

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

JOHNSON & JOHNSON SURGICAL VISION, INC.,
Petitioner,

v.

ALCON, INC.,
Patent Owner.

IPR2021-00899
Patent 9,849,036 B2

Before GRACE KARAFFA OBERMANN, CHRISTOPHER M. KAISER,
and JAMIE T. WISZ, *Administrative Patent Judges*.

OBERMANN, *Administrative Patent Judge*.

DECISION
Denying Institution of *Inter Partes* Review
35 U.S.C. § 325(d)

I. INTRODUCTION

Petitioner filed a Petition (Paper 2, “Pet.”) requesting *inter partes* review of claims 1–17 of U.S. Patent No. 9,849,036 B2 (Ex. 1001, “the ’036 Patent”). Patent Owner filed a Preliminary Response requesting, *inter alia*, denial of review under 35 U.S.C. § 325(d) (“Section 325(d)”). Paper 6 at 20–41 (“Prelim. Resp.”). With the Board’s pre-authorization, Petitioner filed a Reply (Paper 9) and Patent Owner filed a Sur-reply (Paper 10) “strictly limited to addressing issues” bearing on the request for a discretionary denial under Section 325(d). Ex. 1020 (email authorization). We base our factual findings exclusively on the information presented in the Petition, Preliminary Response, Reply, and Sur-reply.

The Board may not institute an *inter partes* review unless the information presented “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). The Board has discretion to deny a request for institution when the information presented shows a petitioner raises “the same or substantially the same prior art or arguments previously presented to the Office,” for example, during patent examination. 35 U.S.C. § 325(d).

For reasons stated below, we determine that Petitioner raises substantially the same prior art or arguments previously presented to the Office during examination of the parent application for the ’036 patent.¹

¹ We refer to the prosecution history of the parent application for the ’036 patent, namely, U.S. Patent App. No. 13/110,352 (“the parent application”), filed on May 18, 2001, which matured to issue as U.S. Patent No. 9,622,913 (“the ’913 patent”). *See* Ex. 1003 (prosecution history). The parties agree that the ’913 patent shares an “identical” or “the same” written description with the ’036 patent. Prelim. Resp. 10; Ex. 2003, 19 n.6. Accordingly, we

Further, Petitioner fails to show sufficiently that the Examiners² erred during examination in a manner material to the patentability of any challenged claim. *See Advanced Bionics, LLC v. MED-EL Elektromedizinische Geräte GmbH*, IPR2019-01469, Paper 6 at 8 (PTAB Feb. 13, 2020) (precedential). Accordingly, we exercise our discretion and deny the Petition pursuant to Section 325(d).

A. Real Parties-in-Interest

The Petition indicates that Johnson & Johnson Surgical Vision, Inc., AMO Development, LLC, AMO Manufacturing USA, LLC, and AMO Sales and Services, Inc. are real parties-in-interest. Pet. 59. Patent Owner's Mandatory Notice indicates that Alcon, Inc., Alcon Vision, LLC, and Alcon Research, LLC are real parties-in interest. Paper 4, 1.

B. Related Matters

Both parties identify as a related matter co-pending district court litigation in *AMO Development, LLC v. Alcon LenSx, Inc.*, No. 1:20-cv-00842-CFC (D. Del.). Pet. 59; Paper 4, 1.

Concurrently herewith, we issue a related decision in IPR2021-00898, addressing Petitioner's challenge against claims of the '913 patent. *See supra* 2–3 n.1.

adopt the parties' convention and assess the prosecution history of the parent application when resolving whether to exercise our discretion and deny institution of review under Section 325(d) in this proceeding. Pet. 1, Prelim. Resp. 24, 32; *see* Ex. 1001, code (63) (identification of references).

² We refer to the plural "Examiners" in this Decision because "[t]he '036 patent issued after prosecution spanning more than three years, six [requests for continuing examinations], and *four* Examiners." Prelim. Resp. 1 (emphasis added); *see generally* Pet.; Reply (nowhere contesting that fact).

II. BACKGROUND

A. The '036 Patent (Ex. 1001)

The '036 patent is titled “Imaging-Controlled Laser Surgical System.” Ex. 1001, code (54). During cataract surgery, a surgeon uses a laser to perform a capsulotomy step and a lysis step on a lens of an eye. *Id.* at 1:21–53. During the capsulotomy step, the surgeon directs a “cutting laser beam to form” a “capsulotomy cut” that transects the capsular bag encasing the lens. *Id.* at 5:58–59; *see, e.g., id.* at Fig. 4A–4B (illustrating capsulotomy cut 260-c). During the lysis step, the surgeon uses a laser to liquefy or fragment the clouded lens in preparation for removal via a capsulotomy cut. *Id.* at 1:21–53. The surgeon may perform the capsulotomy and lysis steps in either order, but regardless of the order selected, the first step creates “bubbles” in the ophthalmic tissue that compromise the precision of the second step. *Id.* at 1:61–2:25.

The claimed invention relates to “[a]n imaging-based laser system” that addresses problems, described in the '036 patent, associated with excessive bubble formation that may occur during a capsulotomy step performed on a lens that is misaligned or tilted relative to an optical axis of the laser system. *Id.* at 12:34–46 (claim 1); *see id.* at Figs. 6A–6H, 6:48–12–16 (written description of the invention and associated figures). Of critical importance to this Decision, the z-axis is the optical axis of the laser system and a z-depth is a depth along that axis. *Id.* at 1:32–35, 5:14–41, 5:45–48, 5:67–6:5, 6:17–23, 6:59–66; 12:4–6 (written description). Lens tilt relative to the z-axis may occur, for example, when the apparatus used to immobilize the eye during cataract surgery pushes the lens sideways relative to the optical axis of the laser system. *Id.* at 6:24–30.

The '036 patent describes a conventional capsulotomy step that sets “the stage to illustrate the operation of the” claimed imaging-based laser system. *Id.* at 5:14–15; *see id.* at 12:34–65 (claim 1). In the next two subsections, we address, in turn, the description provided in the '036 patent of (1) a conventional solution that accounts for lens tilt during a capsulotomy step, and (2) the claimed imaging-based laser system.

1. Description of a Conventional Capsulotomy Step

The '036 patent describes a conventional capsulotomy step in which the surgeon forms “high precision cuts” in ophthalmic tissue by directing laser pulses, having a power that exceeds a photo-disruption threshold, toward target points in the tissue. *Id.* at 1:21–41. Laser pulses adjusted to this “high value” power parameter disrupt ophthalmic tissue by inducing the formation of bubbles, which “can weaken” the tissue sufficiently to allow the surgeon to complete the actual capsulotomy cut in “a subsequent manual procedure.” *Id.* at 1:21–41, 6:59–66. The formation of “a substantial amount of bubbles” during the capsulotomy step, however, may undermine the precision of a subsequent lysis step. *Id.* at 2:10–20.

An imaging-based laser system generates a scan-pattern from an image of the eye that guides the surgeon’s selection of the target points over which to direct the laser to form the bubbles that will weaken tissue in the area where the surgeon will form the capsulotomy cut. *Id.* at 1:32–2:46. In practice, during a conventional capsulotomy step, a cut-cylinder “is often formed as a stack of bubble-circles, where the individual circles are created by directing the laser pulses along a circular scan-pattern at a fixed z-depth to cause photo-disruption, followed by the formation of a similar circle at a slightly lesser z-depth” in the ophthalmic tissue. *Id.* at 5:67–6:5. In other

words, the surgeon may use a circular scan-pattern as a guide to direct “high value” laser pulses, of a power exceeding the photo-disruption threshold, to form “a stack of bubble-circles” at pre-determined z-depths relative to the optical axis of the laser system. *Id.* at 1:32–35, 5:14–41, 5:67–6:5, 6:59–66.

That circular scan-pattern has a height or depth-range over which the surgeon generates the stacked bubble-circles of a cut-cylinder. *Id.* at Figs. 4A–4B. The capsulotomy cut, however, is an element distinct from the cut-cylinder, although the cut ideally is placed where the cut-cylinder intersects the lens capsule. *Id.* at 1:21–41, (describing a “subsequent manual procedure” in which the cut is completed after formation of a cut-cylinder composed of bubble-circles). The ’036 patent illustrates and describes these features of a conventional capsulotomy step. *See id.* at Figs. 4A–4B (identifying “capsulotomy cut 250” as an element distinct from “cut-cylinder 260-c”), 5:56–6:5 (describing a conventional capsulotomy step in which “capsulotomy cut 250 is formed where the cut-cylinder 260-c intersects the lens capsule 222”).

For purposes of this Decision, it is useful to keep in mind that the cut-cylinder has a depth-range relative to the z-axis denoted in the ’036 patent as the “Dcut.” *Id.* at Figs. 4A–4B. The Dcut is the depth-range of the scan-pattern over which bubbles are formed in the ophthalmic tissue (“cut-cylinder 260-c”) **not** necessarily the depth-range of the actual cut (“capsulotomy cut 250”). *Id.* That fact becomes critically important when we discuss Petitioner’s arguments pertaining to the limitation in claim 1 that specifies a “tracking band” having a “lower boundary” of “non-uniform z-depth,” which corresponds, **not** to the depth of the capsulotomy cut itself, but to the lower boundary of the scan-pattern over which bubbles are formed

to weaken ophthalmic tissue. *Id.* at 12:41–46 (claim 1); *see id.* at 5:56–7:15 (written description provided in the '036 patent, explaining the meaning of the variable “depth-range Dcut”); *see also id.* at Figs. 4A–4B (illustrating two examples of the “Dcut” for “cut-cylinder 260-c”).

