

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

MICRON TECHNOLOGY, INC.,
Petitioner,

v.

YANGTZE MEMORY TECHNOLOGIES COMPANY, LTD.,
Patent Owner.

IPR2025-00117
Patent 10,672,711 B2

Record of Oral Hearing
Held: March 13, 2026

Before JO-ANNE M. KOKOSKI, KIMBERLY McGRAW, and
MICHAEL T. CYGAN, *Administrative Patent Judges*.

APPEARANCES:

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The above-entitled matter came on for hearing on Friday, March 13, 2026, commencing at 10:00 a.m. EDT, at the U.S. Patent and Trademark Office, 600 Dulany Street, Alexandria, Virginia.

P R O C E E D I N G S

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10:00 a.m.

THE BAILIFF: All rise.

JUDGE CYGAN: You may be seated. Good morning. This is Judge Cygan. Judges McGraw and Kokoski are present by video. We'll now hear argument in Case Number IPR2025-117 between Petitioner Micron Technology and Patent Owner Yangtze Memory Technologies. This is concerning U.S. Patent Number 10,672,711.

Counsel for the parties, starting with Petitioner, please introduce yourself.

MR. LANG: Good morning, Your Honors. Jason Lang on behalf of Petitioner Micron. I have with me my colleague, Han Hsu. He's going to argue -- introduce the patent and argue claim construction issue. I'll handle the rest of the argument.

With me is Kasper Larsen, a representative for Micron, in house. On the remote line with us is Dave Westergard, also a representative of Micron. Thank you.

JUDGE CYGAN: Thank you.

Patent Owner?

MR. GREENFIELD: Good morning, Your Honors. Adam Greenfield on behalf of Patent Owner YMTC. With me is my colleague Richard Lowry, who will be arguing with me today, as well as my colleague Inge Osman, and from YMTC, Daniel Chan.

JUDGE CYGAN: Thank you and welcome to the board. Per our hearing order, each party is provided with 60 minutes oral argument.

1 Additionally, Petitioner's (sic) request for additional 15 minutes for its
2 LEAP practitioner, Han Hsu, has been granted. Additionally, Patent --
3 Petitioner's request for -- sorry. Patent Owner's request for additional 15
4 minutes for its LEAP practitioner, Richard Lowry, has also been granted.

5 So both Petitioner and Patent Owner have 75 minutes each, correct?

6 MR. GREENFIELD: Correct.

7 JUDGE CYGAN: Parties need not use the entirety of that time.
8 Petitioner will argue first and may reserve time for rebuttal. Patent Owner
9 will respond to Petitioner's argument and may reserve time for surrebuttal.
10 We have the demonstratives from each party. Please remember to identify
11 the number of the demonstrative slides you're on, so we can follow along
12 with your arguments.

13 Petitioner, how much time would you like to reserve for rebuttal?

14 MR. LANG: Fifteen minutes, Your Honor.

15 JUDGE CYGAN: Okay. So you will have 60 minutes -- you may
16 begin whenever you're ready.

17 MR. HSU: Okay. Good morning, Your Honors. The Board should
18 find the -- all claims of the '711 Patent unpatentable because prior art shows
19 the claims to recite nothing more than conventional arrangements of well-
20 known components.

21 I'm going to skip some slides. Mr. Lang has already given the
22 roadmap, so I'm going to skip to Slide 9. We'll start with an overview of the
23 '711 Patent.

24 Turning to Slide 10. The '711 Patent is directed to a 3D memory
25 device, particularly a staircase structure. Conceptually, 3D memories is
26 structured by placing a memory channel vertically as shown here on the

1 slide in the orange color on the right, and the memory cells are arranged
2 vertically along the channel.

3 The memory cells are controlled via their gate conductor, which are --
4 which go across horizontally in the dark color. These are gate electrodes
5 525, which are one of the alternative -- alternating layers of the stack. And
6 then the vertical conductors labeled as 945 connect the memory cells to the
7 memory controller via the gate control -- gate conductors.

8 The staircase structure provides the landing pads for the vertical
9 conductors to electrically connect to the gate conductor. In other words, the
10 gate -- the steps of the staircase provides the horizontal spacing as well as
11 the vertical offsets to accommodate the multiple vertical conductors. This is
12 explained in the petition on Pages 16 through 19.

13 Turning to Slide 11. The vertical conductors are formed first by
14 etching vertical openings through the insulator above the staircase structure,
15 and then through the portion of the staircase that's above the gate conductor.
16 In this figure, the portion -- that portion of the staircase includes, from the
17 top down, the etch-stop layer, 310, and the second insulating layer, 208.
18 There's also a high-k dielectric layer around the gate conductor that is not
19 shown in this figure.

20 Now, as a shorthand, I will refer to the insulating layer above the
21 staircase as the upper insulating layer. Now, after etching is completed and -
22 - the openings are filled with a conductive material, so that they can become
23 conductors for electrical connection to the gate electrodes.

24 Now, as shown here on Figure 6, the -- although the structure of the
25 staircase at each step is the same, the thickness of the upper insulating layer
26 has a large difference between the top-most step and -- between top-most

1 step as represented by the height of the red rectangle and the bottom-most
2 step as represented by the green rectangle. And then because of the
3 difference in the height, there's a concern of over-etching the shallow holes
4 while the -- while etching the deeper holes. And the solution of the '711
5 Patent is to deposit a layer of etch-stop layer to address this over-etching
6 issue.

7 Now, I'm going to skip to claim construction. This is Slide 15. We'll
8 discuss a claim construction issue with the -- Patent Owner raised first in its
9 response post-institution. The claim terms at issue are "on a top surface"
10 and "on a side surface" in Claims 14 and 15. As we will show, the '711
11 Patent demonstrates in multiple ways that "on a surface" includes "on an
12 intermediate layer above the surface."

13 First, as shown on Slide 16, the '711 Patent defines the word "on" as
14 including, "The meaning of on something with an intermediate feature or the
15 -- or layer therebetween."

16 Now, this patent disclosure sets forth a clear definition under Thorner,
17 and the definition is binding under Braintree Labs. Now, the petition cites
18 this definition with respect to both Grounds 1 and 3 on Pages 60 and 89.

19 Now, further confirming that definition of "on," the '711 Patent says
20 "directly on" when that is intended, and this slide shows a couple of
21 examples. Now, if "on" must involve direct contact, saying "directly on"
22 will be redundant.

23 Turning to Slide 17. Patent Owner tries to redefine "on a surface" as
24 directly contacting a surface. In other words, Patent Owner tried to redefine
25 "on" as directly contacting in the context of "on a surface." Now, I'd like to
26 offer three preliminary observations regarding Patent Owner's redefinition.

1 First, Patent Owner does not identify any exception to the patent's
2 own definition. There is no exception. The word "on" is a preposition. It is
3 used with a noun. In the words of the patent's own definition, the usage is
4 "on something." For example, on a surface. Now, Patent Owner argues in a
5 sur-reply that "on" is a, "stand-alone term," as if "on" can be used in a
6 vacuum. That's nonsense.

7 Second, the redefinition leaves out any directional meaning of the
8 word "on." Under Patent Owner's redefinition, thing 1 could be directly
9 contacting thing 2 from below, and thing 1 can still be said to be on thing 2.
10 That is the opposite meaning of the word "on."

11 Third, as Petitioner's expert, Dr. Banerjee, pointed out in his reply
12 declaration in Paragraphs 12 and 13, Patent Owner and Dr. Campbell
13 actually disagree on the construction. Dr. Campbell is Patent Owner's
14 expert. Now, Dr. Campbell defines on -- "on a surface" as "directly on a
15 surface." In other words, Dr. Campbell simply tried to rewrite the claims by
16 inserting a word that isn't there.

17 Moving to Slide 18. Another problem with Patent Owner's
18 redefinition that -- is that it redefines "on" using the same words that are
19 already used in the same claims.

20 Now, we said that Claim 15 and -- 14 and 15 is where the disputed
21 terms -- where construed terms appear. And these claims depend from
22 Claim 13.

23 Now, Claim 13 recites, as shown in the highlight, "Wherein each
24 conductive structure directly contacts the corresponding conductive layers of
25 each step."

1 Now, this is what we're talking about, the conductive structure,
2 meaning the gate conductors and -- excuse me. The conductive structure
3 meaning the vertical conductors and the conductive layers being the gate
4 electrodes.

5
6 MR. HSU: Now, with Patent Owner's redefinition, Claims 14 and 15
7 use both "on" and "directly contact" to mean the same thing, directly contact.
8 That is against the presumption that different words have different meanings.
9 Indeed, the '711 Patent uses the phrase "directly contact" when the electrical
10 contact is needed.

11 Now, the etch-stop layer is an insulator. It is not in electrical contact
12 with the steps of the staircase, so the presumption is factually meaningful
13 here.

14 Turning to Slide 19. Patent Owner argues that the specification of the
15 '711 Patent consistently uses "on the surface" to refer to two things that are
16 in direct contact. That argument fails for two reasons.

17 First, case law is clear that it is not enough to have consistent usage to
18 define a term, much less to redefine a term against the expressed definition
19 in the specification.

20 Second, the '711 Patent itself identifies embodiments as exemplary
21 and non -- non-limiting. So the patent itself does not support using its
22 embodiments to redefine a term. That is also the law under Aventis Pharma.

23
24 MR. HSU: Now, turning to Slide 20, Patent Owner argues that
25 allowing an intermediate layer in the meaning of "on the surface," according

1 to '711 Patent's own definition, renders the word "surface" superfluous. It
2 doesn't. To see this, let's turn back to Slide 11.

3 Now, here, as shown on Figure 6, the etching has started to eat into
4 the etch-stop layer. And as can be seen from the figure, the contact holes are
5 on the top of the etch-stop layer, but the contact holes are not on the top
6 surface of the etch-stop layer because the holes extend into and below the
7 top surface. So "on the top" and "on the top surface" mean different things.
8 The word "surface" is not superfluous.

9 Now, turning back to Slide 20, Dr. Campbell testified that -- himself,
10 testified that there's no difference between the phrase "on the side" and "on
11 the surface" -- "on the side surface." This testimony undermines the basis of
12 Patent Owner's argument.

13 Turning to Slide 21. Now, even if adopting the definition of the '711
14 Patent would render the word "surface" superfluous, the definition still
15 controls. The Federal Circuit is clear on this point.

16 Again, Braintree Labs instruct that (inaudible) policy must govern
17 claim construction, in simple error, instruct that the superfluous language
18 rule does not supersede other claim construction principles. It is merely a
19 preference. And as we have seen, Patent Owner's redefinition would violate
20 many, many claim construction principles.

21 On the flip side, Patent Owner's reliance on Bicon is misplaced. As
22 recognized in Chevron U.S.A., the construction in Bicon that would have
23 rendered a term meaningless was also contrary to the specification and
24 therefore wrong for that reason. And in fact, Chevron U.S.A. affirmed the
25 Board's construction, which tracked the definition in the patent specification
26 at dispute there. And that is the right outcome here as well.

1 Now, unless there are questions, Mr. Lang will take over from here.
2 Thank you.

3 MR. LANG: Good morning, Your Honors, again. So we have two
4 primary references here, Kim and Park. We have four grounds because we
5 combined each with Fang. I'll start with the Kim ground. And, I'm sorry,
6 backing up to Slide 22, there's two issues on Kim, one issue on the
7 independent claims. Each step comprises a gate stack disposed over a
8 dielectric layer. And let me jump ahead to explain that.

9 Jumping to Slide 29, you see there on the right is a staircase. These
10 have been talked about in the past. You see where the steps are, that's where
11 they kind of go down, imagine walking up the staircase. And in that step
12 area, which is often called a landing pad, because those vertical
13 interconnects come down and land there, you have two options, either the
14 dielectric can be on top or the conductive gate can be on top. Two options.

15 What's shown in the Kim figures as shown there in Figure 22A is that
16 the dielectric in blue is on top. These -- the petition relies on Figures 17 and
17 -- through 22A. And if you look at the language on the left, Paragraph 90 of
18 Kim, it says, "As the stacked layer structure has repeated the etch, the
19 insulating layers 111 to 118 may have etched portions being exposed." That
20 means they're on top.

21 Now, jumping back to Slide 23, what the petition demonstrated is that
22 Kim also discloses. Now, this disclosure is in the earlier embodiments in
23 that context, and it says, "In other embodiments, each of the top surfaces of
24 the sacrificial layers, not the top surfaces of the insulating layers, may be
25 partially exposed." That is saying that instead of the dielectric being on top,

1 indeed, the sacrificial layer, which becomes the conductive layer, may be on
2 top.

3 Now, when we get into the description of Figures 17 through 22A, on
4 which the embodiment on which the petition advances, that is where
5 Paragraph 184 on the bottom of this slide appears. And it says, "In these
6 embodiments, the same elements will be denoted by the same reference
7 numerals, overlapping descriptions may be omitted."

8 There is no dispute that these Figures, 17 22 -- through 22A use the
9 same reference inputs. You see there, indeed, on the right, 111 through 118.
10 If you go to earlier figures, 17, 18, 19, those conductive gates are sacrificial
11 and labeled SC1 through 8, no dispute there. So the petition advanced that a
12 POSITA would immediately envision, would know that the reverse ordering
13 applies to 17 through 22A, but there's much more.

14 Turning to Slide 24, the --

15 JUDGE CYGAN: Counsel, can you go back for a second? So
16 Paragraph 90, is that describing the embodiments of Figures 5A through
17 14A and 5B through 14B?

18 MR. LANG: Yes, Your Honor.

19 JUDGE CYGAN: So the argument you're making is that to the extent
20 that 22A embodiment doesn't describe how each gate stack was made and
21 how it's being configured, you would look to the entirety of disclosure
22 before it, and it could be built on any of the embodiments that's disclosed
23 before?

24 MR. LANG: I would say that with respect to the layer ordering, you
25 would certainly look to the earlier embodiments because 184, that is in the
26 context of 17 through 22. And 184 is in the context of building 17 through

1 22, and it says, "same reference numerals, overlapping descriptions may be
2 omitted," so absolutely you would look back to the same descriptions.

3 JUDGE CYGAN: And Paragraph 90, is that explicitly talking about
4 any of the 5A through 14A or 5B through 14B embodiments?

5 MR. LANG: It's talking about -- that's a set of -- basically a -- kind of
6 a build of one embodiment.

7 JUDGE CYGAN: Okay.

8 MR. LANG: And you see there, the numerals SC1 -- 111 through
9 118, those appear in those embodiments. Those also appear in 17 through
10 22.

