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UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

BOE TECHNOLOGY GROUP CO., LTD.,
Petitioner,

v.

OPTRONIC SCIENCES, LLC,
Patent Owner.

IPR2024-01132
Patent 7,586,121 B2

Record of Oral Hearing
Held: November 20, 2025

Before THU A. DANG, BENJAMIN D. M. WOOD, and KEVIN W. CHERRY, *Administrative Patent Judges*.

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P R O C E E D I N G S

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JUDGE CHERRY: Welcome. This is the hearing for IPR2024-01132, BOE Technology Group, Ltd. versus Optronic Sciences, LLC. Will the parties please make their appearances?

MR. LIMBACH: Alan Limbach for the Petitioner, BOE.

MR. TONG: This is Peter Tong from Russ August & Kabat, here on behalf of the Patent Owner. And with me is my associate, Jake Cummings.

JUDGE CHERRY: Welcome, everyone. So we've had some excitement this morning, had some network difficulties. So bear with us while we try to get ourselves organized. I believe the parties have 45 minutes each. How much time -- the way we'll proceed is we'll begin with the Petitioner because the Petitioner bears the burden of proof. Then we'll proceed to the Patent Owner. The Petitioner may reserve some time for rebuttal and may present then respond to the Patent Owner's case. And the Patent Owner may also reserve some time for surrebuttal and can present a surrebuttal after the Petitioner's rebuttal time.

Mr. Limbach, how much time do you want to reserve for rebuttal?

MR. LIMBACH: I'd like to reserve 10 minutes.

JUDGE CHERRY: Sure. Great. And you can begin whenever you wish.

MR. LIMBACH: Good morning, Your Honors. Good to see you again. We were here about a month ago, same parties but different patents. So today we're going to be talking about the '121 Patent. And we've marked all of our demonstrative as confidential. And so we submitted some of the briefing under seal. And so we request that the transcript also reflect that designation.

JUDGE CHERRY: Yes, that's fine. We may ask that the parties review the transcript after the proceeding. And I assume that the person behind, your partner, is also with you.

MR. LIMBACH: I'm sorry I neglected to announce the folks with me. Brian Erickson and Zac Loney with me from, both also from DLA.

JUDGE CHERRY: Oh, great. So we'll keep the room closed. We don't have a public line, but we do ask -- afterwards, we'll ask -- we'll send the parties a copy of the transcript to -- we'll review the transcript, we'll enter it as confidential, and then we'll ask that the parties review it for a public version, if that's okay.

MR. LIMBACH: Yeah.

JUDGE CHERRY: So that's fine. And you can feel free to begin whenever you wish.

MR. LIMBACH: Great. Thank you very much. So for today, we're going to be talking mostly about Claims 3 and 4 of the patent. So it is undisputed for the '121 that Claims 1 and 2 and 5 and 6 are invalid. And so the only claims that are in dispute are 3, 4, and 7. And 7 is really by -- it's

dependency, it's the same issues as 3 and 4. So those are the claims we'll be talking about today.

And this really is a claim constructions case. Patent Owner's defense is basically the construction of passivation layer and capping layer. And the issue here is whether their narrow construction should be adopted or not. So the Patent Owner's construction is a plain and ordinary meaning of passivation layer is a layer that serves as a physical barrier, such as an insulation layer. Now, the '121 Patent provides no meaning for passivation layer. As a matter of fact, the disclosure really boils down to a single sentence. It talks about a layer of passivation; silicon nitride is formed over the ILD and a second metal pattern or the second metal patterns. No function or purpose is described. It just simply tells you it's an insulator of silicon nitride and where it's formed.

JUDGE CHERRY: Oh, Mr. Limbach, just for clarity, what is the ILD?

MR. LIMBACH: ILD is interlayer dielectric. It's another insulator.

JUDGE CHERRY: Thank you.

MR. LIMBACH: So if you look at the extrinsic evidence, there are many examples of the use of passivation layer, some narrow, some broad. But the broadest ones -- and there's some examples here on Slide 6 -- is where it talks about it's an insulation layer and its purpose is protection.

So you can see the examples here from the two of the dictionaries,

it talks about insulation layer of glass, protection against moisture, or isolation of the surface or an insulating layer or skin that protects it from contamination or an insulating layer to protect the surface from contamination. So these are broad uses of the word passivation layer and those are the ones that support our construction.

Now, the passivation layer is not limited to any specific type of passivation. It's not in the claims, it's not in the specification, it's not in the file history, and it's not in any extrinsic evidence. The Patent Owner is proposing a very narrow construction, a layer of material that renders the surface layer below, chemically passive or unreactive, especially by tying up dangling bonds -- very narrow construction. There's no support for that in the specification.

The sole citation that Patent Owner refers to is that single sentence. And that single sentence only tells us it's an insulator and where it's located. It doesn't contemplate tying up dangling bonds in any way for the two layers of this formula. So not only is Patent Owner reading limitations into the claim, but Patent Owner's reading limitations that aren't even in the spec in the claim.

Now, Patent Owner's expert, they provided a dictionary definition, but he cherry-picked it and he only provided one narrow definition from one dictionary. He only looked at one dictionary. He didn't search for any others. And this is really the telltale sign of how far this construction goes.

When I asked the Patent Owner's expert on whether or not the

passivation layer 212 in the specification, the sole embodiment, meets his construction, he had no opinion. I asked him, does the passivation layer 212, the ILD, does it tie up dangling bonds? Oh, I don't have an opinion on that, that's what he said.

Okay. Does the passivation layer render the metal patterns chemically passive or unreactive? Oh, I don't have an opinion on that. And I said, does the passivation layer tie up dangling bonds? Answer, I don't have an opinion on that. It's not credible for this expert to proffer a construction that he can't even defend that reads on the sole embodiment.

The other term at issue here is capping layer. And the plain and ordinary meaning that we believe should be applied is an insulation layer covering the underlying layer of structure. And this goes back to what is the disclosure for capping layer? Again, it's a single sentence. And all it's -- that single sentence is a layer of capping silicon nitride that is deposited to cover passivation silicon nitride 212 and ITO pattern 214C. No function, no purpose.

Now, we also know it's not the most -- uppermost layer in the layer stack. Because if you look at the sole embodiment or one of the embodiments, it's in between. So it's not even the top or uppermost. It just covers something that's underlying.

The Patent Owner's construction is a layer of hard material to protect the layer underneath, like how a hard cap can be worn to protect the head. There's --

JUDGE CHERRY: Mr. Limbach, how would you distinguish the capping layer from the passivation layer?

MR. LIMBACH: Not much, because the identifications in the specification are identical. It's a single sentence. They're both made of silicon nitride and they both cover something, so it's really difficult. I mean, you know, we'd love to have some guidance in the specification if there is a strong distinction between the two terms. But there's nothing there for us to grasp onto. There's nothing that a POSITA would look to, to come to a conclusion that there's that much separation between the two terms.

JUDGE CHERRY: Thank you.

MR. LIMBACH: So again, the sole citation goes back to that single sentence. It doesn't contemplate at all the hardness of the material. And it's the same silicon nitride material for the passivation layer that is for the capping layer. So where's the hardness requirement in their passivation construction?

Now, their construction concedes its own flaw. Notice how that they put the word hard before cap. That tells you the cap isn't necessarily hard. And we know that baseball caps, shower caps are not hard. And even the Patent Owner's expert admitted, yeah, there are caps that are not hard. So they had to place hard in front of cap in their own construction, conceding that cap does not connote hardness.

And then it's indefinite. I asked the Patent Owner's expert, and he couldn't tell me how hard it needed to be. I said -- he said it would depend

on the requirements. There are no requirements in the specification. I said, okay, does it have to be as hard as silicon nitride? Well, I have no opinion on that. Does it have to be harder than the material that it's covering? Couldn't answer. So again, it's not a credible construction.

Now, there's a claim construction order that came out and we submitted it as an exhibit. Two things here, one, capping and passivation layer, those terms were not construed in the District Court case, so that's not going to provide us any guidance. And the other is that the directly formed on term that was construed is not an issue in this case because the prior art that we submitted in this IPR meets that construction.

So now, I'd like to go to Ground 1 -- let me take a quick water break. So Ground 1 is anticipation of Claims 1, 2, 3, and 5 anticipated by the Anzai reference. And Claims 1, 2, and 5 is undisputed. There was no argument of validity, so it really all comes down to Claim 3. And the only defense for Claim 3 is the definitions of passivation layer and capping layer. So the Board does not adopt their narrow constructions, then it's not disputed; Claim 3 is anticipated by Anzai.

Now, Claim 3 says, wherein the second dielectric layer comprises a passivation layer and a capping layer. And Anzai has those, the passivation layer is layer 17 and the capping layer is layer 19. Now, we know that 17 and 19 in Anzai are insulators because they -- it says both the first passed planarization film and the second planarization film function as the capacitance insulating film in this configuration. So we know that

[redacted]

they're both insulators.