The capsulotomy step is complicated when the lens of the eye has an uneven shape or otherwise is tilted relative to the optical axis of the laser system, a disadvantage explained in the '036 patent by reference to Figures 4A and 4B. *Id.* at Figs. 4A–4B, 2:10–20, 6:17–30, 11:5–26. The '036 patent illustrates examples of conventional circular laser scan-patterns in Figure 4A (aligned lens) and Figure 4B (tilted lens). *Id.* at 3:9–10, 5:14–6:47. We reproduce below Figure 4A, which illustrates a conventional scan-pattern for a lens aligned with the z-axis, which, in Figure 4A, runs parallel to scanning circle 254. *Id.* at 5:15–21, 5:57–62.

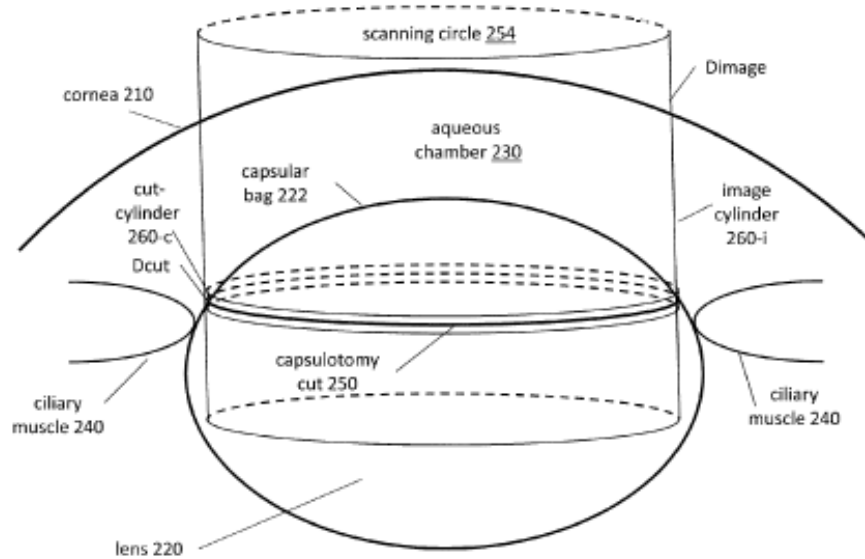


FIG. 4A

Id. at Fig. 4A. Figure 4A illustrates a conventional laser scan-pattern for a capsulotomy step where lens 220 is aligned with the optical axis of the laser system. *Id.* at 3:9–10, 5:14–22. Figure 4A shows the depth-range (“Dcut”)

of cut-cylinder 260-c, which has a diameter selected to ensure complete transection of capsular bag 222. *Id.* at 5:59–6:5. Figure 4A illustrates that, “in the case of a well-aligned lens 220, the bubbles of cut-cylinder 260-c introduce only a limited amount of scatter for the subsequent” lysis step, because the depth-range over which bubble-circles are generated (“Dcut”) is relatively small. *Id.* at 6:21–23.

Figure 4B in the '036 patent, by contrast, illustrates a scan-pattern for a capsulotomy step where lens 220 is tilted relative to the z-axis. *Id.* at Fig. 4B, 6:24–25. When the lens is tilted, the surgeon may form bubble-circles along a greater depth-range, that is, “Dcut,” as compared to a non-tilted lens, to generate a cut-cylinder deep enough to accommodate a cut that is tilted to ensure transection of capsular bag 222. *Id.* As shown in Figure 4B, reproduced below, in this conventional capsulotomy step, capsulotomy cut 250 follows the tilt of lens 222. *Id.* at 5:14–6:47.

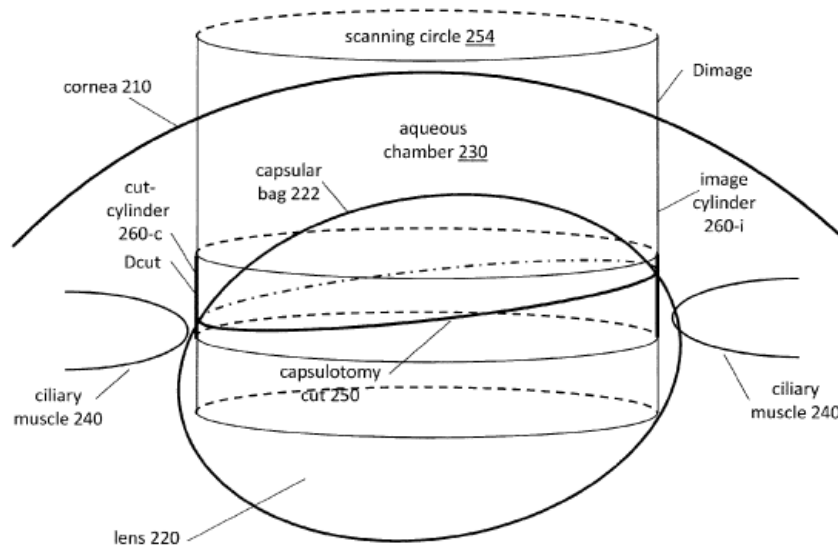


FIG. 4B

Id. at Fig. 4B. Figure 4B of the '036 patent illustrates lens 220 in a tilted position relative to the z-axis and, further, shows a conventional solution

that compensates for lens tilt by increasing the “Dcut,” that is, the depth-range of “cut-cylinder 260-c,” to accommodate “capsulotomy cut 250,” which follows the tilt of lens 220. *Id.* at 5:62, 6:24–47.

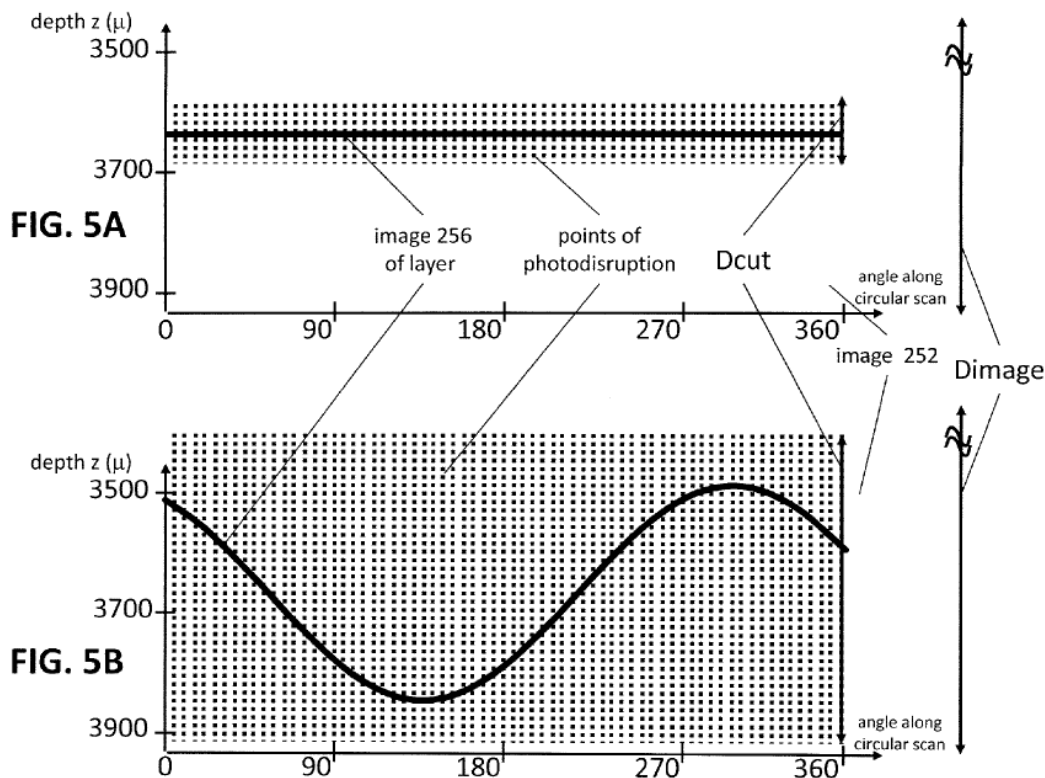
Figures 4A and 4B of the ’036 patent illustrate two examples of depth-ranges over which the surgeon may generate the bubble-circles of a scan-pattern to generate cut-cylinder 260-c. These figures illustrate how, by increasing the depth-range of the cut-cylinder, the surgeon may compensate for lens tilt by producing bubble-circles along a greater z-depth to accommodate a capsulotomy cut that follows the tilt of the lens. *Compare id.* at Fig. 4A (illustrating a relatively small “Dcut” for a non-tilted lens), *with id.* at Fig. 4B (illustrating a much larger “Dcut” for a tilted lens).

To be clear, Figure 4B describes a conventional solution for lens “tilt” that employs a cylindrical scan-pattern, denoted cut-cylinder 260-c, which has a lower boundary of **uniform** z-depth, but that is sufficiently deep to accommodate capsulotomy cut 250, which “will follow this tilt” of lens 220 and fully transect capsular bag 222.³ Ex. 1006 ¶ 90 (Angeley).