11 Moving forward. Turning to Slide 24, Your Honors, the petition
12 further shown -- show that these are simply two options to build the steel
13 staircase. One of two ways, either the dielectric is on top or the gate is on
14 top. Chen shows that side-by-side. It shows it with the etch-stop with a
15 barrier layer. It shows it's doing the same thing. Two known mechanisms,
16 each one is providing that landing spot that you see on the right, so that the
17 vertical connect come -- can come down.

18 Dr. Banerjee explained, it's the same thing. All you're doing is you
19 reverse the ordering when you lay down those layers, but the etch-stop is
20 still formed on top that -- then the interconnection is formed.

21 It further demonstrated this with respect to the Kim or Park reference.
22 I'll get into that reference. Patent Owner does not dispute that Park discloses
23 reversing the order. They say it only does so in earlier embodiments. I'll get
24 into that. But just like Kim, Park says, "Unlike what is shown in 9A,
25 instead, a sacrificial layer may be exposed."

1 So what you have is Kim, you have Park, you have Chen showing that
2 these are two options, predictable variation. You heard Counsel for YMTC
3 yesterday say, oh, this isn't the case where there's just a couple options. This
4 is that case. There's two options. They're laid out side-by-side in three
5 different references, and they're treated as so routine, no distinctions are
6 made between the two.

7 JUDGE CYGAN: Counsel, I have a question about the use of two
8 options for that.

9 MR. LANG: Yes.

10 JUDGE CYGAN: So what we just talked about with Paragraph 90,
11 do I want to understand Kim as having a disclosure of a number of different
12 embodiments? And you're basically pointing to one embodiment, which is
13 Figure 22A with the staircase structure from Paragraph 90. The reverse
14 staircase structure. So basically that should be considered one single
15 description. You have to read it across a couple different paragraphs, but it's
16 one description.

17 In that case, you wouldn't need a motivation for it, correct? Because
18 you're just pointing to an explicit description in there. So when you're
19 presenting reasons why it's a suitable option, is that an additional, sort of,
20 argument you're making, or is it saying, well, I'm not considering it to be one
21 single description, it's really two separate embodiments that aren't linked
22 closely enough together, so I need some sort of motivation to tie them
23 together?

24 MR. LANG: I think it's alternative argument, Your Honor.

25 JUDGE CYGAN: It's alternative argument?

1 MR. LANG: Yes. The petition asserted that a POSITA would
2 understand that that reverse ordering disclosure applies to 17 through 22,
3 and the petition also said it would at least be obvious, and then we pointed to
4 Chen, Park, and Kim.

5 JUDGE CYGAN: And is that why you're using "additionally" there
6 to demonstrate that it's an alternative argument?

7 MR. LANG: Yes, Your Honor.
8

9 JUDGE CYGAN: Okay. Thank you.

10 MR. LANG: Turning to Slide 25, Patent Owner raises -- the patent
11 owner response focuses on this idea that there must be a benefit. They also
12 get into this notion of there's a missing limitation. It's not -- it has to be
13 unusually simple. I'm not going to spend much time on that today, Your
14 Honors, because the idea that there's a missing limitation is silly when they
15 admit Kim reverses the order, when they admit Chen reverses the order,
16 when they admit Park reverses the order, those are all gate on top.

17 We actually cited two additional references for gate stack on top. The
18 DSS case that they cite, that is when you're talking about a true missing
19 limitation where you're using, you know, common sense to fill in a gap.

20 But I want to focus on the first point first. Turning to Slide 26. In
21 their sur-reply, they shift horses a bit and say, we've never identified a
22 problem. That is false, Your Honors. Right there on the left is from the
23 petition. This is setting up the background. This is what the case is about.

24 Indeed, you've heard my colleague explain what the staircase is, what
25 this case is about. We explained in the petition that Citation ID 298, is to a
26 (inaudible) textbook -- a textbook. Dr. Banerjee explains there, what this

1 staircase is doing -- and I'll just back up to Slide 24, Your Honors. This
2 staircase is providing a landing pad. Those are the steps. That interconnect
3 -- that vertical interconnect has to come down and make electrical
4 connection to the gateway. Why? Because that connection has to then go
5 travel to the memory cells down in the middle of the array.

6 And turning back to Slide 26, that was what was explained in the
7 petition. The staircase structure provided landing areas for the control gates
8 for contact to the vertical conductive structures. Then indeed, they say, oh,
9 this is attorney argument. They have a slide on that. And they literally cut
10 off the sentence under -- from what they have in their slide is -- says, this is
11 exactly what Chen, Park, and Kim disclosed. It cites Dr. Banerjee, and Dr.
12 Banerjee explains, in both, you have two different orders, and they both
13 provide the same function. You're connecting the vertical conductive
14 structure to the gate terminal. And what does that do? Then it -- that's the
15 gate terminal of the memory cells. So that gets that signal to the memory
16 cells. The order of the alternating layers, it doesn't change -- impact the
17 function.

18 Okay. Dr. Banerjee explained it once in the petition. He explained it
19 again in the reply. We cited to Kim, Chen, and Park that show you this is
20 exactly what both orders do. This nonsense about there's not a reason, that
21 there's not a problem, that we're just pointing to two embodiments sitting
22 next to each other, that is rejected by the records, Your Honors.

23 And with that, I want to turn to Slide 27 and briefly address the law.
24 This case is, dead-on, the Intel-PACT case. That is the case, Your Honors,
25 that we cited that says you don't need a categorical improvement. Why?

1 Because sometimes you just have two known mechanisms. That's what that
2 case talks about.

3 In Intel, it was two known mechanisms to do cache -- to maintain
4 cache coherency. There were -- they -- it was demonstrated that there was
5 two known ways to do it. Both did the same thing. One wasn't better than
6 the other.

7 That is exactly what we have here. Two ways to build the staircase.
8 What's the reason? What's the why? What's the problem? Because you
9 have to have these landing pads so you can have the vertical connect come
10 down, make that contact, get that electrical signal over to the memory cell.

11 We cite KSR. If this isn't the classical predictable variation, the
12 classical arranging old elements, I don't know what is. This is the to-mah-to,
13 to-may-to. You can either have the gate stack on top or you can have it on
14 bottom. Chen, Park, Kim all tell you it does the same thing.

15 We cited Boston Scientific just for the fact that, look, when you have
16 these two things side-by-side, it doesn't take a rocket scientist to realize that
17 they apply. Indeed, in that case, it was applying a coating from one
18 embodiment to another. Here, we're not even talking about applying a
19 coating. We're talking about just reversing the order, which all the
20 references show were well-known. But what's more, it's actually in the same
21 reference.

22 Turning to Slide 28 in their law. The CommScope case is off-point.
23 There, if you read the case, the petitioner was focused on improvement,
24 predictable variation, or predictable results.

25 And there's a sentence in there that was addressed that says they had
26 said, well, let's change this command. We're going to change the command

1 to deal with error correction. It was never explained how that was tied to
2 error correction. Why are you doing that for error correction?

3 Here, Chen, Park, Kim -- I'll show you, Dr. Banerjee, Micheloni
4 textbook, I'll show you that you're doing either ordering so that you can have
5 a landing pad, so this vertical connect can come down and get the electrical
6 signal to the memory cells. In re Stepan (sic), that point, that case is on
7 point, it relates to doing some additional testing. They cite it just for the fact
8 that you need a reason. I went over the reason several times. Intel v. Tela.
9 Again, that case says if you have nothing more other than two figures sitting
10 next to each other you need something more.

11 Here, you have Kim. I'll get into Park. Park says you can combine
12 the embodiments. Kim says, same reference numerals or may admit
13 descriptions. Then you have Chen, Park, and Kim, all demonstrating that
14 each ordering did the same thing and was routine to implement.

15 Turning to Slide 29, this missing limitation argument fell apart during
16 trial because Dr. Campbell never would say that Kim doesn't disclose
17 reverse -- reversing the order. In fact, Patent Owner later said that Kim does
18 disclose reversing the order, it's just in different embodiments. So I don't
19 understand how there could be a missing limitation. But I do, turning to
20 Slide 30, want to take a pause here and go over this. This is what Dr.
21 Banerjee had described in the opening declaration. This description of Chen
22 removes any doubt that this is not a predictable variation that was so simple
23 to implement. If you look at the -- on the left, Your Honors, we have a
24 conductor on top. On the right, it's the dielectric on top. And Chen does not
25 distinguish between the two. When he forms both, he says, "As shown in
26 9A and 9B, the stack structure is formed. The present step includes forming

1 a priority of conductive layers and forming a priority of insulating layers."
2 There is no distinction about how that's done depending on the order.

3 So any idea suggestion that somehow changing the ordering is
4 difficult is rejected by the record. We go on to 10A, 10B. This is forming
5 an etch-stop. Your Honors, we also cite in the petition, Figure 7, that shows
6 doing the same thing with two etch-stop layers. Figures 10A and 10B say,
7 "As shown in 10A and 10B, the etch-stop layer is formed on the stack
8 structure." For example, you know, which as shown in, you know, 1A(b),
9 the etching layer is formed on the sidewall of a set structure, and it
10 continues. Again, Your Honors, no distinction about what the etch-stop
11 layer is, how thick it is, what material it is, how it's formed, depending on
12 the ordering of the gate stack. It just simply says you form it.

13 What's more, and this is critical, we go to 11A and 11B, the final
14 steps. As shown in 11A and 11B, the conductive structure is formed and the
15 dielectric layer is formed on the etch-stop layer. And it continues and it
16 describes what you end up with, which is these vertical interconnects that
17 I've been talking about. Those hit the conductive layer, whether the
18 conductive layer is on top or the conductive layer is on bottom, they have to
19 make contact with that conductive layer because that is what provides the
20 electrical connection to the gate line. That gate line sends that electrical
21 connection over to the memory cells. No distinction.

22 Your Honors, we have cited law on this; several cases that say a
23 PHOSITA doesn't describe the detail in a specification when it's known,
24 when it's routine. Otherwise, these specifications would be a textbook.
25 Indeed, that's why we cited a textbook to describe this. This was well
26 known. They, in sur-reply, had come back and untimely said, well, that law

1 just relates to, you know, 112 enablement. The parties have cited -- and
2 other IPRs, and the board is well aware of that law applies directly in the
3 103 context. The Uber case, Uber Tech verse X One, 957 F. 3d 1334 (Fed
4 Cir. 2020), that case has been cited between the parties, yet they've still
5 made this argument. That case says the specification is entirely silent on
6 how to implement it, suggesting that a PHOSITA was more than capable of
7 selecting between the known methods.

8 So what we're left with, despite all of anything their expert might say,
9 it's all contradicted by this, what we're looking at here on Chen. This is
10 routine. There were two simple ways to do this. Both orders provided the
11 exact same thing. Two known methods, two predictable variations that
12 accomplished the same thing. The same-- it deals with the same problem,
13 getting this interconnect connected. If that were not enough, Kim and Park
14 treat reversing the ordering the same way. Instead of having the insulating
15 layer on top, you can have the gate stack on top. Kim says it on top, Park
16 says it on the bottom, unlike what is shown in Figure 9A, you can simply
17 have the sacrificial layer on top. Again, no distinction. Oh, we need a
18 different etch-stop layer. We need a different etch technique. None of that.

19 And all, during trial, any alleged distinction fell apart. For example,
20 we cite in our reply papers, they say, well, there's a difference because if the
21 etch -- if the gate layer is on the top, you have to make sure that you stop on
22 the gate layer. If it's on the bottom, you got to go through a dielectric layer
23 to get to it. Their own expert said, that we cited in our reply papers, oh, that
24 just involves etch-stop monitoring. That's been around for two or three
25 decades. So everything is consistent with doing this with routine, simple,

1 certain the expectation of success, and it's certainly obvious, at a bare
2 minimum, when you're looking at two well-known alternatives.

3 So with that, Your Honors, I will turn to Slide 32 and address Claim
4 14 and 15. The issue here, Your Honor, is whether -- and Kim -- go back to
5 -- and Kim, turning to Slide 29, there is a barrier layer and then an etch-stop
6 layer on top. And they've argued, well, the Claim 14 and 15 -- whoops,
7 sorry. Turning to Slide 32, they say, well, Claims 14 and 15 requires that the
8 etch-stop be on the surface, therefore it has to directly contact it. My
9 colleague, Han Hsu, just handled that. The idea that on a side top surface
10 must mean it directly contacts it is legally erroneous, violates multiple claim
11 construction tenets. And for that reason alone, this argument fails.

12 In the alternative, turning to Slide 33, what the petition or what
13 Petitioner has argued, is that even if you require direct contact, Kim
14 discloses it. And then --

15 JUDGE CYGAN: Counsel?

16 MR. LANG: Yeah?

17 JUDGE CYGAN: Sorry. Can we take a step back --

18 MR. LANG: Yeah.

19 JUDGE CYGAN: -- and look at the difference between Claims 13
20 and 1. So the reason why we're talking about Claims 14 and 15 is because
21 they depend on 13. And unlike Claim 1, 13 doesn't have the barrier layer
22 interposed between --

23 MR. LANG: Correct.

24 JUDGE CYGAN: -- is that correct? And your position is that
25 because it's -- if I understand correctly, and correct me if I'm wrong, is that

1 because claim 13 is a comprising claim, it can still have a barrier layer in
2 between it?

3 MR. LANG: Sure.

4 JUDGE CYGAN: So you're using the same structure in your petition
5 for Claims 1 and 13, with having the explicit barrier layer of Claim 1 and
6 having a barrier layer, but you don't -- it's not excluded --

7 MR. LANG: It's not --

8 JUDGE CYGAN: -- from 13?

9 MR. LANG: Absolutely.

10 JUDGE CYGAN: And then to the extent that we have this additional
11 language in Claims 14 and 15, that's covered by their definition of "on" in
12 their specification.

13 MR. LANG: Correct.

14 JUDGE CYGAN: Okay. Thank you.

15 MR. LANG: And, really, what they would need, Your Honor, to --
16 going back to Slide 23 -- slide 32. Really, what they would need, Your
17 Honor, legally, is a case that says that the superfluous rule, we don't think is
18 -- it's redundant at all, but they need some type of support that you could
19 trump a disclaimer or a definitional language. You would need some type of
20 law saying that you could trump definitional language, and there is none.
21 They would've had to disavow the definition, they did not. So --

22 JUDGE CYGAN: Do you think it's a matter of weighing all the
23 evidence on the claim construction, the strength of the descriptions versus
24 the nature of the definition? Or you think once you have a definition,
25 nothing else goes above that unless there's a disavowal?