The planarization layer 17 is formed over the surface to create a planarized flattening. And it covers all of the underlying structure, therefore providing protection from the surrounding environment or underneath. So it meets the plain and ordinary meaning of passivation layer. Planarization layer 19 is formed on planarizations of layer 17. So it covers it, it caps it, therefore it meets the plain and ordinary meaning of capping layer.

The next big issue that we need to address here is the fact that the Patent Owner is taking contradictory positions regarding the construction of passivation layer in this IPR proceeding. They're arguing one construction for validity. But in the litigation case, they're arguing -- they're taking a contrary position for infringement. And so we believe that the Board should give no weight to all of the arguments relating to the passivation layer as well as any other remedy that you deem appropriate.

So it really is an interesting timeline to see how this all played out. And so it starts with the Patent Owner's response on May 17th. Their argument was based upon an organic molecule theory where the Patent Owner's expert said that the layer of Anzai, which is an organic resin -- that's what Anzai says that that layer can be, it's an organic resin. It's not a passivation layer because of the organic molecules in the resin. They said it's the -- going down to the last bullet point on Slide 19 -- the chemical compounds that form organic resins are organic molecules and they don't have any free or combined electrons capable of reacting with and passivating

[redacted]

the surface. So their position was organic materials don't act as a passivation layer and it's because of their organic molecules.

Now, in the deposition of the IPR expert, again, he admitted to a kind of a head in the sand approach. He didn't consult -- he only consulted one dictionary. But more importantly, he did no searching to see how POSITAs use this term. He said, that was outside the scope of my work, never looks.

So in that deposition (INDISCERNIBLE) him free of Patent Owner's own patents. And you'll notice that the first one is 7,226,801. That's a concurrent IPR between the parties. As a matter of fact, that's the hearing that follows this one, the same expert. So he knows, he's familiar with this patent. He studied it. He opined on it.

Well, in that patent, it says, alternatively, the passivation layer can comprise silicon oxide nitride, silicon oxide, organic dielectric layer, or a combination thereof. So I said, okay, you rendered this a thing in organic molecules. This patent says you can use an organic dielectric layer as a passivation layer. His response, well, I didn't consider. And remarkably, he said, I had no reason to, big red flag. But he did admit Anzai's organic resin can be an organic dielectric layer.

So I presented them another of Patent Owner's patent applications. This is a published application '212. It says passivation layer 350 is formed to cover the surface of the insulating layer 340, preferably an organic layer. Again, I showed it to him, I said, is this teaching wrong? Oh, I don't know, I

[redacted]

don't have an opinion on that, is what he said. But he did admit Anzai's organic resin is an organic layer.

Then I showed him another one, the '977 publication, another of their patents. It says passivation layer 130 is fabricated from a material including silicon oxide, silicon nitride, silicon oxynitride, or an organic compound. Again, I asked him, are the teachings wrong? His response, I have no opinion on that. But he did admit Anzai's organic resin could contain organic compounds. So clearly, their own patents underscore that that's not -- POSITAs do not use the -- their construction as a plain and ordinary meaning of passivation layer.

Then we get to the litigation expert report at the District Court case on August 25th. This is after the IPR deposition but before the sur-reply. And remarkably, for the first time in that case, they pivoted their accusation to [redacted]

And what you're looking at here, on Slide 32, is the entirety of the opinion. There's no construction provided. He just said, in paragraph 223, a POSITA would also know that [redacted] is a passivation material. And then there's a cite to a 67-page paper. It doesn't even say where in that 67 pages it is. It just says, that's the paper, that's the evidence. So this is a direct contradiction with what they're telling this Board because it is undisputed. The [redacted] that's an organic material.

So then we get to the sur-reply. Now, duty of candor, they should

[redacted]

[redacted]

be telling the Board what positions they are taking in the District Court case if they appear to be conflicting; they did not. What they did was they pivoted and they said, okay, no, what we really meant was organic resin, this is the organic resin theory, organic resins do not passivate resins underlying.

The problem with that is an organic resin falls within all of the three categories listed in the three patents that we were talking about from Patent Owner. And there's no evidence or analysis why a resin doesn't passivate but the organic molecules in it can. The problem also with this new pivot position is that it still directly contradicts. The accused [redacted] That's the definition of a resin.

The only definition of resin in this case is by their expert who said it's a liquid material that hardens. The [redacted] it's undisputed it's an organic material. Therefore, there's still a direct conflict.

But actually, it gets worse. In the deposition of -- in the litigation case in -- on September 30th, now, the expert -- the litigation expert says, so long as [redacted] it's a passivation layer, categorically, period. And he said it doesn't matter how it's formed. And he admitted it's an organic layer.

And then the last quote here on Slide 25, if the Court or jury finds that [redacted] is an organic layer, in light of the arguments you make here, do you stand by your infringement opinion? Yes. So they're going to go to the

[redacted]

[redacted]

Court -- to the jury, they're going to tell the jury that [redacted] infringes whether it's a resin or not. That is a direct conflict with what's going on in this proceeding.

And we were really struck by how they could possibly be thinking that this is going to work. And what we found in the deposition was surprising. The litigation expert had no idea that any of these arguments were made. He was not provided with any of the IPR briefings or arguments. He had no idea. He was -- I showed him the materials. He had no idea these arguments had ever been made. He was completely taken aback.

So then we get to the response to evidence by Patent Owner on November 5. Now, they've kind of pivoted even again. Now, they're saying, well, it's, you know, resins versus polymer and artificial theory. So what they're arguing is, well, [redacted] is an organic polymer, not an organic resin. Okay. But where's -- notice that they don't define what a resin is. They still haven't established why is that even the case.

And what did they cite to? They cite to, actually, their litigation expert. They said, oh, Dr. Fontecchio disagreed that BOE's [redacted] is an organic resin. He said that in his deposition, no, it's not an organic resin. But in that deposition, I asked him, I said, well, what is organic resin? And he said, I don't know the definition of an organic resin. It's not something I've studied or I'm prepared to offer an opinion on. So I don't know what's more remarkable, that he felt comfortable in opining elsewhere in the

[redacted]

[redacted]

deposition -- well, that's not an organic resin, when he admitted he doesn't know what one is -- or the fact the Patent Owner is actually relying on this in their papers.

And then we get to this article, the sole evidence in the litigation case, the Liaw publication, this is what the litigation experts said, these 67 pages is everything you need to know about [redacted] Well, it's riddled with references to the fact that [redacted]

It also later talks about [redacted]

Another remarkable thing, in Patent Owner's response, they actually quoted Dr. Fontecchio, I've seen nothing to indicate that [redacted] is an organic resin. Why would they rely on that when his own single piece of evidence clearly establishes that it is? And how can this expert in the litigation case make this statement, given his own paper citation?

JUDGE CHERRY: This Dr. Fontecchio, is he a polymer scientist?

MR. LIMBACH: No.

JUDGE CHERRY: Is he a material scientist?

[redacted]

[redacted]

MR. LIMBACH: He said he does not know the definition of an organic resin --

JUDGE CHERRY: Yeah, I know.

MR. LIMBACH: -- so I would say no.

JUDGE CHERRY: No, I understand that. What -- if you know what his background is?

MR. LIMBACH: I do not.

JUDGE CHERRY: We'll ask Mr. Wood.

MR. TONG: Yeah.

JUDGE CHERRY: Mr. Tong. Sorry.

MR. TONG: Yeah. It's a good question. I don't recall, I'm sorry.

MR. LIMBACH: So even in their own paper, Patent Owner is contradicting themselves. First on page 1 of their response, they say [redacted] is an organic polymer, not an organic resin. But then you get to page 3 and they say, well, [redacted] can -- in certain circumstances when further processed in certain ways -- be a resin. Okay. Then that first statement on page 1 is not true.

And notice there's no evidence or analysis of how the [redacted] is processed and how they can somehow come to the conclusion that for some reason it's not a resin. Another point that they make in PO's response is they say, well, the litigation expert for Petitioner, he did a declaration. He said, well, he did not opine that [redacted] is an organic resin. He said it was an organic dielectric material. If it were a resin, he would have said that.

[redacted]

[redacted]

The problem is that report predated their pivot. At the time of that report, their theory was organic molecule theory. So that's what -- that's the scope, the broad scope, of the estoppel that Dr. Neikirk was talking about. He would have -- I won't speak to it, but most likely he would have rendered an opinion different had the issues been framed differently at the time of this report.

Then the other argument they make is they say Dr. Fontecchio testified that a resin is something that is a naturally derived substance and [redacted] is artificial. But the Liaw argument publication confirms that [redacted] is an artificial polymer and a resin. So that argument can't be right.

So the conclusion here is we got three different positions. They're all directly contradicted in the litigation, where they are going to take it to the jury that [redacted] is a passivation layer even if it's formed as an organic resin. That is a direct conflict with what's going on in this proceeding. And remarkably, Patent Owner never even attempted to explain or offer this to the Board under their duty of hindering when dealing with the Board.

