

UNITED STATES PATENT AND TRADEMARK OFFICE

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BEFORE THE PATENT TRIAL AND APPEAL BOARD

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SAMSUNG DISPLAY CO., LTD.,  
Petitioner,

v.

PICTIVA DISPLAYS INTERNATIONAL LTD.,  
Patent Owner.

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IPR2024-01095  
Patent 11,828,425 B2

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Before GRACE KARAFFA OBERMANN, GARTH D. BAER, and  
MICHAEL G. MCMANUS, *Administrative Patent Judges*.

MCMANUS, *Administrative Patent Judge*.

DECISION  
Granting Institution of *Inter Partes* Review  
35 U.S.C. § 314(a)

## I. INTRODUCTION

### A. Summary

Samsung Display Co., Ltd. (“Petitioner”)<sup>1</sup> filed a Petition (Paper 1, “Pet.”) for *inter partes* review of claims 1–19 of U.S. Patent No. 11,828,425 B2 (Ex. 1001, “the ’425 patent”). Pictiva Displays International Ltd. (“Patent Owner”)<sup>2</sup> filed a Preliminary Response. Paper 7 (“Prelim. Resp.”). With permission of the Board, Petitioner filed a Preliminary Reply (“Reply”) (Paper 8) and Patent Owner filed a Pre-Institution Sur-reply (“Sur-reply”) (Paper 9) limited to addressing discretionary denial of institution and the publication of one prior art reference. Ex. 3001, 3002. With further permission of the Board, Petitioner filed its Notice of Filing of Stipulation and Updated Exhibit List (Paper 10) and Patent Owner filed its Preliminary Supplementation (Paper 11). Ex. 3003.

Applying the standard set forth in 35 U.S.C. § 314(a), which requires demonstration of a reasonable likelihood that Petitioner would prevail with respect to at least one challenged claim, we institute an *inter partes* review.

### B. Related Matters

The parties indicate that the ’425 patent is at issue in the following matters:

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<sup>1</sup> Petitioner identifies Samsung Display Co., Ltd., Samsung Electronics Co., Ltd., and Samsung Electronics America, Inc. as real parties-in-interest. Pet. 2.

<sup>2</sup> Patent Owner identifies Pictiva Displays International Ltd., “a subsidiary of Key Patent Innovations Limited,” as “the owner” of the ’164 patent. Paper 3, 1. Patent Owner further states that Key Patent Innovations Limited “is a wholly-owned subsidiary of New PP Licensing, LLC.” *Id.*

*Pictiva Displays International Ltd. v. Samsung Electronics Co., Ltd.*, Case No. 2:23-cv-00495 (E.D. Tex.). Pet. 2; Paper 3, 1.

*Pictiva Displays International Ltd. et al., v. Samsung Elecs. Co., Ltd. et al.*, No. 2:24-cv-00532 (E.D. Texas). Paper 8, 4.

*C. The '425 Patent*

The '425 patent is titled “Organic-Light Emitting Diode.” Ex. 1001, code (54). The specification of the '425 patent states that “[o]ne object of the invention is to provide organic light-emitting diodes which can be used particularly diversely.” *Id.* at 1:26–27. The specification further teaches that the device may comprise “an organic layer sequence, a radiation exit area and an encapsulation.” *Id.* at 1:30–31. The organic layer sequence may contain a “radiation-emitting region which generates electromagnetic radiation in the spectral range from infrared radiation to UV radiation during operation.” *Id.* at 1:32–35. The organic light emitting diode may contain “a hole transport layer and also an electron transport layer as charge carrier transport layers.” *Id.* at 2:15–16. Figure 1 of the '425 patent is reproduced below.

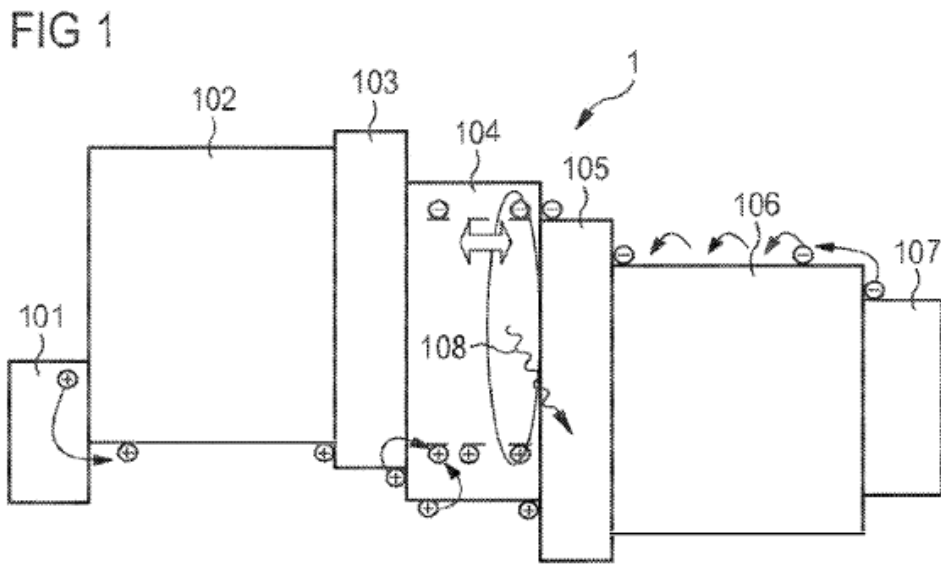


Figure 1 is a schematic band diagram of an exemplary organic light-emitting diode 1. *Id.* at col. 24:30–32. Figure 1 depicts anode 101, hole transport layer 102, electron barrier layer 103, radiation-emitting region 104, hole barrier layer 105, electron transport layer 106, and cathode 107. *Id.* at col. 24:33–62.