1 MR. LANG: I-- yeah. The way I read it is that the -- what's relevant
2 here, I haven't thought about whether -- you know, every principle in the
3 world. You know, the arguments they make is repeated -- you know,
4 alleged repeated consistent use. And no, repeated consistent use cannot
5 trump a definition. There's just no law to support that.

6 JUDGE CYGAN: Thank you.

7 MR. LANG: Now, I-- just briefly, the reply advances that Kim does
8 have an alternative where it would be a single etch-stop, they keep making
9 the argument that this is new, this is a different embodiment. The only thing
10 I want to note for the board, I don't think it's necessary to go here, but if the
11 board considers this, I would just ask you to look at where Kim's Paragraphs
12 185 through 187 appear. It's not in a different embodiment. It's right within
13 the description of Figures 17 through 22. So this idea that we're relying on a
14 different embodiment is false.

15 But I want to importantly jump to Kim in view of Fang. Claims 10 --
16 and Slide 34, Claims 10 and 17 require a thickness of the etch-stop layer is
17 between 10 nanometers and 1,000 nanometers. And the petition showed, as
18 a first matter, that this range, 10 through 1,000, is notoriously well-known,
19 and here's the important thing, it lacks criticality. What does that mean?
20 This was in the prosecution. This is what the examiner said. It was never
21 disputed. Patent Owner still doesn't dispute it. What that means is that this
22 range is not specific to anything.

23 If you think about 10 nanometers as one type of thickness, you could
24 stack 100 of those on top of it and get to 1,000. The range is actually, as the
25 '711 Patent itself says, it subsumes many different ranges. It's as high as the
26 staircase itself. I mean, you saw those little layers. The upper range is as

1 high as the whole staircase. It covers any suitable etch-stop material. This
2 idea that somehow this range is specific to an etch-stop material is rejected
3 by the '711 Patent. It applies whether you have one or two etch-stop layers.

4 So this idea that minor structural differences matter are rejected by the
5 '711 patent and the fact it lacks criticality. What's more, the petition showed
6 Fang 2 has a non-critical range which I'll get into. It's a factor of 20. 50 to
7 1,000 Angstroms, which is 5 to 100 nanometers, and it's overlapping. Now,
8 Fang disclosed the analogous structure. Both of them have a staircase. Both
9 of them have the etch-stop over the staircase. There's more. Both of them
10 may comprise silicon nitride. Both of them may be built by conventional
11 techniques. And Fang's range may be adjusted to Kim's staircase. Dr.
12 Banerjee explained, in his open declaration, and this was never disputed, you
13 could look at the staircases and say, well, Kim's a little bit, you know,
14 smaller, and so we're going to make some adjustments and scale Fang's
15 range to Kim's, and it still applies, it still overlaps, and that was never
16 disputed.

17 What's more, the petition showed that Fang -- and this is undisputed.
18 What Fang is saying is that you can use this etch-stop to prevent punch-
19 through, just like the '711 Patent. That's not disputed. Kim, on the other
20 hand, doesn't talk about that. So a PHOSITA looking at Kim that has the
21 etch-stop on the steps would say, I can improve this by looking at a relevant
22 thickness to get this punch-through benefit. This idea that the motivation
23 has to be in Kim itself is rejected by the law. Your Honors know, there's not
24 a rigid TSM test. You can look to other references for the motivation. Fang
25 provides that here.

1 Now, Patent Owner's arguments largely break down into two buckets,
2 and they fail for two independent -- or they fail for two independent reasons.
3 One, the lack of criticality is a reason that these alleged structural differences
4 fail. Patent Owner has basically said there's some differences between Kim
5 and Fang; that defeats motivation. It fails for a lack of criticality and for a
6 technical reason that I'll get into. But as to criticality, going to Slide 38,
7 Patent Owner is wrong on the law. Criticality, when there is a range of
8 overlaps, which they do not dispute, there's a presumption of obviousness.
9 Okay. So there's a presumption of obviousness now. They have just
10 misstated the law. The case that they cite, UCD, I would ask Your Honors
11 to look at the case on which it cites, the E.I. du Pont case. When there's a
12 presumption of obviousness, then there's a burden of production that shifts to
13 the patent owner.

14 That burden of production, they can overcome the presumption in a
15 couple ways. They do cite in their papers, in their sur-reply, that they could
16 overcome the presumption showing, you know, unexpected results, or
17 showing that it -- the prior art teaches away from it. They could also have
18 shown criticality, and that's what E.I. du Pont shows. So the idea that
19 criticality is not relevant to obviousness is just legally incorrect.

20 But criticality is also important because it shows that these structural
21 differences don't matter. Turning to Slide 39. What did Dr. Campbell
22 testify to? We asked him if you -- if you're reading the '711 Patent, do any --
23 would you know how thick it has to be, basically? And he said, no, that the
24 range there, that's just a place to start doing experiments to determine what
25 you actually need. So the idea that this range is specific to some type of
26 material configuration is rejected by their own expert's testimony. And it's

1 rejected, remember, by the '711 Patent that says it's available for any suitable
2 material, whether you have one etch-stop or two etch-stop layers.

3 Fang's range lacks criticality. It's a factor of 20, 5 to 100. It applies
4 for any suitable material for any material not substantially removed. So
5 basically, the only limitation on material is it's not substantially removed
6 when they're doing this particular type of etch. Even if you limited it to
7 carbon-doped silicon nitride, it applies regardless of doping concentration.
8 So you have two non-critical ranges, any minor structural differences don't
9 matter for that fact alone.

10 But when we look, technically, turning to Slide 41, these alleged
11 differences technically do not matter. Let's start with the etch-stop material.
12 They say Fang is only carbon-doped silicon nitride. And they say Kim is
13 only silicon nitride. Both of those statements are wrong, Your Honors.
14 Fang says, by way of example only, may it be carbon-doped silicon nitride.
15 Kim, they admit in their patent owner response, I think it's around 37, that
16 Kim discloses a host of different types of etch-stop materials.

17 But even if you were to accept what they were saying was true, they
18 now concede that Exhibit 1029 shows that you have the same etch rate for
19 both carbon-doped silicon nitride and silicon nitride. So Kim and Fang,
20 even if you took them at their word, which is wrong, the etch-stop materials
21 etch at the exact same rate. The only thing they say on Exhibit 1029 is,
22 okay, you've proved it for one etched type, but you haven't proved it for all
23 etched types. The only evidence of record shows that it's the same. They
24 agree that shows it the same for the same, for an etched type. So the only
25 evidence shows that the alleged difference in etch-stop material is irrelevant.

1 Next, this idea that somehow the focus is different is just contradicted
2 by Kim. They say, well, Kim is focused on something else. But guess
3 what? You see in Kim, that etch-stop is over the steps. The vertical connect
4 comes down through that etch-stop. What does an etch-stop do? It stops the
5 etch. So the idea that a PHOSITA wouldn't want to say, how can I prevent
6 punch-through when I have the etch-stop on the steps is contradicted by
7 Figure 22A of Kim itself.

8 Next, if these structural differences really matter, turning to Slide 44,
9 well then why does Chen have the same etch-stop thickness, whether it's a --
10 the gate stack is on top or the dielectric is on top? That's a big structural
11 difference underneath, and they don't dispute that Chen has the same
12 thickness when you have an etch-stop on top or the gate layer on top or the
13 gate layer on the bottom. The reason is, is all the evidence, turning to Slide
14 43, lines up as follows: The etch-stop -- the etch-stop is stopping the etch
15 above it. So the etch-stop material protects underlying films during the etch
16 that forms a contact. So you're protecting what's underneath you during the
17 etch above you. Likewise, the barrier layer, for protecting the underlying
18 structure during subsequent etching, that is etching at the etch-stop layer. So
19 when you're etching above you, you're concerned with protecting what's
20 below you. Likewise, a high-K layer is providing the protective function
21 based on the etching above it, immediately above it.

22 So in all cases, the thickness is set, not by differences on what's below
23 you, but based on the etch above you. Turning to Slide 45, Dr. Banerjee
24 explains the same thing. You're doing the thickness based off of what's
25 above you. The layers below it are trying to protect when you're etching the
26 etch-stop. It provides -- basically, if your etch-stop has completely failed, it

1 provides an extra safety mechanism, but you're not setting the thickness of
2 the etch-stop layer based on anything below you. Chen rejects that
3 expressly. And if you look at the sur-reply, the way they describe
4 everything, every time they're describing an etch-stop layer, whether the
5 barrier or high-K or what have you, they're talking about it's performing its
6 function when you're etching immediately what's above it.

7 JUDGE CYGAN: Counsel, I have a question on the way you make
8 your combination of Fang and Kim in your petition, specifically in Petition
9 63. So you cite Fang's disclosed thickness range -- I'll give you a second to
10 pull that up.

11 MR. LANG: Go ahead. I can --

12 JUDGE CYGAN: Okay. You cite Fang's disclosed thickness range,
13 you translate that into the nanometers of units of the claim language. And
14 then if I understand correctly, you alter that based on how it would be used
15 in Fang. So you're not applying, directly, Fang thickness range of 5
16 nanometers to 100, you're applying a thickness range of 5 to 26.7
17 nanometers.

18 MR. LANG: Oh.

19 JUDGE CYGAN: Can you explain a little bit about what's going on
20 there?

21 MR. LANG: Yeah. The PHOSITA is basically just scaling, looking
22 at the height of Fang, the height of the staircase, the height of Kim.

23 JUDGE CYGAN: Okay.

24 MR. LANG: And saying, okay, I have to scale it down based off of
25 the height, because the height is less. And this was never disputed that this
26 was incorrect.

1 JUDGE CYGAN: Does this play at all into your reasonable
2 expectation of success, the fact that you haven't just taken one value from
3 Fang, which is unrelated, you're modifying it?

4 MR. LANG: I -- Your Honor, it shows the reasonable expectation of
5 success. It shows the applicability of it because it's taking that and showing
6 that it can apply to ten specific staircase.

7 JUDGE CYGAN: Thank you.

8 MR. LANG: I want to jump ahead to Park. The same -- there's the
9 same issue on Park. I want to cover a couple of points. Park discloses -- if
10 you look on the left, this is the original 9A, discloses that the dielectric is on
11 top. Then it says, "Unlike what's in 9A, you can have the conductive layer
12 on top. And I want to jump forward to Slide 51. If you look at the whole
13 thing, it says, "Referring to Figure 9A," at the top. And then it says, "Unlike
14 what is shown" -- and then it says, "each insulating may be exposed," and
15 that's what you had in 9A. "Unlike what is shown in 9A, each sacrificial
16 layer may be exposed." So again, if you remember that language of Kim, it's
17 almost identical that unlike what is shown, I'm putting the conductive layer
18 on top.

19 Now, Patent Owner is going to get up here, and I'm going to address
20 this more in rebuttal, they have shifted their argument in sur-reply and their
21 new arguments should be rejected. Their slides talk about -- they say this
22 doesn't show reverse ordering. They say, in Park, earlier, in earlier
23 embodiments, discloses gate stack on top, but this doesn't disclose that.
24 They came up with this new argument in their patent owner response, Your
25 Honors, they said 9B shows their position. They've shifted horses, they've
26 totally changed directions, and now they come up with some argument that

1 this doesn't say gate stack on top. Really what it's saying is that you actually
2 just extend the gate layers. That is not in their papers. And here's the
3 important thing when they make this argument, you're not going to see a
4 citation of Dr. Campbell because he doesn't support it. It's made up.

5 The fact that this is telling you that the gate stack is on top, and this is
6 the embodiment on which we rely on. The idea that this (inaudible) gate on
7 top, this language is consistent with Kim, which they admit is gate stack on
8 top. This language is consistent with Chen, that you can just reverse the
9 ordering, and there is no evidentiary support for their extending argument.
10 Now, If that weren't enough -- this is in the same embodiment on which the
11 petition relies. If that were not enough, again, the petition points out and
12 refers back, that Park in another embodiment reverses the gate order and
13 says gate stack on top. They don't dispute the other embodiment of Park, it
14 shows that. The petition refers back that, again, Kim, Chen, these are just
15 two well-known options. So the petition asserts that a PHOSITA, of course,
16 would envision this, absolutely know just by looking at this. And then Your
17 Honor, to your earlier point, it says it's at least obvious. And in the
18 alternative, given that these are two well-known mechanisms for
19 accomplishing -- solving this problem, it's at least at a minimum obvious.

20 JUDGE CYGAN: And, Counsel, if they had made that argument in
21 the patent owner's response, which I think they did, that is not affecting your
22 position now. Your position is not that they've raised that late. Your
23 position is that it's not supported by the facts correctly?

24 MR. LANG: It's not supported by it. And in the patent owner
25 response, they pointed to Figure 9B, which made no sense because 9B
26 doesn't show the sacrificial gates exposed. They pointed to 9B, and in our

1 reply, that's what we take on. And 9B does not show the sacrificial gates
2 exposed. And so the argument made no sense. Now they're -- and then in
3 their sur-reply, they said nothing about this extending nonsense. When you
4 see their slides, they have the whole series of slides on this notion of
5 extending the sacrificial gate. This extending stuff came out of nowhere.

6 I want to make a brief point and jump ahead to saying we've
7 combined that with the -- I'm going to jump ahead. We combined Park --
8 there's a similar issue on Park on Claim 14 and 15. I addressed that with
9 respect to Kim. But the issue I want to address on Park, we combine that
10 with Fang as well. The arguments are similar, but there's more in Park that
11 tells you that Fang absolutely applies. And this just rejects this notion that
12 there's some differences here.

13 Dr. Campbell, their expert, testified that the high-K layer -- now, he
14 was referring to, just generally, at the time, a high-K layer. They're going to
15 get up and say he wasn't talking about Park, but he was talking about, at the
16 time, what's a high-K layer; how thick is it. He said 5, 10, or 15 nanometers.
17 What does Park say? It says that thickness of the etch-stop layer is less than
18 or equal to two times the gate insulating film. He's referring to the high-K
19 there. So that is saying that an example of Park's etch-stop would be 10, 20,
20 or 30 nanometers. That's right in Fang's range. So the idea that Fang is not
21 applicable to Park is also rejected by Park, because Park is saying, I -- here's
22 an exemplary etch-stop right in Fang's range. So that's one addition on Park
23 in view of Fang.

