

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

CANDELA CORPORATION,
Petitioner,

v.

NIKOLAI TANKOVICH,
Patent Owner.

IPR2023-00234
Patent 10,675,481 B1

Before SHERIDAN K. SNEDDEN, TINA E. HULSE, and
DEVON ZASTROW NEWMAN, *Administrative Patent Judges*.

NEWMAN, *Administrative Patent Judge*.

DECISION

Granting Institution of *Inter Partes* Review
35 U.S.C. § 314, 37 C.F.R. § 42.4

I. INTRODUCTION

A. *Background and Summary*

Candela Corporation (“Petitioner”) filed a Petition pursuant to 35 U.S.C. §§ 311–319 requesting an *inter partes* review of claims 1–28 “the Challenged Claims”) of U.S. Patent No. 10,675,481 B1 (Ex. 1001, “the ’481

patent”). Paper 1 (“Pet.”). Nikolai Tankovich (“Patent Owner”) filed a Patent Owner Preliminary Response (“Prelim. Resp.”). Paper 7.

We have authority to determine whether to institute an *inter partes* review. 35 U.S.C. § 314(b) (2018); 37 C.F.R. § 42.4(a) (2019). An *inter partes* review may not be instituted “unless . . . the information presented in the petition . . . shows that there is a reasonable likelihood that the petitioner would prevail with respect to at least 1 of the claims challenged in the petition.” 35 U.S.C. § 314(a). Upon consideration of the Petition, the Preliminary Response, and the evidence of record, we conclude that Petitioner has established a reasonable likelihood of prevailing on its assertion that at least one challenged claim is unpatentable based on the grounds advanced here. Accordingly, we grant institution of *inter partes* review of claims 1–28 of the ’481 patent.

B. Real Parties in Interest

Petitioner identifies the real parties in interest as “Candela Corporation with a principal address at 251 Locke Drive, Marlborough, Massachusetts 01752 and Candela Medical, Inc. with a principal address at 251 Locke Drive, Marlborough, Massachusetts 01752.” Pet. 3. Patent Owner identifies himself as the real party in interest. Paper 4, 1.

C. Related Matters

The parties identify two litigations, *Tankovich v. Candela Medical, Inc.*, Case No. 8-21-cv-01955 (C.D. Cal. Nov. 29, 2021) (dismissed) and *Tankovich v. Candela Corp.*, Case. No. 1-22-cv-01458 (D. Del. Nov. 4, 2022). Pet. 4; Paper 4, 1.

D. The '481 Patent

1. Specification Overview

The '481 patent discloses a laser system and method for administering multiple beams of laser energy in tissue treatment applications. Ex. 1001, Abstract. The disclosure explains that “laser treatment usually requires different modalities of energy in order successfully treat the pathologies to which they are applied” but that “sequential application of multiple wavelengths of laser energy compromises the treatment” because treated tissue can experience coagulation and swelling leading to scattering of laser energy in subsequent treatments. *Id.* at 1:16–31. The disclosed laser

simultaneously delivers multiple wavelengths of laser energy using a single unit in a single application . . . without producing interference between the wavelengths that typically results when a tissue is treated with multiple wavelengths of laser energy in separate applications [and] can avoid interference of the wavelengths by delivering the wavelengths simultaneously and in spatially separated and overlapping regions of the tissue being treated

Id. at 1:62–2:4. Through such delivery, the disclosed system reduces compromise of the first treated tissue, permits spatial separation of the beams “such that two wavelengths of laser energy are not applied to the same region of tissue thereby preventing a treated tissue from interfering with the propagation of a second wavelength of laser treatment,” and permits treatment at different tissue depths. *Id.* at 2:4–19.

An embodiment of the disclosed laser system is depicted in Figure 1 below, which has been rotated 90° clockwise to enable easier reading of the numbering:

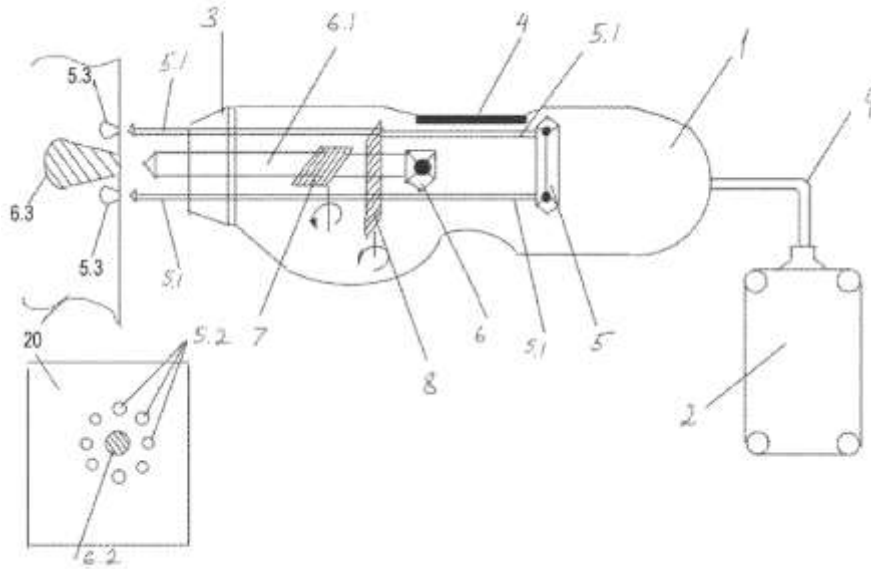


FIG. 1

Figure 1 of the '481 patent, duplicated above, depicts an embodiment of the disclosed laser system. Shown are

a non-limiting beam distribution pattern on skin 20 of a patient wherein fractional scanner 8 is adapted to distribute beam 5.1 according to beam distribution pattern 5.2, and fractional scanner 7 is adapted to distribute beam 6.1 according to beam distribution pattern 6.2, such that beam[] 5.1 contacts skin 20 in a pattern that surrounds the areas of skin 20 that are contacted by beam 6.1. In this pattern, beams 5.1 and 6.1 contact skin 20 in a spatially separated, non-overlapping areas.

Id. at 5:48–56. A mirror can serve as a fractional scanner. *Id.* at 4:53–58.

The '481 patent discloses that methods of treatment using the disclosed laser system comprise applying beams “in the treated tissue in a pattern of overlapping beams, partially overlapping beams, non-overlapping beams, or combinations thereof” and that the beams can be applied such that they propagate at different tissue depths. *Id.* at 8:51–55.

