

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

LITE-ON TECHNOLOGY CORPORATION

Petitioner

v.

SENSOR ELECTRONIC TECHNOLOGY, INC.,

Patent Owner.

Inter Partes Review No. 2022-00780

U.S. Patent No. 9,923,117

**PRELIMINARY RESPONSE TO PETITIONER'S INTER PARTES
REVIEW OF U.S. PATENT NO. 9,923,117**

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<i>TQ Delta, LLC v. CISCO Systems, Inc.</i> , 942 F.3d 1352 (Fed. Cir. 2019)	12, 21, 24, 28

EXHIBIT LIST

Ex. No.	Description
Ex. 2001	Chambers Dictionary of Science and Tech., definition for " <i>homogeneous</i> ", 2007.
Ex. 2002	United States Patent No. 7,812,366.
Ex. 2003	E. Fred Schubert, " <i>Light-Emitting Diodes</i> ", pgs. 167-168, 2006.
Ex. 2004	United States Patent and Trademark Office, Director Memorandum, dated June 21, 2022.
Ex. 2005	<i>Sensor Electronic Tech., Inc. v. Lite-On Tech. Corp. et al.</i> , Case No. 6:21-cv-00322-ADA (W.D. Texas), Dkt. No. 1, Complaint with Jury Demand, dated April 2, 2021.
Ex. 2006	<i>Sensor Electronic Tech., Inc. v. Lite-On Tech. Corp. et al.</i> , Case No. 6:21-cv-00322-ADA (W.D. Texas), Dkt. No. 45, Amended Scheduling Order, dated June 22, 2022.
Ex. 2007	<i>Burley Licensing LLC v. Micro-Star International Co. Ltd.</i> , Case No. 6:21-cv-00862-ADA (W.D. Texas), Docket Report.
Ex. 2008	<i>Frac Shack Inc. v. Alaska Fuel Distributors Inc.</i> , Case No. 7:19-cv-00026-ADA-DTG (W.D. Texas), Docket Report.
Ex. 2009	<i>MicroPairing Technologies LLC v. General Motors LLC</i> , Case No. 6:21-cv-00761-ADA (W.D. Texas), Docket Report.
Ex. 2010	<i>ParkerVision, Inc. v. LG Electronics Inc.</i> , Case No. 6:21-cv-00520-ADA (W.D. Texas), Docket Report.
Ex. 2011	<i>TrackThings LLC v. Amazon.com, Inc. et al.</i> , Case No. 6:21-cv-00720-ADA (W.D. Texas), Docket Report.
Ex. 2012	Docket Navigator, Motion Stay Success Rates Pending <i>Inter Partes</i> Review in W.D. Texas.
Ex. 2013	Ryan Davis, " <i>Albright Says He'll Very Rarely Put Cases On Hold For PTAB</i> ", Law360, dated May 11, 2021.
Ex. 2014	<i>Sensor Electronic Tech., Inc. v. Lite-On Tech. Corp. et al.</i> , Case No. 6:21-cv-00322-ADA (W.D. Texas), Dkt. No. 36, Agreed Scheduling Order, dated February 24, 2022.
Ex. 2015	Docket Navigator, Time to Trial in W.D. Texas.
Ex. 2016	<i>Sensor Electronic Tech., Inc. v. Lite-On Tech. Corp. et al.</i> , Case No. 6:21-cv-00322-ADA (W.D. Texas), Defendants' Preliminary Invalidity Contentions, dated March 24, 2022.

I. INTRODUCTION

Lite-On Technology Corporation's ("Lite-On" or "Petitioner") Petition should be denied. U.S. Patent No. 9,923,117 ("the '117 Patent"), assigned to Sensor Electronic Technology, Inc ("SETi" or "Patent Owner") is directed to a novel arrangement for a semiconductor device not found in the prior art. Particularly, the claimed structure includes inhomogeneous regions having attributes that differ from the material forming the semiconductor layer. These regions are vertically offset from each other and are arranged in multiple levels of the semiconductor layer.

The four prior art references at issue fail to disclose the claimed arrangement. But the Board need not reach that analysis as Petitioner fails to support its invalidity positions beyond conclusory statements and unexplained citations to the record. Petitioner purports to rely on an expert, but he offers "opinions" on the limitations in question without providing any analysis. Institution should be denied.

II. RELATED PROCEEDINGS UNDER 37 C.F.R § 42.8(B)(2)

The '117 Patent is currently the subject of a lawsuit in the United States District Court for the Western District of Texas: *Sensor Electronic Technology, Inc. v. Lite-On Technology Corporation, Lite-On Technology USA, Inc., Lite-On,*

Inc., and Lite-On Trading USA, Inc., No. 6:21-cv-00322-ADA (W.D. Tex.), filed on April 2, 2021 (the “Western District of Texas Case”).

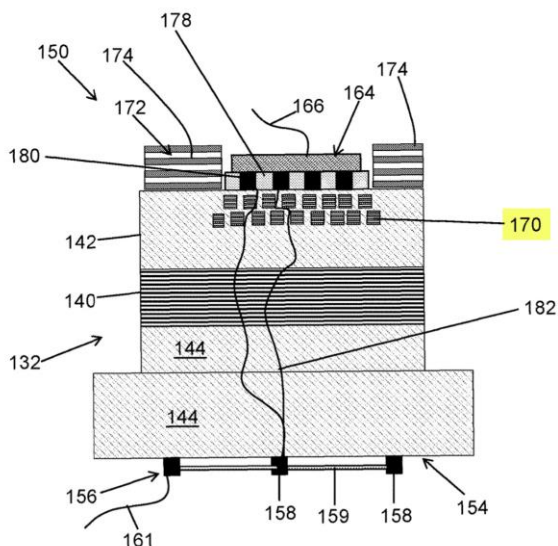
III. THE ’117 PATENT

A. OVERVIEW

The ’117 Patent seeks to improve the then-existing issues with deep-UV LEDs caused by “light trapping within the device, light absorption in the semiconductor layers, as well as light absorption in the contact regions.” Ex. 1001 at 1:53-55. It does so by providing a semiconductor layer that includes a plurality of inhomogeneous regions. The inhomogeneous regions have “one or more attributes that differ from a material forming the semiconductor layer,” such as a region “configured based on radiation having a target wavelength,” a transparent region, a reflective region, and/or a region having “higher conductivity than a conductivity of the radiation-based regions.” Ex. 1001 at 2:5-16.

The ’117 Patent discloses and depicts the arrangement of inhomogeneous regions within multiple levels of the semiconductor layer. For example, Figure 13A also depicts reflective regions arranged within multiple levels of a semiconductor layer that are vertically offset from each other. “As shown in FIG. 13A, the reflective elements 170 in each level can be staggered with reflective elements in an adjacent level such that there is an offset in position between elements in the different levels.” Ex. 1001 at 16:3-6.

FIG. 13A



Ex. 1001, Fig. 13A (annotated).

B. PROSECUTION HISTORY

During prosecution, the examiner rejected method claims 8-10 (which are not challenged by Petitioner here) over U.S. Patent Application Publication No. 2004/0031956 to Saxler (“Saxler,” Ex. 1007) in combination with another Saxler reference. Ex. 1018, 163-64. To overcome that rejection, Patent Owner argued “FIG. 4 of Saxler . . . shows a first set of discontinuous regions 34 in a first layer 32 and another set of discontinuous regions 40 in a third layer 38, with a second layer 36 separating layers 32 and 38. Both the first layer 32 and the third layer 38 are separate and distinct semiconductor layers. Each of these layers in Saxler . . . only have a single level of discontinuous regions and not multiple levels. In view of these distinctions, [the first Saxler reference] in view of Saxler . . . does not

disclose or suggest a single semiconductor layer having a plurality of inhomogeneous regions arranged within multiple levels of the single semiconductor layer. Ex. 1018 at 229. This is consistent with Patent Owner's argument *infra* that Saxler does not disclose or render obvious limitation 1[d], even in view of Dr. Shealy's completely conclusory "expert testimony." *See supra* section IX.E.

C. CHALLENGED CLAIM

Claim 1 of the '117 Patent are challenged in the Petition and is shown below.

1[pre] A semiconductor heterostructure, comprising:

1[a] an active region;

1[b] a metallic contact;

1[c] a group III nitride semiconductor layer located between the active region and the metallic contact;

1[d] the semiconductor layer including a plurality of inhomogeneous regions arranged within multiple levels of the semiconductor layer along a height direction of the semiconductor layer;

1[e] wherein some of the inhomogeneous regions in a first level of the semiconductor layer are vertically offset from inhomogeneous regions in a second level of the semiconductor layer, and

1[f] wherein the plurality of inhomogeneous regions include one or more of a set of transparent regions, a set of reflective regions and/or a set of conductive regions;

1[g] each of the inhomogeneous regions having a set of attributes differing from a group III nitride material forming the semiconductor layer.

IV. CLAIM CONSTRUCTION

For purposes for deciding institution, Patent Owner does not believe that any claim constructions are necessary. As discussed below, under any construction of “inhomogeneous region,” Petitioner’s Grounds 1-2 and 4 fail because Petitioner’s arguments are conclusory and thus fail to demonstrate or support the allegation that the prior art discloses or renders obvious a “plurality of inhomogeneous regions.”

Nevertheless, this point is made more evident in view of the plain and ordinary meaning of the term “inhomogeneous region”—i.e., a “region that has different compositions (e.g. compositional fluctuation).” This plain and ordinary meaning is consistent with the intrinsic and extrinsic record. First, the word “homogeneous” means “a system in which the chemical composition and physical state of any physically small portion are the same as those of any other portion.” Ex. 2001, Chambers Dict. of Sci. & Tech. (2007). Thus, the word “inhomogeneous” means such a system in which the chemical

composition/physical state of some of the physically small portions are different from other portions.