#### *D. Challenged Claims*

The Petition asserts that claims 1–19 (all issued claims) of the '425 patent are unpatentable. Pet. 1. Patent Owner has disclaimed claims 1, 3, 5–8, 13–16, 18, and 19. Ex. 2001. Accordingly, claims 2, 4, 9–12, and 17 remain at issue. Claims 1 and 9 are reproduced below.

1. A device comprising:
  - an organic light-emitting diode comprising:
    - an organic layer sequence,
    - a radiation exit area, and
    - an encapsulation,

wherein the organic layer sequence and the encapsulation are disposed on a carrier,

wherein the organic layer sequence comprises at least one radiation-emitting region configured to generate electromagnetic radiation in a spectral range from infrared radiation to UV radiation during operation,

wherein the organic layer sequence comprises an electron transport layer that is n-doped; and

wherein the organic layer sequence comprises an emission layer comprising an iridium-containing compound.

9. The device of claim 1,

wherein the device comprises at least one touch-sensitive operating element, and

wherein the at least one touch-sensitive operating element comprises at least one touch sensor.

Ex. 1001 col. 87:60–88:9; 88:47–51.

*E. Asserted Challenges to Patentability*

The Petition sets forth the following challenges to patentability.

| Ground | Claim(s)<br>Challenged      | 35 U.S.C. § | Reference(s)/Basis                  |
|--------|-----------------------------|-------------|-------------------------------------|
| I      | 1, 3, 5–8,<br>13–16, 18, 19 | 102/103     | Diekmann <sup>3</sup>               |
| II     | 2, 17                       | 103         | Diekmann, Ma <sup>4</sup>           |
| III    | 4                           | 103         | Diekmann, Lee <sup>5</sup>          |
| IV     | 9–11                        | 103         | Diekmann,<br>Koshihara <sup>6</sup> |
| V      | 12                          | 103         | Diekmann,<br>Harada <sup>7</sup>    |
| VI     | 1, 3, 5–8,<br>13–16, 18, 19 | 102/103     | Suzuki <sup>8</sup>                 |
| VII    | 2, 17                       | 103         | Suzuki, Ma                          |
| VII    | 4                           | 103         | Suzuki, Lee                         |
| IX     | 9–11                        | 103         | Suzuki, Caldwell <sup>9</sup>       |
| X      | 12                          | 103         | Suzuki, Harada                      |

#### *F. Declaratory Testimony*

In support of its assertions of unpatentability, Petitioner advances the Declaration of Russell J. Holmes, Ph.D. (Ex. 1003). Patent Owner advances the Declaration of P. Morgan Pattison, Ph.D. (Ex. 2002).

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<sup>3</sup> WO 2008/040323 A2, pub. Apr. 10, 2008, Ex. 1004, Ex. 1005 certified translation.

<sup>4</sup> *Organic Light-Emitting Diodes Based on New N-doped Electron Transport Layer*, Synthetic Metals 158, pp. 810-814 (2008), Ex. 1010.

<sup>5</sup> US 2005/0146267 A1, pub. July 7, 2005, Ex. 1008.

<sup>6</sup> US 2008/0211395 A1, pub. Sept. 4, 2008, Ex. 1012.

<sup>7</sup> US 2006/0214892 A1, pub. Sept. 28, 2006, Ex. 1009.

<sup>8</sup> JP 2007-277631, pub. Oct. 25, 2007, Ex. 1006, Ex. 1007 certified translation.

<sup>9</sup> US 2003/0159910 A1, pub. Aug. 28, 2003, Ex. 1011.

II. DISCRETIONARY DENIAL UNDER 35 U.S.C. § 314(a)

Patent Owner argues that the Board should exercise its discretion to deny institution under 35 U.S.C. § 314(a). Prelim. Resp. 64–65. The parties disagree about whether the factors identified in *Apple, Inc. v. Fintiv, Inc.*, IPR2020-00019, Paper 11 (PTAB Mar. 20, 2020) (precedential) (“*Fintiv*”), weigh in favor of denial in view of the District Court actions.<sup>10</sup> Pet. 78–79; Prelim. Resp. 64–65; Reply 4–5; Sur-reply 5; Patent Owner’s Preliminary Supplementation, 1.

We consider the following factors to assess “whether efficiency, fairness, and the merits support the exercise of authority to deny institution in view of an earlier trial date in the parallel proceeding.”

