

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

SAMSUNG ELECTRONICS CO., LTD.,
Petitioner,

v.

SIONYX, LLC,
Patent Owner.

IPR2025-00064
Patent 10,347,682 B2

Before GEORGIANNA W. BRADEN, MONICA S. ULLAGADDI, and
BRIAN D. RANGE, *Administrative Patent Judges*.

RANGE, *Administrative Patent Judge*.

DECISION
Denying Institution of *Inter Partes* Review
35 U.S.C. § 314

I. INTRODUCTION

Samsung Electronics Co., Ltd. (“Petitioner”) filed a Petition requesting *inter partes* review of claims 1–44 of U.S. Patent No. 10,347,682 B2 (Ex. 1001, “the ’682 patent”). Paper 1 (“Pet.”). SiOnyx, LLC (“Patent Owner”) filed a Preliminary Response. Paper 10 (“Prelim. Resp.”). With our authorization (Ex. 3001), Patent Owner filed a Preliminary Reply regarding *Fintiv* discretionary denial (Paper 14, “Pet. *Fintiv* Reply”), and Patent Owner filed a Sur-Reply (Paper 15, “PO *Fintiv* Sur-Reply”).

Under 35 U.S.C. § 314(a), an *inter partes* review may not be instituted unless the information presented in the petition “shows that there is a reasonable likelihood that the petitioner would prevail with respect to at least 1 of the claims challenged in the petition.” The Board, however, has discretion to deny institution even when a petition meets that threshold. *Cuozzo Speed Techs., LLC v. Lee*, 579 U.S. 261, 273 (“[T]he agency’s decision to deny a petition is a matter committed to the Patent Office’s discretion.”). Having considered the arguments and record before us, we determine it is appropriate to exercise our discretion to deny institution of an *inter partes* review in this case. Accordingly, we do not institute an *inter partes* review on the grounds set forth in the Petition. See 37 C.F.R. § 42.108(b).

II. BACKGROUND

A. Related Matters

The parties identify a district court case that involves the ’682 patent: *SiOnyx, LLC v. Samsung Electronics, Co., Ltd.*, 2:24-cv-00408 (E.D. Tex.) (“the district court case”). Pet. 3; Paper 6, 2.

Petitioner filed a parallel petition for *inter partes* review of the '682 patent in IPR2025-00065, which also challenges claims 1–44. Paper 6, 2; *see also* Papers 3 (“Pet. Ranking of Petitions”), 11 (“PO Resp. to Pet. Ranking of Petitions”).

B. The '682 Patent

The '682 patent is titled “Shallow Trench Textured Regions and Associated Methods.” Ex. 1001, code (54). The '682 patent describes a photosensitive imager device that includes a semiconductor layer, multiple doped regions, and a texture region that interacts with electromagnetic radiation (“EMR”). *Id.* at code (57). The '682 patent explains that silicon imaging devices can be used in devices such as digital cameras and cell phones with front side illumination (FSI) or backside illumination (BSI). *Id.* at 1:16–39, 3:54–67. These devices for detecting infrared incident EMR, however, have been problematic “because silicon is an indirect bandgap semiconductor having a bandgap of about 1.1 eV” resulting in low radiation absorption, and the '682 purports to resolve such deficiency. *Id.* at 1:32–47, 5:16–36, 6:28–31.

Figure 2 of the '682 patent, reproduced below, is a cross-sectional view of an image sensor. *Id.* at 2:56–58.

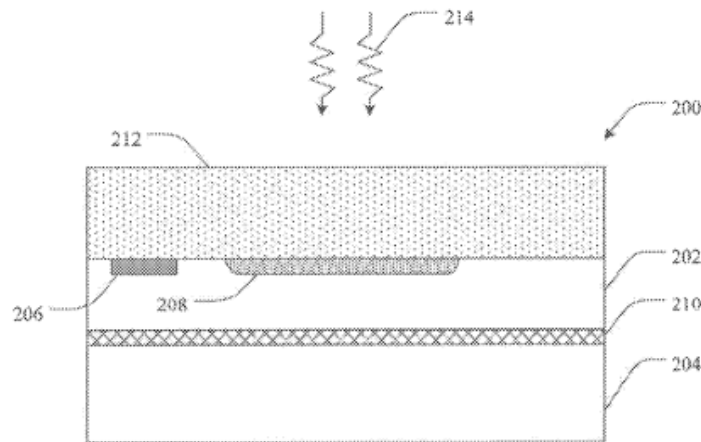


FIG. 2

Figure 2 illustrates a cross-sectional view of an image sensor. *Id.* at 2:56–58.