Second, although the '117 Patent does not provide a definition of the term “inhomogeneous region,” it cites U.S. Patent No. 7,812,366 (“the '366 Patent”) as disclosing an “illustrative solution for producing a laterally inhomogeneous semiconductor structure.” Ex. 1001 at 17:67-18:4. The '366 Patent discloses that “it was discovered that [InGaN alloys] could be grown in which the indium did not incorporate uniformly throughout the InGaN layer (i.e., the material has areas of high and low concentrations of indium spread throughout). **These compositional fluctuations [are] known as localized inhomogeneities.**” Ex. 2002 at 1:39-44 (emphasis added). The '366 Patent also discloses “UV light emitting device active region layer compositions comprised of aluminum and gallium containing III-Nitride alloys that exhibit enhanced photoluminescence (PL) lifetimes due to **compositional fluctuations (i.e., localized inhomogeneities)** therein.” *Id.* at 11:45-50 (emphasis added).

V. A PERSON HAVING ORDINARY SKILL IN THE ART

For the purposes of this Preliminary Response, Patent Owner does not offer an alternative definition of a person of ordinary skill in the art (POSA) but reserves the right to do so should institution be granted. Patent Owner contends that Petitioner has failed to meet its burden under any definition of a POSA.

**VI. THE BOARD SHOULD DENY INSTITUTION ON GROUND 1
BECAUSE OHMAE DOES NOT RENDER OBVIOUS CLAIM 1 OF
THE '117 PATENT**

In Ground 1, Petitioner argues that claim 1 is rendered obvious by U.S. Patent Application Publication No. 2007/0085093 to Ohmae et al. (“Ohmae,” Ex. 1004).

A. Overview of Ohmae

Ohmae discloses a light-emitting diode with a substrate having protruded portions. Ex. 1004 ¶ [0021]. The protruded portions are grown on the substrate and then a nitride-based III-V Group compound semiconductor layer is grown on top of them. *Id.*; *see also* ¶ [0074]. Ohmae also discloses growing multiple nitride-based III-V Group compound semiconductor layers on top of each other. *Id.* ¶ [0247].

B. Petitioner fails to provide any justification for its single-reference obviousness ground based on multiple embodiments

Petitioner’s Ground 1 is purportedly a single-reference obviousness ground based on Ohmae. Petitioner states that “a POSITA would have understood that Ohmae renders obvious each of the limitations recited in Claim 1 of the ’117 Patent.” Petition at 25. However, Petitioner relies on improperly on mixing and matching embodiments. In particular, Petitioner relies exclusively on the Figure 35 embodiment for claim limitations 1[a], 1[b], and 1[c]. Petition at 27-29. In contrast, Petitioner relies on the Figure 39 embodiment for limitations 1[d] and

1[e]. Critically, Petitioner offers no justification for its combination of Ohmae's different embodiments.

If a petitioner seeks to rely on a "combined embodiment" based on "multiple, distinct teachings that the artisan might somehow combine to achieve the claimed invention," it must reconcile the "question of obviousness" as a threshold matter. *Net MoneyIN, Inc. v. VeriSign Inc.*, 545 F.3d 1359, 1371 (Fed. Cir. 2008). This is true irrespective of whether it is "combining disclosures from multiple references, [or] combining multiple embodiments from a single reference, or selecting from large lists of elements in a single reference." *In re Stepan Co.*, 868 F.3d 1342, 1345-46 n.1 (Fed. Cir. 2017). "[T]here must be a motivation to make the combination and a reasonable expectation that such a combination would be successful, otherwise a skilled artisan would not arrive at the claimed combination." *Id.*; see also *Abiomed, Inc. v. Maquet Cardiovascular, LLC*, IPR2017-01204, Paper 9, at 8-12 (P.T.A.B. Oct. 23, 2017).

Petitioner never attempts to argue that its mix-and-match embodiment of "multiple, distinct teachings" is obvious. *Net MoneyIN*, 545 F.3d at 1371. Instead, Petitioner merely states that "Ohmae discloses this limitation" for every claim limitation, and then summarily concludes at the end of the Ground 1 section that "Ohmae . . . renders obvious Claim 1 of the '117 Patent." Petition at 36. Petitioner's failure to explain why a person of ordinary skill in the art would

combine the various embodiments and disclosures in Ohmae it relies upon is fatal to this Ground. *Supercell Oy v. Gree, Inc.*, IPR2020-00513, Paper 11 at 16 (P.T.A.B. Jun. 24, 2020) (“Generic conclusions that the references could have been combined is insufficient.”). Indeed, Ohmae discloses the Figure 35 and Figure 39 embodiments as alternative embodiments; and does not suggest or disclose that they could be combined. Ex. 1004 ¶ [0231] (“In the twelfth embodiment, as shown in FIG. 35...”); ¶ [0247] (“In the sixteenth embodiment, as shown in FIG. 39 ...”). For this reason alone, Petitioner has failed to established a reasonable likelihood that it would prevail with respect to Ground 1.

C. Ohmae does not disclose or render obvious limitation 1[d] of Claim 1, “the semiconductor layer including a plurality of inhomogeneous regions arranged within multiple levels of the semiconductor layer along a height direction of the semiconductor layer”

Ohmae does not disclose or render obvious limitation 1[d] of Claim 1 for several reasons explained more fully below.

First, Ohmae does not disclose or render obvious a “plurality of inhomogeneous regions.” Instead, Ohmae discloses protruded portions grown on top of substrate 11, on top of which the nitride-based III-V Group compound semiconductor layer 15 in Ohmae is grown. Neither Petitioner nor its expert explain or demonstrate that these are the claimed inhomogeneous regions, except by saying, without support, that they are.

Second, even if Ohmae disclosed or rendered obvious “a plurality of inhomogeneous regions,” the purported “regions” are not disposed “within” the semiconductor layers in Ohmae, but are arranged underneath the semiconductor layers. In fact, in the embodiments with a single semiconductor layer 15, Ohmae describes the “protruded portions” as being part of the substrate, and not part of the semiconductor layer 15.

Third, even if the purported “regions” are disposed “within,” they are disposed in **multiple** semiconductor layers, and not within a single semiconductor layer with multiple levels, as required by this limitation.

1. Ohmae does not disclose or render obvious a “plurality of inhomogeneous regions”

Ohmae discloses, according to a first embodiment, a method for manufacturing a light-emitting diode that includes “a providing step” Ex. 1004 ¶ [0021]. The “providing step provides a substrate having a plurality of protruded portions on one main surface thereof.” *Id.* Ohmae discloses, in reference to its Figure 39 embodiment, that “the step of forming protruded portions 12 and growing the nitride-based III-V Group compound semiconductor layer 15 like the first embodiment starts from forming protruded portions 12 on the substrate 11, followed by repeating the step plural times.” Ex. 1004 ¶ [0247]. Ohmae also discloses that the “materials for the protruded portion may be of various types and

may be electrically conductive or non-conductive,” such as, “for example, dielectric materials such as oxides, nitrides, carbides and the like and conductors such as of metals, alloys and the like (including transparent conductors).” *Id.* at ¶ [0026]. No particular material is specified for the Figure 39 embodiment, nor does Petitioner or its expert argue that the “protruded portion” is made of a particular material. And other than the disclosures cited above from Ohmae (¶¶ [0026] and [0247]), Petitioner relies on no other disclosure to allege that the reference discloses or renders obvious the claimed “plurality of inhomogeneous regions.”

As noted above, under any construction or definition of “inhomogeneous,” Petitioner’s argument fails because of its entirely conclusory nature. Additionally, when considering the term’s plain and ordinary meaning, as discussed above, this Ground also fails.

Neither Petitioner nor Dr. Shealy point to any disclosure or suggestion in Ohmae that the “protruded portions” in Ohmae are “inhomogeneous regions,” i.e. whether the “protruded portions” have different compositions within the portions or compositional fluctuation.

Instead, Dr. Shealy summarily concludes that “[i]n my opinion, protruded portions made of dielectric materials or conductors would constitute inhomogeneous regions within the semiconductor layer composed of nitride-based III-V Group compound semiconductor” and that “in my opinion, the nitride-based

semiconductor material grown on top of the protruded portions are also inhomogeneous regions,” without providing any basis for that opinion. Ex. 1002 ¶ 76. Dr. Shealy’s conclusory testimony, which fails to offer any explanation as to how Ohmae’s “protruded portions” are the claimed “inhomogeneous regions” should thus be given little to no weight. *See TQ Delta, LLC v. CISCO Systems, Inc.*, 942 F.3d 1352, 1357 (Fed. Cir. 2019) (overturning Board decision that relied on “conclusory testimony” for unpatentability); *Kinetic Techs. v. Skyworks Solutions, Inc.*, IPR2014-00529, Paper 8 at 14-15 (P.T.A.B. Sept. 23, 2014) (“Expert testimony that does not disclose the underlying facts or data on which the opinion is based is entitled to little or no weight.”).

Dr. Shealy also improperly relies on the ’117 Patent to argue that because the growth methods for the “protruded portions” in Ohmae are also allegedly disclosed in the ’117 Patent, then Ohmae discloses or renders obvious this limitation. Even if Dr. Shealy provided an explanation as to how the allegedly similar growth methods necessarily means that the “protruded portions” **are** the claimed “inhomogeneous regions,” (which he does not), it is improper to rely on the ’117 Patent’s own disclosure to demonstrate that the **prior art** discloses or renders obvious a claim limitation. *In re Ochiai*, 71 F.3d 1565, 1570 (Fed. Cir. 1995) (holding that it is legal error to “use[] [the] specification as though it were prior art in order to make the claim ... appear to be obvious”).

And although Petitioner provides a discussion of the '117 Patent's use of the term "inhomogeneous region," Petitioner offers no proposed construction, and instead states that "the ordinary and customary meaning of 'inhomogeneous regions' in Claim 1 should take into account how that term is described in the '117 Patent." Petition at 21. Petitioner fails offer what that "ordinary and customary meaning" is, and instead provides a long recitation of the '117 Patent's discussion of the attributes of the inhomogeneous regions, and then concludes that "Petitioner's interpretation of the claim terms is further explained for each claim limitation in relation to the prior art discussed in invalidity Grounds 1-4." *Id.* at 21-23. Petitioner appears to suggest that these attributes are definitional of the claimed "inhomogeneous region" inhomogeneous, but Petitioner is mistaken. Instead, these are attributes of the inhomogeneous regions may have, in addition to the preliminary requirement that the regions are in fact inhomogeneous.