24 Another addition, Your Honors, is that Park does not distinguish the
25 thickness of etch-stop, whether you have one or two etch-stop layers. So
26 Park says the etch-stop thickness could be no more than -- maybe no more

1 than two times the thickness of the blocking layer in this example. Park also
2 talks about he has one set of embodiments, four and eight; one set of
3 embodiments, five and eight. One has one etch-stop layer. One has two
4 etch-stop layers. Here are the claims saying at least one etch-stop layer. So
5 you have the same etch-stop thickness, whether you have one etch-stop layer
6 or two etch-stop layers. So this -- again, this idea that there are these
7 differences, you know, Fang has one etch-stop layer, Park has two, Kim has
8 two, that somehow the thickness depends on what's underneath it or whether
9 it's one etch-stop layer or two etch-stop layers, that is rejected by Park. It is
10 rejected by Chen, that has the same thickness for both gate ordering, gate
11 stock on top and gate stock on bottom. So for -- let me see.

12 So for those -- Your Honor, for those two big reasons. Number one,
13 the lack of criticality. These ranges are not critical. They're not set towards
14 a specific etch-stop material, whether it's one layer or whether it's two layer.
15 Lack of criticality, all of these alleged distinctions fall apart. Separately,
16 technically, we saw that the alleged distinctions did not matter as well.

17 Your Honor, with that, I will save my remaining time for rebuttal.

18 JUDGE CYGAN: Thank you, Counsel. Before we start in with
19 Patent Owner, Counsel, you had referenced the other proceeding from
20 yesterday?

21 MR. LANG: Yes, Your Honor.

22 JUDGE CYGAN: Should we be entering that transcript into this
23 record?

24 MR. LANG: I don't think that's necessary. My point is just that here,
25 truly, we're talking about a case that is just two -- one of two things that you
26 can do to perform a service.

1 JUDGE CYGAN: Okay. I just wanted to make sure that, if we're
2 going to be discussing other proceedings, you just let us know that we need
3 to enter the other transcript in the record. If not, we probably want to avoid
4 discussing other proceedings unless there's some factual bearing on it.

5 MR. LANG: Okay. Thank you, Your Honor.

6 JUDGE CYGAN: Patent Owner, how much time would you like to
7 reserve for a sur-reply?

8 MR. GREENFIELD: Seven minutes, Your Honor. If you can just
9 give us a moment to switch the connection?

10 JUDGE CYGAN: So that would be 68 minutes now, and seven
11 minutes later?

12 MR. GREENFIELD: Yes, that sounds right. May I proceed, Your
13 Honor?

14 JUDGE CYGAN: Yes, please proceed.

15 MR. GREENFIELD: Adam Greenfield on behalf of Patent Owner,
16 YMTC. Petitioner has not shown obviousness under any of its four grounds,
17 primarily because its arguments depend on hindsight and a lack of
18 motivation to combine.

19 For Ground 1, Petitioner relies on a Kim embodiment, Figures 17A
20 through 22B, that is its gate stack on bottom rather than on top is claimed.
21 So Petitioner improperly and belatedly relies on other embodiments and
22 other prior art. For Claims 14 and 15, still within Ground 1, Petitioner also
23 relies on an untimely lexicography claim construction.

24 MR. LANG: Your Honors, the clock is not --

25 JUDGE CYGAN: Thank you.

1 MR. GREENFIELD: I thought he was just giving me more time.
2 Hopefully that won't be a problem, but thank you.

3 And for Ground 2, Ground 2 fails because Petitioner brings in a
4 secondary reference, Fang, that's also gate stack on bottom, so both of the
5 references are gate stack on bottom. And the missing etch-stop layer is -- for
6 the thickness limitation is made of a completely different material and
7 structure. My colleague, Mr. Lowry, is going to address Grounds 3 and 4,
8 which fail for similar reasons.

9 And with that, given where we are in the proceeding, I'm going to skip
10 ahead to Slide 8. And to reset here, the claims of the '711 patent are directed
11 to a semiconductor structure with various layers, but in particular, the focus
12 here is on whether the gate stack layer is on top or below the dielectric layer.
13 And you can see here on Slide 8, the gate stack 525 shown in yellow is
14 above and on top of the dielectric layer shown in blue.

15 Now, turning to Ground 1 specifically, Petitioner unequivocally relies
16 on only one embodiment in Kim, and that's Figure 17A through 22B
17 embodiment. That's embodiment, singular. There was sort of reference to,
18 in Counsel's argument today, about it incorporates descriptions of other
19 embodiments. But as you can see here on Slide 10, Petition Page 29
20 identified that one embodiment, and acknowledged that Kim discloses other
21 embodiments, and it cites specifically Figures 5A through 14B. This was a
22 strategic decision, because the other embodiments of Kim lack other claimed
23 features, like relating to the high-K dielectric layer, surrounding a
24 conductive layer, the etch-stop layer, and the barrier layer, and so forth.

25 JUDGE CYGAN: Counsel, is it fair to say that they're relying on
26 different embodiments for different features?

1 MR. GREENFIELD: Is -- if I understand what you're saying, is it fair
2 to say that petitioner is relying on different embodiments for different
3 features?

4 JUDGE CYGAN: Yeah.

5 MR. GREENFIELD: Is that the question? Yes. Yeah, I believe that's
6 correct, Your Honor. And specifically here, they're relying on a different
7 embodiment to show the gate stack layer on top. And I think to your point,
8 the reason they've chosen Figures 17A through 22B is because they need the
9 barrier layer, but that has the problem of where the gate stack layer is
10 positioned.

11 JUDGE CYGAN: And Counsel, your argument, I think, is based
12 upon that sort of interpretation that they're relying on separate embodiments
13 in Kim. But when I was asking your counterpart before, they said, well,
14 what we're really doing is we're making two alternative arguments. And the
15 one which I did not see really addressed in the patent owner's response was
16 the idea that Kim has one description. And part of it is they're describing the
17 gate stack construction, the other part they're describing what happens after
18 the gate stack is done, and how you form your connections and stuff. And
19 that's -- the Figure 17A to 22B description is about the later part of it, and
20 the earlier part of it, which is then Figures 5 to 12, discusses how you're
21 doing the gate stack.

22 So my best understanding of your argument is that you can't look at
23 Kim in that fashion as having one part of the description talking about the
24 gate stack, and the second part that only talks about the stuff that's on the
25 gate stack and you can't combine that description together. Why is that the
26 case?

1 MR. GREENFIELD: Well, it's -- correct, Your Honor. They are
2 unambiguously, here on Slide 10, relying on Figures 17A through 22B
3 embodiment. And that is, admittedly, shown in the figures with the gate
4 stack in the wrong position. It's gate stack on bottom. To make the leap of,
5 oh, well, this embodiment also incorporates -- this embodiment, not like a
6 different embodiment, but basically saying this specific embodiment also
7 incorporates a different gate stack ordering, it's not supported by where
8 they're pointing to in Kim. As I understand it, they're saying, well, Kim,
9 Paragraph 184 says, well, you can look to descriptions of other embodiments
10 to inform this embodiment. And then they point you to Figure 90 -- or
11 Paragraph 90 of Kim, but even paragraph 90 doesn't say, oh, in this
12 embodiment, the gate stack is on top, in any clear way that you're, like,
13 reversing the order.

14 Instead, Paragraph 90 of Kim describes the various features, and you
15 don't get to their -- the part they rely on is to the last sentence, and it says,
16 "In other embodiments," and then it kind of goes on. So I think what -- in
17 order for them to import these aspects of the other embodiments, admittedly
18 on their part, into 17A through 22B embodiment, it's like a -- it's, like, four
19 steps removed. It's not so clear that Kim itself says for 17A through 22B, if
20 you want to know where the gate stack layer is, you look over to this
21 Paragraph 90 and you see gates, Paragraph 90 says it could be on top or
22 bottom. That's just not what Kim says at all. There's many leaps in there.

23 JUDGE CYGAN: Let me follow up on that. I -- petitioner's
24 argument is that because Figures 17A through 22B don't describe how the
25 gate stack is formed, that you necessarily have to look to those earlier
26 discussions. It seems to be reflected by what you have on the screen where

1 it says the petitioner is relying on this embodiment for the etch-stop layer
2 and the barrier layer. So it doesn't seem to be the case that they're saying
3 they're only relying on Figures 17A and 22B. Clearly they're relying on
4 separate parts of the description.

5 And to the extent that you're saying it's four steps removed, where else
6 would we look to understand how the layers are being structured in Kim for
7 those embodiments? We have one -- we have one description of the figure,
8 certainly, but how do we know what the full description of it is without
9 looking to Kim's description of how they formed those layers?

10 MR. GREENFIELD: Well, Your Honor, I disagree with the premise.
11 What the petition says at Paragraph 20 is not that they rely on the Kim
12 Figures 17A and 22 embodiment, only for the etch-stop layer and barrier
13 layer, and you look elsewhere. It says it relies on this embodiment, that
14 embodiment comprises the etch-stop layer and the barrier layer. Which is
15 consistent with (inaudible) they chose this embodiment because they need a
16 barrier layer. And so what they're saying here is this petition, essentially
17 since we know we need to address Claim 1 and 13, and we're picking one
18 embodiment to do that, we're picking the 17A and 22 embodiment because it
19 comprises both an etch-stop layer and a barrier layer, as opposed to some of
20 the other embodiments. It doesn't say it's only relying on it for those
21 purposes.

22 And if it was, they're still then having to combine other embodiments
23 within Kim. If they're saying, we're relying on this embodiment for these
24 two layers and the Figure 5 embodiment for this other layer, well, that
25 requires a combination of two embodiments within a single reference. They
26 need to show a motivation to combine that's in the Stepan case that we cite.

1 It was -- Micron lost that case with a few -- within a few weeks ago with the
2 Federal Circuit. They tried to rely on two different arguments. That's the
3 Netlist case. I can give you the cite for that because it issued after --

4 JUDGE CYGAN: Let me ask you about that case law. That applies
5 to distinct embodiments, correct? Two sort of alternative embodiments.
6 How does that apply where you have some description of options for one
7 part of your device and other descriptions for a separate part of your device,
8 whether they may be described as being, you know, you pick something
9 from Column A, pick something from Column B. Do those cases really
10 affect that?

11 MR. GREENFIELD: They do -- if you can go to Slide 19 for me.
12 They do. So first of all, this is not the case. The premise that, well,
13 one embodiment in -- I'm on the Slide 19, which is Boston Scientific, which
14 I'll get to in a minute, I think addresses Your Honor's question. But sort of
15 as an initial starting point, it is not that the embodiment they rely on here,
16 17A to 22B, doesn't disclose a gate stack layer. It does. It just discloses it as
17 in the wrong position for them. It's on bottom, and it needs to be on top as in
18 the claim. So it's not like a missing limitation, which is -- they rely on
19 Boston Scientific, which would address that situation, I think, sort of like
20 this different line of cases.

21 In Boston Scientific, they had these two adjacent embodiments. And
22 at issue was, would you add coding labeled 15 on top of 14 in Figure 4?
23 And even in Boston Scientific, the Federal Circuit went on to say, well, there
24 would be benefits to doing so, it's purely additive, and it sort of did that
25 motivation and combined analysis. It's not like it, in that case, didn't look to
26 whether there were benefits, didn't require benefits or anything like that. It

1 certainly did. And this case, like, if I take your premise, even in Boston
2 Scientific, that scenario, they would have to show these benefits. This case
3 falls more directly under the Stepan line, the Micron Netlist case, the Federal
4 Circuit issued February 20th, they lost with combining two different
5 embodiments and sort of having to modify them.

6 JUDGE CYGAN: So if I understand correctly, your position is that
7 when the position presents Figure 22A, they're not only locking in the top
8 structure on it, they're locking in the bottom structure on it? So they're
9 relying only on the teaching in that embodiment of the entire structure.
10 They're not just relying on it for what happens on top of the gate stack,
11 they're sort of setting in one embodiment with the gate stack in the wrong
12 order, and then they need to go to a separate embodiment, which doesn't --
13 that doesn't apply to it because they've shown it in the wrong order, and
14 that's why they need motivation to switch that order. Is that the argument
15 you're making?

16 MR. GREENFIELD: Absolutely correct, Your Honor. Absolutely.

17 If you could jump to Slide 14.

18 I'll jump to Slide 14, because some of the earlier slides before that,
19 Your Honors can take a look at it, but really address the issue we -- we've
20 just kind of gone through. And kind of resetting on, okay, there are different
21 embodiments, they do need to show a motivation to combine under clear
22 Federal Circuit law. What they -- if you're in that world, what they rely on is
23 simply that, well, it would have been suitable to have a different gate stack
24 order in the Kim embodiment, and it would have been suitable based on
25 looking at other Kim embodiments and other prior art, namely Chen.

1 You heard a lot about Chen and petitioner's argument. Chen is not
2 one of the references in the combinations for any of the grounds. And so
3 Petitioner's argument really boils down to, well, a POSITA could have
4 switched the order, which, you know, we don't dispute. It is in different
5 orders, and various references, and in the claims. But they rely on the fact
6 that a petitioner could have reversed the order, and that's sufficient, and that
7 they don't need to show any motivation to do so, but that's classic hindsight
8 and not permissible. And when their expert was asked --

9 JUDGE CYGAN: I think we'll -- counsel, let me just ask you a
10 question on here. You may be talking about something separate from what
11 the petitioner is talking about, and I want to make sure I understand your
12 point here. Certainly, if someone says, well, you could do something, it
13 doesn't give you a reason why you would do it. That's not a proper reason to
14 combine two teachings together. But in what we see here from the expert,
15 and I think what the -- what Petitioner's argument really is, is that you have a
16 choice of two suitable things. You could pick A, or you could pick B.
17 They're not saying you could do it, and there's no reason why you'd do it.
18 Petitioner is saying there's two options given in the Kim reference. Kim
19 says you could do either one. They'll both give you the same results. We
20 look to the evidence. The evidence says it's very easy to switch them
21 around, you get the same thing. They're basically alternatives. Why isn't
22 that okay under KSR?

23 MR. GREENFIELD: Well, I wouldn't say the evidence says it's easy
24 to switch them around. These are obviously complicated semiconductor
25 structures, but we acknowledge that you can switch the gate stack order with
26 various other manufacturing changes. What I would say is this goes directly

1 to this sort of dispute we're having over Intel v. CommScope, and how you
2 define the problem.

