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UNITED STATES PATENT AND TRADEMARK OFFICE
BEFORE THE PATENT TRIAL AND APPEAL BOARD

SHENZHEN TUOZHU TECHNOLOGY CO., LTD.	§ Petition for Inter Partes § Review of U.S. Patent No. § 9,592,660
Petitioner,	§
VS.	§
STRATASYS, INC.,	§ Case No. IPR2025-00257
Patent Owner.	§
	§

ORAL AND ZOOM DEPOSITION OF
TIMOTHY OSSWALD, Ph.D.
NOVEMBER 6, 2025
Ref. 56224-0006IP1

The Oral and Zoom Deposition of TIMOTHY
OSSWALD, Ph.D., produced as a witness at the instance of
the Petitioner, and duly sworn, was taken in the
above-styled and numbered cause on NOVEMBER 6, 2025,
from 9:08 a.m. to 1:44 p.m., before Nicole A. Hatler,
CSR No. 11275 in and for the State of Texas, reported by
machine shorthand, in their respective locations via
Zoom, pursuant to the Texas Rules of Civil Procedure.

---oOo---

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Signature and Changes.....98

Reporter's Certificate.....100

EXHIBITS MARKED

NONE

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1 TIMOTHY OSSWALD, Ph.D.,

2 sworn as a witness

3 testified as follows:

4 THE REPORTER: Good morning. My name is
5 Nicole Hatler, Texas Certified Shorthand Reporter No.
6 11275. This deposition will be stenographically
7 reported pursuant to the rules governing depositions in
8 the State of Texas.

9 MR. DARBY: Thank you.

10 Okay. For the record, this deposition is
11 addressing the inter parte review proceeding assigned
12 case No. IPR 2025-00257, regarding United States Patent
13 No. 9592660, which we'll refer today as the '660 patent.

14 This is Kenneth Darby speaking for the
15 petitioner, Shenzhen Tuozhu Technology, and the witness
16 is Dr. Tim Osswald.

17 Q. EXAMINATION BY MR. DARBY: Dr. Osswald, before
18 we get going, I'm going to cover the series of ground
19 rules and other preliminaries. Okay?

20 A. Okay.

21 Q. Okay. So as I'm sure you can appreciate, this
22 is a remote deposition today. It's conducted using
23 videoconferencing equipment, and there may be a slight
24 delay in our communication. So let's just make sure to
25 both speak slowly and just be extra careful not to

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1 interrupt one other.

2 Is that fair?

3 A. Yes.

4 Q. Okay. Will you try to do that today?

5 I think you probably didn't hear the last
6 thing I said, but will you try to do that today.

7 A. Yes.

8 Q. Okay. If I ask you a question and you don't
9 understand it, please ask me to rephrase or to clarify
10 the question. Okay?

11 A. Okay.

12 Q. Okay. I will assume that you understand the
13 question if you answer it; is that fair?

14 A. Yes.

15 Q. Even though we're remote, you understand that
16 your testimony is under oath and that you're providing
17 your testimony just like you would if you were in front
18 of a judge or a jury, right?

19 A. Yes.

20 Q. Okay. Please remember that you remain under
21 oath for as long as this examination persists. So
22 that's even during our breaks. Okay?

23 A. Yes.

24 Q. Is there any reason that you cannot give true
25 and accurate testimony today?

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1 A. No.

2 Q. For breaks, I'll try to take one every hour or
3 so, but if you need a break before then, please just let
4 me know. Okay?

5 A. Okay.

6 Q. All I ask is that -- if there's a question
7 pending, that you answer the pending question before we
8 go on break; is that fair?

9 A. Yes.

10 Q. And will you agree to do that?

11 A. Yes.

12 Q. When we come back from breaks, I'll ask you
13 whether you had any discussions with any other person
14 during the break regarding any aspect of these
15 proceedings or your deposition. Those types of
16 discussions are prohibited. Okay?

17 A. Yes.

18 Q. Please also do not consult any notes or
19 documents during the breaks. Okay?

20 A. Okay.

21 Q. And will you agree to do that?

22 A. Yes.

23 Q. All right. If at any point you're having
24 technical difficulties or you think I'm having any
25 technical difficulties, we'll pause and just get those

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1 worked out. Okay?

2 A. Yeah.

3 Q. Is there anyone in the room with you today?

4 A. No.

5 Q. And where are you located?

6 A. I'm at my home, in the third floor.

7 Q. Okay. And you understand that you cannot
8 communicate with anyone, verbally or nonverbally, while
9 I'm examining you, correct?

10 A. Yes.

11 Q. If someone enters the room with you, I ask that
12 you please let me know.

13 Would you do that?

14 A. Yes.

15 Q. Just to confirm, you're not communicating with
16 anyone using instant messenger, phone, or any other
17 device like that, correct?

18 A. Correct.

19 Q. Do you have any programs running on your
20 computer or any documents displayed on your computer
21 right now?

22 A. I do not.

23 Q. Just the Zoom, I assume?

24 A. Yes. Let me see. My e-mail is open, but I can
25 close that. Hang on.

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1 There. I closed the e-mail.

2 Q. Okay. So now it's just Zoom and nothing else?

3 A. That's -- well, let me see. Safari is open.

4 Sorry. I'm checking here. My calendar is open, but
5 that's, I suppose, fine. There.

6 Q. If you don't mind, please just close everything
7 that's not Zoom for right now.

8 A. Okay. Okay. I'm closing my calendar, too.
9 Now the only thing open here is Zoom.

10 Q. Okay. I'll send you documents through the
11 chat. I'll get to this a little bit later, but,
12 obviously, you'll have to use Adobe to whatever you use
13 to view PDF documents at that time.

14 But other than that and Zoom, please just
15 keep all other programs closed, if you don't mind.

16 A. Yes.

17 Q. Do you have any papers with notes on them or
18 anything like that in front of you?

19 A. No.

20 Q. No papers, at all?

21 A. No.

22 Q. Okay. I'm going to ask that you keep it that
23 way. So please don't use any papers or notes or
24 anything like that during today's deposition. Okay?

25 A. Okay.

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1 Q. Files on your --

2 (Reporter clarification.)

3 Q. BY MR. DARBY: Okay. The last question was,
4 I'm going to ask that you keep it that way. So please
5 don't use any papers or notes or anything like that
6 during today's deposition. Okay?

7 A. Okay.

8 Q. And that goes for electronic files, as well.

9 A. Yes.

10 Q. If you feel like you need to consult some other
11 materials -- whether it be electronic documents, papers,
12 notes, whatever -- please just let me know and tell me
13 that you feel like you need to reference some outside
14 document. Okay?

15 A. Okay.

16 Q. As I mentioned, for the exhibits in this IPR,
17 I'm going to upload a copy of each document as a PDF
18 file to the Zoom chat when we need them, and we'll have
19 a couple of those today, and we'll just cross that
20 bridge when we get there. Okay?

21 A. Okay.

22 Q. Now, for example, I'm going to drop a document
23 into the Zoom chat. Specifically, I'm sending you a
24 copy of Exhibit 1006 in this proceeding through the Zoom
25 chat feature. Please let me know when you've been able

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1 to open that document.

2 A. Hang on. I'm downloading it.

3 Let me see. Well, let me -- there. I have
4 it. Sorry it took so long. I had to download it to my
5 desktop.

6 Q. No problem.

7 Okay. So please take a moment to just
8 scroll through the document and let me know when you've
9 been able to do so.

10 A. I am done.

11 Q. And do you recognize this as a clean, unmarked
12 version of the Cable reference in this proceeding?

13 A. Yes.

14 Q. Okay. Were you aware of the Cable reference
15 before your work in this IPR proceeding?

16 A. No.

17 Q. When did you first learn about the Cable
18 reference?

19 A. During the work I've been doing on this.

20 Q. And do you recognize the name of the inventor,
21 Kevin Michael Cable?

22 A. The name sounds familiar, but I can't place
23 him.

24 Q. Familiar with him as in you may have heard the
25 name before?

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1 A. Yeah. In the polymer world, I guess, or
2 polymer processing world.

3 Q. Have you ever met Kevin Michael Cable, to your
4 knowledge?

5 A. I don't think so.

6 Q. But maybe you read a paper of his or otherwise
7 just ran across the name?

8 A. Maybe.

9 Q. Can't recall anything specific?

10 A. No.

11 Q. What about the Eastman Chemical Company, ever
12 heard of them?

13 A. Yes.

14 Q. In what context?

15 A. It's one of the resident suppliers in the
16 plastics industry.

17 Q. And have you done work with the Eastman
18 Chemical Company?

19 A. Oh, gosh. I have years ago.

20 Q. And what was the nature of that work?

21 A. I don't remember, actually. It's been maybe
22 25 years ago or so.

23 Q. Just generally work?

24 Would you have been obtaining some sort of
25 material from them?

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1 A. No. We were doing -- I think there was
2 something related to mixing, to blending.

3 Q. Were you, perhaps, collaborating with them on
4 some sort of material formulation?

5 A. It was -- I think I was invited to give a
6 seminar. I think it was -- I don't remember. It was
7 something related to mixing. I don't remember. It
8 wasn't a particular material. It was, in general, the
9 theory of mixing, but I don't remember what it was, and
10 I don't remember the people I worked with there, either.

11 Q. Do you have a general time frame that you
12 recall?

13 A. No. No. About 25 years ago, give or take a
14 few years.

15 Q. Okay. Getting back to Cable, did you review
16 this document in preparation for today's deposition?

17 A. I did in the last few days. Yes.

18 Q. And are you prepared to answer questions about
19 the Cable reference today?

20 A. Yes.

21 Q. All right. For the record, any questions I ask
22 you about Cable during today's deposition, I would like
23 for you to answer from a perspective of a person of
24 ordinary skill in the art.

25 Can you do that?

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1 A. Yes.

2 Q. And when preparing your declaration for this
3 proceeding, did you study Cable in detail?

4 A. I mean, I studied Cable in detail in the past
5 few months. And so, yes, I looked at it. I skimmed
6 over -- I read some portions. Yes.

7 Q. Did you read the entirety of it?

8 A. Not in the last few days.

9 Q. What about over the complete time frame of your
10 work in this proceeding, have you read it from cover to
11 cover?

12 A. Yes.

13 Q. Approximately, how much time did you spend
14 studying the Cable reference when preparing your
15 opinions for this case?

16 A. I don't remember.

17 Q. More than an hour?

18 A. Probably.

19 Q. More than ten hours?

20 A. No.

21 Q. What is your general understanding of what the
22 Cable reference is about?

23 A. I wrote about it in my report. If I can look
24 back in my report, I can tell you.

25 Q. Are you able to look at the Cable reference

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1 before you and explain, generally, what it's about or --

2 A. I'd rather look at my report. Sorry.

3 Q. Yeah, that's fair. I will put that into the
4 chat.

5 Okay. I'm sending you, through the Zoom
6 chat feature, Exhibit 2009 in this proceeding. Let me
7 know when you've had a chance to open that up.

8 A. I have it.

9 Q. Okay. And go ahead and scroll through the
10 document, and when you're ready, please confirm that
11 this is a clean, unmarked copy of your declaration in
12 this proceeding.

13 A. It is.

14 Q. Great. Okay. So what is your understanding --
15 going back to Cable, what is your understanding of what
16 the Cable reference is about?

17 A. Paragraph 86, I have a short -- write about it
18 that it's directing to additive manufacturing object
19 removal, and then I talk about figure 3.

20 Q. And what's your understanding about what figure
21 3 shows?

22 A. Shows an additive manufacturing object with
23 first layer 304 and multiple additional layers at 306.

24 Q. Anything else?

25 A. I mean, I can read to you what I wrote, so --

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1 first quote -- quote, First layer 304 of built material
2 is shown as being deposited directly onto this 302 of
3 the substrate 300, according to a predetermined build
4 path, which can represent at the beginning of the
5 additive in the manufacturing process, and then they
6 give a reference in Cable. As the nozzle 112 moves at a
7 predetermined speed according to a build pattern,
8 multiple additional layers 3061, 3062, et cetera, of the
9 build material can be deposited in the layer by layer
10 fashion to form the object 104 on the surface 300.

11 And then I continue and say that substrate
12 300 is shown as having at least a top layer, 308, that
13 is made of first material such as any of the
14 thermoplastic polymers described above.