Indeed, the different attributes of the inhomogeneous regions (i.e. conductivity, reflectivity) are provided for in claim limitation 1[f]: "wherein the plurality of inhomogeneous regions include one or more of a set of transparent regions, a set of reflective regions and/or a set of conductive regions." Thus, Petitioner's "interpretation" of the term "inhomogeneous regions" reads the modifier "inhomogeneous" right out of the claim term. That is improper and Petitioner's interpretation should be rejected. *See Merck & Co. v. Teva Pharm.*

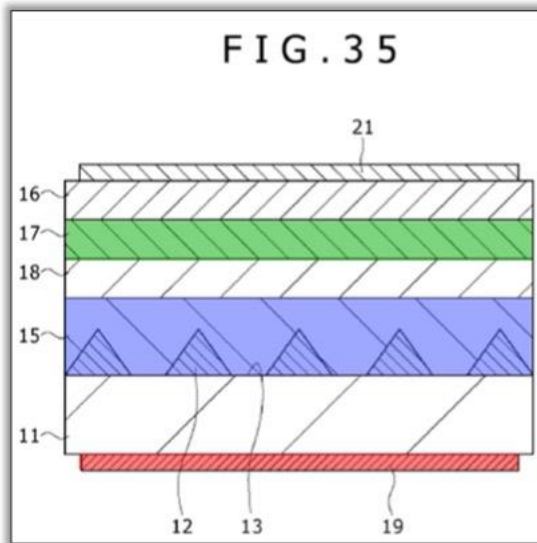
USA, Inc., 395 F.3d 1364, 1372 (Fed. Cir. 2005) (“A claim construction that gives meaning to all the terms of the claim is preferred over one that does not do so.”); *Power Mosfet Techs., LLC v. Siemens AG*, 378 F.3d 1396, 1410 (Fed. Cir. 2004) (“[I]nterpretations that render some portion of the claim language superfluous are disfavored.”).

For this reason, Ohmae does not disclose or render obvious limitation 1d of claim 1.

2. Ohmae’s protruded portions are not “within” the semiconductor layer

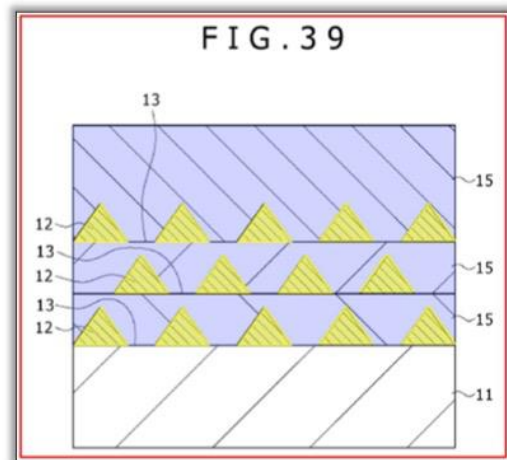
Even if Ohmae’s “protruded portions” constituted “a plurality of inhomogeneous regions,” Ohmae fails to disclose or render obvious the sub-limitation “a plurality of inhomogeneous regions **arranged within** . . . the semiconductor layer.”

Petitioner relies on the below annotated versions of Figures 35 and 39 to show that the “protruded portions” are “arranged within” the nitride-based III-V Group compound semiconductor layer 15.



(Annotated FIG. 35)

Petition at 29



(Annotated FIG. 39)

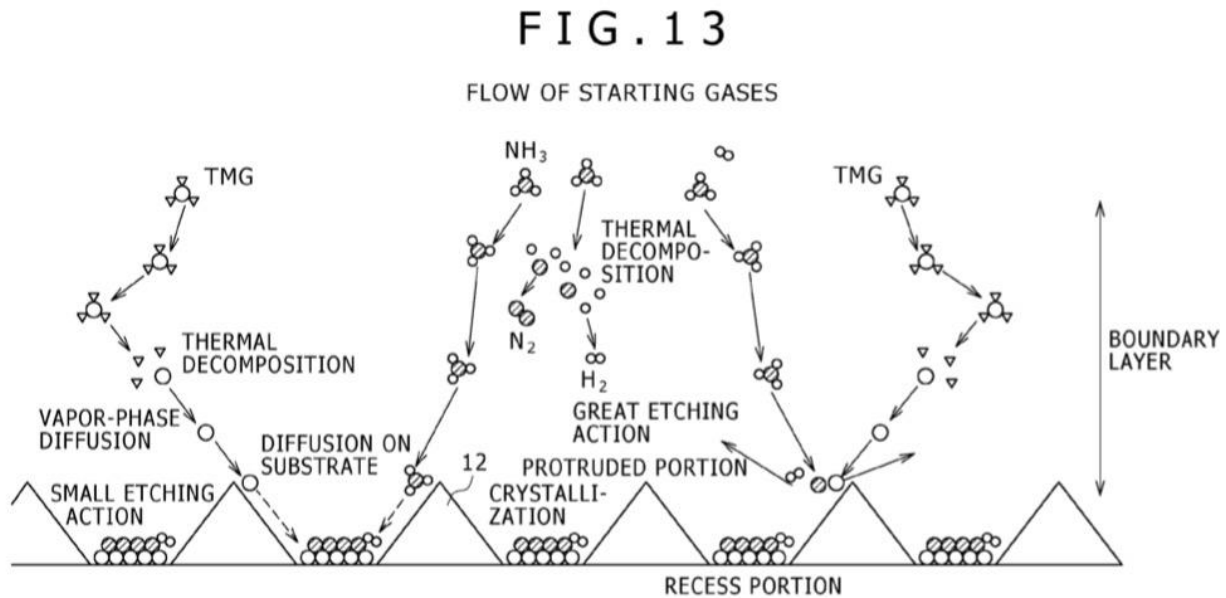
Petition at 32

But these “protruded portions” 12 are not “arranged within” semiconductor layer 15; rather, they are arranged **outside of** or **without** the semiconductor layer 15.

Indeed, Ohmae refers to the protruded portions 12 as being part of the **substrate**, and not as being part of the semiconductor layer 15, thus contradicting Petitioner’s argument that the protruded portions are “arranged within” the semiconductor layer 15. Ex. 1004 ¶ [0174] (“the protruded portion 12 **of the substrate**”) (emphasis added); *see also* ¶¶ [0021] (“The providing step provides a substrate having a plurality of protruded portions.”); [0187], [0190].

Ohmae discloses that “the step of forming protruded portions 12 and growing the nitride-based III-V Group compound semiconductor layer 15 like the

first embodiment starts from forming protruded portions 12 on the substrate 11, followed by repeating the step plural times.” Ex. 1004 ¶ [0247]. Then, “[t]he uppermost nitride-based III-V Group compound semiconductor layer 15 is successively grown thereon.” *Id.* Thus, the protruded portions are formed on the substrate 11 ***before*** the lowermost semiconductor layer 15 is grown. They are therefore not “arranged within” the semiconductor layer 15, but located underneath that semiconductor layer. This is supported by Ohmae’s disclosure of how the “starting material gases flow and diffuse over the substrate at the stage of growth of a GaN layer indicated as an example of the nitride-based III-V Group compound semiconductor layer 15.” *Id.* ¶ [0174]. Ohmae discloses that “[t]he **most important point in this growth** resides in that at the initial stage of the growth, GaN does not grow at the protruded portion 12 of the substrate 11 and the growth of the GaN starts at the recess portion 12.” *Id.* (emphasis added). This is depicted in Figure 13, reproduced below.



For this reason, Ohmae also does not disclose or render obvious limitation 1d of claim 1.

3. Ohmae's protruded portions are arranged under multiple semiconductor layers, not in "multiple levels of the semiconductor layer"

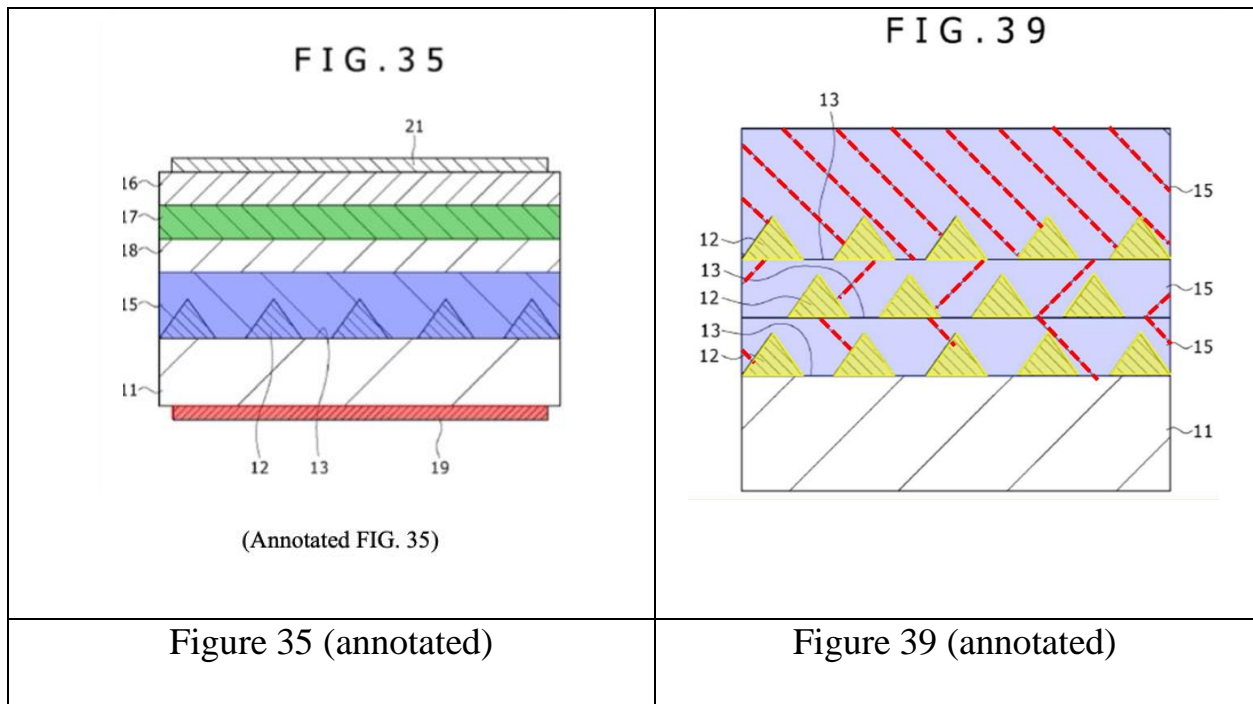
Petitioner argues that Figure 39 "shows a plurality of yellow protruded portions 12 . . . arranged within multiple **levels** of the blue semiconductor layer 15." Petition at 31 (emphasis added). Petitioner is incorrect. Instead, Ohmae discloses multiple semiconductor **layers**, with "protruded portions" arranged under each separate layer.