As you recall, when we wanted to bring this issue up to the Board, they fought it. They said it was too late, it shouldn't be brought up. The only reason we were able to talk about this is Your Honors granted us the opportunity to do supplemental briefing. And that's the only reason why we have this issue here today.

So that is Ground 1 and capping layer and passivation layer. Do

[redacted]

Your Honors have any questions before I move on?

JUDGE CHERRY: No questions.

MR. LIMBACH: Very good. So now we're up to Ground 2, which is Claim 4. And the issue for Claim 4 is what would have been obvious to use for the material of layer 19 in Anzai. That's the issue. And this is how it plays out. So Claim 4 says the device of Claim 3 wherein at least one of the passivation layer and the capping layer comprise silicon nitride.

Now, in Anzai's device, we know that it's an insulator because it tells us. And then it also says that its function is to form as the capacitive insulating film underneath the cathode. And we also know that the planarization layer 17 is an organic resin. For planarization layer 19, Anzai is silent. It doesn't tell you which insulator to use, it just says use an insulator.

Now, Yamazaki, the secondary reference, it also is an organic light-emitting device, and it has an insulating material 30 directly underneath the cathode. Its top surface is flattened using CMP, chemical mechanical polish. And it tells you that silicon nitride is a suitable material to use there.

So if you are following the teachings of Anzai, what would have been obvious to use for layer 19? Well, Anzai and Yamazaki are both analogous prior art. A POSITA would investigate what, you know, should I use for layer 19? They would see Yamazaki and says, hey, you know, use silicon nitride. It's a great layer to put right underneath the cathode as your

insulator. And a POSITA knows that silicon nitride has a nice high dielectric constant. So if you are concerned about capacitance, that's a good film of choice.

Now, in the Petition, we actually argued that you could have used silicon nitride for layer 17 or 19. And there's been a lot of arguing back and forth, oh, would you or would you not have taken (INDISCERNIBLE) silicon nitride? We don't need to go there. We'll just look at 19, layer 19. For layer 19, they only have one argument and that is, well, there's no justification for picking out silicon nitride from, quote, "a huge range of choices," unquote, offered by Yamazaki.

Well, here on Slide 35, is that huge range of choices. One sentence, nine materials total, only three of them inorganic. And given the fact that silicon nitride is known to have a high dielectric constant, it's going to be standing out in that list. But it defies logic that they're going to say that if you're provided a list of nine possible choices, it's unobvious to select one of them. So does it have to be seven, six? I mean if you're looking inorganic, so it's down to three.

JUDGE CHERRY: Did the expert testify about the dielectric constant --

MR. LIMBACH: Yeah.

JUDGE CHERRY: -- as another reason?

MR. LIMBACH: Yes, he did.

JUDGE CHERRY: Okay.

MR. LIMBACH: So that is the summary for Ground 2. Did Your Honors have any questions on those? Okay. For Ground 3, I'm going to try and move quickly now.

JUDGE DANG: But actually, can you please go back? So what is your -- I guess, what is Petitioner's reasoning motivation to apply Yamazaki into Anzai? I mean, Anzai just says it's an insulation layer and then Yamazaki says you can choose one of these. And that's your motivation?

MR. LIMBACH: The motivation is an idea. These are the nine materials that you can use for the insulator that's directly underneath the cathode. So both of the layer 19 and Anzai and 30 in Yamazaki is the insulator underneath the cathode. So our argument is, well, you look to Yamazaki to say, well, what are they using under their cathode for their insulator? And that's how you get there.

JUDGE DANG: Okay. But the patent's -- well, I guess, capping layer, it has a different purpose or is it the same purpose?

MR. LIMBACH: The capping layer would have the same purpose in terms of it is an insulator.

JUDGE DANG: Okay. Oh, okay. So thank you very much.

MR. LIMBACH: Okay. So for Ground 3 -- I'm going to have to really move fast now -- it's really the same issues of Claims 1, 2, 5, 6, don't have any arguments for validity. So it really comes down to Claims 3, 4, and 7. And 4 and 7 rely on the capping layer, so now we're just down to Claim 3. And here, the issue is would it have been obvious to put another

[redacted]

layer underneath or between the Yamazaki insulator 30 and the cathode? In other words, would it have been obvious to use two layers for planarization instead of one?

The answer is yes because that's what Anzai teaches you. Anzai teaches you that you can use two layers, two planarization layers. You can get better planarization by using the second layer. You can also make layer 30 a little thinner too if you're doing that. And they say, oh, Anzai's planarization layer doesn't meet the construction of the capping layer. We've discussed that. They say, well, there's no reason to add a planarization layer on a planarization layer. I'll have to move fast, but there's testimony that's clear that you get better results if you use a second layer. Anzai uses two, one on top of the other. And, you know, I asked their expert and he had no opinion on whether planarization layers are perfectly flat and you need a second one.

Lastly, they say, oh, Petitioner's taking inconsistent positions. Okay. So they're trying to have a volley going back the other way on this issue. They say this contradicts the state of motivation in Ground 3 to add an insulation layer when they're telling you in the District Court case where the [redacted] could be removed. And that's one of the issues in the District Court case.

[redacted] is an insulating layer that's used in another part of the chip, in the peripheral area of the chip. And so it is in the active area because when you put down a layer, you have to put it everywhere. And

[redacted]

[redacted]

they don't need to go in and remove it; they can. They can just do a photolithography and etch step. They don't need to because it doesn't serve any purpose there. It can be there, it can not. It has no effect. There's no capacitor there, so there's no reason to remove it.

And so they're saying, oh, well, that contradicts the motivation to add a second layer. Well, it has nothing to do with the motivation to combine Anzai and Yamazaki. And what's interesting to note there is the Patent Owners didn't even attempt to argue that the [redacted] has anything to do with planarization.

They also say, oh, it contradicts the statement of motivation for Ground 2 to use silicon nitride for Anzai's planarization layer. Because the [redacted] you could try to take it out. Again, that has nothing to do with the stated motivations at issue. So I think I'll stop here unless you have any questions.

JUDGE CHERRY: Is the [redacted] accused as the passivation layer?

MR. LIMBACH: It is accused as the capping layer. And we're saying, oh, it could be removed because of its uncertain purpose as a design.

JUDGE CHERRY: I don't have any more questions. Any questions?

JUDGE WOOD: No. Thank you.

MR. LIMBACH: Thank you, Your Honors.

JUDGE CHERRY: You have about -- I see you have about 13

[redacted]

minutes left. Good morning, Mr. Tong. How much time would you like to reserve for rebuttal?

MR. TONG: Oh, thank you. Five minutes, please, Your Honor.

JUDGE CHERRY: Sure.

MR. TONG: I may proceed?

JUDGE CHERRY: Yes, whenever you're ready.

MR. TONG: Okay. Peter Tong here to present Patent Owner's demonstrative slides. So I'm going to start with a technology background, go over claim construction, address each of the grounds, and then explain why there's actually no inconsistency and why they are trying to shove words into Dr. Bretschneider's mouth and say that he took positions that he never took using logical fallacies.

So the '121 Patent, you know, the title is electroluminescence device having stacked capacitors. It is about pixels with -- that repurposes existing layers for dual stack capacitors. So you get the capacitance that you need for that part of the circuit. You're using existing layers, rearranging them to do that.

And this was a pretty novel technology as of the filing date in 2004. If you just look at the cover of this, you can see that the examiner did not find a lot of prior art. Now, Petitioner here did find two related references, Yamazaki and Anzai, and those were filed in 2002. So this really is state of the art, like, new type of technology.

And what we're going to focus on is specific embodiments. You

see on the cover there, in the bottom right there, is that schematic showing different orders of layers. Figures 3, 4, 5, 6, 7, 8, 9, and I think 11 show different orders of layers, different embodiments that are covered by the different variations of the claim. Some of the various dependent claims cover different embodiments. So we're just going to focus on 3 and 4 and 7. These recite very specific combinations and orderings of layers, including that passivation layer and the capping layer.

If we turn to Slide 4, we can see that I've annotated in red exactly where that passivation silicon nitride is. It's formed over the ILD 208, which is this layer right here. And it does touch this but importantly, what it's passivating is these metal parts 210A and B, okay? And the other layer of interest is this capping silicon nitride 216 in black right here that is above it.

Turning to Slide 5, this is Claim 1. Again, it's a long claim. It's got these elements of the dual stack capacitors in the first area. It has a bunch of other elements.

Turning to Slide 6, we are focused today on Dependent Claims 3 and 4 as they discussed as well as Claim 7. These are the claims that get at the dielectric layer comprising a passivation layer and a capping layer. And in Claim 4, that there is silicon nitride for one of those.

Turning to Slide 7, as Counsel mentioned, this is a case that turns on claim construction. That is right. But they have fundamentally misunderstood the law and who has the burden of proof. And that is fatal to their case because it doesn't matter if Dr. Bretschneider made an error. They

have that burden of proof that their construction is correct --

JUDGE CHERRY: Wait. Why is there a burden of proof on a legal question?

MR. TONG: Because they have to prove that their construction was right and then show that it applies to their prior art.