³ Petitioner repeatedly argues that the “tracking band” limitation of claim 1 (which requires “a tracking band” that has a lower boundary of **non-uniform** z-depth (Ex. 1001, 12:41–46)) is satisfied whenever a capsulotomy cut follows the tilt of a tilted lens (*see* Pet. 26–30; Reply 2, 4). We reject that argument because it conflicts with unambiguous disclosures in the ’036 patent that describe conventional “capsulotomy cut 250,” which follows the tilt of the lens, yet employs a scan-pattern (“cut-cylinder 260-c”) having a lower boundary of **uniform** z-depth. *See* Ex. 1001, Figs. 4B, 5B (figures), 5:14–6:47 (written description). Petitioner misreads claim 1 to require a **cut** that has a non-uniform z-depth, although no claim term limits the z-depth of the cut. Reply 2 (arguing, in connection with Palanker, that the capsulotomy “**cut** has the **claimed** ‘non-uniform z-depth’”) (emphasis added); *cf.* Ex. 1001, 12:41–46 (specifying “a tracking band” having “a lower boundary” that “has a non-uniform z-depth”).

The written description indicates that this conventional solution for compensating for lens tilt may lead to as much as a six-fold increase in the z-depth of bubbles as compared to a capsulotomy step performed on a non-tilted lens. *Id.* at 6:35–47; *see id.* at 2:10–14 (“The amount of bubbles is especially high if the lens is in a tilted position” relative to the z-axis.). Stated somewhat differently, increasing the depth-range of the cut-cylinder comes with a disadvantage, namely, an increase also in the amount of bubble formation, because the cut-cylinder itself is “formed as a stack of bubble-circles.” *Id.* at 5:67–67. If the capsulotomy step is performed before the lysis step, in the case of a tilted lens, so “substantial” an “amount of bubbles” may “undermine the precision of the cataract procedure” by “scattering of the laser pulses” in “the subsequent lens fragmentation” step. *Id.* at 2:10–20.

A comparison of the uniform “Dcut” of “cut-cylinder 260-c” in Figure 4A (aligned lens) with the uniform, but greater, “Dcut” of “cut-cylinder 260-c” in Figure 4B (tilted lens) illustrates why “[t]he amount of bubbles is especially high if the lens is in” the tilted position as illustrated in Figure 4B. *Id.* at 2:13–14; *compare id.* at Fig. 4A (illustrating the relatively small Dcut over which bubbles are formed when a lens is aligned with the z-axis), *with id.* at Fig. 4B (illustrating the much greater Dcut required when a lens is misaligned or tilted relative to the z-axis). We reproduce below Figures 5A and 5B of the ’036 patent, which further illustrate that point. *See id.* at 5:42–6:47 (describing these figures).



Id. at Figs. 5A–5B. Figures 5A and 5B “illustrate traditional scan-patterns for non-tilted and tilted lenses.” *Id.* at 3:11–12. Figure 5A (non-tilted lens) and Figure 5B (tilted lens), respectively, correspond to Figure 4A (non-tilted lens) and Figure 4B (tilted lens). The scan-patterns shown in Figures 5A and 5B identify image 256 of an imaged layer of the eye, which the surgeon evaluates to “decide where to direct the cutting laser beam to form capsulotomy cut 250.” *Id.* at 5:57–59. These illustrations show image 252, which “typically includes an image 256 of the imaged anterior capsule layer of the lens 220 ‘unfolded’ along a scanning variable,” that is, “an angle along the circumference of the scanning circle 254.” *Id.* at 5:42–45, 6:31–33.

When lens 220 is aligned with the z -axis, “image 252 typically includes an image 256” that, when “‘unfolded’ along a scanning variable,” as shown in Figure 5A, “is a flat line, indicating an essentially constant z -

depth” for the cut. *Id.* at 5:45–48. “In contrast to the non-tilted case” shown in Figure 5A, however, “image 256 of the tilted imaged layer can exhibit substantial sinusoidal oscillations” as shown in Figure 5B. *Id.* at 6:33–35. When the lens is tilted relative to the z-axis, therefore, “the image 256 of the tilted imaged layer can exhibit substantial sinusoidal oscillations” having an “amplitude” in the range of “as much as 300–500 microns,” as shown in Figure 5B. *Id.* at 6:33–36. In other words, a scan-pattern of increased depth-range (“Dcut”) – involving more stacked bubble-circles – is required to accommodate a cut that follows the tilt of the lens.

Figure 5B in the ’036 patent illustrates a conventional solution for lens tilt that increases the “depth z (μ)” of the scan-pattern (denoted by black dots in Figure 5B) as compared to the scan-pattern for a non-tilted lens (depicted by black dots in Figure 5A). *Id.* at Figs. 5A–5B. That conventional solution for lens tilt accommodates a *tilted* capsulotomy *cut* by increasing the depth-range of the scan-pattern, yet maintains a scan-pattern having a lower boundary of *uniform z-depth*. *Id.* at Fig. 5B. That fact is important because the challenges rest on Petitioner’s faulty premise that a *tilted* capsulotomy *cut* means *the tracking band* (that is, the scan-pattern) must have a lower boundary of *non-uniform z-depth* as specified in claim 1. *See supra* 9 n.3; *infra* 37 n.8; *see* Ex. 1001, 12:41–46 (tracking band limitation).

2. The Claimed Imaging-Based Laser System

According to the written description of the invention provided in the ’036 patent, the claimed invention pertains to an imaging-based laser system that assists the surgeon “by imaging the eye” before performing the actual capsulotomy cut. Ex. 1001, 3:50, 6:52–58; *see id.* at 1:32–41, 5:56–6:5 (weakening ophthalmic tissue by directing high-power pulses along a

scan-pattern to form stacked “bubble-circles” enables the surgeon to perform the actual capsulotomy cut in “a subsequent manual procedure). The imaging-based laser system of the claimed invention supports “a determination of a z-depth coordinate of the imaged layer” that corresponds “to a scanning coordinate along an image-scan.” *Id.* at 5:20–21 (written description); *see id.* at 12:37–46 (claim 1 limitation relating to that feature of the invention). “Based on the z-depth of the imaged layer, the surgeon can decide where to direct the cutting laser beam to form the capsulotomy cut.” *Id.* at 5:57–59.

Of critical importance to our analysis, claim 1 specifies a laser-controller configured to “generate a tracking band within the scan pattern defining the incision to be made in the eye.” *Id.* at 12:37–46. Thus, the “incision” and “the tracking band” are distinct features of the claimed invention. *Id.* The “tracking band” refers to the scan-pattern, which may be in the shape of a cut-cylinder and guides the surgeon when directing laser pulses to points in the ophthalmic tissue. *See, e.g., id.* at Figs. 4A–4B, 5A–5B, 6A–6H, 1:21–41, 2:37–48, 5:67–6:5, 6:59–7:15 (making plain that the capsulotomy “cut,” or incision, is not the same as the “tracking band” over which the surgeon generates bubbles in ophthalmic tissue).

The laser-controller further is configured to “cause a beam attenuator to control the laser-power parameter of the laser pulses such that a laser power parameter of laser pulses in the tracking band is above a photo-disruption threshold,” whereas “a laser power parameter of laser pulses outside the tracking band is below” that threshold. *Id.* at 12:37, 12:51–54 (claim 1); *see id.* at Fig. 6B (reproduced *infra* 14) (reproducing Figure 6, which illustrates these features of the invention).

In addition, the specified laser-controller is configured to “generate a tracking band within a scan-pattern defining an incision to be made in the eye, wherein a lower boundary of the tracking band has a non-uniform z-depth that varies according to the determined z-depths of the sequence of points corresponding to the imaged layer.” *Id.* at 12:37, 12:41–46 (claim 1); *see id.* at 5:15–21, 5:45–48, 6:17–18 (written description). That feature of the claimed invention is illustrated in Figure 6B of the ’036 patent.

When assessing Figure 6B, it may be helpful to observe that the lower boundary of the tracking band, that is, the band of darker dots labelled “points with high laser-power,” has a ***non-uniform*** “depth $z(\mu)$.” *Id.* at Fig. 6B. That stands in stark contrast to the ***uniform*** “depth $z(\mu)$ ” of the tracking band depicted in Figure 5B (reproduced *supra* 11), which illustrates a conventional solution for lens tilt. We reproduce below Figure 6B of the ’036 patent, which illustrates the claimed solution for lens tilt.