Ohmae discloses, with respect to the Figure 39 embodiment, that "the step of forming protruded portions 12 and growing the nitride-based III-V Group compound semiconductor layer 15 like the first embodiment starts from forming

protruded portions 12 on the substrate 11, followed by repeating the step plural times.” Ex. 1004 ¶ [0247]. Thus, Ohmae discloses forming the protruded portions 12, then growing the nitride-based III-V Group compound semiconductor layer 15, and then repeating the step “plural times,” i.e. forming another set of protruded portions 12 on top of the first semiconductor layer 15 and then growing a **second** semiconductor layer 15.

Petitioner relies on Dr. Shealy’s unsupported opinion that the separate semiconductor layers 15 in Figure 39 are “multiple sub-layers,” Ex. 1002 ¶ 78, but there is no support in Ohmae for Dr. Shealy’s opinion. Instead, he is conflating “multiple levels” as required by the claim, with the multiple semiconductor layers actually disclosed by Ohmae. Indeed, Ohmae uses the term “respective layers” to refer to the multiple semiconductor layers 15 that are grown and does not refer to these layers as “levels” of the same semiconductor layer 15. Ex. 1004 ¶ [0247]. When compared to the Figure 35 embodiment (as shown below), the contrast between the two is stark.

Moreover, Fig. 39 of Ohmae shows the semiconductors layers 15 are separated by staggered hatches to indicate that they are different layers, as depicted in the annotated version of the figure below.



For this reason, Ohmae also does not disclose or render obvious limitation

1d of claim 1.

VII. THE BOARD SHOULD DENY INSTITUTION ON GROUND 2 BECAUSE BAN DOES NOT RENDER OBVIOUS CLAIM 1 OF THE '117 PATENT

In Ground 2, Petitioner argues that claim 1 is rendered obvious by Japan Patent No. 2000-22283 to Ban *et al.* (“Ban,” Ex. 1005).

A. Overview of Ban

Ban discloses a semiconductor laser device. Ex. 1005 ¶ 0042. Ban’s third embodiment discloses a SiO₂ mask layer 34 “embedded in a stripe shape in the group III-V compound semiconductor layer on the substrate.” Ex. 1005 ¶ [0043].

B. Ban does not disclose or render obvious limitation 1[d] of Claim 1, “the semiconductor layer including a plurality of inhomogeneous

regions arranged within multiple levels of the semiconductor layer along a height direction of the semiconductor layer”

Ban does not disclose or render obvious limitation 1[d] of Claim 1 because it does not disclose or render obvious a “plurality of inhomogeneous regions.”

Instead, Ban discloses a SiO₂ mask layer 34. Neither Petitioner nor its expert demonstrate that the SiO₂ mask layer 34 is the claimed plurality of inhomogeneous regions, except by saying, without support, that they are.

Ban discloses a SiO₂ mask layer 34 “embedded in a stripe shape in the group III-V compound semiconductor layer on the substrate.” Ex. 1005 ¶ [0043]. Ban further discloses that “a SiO₂ mask layer 34 (having a thickness of 100 nm) is formed by plasma CVD or the like and a striped opening with a pitch of 4μm and a width of 1.5μm is formed in the [1-100] direction of the GaN by the photolithography and dry etching processes.” *Id.* ¶ [0045].

Neither Petitioner nor Dr. Shealy point to any disclosure or suggestion in Ban that the a SiO₂ mask layer 34 in Ban is “a plurality of inhomogeneous regions,” i.e. whether the portions of the mask layer have different compositions or compositional fluctuation, as discussed above in Section VI.B.1. Instead, Dr. Shealy summarily concludes that “[i]n my opinion, the SiO₂ mask layer constitutes an inhomogeneous region,” without any explanation. Ex. 1002 ¶ 92. Dr. Shealy’s conclusory testimony, which fails to offer any explanation as to how Ban’s SiO₂

mask layer 34 is the claimed “plurality of inhomogeneous regions” should thus be given little to no weight. *See TQ Delta*, 942 F.3d at 1357; *Kinetic Techs.*, IPR2014-00529, Paper 8 at 14-15.

Dr. Shealy also again improperly relies on the ’117 Patent to argue that because the growth methods for the SiO₂ mask layer 34 in Ban are also allegedly disclosed in the ’117 Patent, then Ban discloses or renders obvious this limitation. Again, it is improper to rely on the ’117 Patent’s own disclosure to demonstrate that the **prior art** discloses or renders obvious a claim limitation. *In re Ochiai*, 71 F.3d at 1570.

For this reason, Ban does not disclose or render obvious limitation 1d of claim 1.

VIII. THE BOARD SHOULD DENY INSTITUTION ON GROUND 3 BECAUSE SHUR DOES NOT RENDER OBVIOUS CLAIM 1 OF THE ’117 PATENT

In Ground 3, Petitioner argues that claim 1 is rendered obvious by W.O. Publication No. 2013/023197 to Shur et al. (“Shur,” Ex. 1006).

A. Overview of Shur

Shur discloses “use of composite inhomogeneities [to] obtain[] a more optimal semiconductor material for light emitting/transmission applications.” Ex. 1006 ¶ 0011. It discloses a semiconductor structure with a p-type cladding layer

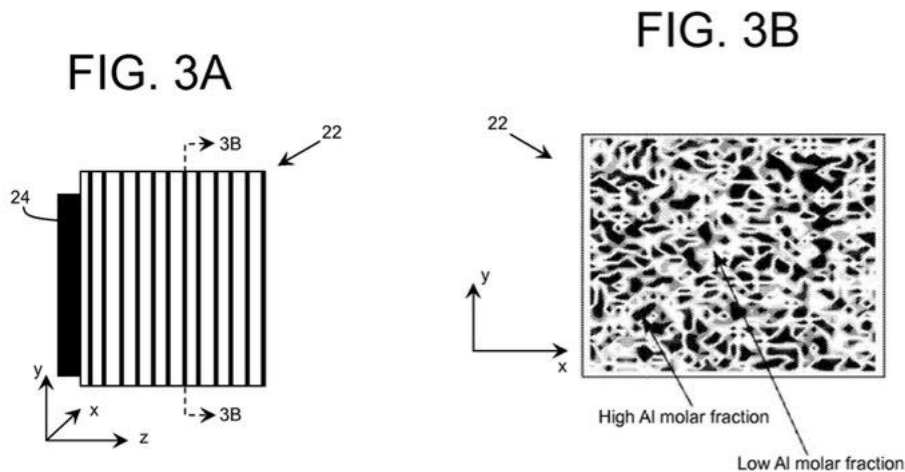
having multiple sub-levels. *Id.* ¶ 0045. Figure 5 depicts conductive channels that are disposed in these sub-levels. *Id.* ¶ 0054.

B. Shur does not disclose or render obvious limitation [1d] of Claim 1, “the semiconductor layer including a plurality of inhomogeneous regions arranged within multiple levels of the semiconductor layer along a height direction of the semiconductor layer”

Shur does not disclose or render obvious limitation 1[d] of Claim 1 because Petitioner’s identified “plurality of inhomogeneous regions” are not arranged “within multiple levels of the semiconductor layer along a height direction.” Petitioner identifies regions of high and low Aluminum composition, but ignores that the Aluminum composition profile depicted in Figure 3B is lateral across the layer and not arranged within multiple levels along a height direction. To make up for this shortcoming, Petitioner arbitrarily divides a single sub-layer in a different figure (Figure 5) into “multiple levels,” but ignores the multiple sub-layers depicted in Figure 5.

Shur discloses in Figure 3A a p-type cladding layer made up of “a $\text{Al}_x\text{Ga}_{1-x}\text{N}/\text{Al}_y\text{Ga}_{1-y}\text{N}$ superlattice, where molar fractions x and y correspond to the molar fractions of barriers and wells, respectively, and where the molar fraction x is greater than the molar fraction y ” and that “[e]ach barrier and well can be approximately a few nanometers in thickness.” Shur further discloses that Figure 3A “illustrates variation in aluminum composition within the layer 22 along the

height of the layer (e.g., indicated by direction z) in a direction normal to a surface of the layer 22 adjacent to the p-type metal 24.” Ex. 1006 at ¶¶ 0045. Shur then discloses that Figure 3B illustrates “variation in the aluminum composition of the p-type cladding layer 22 in the **lateral directions** (e.g., indicated by directions x and y) of the layer 22.” *Id.* at ¶¶ 0046 (emphasis added). Shur states that “areas with a high aluminum composition are indicated by the dark regions, while areas with a low aluminum composition are indicated by the lighter/bright regions.” *Id.* at ¶ 0045.



Petitioner, after quoting the above paragraphs of Shur, has Dr. Shealy summarily conclude that “A POSITA would understand that each layer of the multi-layer superlattice (as shown in FIG. 3A) includes a plurality of inhomogeneous regions within such layer (as shown in FIG. 3B).” Ex. 1002 ¶ 114. But once again, Dr. Shealy’s expert “opinion” lacks any explanation or analysis,

and instead provides a results-driven conclusion that does not follow from Shur's disclosure. *See TQ Delta*, 942 F.3d at 1357; *Kinetic Techs.*, IPR2014-00529, Paper 8 at 14-15. Dr. Shealy fails to explain how a figure depicting regions of differing Aluminum composition in a **lateral** direction somehow discloses the claimed "plurality of inhomogeneous regions arranged within multiple levels of the semiconductor layer along a **height direction**," i.e. a vertical direction.