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

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<sup>10</sup> See *Interim Procedure for Discretionary Denials in AIA Post-Grant Proceedings with Parallel District Court Litigation* at 9 (June 21, 2022) (“Director’s Interim Procedure”) [https://www.uspto.gov/sites/default/files/documents/interim\\_proc\\_discretionary\\_denials\\_aia\\_parallel\\_district\\_court\\_litigation\\_memo\\_20220621.pdf](https://www.uspto.gov/sites/default/files/documents/interim_proc_discretionary_denials_aia_parallel_district_court_litigation_memo_20220621.pdf).

6. other circumstances that impact the Board’s exercise of discretion, including the merits.

*Fintiv*, Paper 11 at 5–6.

*A. Factor 1 – Whether a Stay Exists or Is Likely to Be Granted if a Proceeding Is Instituted*

Petitioner does not address this factor. Pet. 78–79; Reply 4–5. Patent Owner argues that no stay of the District Court action has been requested and, in any event, such a request would be unlikely to be granted in view of the District Court’s demonstrated practice of denying requests to stay based on administrative proceedings in our forum. Prelim. Resp. 64.

We decline to speculate about how the District Court might rule on a motion that has not been filed. On this record, the first factor is neutral.

*B. Factor 2 – Proximity of the Court’s Trial Date to the Board’s Projected Statutory Deadline*

*1. Trial Date*

The District Court action is scheduled for trial on August 4, 2025. Pet. 78 (citing Ex. 1035); Prelim. Resp. 65. Our Final Written Decision is due to be issued within one year of institution (*i.e.* January 2026). *See* 35 U.S.C. § 316(a)(11). On the current record, the trial in the District Court action is scheduled to take place approximately 5.5 months prior to the projected statutory deadline.

*2. Median Time to Trial*

The Director’s Interim Procedure provides that “when considering the proximity of the district court’s trial date to the date when the PTAB final written decision will be due, the PTAB will consider the median time from

filing to disposition of the civil trial for the district in which the parallel litigation resides.” *Director’s Interim Procedure*, 3.

Patent Owner submits evidence that the District Court’s median time-to-trial is 21.6 months. Ex. 2013, 35. The August 4, 2025, trial date is consistent with the District Court’s median time-to-trial. *Id.*

We agree with Patent Owner that this second factor favors denial based on the trial date set for the District Court action, as well as the District Court’s median time-to-trial data.

*C. Factor 3 – Investment in the Parallel Proceeding by the Court and Parties*

In its July 3, 2024, Petition, Petitioner asserts that “the parties have made no material investments in the parallel litigation,” and that “[d]iscovery is still in its early stages (with the deadline for fact discovery being March 10, 2025).” Pet. 78. In its Reply, Petitioner argues that the parallel litigation “remains in an early stage, with limited discovery activity beyond initial contentions and discovery requests.” Reply 4. Petitioner further argues that, by institution, “no *Markman* hearing or claim construction ruling would have taken place, fact discovery would remain ongoing, and expert discovery would not have yet begun.” *Id.*

Petitioner additionally asserts that it acted with diligence in filing its Petition “just three and a half months after service of infringement contentions.” Pet. 78. Accordingly, Petitioner argues that this factor weighs against discretionary denial.

In its Preliminary Response, Patent Owner asserts that “[o]n the current schedule, by the projected institution date, the parties would have filed their joint claim construction statement and have invested in claim

construction discovery.” Prelim. Resp. 65. In its subsequent Sur-reply, Patent Owner argues that, “in addition to activities mentioned in POPR, by then, the parties will have also completed 4-6 depositions, conducted source code reviews, and spent resources on reverse engineering.” Sur-reply 5.

On the present record, Patent Owner has not shown significant investment in fact discovery or significant investment of judicial resources. Accordingly, we regard this factor as weighing against discretionary denial.

*D. Factor 4 – Overlap Between Issues Raised in the Petition and in the Parallel Proceeding*

Where a “petition includes the same or substantially the same claims, grounds, arguments, and evidence as presented in the parallel proceeding, this fact has favored denial.” *Apple Inc. v. Fintiv, Inc.*, IPR2020-00019, Paper 11 (PTAB Mar. 20, 2020) (“*Fintiv*”) 12. “Conversely, if the petition includes materially different grounds, arguments, and/or evidence than those presented in the district court, this fact has tended to weigh against exercising discretion to deny institution.” *Id.* at 12–13.

Petitioner argues that there is incomplete overlap because “Patent Owner will need to narrow the asserted claims in advance of any trial [ ] such that a trial could not resolve all of Petitioner’s claim challenges.” Pet. 78–79.

Additionally, Petitioner has submitted a stipulation to the effect that, if the Petition is instituted, the District Court defendants “will not pursue an invalidity defense in this case that the patent claims subject to the instituted IPR are invalid based on those grounds that were raised in the IPR.” Ex. 1037. This stipulation is similar to that in *Sand Revolution II, LLC v. Continental Intermodal Group-Trucking LLC*, IPR2019-01393, Paper 24 at

12 (PTAB June 16, 2020) (informative), and is sometimes called a “*Sand Revolution* stipulation.” The Board often considers stipulations of this nature to weigh against denying institution. *See, e.g., id.; Nokia of Am. Corp. v. Soto*, IPR2023-00680, Paper 30 at 13 (PTAB Dir. Review Dec. 3, 2024).