Various configurations of beam distribution patterns made by the disclosed laser system are depicted in Figure 2 below, which has been rotated 90° clockwise to enable easier reading of the numbering:

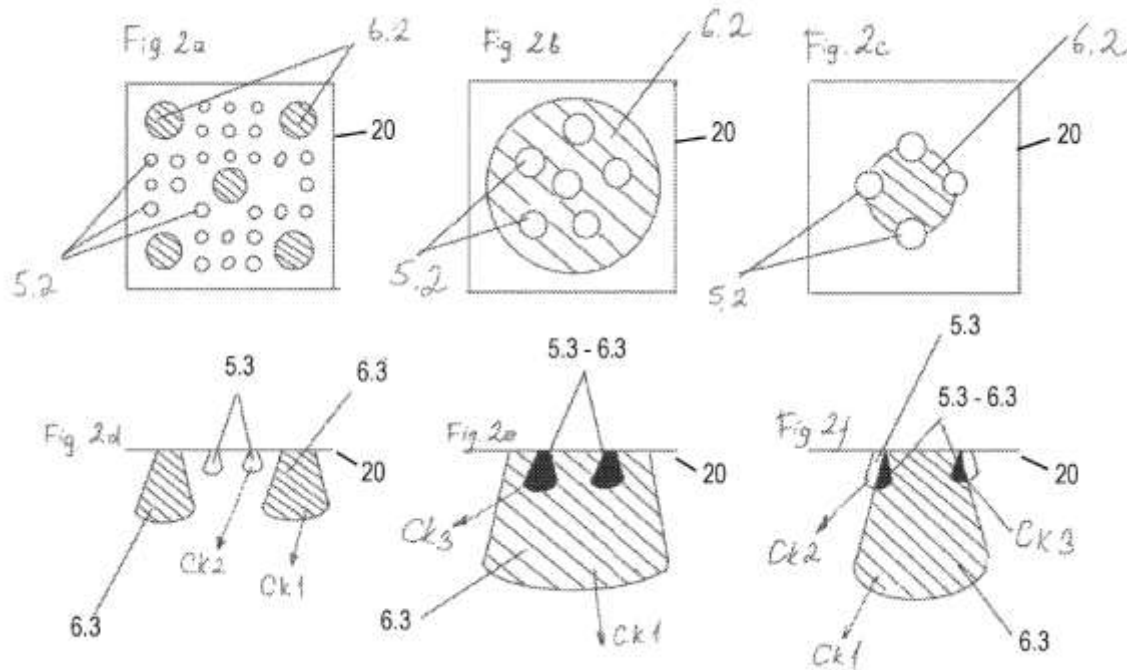


Figure 2 of the '481 patent above discloses various configurations of beam distribution patterns made by the disclosed laser system as follows:

FIG. 2A shows a cross-section of a non-limiting, non-overlapping beam distribution pattern provided by the laser system of the invention.

FIG. 2B shows a cross-section of a non-limiting, fully overlapping beam distribution pattern provided by the laser system of the invention.

FIG. 2C shows a cross-section of a non-limiting, partially overlapping beam distribution pattern provided by the laser system of the invention.

FIG. 2D is a side view of the beam distribution of pattern of FIG. 2A showing the effects of the simultaneous application of non-overlapping wavelengths of laser energy in a tissue.

FIG. 2E is a side view of the beam distribution of pattern of FIG. 2B showing the effects of the simultaneous application of fully overlapping wavelengths of laser energy in a tissue.

FIG. 2F is a side view of the beam distribution of pattern of FIG. 2C showing the effects of the simultaneous application of partially overlapping wavelengths of laser energy in a tissue.

Ex. 1002, 2:25–45.

“Beam propagation profile 5.3-6.3 depicts a region of skin wherein overlapping beams 5.1 and 6.1 both propagate within skin 20.” *Id.* at 7:1–3. “FIG. 2F shows the release of cytokine profile CK1 from beam propagation profile 6.3, the release of cytokine profile CK2 from beam propagation 5 profile 5.3, and the release of cytokine profile CK3 from beam propagation profile 5.3-6.3.” *Id.* at 7:3–7.

2. Relevant Prosecution History

The Examiner rejected claims 1 and 12 as anticipated by Evans,¹ claims 1–11, 12–21, and 25 as anticipated by Zaghetto.² and claims 5, 16, 22–24, 26–29, and 42 as obvious over Zaghetto in view of Tankovich.³ Pet. 11 (citing Ex. 1009, Nov. 18, 2019, Office Action at 3–8). Following an interview, the Examiner noted:

Applicant intends to amend claims 1 and 12 in light of figure 2 of the specification, such that the pattern of the first laser and the pattern of the second laser combine to produce overlapping beams and non-overlapping beams. Such a combined beam pattern has not been taught in the prior art of record. A new search and consideration would be required.

Ex. 1009, Application-Initiated Interview Summary, 1. Applicant made the amendments shown below to claim 1:

¹ K. M. Evans, US 2019/0025212 A1, published Jan. 24, 2019.

² L. Zaghetto et al., US Pat. No. 8,251,982 B2, issued Aug. 28, 2012.

³ N. Tankovich, US 2006/084953 A1, published Apr. 20, 2006.

1. (Currently amended) A laser system for administering two or more beams of laser energy for tissue therapy, comprising:

- a) a first laser in optical communication with a first laser scanner that is adapted to distribute a beam from said first laser in a first pattern; and
- b) a second laser in optical communication with a second laser scanner that is adapted to distribute a beam from said second laser in a second pattern;
- c) wherein said first pattern and said second pattern ~~distribute said beams in a combine to produce distribution pattern selected from~~ overlapping beams, ~~partially overlapping beams, and~~ non-overlapping beams, ~~and combinations thereof.~~

Ex. 1009, Response to Office Action of 11/18/2019, 2.

The following amendments were made to claim 12 (issued claim 11):

12. (Currently amended) A method of treating a tissue condition, comprising:
- a) contacting a tissue having a tissue condition with a first laser beam and a second laser beam, wherein said first laser beam and said second laser beam contact said tissue in a pattern that includes ~~selected from~~ overlapping beams, ~~partially overlapping beams, and~~ non-overlapping beams, ~~and combinations thereof,~~
 - b) wherein contacting said tissue with said beams treats said tissue condition.

Id. at 3. The Examiner allowed the claims to issue. *Id.*, Notice of Allowance dated April 2, 2020.

E. Challenged Claims

As noted above, Petitioner challenges claims 1–28 of the '481 patent.

Pet. 1. Claims 1 and 11 are independent and are reproduced below:

- 1. A laser system for administering two or more beams of laser energy for tissue therapy, comprising:
 - a) a first laser in optical communication with a first laser scanner that is adapted to distribute a beam from said first laser in a first pattern; and
 - b) a second laser in optical communication with a second laser scanner that is adapted to distribute a beam from said second laser in a second pattern;
 - c) wherein said first pattern and said second pattern combine to produce overlapping beams and non-overlapping beams.

11. A method of treating a tissue condition, comprising:
- a) contacting a tissue having a tissue condition with a first laser beam and a second laser beam, wherein said first laser beam and said second laser beam contact said tissue in a pattern that includes overlapping beams and non-overlapping beams;
 - b) wherein contacting said tissue with said beams treats said tissue condition.

Ex. 1001, 10:37–47; 11:10–15.