Perhaps recognizing this deficiency, Petitioner also relies on Figure 5, which depicts "a schematic representation of an illustrative carrier path in a complicated energy landscape caused by the inhomogeneities according to an embodiment." Ex. 1006 ¶ 0054. Although Shur does not explicitly say so, the separation of the levels in Figure 5 appear to correspond to the alternating barrier and well sub-layers of the p-type cladding layer 22 depicted in Figure 3A. Thus, the p-type cladding layer 22 has multiple sub-layers or sub-levels that are depicted in Figures 3A and 5.

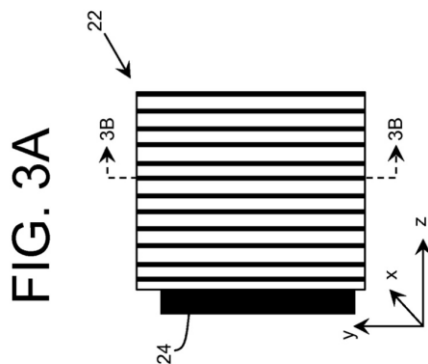


Figure 3A

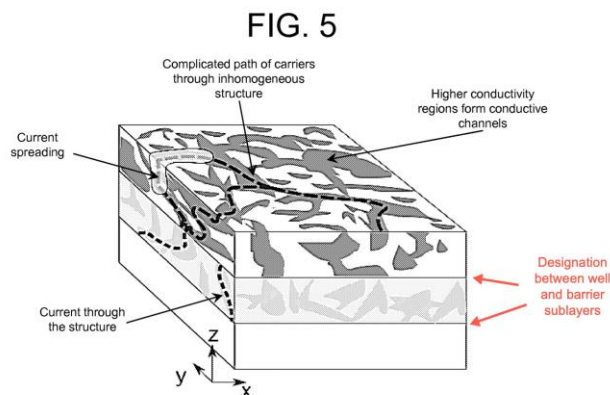


Figure 5 (annotated in red)

Figure 3A depicts alternating sublayers with differing Aluminum compositions. As discussed above, the black layers have a higher Aluminum composition than the white layers. But Figure 3A does not depict the regions of a particular Aluminum composition extending beyond a particular sub-layer. Thus, Figure 3A does not depict or disclose the claimed “plurality of inhomogeneous regions arranged within multiple levels of the semiconductor layer along a **height direction**.”

Similarly, Figure 5 discloses conductive regions within the individual sublayers of the p-type cladding layer 22. There is no disclosure in Figure 5 of the conductive regions being “arranged within **multiple** levels of the semiconductor layer,” rather, the regions are confined to one sub-level.

Again recognizing the weakness in its argument, Petitioner attempts to fashion multiple “levels” within a single sub-layer of the p-type cladding layer 22, as depicted in its annotated version of Figure 5 reproduced below.

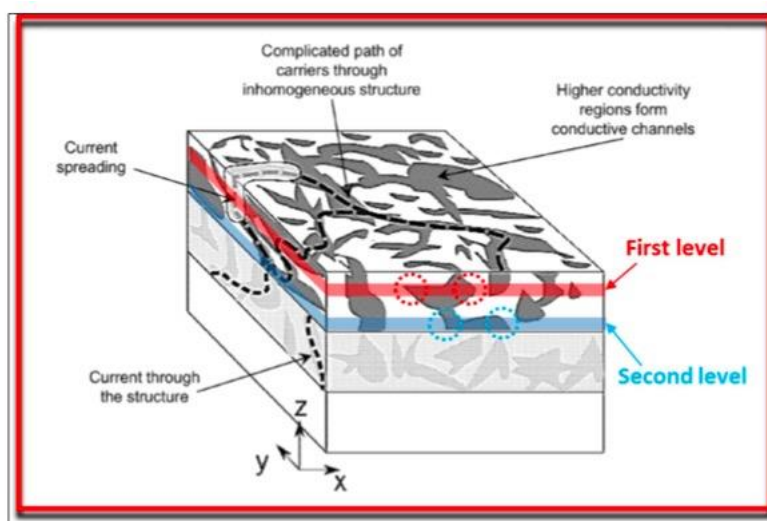


Figure 5 (annotations added by Petitioner)

But this division of one sub-layer into multiple “levels” is completely arbitrary.

Petitioner and Dr. Shealy have simply selected two random portions of the top sub-layer in Figure 5. Indeed, both Petitioner and Dr. Shealy include the identical boilerplate statement regarding these “levels” without any explanation as to why or how these levels actually exist within the reference and without any reference to Shur:

- “For example, a first level of the semiconductor layer is shaded in red and a second level of the semiconductor layer is shaded in blue.” Petition at 53.
- “For example, a first level of the semiconductor layer is shaded in red and a second level of the semiconductor layer is shaded in blue.” Ex. 1002 at ¶ 115.

But “[m]erely repeating an argument from the Petition in the declaration of a proposed expert does not give that argument enhanced probative value.” *Kinetic Techs.*, IPR2014-00529, Paper 8 at 15; *see also Apple Inc. v. Uniloc Luxembourg SA*, IPR2017-02202, Paper 8 at 16-17 (P.T.A.B. May 1, 2018) (affording no weight to “an unsupported verbatim statement in the Declaration” of an expert).

In fact, Shur cuts against dividing the individual barrier and well layers further into sub-layers or sub-levels, as Figure 5 already divides and designates these different sub-layers with shading.

For these reasons, Shur does not disclose or render obvious limitation 1d of claim 1.

C. Petitioner has not established that Shur discloses or renders obvious limitation 1[e] of Claim 1, “wherein some of the inhomogeneous regions in a first level of the semiconductor layer are vertically offset from inhomogeneous regions in a second level of the semiconductor layer”

Petitioner has failed to establish that Shur discloses or renders obvious limitation 1[e] of Claim 1.

Petitioner argues that its annotated Figure 5 shows “red-circled inhomogeneous regions in a first level of the semiconductor layer that are vertically offset from blue-circled inhomogeneous regions in a second level of the semiconductor layer.” Petition at 54-55. Yet again, there is no explanation in the Petition as to why the randomly circled portions of Shur’s conductive channel

constitute “regions” nor why the randomly annotated blue and red “levels” are actually levels of the semiconductor layer, or how these “regions” are “vertically offset,” are required by the claim limitation.

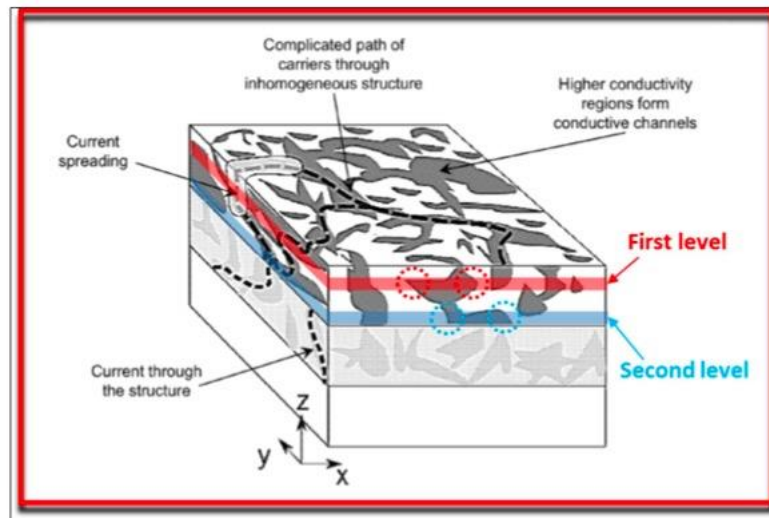


Figure 5 (annotations added by Petitioner)

Petitioner turns to its expert to support its deficient argument, but again, Dr. Shealy offers only a single conclusory sentence offering the ultimate opinion on the claim limitation without providing any predicate analysis or explanation of what Shur actually discloses: “In my opinion, each of the red circle or blue circle constitutes an inhomogeneous region within the semiconductor layer; thus, Shur discloses this limitation.” Petition at 55 (citing Ex. 1002 ¶ 117). This is improper and it is entitled to no weight. *See TQ Delta*, 942 F.3d at 1357; *Kinetic Techs.*, IPR2014-00529, Paper 8 at 14-15.

For this reason, Petitioner has failed to demonstrate that Shur discloses or renders obvious limitation 1e of claim 1.

IX. THE BOARD SHOULD DENY INSTITUTION ON GROUND 4 BECAUSE SAXLER DOES NOT RENDER OBVIOUS CLAIM 1 OF THE '117 PATENT

In Ground 4, Petitioner argues that claim 1 is rendered obvious by U.S. Patent Application Publication No. 2004/0031956 to Saxler (Ex. 1007).

A. Overview of Saxler

Saxler discloses “a Group III nitride based semiconductor structure.” Ex. 1007 ¶ 0016. Saxler discloses semiconductor layers composed of a wide bandgap material and additionally discloses incorporating a different bandgap semiconductor material inside the layers. *Id.* ¶ 0025.

B. Petitioner fails to provide any justification for its single-reference obviousness ground based on multiple embodiments

Petitioner’s Ground 4 is purportedly a single-reference obviousness ground based on Saxler. Petitioner states that “a POSITA would have understood that Saxler renders obvious each of the limitations recited in Claim 1 of the ’117 Patent. Petition at 57. However, Petitioner relies exclusively on the Figure 4 embodiment as disclosing claim limitations 1[a], 1[b], and 1[c]. Petition at 58-60. For limitations 1[d], 1[e], 1[f], and 1[g] however, Petitioner instead relies on the Figures 1, 3, and 4 embodiments, but offers no justification for its combination of Saxler’s different embodiments. *Id.* at 61-73.

Instead, Dr. Shealy states that “a POSITA would understand that Saxler’s teaching” in the Figure 1 embodiment can be applied to the Figure 4 embodiment. Ex. 1002 ¶ 134. He bases his opinion on Saxler’s statement that “embodiments of the present invention are not limited to such a structure” and “may be suitable for use in light emitting devices and/or lasers such as those described in” more than a dozen other patents. *Id.* ¶ 134. (“Saxler expressly discloses that embodiments of its invention (e.g., its teaching of the regions 22 embedded in the layer 20) can be applied to other light emitting diode structures and incorporated by reference several disclosures.”).