15 Cable teaches two ways to make substrate.
16 The substrate 300 shown in the figure, figure 3, can be
17 manufactured by coating a main portion, 310, or body of
18 the substrate 300 with the first material, e.g., a
19 thermoplastic polymer, to form the top layer, 308.
20 Alternatively, substantially all of the substrate 300
21 may be made of the first material such as any of the
22 thermoplastic polymers described above.

23 That's what I write there in the
24 introduction, just a general overview of Cable. Then
25 later, I describe some of the embodiments of Cable that

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1 are demonstrated in various figures.

2 Q. Okay. Can you turn to paragraph 61 through 67
3 of Cable and just take your time to refresh your
4 recollection on those paragraphs.

5 A. 61 to which?

6 Q. 61 through 67.

7 A. Okay. Let me look through them.

8 Okay. I, generally, skimmed over it. It's
9 a lot of reading, so if you ask some questions about it,
10 I'll probably go back and look at the different details.

11 Q. Okay. So let's just start to focus in on
12 specific passages, then. At paragraph 62, can you read
13 that first sentence out loud for the record?

14 A. "Both of the first material of the substrate
15 300 in the build material of at least the first layer, 3
16 of 4 of the object 104, can be selected to promote good
17 adhesion at the interface between the surface 302 and
18 the substrate 300 and the first layer 304 during the
19 formation of the object 104."

20 Q. Okay. So would you agree with me that one of
21 the goals in Cable is to select the materials of the
22 substrate and of the build material of the object so as
23 to promote good adhesion between them during printing?

24 A. That's what, in general, it says in that
25 sentence.

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1 Q. Okay. Can you now turn to paragraph 67 and
2 read out loud for the record the last two sentences of
3 that paragraph?

4 A. So I read until 67. I didn't read 67, so --
5 but I can read you the last sentence.

6 Q. The last two.

7 A. The last two sentences. "With optimal adhesion
8 characteristics, the object 104 can delaminate from the
9 substrate 110 without leaving a residue that is visible
10 to the eye. In addition, the bottom of the object 104
11 can have a smooth finish that is aesthetically
12 pleasing."

13 Q. And so, would you agree that another of the
14 goals expressed in Cable is to select the materials of
15 the object and substrate such that removal could be --
16 can be achieved after printing without leaving a residue
17 that's visible to the eye?

18 MR. KAPADIA: Objection. Leading.

19 THE WITNESS: Well, that sentence says
20 that, but the -- but the evidence in that document
21 doesn't reflect that.

22 Q. BY MR. DARBY: But you would --

23 A. Well, that sentence says that that's -- it --
24 it says, "With optimal adhesion characteristics," yeah,
25 and that it -- that it won't leave a residue that is

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1 visible to the eye, but it delaminates without
2 leaving -- and in addition, also, the bottom of the
3 object can have a smooth finish that is aesthetically
4 pleasing. And that is referring to with optimal
5 adhesion characteristics.

6 Q. Okay. So at least the goal is to optimize the
7 adhesion characteristics. Can we agree on that?

8 A. Well, not necessarily. I mean, it's just
9 explaining that, with optimal adhesion
10 characteristics -- sure, that's something that someone
11 may want, but the document doesn't reflect that. The
12 embodiments don't reflect that.

13 Q. Assuming the adhesion characteristics are, in
14 fact, optimized, would you agree on that premise, that
15 the goal is to achieve adhesion during printing and
16 removal without leaving a residue?

17 A. Well, I think a person of ordinary skill in the
18 art sure would see that -- would see that sentence with
19 optimal adhesion, but the person would then look at the
20 rest of the disclosure in this document and see that
21 that was not achieved. So is that -- that's the only
22 thing that is at hand to a person of ordinary skill in
23 the art.

24 Q. If I understand your position, it's that Cable
25 doesn't achieve the optimal adhesion characteristics, in

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1 your view; is that fair?

2 A. No, I didn't say that. I said whatever is
3 explained there is not achieved in Cable. Now, I don't
4 know if Cable thought what he had was -- was good and
5 that's what he wanted to achieve. He's just saying that
6 the -- in an optimal case, that you can see -- the
7 material won't be left behind on top of the surface, or
8 whatever he says in that sentence, leaving a residue.
9 And -- and I see in all his examples that there is a
10 residue.

11 Q. Okay. And in a hypothetical optimal case,
12 would you agree that there is adhesion during printing
13 and removal without a residue after printing? Again,
14 with the caveat of an optimal case.

15 MR. KAPADIA: Objection. Incomplete
16 hypothetical.

17 THE WITNESS: I mean, I think I'm not --
18 I -- I can't go into hypotheticals when looking at the
19 reference. I mean, a person of ordinary skill in the
20 art would not think that way. They wouldn't think of
21 hypotheticals. They would -- they would interpret the
22 reference by it's face value. So there is no
23 hypotheticals in there.

24 It just says -- I mean, it -- it says, I
25 can repeat, the optimal adhesion characteristics, with

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1 optimal adhesion characteristics. Is he trying to
2 achieve -- he's just mentioning that. He's not saying
3 that's his goal. He's just saying that that's -- that's
4 the case, that's -- it's a statement that he has there.

5 Q. BY MR. DARBY: What was your understanding of
6 the adhesion characteristics referenced in the last two
7 sentences of paragraph 67 that you just read aloud?

8 A. The adhesion characteristics in the last -- in
9 the last few paragraphs?

10 Q. The last two sentences of paragraph 67, where
11 it mentioned optimal adhesion characteristics, what are
12 those characteristics, in your understanding?

13 A. Well, he's saying that with optimal adhesion
14 characteristics, the object can delaminate from the
15 substrate without leaving a residue. So to him, there,
16 in that sentence, he says the optimal case scenario is
17 that there's no visible residue left, something that you
18 can't see. I suppose that would be an optimal adhesion
19 characteristic. That's what he's stating there.

20 Q. If you turn to paragraph 63, just take a minute
21 to refresh yourself on that paragraph.

22 A. Yeah, I read it.

23 Q. Okay. And is it your understanding in this
24 paragraph as discussing the notion of having similar
25 surface energies between the substrate and the object

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1 being printed on that substrate?

2 A. In general, that's what it's stating. Yes.

3 Q. And is it your understanding of paragraph 62 in
4 Cable -- excuse me -- 63 in Cable that having similar
5 surface energies between the substrate and the object
6 printed on that substrate promotes adhesion during
7 printing?

8 A. It's talking about promoting and -- wetting.

9 Q. And is promoting wetting consistent with
10 promoting adhesion in the context of Cable, for example,
11 if you look at paragraph 62?

12 A. Well, I think there it's talking about that the
13 material -- that there's good wetting between the
14 polymer and the polymer substrate, and it's -- so that
15 the surface energy is within 10 percent so that -- and
16 it even says so that it doesn't flow -- I mean -- on the
17 surface.

18 And -- and so -- and it does say, I mean,
19 which in turn creates efficient adhesion during the
20 formation of the object. So having the wetting would
21 probably help in the promotion of adhesion. You want it
22 wetted. You want the surface energies to be close so
23 that it doesn't -- the surface doesn't reflect the
24 polymer that is being printed on.

25 Q. Okay. I think we're on the same page here, but

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1 are you also understanding these paragraphs 62 and 63 of
2 Cable to disclose the idea of having similar surface
3 energies between the build material of the object and
4 the substrate so as to promote adhesion during printing?

5 A. In general, that's what it says. Yes.

6 Q. And what is the surface energy of the polymer
7 material?

8 A. It's -- it's related -- I mean, it's described
9 there as the -- the -- the energy per unit area. I
10 mean, it's -- it's related also to surface tension.
11 There is a relationship also with the -- with the
12 solubility parameter there. There is some inter
13 relationship between all of them, but it, basically,
14 is -- it has to do with wetting, which is --

15 Q. Okay.

16 A. -- surface energy, surface tension, et cetera.

17 Q. And how would a person of skill in the art
18 determine the surface energy of a polymer material?

19 A. They could measure it. There is a way to
20 measure the -- the wetting parameter and measuring
21 the -- the surface -- to measure the surface energy by
22 using angles and the wetting of one material to the
23 other one.

24 Q. Okay. I want to focus now on paragraph 64.
25 Please take a minute to refresh yourself on that

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1 paragraph.

2 A. Yeah, I went through it.

3 Q. Okay. And would you believe -- excuse me --
4 would you agree that paragraph 64 of Cable is talking
5 about a Hildebrand solubility parameter relationship
6 between a substrate and the object in order to achieve
7 removal after printing?

8 A. In general, that's what it's saying. It's
9 saying that it should be at least 5 percent difference.

10 Q. In other words, the Hildebrand solubility
11 parameter of the substrate and the Hildebrand solubility
12 parameter of the object printed on the substrate should
13 have at least 5 percent difference between them?

14 A. Yes.

15 Q. Are you familiar with the Hildebrand solubility
16 parameter?

17 A. Yes.

18 Q. And what is the Hildebrand solubility parameter
19 of a polymer material?

20 A. It's used to determine -- to find the
21 relationship between a polymer and its solvent. For
22 example, the -- the -- polycarbon has a solubility
23 parameter of -- Hildebrand solubility parameter of ten,
24 and acetone has a solubility parameter also around ten.
25 And so, they're very close to each other, which means

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1 that one will dissolve the other one.

2 The further the solubility parameter of one
3 material to the other one, the less soluble it is or the
4 less missible. And so, that's why, if they're too close
5 to each other -- if two Hildebrand parameters are too
6 close to each other, in the case of two polymers, then
7 they will intermingle significantly, which would cause
8 too much adhesion.

9 So you want a certain distance in the
10 solubility parameter to be able to not -- in the case of
11 solvents, not to dissolve the polymer, and in the case
12 of polymer, so that they permanently stick to each
13 other.

14 Q. How would you determine the --

15 (Reporter clarification.)

16 Q. BY MR. DARBY: How would you determine the
17 Hildebrand solubility parameter of a polymer material?

18 A. There are different ways of -- of measuring it
19 using solvents and other techniques. I mean, this --
20 there's a method that goes back to 1949, when Hildebrand
21 published this paper. I have read about it. I have --
22 in my book, "Material Science of Polymers For
23 Engineers," I have a whole section of solubility of
24 polymers with a whole table of solubility of solvents
25 and a whole table of solubility of polymers for people

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1 to do analysis like the one that -- that Cable is
2 discussing there.

3 Q. You mentioned a book, "Material Science of the
4 Polymers of For Engineers"; is that correct?

5 A. Yes.

6 Q. And that's a book that you authored?

7 A. Yes.

8 Q. When did you author that book?

9 A. The first edition in 1996; the last edition in
10 2012. There's three editions. I'm currently putting
11 together the fourth edition.

12 Q. Are you familiar with the polymer material
13 Tritan TX1000 copolyester?

14 A. Yes.

15 Q. And what is the Hildebrand solubility parameter
16 of Tritan TX1000 copolyester?

17 A. I don't remember.

18 Q. Did you look it up during your analysis in this
19 proceeding?

20 A. No.

21 Q. Are you familiar with Amphora copolyester?

22 A. The name rings a bell.

23 Q. And what is its Hildebrand solubility
24 parameter?

25 A. I don't know.

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1 Q. Did you look it up during your analysis in this
2 proceeding?

3 A. No.

4 Q. All right. Why don't we take a short break
5 here. I'm going to change gears when we come back.

6 A. Okay. So how many minutes?

7 Q. How about ten minutes?

8 A. Okay. I'll set my alarm.

9 Q. Okay. I'll see you all at the top of the hour.

10 A. Bye.

11 (A recess was held from 9:49 a.m. to 10:01 a.m.)

12 MR. DARBY: On the record.

13 Q. BY MR. DARBY: Okay. Dr. Osswald, welcome
14 back. Just to confirm, did you speak with anybody
15 during the break about the substance of your testimony
16 today?

17 A. I did not.

18 Q. Okay. Dr. Osswald, who is your current
19 employer?

20 A. I am retired from the university. I am a
21 professor emeritus, although I'm also an honorary
22 professor at the University of Erlangen-Nuremberg in
23 Germany, and I'm an honorary professor at the National
24 University of Columbia. And I also currently am working
25 on in a small startup called AF Latex Technologies,

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1 which deals with natural rubber.

2 Q. And you mentioned that you are retired from the
3 university; is that correct?

4 A. Well, I'm a professor emeritus. I still have a
5 research group, though. I don't get paid by the
6 university, but I still have a research group. I still
7 work at the university.