F. Prior Art and Asserted Challenges to Patentability

Petitioner asserts that claims 1–28 would have been unpatentable on the following challenges:

Ground	Claim(s) Challenged	35 U.S.C. § ⁴	Reference(s)/Basis
1	1–28	103	Hsia ⁵ , Black ⁶
2	23	103	Hsia, Black, Negus ⁷
3	27, 28	103	Hsia, Black, Altshuler ⁸
4	1–28	103	Altshuler, Black
5	23	103	Altshuler, Black, Negus

⁴ The Leahy-Smith America Invents Act (“AIA”), Pub. L. No. 112-29, 125 Stat. 284, 287–88 (2011), amended 35 U.S.C. § 103, effective March 16, 2013. Because the application leading to the ’481 patent was filed after the effective date of these AIA amendments, we apply the AIA version of 35 U.S.C. § 103.

⁵ James C. Hsia, US 2008/0161888 A1, published Jul. 3, 2008 (Ex. 1004, “Hsia”).

⁶ Michael Black, US2003/0109860 A1, published Jun. 12, 2003 (Ex. 1006, “Black”).

⁷ Daniel K. Negus, et al., WO 2018/106751 A1, published Jun. 14, 2018 (Ex. 1007, “Negus”).

⁸ Gregory B. Altshuler, et al., US 20080294152 A1, published Nov. 27, 2008 (Ex. 1005, “Altshuler”).

Pet. 7. Petitioner alleges that “Hsia was filed Jan. 3, 2008 and published July 3, 2008. Hsia is prior art to the ’481 patent under at least § 102(a)(1).” *Id.* at 12. Petitioner further asserts that “Altshuler was filed February 15, 2008, and published Nov. 27, 2008, and is prior art to the ’481 patent at least under § 102(a)(1).” *Id.* at 15. Petitioner asserts that “Black was filed December 12, 2001, and published June 12, 2003, and is therefore prior art to the ’481 patent at least under § 102(a)(1).” *Id.* at 16. Petitioner asserts that “Negus was filed December 6, 2017, and published June 14, 2018, and is prior art to the ’481 patent under at least § 102(a)(1).” *Id.* at 18. Patent Owner does not challenge the prior art status of any asserted reference at this time. *See generally* Prelim. Resp.

In support of its Petition, Petitioner relies on the supporting Declaration of Thomas E. Milner, Ph.D., dated November 18, 2022. Ex. 1002 (“Milner Dec.”).

II. ANALYSIS

A. *Legal Standards*

“In an [*inter partes* review], the petitioner has the burden from the onset to show with particularity why the patent it challenges is unpatentable.” *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 patent claim is unpatentable under 35 U.S.C. § 103 if the differences between the claimed invention and the prior art are such that the invention, as a whole, would have been obvious before the effective filing date of the claimed invention to a person having ordinary skill in the art to which the claimed invention pertains. *KSR Int’l Co. v. Teleflex Inc.*, 550

U.S. 398, 406 (2007). In this section, we apply that standard to assess whether Petitioner shows sufficiently, for purposes of institution, that the subject matter of claims 1–28 would have been obvious over the combined disclosures of the asserted references in each ground.

B. Person of Ordinary Skill in the Art

“The level of skill in the art is a factual determination” that provides a primary guarantee of objectivity in an obviousness analysis. *Al-Site Corp. v. VSI Int’l Inc.*, 174 F.3d 1308, 1324 (Fed. Cir. 1999) (citing *Graham v. John Deere Co.*, 383 U.S. 1, 17–18 (1966); *Ryko Mfg. Co. v. Nu-Star, Inc.*, 950 F.2d 714, 718 (Fed. Cir. 1991)). Petitioner, supported by its declarant, offers the following definition of an ordinarily skilled artisan of the ’481 patent:

A POSA as to the ’481 patent held a bachelor or graduate degree in physics, optics, or biomedical engineering with knowledge of laser systems and the mechanisms of how light interacts with tissues. A POSA would have familiarity with the application of medical laser treatment systems to tissue. Although a POSA would not necessarily hold an M.D. or have experiences treating patients, a POSA would otherwise have knowledge of laser systems and their use to treat individuals, e.g., through experience [*sic, experience*] designing or overseeing implementing animal studies and/or clinical trials. Alternatively, a POSA could have sufficient work experience in these fields to have gained an understanding of the subject matter claimed.

Pet. 19; Ex. 1002 ¶ 77. Patent Owner does not offer a definition of an ordinarily skilled artisan of the ’481 patent at this time. *See generally* Prelim. Resp.

Based on the information presented, we find that the asserted prior art itself is sufficient to demonstrate the level of skill in the art at the time of the invention. *See Okajima v. Bourdeau*, 261 F.3d 1350, 1355 (Fed. Cir. 2001) (prior art itself can reflect the appropriate level of ordinary skill in the art).

To the extent a more precise definition is required, we apply Petitioner’s unopposed proposed definition for purposes of determining whether to institute review because it is consistent with the disclosures of the asserted prior art references and the problems addressed in the ’481 patent.

C. Claim Interpretation

In an *inter partes* review, the Board construes the terms of a patent claim “in accordance with the ordinary and customary meaning of such claim as understood by one of ordinary skill in the art and the prosecution history pertaining to the patent.” 37 C.F.R. § 42.100(b). Under that standard, claim terms generally are given their plain and ordinary meaning as would have been understood by the ordinarily skilled artisan at the time of the invention and within the context of the entire patent disclosure. *See Phillips v. AWH Corp.*, 415 F.3d 1303, 1313 (Fed. Cir. 2005) (en banc). We construe terms in controversy 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) (quoting *Vivid Techs., Inc. v. Am. Sci. & Eng’g, Inc.*, 200 F.3d 795, 803 (Fed. Cir. 1999)).

Petitioner does not propose any interpretation of any claim term. Pet. 8. Patent Owner argues that Petitioner’s failure to construe “overlapping” and to identify whether the claims require simultaneous or sequential delivery of “overlapping and non-overlapping beams” fails to comply with 37 C.F.R. § 42.104(b)(3)-(4) and merits denial of the Petition. Prelim. Resp. 7–14. Taking account of the information of record, we determine that the express construction of the terms “overlapping” and “non-overlapping” is not necessary for purposes of deciding whether to institute trial. While we may agree with Patent Owner that Petitioner’s failure to

As used in independent claims 1 and 11, “overlapping” and “non-overlapping” describe the trajectory of beam patterns from the first and second lasers. Ex. 1001, 10:37–47; 11:10–15. As shown in Figure 2 of the ’481 patent, reproduced below, and as described in its accompanying disclosure, the beam patterns are described as “overlapping” when their beam distribution patterns cross to any extent at the point of reference, whether fully or partially crossing.