The image sensor depicted in Figure 2 is FSI device 200 having semiconductor layer 202, which includes doped regions 206, 208 and is coupled to support substrate 204. *Id.* at 6:37–40. Textured layer 210 with shallow trench isolation (STI) surface features is positioned between semiconductor layer 202 and support substrate 204. *Id.* at 6:40–42. Circuitry layer 212 is coupled to semiconductor layer 202 on the opposite side of support substrate 204 such that light 214 passes through circuitry layer 212 first and light that is not absorbed is redirected back via textured layer 210, “thus allowing light to be absorbed in a subsequent pass.” *Id.* at 6:42–51.

Intervening layers can be present between the semiconductor layer and the support substrate to facilitate bonding. *Id.* at 8:9–11. Furthermore, a light reflecting layer can be disposed between any of the layers. *Id.* at 8:56–67. The surface features of the textured layer can be produced by etching to create shapes such as pyramids. *Id.* at 9:1–3, 9:31–37. The textured layer can diffuse and redirect light to increase quantum efficiency

of the device, and for example, “the semiconductor layer can absorb from about 25% to about 40% of incident 940 nm light.” *Id.* at 9:25–27, 11:46–58.

C. Illustrative Claims

Independent claim 1 is illustrative. The other challenged claims are: independent claims 24 and 28; claims 2–23, 26, and 27, which depend from claim 1; claim 25, which depends from claim 24; and claims 29–44, which depend from claim 28. *See* Ex. 1001, 13:1–15:24.

Claim 1 (with Petitioner’s identifiers of claim elements, *see* Pet. 19–31) is reproduced below.

1. 1[pre] An optoelectronic device having enhanced absorption of electromagnetic radiation, comprising:
 - 1[a] a semiconductor layer having a light incident side and an opposed side, said semiconductor layer having multiple doped regions forming at least one junction,
 - 1[b] a textured region comprising a plurality of shallow trench isolation surface features located on the light incident side of the semiconductor layer and configured to interact with incident electromagnetic radiation,
 - 1[c] a support substrate coupled to said semiconductor layer, and
 - 1[d] a first bonding layer disposed between the semiconductor layer and the support substrate,
 - 1[e] wherein said optoelectronic device is a photosensitive imager device capable of detecting visible and infrared electromagnetic radiation.

Ex. 1001, 13:1–17.

D. Asserted Grounds of Unpatentability

Petitioner, supported by the declaration of Michael Lebby, Ph.D. (Ex. 1004), asserts the following grounds of unpatentability (Pet. 5):¹

Ground	Claims Challenged		35 U.S.C. §	References/Basis
A-1	1–3, 6–8, 11, 12, 15–18, 21, 26, 27		102, 103	Haddad138 ²
A-2	4, 5, 14, 21, 22		103	Haddad 138, Baggenstoss ³
A-3	9, 10, 13, 19, 20, 28–31, 34–42		103	Haddad138, Alie ⁴
A-4	23		103	Haddad138, Haddad204 ⁵
A-5	23		103	Haddad138, Park ⁶
A-6	32, 33, 42, 43		103	Haddad138, Alie, Baggenstoss
A-7	44		103	Haddad138, Alie, Haddad204

¹ The relevant sections of the Leahy-Smith America Invents Act (“AIA”), Pub. L. No. 112–29, took effect on March 16, 2013. The ’682 patent claims priority to provisional Application No. 61/841,326, which was filed after this date. *See* Ex. 1001, codes (63), (60). For the purposes of this Decision, the AIA statutes apply.

² US 2011/0227138 A1, published September 22, 2011, Ex. 1012 (“Haddad138”).

³ US 2006/0081900 A1, published April 20, 2006, Ex. 1007 (“Baggenstoss”).

⁴ US 2012/0068289 A1, published March 22, 2012, Ex. 1006 (“Alie”).

⁵ US 2012/0313204 A1, published December 13, 2012, Ex. 1009 (“Haddad204”).

⁶ US 2010/0006969 A1, published January 14, 2010, Ex. 1010 (“Park”).

