

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

BOE Technology Group Co., Ltd.
Petitioner

v.

Optronic Sciences LLC
Patent Owner

Inter Partes Review No.: IPR2024-01132

**PETITIONER'S REPLY TO PATENT OWNER'S RESPONSE TO
PETITION FOR INTER PARTES REVIEW OF U.S. PATENT 7,586,121**

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Exhibit No.	Description
1001	U.S. Patent No. 7,586,121 (121 Patent)
1002	Declaration of Dean Neikirk in Support of Petition for Inter Partes Review of U.S. Patent 7,586,121 (121 Patent)
1003	U.S. Patent No. 7,330,168 (“Anzai”)
1004	U.S. Patent No. 6,992,332 (“Yamazaki”)
1005	File History of U.S. Patent No. 7,586,121
1006	Polysilicon TFT Technology for Active Matrix OLED Display by Mark Stewart, et. al., (“Stewart”)
1007	U.S. Patent Publication No. 2003/0067266 (“Kim”)
1008	U.S. Patent Publication No. 2006/0208979 (“Fish”)
1009	PCT Publication No. WO 2003/71511 (“Choi”)
1010	U.S. Patent No. 6,476,419 (“Yasuda”)
1011	Declaration Of Mr. Zachary Loney In Support Of Motion For Pro Hac Vice Admission
1012	Electronic Packaging, Microelectronics, and Interconnection Dictionary (1993)
1013	Modern Dictionary of Electronics (1999)
1014	The Authoritative Dictionary of IEEE Standards Terms (2000)
1015	July 16, 2025, Deposition Transcript of Dr. Eric Bretschneider, IPR2024-01132
1016	U.S. Patent No. 7,226,801
1017	EX2008 in IPR2024-01131 for US Patent 7,226,801 (Bretschneider Declaration)
1018	U.S. Patent Publication No. 2007/0002212
1019	U.S. Patent Publication No. 2009/0272977
1020	Declaration of Dean Neikirk in Support of Petitioner's Reply

I. INTRODUCTION

Patent Owner's Response (Paper 25, "POR") fails to rebut the Petition's (Paper 1, "Pet.") showing that claims 1-7 are anticipated or unpatentable.

II. CLAIM CONSTRUCTION

A. Passivation Layer

A POSITA would understand from the 121 patent that there is no special meaning ascribed to "passivation layer" other than it is an insulation material. Pet., 19; EX1002, ¶61.

Patent Owner argues that "passivation layer" has a plain and ordinary meaning in the art. POR, p. 7. However, Patent Owner then provides a very narrow construction: "A passivation layer is a layer of a material that renders the surface layer below chemically passive or unreactive, especially by tying up dangling bonds."¹ *Id.* Patent Owner's expert testified that in the field of semiconductors, all passivation layers meet this construction, and that tying up dangling bonds is a requirement for a layer to be a passivation layer. EX1015, 13:8-12; 17:10-21. The Board should reject this construction.

¹ Patent Owner explains dangling bonds are electrons on the surface of a semiconductor crystal that negatively impact the performance of the semiconductor. Yet, passivation layer 212 of the 121 patent is formed on ILD 208 and metal patterns 210A/210B, not a semiconductor. EX1001, 5:34-36; Figs. 2.

First, there is zero intrinsic support for this construction. Patent Owner's sole citation to the 121 patent for the proposition that its construction is "consistent with" the 121 patent is the following single sentence: "A layer of passivation silicon nitride (SiN) 212 is formed over ILD 208 and second metal patterns 210A and 210B." POR, p. 7, citing EX1001, 5:34-36. Nothing in this sentence, or elsewhere in the 121 patent, discloses or even suggests that passivation layer 212 renders surfaces of ILD 208 or second metal patterns 210A/210B on which it is formed chemically passive or unreactive, let alone by tying up dangling bonds. EX1020, ¶8.