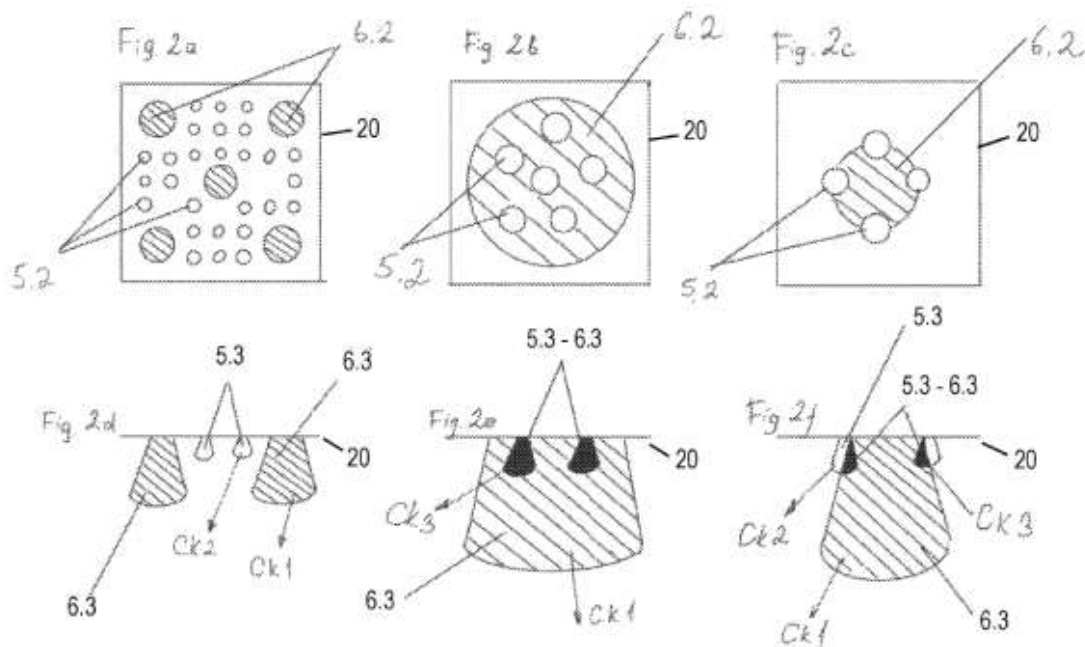


FIG. 2B shows a cross-section of a non-limiting, fully overlapping beam distribution pattern provided by the laser system of the invention.

FIG. 2C shows a cross-section of a non-limiting, partially overlapping beam distribution pattern provided by the laser system of the invention.

FIG. 2D is a side view of the beam distribution of pattern of FIG. 2A showing the effects of the simultaneous application of non-overlapping wavelengths of laser energy in a tissue.

FIG. 2E is a side view of the beam distribution of pattern of FIG. 2B showing the effects of the simultaneous application of fully overlapping wavelengths of laser energy in a tissue.

FIG. 2F is a side view of the beam distribution of pattern of FIG. 2C showing the effects of the simultaneous application of partially overlapping wavelengths of laser energy in a tissue.

Ex. 1002, 2:25–45.

Beam patterns are described in the Specification as “non-overlapping” when no part of the distribution patterns of the two beams cross each other at the point of reference, identified above in Figure 2D–F as “in a tissue.” *Id.* As both claim 1 and claim 11 refer to tissue treatment, we interpret the point of reference for determining whether the beams overlap to be the point at which the beams first intersect the tissue being treated. This interpretation is supported by the diagrams in Figure 2 above and in the Specification. *See, e.g.,* Ex. 1001, 1:67–2:4 (“The invention can avoid interference of the wavelengths by delivering the wavelengths simultaneously and in spatially separated and overlapping regions of the tissue being treated.”). In view of the above, we determine that the term “overlapping,” as used in the claims, refers to the crossing of the beam pattern at the point at which the beams intersect the tissue being treated.

We acknowledge that Petitioner identifies a possible ambiguity regarding whether “partially overlapping” was disclaimed during examination. Pet. 12. Patent Owner does not take a position on the issue at this time. *See generally* Prelim. Resp. Because we need not address this

issue to decide whether to institute, we decline to do so. *Nidec Motor Corp.*, 868 F.3d at 1017. On this record, we interpret “overlapping” to mean “having beam paths that cross to any extent at the point at which the beams intersect the tissue being treated.” We interpret “non-overlapping” to mean “having beam paths that do not cross to any extent at the point at which the beams first intersect the tissue being treated.”

As Patent Owner identifies, the claims do not specify whether simultaneous or sequential delivery of “overlapping and non-overlapping beams” is required, and the Petition does not offer a construction on this issue aside from presuming the claims were allowed with an understanding of simultaneous application. Prelim. Resp. 10; Pet. 12. Patent Owner does not take a position as to whether the claims require simultaneous application. *See generally* Prelim. Resp. We note that the Specification discloses “a therapeutic laser system that simultaneously delivers multiple wavelengths of laser energy using a single unit in a single application” as an advantage of the disclosed system (Ex. 1001, 1:61–63) and uses “simultaneously” in multiple instances to describe the delivery of laser treatment (*id. passim*). We decline, however, to read this limitation into the claims at this stage of the proceeding. *See Phillips*, 415 F.3d at 1323 (reviewing claim construction process and cautioning against importing limitations into the claims). For purposes of deciding whether to institute, we determine that the claims do not require simultaneous application of the beams at the time that “overlapping and non-overlapping beams” is ascertained.⁹ Our

⁹ To the extent that we were to interpret the claims to require simultaneous application of the beams, our decision to institute trial would not change as the asserted art discloses simultaneous beam application. *See, e.g.*, Ex. 1004, ¶¶ 65, 68, 69, 73, Figures 3B, 4B, 6, 7.

interpretations herein are preliminary and only for the purposes of deciding whether to institute trial. We suggest both parties fully address these issues during trial.

D. The Patentability Challenges

1. Ground 1: Alleged Obviousness of Claims 1–28 over Hsia and Black
(1) Petitioner’s Arguments Regarding Hsia’s Disclosures

Hsia is titled “Treatment of Skin by Spatial Modulation of Thermal Injury.” Ex. 1004 1(code (54)). Hsia relates to an apparatus and methods for treating skin using “a beam of radiation to cause spatially modulated thermal injury of the skin sufficient to elicit a healing response and improvement in the skin.” *Id.* ¶ 2. Hsia also discloses treatment with two beams of radiation:

Skin can be treated by delivering a first beam of radiation to a first region of skin to cause a plurality of subsurface volumes of a first thermal injury, which can elicit a healing response from substantially undamaged skin adjacent to the sub-surface volumes of thermal injury. A second beam of radiation can be delivered to a second region of skin to cause a second thermal injury, which can cause the skin to rejuvenate.

Id. ¶ 6.