Ground	Claims Challenged		35 U.S.C. §	References/Basis
A-8	44		103	Haddad138, Alie, Park
B-1	24, 25		103	Park, Baggenstoss

III. DISCRETIONARY DENIAL

A. Discretionary Denial Under 35 U.S.C. § 314(a)

Patent Owner argues that, pursuant to *Apple Inc. v. Fintiv, Inc.*, IPR2020-00019, Paper No. 11 (precedential) (“*Fintiv*”), the Board should “exercise its discretion to deny institution of this Petition.” PO *Fintiv* Sur-Reply 3. Petitioner stipulates that if the Board institutes an *inter partes* review proceeding here, Petitioner will not pursue an invalidity defense for the ’682 patent in the parallel district court case based on any grounds raised or that reasonably could have been raised in this proceeding. Ex. 1037 (the “Stipulation”). According to Patent Owner, “[t]he weight of the *Fintiv* factors strongly favor[s] discretionary denial” because “the Stipulation does not eliminate the overlapping issues between the District Court case and this proceeding,” “the investment in the District Court has been significant[,] and that case will be concluded prior to any final written decision here.” PO *Fintiv* Sur-Reply 1. Petitioner argues that *Fintiv* does not support discretionary denial. *See* Pet. *Fintiv* Reply, *passim*.

Below, we address the framework we apply to resolve these arguments, address each of the six *Fintiv* factors, and assess whether discretionary denial is appropriate.

1. Legal Background and Framework

Under 35 U.S.C. § 314(a), the Director has discretion to deny institution. In determining whether to exercise discretion on behalf of the

Director, we look to, for example, the guidance provided in *NHK Spring Co. v. Intri-Plex Technologies, Inc.*, IPR2018-00752, Paper 8 (PTAB Sept. 12, 2018) (precedential), and *Fintiv*.

Fintiv sets forth six non-exclusive factors for determining “whether efficiency, fairness, and the merits support the exercise of authority to deny institution in view of an earlier trial date” in a parallel proceeding. *Fintiv* at 6. These factors consider:

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.

Id.

Fintiv recognizes that there is some overlap between the identified factors and that some facts may be relevant to more than one factor. *Fintiv* at 6. “Therefore, in evaluating the factors, the Board takes a holistic view of whether efficiency and integrity of the system are best served by denying or instituting review.” *Id.*

On June 21, 2022, the Director issued an “Interim Procedure for Discretionary Denials in AIA Post-Grant Proceedings with Parallel District Court Litigation,” which the Acting Director rescinded on February 28,

2025.⁷ Subsequently, on March 24, 2025, the Chief Administrative Patent Judge of the Board issued “Guidance on USPTO’s rescission of ‘Interim Procedure for Discretionary Denials in AIA Post-Grant Proceedings with Parallel District Court Litigation’” (“March 2025 *Fintiv* Guidance”).⁸ Consequently, in this Decision, we apply *Fintiv* and the March 2025 *Fintiv* Guidance; we do *not* apply the rescinded Interim Procedure.

Additionally, on March 26, 2025, the Acting Director issued a Memorandum setting forth new Interim Processes for PTAB Workload Management for evaluating discretionary denial of institution (“Interim Processes Memorandum”).⁹ The Interim Processes Memorandum states that the new processes “will be implemented in IPR and PGR proceedings where the deadline for the patent owner to file a preliminary response has not yet passed.” Interim Processes Memorandum 3. In the present proceeding, however, the Preliminary Response was filed on March 12, 2025, which is earlier than the date of the Interim Processes Memorandum. Therefore, the new processes set forth in the memo do not apply to this Decision.

We now apply the six *Fintiv* factors to the facts and circumstances present here.

⁷ Available at https://www.uspto.gov/sites/default/files/documents/interim_proc_discretionary_denials_aia_parallel_district_court_litigation_memo_20220621.pdf.

⁸ Available at https://www.uspto.gov/sites/default/files/documents/guidance_memo_on_interim_procedure_rescission_20250324.pdf.

⁹ Available at <https://www.uspto.gov/sites/default/files/documents/InterimProcesses-PTABWorkloadMgmt-20250326.pdf>.

2. *Background*

On June 3, 2024, Patent Owner filed the district court case against Petitioner, asserting infringement of the '682 patent. Ex. 2003, 1–2; *see* Prelim. Resp. 4–5. In that case, “[t]he invalidity and infringement contentions have already been exchanged . . . in October 2024 and January 2025, respectively. . . [,] [f]act discovery will close in November 2025, and expert discovery will close soon after in December 2025. Trial will commence in the beginning of April 2026.” Prelim. Resp. 5; Ex. 2002.