Second, Patent Owner and its expert cherry picked a narrow definition in the extrinsic evidence to make it look like POSITA's only use the term passivation layer in the field of semiconductors to refer to layers that render the underlying layer chemically passive or unreactive by tying up dangling bonds. POR at 7 (citing EX2010 and EX2011). However, it is well known that POSITA's in the field of semiconductors use the term "passivation layer" more broadly to refer to any layer that provides environmental protection to the layer below simply by acting as a physical barrier from environmental conditions, whether or not any chemical bonding occurs that renders the surface layer below chemically passive or unreactive by tying up dangling bonds. EX1020, ¶9. The following dictionary definitions are just some examples:

- “Passivation: (1) The application of an insulating layer of glass, SiO₂, or nitride over circuits and circuit elements ***for protection against moisture, contaminants, or other harmful conditions.*** (2) The growth of an oxide or nitride layer on the surface of a semiconductor ***to provide electrical stability by isolating the surface from electrical and chemical conditions in the environment.***” EX1012, at 140 (emphasis added).
- “Passivation: “5. The technique of providing a semiconductor device chip with an isolating layer or “skin” ***that protects it from contamination by unwanted impurity atoms or molecules.***....7. The formation of an insulating layer directly over a circuit or circuit element ***to protect the surface from contamination, moisture, or particles.***” EX1013, at 542 (emphasis added).
- “Passivation: The process or process ***(physical or chemical)*** by means of which a metal becomes passive.” EX1014, at 798 (emphasis added).

These dictionaries confirm that the plain and ordinary meaning of passivation layer encompasses a layer that serves as a physical barrier, with no consideration that the underlying layer be rendered chemically passive or unreactive by tying up dangling bonds. EX1020, ¶10. In fact, EX1014 expressly

acknowledges the process can be “physical or chemical.” In the context of the 121 patent, this protection can be provided by any insulation layer. *Id.*

Patent Owner's expert admitted when coming up with Patent Owner's construction of passivation layer, he only consulted one dictionary (Wiley Dictionary, EX2010), and did not search for any other dictionaries for the definition of passivation layer. EX1015, 30:16-20; 31:6-22; EX1020, ¶11. This head-in-the-sand approach explains why Patent Owner's expert adopted an overly narrow construction that should be rejected.

Remarkably, Patent Owner's expert openly admitted he had no opinion on whether the passivation layer in the 121 patent meets his own construction. Specifically, the 121 patent discloses that passivation layer 212 is formed over ILD 208 and second metal patterns 210A and 210B. EX1001, 5:34-36. Yet, when asked if passivation layer 212 passivates the ILD below (i.e., tying up dangling bonds), Patent Owner's expert testified he had no opinion, and would not answer either way. EX1015, 34:19-35:8. Further, when asked if passivation layer 212 renders the metal below chemically passive or unreactive, or tie up dangling bonds of the metal patterns, again, he had no opinion and would answer either way. *Id.*, 35:17-36:14. It cannot be ignored that Patent Owner's expert had such little faith in his own construction that he didn't even consider, and refused to opine on, whether the passivation layer 212 disclosed and claimed in the 121 patent meets

his construction for “passivation layer.” EX1020, ¶12 His opinions and testimony are simply not credible, and the Board should give his opinions on “passivation layer” no weight.

1. Patent Owner's Arguments Under Ground 1 Confirm Its Construction Of “Passivation Layer” Should Be Rejected

Patent Owner and its expert argue under Ground 1 that a POSITA would not consider a layer of organic resin to be a passivation layer because the organic resin (and specifically the organic molecules that form an organic resin), do not tie up dangling bonds. POR at 11; EX2005 at ¶71. However, as addressed below for Ground 1, there are multiple instances of inventors at the very same original assignee of the 121 patent that expressly disclose passivation layers formed of organic materials, in direct contradiction to the construction peddled by Patent Owner and its expert. See §III.B.1.a.

In conclusion, Patent Owner's construction of passivation layer is unsupported by the 121 patent and extrinsic evidence, and should be summarily rejected as erroneous.

B. Capping Layer

A POSITA would understand from the 121 patent that there is no special meaning ascribed to “capping layer” other than it is an insulation material. Pet. 19; EX1002, ¶61.

Patent Owner argues that “capping layer” is “a layer of hard material to protect a layer underneath, like how a hard “cap” can be worn to protect the head.” POR, p. 8. The Board should reject this construction. At most, a POSITA would understand capping layer to be an insulation layer covering (i.e., capping) an underlying layer or structure. A capping layer is not limited to providing a hard material. Further, a POSITA would not associate a capping layer to be the uppermost layer in a layer stack, given that multiple layers (i.e., layers 218 and 220) are formed over capping layer 216 in the 121 patent. EX1001, Fig. 2; EX1020, ¶13.