3 JUDGE CYGAN: But KSR itself says you don't need to address the
4 same problem as your secondary reference, correct?

5 MR. GREENFIELD: I don't believe KSR said you don't need to --
6 well, I think it is true you don't need to address the same problem, but I think
7 where you get in a world where what they're saying is, well, when they're
8 saying it's the same problem, you have the same problem, there's only two
9 ways to solve that problem. You don't need to go and list a whole bunch of
10 benefits if it were suitable. And in theory, that is sort of right, but it relies on
11 a lot of false premises, which is that these are addressing the same problem.
12 And that's why you fall into the Intel case, and they rely on the Intel case,
13 like, principally. And to fall within the Intel case, as we see here on Slide
14 16, the Court said, well, you had two references, they were addressing the
15 same problem, and it was, like, to your point, there's really two ways of
16 solving that problem. Both were well known, and so that was sufficient.
17 But here we --

18 JUDGE CYGAN: But I think Intel has a separate statement, which
19 doesn't talk about the problem, which there could be a suitable option to
20 change it, correct?

21 MR. GREENFIELD: The way I interpret that case is it could be a
22 suitable option where you're addressing the same problem, and there's sort of
23 finite solutions to that problem. I do not think, and I think you run into this
24 problem in CommScope, the Micron Netlist case that they lost in the Federal
25 Circuit February 20th, if it were the case that as long as you have a finite
26 number of ways to sort of implement a feature and that was suitable, that

1 that was sufficient, you wouldn't have any need for the CommScope, these
2 other cases. That would sort of really significantly erode the motivation to
3 combine requirement.

4 JUDGE CYGAN: So your position is that under KSR, it's insufficient
5 to show there were two ways that are known in the art to achieve the same
6 structure, and that a person of ordinary skill in the art would not be
7 motivated to use two of those, which are known to be alternatives?

8 MR. GREENFIELD: The short answer is, correct. I agree that's not
9 the statement of KSR. Because KSR -- you -- even after KSR, you require a
10 motivation to combine. I don't think anyone would dispute that. You
11 require a motivation to combine. And the only question is, as Petitioner is
12 arguing, well, where you have a sort of suitable way to make these changes,
13 is that by itself sufficient? And the answer, as I interpret the case law, is no.
14 It's -- the suitability is only sufficient where you're addressing the same
15 problem. If it's just, well, there were known ways to do it, finite, whether
16 two, three, there were finite ways to do it, if that were sufficient, it -- there
17 would be no motivation to combine requirement.

18 I mean, KSR just said the motivation requirement just doesn't have to
19 be expressed in the references themselves. It didn't say you don't need a
20 motivation to combine. I think all the Federal Circuit cases since have
21 reinforced you need a motivation to combine, and it's just where there's a
22 common problem, you know, two or three finite ways to address that
23 problem, they've said, you know, that is sufficient whether, you know, it
24 benefits a person of ordinary skill in the art therefore would have been made
25 -- motivated to do it. But a person of ordinary skill in the art still needed to

1 have been motivated to implement that change. I don't think Petitioner
2 would disagree with that.

3 JUDGE CYGAN: So if KSR stood for the proposition that a person
4 of ordinary skill in the art would use the known options within its grasp, that
5 would not support your argument then?

6 MR. GREENFIELD: I'm sorry, can you say that one more time?

7 JUDGE CYGAN: So if -- under your interpretation, KSR requires
8 some specific motivation and not just based on -- not just something based
9 upon options that are new to a person of ordinary skill in the art, there has to
10 be something more than that, and that -- and that's what your argument is
11 based on?

12 MR. GREENFIELD: Correct, Your Honor.

13 JUDGE CYGAN: Thank you.

14 MR. GREENFIELD: Yeah. Yeah. I'm not aware of any case, and
15 Petitioner hasn't cited it, where as long as there's suitable options, you don't
16 need an additional motivation, that the inquiry ends there. That's not
17 something I'm aware of. And I would, sort of advancing to Slide 17, and not
18 to sort of linger on this point too long, but if you agree with me that there
19 sort of needs to be a problem identified in order to fall within this suitability
20 line of case law, when you look to what -- how Petitioner defined the
21 problem in its papers, and I'm here on Slide 17 from Reply 5, they said
22 expressly that the problem here is, "Constructing a staircase structure using
23 one gate stack dielectric order." That is vastly different than the sort of
24 expression of the problem that Counsel said before me today. The part that
25 he quoted to you is from sort of the technology background, it's not from the
26 motivation to combine section of their papers.

1 And all they've done here is basically said, okay, well, you're -- the
2 missing limitation is the gate stack order. So we're going to define the
3 problem as having a right gate stack order, and then the solution is switching
4 the gate stack order. It's entirely circular. If you look here at what the
5 problem is, it's -- it doesn't -- it's not supported by evidence, this is just
6 attorney argument to kind of gap fill, we'd say, the missing limitation.

7 JUDGE CYGAN: And Counsel, when you talk about the missing
8 limitation, you're not talking about a limitation that's missing from the Kim
9 reference itself, correct?

10 MR. GREENFIELD: I'm talking about the gate stack on top of the
11 dielectric layer is missing from the sole embodiment of Kim that Petitioner
12 relies on, 17A through 22B.

13 JUDGE CYGAN: But this is where I'm having trouble following
14 your argument about a single embodiment. Because they're certainly
15 referencing Paragraph 90, and you're clear that Paragraph 90 does not apply.
16 Under your viewpoint, Paragraph 90 is not part of the Figure 17A to 22B
17 embodiment.

18 MR. GREENFIELD: Correct, Your Honor.

19 JUDGE CYGAN: So they have to be referencing different parts of
20 Kim, and that's pretty clear from the petition, isn't it?

21 MR. GREENFIELD: Oh, correct. I agree that they are trying to
22 combine different embodiments within Kim.

23 JUDGE CYGAN: So to the extent that you're discussing this as a
24 missing limitation, it's missing from the -- one of the embodiments that they
25 rely on, but it's not missing from the other embodiment that they rely on?

1 MR. GREENFIELD: Right, Your Honor. I -- we have not disputed
2 in the papers that nowhere does Kim disclose gate stack on top. The dispute
3 is really, they rely sort of on this one embodiment, and in that embodiment,
4 it is not gate stack on top. In order to then go the next step and say, okay,
5 well, how do they disclose that? They are, we're saying, relying on other
6 embodiments within Kim for which they would need to show a motivation
7 to combine, or they're relying on, like, the Chen reference, which isn't part of
8 the combination, and so isn't permissible either.

9 JUDGE CYGAN: Can they rely on evidence to support motivation or
10 does that have to be in one of the applied references?

11 MR. GREENFIELD: I think the sort of case law on that is mixed. I
12 feel it gets argued all the time, whether it's properly within the combination
13 or sort of informing the knowledge of a person of ordinary skill in the art.
14 I've been on the winning and losing side of that both times, so I appreciate
15 it's a gray area. I think the extent to which they rely on Chen here, if that is
16 what they need to sort of move from Figures 17A through 22B, I think that's
17 improper. I think it should have been part of the combination, and it's not. I
18 don't think there's any dispute that sort of generally, a person of ordinary
19 skill in the art is aware that a gate stack could be on top or bottom of the
20 dielectric layer, again, in the context of these broader, you know, complex
21 semiconductor structures.

22 JUDGE CYGAN: Correct. But to the extent that they're relying upon
23 a teaching of a different ordering, they have that in Kim, correct? And
24 they're just -- the extent they're relying on Chen is just to say, you know,
25 why you might apply -- to the extent these are totally separate embodiments
26 in Kim, that you couldn't tell from the description of Kim that Paragraph 90

1 would have anything to do, or would ever be used with the Figure 17A
2 embodiment. The reason why they're bringing up Chen is to sort of explain
3 why those are reasonably -- one of ordinary skill in the art would reasonably
4 put those together, and would have reason to put those together. That's the
5 extent they're relying on Chen, correct?

6 MR. GREENFIELD: I would say it a little bit different. I think the
7 way they're relying on it is to show that gate stack on top was a suitable
8 option, and they stop there. They -- I don't think they go through the, oh,
9 and here is the benefits or reasons in putting the gate stack on top versus gate
10 stack on bottom. As I heard their argument today, it almost seemed like they
11 were saying it doesn't matter. I mean, I haven't heard them identify, like, a
12 benefit or a reason to switch it.

13 JUDGE CYGAN: But why doesn't Kim itself describe that you could
14 have either as a suitable option?

15 MR. GREENFIELD: Why doesn't Kim -- or I mean, I guess what
16 you're saying is, is it a fair that there is disclosure in, we would say, other
17 Kim embodiments that the gate stack could be on top? We would agree with
18 that.

19 JUDGE CYGAN: Right. So Kim Paragraph 90, is the teaching that
20 the gate stack on top, gate stack on bottom, suitable options to the extent that
21 it's relevant to Kim's disclosure?

22 MR. GREENFIELD: Can you say that one more time? I want to
23 make sure I heard that correct.

24 JUDGE CYGAN: Sure. So Kim Paragraph 90 is the teaching that
25 gate stack on bottom, gate stack on top are suitable -- are both suitable
26 options for the disclosure question.

1 MR. GREENFIELD: I mean, Paragraph 90, I don't think says it that
2 clearly, but you're right that we haven't disputed that in Kim, whether in
3 Paragraph 90 or elsewhere, it discloses you can have the gate stack layer on
4 top. So --

5 JUDGE CYGAN: Correct. And then -- and they would both be
6 suitable, and they're both options, correct?

7 MR. GREENFIELD: I mean, I -- in the abstract, I guess you're asking
8 me, in the abstract that you can have a gate stack on top or on bottom? I
9 agree with that.

10 JUDGE CYGAN: But specifically relevant to Kim.

11 MR. GREENFIELD: Well, not -- I guess what I'm saying is not in
12 17A through 22B. That is clearly gate stack on bottom.

13 JUDGE CYGAN: And your position is that the reason why it
14 wouldn't be relevant is because there's one option already locked in there?

15 MR. GREENFIELD: Right. You would have to modify -- correct. In
16 order for Kim by itself, setting aside Chen, to render obvious claims 1 and
17 13, they would have to show that it would have -- a person of ordinary skill
18 in the art would have been motivated to take the 17A through 22
19 embodiment, combine it with other embodiments of Kim that have the gate
20 stack layer on top, and that a person of ordinary skill would be motivated to
21 do that. There would have been -- they address the same problem, there's
22 benefits or reasons to doing it, and so forth. And they haven't done that.
23 They've sort of stopped at the, it would have been suitable. And we're not
24 taking the position that it's not suitable. Like, yeah, you could have the gate
25 stack layer on top, just like in our claims. It's just that there's no motivation
26 to combine to do that.

1 JUDGE CYGAN: One of the distinctions I'm trying to tease out of
2 your argument is that the teaching that these can be in either order is not
3 some teaching unconnected to Kim. This is a teaching of Kim talking about
4 how it can structure its layers. Why isn't that relevant to all of its
5 embodiments? It may not be expressly put in one of its embodiments. And
6 if you're setting forth Figure 22A, it has one certain way of doing it. But the
7 teaching of Kim, why doesn't that Paragraph 90 teach you that anywhere
8 else in Kim, whenever you see a gate stack on top, you can do a gate stack
9 on bottom, and vice versa?

10 MR. GREENFIELD: That's not what Paragraph 90 of Kim says. It
11 does not say it like you just phrased it. It's --

12 JUDGE CYGAN: How would you characterize the limit on
13 Paragraph 90?

14 MR. GREENFIELD: Well, so Paragraph 90, I mean, they really just
15 rely on the last sentence of Paragraph 90; is that fair? I mean, there's various
16 parts above Paragraph 90 that talk about the mask pattern and so forth, but if
17 I understand Your Honor right, you're focusing me on the last questions. I
18 want to be -- or the last sentence. I want to be responsive to that. And the
19 last sentence of Paragraph 90, which appears within, you know, comes after
20 86, which says referring to Figures 4, 8A, and 8B, and it kind of goes down.
21 And then in Paragraph 90, the last sentence says, "In other embodiments,
22 each of top surfaces of the sacrificial layers 1 to 8, not the top surfaces of the
23 insulating layers, 111 to 118, may be partially exposed in the word line
24 contact region, WCTR."

25 So that sentence, and obviously feel free to direct me if you want me
26 to focus on a different sentence, but that sentence doesn't say you can

1 reverse the gate stack layers in any embodiment here in Kim. It doesn't say
2 why you would reverse the gate stack layers. It doesn't talk about in the
3 context of one or two etch-stop layers, a barrier, nothing like that. I think
4 they're extrapolating from, oh, well, this says you could have this layer
5 exposed in other embodiments of Figures 4, 8, and B. And because you
6 could have exposed, one way you would have exposed it is to reverse the
7 layers, and because Kim says in 148 that any description of any embodiment
8 can apply to any other embodiment, sort of generic language like that, you're
9 sort of importing that. I think that's sort of totally improper and doesn't meet
10 their burden here.

11 JUDGE CYGAN: Is there anything in Kim that would let the reader
12 know that it is not going to apply to any specific other embodiment?
13 Because I'm concerned about the language in Paragraph 90, which just says,
14 "In other embodiments." Is there something special about Figure 22 that
15 would let the reader know that this wouldn't apply? You couldn't have
16 another-- you couldn't have your second sort of alternate way of doing it,
17 Figure 22?

18 MR. GREENFIELD: Well, I think that reverses sort of the disclosure
19 requirement here. So they have the burden to show obviousness, they've got
20 to show that a person ordinary skill in the art would have interpreted this to
21 mean, you know, X, Y, Z, and there'd be a motivation to combine. And this
22 sentence -- so it -- it's in the context of Paragraph 86, referring to Figures 4,
23 8A, and 8B, and then there's, you know, lots of description that follows.
24 Then when you get to 90 it says, "In other embodiments." So I guess it's
25 ambiguous. I interpret that to mean sort of other embodiments of Figure 4,
26 8A, and 8B, is how I interpret it. Like, oh, in these figures, you can have

1 this or that. But in other embodiments, each of the top services, and it goes
2 on. It doesn't say you would reverse the gate stack layer in any embodiment.
3 I wouldn't expect a reference to say, oh, when we say other embodiments
4 here, we're excluding Figure 22A. I mean, you just don't see that kind of
5 language in patents.

6 JUDGE CYGAN: So would you say that Figure 90 applies to the
7 embodiments of Figure 4?

8 MR. GREENFIELD: Would I say that Paragraph 90 applies to the
9 embodiment of Figure 4? Is that what you said?

10 JUDGE CYGAN: Right. Just walk me back to Paragraph 86. And
11 you said this applies to Figure 4, right?

12 MR. GREENFIELD: Right. I mean, because the way I -- I'm used to
13 seeing these is, okay, we're going to talk about Figure 4, and then there's a
14 description and then --

15 JUDGE CYGAN: Right.

16 MR. GREENFIELD: -- usually so you can have A or B and so forth.

17 JUDGE CYGAN: So the two embodiments of 90 apply to Figure 4,
18 correct? Is that what you're saying?

19 MR. GREENFIELD: The two embodiments of Paragraph 90?

20 JUDGE CYGAN: Right. The alternate embodiments.

21 MR. GREENFIELD: Right. I think where -- the sentence, "In other
22 embodiments, each of the top surface," I think that's phrased in the context
23 of referring to Figures 4, 8A, and 8B.