JUDGE CHERRY: No. Don't we have to determine what the correct construction is as a matter of law?

MR. TONG: That is right, Your Honor. And there is a case that they did not consider, which is neither party may be exactly right. If Your Honor believes that the correct construction is actually somewhere in the middle of what both parties proposed, then they haven't shown, by the preponderance of the evidence, that the prior art meets that construction.

So for example -- I'll get to this. But for passivation layer, if the Board has looked at the evidence and says it is anything more than mere insulation, if it has to do some type of protection or if it has any type of passivation requirements, okay, you don't have to go all the way and adopt Dr. Bretschneider's suggestion that it ties up dangling bonds. He could be wrong about that. But they have not shown, by the preponderance of the evidence, that there's any passivating being done or that there is any protection being done.

The position that they have taken repeatedly in their position -- here in their Petition, here on page eight, this is their understanding and their basis for everything in the Petition. They said this four times on pages

19, 22, 42, and 51. A POSITA would understand from the '121 Patent that there is no special meaning that described the passivation layer and capping layer other than they are two separate layers of insulation material. That's it, mere insulators.

They admitted earlier on in one of their slides that there is other functions. It has to be some type of protective function. We would also suggest that there is a passivating function inherent in the root of the words. So if they were wrong, if it's anything more than a mere insulator, they have not shown, they have not met their burden, that these claims are invalid.

JUDGE DANG: Counselor, didn't Petitioner say that the insulating layer, I guess, it would be 17 was protecting the, I guess, the embodiments that were below it?

MR. TONG: Your Honor, they are arguing that now in hindsight, but that is not in their Petition. We looked at the Petition and what their original theory was, they said that it is nothing more than mere insulation. So there is no analysis, no expert testimony submitted with the Petition about whether it passivates the layer below, whether it is protecting the layer below. That's not in the original Petition. All they said is it's an insulator. We're done.

JUDGE DANG: Okay. Thank you.

MR. TONG: So let's look at the evidence, starting with the intrinsic evidence here on Slide 9. The claim itself uses different words, passivation and capping. They are different words that have different

meanings.

Turn to Slide 10, let's look at the evidence that we, Patent Owners, submitted. Exhibit 2010, dictionary definition, the protection of junctions, regions, layers, or surfaces of semiconductors by depositing material which renders them chemically passive or unreactive. It's the root of the word, make it passive, not chemically reactive. You know, Dr. Bretschneider provided the example of tying up the dangling bonds of the surface underneath so that's not chemically reactive. That's a very typical example. It doesn't need to go into the final construction.

JUDGE CHERRY: But he said that the passivation layer is designed to chemically and electrically stabilize the semiconductor surface by neutralizing dangling bonds. But you agree that this is covering a metal surface, right, this layer?

MR. TONG: Yes, Your Honor. And the dangling bonds things, again, based on the evidence, it doesn't need to be adopted. They still lose if the Board finds that there is some type of protection or passivation requirement.

If we look at definition from Exhibit 2012, this, again, is a definition that references providing electrical stability by isolating the transistor surface from electrical and chemical conditions. If we look at example --

JUDGE CHERRY: But you agree that in Anzai, they're identifying -- they haven't changed what they're identifying as passivation

layer, right?

MR. TONG: Right, Your Honor. They've identified an organic resin as the passivation layer.

JUDGE CHERRY: Okay.

MR. TONG: And organic resins do not passivate. I'll explain later why that testimony is not contradicted anywhere.

JUDGE CHERRY: I've got to say, I don't find that -- any of that very persuasive. I mean, a passivation layer is generally understood in semiconductors, in material science, as something that covers another layer. It seems that organic materials can certainly do that. And it seems like your own -- the patents of AU Optronics, which was the applicant for these patents -- this patent say that. I mean, how do you respond to the patents of the same applicant acknowledge that organic materials can be passivation layers?

MR. TONG: Because Your Honor, we certainly agree there are certain organic materials that can be passivation layers, but not organic resins. We have never said that there are no organic materials.

JUDGE CHERRY: So what is your understanding of what a resin is?

MR. TONG: Dr. Bretschneider has explained that. In this context, there are certain organic solutions that are very good for planarization, which is what Anzai's layer is. Those are deposited in a resin format where they can be liquid at a relatively low temperature and standard, you know,

air pressure. You put it on top and you can spin the device and make it very flat. That's what organic --

JUDGE CHERRY: So what organic materials used in semiconductors aren't applied in that way?

MR. TONG: I don't know the answer to that, Your Honor.

JUDGE CHERRY: I mean, I guess I'm just kind of struggling because every organic material that's applied to a semiconductor generally is done that way because how else would you do it?

MR. TONG: That is something beyond the scope of my investigation for this --

JUDGE CHERRY: Well, you're the one that's come up with this resin distinction, which I'm kind of just -- I just don't even know where it's coming from. It's not in the patent. You haven't really provided any evidence that supports this distinction. And I mean, the general understanding in material science, as -- I have a degree in it -- is that resins are just another way to refer to a liquid polymer. It's your polyester resins, you have all kinds of resins, polycarbonate resins. I mean, it's just a liquid polymer is my understanding. I mean, what evidence do you have to support a different understanding?

MR. TONG: So Dr. Bretschneider was not aware of any organic resins used in this context that passivate by making the surface below unreactive, chemically. And that is like -- that's the definition that he applied when he was using passivation.

JUDGE CHERRY: So if we don't adopt his definition, then we should -- shouldn't we give no weight to that testimony?

MR. TONG: If the Board does not adopt that definition, they still have the burden of proof that Anzai's specific material did do some type of passivating function, whether it is protection or making something (CROSSTALK) --

JUDGE CHERRY: If a layer covers another layer, wouldn't it protect it?

MR. TONG: Not necessarily, Your Honor. That would be something they need to prove on.

JUDGE CHERRY: Okay. Well, I mean if I put paint on my wall, you'd agree it protects the wall -- the paint, it should protect the wall, right?

MR. TONG: From sunlight, yes, Your Honor.

JUDGE CHERRY: So I guess I'm struggling why wouldn't a layer put on top of another layer protect the layer below it?

MR. TONG: If it's just used merely for its insulating property instead of a protection property, Your Honor, that would be one --

JUDGE CHERRY: But wouldn't it electrically protect it then if it's insulating it?

MR. TONG: I don't know that it would offer any type of protection from, for example, high voltage as opposed to just making, you know, a non-conductive surface that is not a short circuit.

JUDGE CHERRY: Well, wouldn't it then protect it from short

[redacted]

circuit?

MR. TONG: Not necessarily, Your Honor. It's not -- I mean, there wasn't supposed --

JUDGE CHERRY: I was just going with the example you just gave me, so --

MR. TONG: I mean, it's -- that's not a protector, Your Honor. That's a design. It's supposed to be there. It's providing an insulation function. It's not providing a protection function. It's not like one wouldn't normally say there's not supposed to be a circuit somewhere that that's protecting it from.

JUDGE CHERRY: Okay. But you wouldn't be, like, protecting it from stray voltages or parasitic capacitances or --

MR. TONG: If, for example, it was a very thick, insulation layer that was, you know, so big it made sure there could never be -- even if there was a high voltage applied from a power surge, that it couldn't get through that layer, yes, in that case, it would offer electrical protection, Your Honor. But there's no evidence of that type of thickness here or, you know, that the insulation is so insulated that it's for that purpose. It's just separating the layers by a little bit because that's the design, not as any form of protection.

JUDGE CHERRY: I mean, if it doesn't serve to protect it, what is the layer in Anzai doing?

MR. TONG: It is two functions, Your Honor: One is just being an insulator, and number two is providing a flat surface for the next layer above

[redacted]

to be fabricated on. There is another connector on top that's just supposed to sit on top of it, its structural support.

JUDGE CHERRY: And it's kind of protecting the layer below it from the layer -- this next active layer, right?

MR. TONG: I would disagree that it's protecting it. That's not how someone would normally describe it. It's providing structural support, it's providing insulation. If I were to ask a POSITA to describe what is this doing, that's what they would say. It's there, it's an insulator, it's a planarization layer. You fabricate your next layer on top of it. I don't think they would ever really say it's a protectant. It's just a planarization layer that's an insulator. Those are distinct functions, Your Honor, from protection.

And moving on, their own evidence backs us up that there is some type of protection, specific protection or making passive requirement. Exhibit 1014 talks about making passive. Exhibit 1013 talks about protecting it from contamination. Exhibit 1012 talks about providing electrical stability and isolation.

JUDGE CHERRY: So, like, one question I did have is, I mean, if they have articulated -- the Petition has articulated this definition about dielectric, you're saying, right, it's kind of a dielectric layer --

MR. TONG: (INDISCERNIBLE)

JUDGE CHERRY: -- providing insulation. But that's kind of the position they articulate in the Petition. They've identified this layer, and

[redacted]

you've come up with a construction that's narrower that has to provide protection. Why is it not appropriate in the reply for them and Dr. Neikirk to come in and say, well, yeah, this layer also even meets that construction because it provides protection. Why is that not appropriate? In response to your narrower -- your construction about protection, why can't they add to the evidence?