8 Q. And professor emeritus is your current job
9 title at the University of Wisconsin Madison?

10 A. It's the current -- it's the title, yes.
11 Professor emeritus.

12 Q. Okay. And have you held other titles at the
13 University of Wisconsin Madison?

14 A. Yes. I started as an assistant professor at
15 1989. Five years later, I became an associate
16 professor. Ten years later, I became a full professor,
17 and I was a full professor and also director of the
18 polymer engineering center. And I'm still associated
19 with the polymer engineering center, but as I said, I'm
20 not an -- I don't get paid by the university.

21 Q. And how long have you been involved with the
22 polymer engineering center?

23 A. Since we founded it. I was -- with another
24 colleague, we were founding members of the polymer
25 engineering center. I think we did that about, maybe,

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1 20-some years ago. But before that, I was involved with
2 a polymer processing research group, which was my own
3 group that -- where I started in 1989. So I've been
4 working with polymers at University of Wisconsin for the
5 past 36 years.

6 Q. Work with the polymer --

7 (Reporter clarification.)

8 Q. BY MR DARBY: Your work with the polymer
9 engineering center, does that involve use, research,
10 teaching centered around 3D printers?

11 A. Yes.

12 Q. And you-all have 3D printers on campus at the
13 University of Wisconsin?

14 A. We do. We have 3D printers that are
15 commercially available and we have 3D printers that we
16 have designed and developed.

17 Q. You mentioned that you're currently working for
18 or maybe founded a small startup; is that correct?

19 A. Yes.

20 Q. And just remind me, are you a founder of that
21 startup or working with the startup?

22 A. I was one of the founding members.

23 Q. Okay. And what's the name of that startup?

24 A. AF Latex Technologies.

25 Q. And what kind of products and services does AF

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1 Latex Technologies provide or seek to provide?

2 A. It's technology to stabilize and -- and
3 preserve natural rubber latex in a green fashion,
4 eliminating or reducing hypoallergenic proteins and
5 cancerous nitrosamines from the -- from the latex.

6 Q. Have you been involved with any other startups
7 during your professional career?

8 A. Yes.

9 Q. Approximately, how many?

10 A. I was the founder member -- founding member of
11 a company called the Madison Group here in Madison,
12 Wisconsin, which was founded in 1993. It's a consulting
13 firm. I was -- I'm no longer involved with them because
14 the idea was, after we were 65 years old, we retire and
15 we get paid off. And so, I -- when I turned 65 in 2023,
16 I was paid off.

17 I was also the founding member of a
18 publishing house that published polymer -- published --
19 translated and published polymer plastics book and
20 rubber books into Spanish called Editorial Guaduales,
21 and I think that's it.

22 Q. Those are the only startups that you founded,
23 correct?

24 A. Correct.

25 Q. Have you been employed by any other startups?

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1 A. No.

2 Q. And beyond the University of Wisconsin, what
3 other employers have you worked for, not including the
4 startups that you founded?

5 A. I worked a short time at General Motors
6 research lab in Warren, Michigan on compression molding,
7 which is -- which is a process to manufacture plastic
8 parts.

9 I was employed for a short time at the
10 Polymer Processing Institute at the -- in Aachen,
11 Germany. Then I became a fellow there, which was funded
12 by the German government. And I also -- during that
13 time, I was a consultant for the Dynamit Nobel Company
14 in the process dealing with compression molding.

15 Then my -- much later, I became, also,
16 board member in different companies where I acted as an
17 advisor and consultant to different companies, technical
18 advisory boards and scientific advisory boards for
19 companies.

20 Q. Are any of these entities that you've been
21 discussing, whether startups or other entities -- have
22 any of them provided 3D printing products or services?

23 A. Yes. I'm involved with a -- I was involved
24 with a small company startup in Columbia. I didn't -- I
25 didn't own it, I didn't work for them, but I was

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1 involved with them in manufacturing 3D printers that
2 were designed by myself and my graduate students.

3 Q. And what is the name of that company?

4 A. Fused Form.

5 Q. And, approximately, what was the time frame of
6 your work with Fused Form?

7 A. I would imagine I've been involved with them
8 for the past -- I don't know -- maybe ten years, maybe a
9 little bit less. Since the two -- maybe since 2017 or
10 something. Maybe eight years or so.

11 Q. Any other companies that you've worked with or
12 for on 3D printing products or services?

13 A. Well, when I was in the scientific advisory
14 board of Sabic. Sabic is a big chemical company that
15 manufactures resins, and I consulted with them and I
16 was -- had many discussions and gave many presentations
17 related to 3D printing. They produce manufacturing
18 materials for 3D printing.

19 And then also, I guess there was a company
20 in Germany, Demag -- or I forgot the name of it now.
21 They make fibers for carpets, and they tried -- we tried
22 to make -- use their machines -- or we actually were
23 able to successfully use their machines to
24 manufacture --

25 (Reporter clarification.)

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1 THE WITNESS: That are used for selective
2 laser centering for 3D printing. And then I said that
3 there's other companies that work with -- that -- here
4 that may have been related to 3D printing.

5 Q. BY MR. DARBY: And now narrowing down, did any
6 of these companies or entities that you've worked with
7 produce products that are relevant to the subject matter
8 at hand in this proceeding in terms of coated build
9 plates for 3D printing?

10 A. No.

11 Q. Okay. Stepping back now to your research at
12 the University of Wisconsin --

13 (Technical interruption from 10:12 a.m. to 10:21 a.m.)

14 MR. DARBY: On the record.

15 Q. BY MR. DARBY: Dr. Osswald, just to confirm,
16 did you speak with anybody about the substance of your
17 testimony during the break?

18 A. I did not.

19 Q. Okay. I'm going to hop back into your
20 experience at the University of Wisconsin.

21 You mentioned that you are retired from the
22 university or just in a different role now. And it
23 sounds like your role, at this point, does not involve
24 teaching any courses at the university; is that
25 accurate?

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1 A. At the University of Wisconsin. I'm still
2 teaching courses in Germany and Columbia.

3 Q. Okay. At the University of Wisconsin, when you
4 previously taught courses, did any of those courses
5 cover 3D printing or additive manufacturing?

6 A. Yes.

7 Q. And what courses did you teach at the
8 University of Wisconsin on 3D printing and additive
9 manufacturing?

10 A. One course is one that was called ME311, which
11 is now ME310, which had a whole unit on additive
12 manufacturing. It was a polymer processing class. And
13 the other course was ME514, which was introduction to
14 additive manufacturing and polymers.

15 Q. And what years did you teach ME311 on polymer
16 processing?

17 A. 311, 310 -- I think before it was 310 and then
18 it became 311 and then it became 310 -- or at one point,
19 it was 313. I taught that course for over 30 years.

20 Q. Starting, approximately, when and ending,
21 approximately, when?

22 A. Starting in, maybe, 1990 and ending last year,
23 2024.

24 Q. Okay. What about ME514, the intro to additive
25 manufacturing and polymers, when did you teach that

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1 course?

2 A. Let me see. I helped develop that course many
3 years ago. I think it was maybe 15 years ago. I
4 started teaching it, maybe, ten years ago.

5 I also teach that same -- similar course I
6 teach in 3D printing in Germany, which is called
7 modeling and simulation and -- with additive
8 manufacturing. That's -- I've been teaching that now
9 for -- I don't know -- five, six years, maybe longer.

10 Q. And what textbooks do you use for teaching
11 those courses, particularly as it relates to 3D printing
12 and additive manufacturing?

13 A. I use my own notes, and in the course of 310,
14 there's a whole chapter in my book, "Understanding
15 Polymer Processing," chapter 7, which is dedicated to 3D
16 printing, and then there's some examples in the later
17 chapters of modeling and simulation that involve solving
18 problems and 3D printing.

19 Q. You mentioned your own notes that you use for
20 these courses. Are those materials distributed to
21 students?

22 A. They are.

23 Q. Are they public materials that exist online?

24 A. I'm sure they have -- anything you give to
25 students is found online. But yeah, I've handed them

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1 out. I mean, I hand those handout to -- to -- when I
2 teach a course in additive manufacturing in Latin
3 America or when I teach it in Germany. A lot of those
4 notes involve patents in the field, publications in the
5 field. And also PowerPoints, et cetera.

6 Q. Okay. But you don't post them anywhere in any
7 organize fashioned, like on a personal website or
8 anything like that?

9 A. I don't.

10 Q. Okay. Now, turning to your research, which I
11 believe you said is still ongoing at the University of
12 Wisconsin; is that accurate?

13 A. Yes.

14 Q. And does your research at the University of
15 Wisconsin generally --

16 (Reporter clarification.)

17 Q. BY MR DARBY: The -- the question is with
18 respect to your research at the University of Wisconsin,
19 has that research involved projects relating to 3D
20 printing and additive manufacturing?

21 A. Yes, some projects.

22 Q. Approximately, how many projects have involved
23 3D printing and additive manufacturing?

24 A. It's hard to count because I've also had
25 graduate students in Germany and industry and -- I mean,

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1 I would say several. I think of my 45 graduate students
2 that have -- that they received their Ph.D. with me, I
3 would say -- I don't know -- maybe between 5 and 10 of
4 those graduate students have done theses or work related
5 to 3D printing.

6 Q. In any of those project in your research,
7 whether conducted yourself or in collaboration with
8 graduate students, did any of that work touch on the
9 subject matter at issue in this case, including coated
10 build plates for 3D printers?

11 A. No.

12 Q. Has any of the research or research projects
13 conducted by you or in collaboration with your graduate
14 students been done on behalf of or financed by the
15 United States government?

16 A. Oh, yeah. I mean, several of the projects,
17 yes.

18 Q. I assume the projects are often funded by
19 third-party private or public companies, as well?

20 A. Yes.

21 Q. Who are some of the third-party private or
22 public companies who have funded your research?

23 A. Well, public, the National Science Foundation,
24 the State of Wisconsin, the Department of Energy. I
25 mean, there may be some other public ones related to the

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1 state or so.

2 And -- and with companies, I have worked
3 with 3M; with Sabic, which is a chemical company; with
4 Dow Chemical; with Teel Plastics; with Gen Corp.; with
5 The Bug Company; with VW Volkswagon; with BMW; with
6 Mercedes; with Toyota.

7 I mean, I -- there's plenty of them. There
8 are a lot more. I'm listing you a few.

9 Q. Have many companies directed to 3D printing
10 products or services funded any of your research?

11 A. No, not -- no, not directly. I've gotten
12 some -- I mean, I've been connected with some 3D
13 printing companies, but none of them directly funded
14 other than giving us equipment or we've purchased
15 equipment from them or they've manufactured it for us.
16 And they've also given us free equipment. So I guess
17 that's a form of funding and supporting the research
18 group.

19 Q. And what companies have given you equipment to
20 use?

21 A. Fused Form.

22 Q. Any others?

23 A. No, not -- not others. I mean, there was a
24 donation of 3D -- 3D systems machine, an SLS machine,
25 that was donated to our research group maybe 15 years

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1 ago or so.

2 Q. And who donated that machine?

3 A. I believe that was donated through a donation
4 from -- from a former student.

5 Q. Was that student associated with a particular
6 company?

7 A. Yes. That student was the owner and founder
8 of -- of Phillips Plastics.

9 Q. Okay. You mentioned being connected with some
10 other 3D printing companies. Who are those companies?

11 A. I -- I've had conversations with Formlabs. The
12 founder and owner of Formlabs has visited our lab, but
13 that never went anywhere. And I had conversations and
14 negotiations with MakerBot, which is a company owned --
15 now owned by Stratasys, which they purchased a patent or
16 they have owned a patent of -- that we -- that I have
17 been one of the co-inventors in.

18 I can't -- I mean, I -- there may be
19 something else. I'm drawing a blank right now. So
20 there's a lot of dealings I have done.

21 Q. Before this proceeding, had you ever been
22 retained as an expert witness in any legal proceedings?

23 A. For this proceeding, sorry, I am -- I believe
24 I'm the expert in this proceeding, right?

25 Q. Apologies. To clarify, before this providing,

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1 had you been retained in other capacities as a technical
2 expert in other legal proceedings?

3 A. Oh, yes. On 3D printing, yes, I have.

4 Q. Approximately, how many times?

5 A. 3D printing, maybe -- if I recall, maybe one
6 more time, a case that dealt with a Continuous
7 Composite's printing.