1. “Capping” Does Not Mean “Hard Material”

There is zero intrinsic support for Patent Owner's construction. Patent Owner's sole citation to the 121 patent for the proposition that its construction is “consistent with” the 121 patent is the following one sentence: “A layer of capping SiN 216 is deposited to cover passivation SiN 212 and ITO pattern 214C.” POR, p. 8, citing EX1001, 5:40-42. Nothing in this sentence, or elsewhere in the 121 patent, discloses or even suggests that capping layer 216 is a layer of hard material. EX1020, ¶15. All that the 121 patent discloses is that capping layer is formed of silicon nitride (SiN), and Fig. 2 shows that there are additional layers formed on capping layer 216 (i.e., it is not even the upper most layer in the layer

stack). *Id.* A POSITA would simply not associate “capping layer” of the 121 patent with a material having a specific hardness. EX1020, ¶15.

In a telling contradiction, it should be noted that passivation layer 212 is formed of the same material (SiN) as capping layer 216. EX1001, 5:34-36. Therefore, under Patent Owner's logic, passivation layer 212 would also be a capping layer. Yet, the 121 patent never refers to passivation layer 212 as a capping layer, and even Patent Owner's expert would not go that far. EX1015, 38:24-39:7 (testifying the passivation layer is a passivation layer, and not a capping layer, it cannot be both).

Patent Owner admits to the fallacy of its construction by providing the following analogy in its construction: “like how a hard “cap” can be worn to protect the head.” POR, p. 8. Patent Owner used the word “hard” before “cap,” tacitly admitting it is well known that not all caps worn to protect the head are made of a hard material (e.g., baseball cap to protect the head from the sun; shower cap to protect the head from water). Even Patent Owner's expert admitted “there are caps that are not hard,” confirming “cap” by itself does not connote a hard material. EX1015, 46:18-21. This analogy confirms that “cap” alone does not require a hard material, which is why the word “hard” was added by Patent Owner before “cap.” EX1020, ¶17.

2. Patent Owner's Construction is Indefinite

"Hard material to protect a layer underneath" is indefinite. Patent Owner's expert could not say how hard a material must be for a layer to be a capping layer, testifying that "it would depend on the requirements." EX1015, 42:20-43:5. No such requirements are specified in the 121 patent, and a POSITA would not have a reasonably definite understanding of such. EX1020, ¶18. Remarkably, Patent Owner's expert had no opinion on whether a capping layer has to be at least as hard as silicon nitride (the sole material example in the 121 patent), and couldn't even opine on whether the hardness of the capping layer had to be harder than the material its protecting. *Id.*, 43:14-44:19. At best, all he could come up with was "[B]ut if you want a capping layer, you want something that is ***reasonably durable or capable of protection.***" *Id.*, 43:3-5. "Reasonably durable" and "capable of protection" could not be more indefinite. Patent Owner's expert provides no reasonable explanation of what requirements a POSITA would understand a layer must provide to constitute a capping layer. EX1020, ¶18.

3. Patent Owner's Arguments Under Ground 1 Confirm Its Construction Of "Capping Layer" Should Be Rejected

As addressed below for Ground 1, Patent Owner and its expert directly contradict that the capping layer would be a hard material. See §III.B.2.a.

In conclusion, Patent Owner's construction of capping layer is unsupported by the 121 patent and indefinite, and should be summarily rejected as erroneous.

III. GROUND 1: CLAIMS 1-3 AND 5 ARE ANTICIPATED BY ANZAI**A. Invalidity of Claims 1-2 and 5 Is Unrebutted**

The sole argument by Patent Owner in defense of Ground 1 is based on the claim terms “passivation layer” and “capping layer,” which are found in dependent claim 3 but not in claims 1-2 and 5. Patent Owner provides no arguments of validity under Ground 1 for claims 1-2 and 5. POR at 8-12. Therefore, it is undisputed between the parties that claims 1-2 and 5 are anticipated by Anzai, and these claims should be held invalid for the unrebutted reasons set forth in the Petition. Pet., at pp. 7-19, 21.

B. Claim 3 Is Anticipated By Anzai

“Passivation layer” and “capping layer” of claim 3 as properly construed are disclosed in Anzai.

1. Anzai Discloses a “passivation layer” (claim 3)

Anzai discloses that planarization film 17 may be made of an organic resin for flattening the surface, functions (together with planarization film 19) as the “capacitance insulating film,” is formed over the entire surface for flattening which will protect the semiconductor surface from the surrounding environment, and thus a POSITA would understand Anzai's planarization film 17 is a passivation layer. Pet. at 20, citing EX1003, 4:20-24; 5:44-6:9; EX1002, ¶62-64.