MR. TONG: Because, Your Honor, it shows that from the very beginning, they have the burden of proof to put everything into Petition. Everything else that they're saying now is made up in hindsight. And they just fundamentally did not understand what the claims even were when they were coming up with their obviousness theories and anticipation arguments.

If they came up and submitted some evidence later, for example, saying, I tested organic resins, it does provide some protection for these reasons. That's the type of evidence that we're looking for, but it's not really there.

JUDGE CHERRY: Well, can't they point to again, AU Optronic's own patents that say that these layers, these organic materials, are -- provide passivation layers?

MR. TONG: Those patents do not say that organic resins are passivation layers. There are other types of organic materials certainly that can be passivated. There are other types of organic layers, organic materials, organic dielectrics, certain --

JUDGE CHERRY: And I guess -- is Mr. Limbach correct that you

[redacted]

didn't articulate this resin theory until your sur-reply?

MR. TONG: That is completely wrong, Your Honor. They are fabricating stuff like that.

JUDGE CHERRY: Okay. That's a pretty strong suggestion. Please, I mean, if you're going to make that suggestion, you know, that's a pretty serious accusation you're making, so --

MR. TONG: Yes, Your Honor. So Patent Owner response -- in our response, page 11, from our first response, we took the position that this would be because organic resin does not passivate. We never said organic materials don't passivate. This does not say organic layers do not passivate. It does not say [redacted] does not passivate. It does not say organic compounds or organic molecules do not passivate.

If you look -- just compare this to Paper 49, they said our theory was that when organic molecules -- there are no organic molecules that passivate. We said, no, organic resin does not passivate. And that has been our consistent opinion since the Patent Owner response -- or consistent position, that this whole inconsistency thing is built on logical fallacies.

For example, during deposition, their line of thinking is, okay, well, organic resin may have organic molecules, right? Yes. So that means you've now taken the position that all organic molecules cannot passivate. And that is the basis, that logical fallacy is the basis for their inconsistency allegations.

JUDGE CHERRY: But you agree that the article cited by Dr.

[redacted]

Fontecchio describes [redacted] materials as a resin?

MR. TONG: To be clear, Your Honor, there are -- this is a 69- or 68-page article, as they mentioned. It describes all types of [redacted] some -- only some of which may passivate. In the abstract, you can see that there are [redacted] for plastics, adhesives, dielectrics, photoresistors, nonlinear optical materials. They can be used as crystals in electroluminescent devices. Fuels, they're monomers, there are all sorts of varieties, some do and some don't.

JUDGE CHERRY: But what evidence do you have to support this distinction that somehow resins are distinct from these other ones?

MR. TONG: It is Dr. Bretschneider's experience that he has never seen an organic resin being used as a passivation layer in his decades of work, Your Honor.

JUDGE CHERRY: But does he explain what the distinction between a resin and these other materials is?

MR. TONG: So he had explained that organic resins do not tie up dangling bonds and don't make the surface below chemically unreactive.

JUDGE CHERRY: So --

MR. TONG: He did not get into the specific, like, underlying chemistry beyond that.

JUDGE CHERRY: So if we don't adopt this tie up dangling bonds, then why should we give any weight to that testimony?

MR. TONG: Because even if it's not about tying up dangling

[redacted]

bonds, it still doesn't make the surface below necessarily unreactive, chemically. It doesn't offer that degree of protection in terms of making it passive.

JUDGE CHERRY: So wait, so you're saying that -- I thought we kind of come to the conclusion that passivation layer had to protect. Now, you're saying it has to protect in a certain way?

MR. TONG: Right. By making it passive. That's the root of the word passivation, to make it unreactive. We have seen that in a lot of dictionary definitions from both sides. If we go to their definition, provide electrical stability. Their definition here, 1014, metal becomes passive.

I mean, the evidence is clear that it -- there's two ways this is used in the art. To make it either passive or to do some degree of protection. It's one of those, some combination.

JUDGE CHERRY: But can't something -- but can you make something chemically passive by covering it? For example, if I paint, like, a piece of steel, I can prevent it from oxidizing?

MR. TONG: Yes, Your Honor. That is certainly one way if it is sealed so well, that other stuff cannot get in -- if it's tight enough that oxygen can't get in to react. Yes.

So again, this was their burden of proof to show either some degree of protection or some degree of passivation making it unreactive. That evidence certainly isn't in there. It's not with the Petition because when they started out, they thought, oh, it's just merely an insulator. If I show that

it's an insulator, I'm done. And that was their one of two argument, Your Honor.

When we get to Anzai, this is 102, they have to show an explicit disclosure, teaching in the art. And what is agreed by both parties is that layers 17 and 19 -- is that there is no material disclosed at all. We don't know what that is for planarization layer 19. And for layer 17, all we know is it's an organic resin. The patent itself does not say that this is any type of planarization layer or capping layer or that it is doing something that is passivating or capping. That is not in the art. And Director Squires issued a memo recently saying you can't fill in these gaps with expert testimony.

JUDGE CHERRY: But there is the layer and that -- right, this is claiming a structure, right? Does it have to use the same name for the structure?

MR. TONG: It doesn't have to use the same name for the structure, Your Honor. For example, if this had disclosed that it was silicon nitride, we agree that silicon nitride is an example of a material that does passivate and offer sufficient protection to be a capping layer as well. But that's not in Anzai and --

JUDGE CHERRY: But there is a material. There is a layer. They're not creating a layer. There is a layer there, right? They're not saying --

MR. TONG: Yes, Your Honor.

JUDGE CHERRY: -- the experts are saying that is adding -- is not

adding a layer --

MR. TONG: There is a layer. There is no disclosure of what it is or --

JUDGE CHERRY: But there is a disclosure of what it is, right? There is disclosure.

MR. TONG: Not for 19.

JUDGE CHERRY: For 17, there is.

MR. TONG: For 17, we know it's an organic resin. And we agree with them that what disclosure there is, is that they insulate. We're not disputing that. There's no disclosure of their chemical effects or their protective effects. That's not here. And under a rigid 102 analysis, Your Honor, that has to be taught. Like, this has to teach a POSITA to do this because, again, this is state-of-the-art stuff. The specific selection of materials is -- in these, like what you're repurposing --

JUDGE CHERRY: Passivation layers have existed since the beginning of semiconductor processing, right?

MR. TONG: Yes, Your Honor.

JUDGE CHERRY: It has existed for decades in semiconductor processing. So while this specific device configuration might be new, maybe these components have been known. Passivation layers have been known, right? Insulating layers have been known. Dielectric layers have been known.

MR. TONG: You're right, Your Honor. And none of them have

[redacted]

been known to be repurposed in a dual stack capacitor design. There's no evidence for that. In other contexts, yes. For other purposes, you got to keep in mind that this is in the context of reusing a bunch of different layers to make this new electroluminescent device with stacked capacitors. So there are very specific orders of materials and layers that are being claimed in the big picture.

JUDGE CHERRY: But for example, for Claim 1, you're not disputing that Anzai teaches or -- I shouldn't say teaches, discloses all the limitations, right?

MR. TONG: You're right, Your Honor. We are just focused on the elements that Anzai does not explicitly teach. And that is why under a 102 analysis, they have failed as a matter of law. Now, if they had made this a 103 argument and at that point bring in an expert to fill in the gaps or say there's some other knowledge that we should consider, they would have a different legal argument. But that's not our position.

JUDGE CHERRY: So are you saying that a reference, even if it discloses a similar structure, it has to disclose the same purpose of that structure?

MR. TONG: If the purpose is claimed, Your Honor, like passivation or capping -- and we're doing a 102 analysis, Your Honor -- yes, it has to disclose the same -- that it's doing.

JUDGE CHERRY: So it's not sufficient that it be capable of performing that function? It actually has to say that?

[redacted]

MR. TONG: You're right, Your Honor. Under 102, which is very strict, it has to explicitly teach it. There has to be an explicit teacher.

JUDGE CHERRY: It has to explicitly teach the function?

MR. TONG: If the function is claimed then yes, Your Honor.

JUDGE CHERRY: I mean, have you -- are you aware of In re Schreiber, the popcorn king case?

MR. TONG: Not off the top of my head, Your Honor.

JUDGE CHERRY: Well, there was a functional limitation about dispensing the popcorn. And the Federal Circuit affirmed a rejection based on an oil can because it said that the disclosed structure was capable of performing that function. So are you really sure about what you're saying about 102?

MR. TONG: I'm pretty certain about 102. And while I'm not familiar with that --

JUDGE CHERRY: Do you have a citation for that?

MR. TONG: I could give you some citations of the MPEP, a bunch of cases saying -- you know, teaching has to be there, right? I can look that up.

JUDGE CHERRY: With a function?

MR. TONG: If the function is claimed, it has to be taught. Now, there are arguments for inherency, Your Honor, which is if you say, okay, this material inherently always does that function, that is another avenue you can go down. But they've not made any type of inherency argument.