Given the facts here, we determine that this factor weighs against exercising discretion to deny institution.

*E. Factor 5 – Whether the Petitioner and the Defendant in the Parallel Proceeding Are the Same Party*

This factor takes into account whether Petitioner is a defendant in a parallel district court action. There is agreement that the defendants in the District Court actions are real parties-in-interest with the Petitioner. Prelim. Resp. 65; Pet. 2. This factor favors denial. *See Sotera Wireless, Inc. v. Masimo Corp.*, IPR2020-01019, Paper 12 (PTAB Dec. 1, 2020) (precedential as to § II.A).

*F. Factor 6 - Other Circumstances that Impact the Board’s Exercise of Discretion, Including the Merits*

The sixth *Fintiv* factor takes into account other circumstances that may bear on our decision whether to exercise discretion to deny, such as whether the merits of the challenges are compelling. *Fintiv*, Paper 11 at 14–16. Board precedent provides that we should consider the compelling merits standard only if the first five *Fintiv* factors favor discretionary denial. *CommScope Techs. LLC. v. Dali Wireless, Inc.*, IPR2022-01242, Paper 23 at 4–5 (PTAB February 27, 2023) (precedential).

Patent Owner asserts that the Board should exercise its discretion to deny institution because it has statutorily disclaimed several of the claims put at issue in the Petition. Prelim. Resp. 64. Patent Owner argues that

“[v]oluntary disclaimer of challenged claims should weigh heavily in favor of discretionary denial” as it promotes efficiency. *Id.* This is not persuasive. Patent Owner does not cite any authority that directly supports the proposition that the disclaimer of some claims supports discretionary denial. *Id.* Board precedent supports denial of institution where *all* relevant claims have been disclaimed. *See General Elec. Co. v. United Techs. Corp.*, IPR2017-00491, Paper 9 (PTAB July 6, 2017) (precedential) (denying institution based on the disclaimer of all claims at issue). This, however, does not counsel in favor of denial where some claims of a petition remain at issue.

#### *G. Conclusion Regarding Discretionary Denial*

*Fintiv* Factors 2 (trial date) and 5 (relatedness of parties) favor discretionary denial. Factors 3 (investment) and 4 (overlap) weigh against discretionary denial. Factors 1 (stay) and 6 (other circumstances) are neutral. Although the trial date and relatedness of parties weigh in favor of discretionary denial, this must be balanced against Petitioner’s diligence, the *Sand Revolution* stipulation, and the relatively modest investment in the district court action. On balance, while this is a close issue, after weighing of the *Fintiv* Factors, we decline to exercise our discretion to deny institution.

### III. REASONABLE LIKELIHOOD OF PREVAILING

Although we have closely reviewed each asserted ground, in evaluating Petitioner’s reasonable likelihood of prevailing, we focus our discussion on Ground IX, which concerns the asserted unpatentability of claim 9. As claim 9 depends from claim 1, we additionally discuss that claim. We determine that Petitioner’s arguments regarding claim 9

demonstrate a reasonable likelihood of prevailing with respect to at least one claim.

*1. Ground IX*

For its Ninth Ground, Petitioner alleges that claim 9 of the '425 patent is unpatentable as obvious over the teachings of Suzuki (Ex. 1006) and Caldwell (Ex. 1011). Pet. 4, 73–75. As claim 9 depends from claim 1, Ground IX implicates the arguments put forward in support of Ground VI (unpatentability of claim 1 over Suzuki) as well. *Id.* at 51–69. Patent Owner argues that the bases of invalidity articulated in support of Grounds VI and IX are not persuasive of unpatentability. Prelim. Resp. 22–29, 60–63; Patent Owner's Preliminary Supplementation 2.

*a. Suzuki (Ex. 1006)*

Suzuki is a Japanese patent application titled “Method for Manufacturing Gas-Barrier Thin Film Laminate, Gas Barrier Thin Film Laminate, Gas Barrier Resin Substrate Material and Organic Electroluminescent Device,” published October 25, 2007 as JP2007-277631A. Ex. 1006, code (43) (54).

Suzuki describes an “organic EL device” as shown in its Figure 9. *Id.* ¶ 274. Figure 9 of Suzuki is reproduced below.

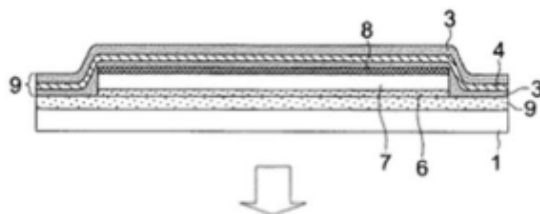


Figure 9 depicts “an example of an organic EL device” described as depicting the following:

[I]n order, an anode 6 comprising ITO, an organic layer (comprising a hole transport layer, a light emission layer, an electron transport layer, and the like) 7, and a cathode 8 on a resin substrate material 1 on which a gas barrier thin film laminate 9 is formed. . . . The arrow indicates the direction of light extraction.