24 JUDGE CYGAN: Okay. Isn't Figure 4 a description of all the
25 embodiments? I'm looking specifically at Paragraph 57. Paragraph 57 of
26 Kim says, "Figure 4 is a perspective view according to the example

1 embodiments of the event -- of the event of concepts." So it seems from that
2 reading, if the alternative embodiments, gate stack on top, gate stack on
3 bottom apply to Figure 4, -- paragraph 57 is the link that applies to all of the
4 example embodiments.

5 MR. GREENFIELD: I don't think Paragraph 57 is so clear. I think
6 that this is sort of going in the sort of general description of, like, the
7 different figures. In Figure 4 -- let me just turn to Figure 4 to see it. I don't
8 know what it's showing. I mean, Figure 4 is, like, a specific --

9 JUDGE CYGAN: But it says Figures 5 through 14A, Figures 5
10 through 14B are illustrations of Figure 4. They're methods of fabricating --
11 there are sectional views of Figure 4. Figure 4 appears --

12 MR. GREENFIELD: Where are you reading from, Your Honor?

13 JUDGE CYGAN: This is at Paragraph 57.

14 MR. GREENFIELD: Yeah. Figure 4 is a perspective view
15 illustrating --

16 JUDGE CYGAN: Right.

17 MR. GREENFIELD: -- a cell array.

18 Correct. And -- I'm sorry, what were you pointing to me in that
19 paragraph? What sentence?

20 JUDGE CYGAN: So the first sentence says that it's a perspective
21 view illustrating a cell array of the device according to the example
22 embodiments of the impact concept, and then it lists all of the different
23 figures 5 through 14A, Figures 5 through 14B, that applied to the
24 descriptions of the device.

25 MR. GREENFIELD: Yeah, I think those are, like, various --

26 Like, I guess variations on embodiment --

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MR. GREENFIELD: -- of the patent invention.

JUDGE CYGAN: And Figure 22, does it -- is it based upon any of those embodiments?

MR. GREENFIELD: Well, Figure 22 is not cited in Paragraph 57.

JUDGE CYGAN: It's not.

MR. GREENFIELD: So yeah.

JUDGE CYGAN: I'm trying to find if there's a distinction that's -- that supports your view as Figure 22 is something which is separate from this description of the other embodiment. The description of Paragraph 90 according to Petitioner's view is sort of a general statement of Kim that says, in Kim, you can use -- you could stack on top, you could stack on bottom. And your position is that it's not a general statement in Kim.

MR. GREENFIELD: Correct.

JUDGE CYGAN: Which is another teaching and you need to find more than what's in 90.

MR. GREENFIELD: Correct.

JUDGE CYGAN: So I think your point was that it's Petitioner's burden to point that out, but then you start talking about it's being related to Figure 4 and Figure 4 seems to be a little bit more universal.

MR. GREENFIELD: Well, I -- the way I read this is -- so there's the - - and Paragraph 57 describes Figure 4 as a perspective view and it references other figures. Does not reference figure 22A. When you go to Paragraph 86, it starts referring to Figures 4A, 8A, and 8B and had some discussion, 87. In some embodiments -- so in some embodiments of those, and then when you get down to Paragraph 90, it's talking about another embodiment.

1 And it kind of -- paragraph 92, in some embodiments, it's kind of doing what
2 you typically see in a patent, which is, you know, you can have A or B or,
3 you know, sort of adding optionality to leave it open-ended and not closed-
4 ended is how I interpret it. But what -- going back to sort of it's their
5 burden. What I understand they need to show is Paragraph 184, when it
6 refers to 22A and it says, you can apply any feature of any embodiment, you
7 would look to 90. 90 says, in other embodiments of four, and then four is --
8 I mean, that is pretty far removed, I think, to meet their burden. I don't --
9 that doesn't meet their burden. That -- spelled out like that it's not in the
10 Petition by any means. It would be insufficient.

11 JUDGE CYGAN: Thank you.

12 MR. GREENFIELD: My colleague, Mr. Lowry, has pointed out to
13 me that in Figure 4, it is also gate stack on bottom. You'll also be up here --

14 JUDGE CYGAN: Not to belabor the point, but the idea of the
15 teaching is of alternatives. So it is important what the figure that is being
16 discussed shows, but it's also important, I think, because they're relying on it,
17 is there a teaching to carry that particular structure? What's being discussed
18 is not whether there is a teaching to vary structure, because it's clearly in
19 Kim, but whether that's going to apply generally to the other teachings that
20 Petitioner is talking about. And that's the issue we're trying to figure out.

21 MR. GREENFIELD: Well, I would disagree that there is disclosure
22 in Kim saying you would vary figure 22A embodiment of the 17 through 22
23 embodiment to put the gate stack on top. That is not in Kim anyway. And
24 instead, what they are arguing and need to argue is you would have a
25 motivation to combine something else in Kim with 22A. And if they're
26 going to do that, then they have to show a motivation to combine, and they

1 haven't done that, just like they did in the Netlist Case on February 20th in
2 the Federal Circuit. That's our position.

3 JUDGE CYGAN: Thank you.

4 MR. GREENFIELD: If I may briefly --

5 JUDGE MCGRAW: Excuse me. Before you move on, is there --
6 what's wrong with considering Petitioner's argument that what they're asking
7 -- what they're stating is that it's really a simple substitution to replace a
8 staircase structure with a gate on -- gate stack on top with a structure with
9 the gate stack on the bottom or vice versa? What's wrong with saying that --
10 making that change as a simple substitution with predictable results?

11 MR. GREENFIELD: I don't see where they have pointed to evidence
12 that it is a simple substitution with predictable results. I think they still have
13 to have a -- even if it is a simple -- well, it's not a simple substitution. We
14 have in slides here in the papers sort of all the cascading effects and the -- I
15 mean, these -- how they're manufactured and how you attach it and so forth.
16 So it's definitely not like the Boston Scientific where you're just adding a
17 coating. We're not in that world.

18 But I agree with you that if it is a simple substitution to address a
19 known problem and you get in the Intel line and there's reasons or benefits to
20 doing that, which here they haven't shown, then that would meet the burden.
21 I would agree with that, but that's just not the case here. We're not in that --
22 in the Intel world.

23 We're in the CommScope world, the Micron Netlist world.

24 JUDGE MCGRAW: Okay. Thank you.

25 MR. GREENFIELD: Before I turn it over to Mr. Lowry to address
26 Grounds 3 and 4, I do just want to briefly address the surface issue for -- this

1 is within Ground 1, Claims 14 and 15. The primary point I want to point out
2 is the Petition says unambiguously plain and ordinary meaning for
3 construction. The reply pivots to lexicography and all you heard today from
4 Petitioner's Counsel is lexicography. That is forfeited. That needed to be in
5 the Petition. It's not in the Petition.

6 On the merits of it very briefly, we're not redefining "on." What we're
7 just saying is "on" needs to be interpreted in context, and here it says "on the
8 surface." What does it mean to be on the surface? We're saying there's
9 direct contact. Their principal argument, I understand is, well, no, the claim
10 says elsewhere directly contact. And so in order to be direct contact, it
11 would have had to say that words and claims should be interpreted
12 differently.

13 Well, the claim also says "disposed over," and so there are -- that's
14 how they're interpreting "on." And so the same argument, I think, would be
15 used against them. On the surface, the analogy, sort of when I first
16 approached this, I think about it as sort of, like, a -- you have a dining table,
17 a place mat, a plate. You say the place mat is on the surface of the table, the
18 plate is on the place mat. You wouldn't say the plate is on the surface of the
19 table if there's, like, an intervening place mat. That's kind of how I think
20 about it.

21 And here, sort of no matter how many intervening layers you'd have,
22 they would say it's on the -- they'd say each one of those layers is on the
23 surface, and I think that just -- it doesn't make sense. In their brief, they
24 refer to something about the interior of the step. Haven't really fleshed that
25 out. We're not arguing that "on" means below or anything like that.

1 JUDGE CYGAN: Counsel, doesn't an applicant's ability to be their
2 own lexicographer-- doesn't that, in some sense, take you away from what
3 the meaning of it in other context would be? So to the extent that you can
4 have examples of, you know, a plate being on a table, if you're saying that
5 on the table means it can have place mats underneath it, don't we need to go
6 with the lexicography that's clearly set forth in Column 4?

7 MR. GREENFIELD: Your explanation omitted the word "surface." I
8 want to be very clear. We are not walking away from the specifications --
9 description of the word "on." The standalone "on," we agree in the context
10 of the patent, you can have intervening layers. I think the patent is clear
11 about that.

12 JUDGE CYGAN: Okay.

13 MR. GREENFIELD: I'm not walking away from that. I'm just saying
14 where it says "on the surface," if you're going to interpret that as just
15 removing surface, so on the side surface is the same as on the side, it reads
16 out surface, we think that's inappropriate. We think to give meaning to
17 surface, it requires this direct contact.

18 JUDGE CYGAN: I think let's take a look at what is said in Column
19 4. So the description in Column 4 says that, "On not only means directly on
20 something, but also includes the meaning of on something with an
21 intermediate feature or layer therebetween." Let's replace "something" with
22 surface. "On not only means directly on the surface, but also includes the
23 meaning of on the surface with an intermediate feature or layer
24 therebetween." What's improper about that reading?

1 MR. GREENFIELD: I mean, I interpret -- and I think Petitioners
2 interpreted it to mean sort of on something as in like on a layer, on a
3 substrate.

4 JUDGE CYGAN: Why isn't surface a something?

5 MR. GREENFIELD: I mean, surface obviously is a something. I'm
6 not going to disagree with you there. I just think that's inconsistent with -- I
7 think that's inconsistent with this sentence sort of, like, in the context of the
8 specification. I think what it's talking about here when it -- it's talking about
9 layers. It's something with an -- something with an intermediate feature or
10 layer therebetween. I think that --

11 JUDGE CYGAN: Isn't that what we're talking about, is the issue of
12 an intermediate layer therebetween?

13 MR. GREENFIELD: On something with an intermediate feature
14 layer. So it's --

15 JUDGE CYGAN: Isn't that the dispute on --

16 MR. GREENFIELD: The --

17 JUDGE CYGAN: -- on Claim -- what are we? 14 and 15?

18 MR. GREENFIELD: Yeah.

19 JUDGE CYGAN: 14, is that -- in Kim, there's an intermediate layer
20 in between the surface and the edge stop layer and that -- that's the reason
21 why you're arguing that it's not on top?

22 MR. GREENFIELD: I mean, the way -- I think this is responsive, but
23 of course let me know if not, but the way I read Column 4, Line 5, is that
24 "on" means -- "on something with an intermediate feature or a layer
25 therebetween" would mean, like, on the sort of step surface with a barrier
26 layer or -- you know, we're talking about the edge stop layer, but where you

1 have multiple edge stop layers between, it's not -- like, the surface doesn't
2 have an intermediate feature or a layer, if that's how you're reading it.
3 Includes the meaning of "on a surface with an intermediate feature or layer."
4 The surface is -- doesn't have a feature or layer. The surface is, like, the
5 feature of the layer.

6 But we -- I mean, we are not walking away of -- from the meaning of
7 "on" here. I do want to be crystal clear about that. We're just saying in their
8 reading, there is no distinguishing the meaning of on a top and on a top
9 surface. The only explanation in the papers they've given is, well, surface
10 distinguishes interior from exterior, but you can have interior and exterior
11 surfaces. And what it means to be on the interior of the step surface is
12 definitely not explained in the papers, and in our view is nonsensical.

13 With that, I -- I'd like to cede my remaining time here to my
14 colleague, the Lead Practitioner, so he has an opportunity to argue, but
15 obviously if there are questions, let me know. But otherwise, we think
16 Grounds 1 and 2 should be rejected. Thank you, Your Honors.

17 MR. LOWRY: Good morning, Your Honors. Jump to Slide 49,
18 please. Today I'll be discussing Ground 3 and Ground 4. Ground 3 is based
19 on Park and Ground 4 is based on Park and Fang. On Slide 42, just like the
20 Kim grounds, Petitioner asserted obviousness in Ground 3 based on a
21 specific embodiment of Park. The one in Park's Figures 5 and 9A to 9J, it's
22 clearly shown in the -- in their Petition. Now, Park recognized that -- or
23 sorry, Petitioner recognized that Park discloses other embodiments, but that
24 those aren't the ones they relied on. It's hard to read their Petition any other
25 way. And this was a strategic choice. Just like Kim, the Petitioner built

1 their mappings on this specific embodiment in order -- because they needed
2 an embodiment that had two edge stop layers and a barrier layer.

3 On Slide 43, the relied on figure -- the embodiment of Figures 5 and 9
4 is gate stack on bottom. It's a completely different structure from what's
5 claimed and they have the same issue that they had with the Kim
6 embodiment.

7 On Slide 44 Petitioner redraws the Figure 59 embodiment to apply
8 gate stack on top, but even Petitioner acknowledges -- and this is in the
9 Petition box on the bottom of this slide -- that the figures of Park show the
10 opposite order. Go to Slide 47. We heard a lot about this paragraph, and I
11 think it -- we're taking a minute to walk through it. Park's Paragraph 102
12 does not say, reverse the layers as Petitioner proposes, but this paragraph is
13 what about -- is about what's exposed in the pad regions P1 to P6. As shown
14 here, this paragraph describes that in Figure 9A, which is shown on the slide,
15 the insulating layers in blue are on top, and the sacrificial layers 140 in red
16 are on the bottom. And of course, those sacrificial layers eventually are
17 replaced with the gate electrode layer in the same location on the bottom.

18 Now, this sentence is important here. Petitioner makes much of this
19 last sentence in part -- paragraph 102, arguing it discloses reversing the
20 insulating and sacrificial layers such that the sacrificial layer is on top to try
21 to shift the gate electrode layer there, but that's not what this sentence says.
22 I think a fair reading of this is that a portion of the top surfaces of both the
23 insulating and sacrificial layers can be exposed. So let's take this just in
24 step. It's on Slide 49. This means that the top surface of each insulating
25 layer in blue can be exposed as shown in Figure 9A. So that's what the first
26 portion of this sentence is saying.