8 Q. And who are the parties involved in that case?

9 A. The plaintiff was a company called Continuous
10 Composite, which is the company I worked with. And then
11 the defendant was a company called Markforged.

12 Q. And what is Continuous Composite printing?

13 A. Basically, what the word of it says, is -- is
14 you -- you drive through a nozzle a fiber that is
15 impregnated with a polymer. And it's a little bit
16 different than the FFF printing process in that you
17 anchor the -- the fiber and the polymer down on the
18 build plate, and then, basically, as you print -- as you
19 move along and print, you pull the fiber and the polymer
20 out of the nozzle instead of pushing it through the
21 nozzle. That's the gist of it.

22 Q. And just to clarify for the record, can you
23 just explain or expand on the acronym FFF?

24 A. Yeah, fused filament fabrication. It's the
25 same as like FDM. FDM is a trade name of Stratasys.

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1 Q. Okay. Including -- well, let me just ask about
2 this 3D printing case involving Continuous Composite
3 printing.

4 Was that a patent case?

5 A. Yes.

6 Q. And, approximately, how many patent cases have
7 you worked on as a technical expert?

8 A. They asked me that last time, and I should --
9 anywhere -- I think over 50 of them. I'd have to go
10 book and look at my records, but about 50 or so.

11 Q. Okay. But only one of them was in relation to
12 3D printing, the one you just talked about; is that
13 right?

14 A. Yes.

15 Q. And have you ever provided live testimony in
16 front of a judge or a jury?

17 A. Yes, I have.

18 Q. Approximately, how many times?

19 A. I don't know. Between 50 and 100 times. No.
20 Between -- to a judge and a jury, no, not that many
21 times. I don't know. Maybe 10 times. I don't know.

22 Q. Okay. Besides this IPR, have you been an
23 expert witness in any other IPRs?

24 A. Yes, I have.

25 Q. Approximately, how many?

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1 A. I don't remember. I don't know. Maybe 10, 20
2 times.

3 Q. Had any court, judge, or the board ever deemed
4 your testimony inadmissible, to the best of your
5 knowledge?

6 A. To the best of my knowledge, not except one
7 time when I opined about portable water. It was a case
8 dealing with sippy cups, and the judge thought I was not
9 an expert on water -- what portable water is. And so --
10 but, I mean, that was a minor part of the elements in
11 the claim.

12 Q. And who are the parties involved in that case?

13 A. I don't remember. It was a sippy cup case. I
14 don't remember. It's been 15 years or so.

15 Q. Has any court, judge, or the board ever found
16 your testimony not credible or unreliable, to the best
17 of your knowledge?

18 A. No.

19 Q. You mentioned patents earlier. Approximately,
20 how many patents are you listed as an inventor on?

21 A. I don't know. Maybe seven or eight. I don't
22 know. Maybe more.

23 Q. And, approximately, how many of those have
24 addressed 3D printers and additive manufacturing?

25 A. Related to additive manufacturing, I would say

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1 maybe three or four.

2 Q. Okay. And being more specific, when do those
3 three or four relate to within the broader field of
4 additive manufacture?

5 A. There may be two or three patents that relate
6 to manufacturing of powders. And these powders are used
7 for processes like selective laser centering, so those
8 aren't related to 3D printing.

9 Then there's one for a patent -- the patent
10 that was purchased by MakerBot -- that relates to
11 printing with different colors. So it's an FFF printing
12 process with -- that prints in color with the single --
13 a filament that going through -- not switching
14 filaments, but a filament where your color is added to
15 the filament during the process.

16 And there is one patent that was -- I think
17 it just came through or is one -- is an FFF process with
18 the spinning nozzle where the nozzle spins, rotates, to
19 aid in the melting process to melt faster and also aid
20 in reorientation of fibers or molecules during the
21 printing process to help in the adhesion between layers.
22 I think those are it.

23 Q. Okay. Dr. Osswald, you have, I believe,
24 Exhibit 209 in this case. I believe I sent it to you
25 earlier, and you confirmed that it's an unmarked copy of

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1 your declaration in this proceeding.

2 Do you still have that handy?

3 A. I do, yes.

4 Q. Okay. And again, you recognize this document
5 as your declaration, correct?

6 A. Yes, I do.

7 Q. Did you review your declaration in preparation
8 for today's deposition?

9 A. I did.

10 Q. Are you prepared to answer questions about your
11 declaration today?

12 A. Yes.

13 Q. And do you agree that this declaration contains
14 your complete opinions for this IPR proceeding?

15 A. Yes.

16 Q. As you were studying your declaration in
17 preparation for today's deposition, did you discuss any
18 errors, typographical or otherwise, in your declaration?

19 A. Not to my knowledge.

20 Q. And did you, personally, write this
21 declaration?

22 A. Yes. I mean, it contains all of my opinion.
23 Parts of it was written by the attorneys, parts of it
24 were written by me, all of it based on my conversations
25 with the attorneys.

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1 Q. And what parts were written by you?

2 A. Most of the technical parts. I think some of
3 the legalese and the structure was written by the
4 attorneys, but I helped fill in blanks or -- whatever
5 was written was -- was certainly -- everything is --
6 contains my opinion.

7 Q. Okay. Please turn to paragraph 3 of your
8 declaration and let me know when you're there.

9 A. I'm there.

10 Q. Paragraph 3 of your declaration, you say that
11 it's your understanding that the '660 patent was
12 formerly owned by Stratasys.

13 Do you see that?

14 A. Yes.

15 Q. Is it your understanding that Stratasys no
16 longer owns the '660 patent?

17 A. I was informed by their attorneys about that.

18 Q. Who do you believe currently owns the '660
19 patent?

20 A. I don't know.

21 Q. Who was your engagement with to provide
22 opinions in this proceeding, Stratasys or some other
23 entity?

24 A. I think I was hired by the law firm. I don't
25 think companies hire. I'm sure, eventually, they pay

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1 for it, but usually the attorneys hire you.

2 Q. But it's your understanding that you don't have
3 a business relationship, an engagement with Stratasys?

4 A. No.

5 Q. You said no, which I think might be a little
6 confusing with how I phrased the question, so I'm going
7 to ask it again.

8 Do you have a business relationship such as
9 an engagement to serve as a technical expert in this
10 proceeding for Stratasys?

11 A. Oh, I suppose I do have. I'd have to go back
12 and look at the engagement letter that I was -- that I
13 signed.

14 Q. But sitting here today, you can't remember?

15 A. No, no. I mean, I know it's a case where
16 Stratasys -- I'm working with the attorneys that are
17 representing Stratasys, so somehow I'm working with or
18 for Stratasys. So actually, I don't understand your
19 questions.

20 Q. I'm asking if, to your knowledge, you've been
21 engaged by Stratasys to offer opinions in this
22 proceeding?

23 A. I think in the -- in the letter Stratasys is
24 mentioned, yeah. So when I call this case, I call it
25 the Stratasys case. Yes.

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1 Q. But you don't believe Stratasys owns the '660
2 patent?

3 A. That's what the attorneys told me.

4 Q. Okay. Did the attorneys tell you who,
5 currently, owns the '660 patent?

6 A. No.

7 Q. Okay. Please turn to paragraph 7 of your
8 declaration.

9 Okay. And here, in paragraph 7 of your
10 declaration, you say, "I have in-depth knowledge of
11 additive manufacturing and additive patent manufacturing
12 history," correct?

13 A. Yes.

14 Q. And what, specifically, do you mean by
15 "Additive manufacturing patent history"?

16 A. It's been one of my interests in the
17 development of the field of additive manufacturing. So
18 I -- I figured that engineering students don't get
19 enough about intellectual property and patents, et
20 cetera, so in my additive manufacturing class, I teach
21 the whole unit that spans a couple of weeks or more that
22 deal with -- with intellectual property, I talk about
23 patents I show them the -- sort of the significant
24 patents in the field, like the Crump patent from
25 Stratasys and other patents in other areas and new

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1 patents. And then I talk about what elements or what --
2 what parts are inside of a patent, like the embodiments
3 of the claim, how a -- what a claim looks like, kind of
4 a little bit the meaning. And then I talk a little bit
5 about infringement, et cetera.

6 Q. Okay. And how did you gain knowledge on the
7 subject of additive manufacturing patent history, just
8 your personal research?

9 A. Personal research. I do a lot of research in
10 the field of history, so I've written many papers on the
11 history of polymers and the history of -- of the
12 plastics industry, et cetera. I give talks. I give
13 presentations on ethics that bring back the history --
14 the history of rubber -- of natural rubber, of synthetic
15 rubber, of polymers, when they were developed.

16 And I've also, in the years, included
17 processing equipment processes, which also includes
18 additive manufacturing. And additive manufacturing, of
19 course, has -- is really guided and -- and -- with
20 patents. And so, I cover the patents -- the major
21 patents that are out there or were out there.

22 Q. And do you routinely search the patent
23 literature pertaining to additive manufacturing or was
24 this a one-time project?

25 A. I routinely do it. I like -- in my additive

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1 manufacturing class, I like seeing new processes that
2 are developed and that are patented or that are
3 published. We call them metric 3D printing, which
4 wasn't patented but was published in science. There are
5 several processes that are patented and published at the
6 same time or published afterwards.

7 So it's an interest of me how the field is
8 developing, and that's -- I mean, teaching an additive
9 manufacturing course, you have to be kept abreast of
10 what's going on.

11 Q. And what tools do you use to perform the patent
12 literature searches?

13 A. Well, I look at -- I look at publications.
14 Usually what I do is I find what has been published in
15 the literature. If I do a search for patents -- I mean,
16 I use Google Patents. I mean, that's one easy way of --
17 to find and at least upload patents that I see published
18 in the literature.

19 Q. Okay. And do you keep the interesting patent
20 literature that you find in your files somewhere?

21 A. Yes.

22 Q. Just in terms of order of magnitude, your
23 personal files of patent literature, tens of patents,
24 hundreds of patents?

25 What kind of scale are we talking?

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1 A. I don't know. Less than 100. Around 50,
2 maybe. And these are the important patents that made
3 the field. Maybe less than 50. I don't know. I'd have
4 to go back and look.

5 Q. Did you have encounter the '660 patent during
6 your review or research on patent literature?

7 A. No.

8 Q. What about any of the other patent documents
9 that you reviewed for this proceeding, have you seen any
10 of them in your research of patent literature?

11 A. I'd have to go back and look. I don't know.

12 Q. Did you conduct a search of the patent
13 literature, whether using tools like Google Patents or
14 your own personal knowledge, during your analysis in
15 this proceeding?

16 A. No.

17 Q. Why not?

18 A. I was given -- I was asked to rebuttal. And
19 so, I was given the -- the -- what is considered the
20 prior art or alleged prior art.

21 Q. And you didn't think it was relevant to look
22 into the patent literature to understand things like the
23 state of the art and those were the things at the time
24 of the '660 patent?

25 A. I searched for some things. I don't think I

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1 did a patent search, so I'm -- I'm -- I'm not sure. I
2 mean, I did search literature. There's some
3 reference -- you can see the references that I brought
4 up in my -- in my report. So I guess I did do some --
5 some searching in there.

6 Q. Just not patent literature searches?

7 A. I don't know. Maybe I did. I don't recall. I
8 mean, it's been -- I've been working on a couple of
9 them, so -- so whatever is referenced -- whatever I have
10 in my references is what I found relevant.

11 Q. Okay. Please turn to paragraph 10 of your
12 declaration.

13 Here at paragraph 10 of your declaration,
14 you say, "Since February of 2019, I've served as an
15 advisory to the Columbian president on matters regarding
16 science and technology in the creation of a new Ministry
17 of Science, Technology, and Innovation."

18 Is that accurate?

19 A. Yes.

20 Q. Can you describe the nature of your work in
21 this capacity?

22 A. Yeah, so Columbia about, I would say, 30 years
23 ago now, created a group that was called the Group of
24 Wisemen, which is a group of Columbians, a lot of them
25 ex-pat Columbians, which included -- Garcia Marcus was

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1 our pride, our Nobel prize winner in literature. And --
2 and they were going to set straight what was important
3 of education, universities, et cetera, in Columbia.