Petitioner alleges that Hsia discloses a laser system with two or more beams for tissue therapy that is capable of directing each beam to separate areas, and also discloses methods for treatment using the beam. *Id.* at 13 (citing ¶¶ 8–10; Ex. 1002 ¶ 51). Petitioner further alleges that Hsia discloses that the laser beam modulator of Hsia can split a single beam into multiple beams and that the beams can be overlapping or non-overlapping at the skin surface and be directed to different regions below the skin. *Id.* at 13 (citing Ex. 1004 ¶¶ 46–52, Figure 3A; Ex. 1002 ¶ 54). Petitioner alleges that Hsia teaches that the radiation beams can be adjusted to form a pattern by using a

modulator and that the beams can overlap “to form the spatially modulated beam of radiation.” *Id.* at 14–15 (citing Ex. 1004 ¶¶ 49, 52, 60, 64, 65, Figures 3B, 4B, 6; Ex. 1002 ¶ 59).

Petitioner alleges that Hsia discloses use of two or more beam sources in treatment. *Id.* at 23 (citing Ex. 1004 ¶ 38). Petitioner also alleges Hsia discloses simultaneous and sequential application of overlapping and non-overlapping beams. *Id.* at 24 (citing Ex. 1004, ¶¶ 65, 68, 69, 73, Figs. 3B, 4B, 6, 7; Ex. 1002 ¶ 104).

(2) Petitioner’s Arguments Regarding Black’s Disclosures

Black is titled “Multiple Laser Treatment.” Ex. 1006, 1 (code (54)). Petitioner alleges that Black relates to a multiple laser treatment apparatus that delivers a beam from two or more lasers that can be selectively combined for treatment of biological tissue. Pet. 16–17, 50 (citing Ex. 1006 ¶¶ 9, 46, 58; Ex. 1002 ¶ 276). Petitioner alleges that Black discloses that each laser can have its own scanner and that the device can be controlled to generate various kinds of three-dimensional treatment patterns by controlling rotation of a mirror that reflects the laser beam. *Id.* at 17, 49–50 (citing Ex. 1006 ¶¶ 6, 12, 61, 62; Ex. 1002 ¶¶ 69, 271). Petitioner further alleges that Black shows three optical components aligned on an optical path to receive laser treatment beams from three lasers. *Id.* at 23 (citing Ex. 1006 ¶ 58, Figure 8; Ex. 1002 ¶ 102). Petitioner alleges Black discloses different wavelengths, penetration depth, and laser beam diameters for treatment beams 520A and 520B. Pet. 26 (citing Ex. 1006 ¶ 54). Petitioner further alleges that Black teaches each laser beam is transmitted to and from a delivery means, such as “an optical device, a micro manipulator or a mirror based optical deliver device.” *Id.* at 22–23 (citing Ex. 1006 ¶ 48; Ex. 1002 ¶¶ 95, 271).

b) Petitioner's Obviousness Allegations

Petitioner argues that the teachings of Hsia and Black in combination render claims 1–28 obvious. Pet. 20–46. In that regard, Petitioner asserts that the ordinarily skilled artisan would have understood that “a scanner can be used in addition to or instead of a modulator to provide adjustability, especially with multiple lasers.” Pet. 22 (citing Ex. 1002 ¶ 93). Petitioner argues the artisan would have looked to Black’s teaching of a system with scanners, each in optical communication with a laser, to direct two or more laser treatment beams simultaneously to treat tissue, thereby meeting the preamble, limitations (a) and (b) of claim 1 and the first half of limitation (a) and limitation (b) of claim 11. *Id.* at 20–23, citing Ex. 1004 ¶¶ 6, 38, 58, 61, 62, 64 Ex. 1002 ¶¶ 85, 89, 91–95, 101, 102. Petitioner further argues that a skilled artisan would have been familiar with the control and programming of multiple scanners as taught in Black, and that an ordinarily skilled artisan would have been able to implement these features in Hsia’s system without undue experimentation. *Id.* at 22–23 (citing Ex. 1002 ¶¶ 97, 98).

Petitioner alleges the artisan would have understood that the individual laser beams form individual patterns and would have found it obvious “to combine and scan multiple beams into a desired pattern, such as overlapping and non-overlapping.” *Id.* at 23 (citing Ex. 1004, ¶ 6; Ex. 1002 ¶¶ 98, 101). Petitioner next alleges the artisan would have understood that, in some embodiments, regions of a first pattern from a first laser beam would overlap regions of the second pattern from a second beam. *Id.* at 24–25 (citing Ex. 1002 ¶¶ 107, 108). Petitioner further alleges that the artisan would have looked to Black “to provide adjustability for scanners with multiple lasers” because Black “describes simultaneous application of two or more laser treatment beams in patterns,” these teachings in combination

thereby additionally meeting limitation (b) of claim 1 and the first half of limitation (a) of claim 11. *Id.* at 26 (citing Ex. 1006 ¶¶ 18–20, 46, 85; Ex. 1002 ¶ 112).

Petitioner alleges the artisan would have understood from Black that two laser beams could be applied simultaneously “in a non-overlapping pattern, an overlapping pattern, or a combination thereof.” *Id.* at 27 (citing Ex. 1006 ¶¶ 61, 62; Ex. 1002 ¶ 115). Petitioner then alleges the artisan would have been motivated to make the combination to improve safety, decrease treatment times while treating multiple areas of tissue, to modify light scattering for desired therapeutic effects, and to develop a device to use to achieve such benefits, thereby meeting limitation (c) of claim 1, the second half of limitation (a) of claim 11, and limitation (b) of claim 11¹⁰. *Id.* at 27–28, 36–38 (citing Ex. 1004 ¶¶ 2, 3, 6, 43, 54, 64, Fig. 6; Ex. 1006 ¶¶ 7, 12, 34, 61, 62; Ex. 1002 ¶¶ 116, 118–120, 173, 174–178, 182, 184–186). Petitioner next alleges that the “specific treatment goal drives the selected beam patterns used for tissue therapy” and that the artisan would have understood how to adjust beams and patterns to produce overlapping and non-overlapping beams while optimizing the location of beam patterns at the desired treatment region such that the subject matter of the challenged claims is an “unsurprising use of known optical elements in a combination that would produce predictable results.” *Id.* at 29–30 (citing Ex. 1002 ¶¶ 121–124). Petitioner also alleges the artisan would have understood that the combination of Hsia and Black teaches sequential production of overlapping and non-overlapping beams, and that using a system made with

¹⁰ Petitioner incorporates its allegations regarding the teachings of claim 1. Pet. 36–38. Accordingly, we have addressed claim 11 with claim 1.

these teachings to performing multiple passes on, for instance, large treatment areas would have been obvious. *Id.* at 30–31 (citing Ex. 1004 ¶¶ 67–73; Ex. 1002 ¶¶ 125–128).

With regard to claim 11, Petitioner incorporates its allegations regarding the teachings of claim 1. Pet. 36–38¹¹. Petitioner also alleges that the combination of Hsia and Black specifically teach medical treatment of biological tissue using application of multiple laser beams to skin and the benefits of such combined treatment. *Id.* (citing same teachings cited for claim 1).

