. Cuozzo Speed Techs., LLC*, IPR2012–00001, slip op. at 1–2 (PTAB Mar. 14, 2013) (Paper 34). For this reason, except as otherwise ordered, the record of an *inter partes* review trial shall be made available to the public. *See* 35 U.S.C. § 316(a)(1); 37 C.F.R. § 42.14. The standard for granting a motion to seal is good cause. 37 C.F.R. § 42.54. That standard includes showing that the information addressed in the motion to seal is truly confidential, and that such confidentiality outweighs the strong public interest in having the record open to the public. *See Garmin*, slip op. at 2–3.

After having considered the arguments, we determine that the parties establish good cause for sealing the documents identified in the respective Motions. Specifically, the parties demonstrate that the information they seek to seal consists of transcript excerpts dealing with confidential technical information about the parties' products and "non-public, highly sensitive research and development information of a third party to this proceeding," and papers that rely on the testimony sought to be sealed. *See, e.g.*, Paper 16, 2; Paper 28, 4; Paper 33, 2. Accordingly, the Motions are *granted* and the Proposed Protective Order (Paper 16, Appendix A) *entered*.

There is an expectation that information will be made public where the information is identified in a final written decision, and that confidential information that is subject to a protective order ordinarily would become

public 45 days after final judgment in a trial, unless a motion to expunge is granted. 37 C.F.R. § 42.56; Office Patent Trial Practice Guide, 77 Fed. Reg. 48,756, 48,761 (Aug. 14, 2012). A party who is dissatisfied with the Final Decision may appeal the Decision pursuant to 35 U.S.C. § 141(c), and has 63 days after the date of the Decision to file a notice of appeal. 37 C.F.R. § 90.3(a). Thus, it remains necessary to maintain the record, as is, until resolution of an appeal, if any. In view of the foregoing, the confidential documents filed in the instant proceeding will remain under seal, at least until the time period for filing a notice of appeal has expired or, if an appeal is taken, the appeal process has concluded. The record for the instant proceeding will be preserved in its entirety, and the confidential documents will not be expunged or made public, pending appeal. Notwithstanding 37 C.F.R. § 42.56 and the Office Patent Trial Practice Guide, neither a motion to expunge confidential documents nor a motion to maintain these documents under seal is necessary or authorized at this time. *See* 37 C.F.R. § 42.5(b).

V. CONCLUSION

For the foregoing reasons, we determine that Petitioner fails to establish, by a preponderance of the evidence, that claims 1, 2, and 4–10 of the ’501 patent are unpatentable under 35 U.S.C. § 102 as anticipated by Takahashi, that claims 1, 2, and 4–10 of the ’501 patent are unpatentable under 35 U.S.C. § 102 as anticipated by Meguro, or that claims 1–10 are unpatentable under 35 U.S.C. § 103 as obvious over the combination of the Takahashi and Ahn, Takahashi and NSIC Roadmap, Meguro and Ahn, or Meguro and NSIC Roadmap.

VI. ORDER

In consideration of the foregoing, it is hereby:

ORDERED that Petitioner does not establish, by a preponderance of the evidence, that claims 1–10 of the ’501 patent are unpatentable;

FURTHER ORDERED that Patent Owner’s and Petitioner’s Motions to Seal are *granted* and the Proposed Protective Order *entered*; and

FURTHER ORDERED that this is a Final Written Decision; therefore, parties to the proceeding seeking judicial review of the decision must comply with the notice and service requirements of 37 C.F.R. § 90.2.

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