4 And so, 25 years later, which was in
5 2019 -- in February of 2019, the president of Columbia,
6 Ivan Duque, decided that he would create a new group of
7 wisemen. [Foreign language spoken] it's called, the
8 Mission of Wisemen, and I was one of them. I, with
9 three other people, was part of the technology group.
10 There was also science. There was also literature.
11 There was also -- so there were several of us -- four of
12 us were part of technology. And we laid down a roadmap
13 for the Colombian government and how to propel research
14 and development in the country.

15 And so, the result of that was creating a
16 new Ministry, so like a cabinet, for science,
17 technology, and innovation. Which Columbia didn't
18 have -- they had a cabinet position in education and
19 defense, cabinet position in treasury, et cetera, but
20 Columbia did not have a ministry of science, technology,
21 and innovation. So that was the culmination of it.

22 We were supposed to go there every year,
23 but under the new presidency, I think we only met once
24 after that. But we were still part of this group that,
25 supposably, would advise -- the Ministry exists, so it's

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1 something that is established.

2 Q. And have you met, personally, with the
3 Columbian president during your service on this
4 Ministry?

5 A. Yes. Yes, I have. With the president and the
6 vice president.

7 Q. And did your advice to the Columbian president
8 on matters of technology include subjects related to 3D
9 printing and additive manufacturing?

10 A. Yes. Yes. There was some of that, as well.
11 There was -- one of the parts, one of my contributions,
12 was the democratization of manufacturing, and obviously,
13 additive manufacturing or 3D printing is ideal for that.
14 And so -- and it could be accessible to all of Columbia.

15 I mean, there were -- there were different
16 aspects of it. One of them was getting internet
17 throughout the country for -- one of the reasons is for
18 sharing models, et cetera, in 3D printing. So that was
19 one of your big examples in this project.

20 Q. I believe you used the term democratizing
21 manufacturing; is that correct?

22 A. Yes, that's what we called it.

23 Q. And what does that mean?

24 A. It means -- I mean, it means open source. I
25 mean, it may be a very idealistic philosophical point of

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1 view, but it's -- it's the sharing of models, et cetera,
2 that can be done in additive manufacturing, or at least
3 a lot of the processes -- if you're going to manufacture
4 something or if you're going to -- to produce a product,
5 you could, basically, through the internet, send them to
6 different places.

7 Anyways, I mean, it's -- it's maybe a
8 philosophical description.

9 Q. You mentioned that additive manufacturing is
10 ideal for democratizing in this fashion. How so?

11 A. Well, it's -- you could have -- you could have
12 additive manufacturing machines in schools -- I mean,
13 you have to think, I mean, the U.S., it's -- it's kind
14 of a given. I mean, everybody has -- or many people
15 have 3D printer in their home or factories have it.

16 Columbia, at the time, didn't. It's an
17 emerging technology there. And so, it was something
18 that was, from an infrastructure point of view, much
19 easier than creating, for example, a whole factory of
20 injection molded parts. And so, that's, basically, the
21 idea that was behind it, although we did also talk about
22 other larger scale manufacturing and OEMs, et cetera.

23 Q. Okay. Please turn to paragraph 14 of your
24 declaration. Take a moment to refresh yourself on that
25 paragraph. Let me know when you're done.

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1 A. Okay. Yeah.

2 Q. Okay. At paragraph 14 of your declaration, you
3 identify a number of different books that you've
4 authored, including a book called "Plastics Handbook,"
5 which is a complete compendium of polymer materials,
6 polymer processes, and polymer characterization; and
7 another book called "Understanding Polymer Processing,"
8 which contains a chapter on additive manufacturing; is
9 that accurate?

10 A. Yes, that's accurate.

11 Q. And these books are reference materials that
12 people skilled in the art of the '660 patent would have
13 consulted and used, in your view?

14 A. Certainly are -- have been -- are published and
15 are for a person of skilled in the art, for students,
16 people in the industry, et cetera. Some of them -- some
17 of them are textbooks. Classics Handbook is probably
18 more for people in the industry.

19 Q. And did you consult these books when rendering
20 your opinions in this proceeding?

21 A. I don't remember -- yeah. I think I -- well,
22 this proceeding, I don't know if I reference any of my
23 books in this particular -- in the '660 patent, but I do
24 consult my books quite often when I work on cases like
25 this. I'd have to go look and see if one of the

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1 references is one of my books or not.

2 Q. Have you written any books that are
3 specifically directed to 3D printing or additive
4 manufacturing?

5 A. Not -- not yet. I am in the process of.

6 Q. What about papers?

7 Have you authored any papers that are
8 particularly and specifically directed to 3D printing or
9 additive manufacture?

10 A. Yes.

11 Q. Okay. Feel free to look at your CV. And in
12 doing so, can you direct me to any papers that are
13 specifically directed to additive manufacturing?

14 I want to give you a caveat that there are
15 a lot of papers listed in the CV. If it's over 20, you
16 can just tell me that.

17 A. It's probably over 20.

18 Q. Let me narrow down. Are there any papers that
19 you've authored that are directed to additive
20 manufacturing that are particularly relevant to the
21 subject matter that we're discussing in this case
22 pertaining to coated build plates?

23 A. No.

24 Q. So, just to be clear, you have not authorized
25 any papers or books that are specifically directed to

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1 coated build plates for 3D printers; is that accurate?

2 A. That's accurate. I mean, look, I've -- is it
3 related -- I mean, in this case here, we were just --
4 before one of the breaks, we were talking about
5 solubility parameter. Yeah, I mean, some of my
6 publications, some of them are related to that. I mean,
7 it's -- I mean, in polymer processing and polymer
8 manufacturing, things are related.

9 I mean, I'm -- I have worked on extrusion,
10 I've published on extrusion, which is used to
11 manufacture --

12 (Reporter clarification.)

13 THE WITNESS: Films that are used for
14 coatings like tape coatings, et cetera.

15 I mean -- so directly build plates and
16 manufacturing build plates, no. But, I mean, there
17 is -- you can find relation with the work I've done to
18 this in different aspects.

19 Q. BY MR DARBY: Have you written or authored
20 specific books or papers that are directed to coating
21 substrates?

22 A. Let me see. I don't -- I don't remember. I
23 mean, maybe extrusion of films. I mean, I've worked
24 with 3M that manufactures a lot of tapes and stuff, so I
25 don't know.

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1 Maybe -- I worked for eight years, in the
2 research funded by 3M, to manufacture blends, and some
3 of those blends went into -- into manufacturing tapes
4 and manufacturing films.

5 So coatings, spraying -- I worked on a
6 research project with -- with Mercedes many, many years
7 ago related to paint on -- on body panels, which is a
8 supposed way of coating a body panel. I've worked in
9 compression molding -- in a process called in-mold
10 coating when I was working with -- with Gen Corp. on
11 compression molding and compression molding products.

12 So, I mean, I'd have to go back and look.
13 I mean, it's -- it's -- I've worked on many, many
14 project. I mean, as you can see, for the 400
15 publications and several books.

16 Q. You mentioned a product with Mercedes many
17 years ago that related to spray coating a body panel.

18 Do you have -- do you have a rough time
19 frame of that project?

20 A. I think it was the early 2000s.

21 Q. And you mentioned a product related to end mold
22 coating, I believe; is that accurate?

23 A. Yes.

24 Q. And what was the approximate time frame of that
25 project?

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1 A. Oh, my gosh. That was probably a little bit --
2 that was also during that time in the 2000s.

3 Q. And both of those involve applying the polymer
4 coating of some sort to a substrate of some sort?

5 A. Yes.

6 MR. KAPADIA: Objection. Leading.

7 Q. BY MR. DARBY: Okay. Please turn to paragraph
8 20 of your declaration. Take a moment to refresh
9 yourself on that paragraph.

10 At paragraph 20 of your declaration, you
11 say, "In forming my opinions, I have reviewed the
12 challenged patent, its prosecution history, the
13 materials cited in the list of exhibits, and the
14 materials cited throughout my declaration."

15 Is that accurate?

16 A. Yes.

17 Q. Did you consider any materials other than those
18 listed in this paragraph and that you cite in your
19 declaration?

20 A. I mean, as I said afterwards, I relied on my
21 academic and professional experience in reaching the
22 opinion expressed in this declaration.

23 Q. Let me narrow the question.

24 Did you consider, in forming your opinions
25 for this proceeding, any documents other than those

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1 listed in this paragraph 20 and cited throughout your
2 declaration?

3 A. Those were the ones -- those were the important
4 citations. Obviously, in my head, I have my books and
5 all that, which is in the next sentence, but that's
6 the -- the -- I stand with the references that I cited
7 in my -- in my presentation. That's where my opinions
8 come from.

9 Q. And do you recall looking at any documents that
10 are exhibits in this proceeding that you did not cite?

11 A. I don't think so.

12 Q. So if you didn't cite an exhibit, you didn't
13 consider the exhibit; is that fair?

14 A. There's a list somewhere of the materials
15 considered.

16 Q. Okay. Please turn to paragraph 27 of your
17 declaration. And here, you say, "I'm not a legal
18 expert. In presenting my opinions, I have applied the
19 legal standards provided to me by counsel in arriving at
20 the opinions set forth in this declaration."

21 Is that accurate?

22 A. Yes.

23 Q. Okay. You mentioned earlier that the lawyers
24 may have written some of the legalese. Is this one of
25 the sections that the lawyers may have written?

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1 A. Yes.

2 Q. Okay. And does the discussion at paragraph 27
3 through 58, legal standards, reflect the standards that
4 you applied in your analysis for this proceeding?

5 A. Yes.

6 Q. Is it fair to say that, if it turned out that
7 these legal standards were not correct, that your
8 opinions might change?

9 A. I mean, I'm not an attorney, so I don't know
10 how to answer that. So I'm not sure. I'm sure you guys
11 will find something to make it -- so I don't know. I
12 mean, I'm -- again, I'm not an attorney, so I don't
13 know.

14 I think -- I mean, I read through all those
15 legal standards, and I agree with it. I signed my
16 report. But if there's something that changed or is
17 changing, that's not something I'm going to opine on.
18 In the legal aspects, I'm not opining on the legal
19 aspects other than what is stated there.

20 Q. Okay. Please turn to paragraph 29 of your
21 declaration. And here, you say, "I understand that the
22 first step in determining whether a patent claim would
23 have been anticipated or obvious was to ascertain how a
24 POSITA, P-O-S-I-T-A, would have understood the claim
25 terms."

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1 Is that accurate?

2 A. Yes. That's accurate.

3 Q. And do you offer any express definitions or
4 expressions from any of the claims terms from the '660
5 patent in this proceeding?

6 A. Well, I mean, I think there is -- I don't know.
7 I mean, I talk about claim construction somewhere. So
8 whatever -- otherwise, it's just ordinary meaning unless
9 defined in a claim construction by -- by a judge.

10 Q. Okay. If you need to take a look at your
11 declaration, please do. But I would like to know if you
12 have construed any terms in this proceeding.

13 A. I mean, the next sentence is, "I have been
14 instructed by you counsel in the law regarding claim
15 construction and patent claims."

16 Q. Let me ask the question differently.

17 Have you defined any claim terms in this
18 proceeding, to your knowledge?

19 A. Well, other than the ordinary meaning, I mean,
20 it's like how it's understood by a person of ordinary
21 skill in the art. And I talk about it later, and -- on
22 the analysis. I think -- I don't know, somewhere down
23 there, I -- I talk about how a claim is constructed, et
24 cetera.

25 Q. Do you have a particular section or passage in

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1 mind where you talk about that?

2 A. I'd have to look at it. Hang on. A little
3 bit -- to be construing a claim term, one looks
4 primarily at the intrinsic evidence, then the claims of
5 the patent defines a scope of the rights conferred by
6 the patent.

7 I mean, the claim particularly -- the
8 claims particularly point out and distinctly --
9 distinctly claim the subject matter. Here is the --
10 accordingly, a claim construction analysis must begin
11 with and remain centered on the claim language itself.

12 I think that's about it. I mean, I don't
13 think I personally -- I mean, I --

14 (Reporter clarification.)

15 THE WITNESS: I don't think I know --
16 personally know that there is a claim -- claim
17 construction given by a judge in this case. So, I mean,
18 I interpret the claims and the terms like somebody that
19 ordinary skill in the art would interpret them.

20 Q. BY MR DARBY: Please turn back to paragraphs 40
21 to 41 of your declaration.

22 A. Yes.

23 Q. Okay. At these paragraphs you indicate that a
24 prior art reference must first qualify as prior art
25 before it can be used to invalidate a patent claim; is

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1 that accurate?