3. *Fintiv Factor One: Stay*

Patent Owner argues that factor one favors discretionary denial because there is no stay in the district court case. Prelim. Resp. 6–7. Patent Owner further argues that “the District Court is very unlikely to grant such a stay at this stage,” noting that it “has already denied a motion to stay the [district court case] in favor of a pending ITC investigation¹⁰ also filed by Patent Owner against Petitioner.” *Id.* Petitioner argues this factor is neutral. Pet. *Fintiv* Reply. 2.

Fintiv instructs that “[a] district court stay of litigation pending resolution of the PTAB trial allays concerns about inefficiency.” *Fintiv* at 6.

We determine this factor is neutral because the district court has not ruled on a potential stay. Patent Owner references the court’s denial of a stay in view of an ITC investigation filed by Patent Owner against Petitioner, but that ITC investigation does not involve the '682 patent. *See, e.g.*, Ex. 2003, 1–2. We decline to speculate on the likelihood of a stay in the future.

¹⁰ This ITC investigation is captioned *In the matter of Certain Sensors with Pixels and Products Containing the Same*, Inv. No. 337-TA-1403 (ITC). *See, e.g.*, Ex. 2003, 1–2.

4. *Fintiv Factor Two: Proximity of Trial Date*

Patent Owner argues that “[t]his factor also factors denial of institution” because “the trial date is set for April 2026, and a final written decision would not issue until approximately June 2026, months after the trial.” Prelim. Resp. 7; *see id.* at 5; Ex. 2002 (Second Amended Docket Control Order), 1 (listing trial date as Apr. 6, 2026). Petitioner argues that “trial would commence only two months before the June 2026 expected due date for the Final Written Decision,” and “[t]he Board commonly attributes at most marginal weight to this factor in such situations.” Pet. *Fintiv* Reply 2 (citations omitted).

“If 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 under *NHK*.” *Fintiv* at 9. Here, the district court’s trial date (April 6, 2026) *is* earlier than our projected statutory deadline (June 2026) but only by about two months. Under similar circumstances, the Board has weighed this factor only “somewhat” in favor of discretionary denial. *See, e.g., Quibi Holdings, LLC v. JBF Interlude 2009 Ltd*, IPR2021-00231, Paper 10 at 8, 11 (PTAB June 7, 2021). Here, we agree that *Fintiv* factor two weighs somewhat in favor of discretionary denial.

5. *Factor Three: Investment in the Parallel Proceeding*

Patent Owner argues that this factor favors discretionary denial because “[t]he investment in the District Court case . . . has been significant for both Petitioner and Patent Owner, outweighing any benefit in efficiencies allegedly addressed by Petitioner’s Stipulation.” PO *Fintiv* Sur-Reply 2; Prelim. Resp. 6, 7. According to Patent Owner “[t]he entirety of claim construction and discovery – fact and expert, including reports and

depositions – will be completed by the end of this calendar year,” and “[i]nstituting the Petition will require a full duplication of effort.” PO *Fintiv* Sur-Reply 2. In Petitioner’s view, however, “the district court case is still in [its] early stages” because “[t]he claim construction hearing is not scheduled until October 2025, fact discovery does not close until November 2025, and expert discovery closes thereafter in December 2025.” Pet. *Fintiv* Reply 3.

For this factor, *Fintiv* instructs us to consider “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.” *Fintiv* at 9. Here, the parties have completed substantial work in the district court case, but the litigation is only in its early- to mid-stages—discovery is still ongoing and the claim construction phase has not even begun yet. *See* Ex. 2002, 4–5. So, we determine this factor neutral.

6. *Fintiv Factor Four: Overlapping Issues*

Patent Owner argues that the overlap between issues raised in the Petition and in the district court case favors denial of institution. Prelim. Resp. 7–8; *see* PO *Fintiv* Sur-Reply 1–3.

In its Preliminary Response, Patent Owner asserts that “the issues presented as to the validity of the ’682 Patent are nearly identical”: “Petitioner’s counterclaim and supporting Invalidity Contentions . . . assert the same prior art references as those that have been asserted in the Petition.” Prelim. Resp. 7–8 (citing Ex. 2004). Patent Owner adds that, in the district court case, “Petitioner challenges the ’682 Patent. . . claims based on a prior art product” as well, which “also weighs in favor of denying the Petition, as the District Court will consider all the prior art proffered by Petitioner in the Litigation.” *Id.* at 8.