Patent Owner's sole argument that Anzai's planarization film 17 is not a passivation layer is because it fails to meet Patent Owner's erroneous construction

of “passivation layer.” POR at 8-11. Should the Board reject Patent Owner’s construction of “passivation layer” (which it should, see §II.A), then it is undisputed between the parties that Anzai’s planarization film 17 is a passivation layer.

a. Patent Owner’s Arguments on “Passivation Layer” Under Ground 1 Confirm Its Proposed Construction Should Be Rejected

The Patent Owner and its expert argue that Anzai’s organic resin is not a passivation layer because an organic resin lacks the chemical reactivity and appropriate atomic bonding characteristics needed to neutralize the electrical active surface states and dangling bonds. POR at 9-11, citing to its expert’s declaration EX2005, ¶¶69-72. In his deposition, Patent Owner’s expert doubled down on this argument, testifying that in his opinion, “the chemical compounds that form organic resins are organic molecules and do not have any free or unbonded electrons capable of reacting with and passivating the surface.” EX1015, 52:7-16. This is after his admission that he didn’t conduct a search for dictionary definitions for passivation layer. EX1015, 30:16-20; 31:6-22. He also admitted that he never conducted a search for how those in the field of semiconductors use the term “passivation layer,” finding that would have been “outside the scope of my task.” Id., 55:10-20. Again, this head-in-the-sand approach would explain his obvious ignorance on the subject, and why his opinions should be given no weight.

For example, Patent Owner's expert rendered opinions regarding claim construction and validity for U.S. Patent 7,226,801 (the 801 patent) in concurrent IPR proceeding IPR2024-01131. EX1017. His declaration spans 83 pages. *Id.* Therefore, he clearly studied the 801 patent in depth. In fact, his deposition on the 801 patent was two days after his deposition on the 121 patent. The 801 patent has the same original assignee (Au Optronics Corp.) as the 121 patent. EX1001 & EX1016, cover pages. Yet, Patent Owner's expert ignored the following disclosure in the 801 patent that expressly teaches a passivation layer can comprise an organic dielectric layer:

“A predetermined material layer such as a silicon nitride layer 242 is formed on the TFT array substrate 232, serving as a passivation layer. Alternatively, the ***passivation layer*** can comprise silicon oxynitride, silicon oxide, ***organic dielectric layer***, or a combination thereof.”

EX1016, at 2:47-52 (emphasis added)

Patent Owner's expert admitted that Anzai's organic resin can be an ***organic dielectric layer***. EX1015, 59:15-17. Yet, Patent Owner's expert admitted he did not consider this passage of the 801 patent, and even took the position he had no reason to. *Id.*, 58:11-24.

Patent Owner's expert admitted he didn't even search patents originally assigned to the same assignee of the 121 patent to see if his opinions were

consistent on the issue of passivation layer with other inventors in the field.

EX1015, 60:13-22. Had Patent Owner's expert conducted a simple search, he would have found other instances where inventors from the same original assignee as the 121 patent disclosed that organic layers can be passivation layers. For example, US2007/0002212 ("212 publication") is a patent application publication, originally assigned to Au Optonics Corp (the same originally assignee as the 121 patent. EX1018, cover page. This patent publication expressly teaches that its passivation layer is preferably an organic layer:

"A thick **passivation layer** 350 is formed to cover the surface of the insulating layer 340, **preferably an organic layer** with a thickness of 3-4 um." Id., at ¶[0022] (emphasis added)

Patent Owner's expert admitted that Anzai's organic resin is an organic layer.

EX1015, 64:12-14. He had no opinion on whether the teachings of the 212 publication were wrong. Id., 64:15-24.

Another example is US2009/0272977 ("977 publication"), also originally assigned to Au Optonics Corp (same original assignee as the 121 patent).

EX1019, cover page. This patent publication expressly teaches that its passivation layer can be an organic compound:

"As shown in FIGS. 1 and 2G, a **passivation layer** 130 is formed over the substrate 100 to cover the aforementioned structures. In one

preferred embodiment, the **passivation layer** 130 is fabricated from a material including silicon oxide, silicon nitride, silicon oxynitride or **an organic compound**, for example.” Id., at ¶[0030] (emphasis added)

Patent Owner's expert admitted that Anzai's organic resin could contain organic compounds. EX1015, 66:22-67:2. Again, he had no opinion on whether the teachings of the 977 publication were inaccurate. Id., 66:7-14.