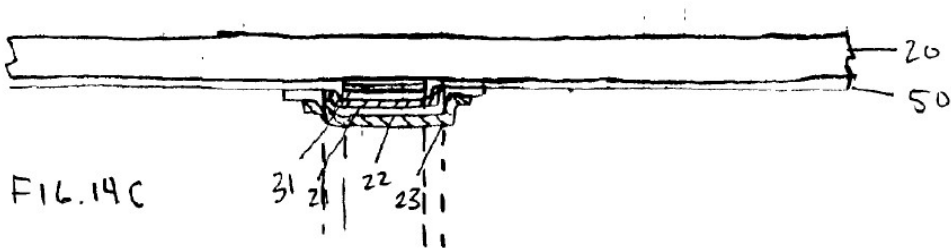
*Id.* ¶ 274.

*b. Caldwell (Ex. 1011)*

Caldwell is a United States patent application titled “Integrated Touch Sensor and Light Apparatus.” Ex. 1011, code (54). Caldwell states that “[a] touch sensor is physically integrated with a light emitting device to provide a switching device with built-in backlighting.” *Id.*, Abstract.

Caldwell teaches that “[b]ecause backlighting can be advantageously aligned with an operative touch surface, it is sometimes desirable to locate a touch sensor in close proximity to and/or atop a light emitting device.” *Id.* ¶ 6. Caldwell further teaches that, in the prior art, the touch sensor and backlighting device were separate components. *Id.* The invention of Caldwell “relates to integration of touch sensors with light emitting devices” in order to “reduce the cost and complexity of using backlighting with touch sensors.” *Id.* ¶ 7.

Petitioner directs us to Figure 14C of Caldwell, reproduced below.  
Pet. 17.



Ex. 1011, Fig. 14C. Caldwell describes the device of Figure 14C as a “bottom-emitting touch switch with integrated control circuit assembly according to the present invention including a touch switch with integrated control circuit assembly of FIGS. 5A-5B and an integrated light emitting device.” *Id.* ¶ 74.

The figure shows electrode 31 overlying anode 21, which overlies emissive stack 22 and cathode 23. The figure further shows insulating layer 50 and substrate 20. *Id.* Caldwell teaches that “electrode 31 and anode 21 could be smaller than emissive stack 22, allowing the light emitting device to form a border or halo around even a non-transparent electrode 31 or anode 21.” *Id.*

*c. Level of Ordinary Skill in the Art*

The level of ordinary skill in the art at the time of the invention is a factual determination that provides a primary guarantee of objectivity in an obviousness analysis. *Al-Site Corp. v. VSI Int’l Inc.*, 174 F.3d 1308, 1324 (Fed. Cir. 1999) (citing *Graham v. John Deere Co.*, 383 U.S. 1, 17–18 (1966); *Ryko Mfg. Co. v. Nu-Star, Inc.*, 950 F.2d 714, 718 (Fed. Cir. 1991)).

Petitioner contends:

A person of ordinary skill in the art (“POSITA”) at the time of the alleged invention of the ’164 patent would have had a Bachelor’s degree in chemistry, physics, or a comparable field of

study, and at least three years of research or industrial experience with organic optoelectronic light-emitting devices. An individual with additional education could have less research or industrial experience and vice versa.

Pet. 10. Patent Owner does not dispute Petitioner's argument. *See generally* Prelim. Resp.

Neither party indicates that the determination of the level of ordinary skill in the art would materially affect the present determination. Accordingly, for the sole purpose of deciding whether to institute review, we adopt Petitioner's uncontested proposed definition, because, on this record, it is consistent with the disclosures of the asserted prior art. *See* Ex. 1006, code (57); Ex. 1011, code (57) (abstracts of the references asserted in Ground IX).

*d. Claim 1*

Claim 9 depends from claim 1. Accordingly, Petitioner must show that each limitation of claim 1 is taught by the prior art in order to succeed on this challenge. Petitioner relies on Suzuki as teaching each element of claim 1. Pet. 51–58.

Patent Owner disputes Suzuki's disclosure with respect to several claim elements. Patent Owner argues that Suzuki does not teach an OLED that both a) has a radiation-emitting region that generates a spectral range from infrared to ultraviolet (claim element 1(f)), and b) has an emission layer that comprises an iridium-containing compound (claim element 1(h)). Patent Owner's Preliminary Supplementation (Paper 11) 2.

Patent Owner further argues that Suzuki does not teach an n-doped electron transport layer (claim element 1(g)). Prelim. Resp. 22–24.

- i. Claim Elements 1(f) (spectral range from infrared to ultraviolet) and 1(h) (emission layer comprises an iridium-containing compound)*

Claim element 1(f) requires that “the organic layer sequence comprises at least one radiation-emitting region configured to generate electromagnetic radiation in a spectral range from infrared radiation to UV radiation during operation.” Ex. 1001, 88:1–4.

Petitioner relies on Suzuki’s “light emission layer” as teaching this claim element. Pet. 55–556. Suzuki’s specification includes a section titled “Light emission layer.” Ex. 1006 ¶¶ 299–321. Suzuki teaches that “[t]he light emission layer of the organic EL element of the present invention preferably contains a host compound and a dopant compound.” Ex. 1006, 300. Petitioner refers us to Suzuki’s disclosure of various “light emission hosts” which “may be used in combination” and explains that, “by using a plurality of dopant compounds, it is possible to mix different light emissions, thereby obtaining any desired light emission color.” Pet. 56 (quoting Ex. 1006 ¶ 319).