In its Preliminary Reply, Petitioner argues that its “*Sotera*”¹¹ stipulation ‘is highly relevant’ and strongly favors not exercising discretion to deny institution.” Pet. *Fintiv* Reply 3. Petitioner adds that “while this IPR challenges claims 1–44, only 25 claims (1–11, 13–19, and 21–27) are asserted in district court,” and “[t]here is no overlap regarding the other 19 challenged claims (12, 20, and 28–44),” which “also favors not exercising discretion to deny institution.” *Id.*

Patent Owner responds that Petitioner’s “Stipulation is inadequate[] because it does not reduce the overlapping invalidity issues and positions already presented to the District Court.” PO *Fintiv* Sur-Reply 1. In support of its position, Patent Owner cites a recent order by the Acting Director that denied institution of *inter partes* review where Petitioner’s invalidity arguments in the district court were more expansive and included combinations of the prior art asserted in the IPR proceedings with unpublished system prior art. *Id.* (citing *Motorola Solutions, Inc. v. Stellar, LLC*, IPR2024-01205, IPR2024-01206, IPR2024-01207, IPR2024-01208, Paper 19 at 4 (PTAB Mar. 28, 2025)). Patent Owner asserts the facts here are similar because “[i]n the District Court, there are far more combinations of art (both art cited and relied on in this Petition and additional art),” and “Petitioner also asserts. . . product art in combination with some of the art asserted in this Petition.” *Id.* Accordingly, Patent Owner posits that “Petitioner’s art and arguments here *are* being considered in the District Court,” and “[t]hus, a duplication of effort by the Board and the Court will be required” if we institute trial here. *Id.* (emphasis added); *see also id.*

¹¹ *Sotera Wireless, Inc. v. Masimo Corp.*, IPR2020-01019, Paper 12 (PTAB Dec. 1, 2020) (precedential as to § II.A).

(“The invalidity arguments advanced by Petitioner in the District Court case are broader than but fully inclusive of, the Grounds presented in this Petition.”). Patent Owner adds that “Petitioner opted to file counterclaims in the District Court challenging the validity of all the claims in the ’682 Patent” so “all 44 of the claims that are challenged in this Petition are at issue in the District Court”—“a complete overlap of claims in both proceedings.” *Id.* at 2.

Fintiv instructs that this factor should focus on “claims, grounds, arguments, and evidence *presented* in the parallel proceeding.” *Fintiv* at 12 (emphasis added). “[A] timely-filed *Sotera* stipulation . . . from a petitioner”—“that, if an IPR . . . is instituted, the petitioner will not pursue in district court . . . any ground raised or that could have been reasonably raised in the IPR”—“is highly relevant, but will not be dispositive by itself. Instead, the Board will consider such a stipulation as part of its holistic analysis under *Fintiv*.” March 2025 *Fintiv* Guidance 2–3.

Here, Petitioner’s invalidity contentions in the district court case cover claims 1–11, 13–19, and 21–27 of the ’682 patent and include all of the prior art references and six of the same grounds as asserted here. Ex. 2004, 1, 6, 7, 13–18. For example, similar to this proceeding, in the district court case, Petitioner asserts claims 1–11, 13–19, and 21–27 of the ’682 patent are anticipated or obvious over (1) Haddad138, (2) Haddad138 and Baggenstoss, (3) Haddad138 and Alie, (4) Haddad138 and Haddad204, (5) Haddad138 and Park, and (6) Park and Baggenstoss. *Id.* at 15–16.

Critically, the district court invalidity contentions also assert combinations of product art with printed publication prior art asserted in this proceeding. *Id.* at 6–7, 15–18. Petitioner’s Stipulation does not moot these

district court invalidity contentions because these contentions could not have been asserted in the Petition (because these involve product art but *inter partes* review can only be based on “prior art consisting of patents or printed publications” (35 U.S.C. § 311(b))).

