

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

MICRON TECHNOLOGY, INC.,
MICRON SEMICONDUCTOR PRODUCTS, INC., and
MICRON TECHNOLOGY TEXAS, LLC,
Petitioner

v.

BESANG INC.,
Patent Owner.

Case No. IPR2023-00900
U.S. Patent No. 7,378,702

**PETITIONER'S OPPOSITION TO
PATENT OWNER'S MOTION TO STRIKE**

TABLE OF CONTENTS

	Page
I. INTRODUCTION	1
II. ARGUMENT	2
A. The Board Requested Petitioner to Construe “Stackable Add-On Layer” and “SOI Pillar,” and Explain Structural Distinctions	2
B. Petitioner Responded to PO’s Challenge to Watanabe’s Combinability and Enablement	4
C. PO Challenged Motivations to Combine and Reasonable Expectation of Success Regarding NAND Architecture	5
D. PO Challenged Motivations to Combine Embodiments	7
E. PO Argued the Petition Combined Disparate Embodiments	8
F. Petitioner Does Not Recant Dr. Lee’s Testimony	9
III. STRIKING PROPER REPLY ARGUMENTS AND EVIDENCE PREJUDICES PETITIONER	10
IV. CONCLUSION	10

I. INTRODUCTION

A reply may “respond to arguments raised in the corresponding opposition, patent owner preliminary response, patent owner response, or decision on institution.” 37 C.F.R. § 42.23(b). Recently, the Federal Circuit noted that “the very nature of the reply and sur-reply briefs are to respond (whether to refute, rebut, explain, discredit, and so on) to prior raised arguments within the confines of 37 C.F.R. § 42.23(b).” *Rembrandt Diagnostics v. Alere*, 76 F.4th 1376, 1384 (Fed. Cir. 2023). Each of the Exhibits 1033, 1035, 1041 ¶¶ 12-70, 1047-1050, 1052-1055, and 1057-1062, and the portions of Petitioners’ Reply (Paper 20) relying on these exhibits, responded to arguments raised in PO’s Preliminary Response (Paper 6), PO’s Response (Paper 18), or a request in the Decision on Institution (Paper 9, “DI”).

The caselaw PO cited is inapposite. In each case, the petitioner relied on new evidence to *revise* the petition’s unpatentability grounds. Here, Petitioner “assert[s] the same ‘legal ground’ as its petition because it relied on the ‘same prior art’ to support the ‘same legal argument.’” *Rembrandt*, 76 F.4th at 1384 (quoting *Apple Inc. v. Andrea Elecs. Corp.*, 949 F.3d 697, 706 (Fed. Cir. 2020)).

Petitioner properly responded to PO and the Board. “Since the need to rely on new evidence in response may not arise until a particular point has been raised in the [PO] response or [DI], [the Federal Circuit has] held that there is no blanket prohibition against the introduction of new evidence during an IPR,” especially

where it is “a legitimate reply to evidence introduced by [PO].” *Id.* (quoting *Anacor Pharms., Inc. v. Iancu*, 889 F.3d 1372, 1380-82 (Fed. Cir. 2018)). “In fact, ‘the introduction of new evidence in the course of the trial is to be expected...’ and permissible ‘as long as the opposing party is given notice of the evidence and an opportunity to respond to it.’” *Id.* (quoting *Genzyme v. Biomarin*, 825 F.3d 1360, 1366 (Fed. Cir. 2016)). The Board should deny the Motion to Strike Petitioner’s arguments and evidence responding to PO and the Board.

II. ARGUMENT

Petitioner does not revise the grounds of the Petition or recant any of Dr. Lee’s testimony, as PO argues. Each exhibit and portion of Petitioner’s Reply relying on those exhibits properly responded to PO’s arguments and requests from the Board.

A. The Board Requested Petitioner to Construe “Stackable Add-On Layer” and “SOI Pillar,” and Explain Structural Distinctions

PO alleges that “Micron and Dr. Lee waited until the Reply to provide construction[s] of ‘stackable add-on layer’ and ‘SOI pillar.’” Paper 24 at 8. Not so. Dr. Lee provided both constructions during his first deposition, Ex-2028, 15:14-19, 136:11-18, at which PO had every opportunity to question Dr. Lee and did so. *See, e.g., id.*, 12:8-16:8, 56:12-59:11, 65:13-69:23. PO thereafter addressed both terms in its Response, had the opportunity to depose Dr. Lee on his constructions again during deposition on June 12, and may still address them in its sur-reply. Paper 18 at 3, 12-19, 49, 54-56, 60-62. PO cannot now argue that it had no notice and

opportunity to respond.