But there is no “teaching” in Saxler that the regions 22 in Figure 1 can be combined or applied to the structure depicted in Figure 4. Nor is there any motivation identified by Petitioner for doing so. Rather, the paragraph of Saxler that Dr. Shealy relies on is about applying Saxler embodiments to light emitting devices and/or lasers in **other** prior art patents. Ex. 1007 ¶ 0030.

Similarly, Petitioner and Dr. Shealy rely on the Figure 3 embodiment to disclose limitation 1[e] but offer no explanation for combining the Figure 3 and Figure 4 embodiments. Petition at 65-66; Ex. 1002 ¶ 135. Indeed, for this limitation, Petitioner and Dr. Shealy do not even mention the Figure 4 embodiment. *Id.*

For these reasons and those discussed *supra* with respect to Ohmae (*see supra* Section IX.B), Petitioner has failed to established a reasonable likelihood that it would prevail with respect to Ground 4.

C. Petitioner has not established that Saxler discloses or renders obvious limitation 1[a], “an active region”

Petitioner relies on optional layer 36 in Saxler’s Figure 4 embodiment, which includes an “may be provided between the first layer 32 and a third layer 38 and may have a lower bandgap than that of the first layer 32 and the third layer 38 to provide a well region for the device.” Ex. 1007 at ¶ 0026.

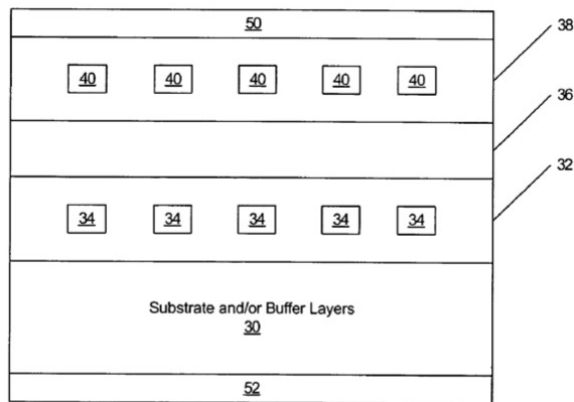


Figure 4

Saxler also discloses that “the first layer 32, second layer 36 and/or third layer 38 may be multiple layers, for example, in a multi-quantum well embodiment of the present invention.” *Id.* at ¶ 0028.

The active region refers to a layer where holes and electrons are injected and recombination occurs to emit light, and the electrons are injected from the negative type semiconductor layer, and the holes are injected from the positive type semiconductor layer. As the '117 Patent discloses and as Dr. Shealy similarly acknowledges in his declaration, “during operation of the LED, a voltage bias applied across doped layers leads to injection of electrons and holes into an active layer where electron-hole recombination leads to light generation.” Ex. 1001 at 1:39-42; Ex. 1002 ¶ 37, 44. But Petitioner points to no disclosure in Saxler regarding any recombination of electrons and holes in or any light emission by second layer 36; indeed, layer 36 is described by Saxler as being “optional,” further cutting against this layer being the claimed “active region.” Saxler only explains that the optional second layer 36 is a layer with a low bandgap.

Additionally, Petitioner does not actually identify which of these layers is the claimed “active region” in its invalidity theory. Instead, Petitioner relies on Dr. Shealy’s threadbare opinion to supply the ultimate conclusion for this claim limitation, without any analysis or explanation: “A POSITA would understand that because FIG. 4 represents a vertical diode structure that can be applied to light emitting devices, the ‘well region’ or ‘multi-quantum well’ semiconductor layers disclosed by Saxler are active regions for the semiconductor device.” Ex. 1002 at ¶ 125. But Dr. Shealy states that any of the layers 32, 36, or 38 could be the

claimed “active region,” *id.*, thus Petitioner has failed to identify which layer is the claimed “active region.” The fact that Petitioner later contends that layer 36 is the claimed “active region” when discussing limitation 1[c] further demonstrates Petitioner’s failure to properly disclose its argument. In any event, as discussed above, Petitioner has failed to present any evidence that any of these layers are the claimed “active region.”

For this reason, Petitioner has failed to demonstrate that Saxler discloses or renders obvious limitation 1a of claim 1.

D. Petitioner has not established that Saxler discloses or renders obvious limitation 1[b], “a metallic contact”

Saxler does not disclose or render obvious limitation 1[b] of Claim 1 because it does not disclose a metallic contact. Saxler merely discloses, in Figure 4, that “[c]ontacts 50 and 52 may also be provided.” Ex. 1007 ¶ 0026. Petitioner argues that contact 50 is made of metal, but there is no support in Saxler for that assertion, nor does Petitioner point to any. Instead, Petitioner turns to Dr. Shealy to offer attorney argument masked as an expert opinion: “A POSITA would understand that contact 50 (and alternatively, contact 52) is a metallic contact of the semiconductor device; specifically, a POSITA would understand that contact 50 is an ohmic contact made of metal.” Petition at 59 (citing Ex. 1002 ¶ 126). Dr.

Shealy offers no explanation or basis for why a POSITA would understand that contact 50 is “an ohmic contact made of metal”; he merely says so.

Petitioner appears to be making an implied inherency argument without explicitly saying so. A POSITA would understand that the contact in Saxler could, for example, be made of Indium Tin Oxide (ITO), a common p-type contact material. Ex. 2003 at 167-68. ITO is *not* metallic. *Id.* at 168. Thus, the mere presence of a contact in Saxler does not *necessarily* disclose a metal contact.

To the extent Petitioner relies on an obviousness rationale for this element, it has utterly failed to disclose it. There is no motivation to combine supplied nor any discussion of reasonable expectation of success. Thus, the Petition fails on this element.

Petitioner next tries to rely on a patent incorporated by reference into Saxler, but this too fails. Petition at 59-60 (“Saxler incorporates by reference U.S. Patent No. 6,201,262, which discloses forming an ohmic contact to a conductive substrate.”). In incorporating by reference the ’262 Patent, Saxler states that “embodiments of the present invention may be suitable for use in light emitting devices and/or lasers such as those described in U.S. Pat. No. 6,201,262.” Ex. 1007 ¶ 0030. There is no incorporation by reference of the ’262 Patent as it relates specifically to an ohmic contact, and indeed, the word “ohmic” does not even appear in the ’262 patent’s specification, only in the claim limitation that Petitioner

and Dr. Shealy randomly seize upon. Furthermore, Saxler incorporates by reference **over a dozen** prior art patents, including the '262 Patent. Petitioner and Dr. Shealy have cherry-picked two lines from a prior art patent generally incorporated by reference with a dozen others, but that cannot save their argument.

For this reason, Petitioner has failed to demonstrate that Saxler discloses or renders obvious limitation 1b of claim 1.

E. Saxler does not disclose or render obvious limitation 1[d], “the semiconductor layer including a plurality of inhomogeneous regions arranged within multiple levels of the semiconductor layer along a height direction of the semiconductor layer”

Saxler does not disclose or render obvious limitation 1[d] for two reasons.

First Saxler does not disclose “a plurality of inhomogeneous regions.” Instead, in Figure 1, Saxler discloses regions that have a different bandgap than the material comprising a semiconductor layer, but neither Petitioner nor its expert demonstrate that these regions are the claimed inhomogeneous regions, except by saying, without support, that they are. Second, Saxler does not disclose regions arranged within multiple levels of the semiconductor layer along a height direction. Instead, Figure 3 merely depicts a semiconductor layer 20 with regions 22 but Saxler does not disclose the orientation of the figure.

Saxler discloses, in the Figure 1 embodiment, “a first layer 20 of wide bandgap semiconductor material having a first bandgap has included therein

regions 22 of wide bandgap semiconductor material having a second bandgap.”

Ex. 1007 ¶ 0018. Figure 1 depicts a “top view of a layer of wide bandgap semiconductor material” and Figure 2 depicts a cross section of the layer of Figure 1. Figure 2 additionally depicts regions 22 arranged in a single level of layer 20.

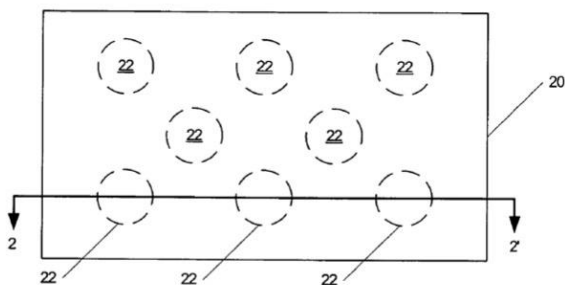


Figure 1

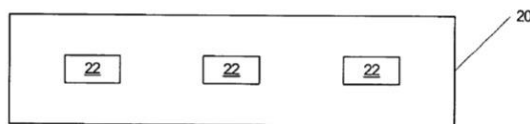


Figure 2

Dr. Shealy offers yet another conclusory opinion that “the regions 22 constitute inhomogeneous regions because these regions can include wider bandgap material, transparent regions, and contribute to higher electrical conductivity of the semiconductor layer 20 in which the regions 22 are embedded.”

Ex. 1002 ¶ 131. But there is no disclosure or teaching in Saxler that the regions 22 are transparent and neither Petitioner nor Dr. Shealy point to such a disclosure.

Instead, Petitioner and Dr. Shealy rely on the teachings of the '117 Patent with

respect to the properties of the claimed plurality of inhomogeneous regions.

Petition at 62-63 (citing Ex. 1002 ¶ 131). As discussed *supra*, this is improper and cannot fill the hole in Petitioner's deficient prior art. *See* Section VI.C.1.

Petitioner and Dr. Shealy also fail to demonstrate that the regions have different compositions within portions of the regions or compositional fluctuation, as required by Patent Owner's proposed construction.