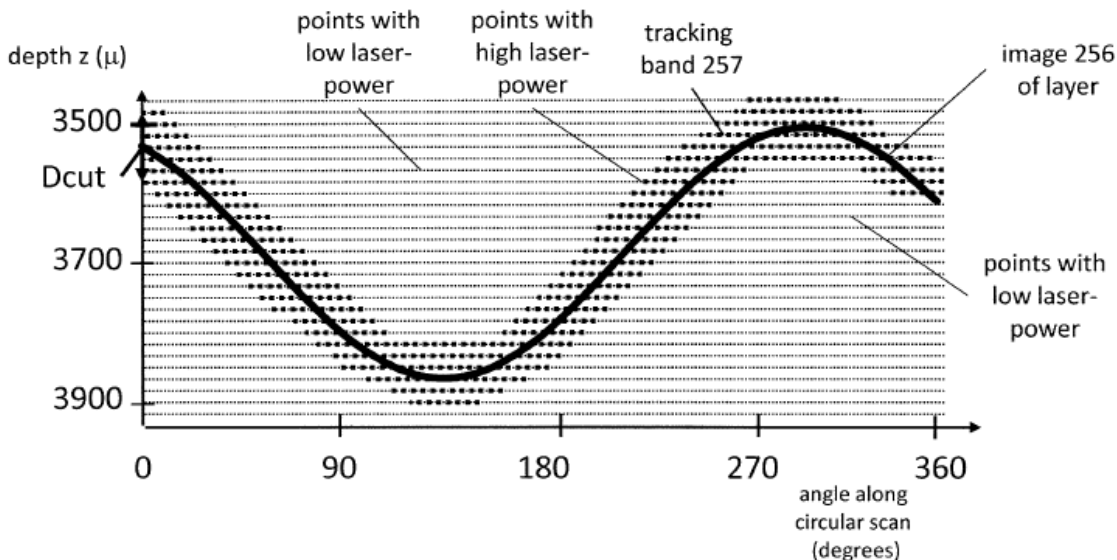


FIG. 6B

Id. at Fig. 6B. Figure 6B illustrates “a scan-pattern along a circular scan with a distance-dependent laser-power parameter.” *Id.* at 3:13–14. “[F]or those points of the scan-pattern that lie within the tracking band 257, the laser power is high – indicated by a thick line – whereas for those points that lie outside the tracking band 257, the laser power is low.” *Id.* at 7:45–48.

As shown in Figure 6B, “some implementations of the laser system” of the claimed invention allow the surgeon to “substantially reduce the number of photo[-]disrupted bubbles” created during a capsulotomy step performed on a tilted lens “by generating bubbles only in a narrow proximity of the imaged layer” identified as tracking band 257. *Id.* at 6:48–51.

B. Challenged Claims

Petitioner challenges claims 1–17 of the '036 patent. Pet. 2. We reproduce below claim 1, which illustrates the claimed subject matter.

1. An imaging-based laser system, comprising:
 - a laser engine configured to generate a beam of laser pulses;
 - an imaging-based laser-controller configured to:
 - determine z-depths of a sequence of points in a scan-pattern that correspond a layer of the eye imaged by an imaging system;
 - generate a tracking band within the scan pattern defining the incision to be made in the eye, wherein a lower boundary of the tracking band has a non-uniform z-depth that varies according to the determined z-depths of the sequence of points corresponding to the imaged layer,
 - cause a beam scanner to scan the beam of laser pulses to the points of the scan-pattern, and
 - cause a beam attenuator to control the laser-power parameter of the laser pulses such that a laser power parameter of laser pulses in the tracking band is above a photo-disruption threshold, and a laser power parameter of laser

pulses outside the tracking band is below the photo-disruption threshold.

Ex. 1001, 12:34–54. Each of the other challenged claim specifies, or inherits by dependence, the “tracking band” limitation of claim 1. *Id.* at 12:40–46; *see id.* at 12:55–14:44 (claims 2–17). Our analysis of that limitation of claim 1, therefore, applies with equal force to every challenged claim.

C. Asserted Grounds of Unpatentability

Petitioner challenges the patentability of claims 1–17 on three grounds, as follows:

Ground	35 U.S.C. § ⁴	Reference(s)
1	102	Angeley ⁵
2	103	Angeley
3	103	Angeley and Palanker ⁶

⁴ The Leahy-Smith America Invents Act (“AIA”), Pub. L. No. 112-29, 125 Stat. 284 (September 16, 2011), included revisions to Sections 102 and 103 that became effective on March 16, 2013. Because the ’036 patent issued from an application filed before March 16, 2013, we apply the pre-AIA versions. Ex. 1001, code (22) (indicating that the application that matured to issue as the ’036 patent was filed on May 18, 2011). Neither party directs us to information that indicates the result would change based on which version of these provisions is applied.

⁵ Pub. No. US 2011/0202046 A1 (Ex. 1006). Petitioner asserts that “Angeley is prior art under pre-AIA 35 U.S.C. § 102(e)(1) because it is a published patent application filed on January 21, 2011, before the ’036 patent’s earliest claimed priority date.” Pet. 18.

⁶ Daniel V. Palanker et al., *Femtosecond Laser-Assisted Cataract Surgery with Integrated Optical Coherence Tomography*, 2 Science Translational Medicine (Nov. 17, 2010) (Ex. 1009). Petitioner comes forward with information that Palanker “was accessible to the public no later than November 22, 2010.” Pet. 50; *see* Ex. 1015 (Declaration of Mr. Duncan Hall, Records Request Processor at the Internet Archive); *see also* Ex. 1018 (Declaration of Professor Daniel V. Palanker).

Pet. 2. Petitioner relies on the Declaration of Georg Schuele, Ph.D. Ex. 1004. Patent Owner relies on the Declaration of Edward A. DeHoog, Ph.D.

Ex. 2001. Based on their statements of qualifications and *curricula vitae*, for purposes of this Decision, we find that both Dr. Schuele and Dr. DeHoog are qualified to opine about the level of ordinary skill in the art at the time of the invention. Ex. 1004 ¶¶ 1–11 (Dr. Schuele’s statement of qualifications); Ex. 1005 (Dr. Schuele’s *curriculum vitae*); Ex. 2001 ¶¶ 5–16 (Dr. DeHoog’s statement of qualifications); Ex. 2002 (Dr. DeHoog’s *curriculum vitae*).

III. ANALYSIS

A. Level of Ordinary Skill in the Art

The level of ordinary skill in the art at the time of the invention 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)). In this Decision, we assess the asserted obviousness grounds only to the extent necessary to resolve Patent Owner’s request that we exercise our discretion and deny the Petition under Section 325(d).

Based on the information presented, we find 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) (the prior art itself can reflect the appropriate level of ordinary skill in the art). To the extent a more precise definition is required, we adopt Petitioner’s definition because, on this record, it appears consistent with the disclosures of the asserted prior art and the written description of the invention provided in the ’036 patent. Pet. 17 (Petitioner’s asserted

definition of the ordinarily skilled artisan); *see* Prelim. Resp. 20 (reciting that definition without adopting it or proposing an alternative definition).

B. Claim Construction

For petitions such as this one, filed after November 13, 2018, claims “shall be construed using the same claim construction standard that would be used to construe the claim in a civil action under 35 U.S.C. 282(b).” *See* Changes to the Claim Construction Standard for Interpreting Claims in Trial Proceedings Before the Patent Trial and Appeal Board, 83 Fed. Reg. 51,340, 51,340, 51,358 (Oct. 11, 2018) (amending 37 C.F.R. § 42.100(b) effective November 13, 2018) (now codified at 37 C.F.R. § 42.100(b) (2019)). Under that standard, the “words of a claim ‘are generally given their ordinary and customary meaning,’” which is “the meaning that the term would have to a person of ordinary skill in the art in question at the time of the invention, i.e., as of the effective filing date of the patent application.” *Phillips v. AWH Corp.*, 415 F.3d 1303, 1312–13 (Fed. Cir. 2005) (en banc) (quoting *Vitronics Corp. v. Conceptiontronic, Inc.*, 90 F.3d 1576, 1582 (Fed. Cir. 1996)).

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)). Neither party proposes an express construction for any claim term. *See* Pet. 17; Prelim. Resp. 61–62. We find no claim term requires express construction in order to resolve whether to exercise our discretion and deny the Petition under Section 325(d). We discuss the scope of certain claim terms as necessary to our analysis of that issue, however, which we turn to in the next section.

C. Discretionary Denial Pursuant to Section 325(d)

We apply a two-part framework to assess whether to exercise our discretion and deny a petition as authorized under Section 325(d). First, we consider whether the same or substantially the same prior art or arguments previously were presented to the Office. If either condition is satisfied, we assess whether the petitioner has demonstrated that the Office erred in a manner material to the patentability of the challenged claims. *Advanced Bionics*, Paper 6 at 8. A non-exclusive list of factors, set forth in *Becton, Dickinson and Co. v. B. Braun Melsungen AG*, IPR2017-01586, Paper 8 (PTAB Dec. 15, 2017) (precedential as to § III.C.5, first paragraph), guides our application of that two-part framework. *Advanced Bionics*, Paper 6 at 9. Those factors include:

- (a) the similarities and material differences between the asserted art and the prior art involved during examination;
- (b) the cumulative nature of the asserted art and the prior art evaluated during examination;
- (c) the extent to which the asserted art was evaluated during examination, including whether the prior art was the basis for rejection;
- (d) the extent of the overlap between the arguments made during examination and the manner in which Petitioner relies on the prior art or Patent Owner distinguishes the prior art;
- (e) whether Petitioner has pointed out sufficiently how the Examiner erred in its evaluation of the asserted prior art; and
- (f) the extent to which additional evidence and facts presented in the Petition warrant reconsideration of the prior art or arguments.

Becton, Paper 8 at 17–18. “If, after review of factors (a), (b), and (d), it is determined that the same or substantially the same art or arguments

previously were presented to the Office, then factors (c), (e), and (f) relate to whether the petitioner has demonstrated a material error by the Office.”