Suzuki further teaches that “[w]hite light emission is possible by adjusting the type and doping amount of phosphorescent compounds, and can be applied to illumination and backlighting.” Pet. 56; Ex. 1006 ¶ 319. Petitioner argues that these teachings disclose the limitation requiring that the radiation-emitting region be “configured to generate electromagnetic radiation in a spectral range from infrared radiation to UV radiation during operation.” Pet. 56.

Claim element 1(h) requires that “the organic layer sequence comprises an emission layer comprising an iridium-containing compound.”

Ex. 1001, 88:7–9. In support of its argument that Suzuki teaches this feature, Petitioner directs us to Suzuki’s teaching that there are “two major types of light emission dopants: fluorescent dopants, which emit fluorescence, and phosphorescent dopants, which emit phosphorescence” and that for phosphorescent dopants, “iridium compounds are the most preferable.” Pet. 58; Ex. 1006 ¶¶ 301, 303. Suzuki further teaches that “[w]hite light emission is obtained by mixing a plurality of colors emitted simultaneously with a plurality of light emission materials. The combination of the plurality of emission colors may include three emission peak wavelengths of the three primary colors, i.e., blue [sic: red], green, and blue.” *Id.* ¶ 369.

Patent Owner addresses claim elements 1(f) and 1(h) collectively. Patent Owner’s Preliminary Supplementation (Paper 11) 2. Patent Owner argues that Petitioner has not shown that Suzuki teaches an emission layer that both includes iridium, which emits green light, as well as an emission layer that emits light from IR to UV. *Id.*

For present purposes, we are persuaded on this record that Suzuki’s teaching to “adjust[ ] the type and doping amount of phosphorescent compounds” to achieve “[w]hite light emission” (Suzuki ¶ 319) discloses claim element 1(f)’s requirement that the emission layer emit radiation in a spectral range from infrared to ultraviolet. We are further persuaded that Suzuki’s teaching of multiple specific iridium compounds for use as light emission layer dopants (*id.* ¶¶ 307–308) as well as its teaching that iridium compounds are the “most preferable” phosphorescent dopants (*id.* ¶ 303) discloses the use of one or more iridium compounds in achieving white light emission. *See KSR Int’l Co. v. Teleflex Inc.*, 550 U.S. 398, 421 (2007) (“[a] person of ordinary skill is also a person of ordinary creativity, not an

automaton.”). Accordingly, for present purposes, we determine that Suzuki teaches claim elements 1(f) and 1(h).

*ii. Claim Element 1(g) (n-doped transport layer)*

Petitioner relies on the following portion of Suzuki as teaching an n-doped electron transport layer:

In addition, ***an electron transport layer with a high n nature doped with impurities*** can also be used. Examples include those described in Patent Appl. Pub. Nos. JP H4-297076, JP 2000-196140, and JP 2001-102175, and **J. Appl. Phys., 95, 5773 (2004)**.

Ex. 1006 ¶ 333 (emphasis added).

Patent Owner argues that Suzuki does not teach an n-doped electron transport layer. Prelim. Resp. 22–24. Patent Owner concedes that Suzuki teaches electron transport layers that have a “high n nature doped with impurities.” *Id.* at 22 (citing Suzuki ¶ 333). Patent Owner contends that “Suzuki does not say that the ETL has been ***n-doped***, but that a material with an already ‘high n nature’ is then ‘doped with impurities.’”<sup>11</sup> *Id.*

Petitioner argues that “[a] POSITA would understand that this [Suzuki ¶ 333] refers to an electron transport layer which has been n-doped, particularly as the publications cited by Suzuki as examples explicitly disclose n-doped electron transport layers.” Pet. 57 (citing Ex. 1003 ¶ 194; Ex. 1019).

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<sup>11</sup> Patent Owner’s argument appears to rely upon construction of “electron transport layer that is n-doped” as a product-by-process limitation. Patent Owner does not address the implications of such construction. *See, e.g., In re Nordt Dev. Co., LLC*, 881 F.3d 1371, 1374 (Fed. Cir. 2018) (“when considering the patentability of product claims that contain process limitations, claim scope is generally based on the product itself, not the process.”).

The He article (Ex. 1019), cited in paragraph 333 of Suzuki as “J. Appl. Phys., 95, 5773 (2004),” teaches an “*n*-doped electron transport layer” Ex. 1019, Abstract. Given that the Petition specifically refers to the publications cited by Suzuki in paragraph 333<sup>12</sup> and Petitioner’s declarant discusses this portion of the He article,<sup>13</sup> it is appropriate to consider these teachings in order to understand Suzuki’s disclosure. *See, e.g., Ariosa Diagnostics v. Verinata Health, Inc.*, 805 F.3d 1359, 1365 (Fed. Cir. 2015) (“Given those references in the Petitions and supporting declarations, [the exhibit] had to be considered by the Board.”).