Petitioner and Dr. Shealy then rely on Figure 3 as disclosing the arrangement of regions in multiple levels, Petition at 63-64, Ex. 1002 ¶ 132, but there is no disclosure in Saxler regarding the composition of the regions 22 in the Figure 3 embodiment. Ex. 1007 ¶ 0021. Tellingly, neither Petitioner nor Dr. Shealy cite to or rely on the specification's description of Figure 3, and instead create their own summation of what Figure 3 depicts:

“Annotated FIG. 3 of Saxler . . . shows the semiconductor layer 20 including a plurality of inhomogeneous regions (the regions 22; shown in yellow) arranged within multiple levels of the semiconductor layer (layer 20) along a height direction (vertical direction) of the semiconductor layer.”

Ex. 1002 ¶ 132. However, there is no disclosure in Saxler regarding whether the orientation of Figure 3 depicts a cross section or top view. There is therefore no support for Petitioner's and Dr. Shealy's claim that Figure 3 discloses regions 22 arranged within multiple levels of layer 20 **along a height direction**, as required

by the claim. And, Petitioner cannot rely on Figure 4 on its own as disclosing this limitation, as the regions 40 and 34 are in **separate** semiconductor layers, and are not arranged within one semiconductor layer as required by the claim. As discussed *supra*, Petitioner's only recourse is to mix-and-match the Figures 1, 3, and 4 embodiments, which is improper.

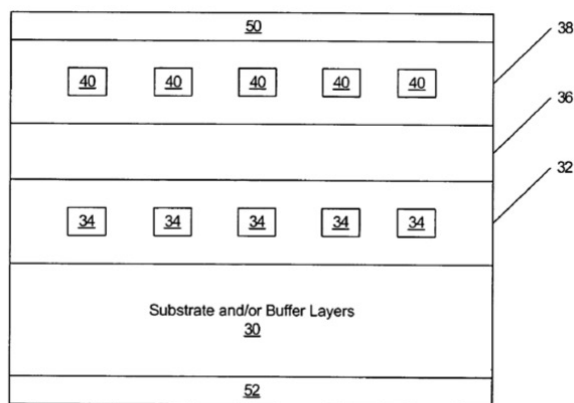


Figure 4

For these reasons, Saxler does not disclose or render obvious limitation 1d of claim 1.

- F. Saxler does not disclose or render obvious limitation 1[e], “wherein some of the inhomogeneous regions in a first level of the semiconductor layer are vertically offset from inhomogeneous regions in a second level of the semiconductor layer”**

Saxler does not disclose or render obvious limitation 1[e] of Claim 1.¹ As discussed above, there is no disclosure in Saxler regarding whether the orientation of Figure 3 depicts a cross section or top view. Petitioner does not even rely on the description of Figure 3 in arguing that Saxler discloses this claim limitation, improperly citing to Saxler's discussion of the Figure 1 embodiment. Petition at 65 (citing Ex. 1007 ¶ 0021). There is therefore no support for Petitioner's and Dr. Shealy's claim that Figure 3 discloses regions 22 in one level that are vertically offset from regions 22 in a second level.

For this reasons, Saxler does not disclose or render obvious limitation 1e of claim 1.

X. INSTITUTION IS NOT APPROPRIATE UNDER 35 U.S.C. § 325(D)

Petitioner argues that Patent Owner wrongly argued to the Patent Office during prosecution that Saxler "does not disclose or suggest a single semiconductor layer having a plurality of inhomogeneous regions arranged within multiple levels of the single semiconductor layer." Petition at 74. Petitioner argues that Saxler along with Dr. Shealy's expert testimony "shows that Saxler discloses [limitation 1[d] and at least renders it obvious," and "[a] material error therefore occurred

¹ As discussed *supra*, in any event, Saxler does not disclose or render obvious limitation 1[d].

during prosecution of the '117 patent because . . . the Applicant misrepresented or ignored Saxler's disclosures." *Id.*² Petitioner is incorrect.

During prosecution, the examiner rejected method claims 8-10 (which are not challenged by Petitioner here) over Saxler in combination with another Saxler reference. Ex. 1018, 163-64. To overcome that rejection, Patent Owner argued "FIG. 4 of Saxler . . . shows a first set of discontinuous regions 34 in a first layer 32 and another set of discontinuous regions 40 in a third layer 38, with a second layer 36 separating layers 32 and 38. Both the first layer 32 and the third layer 38 are separate and distinct semiconductor layers. Each of these layers in Saxler . . . only have a single level of discontinuous regions and not multiple levels. In view of these distinctions, [the first Saxler reference] in view of Saxler . . . does not disclose or suggest a single semiconductor layer having a plurality of inhomogeneous regions arranged within multiple levels of the single semiconductor layer. Ex. 1018 at 229. This is consistent with Patent Owner's argument *supra* that Saxler does not disclose or render obvious limitation 1[d], even in view of Dr. Shealy's completely conclusory "expert testimony." *See supra* section IX.E.

² Petitioner cites to pages 74, 100, and 102 of the '117 patent's file history in support of its argument, but these page citations are not accurate.

Petitioner also argues that although Shur was disclosed to the Patent Office in an IDS during prosecution, institution is still appropriate under § 325(d).

Petition at 73. Petitioner ignores the *Advanced Bionics* case it cites on page 73, which held that “[p]reviously presented art includes . . . art provided to the Office by an applicant, such as on an Information Disclosure Statement (IDS).”

Advanced Bionics LLC v. Med-EL Elektromedizinische Geräte GMBH, IPR2019-01469, Paper 6 at 7-8 (P.T.A.B. Feb. 13, 2020) (precedential, designated March 24, 2020).

And Petitioner ignores that the Board has denied institution under § 325(d) where a petitioner relied on art that was submitted in an IDS that the examiner considered but did not issue a rejection over. In *Biocon Pharma Ltd. v. Novartis Pharms. Corp.*, the petitioner relied on two prior art references that were presented to the examiner in an IDS. IPR2020-01263, Paper 12, at 9 (P.T.A.B. Feb. 16, 2021). The panel, relying on *Advanced Bionics*, found that these references were previously presented art under § 325(d) and denied institution. *Id.*

Similarly, here Shur was submitted in an IDS by the Patent Owner, and the examiner considered the reference during prosecution. Ex. 1018 at 172-73 (IDS disclosing Shur and stating that “ALL REFERENCES CONSIDERED EXCEPT WHERE LINED THROUGH”). Thus, Shur is previously presented art under § 325(d).

For these reasons, the PTAB should exercise its discretion under 35 U.S.C. § 325(d) to deny institution of trial.

XI. THE BOARD SHOULD EXERCISE ITS DISCRETION TO DENY INSTITUTION

For *Inter Partes* Review proceedings 35 U.S.C. “[Section] 314(a) invests the Director with discretion on the question whether to institute review.” *SAS Institute v. Iancu*, 138 S. Ct. 1348, 1351, (2018). *See also Cuozzo Speed Techs., LLC v. Lee*, 136 S. Ct. 2131, 2140 (2016) (“[T]he agency’s decision to deny a petition is a matter committed to the Patent Office’s discretion.”).

In determining whether to exercise discretion to not institute in view of parallel proceedings in a district court, the Board considers the six factors enumerated in the *Fintiv* order:

1. Whether the court granted a stay or evidence exists that one may be granted if a proceeding is instituted;
2. Proximity of the court’s trial date to the Board’s projected statutory deadline for a final written decision;
3. Investment in the parallel proceeding by the court and the parties;
4. Overlap between issues raised in the petition and in the parallel proceeding;

5. Whether the petitioner and the defendant in the parallel proceeding are the same party; and
6. Other circumstances that impact the Board's exercise of discretion, including the merits.

See Apple Inc. v. Fintiv, Inc., IPR2020-00019, Paper 11 at 5–6 (P.T.A.B. Mar. 20, 2020) (precedential, designated May 5, 2020) (“*Fintiv*”).

The Director recently issued a memorandum further holding that the PTAB may not deny discretion under *Fintiv* if (A) the petition the merits are “compelling” and “would plainly lead to a conclusion that one or more claims are unpatentable”; (B) the parallel proceeding is an ITC investigation; or (C) the Petitioner has presented a stipulation not to pursue in a parallel proceeding the same grounds or any grounds that could have reasonably been raised before the PTAB. Ex. 2004 (June 21, 2022 Director’s Memorandum). As set forth below, none of these exceptions are applicable to the present case.

Petitioner filed its petition in this proceeding nearly a full year after Patent Owner filed a case in the United States District Court for the Western District of Texas on April 2, 2021. Ex. 2005 (Complaint). In the parallel Western District of Texas Case, Patent Owner alleges Petitioner infringes the ’117 Patent that is challenged by Petitioner here. The parties have nearly completed *Markman* briefing, and the Court scheduled the *Markman* hearing to occur on August 29,

2022. Ex. 2006 (June 22, 2022 Amended Scheduling Order). In the last five cases to issue *Markman* orders in the Western District of Texas, the *Markman* Orders were entered in a range from the same day as the scheduled hearing to 35 days afterwards. Exs. 2007-2011 (Five Docket Exhibits).³ Thus an order would reasonably be expected by October 4, 2022 or earlier.

Under the schedule, fact and expert discovery are set to conclude by May 18, 2023, and a trial is projected to commence on or about November 6, 2023.

A. *Fintiv* Factor 1: There Is No Stay In The Parallel Western District Of Texas Case

There is no stay in the parallel litigation in the Western District of Texas Case, and there is no reason to believe that a stay will be granted. Indeed, Petitioner has not even moved for a stay in that case which, at minimum, makes this factor neutral, and in view of the facts here, weighs in favor of denying institution. *See Daiichi Sankyo, Inc. v. Seagen Inc.*, PGR2021-00042, Paper 12 at 14 (P.T.A.B. June 24, 2021) (finding this factor neutral because the record lacked sufficient evidence to suggest that a stay had been given or would be granted in the future in view of lack of request for stay and Petitioner's assertion that it would seek a stay upon institution). However, in addition to the lack of a stay or request

³ In certain instances in the attached cases, the hearing was canceled the day of the hearing and an Order issued shortly afterwards. Exs. 2008-2009 (*FracShack* docket, *Microparing* docket).

for a stay, Petitioner has not expressed an intent to seek a stay, and, of the 11 patents asserted by Patent Owner in the Western District of Texas Case, Petitioner filed PTAB challenges against just two: the '117 Patent and U.S. Patent No. 8,552,562. Additionally, Judge Albright, the presiding judge, has only granted 4 of 10 contested motions for stay pending *Inter Partes* Review since 2019. *See* Ex. 2012 (Docket Navigator Motion Success Rate) (summary of contested motions to stay pending *Inter Partes* Review from the Docket Navigator website). Judge Albright has stated that he will very rarely grant stays pending *Inter Partes* Review. Ex. 2013 (IPLaw360 Article).