For example, Petitioner asserts claims 1–11, 13–19, and 21–27 would have been obvious over the combinations of “S5K3L1YX03 (A11)” with Alie, Baggenstoss, and Park, respectively. *Id.* at 17–18. Petitioner asserts that Samsung Imager Process Review S5K3L1YX03 (prior art reference number A11) is a “Prior Art Product.” *Id.* at 7. The district court’s consideration of these contentions will require consideration of Baggenstoss, Alie, and Park. The district court would also have to address Petitioner’s counterclaims, which allegedly challenge the validity of all 44 claims of the ’682 patent and include the same prior art references as asserted here. *See* PO *Fintiv* Sur-Reply 2; Prelim. Resp. 4–5, 7–8; Ex. 2002, 5 n.5. And even if there were no counterclaims, “it may still be inefficient to proceed because the district court[’s]” review of Petitioner’s overlapping invalidity contentions “may resolve validity of enough overlapping claims to resolve key issues in the petition.” *Fintiv* at 13.

Of the issues presented in this *inter partes* review, Petitioner’s stipulation would only eliminate the District Court’s consideration of Haddad138 and Haddad204. Despite the stipulation, the District Court would still have to consider invalidity of every claim the Petition addresses and would still have to consider the Baggenstoss, Alie, and Park references. *Cf. Stellar* at 4 (“Petitioner’s invalidity arguments in the district court are more expansive and include combinations of the prior art asserted in these proceedings with unpublished system prior art, which Petitioner’s stipulation

is not likely to moot.”). In other words, “Petitioner’s stipulation does not ensure that [this proceeding] would be a ‘true alternative’ to the district court proceeding.” *Id.* at 3–4.

Because of the remaining overlap between the Petition and the District Court proceeding, *Fintiv* factor four weighs somewhat in favor of discretionary denial.

7. *Fintiv Factor Five: Overlapping Parties*

Petitioner is the same party as the defendant in the district court case, and Patent Owner is the plaintiff there. Prelim. Resp. 5; *see also* Pet. *Fintiv* Reply 3 (“Petitioner and Real Parties-in-Interest are Defendants in district court”). This factor weighs in favor of discretionary denial.

8. *Fintiv Factor Six: Other Circumstances*

Patent Owner argues that this factor favors discretionary denial because it “has undergone significant expense to address the invalidity positions set forth by Petitioner and will have to expend even more resources to substantively address those same invalidity arguments before the Board,” which “is antithetical to the preservation of the efficiency and consistency of the patent system”—“a key objective of *Fintiv*.” Prelim. Resp. 8. “[T]he weak merits of this Petition . . . further weigh[] in favor of discretionary denial,” according to Patent Owner. PO *Fintiv* Sur-Reply 2. Petitioner, however, argues that it “has established a strong case on the merits, as demonstrated by the Petition and Patent Owner’s limited discussion of the merits in its POPR.” Pet. *Fintiv* Reply 3.

Based on our review and consideration of the current record, we agree with Petitioner that its case on the merits is strong. For example, we determine the information presented sufficiently supports Petitioner’s

assertions that Haddad138 teaches or suggests each limitation of claim 1.¹² See Pet. 19–31. As cited by Petitioner (*id.*) and supported by its expert declaration (Ex. 1004 ¶¶ 37–40, 81–107), Figure 9 of Haddad138 and its accompanying descriptions appear to satisfy the requirement for an optoelectronic, photosensitive imager device with enhanced EMR absorption comprising a semiconductor layer¹³ with doped regions,¹⁴ a textured region with a plurality of surface features,¹⁵ and a support substrate¹⁶ coupled to the semiconductor layer, which can be done via a bonding layer.¹⁷ See Ex. 1012, Fig. 9, ¶¶ 6, 44, 45, 63, 64, 79, 87, 95. Haddad138 also appears to teach or suggest a textured region with “shallow trench isolation” surface features. See Pet. 22–24; Ex. 1004 ¶¶ 88–91. As Petitioner asserts, Haddad138’s surface features have the same structures (e.g., pyramids), the same height (50nm to 20µm), similar formation processes (e.g., trench isolation and etching), and serve the same function (i.e., reflecting incident light to enhance absorption) as the shallow trench isolation features disclosed in the ’682 patent. Compare Ex. 1012 ¶¶ 6, 63, 66, 70, 85, with Ex. 1001, 9:29–31,

¹² To the extent independent claim 28, which Petitioner asserts as obvious over Haddad138 and Alie, recites additional limitations directed to first and second bonding layers and a reflector layer, it appears Petitioner has sufficiently shown that Alie satisfies these limitations and that a person of ordinary skill in the art (“POSITA”) would have been motivated to combine Alie’s teachings with those of Haddad138. Pet. 58–60 (citing Alie ¶¶ 55, 59, 87, 88, 105; *KSR*, 550 U.S. at 417; Ex. 1004 ¶¶ 178–185).