The dependent claims in this ground recite specific laser wavelengths, laser types and settings, and treatment parameters and strategies. Ex. 1001, 1048–11:9; 11:18–12:38. Petitioner cites specific teachings in Hsia and Black that teach each limitation of the dependent claims (*id.* at 31–36, 39–46) with declarant support that each limitation would have been perceived as taught by an ordinarily skilled artisan. (Ex. 1002 ¶¶ 132–169, 189–247).

c) Patent Owner's Arguments

Patent Owner does not address the merits of Petitioner's obviousness allegations, but alleges the Petition is deficient and institution should be denied on that basis. *See, generally*, Prelim. Resp. Patent Owner alleges the Petition is deficient because it does not construe certain terms from the challenged claims (*id.* at 7–14) or identify the proposed combinations with particularity (*id.* at 14–39).

With regard to the first argument, Patent Owner argues that Petitioner should have construed “overlapping beams,” as recited in independent

¹¹ We have addressed Petitioner's allegations regarding claim 11 along with Petitioner's allegation regarding claim 1.

claims 1 and 11, to resolve ambiguity “as to whether ‘overlapping’ is limited to only ‘fully overlapping’ beams or more broadly includes ‘fully or partially overlapping’ beams. Prelim Resp. 8–9. As stated above in our discussion of claim construction (*see supra* Section II.C), resolution of this issue is not necessary for purposes of institution. *Nidec Motor Corp.*, 868 F.3d at 1017.¹² Patent Owner also argues Petitioner should have identified whether the claims require simultaneous or sequential delivery of “overlapping and non-overlapping beams.” Prelim. Resp. 10–11. As discussed above, we decline to import “simultaneous” into the claims at this stage and determine that the claims do not require simultaneous application of the beams at the time that “overlapping and non-overlapping beams” is ascertained. Although Petitioner’s failure to offer constructions on these issues is unhelpful, we have sufficient information for purposes of deciding whether to institute and decline to deny the Petition on this basis.

Patent Owner next argues that the Petition should be denied because it does not identify the proposed combinations with particularity. Prelim. Resp. 14–39.¹³ Patent Owner specifically argues that the Petition does not explain what the proposed combined laser system resulting from the combination of Hsia and Black “would be, how it would operate, what features and components it would consist of, and how and why the

¹² To the extent it is helpful to the parties, we observe that a beam pattern that is “overlapping and non-overlapping” as stated in the challenged claims is “partially overlapping” on a plain reading of the claims. *See* Ex. 1002 ¶ 123 in which patterns combine such that the patterns partially overlap. To the extent either party wishes to argue otherwise or to address other claim construction issues, we suggest the parties address this issue during trial.

¹³ As Petitioner argues some points specific to asserted grounds, we will address Patent Owner’s arguments with respect to each ground in the appropriate section.

components from each reference would be modified and combined to produce the claimed laser system.” *Id.* at 16. Patent Owner then argues that the Petition focuses on the ordinarily skilled artisan’s motivation to combine the references without explaining how the artisan would have combined them. *Id.* at 16–18. Patent Owner further argues that the Petition does not explain how the implementation of Black’s scanner would be used to replace Hsia’s modulator, both spatially and because the systems have different designs. *Id.* at 21–27.

d) Discussion

On the present record and for the purposes of institution, we find that Black discloses that its combined beam can be controlled to rotate the mirrors to “generate various different kinds of treatment patterns” and can “create any type of three-dimensional paths and treatment pattern.” *See* Ex. 1006 ¶¶ 61, 62; Ex. 1002 ¶ 69. On this record and at this stage, the ability to generate treatment patterns meets the limitations of the claims, which each require a pattern of “overlapping beams and non-overlapping beams. We credit Dr. Milner’s uncontroverted testimony that the ordinarily skilled artisan would have understood that a scanner could be used with or instead of a modulator to provide adjustability to one or more lasers, that the artisan would have been familiar with the control and programming of multiple scanners taught in Black, and that the artisan would have been able to implement these features in Hsia’s system without undue experimentation. Ex. 1002 ¶¶ 93, 95, 97, 98. Additionally, we credit Dr. Milner’s uncontroverted testimony that the ordinarily skilled artisan would have found it obvious from the teachings in Black to combine and scan multiple beams into a desired pattern, such as overlapping and non-overlapping in order to optimize treatment results and because the

combination would have provided multiple potential benefits. *Id.* ¶¶ 98, 101, 112, 116, 118–128. We acknowledge Patent Owner’s argument that Dr. Milner’s testimony regarding the ordinary artisan’s motivation to combine references parrots the rationales identified and discussed in the ’481 patent. Prelim. Resp. 36–38. Dr. Milner, however, also cites disclosures in both Hsia and Black citing advantages of combined beams including improved treatment efficacy, improved healing, the ability to treat simultaneously at multiple depths, and reduction in the number of required treatments. Ex. 1002 ¶¶ 117–119. “[T]he motivation-to-combine analysis is a flexible one. Any need or problem known in the field of endeavor at the time of invention and addressed by the patent can provide a reason for combining the elements in the manner claimed.” *Intel Corp. v. PACT XPP Schweiz AG*, 61 F.4th 1373, 1379 (Fed. Cir. 2023) (citing *KSR Int’l*, 550 U.S. at 420 (alterations, emphasis, and internal quotation marks omitted).

Patent Owner also argues that Dr. Milner’s testimony is conclusory, merely parrots the petition, and should be afforded little weight. Pet. 30 (citing *XEROX Corp. v. Bytemark, Inc.*, IPR2022-00624, Paper 9 at 15 (PTAB Aug. 24, 2024) (precedential). While it is true that Dr. Milner’s Declaration and the Petition are highly similar, Dr. Milner’s Declaration provides some additional helpful information and explanation that supports his conclusions. *See, e.g.*, Ex. 1002 ¶¶ 77, 123, 128, 250.

For these reasons, on the present record, and for the purposes of institution, we determine Petitioner has shown sufficiently that the proposed combination of Hsia and Black would have rendered the required claim limitations obvious to a person of ordinary skill of the art at the critical time.