Advanced Bionics, Paper 6 at 10.

Patent Owner asserts that the Board should deny institution under Section 325(d) because Petitioner presents substantially the same art or arguments previously analyzed by the Office and fails to show that the Office materially erred in issuing the challenged claims. Prelim. Resp. 20. In particular, Patent Owner contends that the Examiners considered Angeley and, further, that Palanker is cumulative of Angeley. *See id.* at 21–22. In Patent Owner’s view, moreover, Petitioner fails to show material error by the Office in the application of Angeley to the challenged claims. *Id.* at 22. We address those arguments in detail below.

Factor (a): The similarities and material differences between the asserted art and the prior art involved during examination

Petitioner asserts Angeley in every ground of unpatentability identified in the Petition. Pet. 2. The parties agree that Angeley was before the Office during the examination of the parent application for the ’036 patent. *See* Pet. 1–2, 55; Prelim. Resp. 1–2, 10–12, 20–22 (Petitioner and Patent Owner, acknowledging Angeley was before the Office during that examination); *see also* Ex. 1001, code (56) (references cited during patent examination, including Angeley).

Petitioner asserts that the Examiners “overlooked” or failed to “appreciate” two disclosures in Angeley, but that argument does not show sufficiently a material difference between Angeley, as presented to the Examiners, and the reference as advanced in the Petition. Pet. 2, 16 (arguing that “the Examiner[s] did not appreciate” or “overlooked” paragraph [0090]

and Figure 15 in Angeley, but nowhere contending that Angeley, as advanced in the Petition, differs in any material respect from the reference as considered during patent examination). Accordingly, on this record, we determine, and Petitioner does not meaningfully contest, that Angeley “previously” was “presented to the Office” within the meaning of Section 325(d). This factor supports a decision to exercise our discretion and deny institution of review.

*Factor (b): The cumulative nature of the asserted art
and the prior art evaluated during examination*

Petitioner advances only Palanker and Angeley in the section of the Petition that identifies the challenge. Pet. 2. Palanker was not before the Office during the '036 patent examination. *Id.* at 58; Prelim. Resp. 37. We first discuss, individually, the disclosures of Angeley and Palanker. We then address the cumulative nature of those references, with a focus on whether Palanker, with greater clarity or detail than Angeley, suggests a “laser controller” configured to “generate a tracking band” that “has a lower boundary” of “non-uniform z-depth” as specified in claim 1. Ex. 1001, 12:41–46 (claim 1). Our analysis of that issue alone is sufficient to resolve the dispute presented on this record. *See* Pet. 12–14, 31–32, 58; Prelim. Resp. 2–4, 14–17, 19–20, 22–41; Reply 1–7; Sur-reply 1–3, 6–7 (the parties’ arguments, pertaining to whether Palanker is cumulative to Angeley, which focus on the specified “tracking band” limitation).

1. Angeley

Angeley recognizes problems that attend cataract surgery when a lens is tilted relative to the optical axis of the laser system. Ex. 1006, Figs. 9, 10, 15, ¶¶ 6, 78, 90. Angeley proposes a solution for lens tilt that relies on a

scan-pattern having a constant depth-range, identified in the reference as “depth thickness 419,” to compensate for the “tilt.” *Id.* ¶ 78. That factual issue was a “belabored” point of contention throughout examination of the parent application and, ultimately, the Office resolved that issue in Patent Owner’s favor. Prelim. Resp. 28 n.6 (citing the prosecution history).

The laser system disclosed in Angeley “scan[s] a laser through ‘a cylindrical shape (extruded circle or ellipse).’” *Id.* at 24 (quoting Ex. 1006 ¶ 78). That shape, at minimum, suggests the “cut-cylinder” scan-pattern discussed at length in the ’036 patent. *See* Ex. 1001, Fig. 4B (cut-cylinder 260-c), 5:14–6:47; Ex. 1006, Fig. 9 (rectangular box 400B). Although Angeley describes using imaging techniques to minimize the *uniform* depth thickness of the cylindrical scan-pattern employed to guide the laser, the reference does not suggest *varying* the depth of the lower boundary of that pattern relative to the optical axis of the laser system. Ex. 1006 ¶¶ 78, 90.

On the contrary, as shown in Angeley’s Figure 9, the scan-pattern (rectangular box 400B) has a constant depth thickness 419 relative to the optical axis of the laser system. *Id.* at Fig. 9, ¶ 78 (illustrating and describing “depth thickness 419” of the cylindrical scan-pattern that Angeley employs “to take into account variations in the depth of the targeted capsule cut”); *see id.* at Fig. 10 (illustrating the direction of the optical axis in Angeley’s laser system). We reproduce below Angeley’s Figure 9.

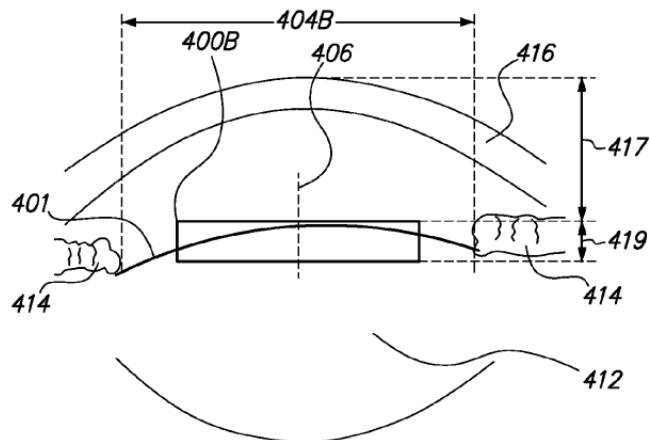


FIG. 9

Id. at Fig. 9. Angeley’s Figure 9 illustrates a composite image of an eye in which the scan-pattern, that is, rectangular box 400B, has a lower boundary of uniform “depth thickness 419.” *Id.* ¶¶ 22, 78. Significantly, Angeley proposes a scan-pattern of uniform “depth thickness 419” sufficient to account for a “tilt of the capsule.” *Id.* ¶ 78 (uniform “depth thickness 419” of the “cylindrical” scan-pattern accounts “for variations in the” z-depth “of the targeted capsule cut,” including cuts that follow the “tilt of the capsule”).

Angeley’s Figure 15 “shows a tilted lens.” *Id.* ¶ 90. We reproduce below Angeley’s Figure 15.

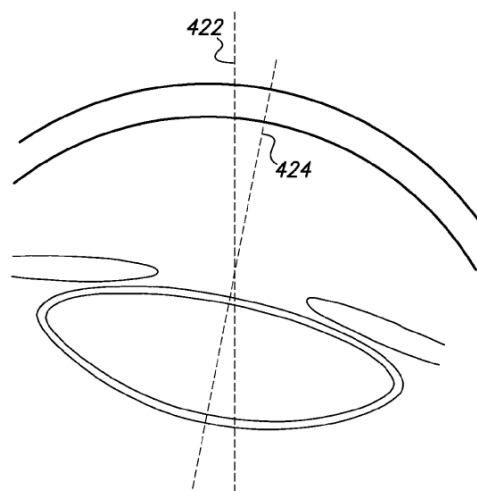


FIG. 15

Id. at Fig. 15. Figure 15 of Angeley illustrates “a cross-sectional schematic of [an] eye showing a tilted capsulorhexis incision plane.” *Id.* ¶ 90.

Angeley’s paragraph [0090] explains that Figure 15 “shows a tilted lens” and, further, indicates that when the lens is so tilted, “ideally the cut for the capsule will follow this tilt.” *Id.* Neither paragraph [0090] nor Figure 15, however, illustrates a scan-pattern, a cut-cylinder, or an actual cut. Nor does either of these disclosures suggest a solution for lens tilt that involves varying the z-depth of the lower boundary of a scan-pattern.

For example, paragraph [0090] of Angeley identifies, in Figure 15, optical axis 422 and lens tilt 424 relative to that optical axis. *Id.* ¶ 90 (“axis 422 . . . is coincident to the system’s optical axis”). Angeley’s paragraph [0090], however, contains no disclosure that suggests a solution for lens tilt. *Id.* On this record, therefore, we find that paragraph [0090], at least implicitly, relates back to the only solution for lens tilt discussed in Angeley, namely, the disclosure provided in paragraph [0078]. *Id.* ¶ 90 (describing a capsulotomy cut that “will follow” the “tilt” of the lens); *see id.* ¶ 78 (describing a solution that accounts for a “tilt of the capsule” by employing a cylindrical scan-pattern having a **constant** “depth thickness 419”).

To be clear, Petitioner directs us to no disclosure in Angeley that suggests varying the lower boundary of “depth thickness 419” (*id.* ¶ 78) relative to the optical axis of the laser system. Pet. 26–29 & n.7 (citing Ex. 1006, Figs. 8, 9, 15, ¶¶ 8, 42, 66, 67, 78, 90). On the contrary, Angeley consistently discloses a scan-pattern that has a lower boundary of **uniform** “depth thickness 419.” Ex. 1006, Fig. 9 (illustrating uniform depth thickness 419 of rectangular box 400B), Fig. 10 (showing z-axis of the laser

system relative to “target surface 510”), ¶¶ 78, 81, 82 (describing uniform “depth thickness 419” as the depth-range of a “cylindrical” scan-pattern).