So again, without being familiar with that popcorn case, I don't know if that was 102 or 103 or whether it was an inherency argument or not. But it can't just -- something can't just be -- it can't be the case of -- it's possible for this to be passivating, but there's no teaching as to whether or not it is passivating or protecting. 102 is pretty strict, Your Honor.

So other than that, we have a similar issue with capping. I want to again go to the root word of this, which is, you know, put a cap on something. Just take the baseball cap example that Counsel used. If you put a baseball cap on your head, you know, you're protecting the front of your face from the sun. Similar issue here. It doesn't necessarily have to be hard, you know. Again, but they have to show a sufficient amount of protection that this layer is providing.

JUDGE CHERRY: So you agree that the hard part of your construction is incorrect?

MR. TONG: I leave that to the Board. But the point is, if we're both wrong, if it's more than a mere insulation but it's -- you don't have to go as far as being hard. If the Board takes the position, even just the position that it has to be protecting whatever is underneath, they haven't offered any type of expert opinion or analysis as to what amount of protection this layer is doing. And they can't because their -- Anzai has explicitly -- both parties have agreed that we don't know what this layer is made of. We don't know what material it is. We can't tell what its effects are.

JUDGE CHERRY: So does your patent provide us any guidance

about how much protection these layers have to provide?

MR. TONG: No, Your Honor. And the patent was not trying to define the word capping. It's, you know, just another one of those words that's used in the art. Just use it like its root. You can wear a baseball cap to protect your head. If you do want to put on a hard hat, you're at a construction site, yes, it's hard. Cap your head with a hard hat for protection.

JUDGE CHERRY: I guess it just seems like a broad term to me. Like it just is covering it -- it's covering the passivation layer, right?

MR. TONG: Yeah. That's part of it. But we would argue that why are you covering it? It is for protection. It's not, for example, just to provide insulation. It's not covering it to provide electrical conductivity. It has to offer some degree of protection, at a minimum. The Board doesn't have to go as far as adopting the hard part, which is -- I mean, that's what Dr. Bretschneider's understanding is.

And we would certainly say there is sufficient evidence for the Board to adopt that construction. But if the Board just thinks some protection is needed, they've lost because we don't know what it is.

JUDGE DANG: So you're basing the word cap on its ordinary meaning. And you're saying that ordinary meaning for the word cap is protection?

MR. TONG: Well, it's something that goes on top of whatever --

JUDGE DANG: Right.

MR. TONG: -- to protect it.

JUDGE DANG: Yes, well, cover it. But the word protection is something you just added.

MR. TONG: Yeah. For example, it wouldn't be for ornamental purposes. There are certain hats, you know -- you can certainly wear a hat because you think it looks good. But here, you know, there's a utilitarian purpose, which is for protection.

JUDGE DANG: Well, there's some terms like let's cap this off with, you know, blah-blah-blah. That means just put an end to it or put a cover to it, really, right? So there's no protection when you use that term, let's cap this off.

MR. TONG: It sounds to me like that word is being used to seal something off, like a bottle cap. And in that case, yeah, you know, there's another function there which is a seal. And we don't know what degree of sealing this layer is doing because we don't know what it's made of.

JUDGE DANG: Okay.

MR. TONG: We just know it's there and we know it's insulating and planarizing.

JUDGE DANG: So looking at Anzai's, I guess, layer 19, isn't that sealing the rest of the layers?

MR. TONG: No. Because it eventually ends and there are connections that go through. You can see that in another figure. If we look at Figure 2B of Anzai, it ends around here. It goes through, you know -- there's this layer 61 that goes through. So it's not forming a perfect seal

here.

JUDGE CHERRY: But that's true of the other layers, right? I mean, the passivation layer has a similar -- I mean, there's vias that connect through these layers, right?

MR. TONG: Right. So the passivation is, for example, protecting these -- well, it would be protecting vias and making those via surfaces chemically unreactive to -- you know, it could be whatever other semiconductor processing materials it might be exposed to in the meantime, acids and edges or something.

So if it's okay, I would like to quickly run through the other grounds because I'm getting short on time. So for Ground 2, Anzai and Yamazaki, section 103, the core issue here is that they're saying, take this passage, this is the relevant passage for Yamazaki, it's the list of insulating materials through. And you have a list of materials here.

And after we read this, what does this actually teach a POSITA who is not arguing or is not working in hindsight? We have a list of materials that's good for insulation. But what they haven't considered is what do we need? We need a material that is both good for insulating and good for planarizing. Because the parties have agreed that if you want to use it for 17 and 19, these are planarization layers. Their purpose is to be flat, that and insulating. So we've met one of the -- we thought about one of the two things, okay?

From that subset, we need to pick a material that is good for

planarizing. And what the evidence shows is that the patents do not use silicon nitride for planarization. And the expert testimony is that silicon nitride is not good for planarization. Why? Because when you start out with organic resin, it's easy to make it flat. It's a resin. You drop it on, you spin it around, super cheap, it works. It's flat enough to build your next layer on.

If we look at the '121 Patent, the silicon nitride here, layer 212, it goes up and down when you deposit it. That's how it goes on. It doesn't go on planar. And when you look at Anzai, layer 15 is what Anzai chose to use silicon nitride for. Again, it's got those curves up and down. It's not planar. Anzai specifically chose to use organic resin. Now, they're saying, actually ignore what Anzai has taught, which is that organic resins are good. Go pick something that's an insulator without considering its planarization capabilities.

And if we look at Dr. Bretschneider's report, he explains that organic resins are easy for making planarization layers. They fill out the dips below. You just spin coat them. It's cheap. You can do it at atmospheric temperature -- at one atmosphere, relatively low temperature.

If you want to switch to silicon nitride, you've got to completely change your process. You need either a CBD chamber or sputtering chamber, which are super expensive, need high atmospheres. These tend to crack or delaminate. And in other words, organic resins are cheaper. And it's certainly not an obvious choice to pick something that is super complex, doesn't work as well, and cost way, way more money to do.

In the deposition in fact, he includes, I have no motivation to do it unless I want to spend money -- spend more money and have a lower yield in the process. That's what they're asking the Board to believe is the obvious choice; it's not.

Moving to Ground 3, so here they have swapped the primary and secondary references and what their motivation here starts off with is hindsight on its face. They are saying to add a planarization layer on top of an already existing planarization layer. Why? It's already smooth enough.

Now the best evidence that they have is some deposition clips saying, okay, well, you agree that the planarization is not perfectly flat, right? But that's not what POSITAs are concerned about. They don't care about theoretically perfect flatness. It just needs to be flat enough so that you can fabricate your next layer of structure on top of it. There is no teaching in Anzai or in Yamazaki that the planarizations were not good enough such that you needed to start out with one layer that your, you know, resin wasn't flat enough such that if you added another layer of organic resin on top of that, or slip nitride on top of that, that it becomes better.

And in fact what we've seen is silicon nitride is very hard to do. So if you wanted to start out with a resin that was great for being flat because it starts out as a resin and then you add something else on top of that that comes down all jagged, well, I don't know that you've actually improved your overall flatness.

And I also want to note that, you know, they call Yamazaki 30 a

[redacted]

planarization layer here. Yamazaki never says anything about planarizing. The word planarization is not in Yamazaki. But, you know, just going with it, there is no evidence to say that these layers need to be theoretically perfect.

Moreover, if we were to add a layer here on the right side, as Petitioners would argue, you would be increasing this distance between what is acting as the capacitor plates. And so Dr. Bretschneider has explained, if you made this modification in hindsight, you know, as they're arguing what you would do, you know, apply using the well-known equation for capacitors. Capacitance goes down because you're increasing that thickness and you're increasing this. You wouldn't do that. It's not obvious.

JUDGE CHERRY: Why isn't it -- why isn't that bodily incorporation?

MR. TONG: Why is what not bodily incorporation?

JUDGE CHERRY: What you're complaining about. I mean, it seems like you're asking for -- you're kind of using bodily -- you're kind of requiring bodily incorporation here. I mean, it seems like we don't -- we're not trying to, you know, bodily incorporate this layer into that structure, right? We're taking the teachings here.

MR. TONG: Well, Your Honor, that's what they propose, which is depositing another --

JUDGE CHERRY: But can we make adjustments? When we make adjustments here --

[redacted]

[redacted]

MR. TONG: What adjustments would be made, Your Honor? Now, the one thing they had talked about is maybe making this layer narrower. But in semiconductor fabrication, typically, materials are already made as small as possible. I mean, that's how you get the highest yields, you know. Like for pixels, they're trying to make them as small as possible already. You won't want to make a pixel that's super thick.

JUDGE CHERRY: What's the feature size for pixels generally? Do you know?

MR. TONG: I don't know that off the top of my head, Your Honor. So they did -- you know, their other problem was that in litigation, when we accused the same thing of the same claim as being infringing and we asked them, okay, what are your non-infringing alternatives? They said this layer serves no purpose in the active area of the display and could be omitted.