2. *Ground 2: Alleged Obviousness of Claim 23 over Hsia, Black, and Negus*

Claim 23 depends from Claim 11 and further recites “wherein contacting said tissue with said beams causes said tissue to release one or more cytokines.” Ex. 1001, 12:14–16.

a) *Petitioner’s Arguments Regarding Negus’ Teachings*

Negus is titled “Laser Treatment of Wounds.” Ex. 1007, 1 (code (54)). Negus relates to “systems and devices for treatment of chronic wounds with lasers.” *Id.* ¶ 2. Petitioner alleges that Negus also discloses the treatment of damaged tissue as a wound or on its own. *Id.* ¶ 8. Petitioner alleges that Negus discloses a system with multiple lasers for performing full field and fractional laser ablation, and that wound-healing responses such as cytokine release can be stimulated through the laser treatment. *Id.* ¶¶ 9, 44.

b) *Petitioner’s Obviousness Allegations*

Petitioner argues that Hsia teaches laser treatment activation of fibroblasts that results in release of extracellular matrix constituents. Pet. 46 (citing Ex. 1004 ¶ 45; Ex. 1002 ¶ 249). Petitioner further argues that the ordinarily skilled artisan would have understood that the extracellular matrix constituents are cytokines released naturally as a result of the laser treatment. *Id.* (citing Ex. 1002 ¶ 250; Ex. 1008, 318–319). Petitioner alleges that Negus in addition teaches that laser treatment can stimulate host immune healing systems, which leads to cytokine release and improved skin penetration of cytokines. *Id.* (citing Ex. 1007 ¶ 44). Petitioner then argues that the skilled artisan would have understood that Hsia’s laser treatment would generate the immune and wound-healing responses recited in claim 28, rendering the claim obvious over the proposed combination.

c) Patent Owner's Arguments

Patent Owner makes no arguments specific to this ground. Nonetheless, the burden remains on Petitioner to demonstrate unpatentability. *See Dynamic Drinkware, LLC v. Nat'l Graphics, Inc.*, 800 F.3d 1375, 1378 (Fed. Cir. 2015) (holding that the burden of persuasion never shifts to the patent owner).

On the present record, and for the purposes of institution, for the reasons Petitioner has argued as supported by the evidence cited, we are satisfied Petitioner has established a reasonable likelihood that it would prevail in showing the unpatentability of claim 23 as obvious over Hsia, Black, and Negus.

3. Ground 4¹⁴: Alleged Obviousness of Claims 1–28 over Altshuler and Black

a) Petitioner's Arguments Regarding Altshuler's Disclosures

Altshuler is titled “Cooling System for a Photocosmetic Device.” Ex. 1005, 1 (code (54)). Petitioner alleges that Altshuler relates to a photocosmetic device using two radiation sources with separate optical systems for use on a patient's skin. Pet. 15 (citing Ex. 1005 ¶¶ 5, 76, 84, 85, Figs. 2A, 2B, 3; Ex. 1002 ¶ 63). Petitioner then alleges Altshuler discloses that the radiation sources may produce parallel or overlapping radiation, and that the optical system may be configured to produce an overlap of at least one part of the two radiation beams. *Id.* at 15–16 (citing Ex. 1005 ¶ 85; Ex. 1002 ¶ 275). Petitioner further alleges Altshuler discloses that the two optical systems can produce separate areas of radiation or patterns of

¹⁴ We address Ground 4 in advance of Ground 3 due to its breadth.

radiation. *Id.* at 16 (citing Ex. 1005 ¶¶ 86, 87, 173; Ex. 1002 ¶¶ 65, 275). Petitioner alleges that Altshuler discloses two pivoting transmission systems that pivot in at least one rotational direction. *Id.* at 49 (citing Ex. 1005 ¶¶ 174, 175; Ex. 1002 ¶ 269).

b) Petitioner's Obviousness Allegations

Petitioner's allegations regarding Black's teachings are discussed above with respect to Ground 1. *See supra* Section II.D.1. Petitioner argues that the teachings of Altshuler and Black in combination render claims 1–28 obvious. Pet. 48–71. In that regard, Petitioner asserts that the ordinarily skilled artisan would have understood that each laser beam disclosed in Altshuler would form its own pattern from the optical system and that the disclosed pivoting transmission systems act as scanners to direct the location of the beams, thereby meeting the preamble, limitations (a) and (b) of claim 1 and the first half of limitation (a) of claim 11¹⁵. *Id.* at 48–50 (citing Ex. 1005 ¶¶ 5, 53, 54, 61, 62, 76, 84, 85, 87, 173–175; Ex. 1002 ¶¶ 262, 265, 269). Petitioner alleges that the artisan would have known from Black how to control and program multiple scanners and could have implemented those teachings in other laser systems to add adjustability without undue experimentation. *Id.* at 50 (citing Ex. 1006 ¶ 62; Ex. 1002 ¶¶ 268, 272). Petitioner alleges the artisan would have found it obvious to “combine and scan multiple beams into a desired pattern, such as overlapping and non-overlapping,” thereby meeting limitation (c) of claim 1 and the second half of limitation (a) of claim 11. *Id.* (citing Ex. 1006 ¶ 62; Ex. 1002 ¶ 273).

¹⁵ Petitioner incorporates its allegations regarding claim 11. Thus, we address claim 11 herein.

Petitioner alleges that Altshuler teaches both overlapping and non-overlapping beams. *Id.* at 51–52 (citing Ex. 1005 ¶ 85, Figure 2B; Ex. 1002 ¶ 283). Petitioner argues that the artisan would have turned to Black’s teachings to incorporate adjustable scanners for use with multiple lasers to allow treatment using multiple patterns and at different tissue depths. *Id.* at 52–53 (citing Ex. 1005 ¶¶ 54, 61, 62 Figure 5; Ex. 1002 ¶¶ 284, 286–288). Petitioner alleges that the artisan would have understood that these adjustments would result in both overlapping and non-overlapping beams that could be adjusted as desired to target desired treatment depths. *Id.* at 53 (citing Ex. 1002 ¶¶ 287, 288). Petitioner alleges the claimed subject matter is an unsurprising combination of known elements providing predictable results to the ordinarily skilled artisan. *Id.*

Petitioner alleges the ordinarily skilled artisan would have been motivated to make the combination to improve safety, decrease treatment times while treating multiple areas with reduced injuries, modify light scattering for desired therapeutic effects, and to develop a device to use to obtain such benefits. *Id.* at 54–55 (citing Ex. 1005 ¶ 3; Ex. 1006 ¶¶ 7, 34; Ex. 1002 ¶¶ 290–292). Petitioner alleges that the artisan would have found it obvious to combine the teachings of Black with Altshuler to make either sequential or simultaneous overlapping and non-overlapping beam patterns, and would have had a reasonable expectation of success in doing so. *Id.* at 55 (citing Ex. 1002 ¶¶ 292, 293).

With regard to claim 11, Petitioner incorporates its allegations regarding the teachings of claim 1. Pet. 60–63. Petitioner also alleges that the combination of Altshuler and Black specifically teach medical treatment of biological tissue including skin conditions, thereby meeting limitation (b) of claim 11. *Id.* at 60–63 (citing Ex. 1005 ¶¶ 2, 185, 190, 192, 195, 204,

206–208; Ex. 1006 ¶ 12; Ex. 1002 ¶¶ 342, 357, 358). Petitioner also reiterates its allegations regarding the proposed combination of teachings of Altshuler and Black regarding using multiple laser beams to create overlapping and non-overlapping beam patterns. *Id.* at 61–62 (citing same citations). Petitioner alleges that the ordinarily skilled artisan would have understood that the combined laser beams could be used to treat a single tissue condition, and would have been motivated to combine the teachings of Altshuler and Black “for, e.g., improved safety, desired treatment outcomes, and shorter treatment times, with a reasonable expectation of success,” rendering claim 11 obvious. *Id.* at 63 (citing Ex. 1002 ¶¶ 361, 362).