Petitioner stated in its Petition that it believed no term required explicit construction “because the prior art discloses the claim limitations in a manner consistent with the ’702 Patent, including its ‘Terminology’ section” and “because the prior art discloses or renders obvious forming a ‘stackable add-on layer’ under either interpretation.” Paper 1 at 12, 6 n.2. And though nothing requires Petitioner to take claim construction positions in its Petition, Petitioner noted “that the intrinsic record does not support any interpretation of Claim 13 that encompasses forming the ‘stackable add-on layer’ by sequential deposition directly on the substrate.” *Id.* at 6 n.2. In its DI, however, the Board provided a preliminary construction of “stackable add-on layer,” and requested the parties to “expressly construe this term during trial and to explain how a ‘stackable add-on layer’ is structurally distinguishable from a layer that is sequentially deposited.” Paper 9 at 7-9, 9 n.5, 17. The Board also asked the parties to “provide an express definition of ‘SOI pillar.’” *Id.* In response, Dr. Lee and Petitioner provided constructions of these terms and identified structural distinctions between a “stackable add-on layer” versus structures made by sequential deposition. *See, e.g.,* Ex-2028, 141:20-142:11, 122:19-128:14, 119:18-121:15, 131:7-12, 132:3-12; Paper 20 at 4-13. And Dr. Lee did so at the earliest possible opportunity after the Board’s request—his first deposition, on February 6, 2024—giving PO notice and opportunity to respond.

Dr. Lee provided Exhibits 1033-1035—identifying structural distinctions—to PO five days *before* his first deposition. Despite having the opportunity to depose Dr. Lee on February 6 and again on June 12 and address these issues in its Response, PO declined to do so. Instead, PO argues that it is prejudiced and accuses Petitioner of gamesmanship. PO's problem is of PO's own making and the Board should not reward PO for choosing not to engage on issues that the Board explicitly asked the parties to address. *Genzyme*, 825 F.3d at 1366 (“[G]iven notice of the evidence and an opportunity to respond to it, the introduction of such evidence is perfectly permissible under the APA.”). Thus, the Board should not strike Exhibits 1033, 1035, 1047, 1057, 1060-1062, or ¶¶ 12-34, 60, 62-63, 67-69 of Exhibit 1041.

B. Petitioner Responded to PO's Challenge to Watanabe's Combinability and Enablement

Petitioner's Reply responded to combinability and enablement arguments PO raised for Watanabe. Paper 18 at 1-3, 10, 21, 23-30, 56, 62-63. First, PO argues, “a skilled artisan would have understood that Watanabe's stacking method simply would not work with Lee” because Watanabe describes high-temperature bonding. Paper 18 at 23; *see id.* 2, 21, 24-27, 56, 62-63. Second, PO argues, “Watanabe says nothing about alignment, which is a fundamental flaw” and “one of skill would not have been motivated to use Watanabe's stacking method in Lee.” *Id.* at 21, 28-30; *see* Ex-2028, 110:4-114:2, 117:5-118:2.

The Reply does not revise the Petition's mapping of the bonding limitation of

Claim 13, nor would it need to because Claim 13 does not require a specific bonding method, temperature, or time. Instead, the Reply explained that bonding techniques such as EMIH were well-known and would enable Watanabe's high-temperature bonding process without exceeding thermal budget. Paper 20 at 14-17. Claim 13 also does not recite alignment. Rather than revising unpatentability grounds, the Reply explains that optical and mechanical alignment were well-known and would enable precise alignment in Watanabe's stacking method. *Id.* The Reply does not contend that "optical or mechanical alignment" or "EMIH provided a rationale for combining Lee and Watanabe." Paper 24 at 3. Instead, the Reply responded to PO's arguments about combinability and enablement that ignore a POSITA's knowledge and for which "there is no blanket prohibition...of new evidence." *Rembrandt*, 76 F.4th at 1384. Because Exhibits 1048-1050, 1052-1055, 1059-1060, and ¶¶ 35-50, 70 of Exhibit 1041 are not necessary for a prima facie case of unpatentability for any claim, and were properly filed in response to PO's arguments challenging combinability and enablement of Watanabe, the Board should not strike them.

C. PO Challenged Motivations to Combine and Reasonable Expectation of Success Regarding NAND Architecture

PO acknowledges that "[t]he Petition's theory for Grounds 4 and 6 has always been modifying Lee with Endoh." Paper 24 at 6. That is still the case. In response to PO's arguments asserting lack of motivation to combine Lee's memory array with Endoh's NAND architecture and reasonable expectation of success, Petitioner filed

Exhibits 1057-1058 and Dr. Lee's testimony. This evidence explained that a POSITA would have known how to implement Lee's and Watanabe's memory cells within NAND architecture because the differences between NOR and NAND architectures reside in the circuitry that couples the memory cells.