2 A. Yes.

3 Q. And you also say in these paragraphs that, to
4 qualify a prior art, a reference must contain an
5 enabling disclosure that allows one of ordinary skill to
6 practice the claims of the challenged patent without
7 undue experimentation."

8 Is that accurate?

9 A. Yes.

10 Q. What do you mean by "practice the claims of the
11 challenged patent"?

12 A. Well, I mean, the claims have different
13 elements. And a prior art would have to have the -- the
14 old elements of that claim to anticipate certain patent,
15 and -- and you only can practice a claim -- in other
16 words, how to enable the patent without having to do all
17 kinds of experiments and trial errors, et cetera, et
18 cetera.

19 Q. What, specifically, does it mean to practice
20 the claims in your understanding?

21 A. Be able to -- to make a product. If a claim
22 has a certain product, make a product with the -- with
23 all the characteristics of the element of the claim
24 define it.

25 Q. Is it enough to make a single product that

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1 satisfies all the elements of the claim or do you have
2 to be able to make a wide variety of different products
3 that all satisfy the elements of the claim?

4 A. I think you're going a lot into the legal
5 aspects of that. I think what I answered before. I
6 think that's -- that's sufficient.

7 Q. Is it fair to say that you don't know the
8 answer to my question? That's okay.

9 A. No, I didn't say that. I said I don't want to
10 go into the legal -- I already answered the question, I
11 said, and it's answered right there. I understand that,
12 to qualify as prior art, a reference must contain an
13 enabling disclosure -- I said that -- that allows one of
14 ordinary skill to practice the claims, and the
15 challenged -- of a challenged patent without undue
16 experimentation.

17 I think that sentence is pretty clear. If
18 you're making a product, if you're -- if you see a prior
19 art, if that prior art does that, practices all the
20 elements of the claim without having to do a lot of
21 experimentation, then it's considered prior art.

22 But if you start going into asking
23 questions, is it one or five products or whatever, no,
24 it's -- that's what -- it says what it says there.

25 Q. If a reference does not enable a person of

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1 ordinary skill to practice the claims from the
2 challenged patent, is it your understanding that the
3 reference is disqualified and cannot be used to
4 determine whether the claims of that patent are obvious?

5 A. Well, if it -- if it takes undue
6 experimentation, then, yes, it disqualifies the prior
7 art as -- as the reference. If it doesn't --

8 (Reporter clarification.)

9 THE WITNESS: If it doesn't disclose -- if
10 it doesn't practice all the elements of the claim, then
11 it doesn't -- it doesn't -- it's not -- it doesn't
12 precede that patent.

13 Q. BY MR DARBY: I'm not sure I understand what
14 you mean, and I want us to get more clarity on this.

15 A. Is that a question?

16 Q. Not yet. Is it fair to say that, in this
17 proceeding, you've taken this position that Cable's
18 teachings are not enabled?

19 A. Cable's teachings don't have all the elements
20 found in the -- in the '660 patent. I mean, I have a
21 whole analysis on Cable and -- and the '660 patent in
22 combination of Cable and award, et cetera. So we can go
23 down there and discuss that, if you want.

24 Q. Let me ask it another way. Is it your
25 understanding that Cable is disqualified and cannot be

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1 used to determine whether the claims are obvious?

2 A. Yeah, Cable -- Cable does not -- so when I
3 read, I understand that to qualify as prior art, a
4 reference must contain an enabling disclosure that
5 allows one of ordinary skill to practice the claims of
6 the challenge patent without undue experimentation. And
7 Cable doesn't disclose -- contain an enabling
8 disclosure.

9 Q. So is it your opinion that Cable is
10 disqualified and cannot be used to determine whether the
11 '660 patent's claims are obvious?

12 A. Yeah, it doesn't practice the claims.

13 Q. So it's disqualified?

14 MR. KAPADIA: Objection. Seeks a legal
15 conclusion.

16 THE WITNESS: So I can re-read this --
17 re-read the same sentence. I understand that for Cable
18 to qualify as a reference, Cable must contain an
19 enabling disclosure that allows one of ordinary skill in
20 the art to practice the claims of the '660 patent
21 without undue experimentation. And so, Cable does not.

22 I'm not a judge or an attorney that -- to
23 determine if it's disqualified or not. It's used in
24 this proceeding, so it's -- and the argument is, does it
25 practice, and it doesn't. I mean, I go down -- I do the

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1 analysis later in my in my report.

2 MR. DARBY: Okay. Let's take a break here.

3 THE WITNESS: Okay. How long?

4 MR. DARBY: I usually eat lunch around this
5 time. I don't know how you're -- so I'm happy to take a
6 bit of an extended break.

7 THE WITNESS: Yeah. So maybe if we can
8 meet again at 12:00 -- I don't know -- 15, 12:30, in an
9 hour.

10 MR. DARBY: Yeah. Okay. Yeah. To me --
11 in an hour, about 12:30, yes.

12 THE WITNESS: Okay. Sounds good. So I'll
13 set my alarm for one hour.

14 MR. DERBY: Okay. See you all then.

15 THE WITNESS: Okay.

16 (A recess was held from 11:19 a.m. to 12:30 p.m.)

17 MR. DARBY: Back on the record.

18 Q. BY MR. DARBY: Okay. Dr. Osswald, welcome
19 back.

20 A. Thank you.

21 Q. Just to confirm, did you speak with anybody
22 during the lunch break with respect to the substance of
23 your testimony today?

24 A. No.

25 Q. Did you speak with anybody, at all, during the

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1 lunch break?

2 A. Just my wife.

3 Q. Anybody else?

4 A. Nope.

5 Q. Okay. I'm going to send you, using the Zoom
6 chat feature, Exhibit 1001, the '660 patent, the patent
7 at issue.

8 Okay. I just dropped it in the chat.
9 Please let know when you've had the opportunity to
10 obtain that document and have a look at it.

11 A. I downloaded it on my desktop, but I can't see
12 it -- open. There we go.

13 Okay. I have it.

14 Q. Okay. Take a moment to flip through, and once
15 you've done so, please let me know if this is a clean
16 copy of the '660 patent.

17 A. Yes, it is.

18 Q. And were you aware of the '660 patent before
19 your work in this IPR proceeding?

20 A. No.

21 Q. And when did you first learn about the '660
22 patent?

23 A. During this proceeding.

24 Q. Do you recognize the names of the inventors of
25 the '660 patent, Riley Reese or Hemant Bheda?

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1 A. No. I mean, the names ring a bell, but, no, I
2 don't know them.

3 Q. When you say the names ring a bell, do you mean
4 that you recognize the names from some other context
5 outside of this proceeding?

6 A. Yeah, I knew somebody that worked at Arevo.
7 So --

8 Q. And might it have been one of these two
9 individuals of the '660 patent?

10 A. No.

11 Q. But you just may have come across their names?

12 A. Yes.

13 Q. You said you knew somebody at Arevo. Who did
14 you know at Arevo?

15 A. Natalie Rudolph.

16 Q. And what was Natalie Rudolph's role at Arevo?

17 A. She was a researcher there.

18 Q. And what was the nature of your professional
19 relationship with Natalie Rudolph at Arevo?

20 A. I was a part of her Ph.D. committee when she
21 got her Ph.D. in Germany, and then she did her
22 postdoctoral work in Madison with me. And then later, I
23 followed her career in Germany when she worked for
24 Fraunhofer in Germany, and then -- then she was a
25 colleague of mine as a assistant professor in Madison.

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1 And from Madison, she went to Arevo. And now she's in
2 Germany working for a company called Netzsch.

3 Q. And did you have a business relationship with
4 Arevo during this time?

5 A. No.

6 Q. You just knew someone who worked there, Natalie
7 Rudolph, and that was, basically, the end of it?

8 A. Yeah. I knew what they were doing at the time.

9 Q. When you say you knew what they were doing at
10 the time, what time were you talking about?

11 A. Oh, gosh. Maybe -- I don't know -- ten years
12 ago or so, eight years ago, seven years ago. I don't
13 know. Somewhere around that time.

14 Q. And what were they doing?

15 A. They were using robot arms to assist 3D
16 printing, in particular 3D printing with -- with
17 continuous fibers. Like, I think their demonstrator was
18 a bicycle frame.

19 Q. And by that, do you mean they demonstrated the
20 technology by printing a bicycle frame?

21 A. That was at least at the last I -- I followed
22 them. Once Natalie left, I kept following their works.

23 Q. Any other recollections with respect to Arevo?

24 A. No.

25 Q. Did you review the '660 patent in preparation

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1 for this deposition?

2 A. Yes.

3 Q. And are you prepared to answer questions about
4 the '660 patent today?

5 A. Yes.

6 Q. For the record, any questions I ask you about
7 the '660 patent during today's deposition, I would like
8 you to answer from the perspective a person of ordinary
9 skill in the art.

10 Can you do that?

11 A. Yes.

12 Q. And will you do that?

13 A. Yes.

14 Q. When you were preparing your declaration for
15 this proceeding, did you study the '660 patent in
16 detail?

17 A. Yes, I did.

18 Q. Did you read it from cover to cover?

19 A. Yes.

20 Q. Approximately, how much time had you spent
21 studying the '660 patent when preparing your opinions in
22 this case?

23 A. I don't remember.

24 Q. More than an hour?

25 A. Yes.

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1 Q. More than five?

2 A. I don't know.

3 Q. More than ten?

4 A. I don't know. I don't remember.

5 Q. Okay. And you would have reviewed both the
6 claims and the specification of the '660 patent in
7 detail; is that right?

8 A. Yes.

9 Q. Okay. And is it your opinion that the '660
10 patent specification contains an enabling disclosure
11 that allows one of ordinary skill in the art to practice
12 the claims without undue experimentation?

13 A. Yes.

14 Q. Are there any specific disclosures in the '660
15 patent specification that you believe would teach a
16 person of ordinary skill in the art to practice the
17 claims?

18 A. Yes.

19 Q. And can you take me to those disclosures?

20 A. Basically, it starts on page 5, column 2, where
21 the title is, "Detailed Description of the Embodiments,"
22 and there are two figures that go along with it.

23 Q. Okay. And would you agree that that detailed
24 description goes through column 6, down to around line
25 28?

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1 A. Yes.

2 Q. Okay. And so, the detail description between
3 column 2, line 54, and column 6, line 28, along with the
4 two figures, is what you would point to as providing
5 enabling disclosure in the '660 patent; is that fair?

6 A. Correct.

7 MR. KAPADIA: Objection. Scope.

8 Q. BY MR. DARBY: You mentioned that the '660
9 patent provides details about the plate.

10 What specific details were you referring
11 to?

12 A. Well, I mean, it talks about the plate 100 with
13 a base 102, 104, and a coating 106.

14 Q. Can you take me to the column and line numbers
15 on that?

16 A. I mean, it -- as I said, it starts -- I mean,
17 it goes all the way to the beginning, where it describes
18 figure 1, build apparatus 100 comprises build platform
19 102, a thermally conductive removable plate, 104 high
20 temperature polymer coating, 106 --

21 (Reporter clarification.)

22 THE WITNESS: I mean, basically, the
23 whole -- I mean, I can read the whole thing, but
24 that's -- it goes through -- and then it goes into
25 figure 2. It talks about the heater cartridges and the

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1 thermocouples that are used to control and to -- yeah.
2 And then embodiment for controlling temperature, the
3 build platform, one or more thermocouples can be
4 situated at one or several locations.

5 I mean, it goes on. I mean, it's a full
6 description of the build platform with a thermally
7 conductive plate and with a coating on it.

8 Q. BY MR DARBY: And how would a person of skill
9 in the art go about taking the details from the
10 specification and take that information to practice the
11 claims of the '660 patent, in your view?

12 MR. KAPADIA: Objection. Scope.

13 THE WITNESS: I mean, I think a person of
14 ordinary skill in the art would certainly know what a
15 build platform is, would know in the context of -- of 3D
16 printing and what time skills there are. So what is the
17 meaning, what -- of that, why do you need a thermally
18 conductive plate. And of course, it -- it knows about
19 the coating -- a person of ordinary skill in the art
20 would know about coatings.

21 So -- and the title, itself, of the patent
22 is a build -- heated build platform for
23 three-dimensional printing. So, I mean, a person of
24 ordinary skill in the art would certainly know what all
25 that means.