The dependent claims in this ground recite specific laser wavelengths, laser types and settings, and treatment parameters and strategies. Ex. 1001, 1048–11:9; 11:18–12:38. Petitioner cites specific teachings in Altshuler and Black that teach each limitation of the dependent claims (*id.* at 55–60, 64–72) with declarant support that each limitation would have been perceived as taught by an ordinarily skilled artisan. (Ex. 1002 ¶¶ 297–339, 365–437).

c) Patent Owner’s Arguments

As we have addressed above the majority of Patent Owner’s arguments in our discussion of Ground 1, we confine our analysis here to Patent Owner’s arguments specific to the combination of Altshuler and Black.

Patent Owner contends that the Petition should be denied because it does not identify the proposed combination of Altshuler and Black with particularity. Prelim. Resp. 14–39. Patent Owner argues the Petition does not explain how the proposed combined laser system resulting from the combination of Altshuler and Black would be made, with what components, or how it would work. *Id.* at 16. Patent Owner then argues that the Petition

focuses on the ordinarily skilled artisan's motivation to combine the references without explaining how the artisan would have combined them. *Id.* at 16–18. Patent Owner further argues that Petitioner does not explain which reference's lasers and which reference's scanners would be implemented in the proposed system, and argues that Petitioner's failure to identify the combination with specificity warrants denial of the Petitioner. *Id.* at 22–23. In particular, Patent Owner highlights operational differences in the systems of Altshuler and Black and argues that Petitioner's proposed combination lacks support due to the different designs absent further explanation from Petitioner. *Id.* at 27–29.

On the present record and for the purposes of institution, we find that Black discloses that its combined beam can be controlled to rotate the mirrors to “generate various different kinds of treatment patterns” and can “create any type of three-dimensional paths and treatment pattern.” *See* Ex. 1006 ¶¶ 61, 62; Ex. 1002 ¶ 69. We also credit Dr. Milner's uncontroverted testimony that the ordinarily skilled artisan would have understood that Black's adjustable scanners could be used with multiple lasers to permit treatment in overlapping and non-overlapping patterns at different tissue depths and that the artisan would have been motivated to combine these features for the potential benefits and able to do so without undue experimentation. Ex. 1002 ¶¶ 284–293.

We acknowledge Patent Owner's argument that Dr. Milner's testimony regarding the ordinary artisan's motivation to combine references parrots the rationales identified and discussed in the '481 patent. Prelim. Resp. 36–38. Dr. Milner, however, directs our attention to disclosures in both Altshuler and Black citing advantages of combined beams including improved treatment efficacy, improved healing, the ability to treat

simultaneously at multiple depths, and reduction in the number of required treatments. Ex. 1002 ¶¶ 290–292. *See Intel Corp*, 61 F.4th at 1379 (noting that any single motivation for a combination is sufficient). Thus, at this stage of the proceeding, we credit the testimony of Dr. Milner and find that Petitioner has shown sufficient rationale to combine the teachings of Altshuler and Black. Consequently, we determine Petitioner has demonstrated a reasonable likelihood that these claims would have been rendered obvious to a person of ordinary skill in the art by the combined teachings of Altshuler and Black.

4. *Ground 3: Alleged Obviousness of Claims 27 and 28 over Hsia, Black, and Altshuler*

Claim 27 depends from claim 24, which depends from claim 11. Claim 24 specifies that the tissue treated in the method of claim 11 is skin. Claim 27 additionally recites that the method of treatment additionally comprises “administering to said tissue a composition that comprises a drug, anti-angiogenic antibody, hyaluronic acid, botox, fibroblasts, stem cells, stem cell factors, a vitamin, an antioxidant, or combinations thereof.” Ex. 1001, 12:27–31.

Claim 28 depends from claim 11 and further recites that the tissue treated “is endothelial tissue, urothelium tissue, parenchymal tissue, kidney stone, gallbladder stone, respiratory system tissue, connective tissue, cartilage, fat, retinal tissue, and combinations thereof.” *Id.* at 12:32–37.

Petitioner’s allegations regarding the teachings of Hsia, Black, and Altshuler are discussed above with respect to Grounds 1, 2, and 4. Patent Owner makes no arguments specific to this ground. *See generally* Prelim. Resp. Nonetheless, the burden remains on Petitioner to demonstrate unpatentability. *See Dynamic Drinkware*, 800 F.3d at 1378. On the present

record, and for the purposes of institution, Petitioner has established a reasonable likelihood that it would prevail in showing the unpatentability of claims 27 and 28 as obvious over Hsia, Black, and Altshuler.

5. *Ground 5: Alleged Obviousness of Claim 23 over Altshuler and Negus*

Claim 23 depends from Claim 11 and further recites “wherein contacting said tissue with said beams causes said tissue to release one or more cytokines.” Ex. 1001, 12:14–16.

Petitioner’s allegations regarding the teachings of Altshuler and Negus are discussed above with respect to Grounds 2 and 3. Patent Owner makes no arguments specific to this ground. *See generally* Prelim. Resp. Nonetheless, the burden remains on Petitioner to demonstrate unpatentability. *See Dynamic Drinkware*, 800 F.3d at 1378. On the present record, and for the purposes of institution, Petitioner has established a reasonable likelihood that it would prevail in showing the unpatentability of claim 23 as obvious over Altshuler and Negus.

III. CONCLUSION

Petitioner has shown a reasonable likelihood of prevailing with respect to at least one of the claims challenged in the Petition. Thus, we institute an *inter partes* review on all grounds presented.

Our factual findings, conclusions of law, and determinations at this stage of the proceeding are preliminary and based on the evidentiary record developed thus far. At this stage of the proceeding, the Board has not made a final determination as to the patentability of any challenged claim. Our final decision will be based on the record as fully developed during trial.

IV. ORDER

In consideration of the foregoing, it is hereby:

ORDERED that pursuant to 35 U.S.C. § 314(a), an *inter partes* review is hereby instituted as to claims 1–28 of the '481 patent on all the grounds set forth in the Petition namely:

- (1) Claims 1–28 under 35 U.S.C. § 103 as unpatentable over Hsia and Black;
- (2) Claim 23 under 35 U.S.C. § 103 as unpatentable over Hsia McCowan, Black, and Negus;
- (3) Claims 27 and 28 under 35 U.S.C. § 103 as unpatentable over Hsia, Black, and Altshuler;
- (4) Claims 1–28 under 35 U.S.C. § 103 as unpatentable over Altshuler and Black; and
- (5) Claims 23 under 35 U.S.C. § 103 as unpatentable over Altshuler, Black, and Negus;

FURTHER ORDERED that pursuant to 35 U.S.C. § 314(c) and 37 C.F.R. § 42.4, notice is hereby given of the institution of a trial; the trial will commence on the entry date of this decision.

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