On this record, we determine that Angeley discloses a solution for lens tilt in which the cut “follow[s] the tilt” where the uniform “depth of the cut-cylinder (which corresponds to Angeley’s depth thickness 419) is adjusted to cover the full extent of the difference between the high and low points of the tilted lens capsule.” Prelim. Resp. 31; *see* Ex. 1006 ¶ 90 (describing a cut that “will follow this tilt”). That is essentially the same prior art solution for lens tilt described and illustrated in the ’036 patent. Ex. 1001, Figs. 4B, 5B, 5:14–6:47.

2. Palanker

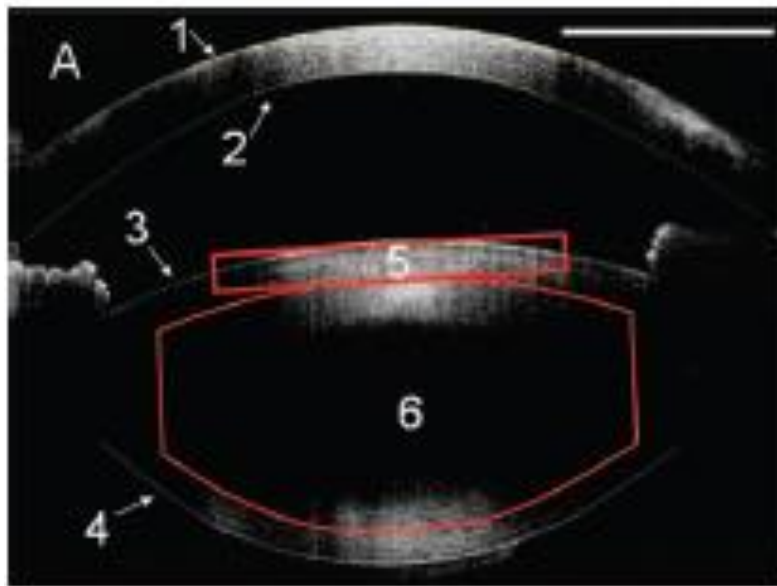
Palanker bears a publication date nine months prior to that of Angeley. Ex. 1009, 2⁷ (Palanker, bearing the notation, “Published 17 November 2010”); Ex. 1006, code (43) (identifying Angeley’s publication date as “Aug. 18, 2011”). Palanker was not before the Examiners during the ’036 patent examination. *See* Ex. 1001, code (56).

Palanker describes a laser-assisted cataract surgery that involves determining the placement of a capsulotomy cut “by imaging the anterior segment of the eye with integrated optical coherence tomography.” Ex. 1009, 2; *compare* Ex. 1006, Abstract, ¶¶ 44, 78, 90. The scan-pattern in Palanker is “a spiral capsulotomy pattern” that ensures “intersection of the incision with the anterior lens capsule in between.” Ex. 1009, 3–4. In other words, like Angeley, Palanker describes a cylindrical scan-pattern to guide

⁷ We refer to page numbers added by Petitioner.

the surgeon's selection of target points for application of laser pulses having sufficient power to form bubbles that weaken the ophthalmic tissue.

Petitioner argues that Palanker discloses a “tracking band” that has “a lower boundary” of “non-uniform z-depth.” Pet. 50–53; Reply 6–7. Petitioner directs us to no disclosure in Palanker, however, that mentions a tilted lens, much less proposes a solution that compensates for lens tilt. *See* Pet. 50–53; Reply 6–7. Instead, Petitioner directs us to Palanker's Figure 3A. We reproduce Figure 3A below.



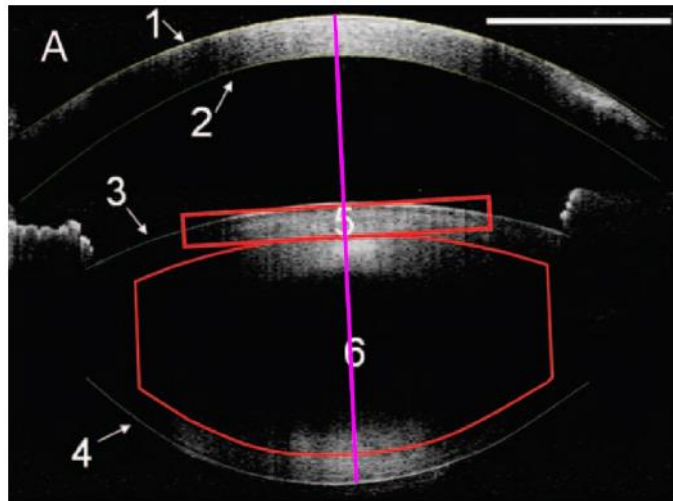
Ex. 1009, 4 (Fig. 3A). Palanker describes Figure 3A as an “image of an eye.” *Id.* Figure 3A includes a red rectangular shape identified as “capsulotomy pattern (5)” atop “lens segmentation pattern (6).” *Id.* Figure 3A also illustrates “cornea (1 and 2) and lens capsule (3 and 4).” *Id.*

Palanker does not state that Figure 3A is an image of a lens tilted relative to an optical axis of a laser system. *See generally* Ex. 1009. Petitioner and its witness, Dr. Schuele, advance that assumption based entirely on the fact that the lens appears to lean slightly toward the left in

this image. Pet. 50–53 (citing Ex. 1004 ¶¶ 174–178, Dr. Schuele’s opinions). Petitioner directs us to no other disclosure in Palanker tending to establish the location of the optical axis in Figure 3A. *Id.*

Patent Owner, by contrast, argues, “Although the red box labelled as ‘5’” in Figure 3A “appears tilted relative to the boundaries of this image, the teachings in Palanker clarify that neither the red box 5 nor the lens are tilted relative to the optical axis of the laser system.” Prelim. Resp. 17. Patent Owner keys its argument, on that crucial point, to objective evidence in the disclosure of Palanker. *Id.* at 16–19, 37–39; *see* Ex. 2001 ¶¶ 61–64, 91–94 (Dr. DeHoog’s opinions and supporting citations to Palanker).

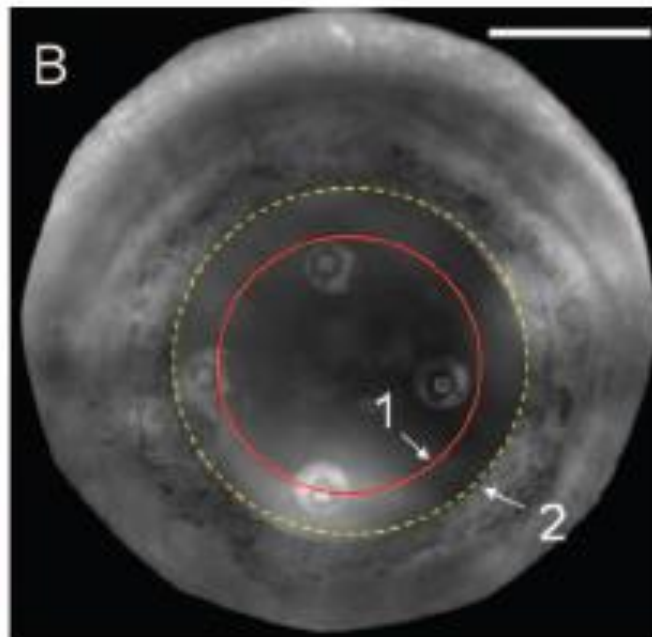
For example, Patent Owner directs us to information that Palanker’s Figure 3A “includes regions of higher intensity (appearing in the image as white areas),” which “are characteristic of the higher intensity scattering expected along the optical axis of the imaging system.” Prelim. Resp. 18; Ex. 2001 ¶ 63. Patent Owner’s annotated version of Figure 3A, which we reproduce below, shows those white areas.



Prelim. Resp. 19. The above image is Patent Owner’s annotated version of Palanker’s Figure 3A, which is an image of an eye. Ex. 1009, 4 (description

of Figure 3A). Patent Owner annotates Figure 3A to add a purple line that bisects, on the perpendicular, capsulotomy pattern (5) and lens segmentation pattern (6). The purple line added by Patent Owner also bisects three white areas that appear in this image. In Patent Owner's view, the purple line reflects the optical axis of the laser system. Patent Owner points out that the lens, depicted in Figure 3A, is *not* tilted relative to the z-axis, as evidenced, for example, by the position of higher intensity scattering regions (indicated by the white areas in Figure 3A). Prelim. Resp. 18; Ex. 2001 ¶ 63.

In addition, Patent Owner advances Palanker's description of "the capsulotomy pattern as a 'spiral pattern . . . applied from posterior to anterior, thereby ensuring intersection of the incision with the anterior lens capsule in between.'" Prelim. Resp. 19 (quoting Ex. 1009, 4–5); Ex. 2001 ¶ 64. Patent Owner then directs us to Palanker's Figures 3B and 3C, which show that Palanker's capsulotomy scan-patterns, in top view, are circular in shape. Prelim. Resp. 18; Ex. 1009, 5 (Figs. 3B–3C); Ex. 2001 ¶ 62. We reproduce below Palanker's Figure 3B.