¹³ Ex. 1012, Fig. 9 (item 72).

¹⁴ *Id.*, items 74, 76.

¹⁵ *Id.*, item 90.

¹⁶ *Id.*, item 88.

¹⁷ *Id.* ¶ 86; see also Ex. 1021 (Haddad138 Provisional), Fig. 4 (item 222).

9:34–37, 11:16–22, claims 11 (“shallow trench isolation surface features have a height in a range of about 50 nm to about 20 microns”), 12 (“shallow trench isolation surface features comprise pyramids”). And, as Petitioner reasons, “[c]reating the surface features using the same process as the process for the shallow trench isolation would generate predictable results, and reduce the costs associated with developing a new process,” which “would involve employing a known technique to improve similar devices in the same way.” Pet. 23 (citing *KSR Int’l Co. v. Teleflex Inc.*, 550 U.S. 398, 417 (2007); Ex. 1004 ¶ 91).

Haddad138 further discloses that its devices can be adapted for back side illumination (BSI), which appears to teach or suggest a textured region with surface features “located on the light incident side of the semiconductor layer and configured to interact with incident [EMR].” Pet. 24–27 (citing Ex. 1012, Figs. 1, 9, ¶¶ 48–49, 63, 149; Ex. 1004 ¶¶ 93–94, 98). Haddad138 itself provides reasons to modify as well, stating that with “BSI imagers, . . . incident light enters the device . . . and is mostly absorbed prior to reaching the circuitry,” and that “BSI designs allow for smaller pixel architecture and a high fill factor for the imager.” Ex. 1012 ¶ 48.

Patent Owner argues that Haddad138 does not anticipate claim 1 of the ’682 patent. Prelim. Resp. 10–14. But as discussed above, it appears Petitioner has at least shown Haddad138 teaches or suggests the limitations of claim 1, including a textured region with “shallow trench isolation surface features.” Patent Owner also argues that Petitioner does not establish a reason to modify or a reasonable expectation of success. *Id.* at 14–16. But, as discussed above and cited by Petitioner, Haddad138 itself provides reasons to modify. Ex. 1012 ¶ 48. And Petitioner has shown us why a person of

ordinary skill in the art would have had a reasonable expectation of success in making the proposed modification. Pet. 23–24 (citing Ex. 1004 ¶ 91). We also note that, to the extent Patent Owner attempts to distinguish Haddad138 based on “the light incident side of the semiconductor layer” language of claim 1, it is not even clear, on this record, how “light incident side” structurally limits the scope of claim 1. In particular, although the claim recites a semiconductor layer having two sides—“a light incident side and an opposed side”—it is not clear that the qualifier “light incident” requires that light actually hit the device on a certain side. *Cf.* Prelim. Resp. 12 (“For this embodiment of Haddad138 to meet that limitation, light would need to be incident on the device from the bottom side of Figure 9.”).

The information presented by Petitioner also appears to sufficiently support its assertions that the combination of Park and Baggenstoss renders independent claim 24 obvious. *See* Pet. 83–94. As cited by Petitioner (*id.*) and supported by its expert declaration (Ex. 1004 ¶¶ 279–298). Figures 4 and 7 of Park and their accompanying descriptions about a method of fabricating a CMOS image sensor appear to satisfy limitations 24[a]–[c], which recite a method of making an optoelectronic device by bonding a semiconductor layer to a support substrate, where the bonding includes depositing a first bonding layer onto the semiconductor layer, and bonding the first bonding layer to a second bonding layer disposed on the support substrate. Pet. 87–91 (citing Ex. 1010, Figs. 4 (second substrate 20 bonded to third substrate 132; adhesive layer 134a bonded to adhesive layer 134b, which is disposed on third substrate 132), 7 (third substrate 132 supports the device), ¶¶ 59, 76). Regarding limitation 24[d], “creating a plurality of shallow trench isolation surface features on a light incident side of said