The extrinsic evidence from the same assignee as the 121 patent confirms that the construction proffered by Patent Owner and its expert, and the argument that an organic resin would not be considered a passivation layer by a POSITA, should be summarily rejected.

2. Anzai Discloses a “capping layer” (claim 3)

Anzai discloses that planarization film 19 (together with planarization film 17) functions as the “capacitance insulating film.” Pet. at 20, citing EX1003, 5:62-67. The fact that planarization film 19 is made of insulating material is further confirmed by the fact that in the embodiment of Fig. 3A, it is the sole layer between electrode layer 71 and cathode layer 65 forming the second capacitor. Pet. at 20, citing EX1003 6:3-8, Fig. 3A. A POSITA would have understood that when the first and second planarization layers 17 and 19 are used as the insulating film, one of the layers can be understood as a passivation layer while the other layer is a capping layer. Pet. at 20. A POSITA would further understand that the

second planarization film 19 is disposed on the first planarization film 17, thus capping the passivation layer. *Id.* citing EX1002, ¶63.

Patent Owner's sole argument that Anzai's planarization film 19 is not a capping layer is because it fails to meet Patent Owner's erroneous construction of "capping layer." POR at 11-12. Should the Board reject Patent Owner's erroneous construction of "capping layer" (which it should, see §II.B), then it is undisputed between the parties that Anzai's planarization film 19 is a capping layer.

a. Patent Owner's Arguments on "Capping Layer" Under Ground 1 Confirm Its Proposed Construction Should Be Rejected

Patent Owner argues that because Anzai does not disclose the material for planarization layer 19, it cannot be shown that Anzai's planarization layer 19 is strong or hard enough to protect layers underneath, making it a capping layer. POR at 12. Yet, its own expert undermines both this argument and its construction of capping layer.

Patent Owner's expert testified that it would only have been obvious to use an organic resin material for the planarization layer 19 of Anzai. EX1015 73:3-7. He testified that one would not use a hard material like SiN over a softer material. *Id.*, 71:12-72:13. Yet, when defending his construction for capping layer, Patent Owner's expert testified that if the capping layer were softer than the material its protecting, then "it would seem obvious that it would not do a very good job

protecting.” *Id.*, 44:3-8. Taking polar opposite positions (capping layer should be harder than the layer it’s protecting to defend his claim construction opinion, yet one would not use a hard material over a soft material to defend his opinions on Anzai) is compelling evidence that Patent Owner’s erroneous construction of capping layer should be rejected, and that Anzai anticipates the capping layer of claim 3.

In conclusion, claim 3 is anticipated by Anzai.

IV. GROUND 2: CLAIM 4 RENDERED OBVIOUS BY ANZAI IN VIEW OF YAMAZAKI

A. Dependence of Claim 4 on Claim 3

Claim 3 is invalid as anticipated by Anzai. See §III.B. Therefore, the mere dependency of claim 4 on claim 3 cannot save claim 4.

B. There is Motivation to Combine Anzai and Yamazaki

It would have been obvious to a POSITA to combine the teachings of Anzai and Yamazaki to use silicon nitride as the material for at least one of the planarization films 17 or 19 of Anzai. Pet., at 22-27. Patent Owner responds with a variety of arguments, all of which fail.

Patent Owner argues that a POSITA would have had no reason to deviate from Anzai’s teaching of using an organic resin for planarization layer 17. POR at 13. To the contrary, the Petition explains silicon nitride (with a higher dielectric constant than that of most organic materials) would have increased the capacitance

of the resulting capacitor relative to one with organic resin, a reason ignored by Patent Owner. Pet., at 26.

Patent Owner argues that a POSITA would have preferred an organic resin over silicon nitride for a planarization layer. POR at 14. This argument ignores that fact that there are competing factors when choosing materials. Yamazaki teaches using its insulation layer as a planarization layer, and silicon nitride would have enhanced the capacitance of the resulting capacitor. Pet., at 26.