In light of these facts, and the case schedule entered by the district court, there is no evidence that the Western District of Texas would enter a stay, even if review were instituted. Accordingly, this factor weighs in favor of denying institution under 35 U.S.C. § 314(a).

B. *Fintiv* Factor 2: Trial May Occur in The Western District Of Texas Case Before or Around The Board's Projected Statutory Deadline

According to the *Fintiv* decision, “[i]f the court’s trial date is earlier than the projected statutory deadline, the Board generally has weighed this fact in favor of exercising authority to deny institution...” *Apple Inc. v. Fintiv, Inc.*, IPR2020-00019, Paper 11 at 9. Here it is possible that the parties will try the '117 Patent

and/or other asserted patents in the Western District of Texas case prior to or at least concurrent with the Board's statutory deadline.

The projected statutory deadline for the Board to issue a final written decision, absent any extension, is in November of 2023 based on a timeline of no more than 15 months from the filing of this Preliminary Response (3 months to institution plus 12 additional months to final written decision).

The schedule in Western District of Texas Case sets a trial date for November 6, 2023 concurrent with the projected statutory deadline. *See* Ex. 2014 (2/24/22 Scheduling Order) at 5. This is actually longer from filing (950 days) than the average time to trial in the Western District of Texas so there is no reason to expect it to be further delayed. *See* Ex. 2015 (Docket Navigator Time to Trial) (showing 774 days for time to trial in 2022 according to the Docket Navigator website). Accordingly, this factor may weigh in favor of denying institution or it is at worst neutral.

C. *Fintiv* Factor 3: The Investment Of The Parties In The Western District Of Texas Case Weighs In Favor Of Denying Institution

This factor considers “the amount and type of work already completed in the parallel litigation by the court and the parties at the time of the institution decision.” *Apple Inc. v. Fintiv, Inc.*, IPR2020-00019, Paper 11 at 9. Specifically, the Board would consider whether the court in the parallel proceeding will have

issued substantive and/or claim construction orders. *Id.* at 9-10. This factor “is related to the trial date factor, in that more work completed by the parties and the court in the parallel proceeding tends to support the arguments that the parallel proceeding is more advanced, a stay may be less likely, and instituting would lead to duplicative costs.” *Id.* at 10.

This factor weighs significantly in favor of discretionary denial under Section 314(a). Specifically, by the time that an institution decision is due in this proceeding, on November 7, 2022, the parallel proceedings will have advanced significantly. Patent Owner and Petitioner have already nearly completed the *Markman* process. The Court will, based on previous averages, issue its *Markman* Order no later than October 4, 2022 and likely earlier. *See* Section XI, *supra* discussing times from *Markman* hearing to ruling. Petitioner and Patent Owner will also have served final contentions and will be significantly into the fact discovery period. *See* Ex. 2014 (2/24/2022 Scheduling Order) at 4. *See Kiss Nail Prods., Inc. v. Lashify, Inc.*, PGR2021-00046, Paper 12 at 9-10 (P.T.A.B. Aug. 9, 2021) (“[I]f, at the time of institution, the court in the parallel proceeding has issued ‘substantive orders related to the patent at issue in the petition’ or ‘claim construction orders,’ this favors denial.”). In sum, the parties already have expended significant effort in the parallel proceeding, and will have expended significantly more time, effort and money in the parallel proceeding by the time of

the Board's decision regarding institution. Given the significant deadlines in the Western District of Texas Case that will have passed and that will be quickly approaching by the time an institution decision issues, a stay is unlikely, and failing to deny institution would lead to significant duplicative costs.

D. *Fintiv* Factor 4: The Issues Substantially Overlap

This factor also favors discretionary denial. The claim challenged in the Petition is the same claim asserted in the Western District of Texas Case. Thus, the one asserted claim at issue in the parallel case is at issue here and the claim at issue in the parallel case is challenged in the Petition. Ex. 2016 (Invalidity Contentions) at 2. Even more importantly, however, Petitioner asserts the same prior art in the Western District of Texas Case that it asserts here. Specifically, in its invalidity contentions in that case, Petitioner asserts that claim 1 of the '117 Patent is anticipated or rendered obvious based on each of the prior art references (Ohmae, Ban, Shur, and Saxler) presented in this Petition. Ex. 2016 (Invalidity Contentions) at 30. *See Apple Inc. v. Fintiv, Inc.*, IPR2020-00019, Paper 11 at 12-13. (Where "the petition includes the same or substantially the same claims, grounds, arguments, and evidence as presented in the parallel proceeding, this fact has favored denial."). Accordingly, Factor 4 weighs in favor of discretionary denial.

E. *Fintiv* Factor 5: Petitioner Is The Defendant In The Western District Of Texas Case

Petitioner in this proceeding, Lite-On Technology Corporation, is the same party accused of infringement in the parallel Western District of Texas Case by Patent Owner, Sensor Electronic Technology Inc. Ex. 2005 (Complaint). The parties are the same in both this proceeding and the Western District of Texas Case, weighing in favor of discretionary denial. *See Supercell Oy v. Gree, Inc.*, PGR2020-00039, Paper 14 at 18 (finding Petitioner and Defendant in the parallel district court proceeding were the same and thus this factor weighed in favor of denying institution).

F. *Fintiv* Factor 6: Other Circumstances

Petitioner has not demonstrated a reasonable likelihood that it would prevail in showing that the claims are unpatentable. As explained above, Petitioner has failed to establish a reasonable likelihood that it would prevail with respect to the challenged claim. Accordingly, this factor favors denying institution. *See Apple Inc. v. Fintiv, Inc.*, IPR2020-00019, Paper 11 at 14–15 (“[I]f the merits of a ground raised in the petition seem particularly strong on the preliminary record, this fact has favored institution.”); *Kiss Nail Products*, PGR2021-00046, Paper 12 at 19 (finding the “merits of Petitioner’s arguments [did not] outweigh the other *Fintiv* factors.”). But even if Petitioner had shown a reasonable likelihood it might prevail with respect to at least one of the challenged claims, Petitioner certainly has not made out the

type of “particularly strong” prior art showing to overcome the other factors that weigh significantly in favor of discretionary denial in this case.

G. None of the Exceptions Set forth in the Director’s Memorandum are Applicable to this Petition

The Board should grant institutions since none of the exceptions that would foreclose a *Fintiv* analysis are present in the instant petition. Ex. 2014 (6/21/2022 Director’s Memorandum). For the reasons set forth above, the Petition does not justify institution at all, let alone set forth “compelling” evidence. The Western District of Texas Case is a district court proceeding, not an ITC proceeding. Finally, Petitioner has not presented a stipulation not to pursue in a parallel proceeding the same grounds or any grounds that could have reasonably been raised before the PTAB. Accordingly, the Board should exercise its discretion under *Fintiv* to deny institution.

XII. CONCLUSION

For the foregoing reasons, Patent Owner respectfully requests that *inter partes* review is not instituted.

Dated: August 8, 2022

Respectfully submitted,

/David C. Radulescu/
David C. Radulescu, Ph.D.
(Reg. No. 36,250)
david@radip.com
RADULESCU LLP
5 Penn Plaza, 19th Floor
New York, NY 10001
Phone: (646) 502-5950
Facsimile: (646) 502-5959

Attorneys for Patent Owner
Sensor Electronic Technology, Inc.

CERTIFICATE OF WORD COUNT

Pursuant to 37 C.F.R. § 42.24, the undersigned attorney for the Patent Owner declares that this Preliminary Response to Petitioner's Inter Partes Review of U.S. Patent No. 9,923,117 (Sections I through XII) has a total of **9,945** words, according to the word count tool in Microsoft Word™.

Date: August 8, 2022

RADULESCU LLP

5 Penn Plaza, 19th Floor
New York, NY 10001
Phone: (646) 502-5950
Fax: (646) 502-5959

/s/ David C. Radulescu

David C. Radulescu, Ph.D.
Attorney for Petitioner Sensor
Electronic Technology, Inc.
(Reg. No. 36,250)
david@radip.com

CERTIFICATE OF SERVICE

The undersigned hereby certifies that a true and correct copy of the foregoing PRELIMINARY RESPONSE TO PETITIONER'S *INTER PARTES* REVIEW OF U.S. PATENT NO. 9,923,117 has been served in its entirety this 8th day of August 2022, on Petitioner's lead and backup counsel by the following email addresses:

Matthew W. Hindman
(Reg. No. 57,396)
**PILLSBURY WINTHROP SHAW
PITTMAN LLP**
2550 Hanover Street
Palo Alto, CA 94304
Telephone: 650.233.4087
Facsimile: 650.233.4545
Matthew.hindman@pillsburylaw.com

Christopher Kao
(*Pro Hac Vice* to be requested)
Brock S. Weber
(*Pro Hac Vice* to be requested)
**PILLSBURY WINTHROP SHAW
PITTMAN LLP**
Four Embarcadero Center, 22nd Floor
San Francisco, CA 94111
Telephone: 415.983.1000
Facsimile: 415.983.1200
christopher.kao@pillsburylaw.com
brock.weber@pillsburylaw.com

Jack Ko, Ph.D.
(Reg. No. 54,227)
**PILLSBURY WINTHROP SHAW
PITTMAN LLP**
501 West Broadway, Suite 1100
San Diego, CA 92101-3575
Telephone: 619.234.5000
Facsimile: 619.236.1995
jack.ko@pillsburylaw.com

Dated: August 8, 2022

Respectfully submitted,

/David C. Radulescu/
David C. Radulescu, Ph.D.
(Reg. No. 36,250)
david@radip.com
RADULESCU LLP
5 Penn Plaza, 19th Floor
New York, NY 10001
Phone: (646) 502-5950
Facsimile: (646) 502-5959

Attorneys for Patent Owner
Sensor Electronic Technology, Inc