semiconductor layer,” Park in view of Baggenstoss appears to render this obvious. *See* Pet. 91–94; Ex. 1004 ¶¶ 294–98. As Petitioner asserts, Figure 1 of Park shows that second substrate 20 can have an uneven surface, and Figure 7 of Park teaches that second substrate 20 can be on the backside or the light incident side. Ex. 1010, Figs. 1, 7, ¶ 72. And the trenches 144 shown in Figure 4 of Baggenstoss appear to teach the “plurality of shallow trench isolation features.” Ex. 1007, Fig. 4, ¶¶ 9, 31–32. Petitioner’s reasons to combine Baggenstoss with Park also appear to be adequate, with a reasonable expectation of success. *See* Pet. 85–87 (citing, e.g., Ex. 1007 ¶ 14; *KSR*, 550 U.S. at 418; Ex. 1004 ¶¶ 281–284). For example, Petitioner cites Baggenstoss’s disclosure that a grated interface formed of trenches allows a greater percentage of incident light to be captured. *Id.* at 85 (citing Ex. 1007 ¶ 14).

Patent Owner argues that Petitioner does not establish a reason to combine Park with Baggenstoss, or a reasonable expectation of success. Prelim. Resp. 18–20. But as discussed above, in the portions cited by Petitioner, Baggenstoss itself appears to provide adequate motivation. Ex. 1007 ¶ 14. And Petitioner has shown us why a person of ordinary skill in the art would have had a reasonable expectation of success in making the proposed combination. Pet. 87 (citing Ex. 1004 ¶ 284).

To summarize our analysis for factor six, while Patent Owner’s past and future litigation costs are worth noting, Petitioner’s strong case on the merits carries more weight. Thus, we determine *Fintiv* factor six weighs against discretionary denial.

9. *Conclusion*

When considering the *Fintiv* factors, we “take[] a holistic view of whether efficiency and integrity of the system are best served by denying or instituting review.” *Fintiv* at 6. Here, *Fintiv* factor one is neutral, factor two weighs somewhat for discretionary denial, factor three is neutral, factor four weighs somewhat for discretionary denial, factor five weighs for discretionary denial, and factor six weighs against discretionary denial.

Considering all factors as a whole, the proximity of the trial date as well as the investment and overlapping issues and parties in the district court case—*Fintiv* factors 2 through 5—collectively weigh in favor of denial and outweigh the strong merits the Petition presents (factor six), especially considering the only marginal reduction in issues provided by Petitioner’s stipulation (factor four). Under similar facts in *Stellar*, despite a strong case on the merits, the Acting Director denied *inter partes* review where a petitioner’s invalidity arguments in the district court were more expansive and included combinations of the asserted art with unpublished system prior art, which Petitioner’s *Sotera* stipulation was not likely to moot. *Stellar*, at 2–4; see also *Motorola Solutions, Inc. v. Stellar, LLC*, IPR2024-01205, Paper 11 at 12 (“[W]e also recognize that Petitioner’s contentions have merit.”), 17–38 (PTAB Feb. 13, 2025). In determining that “the efficiency and integrity of the system [were] best served by denying review,” the Acting Director explained that “although Petitioner’s *Sotera* stipulation may mitigate some concern of duplication between the parallel proceeding and this proceeding, the stipulation does not outweigh the substantial investment in the district court proceeding or *Fintiv* factors 1, 2, and 5, which the Board found weighed in favor of denial.” *Stellar*, at 4.

Accordingly, based on the applicable precedent and Director guidance, we determine that the circumstances presented weigh in favor of exercising our discretion to deny institution under 35 U.S.C. § 314(a).¹⁸

IV. CONCLUSION

After considering all the arguments and evidence before us, we determine that exercising our discretion under 35 U.S.C. § 314(a) to not institute trial is warranted. Accordingly, we do not institute *inter partes* review.

V. ORDER

For the foregoing reasons, it is

ORDERED that pursuant to 35 U.S.C. § 314(a), the Petition is denied and *inter partes* review is not instituted.

¹⁸ Petitioner filed petitions for IPR2025-00064 and IPR2025-00065 at the same time. Both petitions address the '682 patent but apply different art. Patent Owner also argues the second petition (IPR2025-00065) should be denied because one petition is sufficient. Patent Owner's Response to Petitioner's Notice Ranking Parallel Petitions, Paper 11. Because we deny institution based on *Fintiv* discretion, it is not necessary to reach Patent Owner's multiple petition argument.

IPR2025-00064
Patent 10,347,682 B2

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