Ex. 1009, 4 (Fig. 3B). Palanker's Figure 3B is a "[v]iew of the eye via" a "near-infrared video camera, with overlaid guidance lines indicating a planned capsulotomy pattern." *Id.* Those overlaid guidance lines are circular, indicating "a spiral capsulotomy pattern." *Id.* at 4.

Patent Owner also relies on Palanker's Figure 3C, reproduced below.

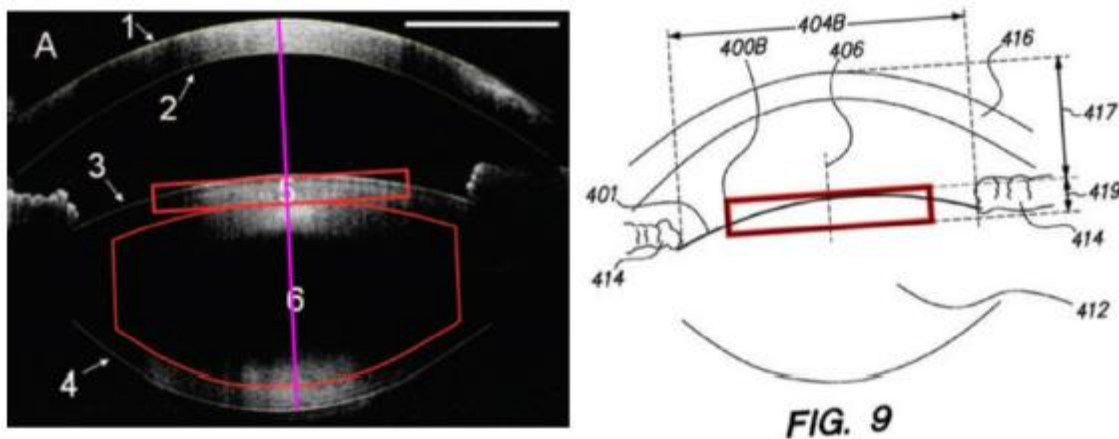


Ex. 1009, 4 (Fig. 3C). Figure 3C from Palanker is a "[t]op view of the circular capsulotomy pattern, a cross-pattern for lens fragmentation, and the nucleus fragmentation pattern." *Id.*

In Patent Owner's view, Figures 3A–3C, taken together with Palanker's written description of a spiraling scan-pattern, illustrate that "Petitioner's interpretation of Palanker's Figure 3A is incorrect: Palanker does not disclose a 'tilted red box 5' or a 'tilted lens.'" Prelim. Resp. 19 (citing and quoting Ex. 2001 ¶¶ 61–64; Pet. 13); *see* Ex. 1009, 3–4 (describing and illustrating Palanker's scan-pattern). "[T]he red box labelled as '5' appears tilted" in Figure 3A, according to Patent Owner, only "relative to the boundaries of" the optical coherence tomography image, and neither the red box nor the lens depicted is "tilted relative to the optical axis of the laser system." Prelim. Resp. 17 (citing Ex. 1009, 4; Ex. 2001 ¶ 62).

Patent Owner advances a side-by-side comparison of annotated versions of Palanker's Figure 3A and Angeley's Figure 9. Sur-reply 7.

Patent Owner submits that, as shown in this comparison, neither reference suggests the specified tracking band of claim 1, because in both references, the lower boundary of the scan-pattern, which, in this side-by-side comparison, corresponds to the lower edge of the red box in each figure, has a uniform z-depth relative to the optical axis of the laser system. *Id.* at 6–7; *see* Prelim. Resp. 16–19, 37–38, 55–59 (similar argument). We reproduce below Patent Owner’s side-by-side comparison.



Sur-reply 7. The above comparison figure shows annotated versions of Palanker’s Figure 3A (on the left) and Angeley’s Figure 9 (on the right). Patent Owner annotates Figure 3A to include a purple line that, in Patent Owner’s view, corresponds to the optical axis of Palanker’s laser system. *Id.* at 6–7. Patent Owner annotates Figure 9 by tilting the edge of the figure leftward and superimposing a red line around box 400B. In Patent Owner’s view, this comparison figure shows that “Palanker’s red box 5 is no different from Angeley’s box 400B in Figure 9, which the Office already considered” during the examination of the parent application. *Id.* at 6–7.

On this record, we determine that Petitioner does not show sufficiently where the optical axis of Palanker’s laser system lies in Figure 3A. Pet. 50–53 (citing Ex. 1004 ¶¶ 174–178). Patent Owner casts

significant doubt on the adequacy of Petitioner's information, in that regard, by directing us to evidence that the purple line in annotated Figure 3A (reproduced *supra* 27) corresponds to that axis. Prelim. Resp. 19, 38, 58.

Against that backdrop, relatedly, we determine that Petitioner fails to demonstrate adequately that Palanker's Figure 3A shows a lens tilted relative to the optical axis of the laser system. In reaching that determination, we take account of Petitioner's contention that "two axes of the red shape labeled '1' in Palanker's Figure 3B, measure a major axis of 4.9 mm and a minor axis of 4.8 mm, respectively." Reply 7. We take account also of Petitioner's further contention that "such a seemingly slight difference indicates a meaningful tilt, given the relationship (\cos^{-1}) between the ratio of the axes and the tilt." *Id.* Both of those contentions rest on an unsupported assumption about where the optical axis lies in Figure 3B. *Id.* Both, moreover, consist of bare attorney argument, which, contrary to Petitioner's view, is ineffective to create a genuinely disputed issue of material fact about whether the "slight difference" observed by counsel, in fact, "indicates a meaningful tilt." *Id.* ("[T]his fact-intensive analysis is best reserved for an instituted proceeding").

3. Cumulative Nature of Palanker and Angeley

Petitioner relies on Palanker "solely for its alleged teaching of the claimed 'tracking band.'" Prelim. Resp. 3; *see* Pet. 50–53. In this subsection, therefore, we resolve whether Palanker discloses, with greater clarity or detail than Angeley, a solution for lens tilt that includes the specified "tracking band" having "a lower boundary" of "non-uniform z-depth." Ex. 1001, 12:41–46. As an initial matter, we observe, the parties agree that Palanker "discloses the commercial embodiment of Angeley's laser-based

system for cataract surgery.” Pet. 53–54; Prelim. Resp. 39. Further, “both arise from the same company, share the same authors, and *describe the same laser cataract surgery system*.” Pet. 53–54 (emphasis added). Those facts, standing alone, tend to support Patent Owner’s view that Palanker is “far from new compared to what the Office already considered when reviewing Angeley.” Prelim. Resp. 2.

The parties agree, moreover, that Angeley’s Figure 15 illustrates optical axis 422 and lens tilt 424. Pet. 10; Prelim. Resp. 28. Angeley explains, “The tilt of this axis 424 can be seen relative to *an axis 422* defined by the center of the iris *and coincident to the system’s optical axis*.” Ex. 1006 ¶ 90 (emphasis added). On this record, therefore, we find Angeley describes a lens tilted relative to optical axis 422. *Id.* For reasons explained above in our discussion of Angeley’s disclosure, however, we determine that Angeley suggests only one solution to compensate for lens tilt, and that solution involves generating a cut cylinder *of uniform depth relative to the z-axis* (*id.* ¶ 78, “depth thickness 419”) that is great enough to accommodate a cut that “will follow” the lens “tilt” (*id.* ¶ 90) – that is, the same prior art solution discussed and illustrated in the ’036 patent. *Compare* Ex. 1006, Figs. 9, 15, ¶¶ 78, 90, *with* Ex. 1001, Figs. 4B, 5B, 5:15–6:46.

Tellingly, Petitioner directs us to no disclosure in Palanker that mentions the word “tilt,” discloses a solution for lens tilt, or suggests a “laser-controller” configured to “generate a tracking band” having “a lower boundary” of “non-uniform z-depth” as specified in claim 1. Ex. 1001, Figs. 6A–6H, Fig. 7, 6:59–10:11 (written description), 12:41–46 (claim 1). On this record, we determine that Petitioner does not explain adequately how or why Palanker describes the “tracking band” of claim 1 with any

greater clarity or detail than Angeley. Ex. 1001, 12:41–46; *see* Pet. 12–14, 48–49, 50–54; Prelim. Resp. 2–4, 16–19, 37–41; Reply 1–7; Sur-reply 2–3, 6–7. Accordingly, we determine that Palanker is cumulative of Angeley. *Compare* Ex. 1009 (Palanker, nowhere describing a solution that accounts for lens tilt), *with* Ex. 1006 ¶¶ 78, 90 (Angeley, describing a conventional solution for lens tilt). This factor supports a decision to exercise our discretion and deny institution of review.

Factor (d): The extent of the overlap between the arguments made during examination and the manner in which petitioner relies on the prior art or patent owner distinguishes the prior art

Petitioner argues that Angeley (or Palanker, which is cumulative of Angeley) discloses the “tracking band” of claim 1. Ex. 1001, 12:41–46 (tracking band limitation); Pet. 25–29, 50–53. Patent Owner counter argues, “Petitioner wants a do-over” of the precise issue that was the focus of an “extensive examination.” Prelim. Resp. 1–2, 23. We agree with Patent Owner that the Office previously considered, and resolved in Patent Owner’s favor, the question whether Angeley discloses or suggests the “tracking band” limitation of claim 1. Ex. 1001, 12:41–46; *see, e.g.*, Prelim. Resp. 25 (citing Ex. 1003, 444, 815–818, 827–829, 868–871, 876, 925–927, 935, 998, 1013–1014, 1054, 1083, 1108, 1115, 1145–1147, 1154–1158 (prosecution history)). The arguments made during examination, and those advanced in the Petition, substantially overlap. *See* Pet. 25–29, 50–53. This factor supports a decision to exercise our discretion and deny institution of review.