1 The sentence goes on to say, "And" -- and I'm on Slide 50 with the red
2 bubble that says, "Too, unlike what is shown in Figure 9A, a portion of the
3 top surface of each sacrificial layer may be exposed in a plurality of pad
4 regions." On Slide 51, Petitioner interprets this disclosure as reverse the
5 layers such that only the top surface of the sacrificial layer is exposed, but
6 that is contradictory to the text here. On Slide 52, Petitioner's interpretation
7 directly conflicts with the first portion of the sentence, which says, "A top
8 surface of the insulating layer in blue may be exposed." In other words,
9 Petition -- petitioner interprets the sentence that says, "A portion of the top
10 surface of each insulating layer 170 may be exposed," as disclosing that the
11 top surface of each insulating layer is not exposed. That can't be correct.

12 JUDGE CYGAN: Counsel, can I ask you --

13 MR. LOWRY: Of course.

14 JUDGE CYGAN: -- what is the difference between the language in
15 Kim and Park? Because in -- they seem to have almost the same language,
16 and you're not arguing that that language in Kim teaches the top surface
17 having the sacrificial layers, but you are arguing it for Park. What the
18 distinction on the language?

19 MR. LOWRY: Yeah, so I would just first initially say that these are
20 two different references and the disclosures are completely separate. So I
21 think even though Petitioner hasn't argued it, it would be a stretch to look at
22 a completely external reference to interpret what Park discloses.

23 I'd also say on Slide 50, Park is very clear -- was very clear when it
24 said reverse the layers. In Paragraph 42, which is at the top here, in the
25 Figure 4 embodiment Park spells it out. Park says, "The insulating layer is
26 depicted as being positioned above the gate electrode layer, but conversely,

1 the gate electrode layer may be positioned above the insulating layer."
2 That's clear, Your Honor, and that's not what we're seeing in Park's
3 Paragraph 102. And in addition to Park's Paragraph 104, you know, when
4 Park wanted to reference a different embodiment, it said so expressly here,
5 as we can see in 104. "The method of forming a channel region may be the
6 same as described with reference to Figure 8H above." We don't see any
7 sort of cross reference from Park to -- park's Paragraph 102 to other
8 embodiments, and certainly not to any exterior prior art references.

9 And then I would just like to just briefly -- petitioner's point that this
10 wasn't in the paper, as I just direct Your Honor to the Patent Owner
11 Response at Pages 43 to 44 directly responds to this. It's in Campbell's
12 declaration supporting the POR Exhibit 209 at Paragraph 58, and then Patent
13 Owner Response at 57 to 60 provides the build that we just looked at.

14 JUDGE CYGAN: Okay. Counsel, I mean, you pointed me to
15 something different in Park --

16 MR. LOWRY: Uh-huh.

17 JUDGE CYGAN: -- which explicitly says something, but I'm trying
18 to understand your interpretation of what they're relying on in Park and why
19 it's different than what's being stated in Kim because the language in Kim
20 says that in different embodiments, the top surfaces of sacrificial layers may
21 be partially exposed. And in Park, it says, "A portion of the top surface in
22 the sacrificial layer may be exposed." I mean, I don't know how we draw a
23 difference in the language there. And find that in one situation, it's
24 describing the -- you know, the inverse order of the gate layer stacking and
25 it's not doing it in the other one.

1 MR. LOWRY: Yeah. Yes, thank you, Your Honor. I think -- can
2 address this head on. The Kim Paragraph 90 says, "In" -- "In other
3 embodiments, each of the top surfaces of the sacrificial layers, not the top
4 surfaces of the insulating layers, may be partially exposed." Whereas in
5 Park Paragraph 102, if you look at this sentence, it says, "In addition, a
6 portion of the top surface of the insulating layer may be exposed and unlike
7 what is shown in the Figure 9A, a portion of the top surface of each
8 sacrificial layer may be exposed." So we have the inclusion of both of those
9 things happening in Park.

10 JUDGE CYGAN: So it's the "not" versus the "and" --

11 MR. LOWRY: I --

12 JUDGE CYGAN: -- which you're focusing on?

13 MR. LOWRY: Yes.

14 JUDGE CYGAN: Okay. Thank you.

15 MR. LOWRY: If we could go to Slide 45. Turning to Motivation to
16 Combine, Petitioner points to generalized assertions that various
17 embodiments may be combined or that elements indicated by the same
18 symbols are the same, but that's not a sufficient motivation to combine of the
19 statute and precedent. This is essentially saying that the ability to combine
20 provides a motivation to combine and that's not the case, especially between
21 two different non-embodiments like we saw in the Stepan Case.

22 On this record, Petitioner never explains what problem the proposed
23 layer order reversal would solve, and never explains why a POSITA would
24 make that change, and never identifies any benefit. And as we saw on Slide
25 46, that Petitioner's own expert admitted that there is no benefit to reversing
26 the layers.

1 To Slide 55. Turning to the Claims 14 and 15, which require the edge
2 stop layer formed on a side surface and a top surface of each step. Park does
3 not disclose each -- does not disclose edge stop layer on the side surface of
4 the bottom step of the staircase, and second, Park's edge stop layer of Park is
5 formed on other intervening layers.

6 To Slide 57 to start. You can see the bottom right step here. The right
7 side of that bottom step has no edge stop layer at all. And this is what
8 Petitioner selected in their Petition. They selected the whole staircase, as
9 you can see in the red, on the left, and the plurality of steps on the left as
10 well in green. And you can see even though it's a little combined, that the
11 red and the green go down to that bottom right-hand part of that step. And
12 there's no edge stop layer.

13 And just to be clear here, Your Honors, there's -- this is not a -- an
14 argument that's impacted by the "on a surface" claim construction, right?
15 There's -- regardless of whether "on" requires direct or indirect contact,
16 there's no edge stop layer on the side surface of that bottom step. And I'll
17 just touch briefly on 61. You know, Petitioner now argues that each step can
18 refer to only a subset of the identified plurality of steps, but that's both
19 forfeited and foreclosed. That -- first, it's a new Claim Construction
20 Argument. Wasn't set forth in their Petition. And what Petitioner actually
21 said in the Petition -- go look at that -- forecloses this position. The Petition
22 repeatedly identified each step as referring to all the steps. And that's same
23 figure on the left with the red and the green, you can see on the bottom on
24 identifying all the steps.

25 For example, Claim 14 in the Petition at Pages 88 to 89, Petitioner
26 identified for the limitation regarding a top surface of each step as including

1 the top surfaces of every step. So when you look at how they applied it in
2 the Petition, it was very consistent. They were using every single step in the
3 staircase and referring to it as each step to address the claim limitations.
4 And this can be also seen in Limitations 13A at Petitioner -- petition 86,
5 Limitation 13B, Page 87 of the Petition, and Limitation 13D at Petition 88.

6 Go to 56. I'm going to go to 62 first, pardon me. Petitioner also
7 argues for the first time reply that Park's insulating layer 82 in pink is
8 optional in the Figure 5 non-embodiment based on disclosures from the
9 Figure 4, 8 embodiment. That argument is also forfeited and fails on the
10 merits. The barrier layer 82 is not simply optional because it's not shown in
11 the figures 4, 8 embodiment. We saw clearly Petition relies on the Figures
12 5, 9 embodiment. And second, even if the barrier layer of the 82 layer was
13 optional and removed, Petitioner still wouldn't meet the claim because the
14 edge stop would form -- the edge stop layer 110B would form on layer
15 110A, not the surface of the step. And this was admitted by Dr. Banerjee,
16 Petitioner's expert, in deposition where he said it'd be either formed on AD2
17 or on the surface of the barrier layer.

18 Petitioner also provides no motivation to combine these two
19 embodiments to remove any of the layers. And, you know, there's a good
20 reason for that. On Slide 54 -- a POSITA would have no reason to strip out
21 the very features that differentiate the Figures 5, 9 embodiment from the
22 Figures 4, 8 embodiment, and Park tells us why. Paragraph 51 of Park
23 explains that, "When you form a vertical opening in the Figures 5, 9
24 embodiment, the process may be temporarily stopped or slowed down by a
25 plurality of edge stop layers 110A and 110B, thereby preventing defects
26 caused by penetration of the top gate electrode layer 156. So in other words,

1 these layers provide a real solution in this embodiment and a POSITA
2 wouldn't remove that benefit in hindsight here.

3 Jumping to Slide 66, we'll turn to Ground 4. On Slide 67 shows the
4 claim at issue -- claim 7 for Ground 4 regarding coplanarity -- or sorry,
5 coplanar components. On Slide 68, Petitioner argued that they would use
6 the specific planarization step in Park and extend it, but there's several issues
7 with that. Your Honors, I have slides going through, but I will jump -- go
8 through the -- park's manufacturing process, but I'll jump forward to the
9 point on Slide 72 that Petitioner's argument has a fundamental flaw in that
10 planar is -- planarizing Park's insulation layer would impact the forming of
11 the edge stop layer. And if we look at Parks -- or sorry, Petitioner's
12 modification on the right, it removes the very portion of the insulating layer
13 -- the blue part, down to that dotted orange line, which removes the portion
14 that acts as a ceiling to form the edge stop layer, 110B. So if you remove
15 that ceiling, then there's no enclosed cavity, and if there's no enclosed cavity,
16 there's no edge stop layer.

17 And Petitioner's expert never grappled with this in the papers, he
18 never addressed this fundamental problem, and instead they decided to
19 pivot. I -- I'll look at two in a second. On Slide 73 there's another reason
20 why I posted a wouldn't planarize below the conductive layer and that's
21 because it could damage the components like the Structure 195, the
22 conductive layer, which is above the other components. And we don't need
23 to speculate about this petitioner's own reference, Kim, on this slide
24 recognized that that can happen.

25 Slide 74. Faced with these deficiencies, Petitioner tried to cure them
26 on reply with two brand new arguments that were never in the Petition.

1 First, Petitioner cited new evidence in Exhibit 1030, Wang, to show
2 selective planarization, but Wang is not part of the Petition and the Petition
3 combined Park and Fang, so we would argue this is improper. And second,
4 Petitioner's reply argues that there's a second planarization step but Park
5 doesn't disclose the second planarization step at all, much less one that
6 occurs after the formation of the edge stop layer.

7 We can go to Slide 70 and look very briefly at what Park says.
8 They're referring to the sentence at the last sentence of Paragraph 89 on the
9 bottom of this slide says, "After describing how to form the conductive
10 layer," it says, "again, a planarization process may be performed such that a
11 conductive layer 195 may be formed." I mean, we'd submit that this is more
12 of a summary of this paragraph rather than a second step. And in context,
13 where this paragraph is, even taking their position and giving it as much
14 weight as you possibly could, it still would happen before you formed the
15 edge stop layer so you run right back into that issue of planarization down to
16 the ceiling and running into how would you form the edge stop layer if you
17 remove the T2 cap?

18 And one final issue I'd like to address, Your Honor, on Slide 81 is just
19 this side issue of Dr. Campbell not being a POSITA. We've seen this in the
20 papers. We think it's a relatively -- a distraction. You know, under
21 Petitioner's own definition, Dr. Campbell qualifies and in fact exceeds the
22 standard for a POSITA. So the definition has two parts: this educational
23 requirement, professional requirement. The educational requirement
24 requires at minimum of Bachelor of Science in Electrical Engineering and
25 says -- it goes on to say that, "if an advanced degree may replace some of the
26 professional experience." So that means that if a professional or an expert

1 had a master's degree, it would be something less than two to three years. If
2 they had a Ph.D., it would be less.

3 And we go to -- even just Dr. Campbell's CV shows he has a Ph.D. in
4 physics, so clearly meets the educational requirement here. And his CV also
5 identifies that he exceeds the professional requirement with teaching
6 experience in microfabrication and semiconductor devices, research in high
7 permittivity. And it also says he was -- he's most well known for pioneering
8 efforts in high permittivity, a.k.a. high-K, materials for the gate insulator in
9 deeply scaled MOSFETs. So clearly Dr. Campbell has the right stuff to be
10 posted up in this case.

11 And in conclusion, the Board should reject all four grounds and
12 uphold the patentability of the challenged claims.

13 Thank you, Your Honor.

14 JUDGE CYGAN: I have three minutes remaining, so that will give
15 you ten minutes in your surrebuttal. Petitioner, you have 15 minutes for
16 your rebuttal. If you'd like to begin whenever you're ready.

17 MR. LANG: Sorry about that, Your Honor. Technical issues.

18 JUDGE CYGAN: No problem. And Patent Owner, since you got a
19 few extra seconds at the beginning of yours before the timer started, are you
20 okay if I give them a few extra seconds at the beginning before I start the
21 timer?

22 MR. GREENFIELD: Absolutely, Your Honor.

23 MR. LANG: And Your Honors, I -- don't hold me to it, but I'm not
24 sure I'll even take the 15 minutes. Maybe we can eat lunch early.

25 Your Honors, I want to follow up on one point that was raised. This
26 idea that Patent Owner has been saying, well, we're just relying on Figures

1 15 -- or 17 through 22 of Kim. That's just not the case. This is the Petition,
2 Your Honors, at Page 29. A POSITA would have understood that
3 descriptions of one of Kim's embodiments applies to the other embodiments,
4 except where the embodiments differ. As you noted, Your Honor, 17
5 through 22 does not describe that initial formation.

6 It continues, "Kim's closely related embodiments with many of the
7 same elements denoted by the same reference materials." Okay, then we cite
8 to Kim at 184 and then we say -- and that is right where they introduce this -
9 - the figures 17A through 22B. And right when it introduces 17 through 22,
10 it refers back to the other embodiments. Why is that? Because right at 185,
11 186, as Your Honor noted, it picks up with adding the edge stop and the
12 barrier layer. And then the Petition says, "For example, the embodiment
13 shown in 5A through 14 and 17" -- "17 through 22 are closely related."

14 Now, when we get to Kim -- the Kim ground, we say -- before the
15 highlighted sentences, Your Honor, Kim discloses the gate stack on top
16 ordering, even though its figures show the opposite order. This teaching of
17 gate stack on top layer ordering applies to figure 17A through 22B. Then we
18 say "it," and we're referring to that section of Kim's descriptions applied to
19 common aspects across embodiments. To common aspects. Your Honor,
20 that's what you pointed to with regard to the formation of the stack. That's
21 right there in the Petition. This idea that somehow we cabined ourself into
22 figure 17A and 22B, it just doesn't pass the straight face test. I just walked
23 through the language of the Petition. That statement applies and once you
24 jump to Kim 17 through 22, it picks up with the barrier layer and the edge
25 stop layer.