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1 Q. BY MR. DARBY: You said a person of ordinary
2 skill in the art would know about coatings. What,
3 specifically, did you have in mind there?

4 MR. KAPADIA: Objection. Misstates
5 testimony.

6 THE WITNESS: A person of ordinary skill in
7 the art would know at the beginning of the -- of the.

8 (Reporter clarification.)

9 THE WITNESS: -- of the patent, the
10 background section, when it talks about tape coatings
11 and would know the -- the issues that exist with -- with
12 tape coatings.

13 Q. BY MR. DARBY: Anything else?

14 A. No. I mean, that's -- that's -- that's what it
15 is. I mean, so an explanation of the embodiments, a
16 person of ordinary skill in the art obviously would have
17 to understand, otherwise it's not a name. So you go
18 through the whole -- the several columns under column 6,
19 line 28 or 29.

20 Q. What other details about the coating would
21 allow a person of ordinary skill in the art to practice
22 the claims?

23 MR. KAPADIA: Objection. Scope.

24 THE WITNESS: Well, I mean, the claim is
25 clear, right. Build platform and the temperature

1 control unit configured to control heating of the build
2 platform. So it's a build platform that is heated. So
3 it -- having a thermally conductive plate disposed
4 adjacent to the platform, that's clear to a person of
5 ordinary skill in the art.

6 And then the polymer coating attached to a
7 surface of the thermally conductive plate which is
8 capable end up doing, i, facilitating adhesion to the 3D
9 object during printing; and, ii, preventing the removal
10 of the 3D object once the 3D object has been formed and
11 cooled without chemically or mechanically removing the
12 polymer coating from 3D object and without damaging the
13 polymer coating. And it goes on, and the thermally
14 conductive plate or the 3D object wherein the polymer
15 coating is not a polymer tape.

16 So it's clear. I mean, obviously a person
17 of ordinary skill in the art was aware of tapes at the
18 time that I used to coat the plat. And so, this
19 specifically states that it's not a tape -- a coating
20 that is not a tape.

21 Q. BY MR. DARBY: Are there any additional details
22 in the specification of the '660 patent that you believe
23 the person of skill in the art would need to know in
24 order to practice the claims?

25 MR. KAPADIA: Objection. Scope.

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1 THE WITNESS: I think it's pretty clear. I
2 mean, I think the -- the specifications are pretty
3 clear.

4 Q. BY MR. DARBY: I'm not sure what you mean by
5 that. Do you mean that there are particular details in
6 the specification that you believe a person of skill in
7 the art would need to know in order to practice the
8 claims?

9 If so, could you point me to them?

10 A. No. I think the claim --

11 MR. KAPADIA: Objection. Scope.

12 THE WITNESS: Sorry.

13 So I think the claim is pretty clear in
14 what is wanted, and the specifications certainly give a
15 good -- give good examples, or at least explains with
16 the numbers and the figures, et cetera. But the claim,
17 itself, is quite clear. The claims. I mean, there are
18 obviously more claims. There are dependent claims
19 and --

20 Q. BY MR. DARBY: The paragraph that starts at
21 column 2 line 54 and extends to line 63. Let me know
22 once you've had a chance to review that paragraph.

23 A. Sorry. The paragraph that starts on line 52,
24 you said?

25 Q. Column 2, line 54, through line 63 -- excuse

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1 me, 64.

2 A. Okay.

3 Q. What is your understanding of this passage that
4 says it will be obvious to a person skilled in the art
5 that embodiments of the invention may be practiced with
6 or without the specific details in the specification?

7 A. Well, it says what it says, right. I mean, it
8 will be obvious to a person skilled in the art in the
9 field of additive manufacturing would understand the
10 detail and could expand in the detail. That's -- that's
11 what it says there.

12 Q. Okay. Can you take a look at paragraph that's
13 at column 4, line 30, and goes through line 51?

14 A. Okay.

15 Q. Do you see where this paragraph is talking
16 about a polymer coating?

17 A. Yes. A polymer coating, 106.

18 Q. And what is your understanding of a polymer
19 coating?

20 A. Well, there are different meanings of polymer
21 coating. I mean, there is an example there that talks
22 about material that are spray painted. There are other
23 ways to apply them. Additionally, a polymer coating can
24 also be a tape. I mean, the tape is used to coat -- it
25 has been traditionally used to coat build plates. So

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1 there is -- polymer coatings have different meanings.

2 Q. So there are different types of polymer
3 coatings, is what I hear you say; is that accurate?

4 A. Yeah. Could be a tape coating, polymer tape
5 coating.

6 Q. Spray coating, I think you also mentioned?

7 A. Yes. The patent mentions that.

8 Q. Any others that the person of ordinary skill in
9 the art would know about?

10 A. Probably, yes.

11 Q. Which of those come to mind?

12 A. Maybe a Dr. Blade. I don't know. I'd have to
13 think about it.

14 Q. Would this be one of those subjects where the
15 person of skill in the art would have consulted a
16 reference like your plastics handbook or your textbook
17 on understanding polymer processing to learn about the
18 different types of coating techniques?

19 A. Yes.

20 Q. What exactly is spray coating, in your view?

21 A. It's like painting with compressed air.

22 Q. And that was a known way to apply a coating to
23 a substrate?

24 A. Yes.

25 Q. Okay. Can you turn now to column 6, lines 31

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1 to 47, of the '660 patent, and just take a moment to
2 refresh yourself there. And when you're ready, can you
3 just confirm that this is independent Claim 1 of the
4 '660 patent?

5 A. Yes, it is.

6 Q. Okay. I want to focus on the last clause of
7 Claim 1. It starts with, "A polymer coating attached to
8 a surface." Can you just read that clause out loud for
9 the record?

10 A. Sorry. Which -- which part? Oh, I see. The
11 whole -- the last -- I'm sorry, yes.

12 "A polymer coating attached to the surface
13 of a thermally conducted plate which is capable of, i,
14 facilitating adhesion to the 3D object during printing;
15 and, ii, permitting removal of the 3D object once the 3D
16 object has been formed and cooled without chemically or
17 mechanically removing the polymer coating from 3D object
18 and without damaging the polymer coating, the thermally
19 conductive plate, or the 3D object where in the polymer
20 coating is not a polymer tape."

21 Q. And what is your understanding of the phrase,
22 "Without damaging the polymer coating, thermally
23 conductive plate, or the 3D object"?

24 A. I think that sentence is pretty clear. Without
25 damaging the polymer coating, the plate, or the 3D

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1 object.

2 Q. Okay. Just to be more specific, what is your
3 understanding of the term "damage"?

4 A. Breaking, scratching, dissolving, cracking,
5 removing coating from the plate, et cetera. Removing
6 portions of the part from the part. Not detaching the
7 part completely from the coating and leaving it on the
8 coating, having to somehow damage then -- also damage
9 the -- the coating to be able to remove the portion of
10 the part that is stuck to the coating. Bending the
11 plate out of shape, causing a permanent damage. All
12 those things.

13 I mean, that's all damage. It's all -- so
14 the function of the part is no longer what it should be.
15 And a person of ordinary skill in the art would
16 understand that.

17 Q. If the part is removed and can still fulfill
18 its functional purpose, is that part damaged, in your
19 view?

20 A. It depends.

21 Q. What does it depend on?

22 A. If it's a decorative part where it doesn't
23 matter that it has cracks or that's the surface -- or
24 it's -- the bottom surface is important. And if a part
25 of the bottom surface was lost, then maybe the integrity

1 of the part has not been compromised, but certainly
2 it's -- it's optics. So it depends. I mean, there are
3 many things that would be considered damage, and a
4 person of ordinary skill in the art would know that
5 since they are in 3D printing.

6 Q. So depending on the purpose of the part, there
7 may be situations where, for example, a small crack
8 could be considered damage, but another situation
9 that -- where the part had a different purpose and that
10 same crack may not be considered damage.

11 Is that what you're saying?

12 MR. KAPADIA: Objection. Misstates
13 testimony.

14 THE WITNESS: No, I didn't say that. I
15 said, if it's a decorative part, that may not be as
16 important, but it certainly is damage. I mean, a crack
17 is damage. Losing material from the surface, no longer
18 having a bottom surface that is shiny may not be that
19 important in some cases, but it also is damage. You
20 have something that is different than what you wanted to
21 3D print.

22 Q. BY MR. DARBY: So it's damage no matter how
23 small the crack is, for example, or how important the
24 crack is or where the crack occurs, it's damage
25 nevertheless.

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1 Is that what your testimony is?

2 MR. KAPADIA: Objection. Misstates
3 testimony.

4 THE WITNESS: In some cases, you see there
5 is a crack in the part that is not visible, but it's
6 still damage.

7 Q. BY MR. DARBY: So what about a small
8 microscopic flaw in the part that occurs during removal
9 that cannot be seen by the user or the operator of a
10 machine.

11 Is that damage, in your view?

12 MR. KAPADIA: Objection. Incomplete
13 hypothetical.

14 THE WITNESS: I mean, 3D printed parts have
15 microscopic flaws by nature. I mean, there are little
16 voids and things when you 3D print the part.

17 So something that is -- is caused as a
18 result of applying a force or whatever or chemically,
19 mechanically removing the part will -- or whatever, by
20 removing the part, if it's damaged, the microscopic flaw
21 could be -- could have -- could have existed. It may
22 not have been caused by removing it.

23 So, I mean, I don't want to go into what
24 size has considered damage. A person of ordinary skill
25 in the art is not -- I mean, is not dumb. I mean, they

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1 know what damage means. So damaging the part, damaging
2 the coating, damaging the plate, there are easy ways --
3 so what's considered damage?

4 Well, so the functional -- you've -- you've
5 compromised the functionality of the part. Some
6 microscopic flaw may even exist without removing it.

7 So that's -- that's -- that's something
8 that is going down into hypotheticals that I really
9 don't want to get into. A person of ordinary skill in
10 the art would know what damage is.

11 Q. BY MR. DARBY: I'm trying to understand, is
12 there an objective measure that you can describe in
13 order to tell if a part is damaged or not damaged?

14 MR. KAPADIA: Objection. Beyond the scope.

15 THE WITNESS: I think it's pretty clear. I
16 think damage encompasses a lot, but it's understood -- a
17 person of ordinary skill in the art understands what
18 happened -- what is -- when the part gets damaged during
19 removal.

20 Q. BY MR. DARBY: Is it a, you know it when you
21 see it, sort of thing?

22 MR. KAPADIA: Objection. Beyond the scope.

23 THE WITNESS: I didn't do a complete
24 analysis step by step what all the different things that
25 are considered damage are damaged. I mean, a person of

1 ordinary skill in the art would know that. I
2 certainly -- in my analysis, I saw damage in the parts
3 that were -- that were printed by Cable. There was
4 damage there. And so, maybe that's what we should be
5 talking about, visible damage.

6 Q. BY MR. DARBY: What about damage that is not
7 visible?

8 Is that a possibility, in your view?

9 MR. KAPADIA: Objection. Beyond the scope.

10 THE WITNESS: Again, I didn't start listing
11 out things like cracks and other things that occur. So,
12 I mean, as I said -- I mean, I stand with it, a person
13 of ordinary skill in the art would perfectly -- clearly
14 understand what is the word -- the meaning damage, and
15 if -- in 3D printing, of all those different aspects, of
16 the coating, of the part, et cetera.

17 Q. BY MR. DARBY: Okay. So in your view, yes or
18 no, a person of ordinary skill in the art would
19 understand whether a part was damaged during removal.
20 They'd be able to determine that?

21 A. Yes --

22 MR. KAPADIA: Objection. Beyond the scope.

23 THE WITNESS: A person of ordinary skill in
24 the art understands what means damage -- a damaged part
25 during removal. I mean, in -- oh, there's numerous

1 different ways that damage can occur. But yeah, they
2 would understand that.

3 Q. BY MR. DARBY: Okay. And in order to make that
4 determination, what factors would a person of ordinary
5 skill in the art consider?

6 MR. KAPADIA: Objection. Beyond the scope.

7 THE WITNESS: Again, I did not do a full --
8 as I mentioned earlier, I said I did not do a full
9 analysis of what kind of damage is -- a list of damages
10 of all of those. And I think that -- that the claim is
11 clear.

12 I mean, if I look at the claim, it's --
13 it's clear -- it says, "ii, permitting removal of the 3D
14 object once the 3D object has been formed and cooled
15 without chemically or mechanically removing the polymer
16 coating from -- from 3D object and without damaging the
17 polymer coating, the thermally conductive plate, or the
18 3D object where the polymer coating is not a polymer
19 tape."