Because each of factors (a), (b), and (d) weighs in favor of a discretionary denial under Section 325(d), we determine that the same or substantially the same art or arguments presented in the Petition previously

were before the Office. Accordingly, in the next subsections, we assess factors (c), (e), and (f), which inform our decision whether Petitioner demonstrates adequately that the Examiners materially erred during patent prosecution by allowing the challenged claims to issue over Angeley.

Factor (c): The extent to which the asserted art was evaluated during examination, including whether the prior art was the basis for rejection

Patent Owner directs us to information that the examination of the parent application for the '036 patent spanned “more than three years” and, further, that Angeley was the focus of “seven rejections, two interviews, two advisory actions, and a pre-appeal conference.” Prelim. Resp. 1; *see id.* at 28 n.3 (citing Ex. 1003, 826–828, 934–936, 1013–1016, 1145–1147, 1155–1157) (prosecution history)). Petitioner does not contest that characterization of the patent examination. *See* Reply 1–7. On this record, we agree with Patent Owner that the Office previously conducted an “extensive examination of Angeley” during prosecution. Prelim. Resp. 1–2; *see* Ex. 1001, code (56) (identifying Angeley as one of only two references cited during the '036 patent examination). This factor supports a decision to exercise our discretion and deny institution of review.

Factor (e): Whether petitioner has pointed out sufficiently how the examiners erred in evaluation of the asserted prior art

Petitioner directs us to no persuasive evidence that the “four Examiners” involved in the “extensive examination” of Angeley (Prelim. Resp. 1–2) erred by failing “to fully consider” Angeley’s paragraph [0090] or Figure 15 (Pet. 57–58). Patent Owner, by contrast, directs us to persuasive evidence, within the four corners of the prosecution history, supporting a “reasonable inference that at least one of the four Examiners” involved in

the patent prosecution undertook to read the “entire disclosure” of Angeley to assess “the reference as a whole.” Prelim. Resp. 1–2, 23.

For example, a summary of an interview with the applicant on July 2, 2015, indicates an “Examiner will review Angeley to determine whether there is sufficient suggestion in Angeley to construe ‘3-dimensional path for the cutting’ to include local variations in depth.” *Id.* at 23 (quoting Ex. 1003, 967). Not once, but three times, that Examiner expressed an intention to review Angeley in its entirety. *Id.* at 23–24 (quoting Ex. 1003, 967 (twice stating the Examiner “will review” Angeley), 876 (the “Examiner will reconsider” Angeley)). That same Examiner, thereafter, referred to Angeley’s disclosure “considered as a whole” or “read in its entire[t]y,” which directly conflicts with Petitioner’s suggestion that the Examiner failed to carry out the stated intention to review Angeley’s full disclosure. *Id.* at 24 (quoting Ex. 1003, 1115, 1154).

“If Petitioner were indeed correct that the Office did not consider” Angeley’s paragraph [0090] or Figure 15, that would mean four Examiners, “while repeatedly straining to piece together evidence from within a single reference to support an argument that Angeley” discloses the specified tracking band, “failed to find the very thing [they] were looking for.” Prelim. Resp. 25; *see* Ex. 1003, 1115–1116, 1123 (references to the “generalized” or “general” teachings of Angeley in the prosecution history). In that regard, Angeley’s paragraph [0078] was “the central focus of at least *sixteen* correspondences during prosecution of the” parent application for the ’036 patent. Prelim. Resp. 26 (citing Ex. 1003, 444, 815–818, 827–829, 868–71, 876, 925–927, 935, 995, 103–1014, 1054, 1083, 1108, 1115, 1145–1147, 1154–1158 (prosecution history)). Patent Owner argues, reasonably on this

record, that “it strains credulity to suggest that none of the four Examiners that considered Angeley chose to search” the reference “for the word ‘tilt,’” which would have led directly to paragraph [0090] and its description of Figure 15, in addition to paragraph [0078]. *Id.* at 25. Further, as Patent Owner observes, where Angeley’s disclosure was a focus of examination, “[t]he omission of a citation to paragraph [0090] speaks louder to its irrelevance than to any material error on the part of the Office.” *Id.* at 22.

For reasons explained above in our discussion of Angeley’s disclosure, we agree with Patent Owner that paragraph [0090], at best, is duplicative of “the primary portion of” Angeley” that describes a solution for lens tilt, namely, paragraph [0078]. *Id.* at 25. Neither paragraph [0090] nor Figure 15, which Petitioner advances in the Petition, describes a scan-pattern that accounts for lens tilt, whereas paragraph [0078] and Figure 9, which were the focus of examination, describe a scan-pattern that accounts for “tilt of the capsule.” *Compare* Ex. 1006 at Fig. 15, ¶ 90, *with id.* at Fig. 9, ¶ 78; *see* Prelim. Resp. 25–37 (Patent Owner’s information on that point).

We next address Petitioner’s serious allegation that Patent Owner misrepresented the disclosure of Angeley to the Office during the examination of the parent application for the ’036 patent. Pet. 57–58. Petitioner alleges that the Examiners overlooked Angeley’s paragraph [0090] and Figure 15 as a direct result of Patent Owner’s “misrepresentation that paragraph [0078] ‘is the only passage of Angeley that describes how cut depth is determined; nowhere does Angeley suggest or contemplate another way of accounting for lens tilt.’” Pet. 57–58 (citing Ex. 1003, 1146, 1157) (emphasis omitted). Based on the information presented, and for reasons set forth above in our discussion of Angeley’s disclosure, we find Petitioner

does not show sufficiently that this statement is a “misrepresentation.” *Id.* “Petitioner’s arguments amount to a disagreement with Patent Owner” over issues squarely addressed during an examination in which “[n]othing about” Angeley “was concealed from the Examiner[s].” Sur-reply 5 (quotation omitted, alteration in original). On this record, we find no merit in Petitioner’s contention that Patent Owner misrepresented Angeley’s disclosure to the Examiners during prosecution. Pet. 57–58.

As Patent Owner observes, “[T]he Office’s decision to allow the patent over Angeley after years of prosecution and a pre-appeal conference underscores the thoroughness of the examination and the duplicity of paragraph [0090]” over the content of paragraph [0078]. Prelim. Resp. 32. We agree with Patent Owner that Petitioner “ascribes additional meaning to the general statements of paragraph [0090] where none is warranted.” Prelim. Resp. 31; *see* Pet. 25–29.⁸

Petitioner does not show sufficiently that the Examiners overlooked in Angeley’s disclosure a solution for lens tilt contained in paragraph [0090] or Figure 15. Pet. 18–58. Accordingly, as Patent Owner observes, Petitioner does not demonstrate adequately how or why “the Office erred in a manner material to patentability.” Prelim. Resp. 36 (quoting *Advanced Bionics*, Paper 6 at 9). This factor supports a decision to exercise our discretion and deny institution of review.

⁸ Petitioner also wrongly asserts that Patent Owner “confirmed during prosecution that a tilted capsulotomy has a non-uniform z-depth.” Pet. 27 n.8. The material quoted by Petitioner shows only that Patent Owner described “the laser controller” of the claimed invention as “configured to ‘generate a tracking band’” that has “a lower boundary” of “non-uniform z-depth” as specified in claim 1. *Id.*

Factor (f): The extent to which additional evidence and facts presented in the petition warrant reconsideration of the prior art or arguments

Even “[i]f reasonable minds can disagree regarding the purported treatment” of Angeley by the Office during patent examination, a trial focused on resolving whether Angeley suggests the specified tracking band “would be an inefficient use of Board resources,” given the extent to which that same issue previously was considered by the Office. Prelim. Resp. 32, 36. The issue was the subject of an “extensive examination” spanning three years and four Examiners. *Id.* at 1–2; *see id.* at 25 (citing Ex. 1003, 444, 815–818, 827–829, 868–871, 876, 925–927, 935, 998, 1013–1014, 1054, 1083, 1108, 1115, 1145–1147, 1154–1158 (prosecution history)). No other information presented warrants a reconsideration of substantially the same art or arguments previously presented to the Office during examination. *See generally* Pet. This factor supports a decision to exercise our discretion and deny institution of review.

IV. CONCLUSION

Each of factors (a)–(f) discussed above supports a decision to exercise our discretion and deny institution of review. On this record, therefore, we determine that Petitioner raises substantially the same prior art or arguments previously presented to the Office and, further, has not demonstrated adequately that the Office erred in a manner material to the patentability of the challenged claims. *Advanced Bionics*, Paper 6 at 8. Taking a holistic view of the circumstances presented, we exercise our discretion under Section 325(d) and do not institute an *inter partes* review.

V. ORDER

It is

ORDERED that the Petition is *denied* and no *inter partes* review is instituted.

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