He’s explicit teaching of an “*n*-doped electron transport layer” and description thereof indicates that Suzuki’s description of “an electron transport layer with a high *n* nature” with a citation to He as exemplary discloses an *n*-doped electron transport layer. In view of the foregoing, for purposes of the present decision, we determine that Suzuki teaches an *n*-doped transport layer.

*iii. Modification of Suzuki*

Patent Owner asserts that Suzuki does not teach an *n*-doped transport layer and further asserts that Petitioner has not set forth an adequate basis why one of ordinary skill in the art would have modified Suzuki to include such feature. Prelim. Resp. 24–28. Patent Owner further argues that one of skill in the art would not have had a reasonable expectation of success in

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<sup>12</sup> Pet. 57 (“Suzuki . . . lists applications and publications that include examples of this doped electron transport layer.”).

<sup>13</sup> Ex. 1003 ¶ 194.

doing so. *Id.* at 28–29. As we have determined, for present purposes, that Suzuki does teach an n-doped transport layer, this argument is moot.

*iv. Conclusion Regarding Claim 1*

In view of the foregoing, we do not find Patent Owner’s arguments regarding Suzuki’s disclosure of claim 1 to undercut the sufficiency of Petitioner’s evidence to support institution. We further determine, upon review of the Petition and Suzuki, for present purposes, that Suzuki discloses each limitation of claim 1 of the ’425 patent. Claim 1, however, has been disclaimed. Ex. 2001. Accordingly, we proceed to consideration of claim 9.

*e. Claim 9*

Petitioner argues that claim 9 would have been obvious over the teachings of Suzuki and Caldwell. Pet. 73–75. Claim 9 depends from claim 1 and further requires that “the device comprises at least one touch-sensitive operating element,” and that “the at least one touch-sensitive operating element comprises at least one touch sensor.” Ex. 1001, 88:47–51.

Petitioner argues that Caldwell teaches a touch-sensitive operating element including a touch sensor. Pet. 73–75. Petitioner further argues that one of ordinary skill in the art would have had reason to combine the teachings of Suzuki and Caldwell so as to arrive at the device of claim 9 and a reasonable expectation of success in doing so. *Id.* Patent Owner disputes whether Petitioner has shown an adequate reason to combine and a reasonable expectation of success in combining the teachings of the references. Prelim. Resp. 60–63.

*i. Reason to Combine Suzuki and Caldwell*

Petitioner argues that one of skill in the art would have had reason to combine the teachings of Suzuki regarding OLEDs with the touch sensing functionality of Caldwell. Pet. 74.

Caldwell teaches that “[b]ecause backlighting can be advantageously aligned with an operative touch surface, it is sometimes desirable to locate a touch sensor in close proximity to and/or atop a light emitting device.” Ex. 1011 ¶ 6; *see* Pet. 74. Petitioner argues that integrating a touch sensor into a light emitting device can “greatly reduce the cost and complexity of using backlighting with touch sensors” and can “reduce or eliminate the extra material and manufacturing cost associated with the separate touch sensor and lighting assemblies known in the art, which must be electrically coupled and aligned.” Pet. 74 (quoting Ex. 1011 ¶ 7). Petitioner argues that such reduction of cost and complexity, as well as a desire for a thinner OLED profile, would have motivated one of skill in the art to combine touch sensor functionality into the device of claim 1. *Id.*; *see also* Ex. 1003 ¶¶ 241, 242.

Patent Owner argues that Petitioner has not shown an adequate basis for the combination. Patent Owner asserts that “Petitioner simply never explains *why* a skilled artisan would use a touch sensitive element in the first place.” Prelim. Resp. 60. Patent Owner concedes that Caldwell teaches cost savings and thinner profiles relative to a device with a separate touch sensor. *Id.* at 61. Patent Owner argues, however, that Suzuki fails to teach any such separate touch-sensitive element “[a]nd **adding** a touch sensitive element onto of the OLED without a touch sensor would only **increase** thickness

(adding layers) and cost (adding components and redesigning for added traces and controllers).” *Id.* (emphasis in original).

Patent Owner’s arguments depend upon an unduly narrow reading of the references. Caldwell specifically teaches “integration of touch sensors with light emitting devices.” Ex. 1011 ¶ 7; Pet. 16. Thus, the combination of touch sensors and light emitting devices integrated into one device was already known to be desirable. Given such teachings, Patent Owner’s argument that Petitioner has not shown “*why* a skilled artisan would use a touch sensitive element in the first place” misses the mark. Caldwell expressly teaches such feature. Accordingly, Patent Owner’s arguments do little to undermine Petitioner’s stated rationale, which finds express support in the asserted prior art.

*ii. Reasonable Expectation of Success*

Petitioner argues that one of skill in the art would have had a reasonable expectation of success in combining the touch sensing functionality of Caldwell with the OLED of Suzuki as such integration would have been routine. Pet. 74; Ex. 1003 ¶ 243 (integration “would have been a simple, routine modification”). Patent Owner argues that Petitioner’s arguments regarding reasonable expectation of success are conclusory and unsupported. Prelim. Resp. 63.