Patent Owner argues that there is no justification for picking out silicon nitride from the “huge range of choices” offered by Yamazaki. POR at 15. Patent Owner’s “huge range” is nine in total (broken down by organic and inorganic materials). *Id.* For the list of inorganic materials to choose from, the total is three. Arguing that it would not have been obvious to choose one material from a list of 9 total materials (or from just 3 inorganic materials) defies logic.

Patent Owner argues that a POSITA would not think to use a material from one layer in Yamazaki for changing two different layers in Anzai. POR at 16. Given that the petitioner is arguing it would have been obvious to use silicon nitride “for ***at least one*** of the planarization films 17 or 19 of Anzai,” this argument fails.

It is telling that when Patent Owner finally addresses the obviousness of using silicon nitride for just planarization layer 19 of Anzai, the Patent Owner

provides no argument other than layer 17 (a different layer) does not meet Patent Owner's passivation layer construction. POR at 17. Pivoting to its erroneous construction *for a different layer* underscores that Patent Owner has no real argument to the Petitioner's position that it would have been obvious to use silicon nitride for planarization layer 19 of Anzai.

V. GROUND 3: CLAIMS 1-7 RENDERED OBVIOUS BY YAMAZAKI IN VIEW OF ANZAI

A. Invalidity of Claims 1-2 and 5-6 Is Unrebutted

The sole argument by Patent Owner in defense of Ground 3 is based on the claim term "capping layer," which is only found in dependent claims 3 and 7 (and claim 4 depends upon claim 3). Patent Owner provides no arguments of validity under Ground 3 for claims 1-2 and 5-6. POR at 18-21. Therefore, it is undisputed between the parties that claims 1-2 and 5-6 are rendered obvious by Yamazaki in view of Anzai, and these claims should be held invalid for the unrebutted reasons set forth in the Petition. Pet., at 27-42 and 47-52.

B. Claim 3 Is Rendered Obvious By Yamazaki In View Of Anzai

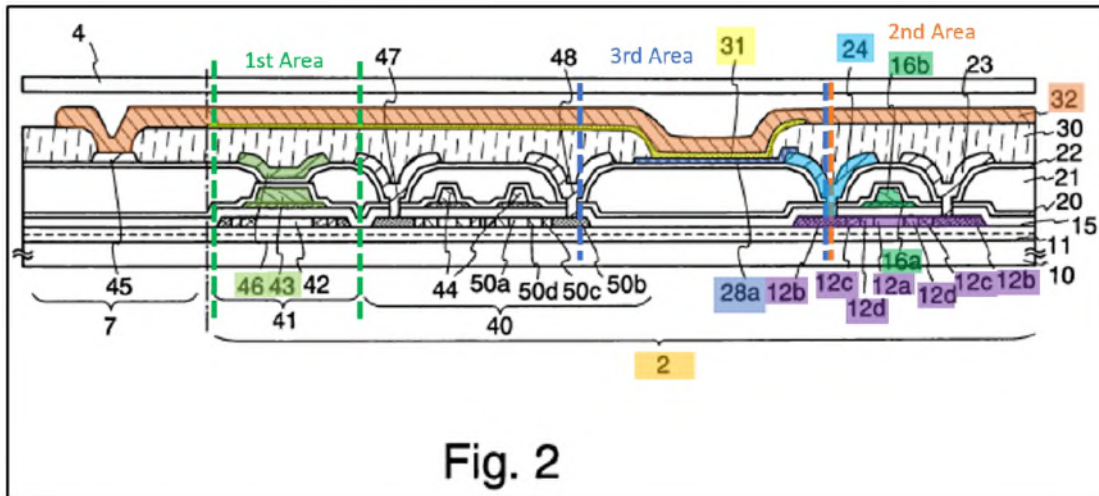
The combination of Yamazaki and Anzai renders obvious claim 3: wherein the second dielectric layer comprises a passivation layer (Yamazaki's insulating material 30) and a capping layer (Anzai's planarization layer). Petitioner established why it would have been obvious to add planarization layer 19 from

Anzai to be formed on top of the insulating material 30 of Yamazaki. Pet. at 42-46.

Patent Owner's first rebuttal is that Anzai's planarization layer 19 does not meet Patent Owner's erroneous construction of "capping layer." POR at 19. The Patent Owner's erroneous construction of "capping layer" should be rejected. See §II.B.