So, on one hand, they're telling you it's super important, super great, you'd want to take this material and add it at the modification. On the other hand, they're saying, no, it serves no purpose at all, just get rid of it. That's an inconsistency on its face, Your Honor. I'd like to --

JUDGE CHERRY: I guess, how do we know -- I mean, I'm not sure what this [redacted] is.

MR. TONG: It is the same -- it is the layer that is accused of infringing the same claim element that we are discussing.

JUDGE CHERRY: Okay. Well, I mean, that doesn't really matter,

[redacted]

right? Because I don't -- we don't -- did you provide what the structure is? So how would we -- do we know that it's the same -- have you presented evidence that it's the same as what we're pointing to now in this reference?

MR. TONG: Well, I can tell you, Your Honor, that our expert has an opinion that maps every single one of their claim elements to the same claim. So with that as your context, yes, we have a mapping that their product has exactly the same elements.

JUDGE CHERRY: We see lots of mappings, right? I don't -- I'm not sure how we know that then yes, you've mapped this to that element. But without knowing what the overall thing looks like, how can I know that it's the same as what we're now talking about in this reference?

MR. TONG: The point is well taken, Your Honor. With your permission, we could submit further --

JUDGE CHERRY: No. We're not -- you didn't ask before. We're not submitting more evidence.

MR. TONG: Fair enough, Your Honor. And I want to address their allegedly, you know -- their allegations and inconsistencies. Again, our position has been, since the beginning, that it's just organic resins that do not passivate. They have tried to accuse us of saying organic molecules, organic compounds, other organic things do not passivate using some type of logical gap that because organic resins are organic molecules, that we have somehow said that all organic molecules don't pass it. That is the logical fallacy that they use to create an inconsistency.

[redacted]

There is no citation in deposition or in our briefs where we say the accused organic resin passivates. That's not in litigation either. We had never said anything along the lines of all [redacted] always inherently passivates. I tried to find what their contradiction was in their brief. They say in direct contradiction, they accused [redacted] organic resin is the claimed passivation layer. There is no evidence that that is an organic resin. They cite to pages 137 to 138. This never says that the accused thing is an organic resin. That is an argument that they have taken and they're trying to shove into our mouths.

JUDGE CHERRY: But you agree an organic material can be a passivation layer?

MR. TONG: Certain organic materials, yes. That's a very broad category. In fact, Dr. Bretschneider made that exact point here on the bottom right. You're saying no matter what organic material, right? But Anzai talks about using organic resins. That is the specific subcategory of materials.

JUDGE CHERRY: Okay.

MR. TONG: It's a much smaller range. Those don't passivate. So he was very careful in deposition making these distinctions. They're trying to present it as though he said something else.

JUDGE CHERRY: Okay. You got 30 seconds, and we'll give you five minutes for rebuttal. But why don't you wrap up?

MR. TONG: Very well. The allegation that we shielded Dr.

[redacted]

Fontecchio, that's also incorrect. He's not part of this IPR. He had no reason to look at the IPR proceedings. I would ask the Board to take judicial notice of Judge Gilstrap's standing motion limiting number 6, which excludes evidence in his courtroom.

Dr. Fontecchio is the litigation expert. It precludes the parties from using IPR materials in litigation. So he's not allowed to talk about this. There was no reason for him to look at this because he can't say anything about it at trial. He's a litigation expert, not involved here. There was no shielding. If there was any shielding, Judge Gilstrap said, no, you can't use this stuff in my courtroom.

With that, just to briefly conclude, they have the burden of proof that the prior art has to teach under 102. Whatever claim construction the Board decides today is correct. They said it was just mere insulation. That has been their petition -- position day one. And this whole inconsistency thing is a complete sideshow. We first alleged they have an inconsistency. They just manufactured their arguments as like a revenge type thing. So that's it, Your Honor. Thank you.

JUDGE CHERRY: Great. Thank you. Mr. Limbach.

MR. LIMBACH: Yes. Surprised I have a response again. One second. May we proceed?

JUDGE CHERRY: Yes, whenever you're ready.

MR. LIMBACH: Thank you, Your Honors. So I'd like to address certain arguments that were made. The first is they -- we have fully briefed

[redacted]

this issue of passivation layer, what it is, protection, capping layer, all this is fully briefed. And I guess Patent Owner is realizing that the only way is maybe win on a technicality and say, oh, but you didn't say the magic word protection in the Petition, so therefore you're out. Patent Owner's counsel should read our Petition. Page 20, the first planarization film 17 is formed over the entire surface for flattening which will protect the semiconductor surface from the surrounding environment for passivation. So it is also in our Petition.

The next point that was made was, you know, there's nothing in the record on how a resin is different than a non-resin form of organic material. But Counsel made a reference to what a resin, how it's done. It's a spin on process, right? Put it on and you spin it to make it flat. Well [redacted] It's put on -- the [redacted]

So they're saying a resin can't be a passivation here, but they're accusing one. And it's all done by a spin up process. So there's no distinction there. And Slide 19 has citations to the evidence -- let's see, do I have the wrong slide number? I apologize, Your Honors. Slide 24 has the citations in Exhibit 1025 about how the spin on process works for the accused (INDISCERNIBLE).

Another point that they're denying that they pivoted with their positions. We studied their POR and we specifically addressed in the deposition what is it about the organic resin that is not a passivation layer.

[redacted]

[redacted]

And they kept telling us it was the organic molecules. And they're somehow saying, oh, it's our fault for misinterpreting. They never said it was the resin form that made it. They always pointed to the organic molecules. So how do we know, at that time, that they really thought that it was, no, organic molecules, perfectly fine, it's only when it's in a resin form. There's no evidence in this case that that -- why that's the case. It's nowhere other than what's the one piece of information that Dr. Bretschneider hasn't seen it before. It's not evidence.

This issue about passivation versus capping layer -- and you touched on it, Your Honor, with the questions to me earlier -- what's the difference between the two? They seem very similar, especially when we're saying that they're both insulators. And that is the case because of the way the specification is worded.

So if I go to Slide 8, this tells -- this is the sole description of the passivation layer. A layer of passivation silicon nitride is formed over, okay? Formed over, that's all we're told. Then if I go to Slide 11, this is the definition for the capping layer -- is deposited to cover. So the only difference between the description of these two is formed over and cover.

And you notice that in our construction, we're true to the specification. Our construction is an insulation layer cover. So we are dead on as close as we can to the teachings of the specification.

JUDGE DANG: But Counselor, the plain meaning of words passivation is different than capping, right? So if we look at those, I mean,

[redacted]

[redacted]

you have to have some sort of passivation, like, in the passivation layer, right? It has to do some passivation, right?

MR. LIMBACH: Exactly. That's exactly right.

JUDGE DANG: The capping layer doesn't have to --

MR. LIMBACH: Yeah.

JUDGE DANG: -- but the passivation layer does have to.

MR. LIMBACH: Yes. And you've got it. You got it directly correct. It has to do some passivation. Well, there's all sorts of lists of different ways to passivate or different functions. One of them is protection. That's the broadest one because virtually all of them do that. Then you get narrowed down to some type dangling bonds and some don't.

JUDGE DANG: Right.

MR. LIMBACH: So the issue here before Your Honors is do we go with the narrow construction? Has the specification said that not all passivation layers work, only some of them, and therefore we're going to narrow the construction to something that is going to exclude some other passivation layers. There's nothing in the specification that tells us to do that.

And look at the -- go back to Dr. Bretschneider's testimony. I asked him, does the passivation layer in the specification actually do what your construction says? And no opinion. No opinion. He knew that if he answered, then I'd ask him how. And he didn't -- he couldn't answer that question. So he did what he does very well. I have no opinion on that and

[redacted]

I'm not going to testify about anything I don't have an opinion on. He made that very clear.

JUDGE DANG: Okay. So let's look at Anzai's, layer 17. There's an insulation layer. It is there for planarization or is it there for protection? Does it say so or, basically, that's what you say.

MR. LIMBACH: Well, what the experts will tell you is when you put down an insulation layer, it almost always protects. I mean, it always protects at least from something. It will protect it from the subsequent processes. And oftentimes that's actually a really important thing in semiconductor manufacturing is when you put down a layer, it's, like, you know what, that layer is going to be inconsistent when we do this etch for this over here. So we're going to put a passivation layer over it so to protect it. The environmental conditions from one of the subsequent process steps can be harmful -- doing something over here, to the layer that you're protecting in the active area.

JUDGE DANG: Thank you.

MR. LIMBACH: Another argument that was made was Your Honors asked about capping layer and Counsel, I believe he said, well, the capping layer has to form a perfect seal. It has to be a perfect seal. We know that's not the case. The capping layer got a hole in it for a purpose. You have to have that. This layer does not create a perfect seal. Capping layers will perform a seal over the area that they're covering. But there's no requirement that a capping layer cover everything. It can't, because the

[redacted]

patent tells us so.