“An obviousness determination requires that a skilled artisan would have perceived a reasonable expectation of success in making the invention in light of the prior art.” *Amgen Inc. v. F. Hoffman-La Roche Ltd.*, 580 F.3d 1340, 1362 (Fed. Cir. 2009). “[O]bviousness cannot be avoided simply by a showing of some degree of unpredictability in the art so long as there was a

reasonable probability of success.” *Pfizer, Inc. v. Apotex, Inc.*, 480 F.3d 1348, 1364 (Fed. Cir. 2007).

Thus, the inquiry is whether one of ordinary skill would have had a reasonable probability of success in combining the relevant OLED features taught by Suzuki with the touch sensor functionality of Caldwell.

Petitioner’s declarant, Dr. Holmes, asserts that “OLEDs with integrated touch sensors were well known at the time.” Ex. 1003 ¶ 243 (cited at Pet. 74); *see also* Ex. 1012 ¶¶ 30, 31 (cited at Pet. 15, 74). Dr. Holmes further testifies that “[i]ntegrating Caldwell’s touch sensor into Suzuki’s OLED would have been a simple, routine modification.” Ex. 1003 ¶ 243 (cited at Pet. 74).

This appears to be consistent with the evidence of record. Caldwell depicts a touch sensor incorporated with a light emitting device (Figure 14C of Caldwell, reproduced below). Ex. 1011 ¶ 74.

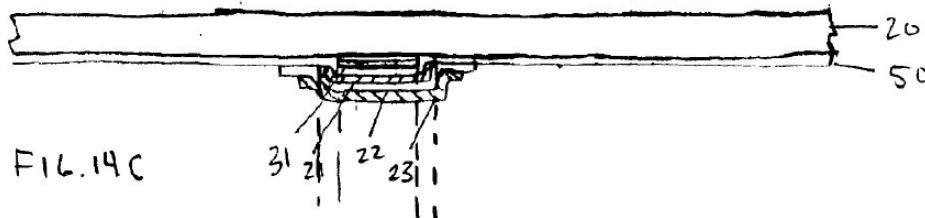


Figure 14C shows electrode 31 overlying anode 21, which overlies emissive stack 22, cathode 23 and substrate 20. *Id.*

Caldwell teaches that the integration of lighting devices, such as OLEDs, with touch sensors was known. Pet. 74 (“incorporating touch sensors in OLEDs was well-known”); Prelim. Resp. 16. Given that the prior art already includes teachings of OLEDs combined with touch sensors,

Petitioner’s showing that one of skill in the art would have had a reasonable expectation of success in combining the OLED of Suzuki with the integrated structure of Caldwell, though somewhat brief, is sufficient. *See Keynetik, Inc. v. Samsung Elecs. Co.*, No. 2022-1127, 2023 WL 2003932, at \*2 (Fed. Cir. Feb. 15, 2023) (“While Dr. Abowd’s testimony is brief, in the absence of any contradictory evidence, it constitutes substantial evidence to support the Board’s finding” of a reasonable expectation of success).

*iii. Conclusion Regarding Claim 9*

We determine, for present purposes, that the evidence of record set forth with respect to Ground IX demonstrates a reasonable likelihood that the Petitioner would prevail at least as to claim 9.

*2. Other Asserted Grounds of Unpatentability*

This *inter partes* review is one of several involving patents at issue in the related district court actions listed in Section I.B, above. Several of these patents are the subjects of other petitions for *inter partes* review. The patents each relate to similar technology and in some instances involve the same references or have overlapping inventorship. Given such circumstances, refraining from supplying preliminary findings beyond those necessary to determine whether institution is appropriate may be the prudent course.

Patent Owner’s arguments set forth in regard to Grounds I–V, VII, VIII, and X have been considered but are not the subject of any present determination. Should Patent Owner preserve these arguments in a timely-filed response to the Petition, we will resolve them as necessary to a final

written decision, based on a full trial record, with little likelihood of conflict with preliminary findings.

#### IV. NOTICES

The Board shall deem waived any issue not raised by Patent Owner in a timely response to the Petition or as permitted in another manner during trial, even if the issue was raised in the Preliminary Response or discussed in this Decision.

Nothing in this Decision authorizes Petitioner, in a manner not otherwise permitted by the Board's rules, to supplement the information supporting any ground advanced in the Petition.

#### V. CONCLUSION

For the above reasons, based on this preliminary record, we determine that Petitioner demonstrates a reasonable likelihood that the subject matter of at least one challenged claim is unpatentable.

Accordingly, we institute an *inter partes* review of all challenged claims based on all grounds asserted in the Petition pursuant to 35 U.S.C. § 314(a). *See PGS Geophysical AS v. Iancu*, 891 F.3d 1354, 1359–60 (Fed. Cir. 2018) (interpreting relevant statutory provisions and caselaw to require “a simple yes-or-no institution choice respecting a petition, embracing all challenges included in the petition”).

VI. ORDER

It is ORDERED that, pursuant to 35 U.S.C. § 314(a), *inter partes* review of all challenged claims of the '425 patent is instituted on all grounds of unpatentability set forth in the Petition;

It is FURTHER ORDERED that, pursuant to 35 U.S.C. § 314(a) and 37 C.F.R. § 42.4, notice is given of institution of trial commencing on the entry date of this Decision.

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