The Patent Owner's only other rebuttal is relegated to a footnote: "Why add another planarization layer if the insulating layer is already planarized?" POR at 19. This argument evidences a profound misunderstanding of semiconductor processing. No planarization layer has a perfectly planar upper surface, there are always some deviations. EX1020, ¶20. The planarity of the upper surface of a layer varies depending on a number of factors, such as the material used, the formation technique used, the topography of the structure underneath, just to name a few. *Id.* While adding a second planarization layer on top of a first one does add a manufacturing step and possibly some marginal cost, it will (if done correctly) result in an increase of the planarity of the final upper surface. That increased planarity can increase the integrity of the components formed on the upper surface. *Id.*

For example, in Yamazaki, the topography of the structure underneath layer 30 is extremely uneven.



EX1004, Fig. 2. Therefore, while the upper surface of layer 30 is depicted in the figure with a straight line in the 1st Area, a POSITA would have understood that in reality it can be difficult to achieve the desired planarity using a single layer of material, such as layer 30, when covering an uneven topology. EX1020, ¶21. By adding a second planarization layer on layer 30, a greater planarization can be achieved. This increased planarity will increase the integrity of the components formed above, such as layers 31 and 32, which could suffer catastrophic breaks or other deformities if the surface on which they are formed does not meet certain planarity requirements. *Id.*

Patent Owner's expert provided remarkably naïve testimony on this issue, that putting a planarization layer on a planarization means the first layer wasn't a planarization layer, that "[I]f it was planarized, it was planarized. You're done." EX1015, 75:23-76:9. He goes on: "He says, I have a planarization layer. Let me put another planarization layer on top of it to make it better. That means it's not a

planarization layer. The bottom layer is not a planarization layer. It's plain and simple." *Id.*, 79:13-17. That opinion is not consistent with the understanding of a POSITA, because a POSITA would have understood that a planarization layer is one that has an upper surface more planar than the underlying topology or layer. EX1020, ¶22. Therefore, putting a planarization layer on a planarization layer simply means the first layer has an upper surface that is more planarized than the underlying topology or layer, and the second layer has an upper surface that is more planarized than the upper surface of the first layer. A POSITA would consider both layers are planarization layers. *Id.*

Patent Owner's expert had no opinion on whether all planarization layers are perfectly flat. *Id.*, 79:19-23. But he did categorically testify that there is "no reason" to meet a flatness requirement as a two-layer step. *Id.*, 80:22-25. That categorical statement is simply inconsistent with the understanding of a POSITA, which may explain why he changed his answer when pressed to "I haven't considered that." *Id.*, 82:19-23. EX1020, ¶23.

Patent Owner's argument here simply fails.

C. Claim 4 Is Rendered Obvious By Yamazaki In View Of Anzai

The combination of Yamazaki and Anzai renders obvious claim 4: wherein at least one of the passivation layer (insulating material 30 of Yamazaki) and the

capping layer (planarization layer 19 of Anzai) comprises silicon nitride.” Pet., at 47.

Patent Owner's only rebuttal is that Anzai's planarization layer 19 does not meet Patent Owner's erroneous construction of “capping layer.” POR at 20. The Patent Owner's erroneous construction of “capping layer” should be rejected. See §II.B.

D. Claim 7 Is Rendered Obvious By Yamazaki In View Of Anzai

Petition established why claim 7 is rendered obvious by Yamazaki in view of Anzai. Pet., at 52.

Patent Owner's only rebuttal is that claim 7 also recites a capping layer, and argues the same theories as discussed for claims 3 and 4. POR at 21. The Patent Owner's erroneous construction of “capping layer” should be rejected. See §II.B.

VI. CONCLUSION

It is undisputed between the parties that claims 1-2 and 5-6 are anticipated and/or rendered obvious, and should be cancelled. Claims 3-4 and 7 are anticipated or unpatentable for the reasons set forth above and in the petition and should be cancelled.

Respectfully submitted,

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CERTIFICATE OF WORD COUNT

Pursuant to 37 C.F.R. § 42.24(d), Petitioner certifies that this petition includes 4,622 words, as measured by Microsoft Word, exclusive of the table of contents, mandatory notices under § 42.8, certificates of service, word count, claim listing, and exhibits.

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CERTIFICATE OF SERVICE

The undersigned certifies pursuant to 37 C.F.R. §§ 42.6(e) and 42.105 that on July 30, 2024, a true and correct copy of the Petition for Inter Partes Review of U.S. Patent No. 7,586,121 was served by emailing a copy of same (by agreement) to the following attorneys for the Patent Owner:

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