Another argument that was made was that Yamazaki does not use the silicon nitride layer as a planarization layer. I want to go to Slide 33. So this is Yamazaki. Here's 30. See how flat that is? Do you know how they got there? Because you know that when this layer was formed down -- see these electrodes, how the underlying contour is so fundamentally different? You can have bubbles up here when it's laid down.

They use CMP, chemical mechanical polish. That's how you flatten an upper surface for something that is covering a contour underneath that's got a lot of irregularities in the topology. Whenever you do a CMP, you are planarizing. Therefore, if you CMP a layer, it is serving a planarization function. It doesn't necessarily have to be absolutely perfect. We know that from Dr. Bretschneider. But it's far more planar up here on the upper surface than that very irregular bottom surface area. So it is being used as a planarization layer. And Yamazaki says they do that with CMP.

Another argument that was made was that Anzai is not -- the reason that Anzai has a planarization layer on a planarization layer is because there's an intervening electrode. That's for the embodiment in Figure 3. But the embodiment of Figure 2 couldn't have that. It's got a planarization layer on a planarization layer. And they're saying no one would ever do that. Anzai tells you now they do.

There's some discussions about the accused layer, the [redacted] And Your Honors, I think you nailed it with your questioning. What's

[redacted]

[redacted]

missing from their accusation that we're being inconsistent? They didn't talk about what that -- what the purpose of the [redacted] is. And they didn't tell you what the surrounding structure is. They don't even tell you that there's a need for planarization because the [redacted] isn't needed for planarizing in our product, it doesn't mean it would have been obvious in the prior art presented to you.

Now, Counsel's made arguments, hey, they are not being consistent. They never said that the [redacted] is an organic resin. And we've all talked about -- there's nothing in the record that can differentiate that. We've got evidence that it is. But the thing to keep in mind is even if they're right -- they're not -- they're still directly contradictory.

It is undisputed that the opinion of their expert, when he gets on the stand, is that [redacted] infringes even if it's an organic resin. So if we tell the jury, hey, they've disclaimed it and ours is an organic resin, he's going to get up there and he's going to say it infringes anyway. That is directly contradictory to this proceeding.

And then finally, they talked about Judge Gilstrap. And the reason why they shielded their experts is because he can't use evidence from the IPR in the District Court case. Well, first of all, this whole proceeding is part of file history. Second of all, they showed a rebuttal expert report where he did opine on what happened in the IPR. So how can they say, well, Judge Gilstrap won't allow that in when it's actually in his expert report? And it will be in. So that's not true.

[redacted]

[redacted]

And finally, they have it flipped on top of its head. It's not whether he's taking an inconsistent position to the jury. They're taking an inconsistent position to you. That's the issue. Unless you have anything else, that is all I have for today.

JUDGE CHERRY: No. I do not have anything else.

JUDGE WOOD: No. Thank you.

MR. LIMBACH: Thank you, Your Honors.

MR. TONG: Your Honors, it's Peter Tong. I'd like to start out by answering the question about this in re Schreiber case. So as I had suspected, this was a case where the Board found that the structure disclosed by Harz is inherently capable of the function of dispensing popcorn. So this was an inherency case. They don't have that here if we look at the MPEP requirements for inherency in the context of anticipation.

This is from MPEP Section 2131, Roman numeral III. To serve as an anticipation when the reference is silent about the asserted inherent characteristic, such gap in the reference may be filled with recourse to extrinsic evidence. Such evidence must make clear that the missing descriptive matter is necessarily present. It's not that it can be used in a certain way. It's that it must necessarily be the case. For example, a square is necessarily a polygon. That's the level of inherency. It's not 99 percent correct. It is --

JUDGE CHERRY: But you agree it has to be necessarily capable of performing the function?

[redacted]

[redacted]

MR. TONG: No. Necessarily present. It must --

JUDGE CHERRY: Wait.

MR. TONG: -- necessarily do that, Your Honor.

JUDGE CHERRY: With the functional language, if so, if the function is, it has to protect. It has to -- if the layer is necessarily capable of protecting the layer below it is not sufficient, correct?

MR. TONG: That is right, Your Honor. And in fact, there was a case where -- I don't remember the name, but there was a protection technique that activated when you turn on a computer. And it worked like 99.999 percent of the time. But it didn't meet a protection limitation, wasn't inherently protecting the computer, as claimed in that scenario.

So necessarily present means it necessarily always has to be there, like a square is necessarily a polygon. It can't be that a material might, in most cases, even in the majority of cases, do something. That's not -- that is legally insufficient under the 102 analysis, Your Honor.

Next, I would like to address this -- what they said about the double insulating layers. Now, they said in Anzai, that in Figure 2, there is no intermediate structure here, right? But that's Figure 2A. Figure 2B has the same embodiment and what you see is in this other part is that, yes, they have that planarization there to accommodate this 61 intermediate structure between the two planarization layers. Anzai does not say, put that planarization layer there to make it even more flatter because it's not flat enough. That's not what Anzai is talking about. About Yamazaki --

[redacted]

JUDGE CHERRY: Does Anzai have to disclose that to be -- for it to serve as a motivation to combine?

MR. TONG: Well, something has to say that -- there has to be some evidence that that is a real motivation where the underlying layer is not flat enough. The only thing that they have is, one, their biased expert saying it; and number two, a line of deposition questioning where Dr. Bretschneider basically said, well, I can't tell you if it's perfectly theoretically flat.

But it's flat enough to put your next layer of structure on it. It's good enough. This is what POSITAs do. And Dr. Bretschneider has never in his line of experience, decades of experience, actually used a second planarization layer just to make it more flat, especially if you pick silicon nitride as the upper layer.

They had this issue they raised, okay, well, what about this report here? So after they made -- they complained about Dr. Fontecchio not opining about IPR -- this was a later filing. It's now here for the Board, if the Board wants to look at it, it's in the demonstratives. So that complaint has no basis.

One other thing I want to address briefly is Yamazaki's CMP. So Yamazaki does talk about CMP, and this is for a CMP treatment for this first electrode. Yamazaki, if you do a word search, planarization or planar and Yamazaki, that word will not exist. It won't be hit. Yamazaki's layer 30 is not a planarization layer. So with that, unless the Board has any questions, we'll stop here.

JUDGE WOOD: No. Great.

MR. TONG: Thank you, Your Honor.

JUDGE WOOD: Thank you very much.

JUDGE CHERRY: I think we have a couple -- before we adjourn, I just wanted to thank the parties for their presentations. But I also wanted to check, do we have any outstanding issues that we need to address? You're at the podium, Mr. Tong, why don't you start?

MR. TONG: Yes, Your Honor. So we had requested leave to file a supplemental brief addressing the Director's recent -- it was either a decision or a memorandum on real parties in interest. We have evidence that the People's Republic of China is a real party in interest and they are unlisted. And this would be something that now applies under the Director's recent guidance.

JUDGE CHERRY: Okay. Mr. Limbach, could you give us what your thoughts on that are? Yeah, you can stay.

MR. LIMBACH: There's no new facts that they would want to allege here that they've known all of this all along. It's too late in proceeding to raise that issue. It's not appropriate. That would be our response.

JUDGE CHERRY: Okay. Yeah. We'll take it under advisement for this moment, and then we'll try to tell you maybe in the next hearing what we'll do with that. Do we have an exhibit that's outstanding that you want to refile?

MR. LIMBACH: Yes, Your Honors. So I believe --

JUDGE CHERRY: It's 1024?

MR. LIMBACH: -- it's 1024, I think. It's the Liaw article. Somehow when it got uploaded, it came out fuzzy. Luckily, Patent Owner resubmitted it as one of their exhibits, and it's 2015.

MR. TONG: Fifteen.

MR. LIMBACH: So if you ever -- when you're working on this and you see a blurry exhibit, just please understand that there is a clean copy, that is 2015. If it would help, we are willing to submit 1024 again, it's up to you. What do you prefer?

JUDGE CHERRY: Maybe for the cleaner -- so the record's cleaner, maybe it would be better to resubmit it. Do you object to that, Mr. Tong?

MR. TONG: No objection.

JUDGE CHERRY: Okay. Yeah. Mr. Limbach, please resubmit that. Anything else you guys want to talk about for this case?

MR. LIMBACH: Not for this case, Your Honor.

MR. TONG: Just one additional comment on the supplemental briefing related to the real parties of interest. It's going to be -- the Board's going to see a copy of our arguments in the Paneltouch v. BOE case. It's going to be essentially the same arguments that the Board will need to decide.

JUDGE CHERRY: And how many pages did you want for that?

MR. TONG: Three pages, Your Honor.

JUDGE CHERRY: Okay. We'll let you know. I need to just talk -- we need to talk about that. Is there anything else the parties wish to discuss?

MR. LIMBACH: Not for this IPR proceeding.

JUDGE CHERRY: Not for this. Do we want to talk about 01315 for a moment?

MR. LIMBACH: Yes, Your Honor.

JUDGE CHERRY: Okay. So we're going to go off the record for IPR2024-01132.

(Whereupon, the above-entitled matter went off the record at 11:05 a.m.)

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