The Reply does not offer new theories on motivation to combine. Rather, it explains that a POSITA would have substituted the well-known teachings of NAND architecture for the NOR architecture taught in Lee. PO's argument hinges on physically combining the references in a set order. But the test for obviousness is not whether the disclosed devices are physically combinable. Instead, it is whether a POSITA, in possession of the references' teachings, could arrive at the claimed invention. *See Allied Erecting v. Genesis*, 825 F.3d 1373, 1381 (Fed. Cir. 2016). "Rejecting a blinkered focus on individual documents, the Court [in *KSR*] required an analysis that reads the prior art in context, taking account of 'demands known to the design community,' 'the background knowledge possessed by a [POSITA],' and 'the inferences and creative steps that a [POSITA] would employ.'" *Randall v. Rea*, 733 F.3d 1355, 1362 (Fed. Cir. 2013). Here, a POSITA of ordinary creativity would have understood how to implement the teachings of Lee's memory cells using well-known teachings of NAND architecture as a whole rather than taking a finished NOR structure and removing, altering, or replacing elements to convert it to NAND.

Contrary to PO's assertion, the Petition does "set forth a theory based on

implementing *Watanabe's* memory cells in a NAND architecture.” Paper 24 at 7; Paper 1 at 37-46, 73-74. But if PO meant “*Lee's* memory cells” (as Section III.B's heading suggests), the Petition also set forth a theory based on implementing *Lee's* memory cells in a NAND architecture. *See* Paper 1 at 59-69, 73-74. The Reply does not alter the unpatentability grounds, but only elaborates on the Petition's obviousness argument substituting the well-known teachings of NAND and NOR architecture. The Board should not strike Exhibits 1057-1058, or ¶¶ 51-59, 61 of Exhibit 1041 filed in response to PO's arguments regarding the motivations to combine and reasonable expectation of success regarding NAND architecture.

D. PO Challenged Motivations to Combine Embodiments

PO challenged motivations to combine Lee and Watanabe and Lee, Watanabe, and Endoh. For example, PO argued that “[w]ith no advantage presented to combine Lee and Watanabe, simply offering two ‘alternative method[s]’ from the asserted art falls short of Micron's burden to show a *motivation* to combine them.” Paper 18 at 32-37; *see also* Ex-2028, 59:12-63:18. Similarly, PO argued that “Micron never meets its burden to show one of skill would have been motivated to combine Lee and Endoh's fundamentally incompatible memory architectures....” Paper 18 at 42-43. But, as the Petition explained, a POSITA would have been motivated to combine the teachings of Lee, Watanabe, and Endoh because of the benefits offered by the described stacking method (improved integration density and transistor

performance) and NAND architecture (fewer contacts per memory cell improving integration density), and would have had a reasonable expectation of success in doing so. Paper 1 at 26-28, 32-33, 36-37, 41-42, 45-46, 59-61, 64-65, 68-74. Thus, the Board should not strike ¶¶ 34-59 of Exhibit 1041 filed in response to PO's arguments regarding the motivations to combine Watanabe, Lee, and Endoh.

E. PO Argued the Petition Combined Disparate Embodiments

In its Preliminary Response, PO argued the Petition combined disparate embodiments of Watanabe and Lee. *See, e.g.*, Paper 6 at 3-4, 14-19, 28-33. The Board considered these arguments in its DI and noted that “[t]he parties may further address [the ground based on Watanabe] at trial.” Paper 9 at 14-16. The Board also found that it “do[es] not understand Petitioner to be selecting or combining disparate or separate embodiments [of Lee] to arrive at the claimed invention.” *Id.* at 24-25. Because PO raised these issues and the Board invited the parties to address them, Petitioner's Reply did so. *See* Paper 18 at 38-40, 50-53, 56-59.