1 So Your Honor -- and I said this in the opening, and it's -- the same
2 applies. We had two -- and then -- we had two bases. One, that statement
3 applies and then we say Kim, at least renders this -- renders an obvious and
4 we go through Chen.

5 So there's two different bases. The statement certainly applies. I like
6 the analogy as well to the simple substitution. It's just a predictable
7 variation. One of two -- one of two options.

8 So with that, I want to turn and comment on a couple of their slides.
9 These are Patent Owner slides. And before I do that, I'll -- a lot of
10 discussion was about the Intel case, Your Honors. The suitable option -- the
11 case calls it a known mechanisms as well. What it requires is a suitable
12 option or known mechanisms for something. So you can't just say, well, I
13 could put -- I could locate this member here, I could locate it here, I could
14 locate it here. The case says there's got to be a reason. The suitable option
15 has to relate to something. Why are you doing it? A reason, a purpose, a
16 problem, semantically, whatever you want to call it.

17 Here, it is constructing the staircase so that you can have the landing
18 pads. Indeed, when we look at their slides, they can't even introduce the
19 patent without talking about the reason, the problem. They show the
20 staircase, they show the vertical interconnects coming down. And what does
21 it say at the bottom of the '711 Patent itself? "To form semiconductor
22 interconnect structures for interconnecting components of different layers."
23 That's what those interconnects are doing. It's got to come down vertically,
24 it's got to hit the gate, make the electrical connection. Whether you want to
25 put the gate on the bottom, whether you want to put the gate on the top, it --
26 it's accomplishing the same thing. You're doing it for the same reason,

1 you're overcoming the same problem of how am I going to form this
2 connect? It's just two ways of doing the staircase. Chen, Park, Kim all
3 shows each was incredibly well known, simple to implement.

4 This is the slide I was referring to in my opening, Your Honors. They
5 say -- so we point out the -- constructing the staircase. One sentence below
6 this, if you look in the Petition, that's where we cite Dr. Banerjee, that's
7 where we cite Park, that's where we cite Chen. That describes that either of
8 these is for the same reason, is addressing the same purpose -- the same
9 problem, semantically, however you want to say it.

10 Let me jump forward to -- the -- their arguments on this seem to be --
11 and on the one hand, they're saying, we're relying on Figure 9. On the other
12 hand, they're pointing out that, we have expressly said that Park, other
13 embodiments apply to one another. So this is really kind of just like Kim,
14 Your Honors. The Petition advances, again, two theories. The Figure 9A
15 itself reverses the order. But like Kim, there's even another disclosure
16 earlier on about reversing the order. And Park expressly says various
17 embodiments may be combined. So however you want to look at Park,
18 whether you look at the earlier embodiments, whether you look at Figure
19 9A, it discloses reversing the order twice. Our position is right within the
20 Figures 9 but certainly it may admit it discloses it. So again, there's no kind
21 of missing limitation here with Park as well.

22 Your Honors, with -- you heard them kind of do these handstands to
23 try to take this language and say it doesn't disclose gate stack on top. I
24 would say simply this. This is representative of their arguments in this
25 proceeding. None of it is supported by evidence. In their Patent Owner
26 Response, the pages that they cited to -- I believe it was 45 or something

1 around there -- the argument they made was this is reflected -- this language
2 -- their argument is reflected in 9B. If you go back and look at the Patent
3 Owner Response, 9B does not show extending the sacrificial layers. Okay.
4 What figure shows extending the sacrificial layers? What reference shows
5 extending the sacrificial layers? We're -- we have nothing except some
6 mental gymnastics to twist this language.

7 On the otherhand, we have Kim using basically identical language
8 that admittedly reverses the order. They don't dispute that Park elsewhere
9 reverses the order. They don't dispute that Chen side-by-side reverses the
10 order. So we have on the one hand, does this mean reversing the order?
11 Unlike what's shown in the figure, just like Kim says, the sacrificial layers
12 are on top, consistent with Park's other disclosures, consistent with Kim,
13 consistent with Chen. Or does it mean something that they cited Figure 9B
14 it doesn't support. They can't cite any figures. There's no evidence. Dr.
15 Campbell never talks about extending the layers. There's just no support for
16 this. So Park alone discloses this in Figure 9.

17 Just a couple more. They said that this each -- that somehow we're
18 making a new argument. Your Honor, I would just -- and maybe, Mr. Hsu,
19 if you could give me the citation to Petition. When comprising first comes
20 up in the Petition, the Petition says, "Comprising does not require all of the
21 steps." We say the claim could include three steps, could include five steps,
22 could include a subset of steps. And --

23 JUDGE CYGAN: Counsel, I noticed you made the -- you made that
24 argument for Kim, I believe, in talking about Step 1A, but I did not see that
25 in the Park ground.

1 MR. LANG: Your Honor, I'm not sure if we referred back. I think
2 we were commenting on the claim language once, but the -- our position,
3 Your Honor, respectfully, would be that because we're commenting on what
4 the claim requires, that that one discussion should apply to the claim
5 generally. And that's at Petition 71.

6 Oh, Your Honor, we cited for Part 2 if you look at the bottom of Page
7 71. And we kind of make it, you know, on a separate point, but we're
8 pointing to the comprising does not require all. And I would say that even
9 despite that, certainly we should be able to counter their constructions in the
10 Patent Owner Response. They have come out and said -- came up with a
11 construction that would read comprising to require all, and we should be
12 able to say, of course, this black letter law, comprising does not require all.
13 Our position is we do advance that in the Petition.

14 Secondly -- so it fails for that reason. The subset language fails
15 additionally because the specification defined subset to include subset of a --
16 each to include each of a subset. That's in our papers.

17 The brief point on 72. They had made the argument that this
18 modification -- you can't do it because you have to form the edge stop before
19 you do the CMP. They basically said you need that light blue material to
20 form the edge stop. We don't dispute that, but it -- it's -- they're attacking a
21 straw man because if you look at our Petition, we say that you form the edge
22 stop, then you do the CMP. Part, in fact -- and again, we discussed this in
23 the -- our papers, it discloses doing CMP multiple times. So the idea that
24 you can't just add another CMP stack, and then form the edge stop, and then
25 do the CMP. The -- it's just attacking a straw man. The argument that they
26 made that we're not entitled to bring in new evidence -- and this is on their

1 Slide 74. We did -- I -- we -- well, I'll tell Your Honors, we did cite this for
2 the first time in the reply.

3 The reason we cited it is because they made the argument that you
4 can't do what's shown there. They said that you cannot do a CMP if you
5 have these protruding elements, but because it's a chemical mechanical
6 polish, you actually technically can. It's not disputed now that Exhibit 1030
7 shows that you can, and therefore we would consider this purely responsive
8 to the argument that they said that this is not -- this is not possible.

9 The last comment I'll say on -- they had brought up Dr. Campbell, and
10 we did not move to exclude Dr. Campbell's testimony. I understand the law
11 to be that perhaps even if you're not a POSITA, that you can still testify
12 assuming that, you know, in retrospect, you're applying a POSITA standard,
13 so we did not move to exclude. We would ask, Your Honors, however, that
14 the weight of his testimony -- he's not a POSITA. They've proffered no
15 evidence that he had two to three year's experience in staircase design. And
16 I think where that comes in is the knowledge of Chen, of Park. The
17 knowledge of how simple layer reversal is, the knowledge that all of the
18 changes are routine. He simply didn't have that experience and we would
19 respectfully ask that his testimony be weighed accordingly.

20 Thank you, Your Honor. No further questions.

21 JUDGE CYGAN: Thank you, Counsel. Patent Owner?

22 MR. GREENFIELD: Thank you, Your Honors. Briefly as to the
23 Park grounds. Petitioner's Counsel sort of said this is a claim construction
24 dispute. To be clear, that Park fails to disclose an edge stop layer on the
25 bottom side surface is not a claim construction dispute. It's a deficiency in
26 evidence they're pointing to, to meet that claim limitation.

1 Second, the identification of the problem today by Petitioner's
2 Counsel referring to the landing pad is entirely new. It's entirely attorney
3 argument. It's nowhere in the papers and stands in stark contrast to the
4 identification of the alleged problem that they have in the reply -- page 5
5 shown here on Slide 17.

6 Third point. Petitioner's Counsel pointed you to Page 29 of the
7 Petition going to this dispute about the different embodiments in claim -- in
8 Kim, whether it's the 17A embodiment or the other embodiments. What he
9 pointed to seems to me to entirely support Patent Owner's argument. He
10 read you, "A POSITA would have understood the descriptions of one of
11 Kim's embodiments apply to other embodiments, except where the
12 embodiments differ." The embodiments differ in the gate stack. That Page
13 29, take a look at it after their oral argument. I think that is entirely
14 consistent with our argument that they're relying on Figure 17A to 22B,
15 embodiments singular, not the other embodiments. To bring in the other
16 embodiments, it brings them within the scope of Boston Scientific they rely
17 on as supportive, but it really supports us. I'm -- got here Slide 19. Even in
18 Boston Scientific, you had two embodiments right next to each other and the
19 question is, are you going to add this coating -- figure -- coating 15 on top of
20 coating 14 in Figure 4?

21 Even where in that case, they're right next to each other and it's purely
22 additive, the Federal Circuit still went on to talk about the benefits in doing
23 so. It didn't just rest on the suitability of adding the layer that -- there was
24 some discussion of whether that'd be sufficient when I was up here before.
25 The Federal Circuit could have stopped and said it would have been suitable
26 to add that layer. It didn't. It went on to address the benefits in -- going

1 down to Slide 20, when the Board's decision in a different Intel case was
2 discussing and distinguishing the Boston Scientific case. It said, "The
3 court's analysis" -- I'm reading now from the Board's Intel v. Tela
4 Innovations case shown here on Slide 20. "The court's analysis in Boston
5 Scientific indicates that adjacent placement alone is not sufficient."

6 And it goes -- and it goes on, and it's really focusing on the benefits of
7 adding this coating. If you didn't need that and a (inaudible) was sufficient,
8 you'd expect to see it. Micron trying to combine different embodiments
9 from the same prior art -- as I mentioned, lost with the Federal Circuit
10 February 20th. I want to read the cite into the record. It's 2026WL480156.
11 That's Microsoft, Netlist, February 20th, Federal Circuit, affirming the
12 Board and concluding that Micron failed in its burden with respect to
13 motivation to combine on two references, or two embodiments in the same
14 reference, and they should fail here too for the same reason.

15 Thank you, Your Honor.

16 JUDGE CYGAN: Counsel, I have one question for you about -- so
17 the background discussion of options in Kim. So I mean, there are areas in
18 the early part of Kim where they talk about different materials being used for
19 different layers. So if you want to look particularly at something like
20 Paragraph 83, just as an example.

21 MR. GREENFIELD: I'm sorry, what was the number you said? And
22 paragraph?

23 JUDGE CYGAN: Paragraph 83. I mean, just as an example of these
24 early paragraphs of Kim talk about a lot of different options for doing things
25 in the same way that Paragraph 90 talks about different options for what
26 we've determined to be ordering. So in your view, which options should we

1 consider to be part of the possible described options for, I guess, figures 17
2 through 22? I mean, would we consider tungsten to be, you know, a
3 possible layer in that, even though it's described in Paragraph 83 and
4 Paragraph 83, isn't specifically mentioned in the later portion?

5 MR. GREENFIELD: I think it depends on the context. I'm certain
6 I'm not going to concede that sort of all the alternatives discussed in Kim
7 apply to all of them. I don't think that's what you're asking. What I would
8 want to -- what I -- the process I would do there is say, okay, in Figure 83, if
9 it says this certain layer can be tungsten, when they go and look and see how
10 Figure 17A to 22B embodiment is described for that specific layer, and
11 when doing it, does it kind of refer back and say, oh, well, for this layer, you
12 know, you can use any of the materials described throughout the --
13 throughout specification and that would kind of bring you to here and it
14 would say, oh, yeah, tungsten is one of those layers. You don't see that with
15 Figure 17A, 22B saying the gate stack is on bottom. Oh, but if you want to
16 switch the order, you can look elsewhere to -- whether it's Paragraph 90 or
17 elsewhere, which then says it.

18 Or Kim doesn't say in Figure 17A, 22B the gate stack can be
19 anywhere relative to the dielectric layer as described here throughout. It
20 doesn't say that either. In that figure, it's gate stack on bottom. In the '711
21 claims, it's gate stack on top, fitting within the larger complex
22 semiconductor structure. This isn't just as easy as, you know, adding the
23 coating like in Boston Scientific.

24 JUDGE CYGAN: So if I'm understanding correctly, which you
25 would be looking for -- to draw in a description from the earlier point, you'd
26 be looking for something specific. Not just the absence, I think, which is

1 what sort of Petitioner points to if it's not being discussed but has closely
2 related embodiments which you would use the same reference numerals that
3 sort of ties in the earlier portion to it. But you're really looking for
4 something more. Something that would specifically tie in some earlier
5 option.

6 MR. GREENFIELD: Right, because that's Boston Scientific. And
7 Boston Scientific -- if it were just sufficient that the absence and sort of
8 adjacent placement and common numerals, the analysis would have been
9 much shorter in Boston Scientific. Instead, they went on to say, oh -- and I
10 can -- I'll put it back up again on Slide 19. It talks about the benefits. You
11 don't have that discussion about -- in this case, there's no discussion in
12 Petitioner's papers that says -- I understand Figure 17A through 22B has the
13 gate stack on bottom, but there's a downside to that. If you want to improve
14 it and have this benefit, you would just flip the order as described elsewhere.
15 That -- that's nowhere in the papers. And that's what would fall within the
16 scope of Boston Scientific, et cetera. If it was just sufficient that there was
17 common numerals, adjacent, suitable option, it would have been a totally
18 different opinion in Boston Scientific.

19 JUDGE CYGAN: Thanks for clarifying.

20 MR. GREENFIELD: Thank you, Your Honor.

21 Well, we have nothing further unless there are questions. We'd ask
22 that the Board reject grounds 1 through 4. Thank you.

23 JUDGE CYGAN: I'd like to thank Counsel for both parties again
24 today for your attendance, and your presentation, and your responsiveness to
25 the questions which were posed to you today. Your good command of the
26 record is -- especially was very helpful for the Board in determining the

1 issues presented today. Also, we'd also like to compliment your colleagues
2 on the demonstrative exhibits and the Final Written Decision will be issued
3 in due course.

4 (Whereupon, the above-entitled matter went off the record.)

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