The Reply reiterated that Petitioner does not combine disparate embodiments to arrive at the claimed subject matter for grounds based on Watanabe or Lee. Paper 20 at 21-24. In doing so, Petitioner has not “revise[d] its Petition by offering a new theory.” Paper 24 at 5. Similar to Dr. Lee's declaration, the Petition explained that Watanabe's Figures 5 and 6 disclosed methods of manufacturing the invention—“a semiconductor memory device in which memory cells are arrayed

three-dimensionally”—and that “[t]he memory cell of the present invention is applicable to any type of memory device i.e., a SRAM, a PROM, or a DRAM.” Paper 1 at 8-9, 16-21, 25-26 (quoting Ex-1005, 1:49-52, 2:51-53 (emphasis added)); *see* Paper 7 at 3-5. Similarly, the Petition explained that Lee’s Figure 83A showed only that a POSITA would have understood that the memory arrays of Figures 1A and 35 are bonded to the interlayer insulating layer formed over a substrate in the same manner as in Figure 83A. Paper 1 at 50-52; Paper 7 at 5-7. Thus, the Board should not strike ¶¶ 61, 64-66 of Exhibit 1041 filed in response to PO’s arguments that the Petition combined disparate embodiments of Watanabe and Lee.

F. Petitioner Does Not Recant Dr. Lee’s Testimony

Petitioner does not recant any of Dr. Lee’s testimony. PO misstates the record, arguing that “Dr. Lee admitted that the Lee reference preferred ‘monolithic’ structures.” Paper 24 at 7. Instead, Dr. Lee testified, “I don’t see how a [POSITA] reading that particular passage would conclude that Lee has a preference.” Ex-2028, 59:12-63:18; Ex-1041 ¶ 34. Similarly, PO misstates Dr. Lee’s testimony regarding Lee’s Figure 12B. During his first deposition, Dr. Lee was told to “draw a box around the first SOI pillar in Figure 12B,” and Dr. Lee relied on the ’702 Patent’s definition of “pillar” as a “doped stack structure” and his view that the hashed regions were insulators to indicate that Lee’s Figure 12B could depict two pillars. Ex-2028, 77:20-78:15. However, Dr. Lee acknowledged in his second declaration

that the memory cells of Figure 12B may form a single pillar consistent with PO's construction in the same way that multiple memory cells of the '702 Patent's Figures 4, 20, and 27 are described as forming a single pillar. Ex-1041 ¶¶ 62-63.

III. Striking Proper Reply Arguments and Evidence Prejudices Petitioner

The Reply did not improperly revise the grounds of the Petition or recant any of Dr. Lee's testimony. Petitioner merely responded to arguments raised by PO and requests from the Board. There is no prejudice to PO because PO knew about these issues from at least the DI, raised most of these issues itself, deposed Dr. Lee twice, already addressed the issues in its Response, and still may file a sur-reply. Because "the very nature of the reply and sur-reply briefs are to respond...to prior raised arguments," *Rembrandt*, 76 F.4th at 1384, Petitioner's responses were appropriate and PO's sur-reply remains the proper vehicle in which to respond on the merits.

If the Board grants PO's Motion to Strike, *Petitioner* would be prejudiced by not being afforded the opportunity to respond to PO's arguments and the Board's requests. *Axonics, Inc. v. Medtronic, Inc.*, 75 F.4th 1374, 1380-82 (Fed. Cir. 2023) ("[A] petitioner is entitled under the APA to respond to new claim construction arguments made by a [PO] or adopted by the Board sua sponte" and "to respond to new arguments made in a [PO] response.").

IV. CONCLUSION

Micron respectfully requests that the Board deny BeSang's Motion to Strike.

Dated: June 12, 2024

Respectfully submitted,

/s/ John Kappos

John Kappos (Reg. No. 37,861)

O'Melveny & Myers LLP

2801 N. Harwood St., Ste. 1600

Dallas, TX 75201

Telephone: (972) 360-1900

Fax: (972) 360-1901

E-Mail: jkappos@omm.com

Attorney for Petitioner

CERTIFICATE OF SERVICE

The undersigned certifies pursuant to 37 C.F.R. § 42.6(e) that on June 12, 2024, a true and correct copy of **PETITIONER'S OPPOSITION TO PATENT OWNER'S MOTION TO STRIKE** was served in its entirety by filing these documents through the PTAB E2E System, as well as by email, on the counsel of record for the Patent Owner.

Michelle E. Armond
michelle.armond@armondwilson.com
Joseph Li
josepher.li@armondwilson.com
Yue Han
amy.han@armondwilson.com
ARMOND WILSON LLP
4685 MacArthur Court, Suite 390
Newport Beach, CA 92660
Douglas R. Wilson
doug.wilson@armondwilson.com
ARMOND WILSON LLP
13785 Research Blvd., Suite 125
Austin, TX 78750

Dated: June 12, 2024

Respectfully submitted,

/s/ John Kappos

John Kappos (Reg. No. 37,861)
O'Melveny & Myers LLP
2501 North Harwood Street, Suite 1700
Dallas, TX 75201
Telephone: (972) 360-1900
Fax: (972) 360-1901
E-Mail: jkappos@omm.com
Attorney for Petitioner