20 So -- so yeah, without damaging the 3D
21 object. I mean, I think that's -- it's not that
22 complicated of a statement, and a person of ordinary
23 skill in the art would understand that.

24 Q. BY MR. DARBY: A person of ordinary skill in
25 the art could look at a removed part and say, yeah,

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1 that's damaged or, no, that's not damaged. You know --

2 MR. KAPADIA: Objection. Beyond the scope.

3 THE WITNESS: It depends how they were to
4 3D print the part, how they -- what analysis is done,
5 what's the functionality of the part, et cetera. So it
6 depends on many -- but, yeah, damage is no longer -- it
7 doesn't have its function. I mean, I -- I -- damage,
8 the part is damaged.

9 Q. BY MR. DARBY: You mentioned that it would
10 depend on the analysis. What analysis would the person
11 of skill in the art do?

12 MR. KAPADIA: Objection. Beyond the scope.

13 THE WITNESS: Optical, seeing if it's
14 mechanical integrity. I mean, they hear it crack when
15 they remove, that's damage. You might not be able to
16 see the crack. So it -- a lot of it -- it's -- it's
17 damage of the part. So is it -- a microscopic, tiny
18 little void, is that damage? I don't know. I mean, it
19 could be part of -- it could be a result of the printing
20 process.

21 So that's -- so I think it's clear, you
22 don't want to damage the part during removal.

23 Q. BY MR. DARBY: Dr. Osswald, when were you first
24 contacted by Stratasys or counsel for Stratasys
25 regarding a potential engagement with respect to the

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1 '660 patent?

2 A. I don't remember. I mean, it was not
3 particularly the '660 patent. It was the whole family
4 of patents. Sometime I think end of last year,
5 beginning of this year. I don't remember.

6 Q. We're at the end of 2025. Might they have
7 contacted you in 2024, at the end of 2024? Is that what
8 you're saying?

9 A. Maybe. I'd have to go back and look at my
10 records.

11 Q. And who contacted you, if you recall?

12 A. Mr. Kapadia.

13 Q. Have you been involved in any of the district
14 court proceedings regarding the '660 patent?

15 A. No.

16 Q. Have you read any documents from the district
17 court proceeding?

18 A. No.

19 Q. Have you offered any opinions with respect to
20 the district court proceeding?

21 A. No.

22 Q. I'm sure you've heard what Stratasys is before
23 you were contacted about the engagement that you're in
24 with Stratasys right now; is that true?

25 A. Yes.

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1 Q. And had you ever been employed by Stratasys
2 outside of your engagement --

3 A. No.

4 Q. -- for these IPR proceedings?

5 A. No.

6 Q. Have you ever had any other professional
7 relationship or business dealings with Stratasys outside
8 your engagement?

9 (Reporter clarification.)

10 THE WITNESS: And I said not directly.

11 Q. BY MR. DARBY: What about indirectly?

12 A. Through MakerBot.

13 Q. Can you expound on that?

14 A. Yeah. I had an invention with four of my
15 students who 3D printed a color part using the FFF
16 process, and MakerBot purchased the patent or the right
17 to the patent.

18 Q. Does the University of Wisconsin have
19 Stratasys's 3D printers on campus?

20 A. Oh, I -- not in my lab, but I'm sure somewhere
21 in the university there is Stratasys's 3D printer. At
22 least we used to have a printer -- not in my lab, but in
23 another professor's lab.

24 Q. And do you know if the university purchased
25 those printers or whether they were donated by

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1 Stratasys?

2 A. I don't know. Probably purchased.

3 Q. Had you personally used any of Stratasys' 3D
4 printers before you were involved in this proceeding?

5 A. No, I had not.

6 Q. What about Arevo, do you know if Arevo has 3D
7 printer products that they sold in the past?

8 A. Sold to whom?

9 Q. Just in general, if they had product offerings
10 in terms of 3D printers?

11 A. I don't know.

12 Q. Have you ever seen or used a 3D printer from
13 Arevo, to your knowledge?

14 A. No.

15 Q. Going back to your engagement with Stratasys
16 and the IPRs, are you aware that Stratasys has submitted
17 a preliminary response to this petition in this IPR
18 proceeding in March of 2025?

19 A. Yeah. I mean, I saw a response. I think also
20 I saw a report -- well, I saw Petitioner's report, I saw
21 a response from Stratasys, and I saw a report from --
22 from the expert of petitioner.

23 Q. And were you aware of that preliminary response
24 before you developed your opinions in this proceeding?

25 A. I read it. Yes.

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1 Q. Was that before or after you developed your
2 opinion?

3 A. That was during the time of developing my
4 opinion.

5 Q. Are you aware that the board issued an
6 institution decision in this IPR proceeding in June of
7 2025?

8 A. You know what, those legal portions, I don't --
9 I don't pay much attention to it. So I don't know, and
10 I don't know what that means either. So --

11 Q. To the best of your knowledge, you haven't read
12 any decisions from the board relating to this IPR
13 proceeding; is that fair?

14 A. No. I think I read something from the board.
15 I -- yes, I have read something. I don't remember, but
16 yeah, I -- I think I have read something from the board,
17 yes.

18 Q. And was that before, after, or during your
19 formulation of your opinions for this proceeding?

20 A. I think that was when I was reviewing all the
21 documents before I wrote my report.

22 Q. You mentioned MakerBot earlier. Have you been
23 employed by MakerBot?

24 A. No.

25 Q. Have you had any professional relationship or

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1 business dealings with MakerBot?

2 A. You mean other than the one I just told you?

3 Q. Yes, which I'll come back to. But yes, other
4 than the one that you told me about.

5 A. No.

6 Q. Has MakerBot ever funded, directly or
7 indirectly, any of your research?

8 A. No.

9 Q. Has Stratasys ever funded, directly or
10 indirectly, any of your research?

11 A. No.

12 Q. Going back to the patent that you spoke about
13 before, I understood you to say that MakerBot purchased
14 some patent rights for you and you assigned to those
15 rights to MakerBot; is that accurate?

16 A. Yes.

17 Q. Okay. And do you recall that occurring on or
18 around July of 2020 -- or excuse me -- of 2015?

19 A. Something like that. Yeah.

20 Q. Okay. Were you compensated by MakerBot in
21 exchange for assigning them your patent rights?

22 A. Yes.

23 Q. Is that compensation monetary payment?

24 A. Yes.

25 Q. Single lump sum payment, multiple installment

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1 payments, ongoing royalty, something else?

2 A. A big sum that was divided into two, of which I
3 received a percentage. The students received most of
4 it.

5 Q. How much total?

6 A. Well, the first payment was paid out, and the
7 second payment was not paid out.

8 Q. How much was the total agreed-upon payment?

9 A. I don't remember. I think the total -- sorry.
10 And maybe it's something I shouldn't talk about. I
11 don't know. At the time, I think we -- or maybe it's --
12 now it's past the statute of limitations, but I think
13 the -- I think the original sum that was going to be
14 paid out I think was \$5 million.

15 Q. Okay. And that was going to be broken up into
16 two payments. What was the first payment supposed to
17 be?

18 A. A million and a half.

19 Q. And the second payment?

20 A. Three and a half.

21 Q. And you mentioned that only the first payment
22 was actually executed; is that accurate?

23 A. Correct.

24 Q. And why wasn't the second payment executed?

25 A. I think there was a clause that the first 50

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1 machines using that system should have been manufactured
2 within three years, and that wasn't the case. And so,
3 the whole thing didn't fulfill the requirements.

4 The four people that were -- the four
5 students that worked with me on that project, they were
6 actually hired by MakerBot.

7 Q. So if I understand correctly, they were
8 supposed to manufacture 50 machines. And if those 50
9 machines were manufactured, then the remaining
10 3.5 million would be paid out; and if not, the -- then
11 the remaining 3.5 million did not need to be paid out.
12 Is that accurate?

13 A. Something like that, yeah. I'm not 100 percent
14 sure.

15 Q. Okay. And the 50 machines were not
16 manufactured, so the 3.5 million wasn't paid out. Fair?

17 A. Yeah. They never manufactured any machines
18 using that method.

19 Q. Do you currently have any or previously held
20 any stock or ownership interest in MakerBot or any
21 entity affiliated with MakerBot, such as Stratasys or
22 Ultimaker?

23 A. Not to my knowledge.

24 MR. DARBY: All right. Why don't we take a
25 break here. Ten minutes.

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1 THE WITNESS: Okay. I'll set my alarm
2 here.

3 MR. DARBY: Okay.

4 (A recess was held from 1:19 p.m. to 1:30 p.m.)

5 MR. DARBY: Back on the record.

6 Q. BY MR. DARBY: Dr. Osswald, welcome back.

7 Just to confirm, did you speak with anybody
8 about the substance of your testimony today?

9 A. I did not.

10 Q. Okay. The kind of build plates that are
11 discussed in claim '660 patent, so a thermally
12 conductive plate with an attached polymer coating that's
13 not tape and that permits removal of the object without
14 chemically or mechanically removing the polymer coating
15 from the object and without damaging the polymer
16 coating, the thermally conductive plate, or the 3D
17 object, are you aware of any of those kinds of build
18 plates in the marketplace today?

19 A. I haven't done an analysis of what's out in the
20 marketplace. No.

21 Q. Do you recall using -- in your experience,
22 using 3D printers, any such build plates?

23 A. Yeah, as used -- I, personally, don't run the
24 3D machines. My students or graduate students do -- I
25 mean, I know what a build plate is and -- and when --

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1 what -- I haven't done analysis what kind of build
2 plates are on it. So --

3 MR. DARBY: Okay. I don't have any further
4 questions today. I'll pass the witness.

5 THE WITNESS: Thank you.

6 MR. KAPADIA: Okay. Could we take a few
7 minute break?

8 MR. DARBY: Yeah.

9 THE WITNESS: Two minutes okay?

10 MR. KAPADIA: Yeah. Why don't we do ten
11 minutes. Does that sound good?

12 THE WITNESS: Sounds good. Thanks.

13 MR. DARBY: Sure.

14 MR. KAPADIA: Okay. All right.

15 (A recess was held from 1:31 p.m. to 1:42 p.m.)

16 Q. EXAMINATION BY MR. KAPADIA: Dr. Osswald, I
17 have a quick question for you.

18 Earlier, do you recall talking about you, I
19 guess, providing some rights to MakerBot in relation to
20 a patent?

21 A. Yes.

22 Q. And you had mentioned that there was a payment
23 that was received in connection with that assignment of
24 rights?

25 A. Yes.

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1 Q. What -- and that payment was, I think,
2 \$1.5 million; is that correct?

3 A. Correct.

4 Q. Do you recall what portion of that payment you
5 received, personally?

6 A. Yeah. I think it -- if my memory serves me
7 right, it was about \$15,000, about one percent.

8 Q. Okay. Besides that particular payment, did you
9 receive any other payments from MakerBot?

10 A. No.

11 MR. KAPADIA: Okay. No further questions.

12 THE WITNESS: Thank you.

13 MR. DARBY: And no redirect or recross.

14 THE WITNESS: I like hearing that. Those
15 are the best words in the deposition.

16 THE REPORTER: Please let me know if you
17 need a rough draft.

18 MR. DARBY: We need a rough draft. I'll
19 shoot you an e-mail on the expedite, if we need that,
20 here shortly.

21 MR. KAPADIA: And I don't -- no, I don't
22 need a rough.

23 (Whereupon proceedings concluded at 1:44 p.m.)
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DEPOSITION OF: TIMOTHY OSSWALD, Ph.D.

NOVEMBER 6, 2025

PAGE	LINE	CHANGE
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REASON

[illegible]

Signature: _____ Date: _____

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1 I, TIMOTHY OSSWALD, Ph.D., have read the foregoing
2 deposition and hereby affix my signature that same is
3 true and correct, except as noted above.

4
5
6 _____
TIMOTHY OSSWALD, Ph.D.

7
8 THE STATE OF _____)

9 COUNTY OF _____)

10 Before me _____ on this day
11 personally appeared TIMOTHY OSSWALD, Ph.D., known to me
12 (or proved to me under the oath or through
13 _____) (description of identity card or
14 other document) to be the person whose name is
15 subscribed to the foregoing instrument and acknowledged
16 to me that they executed the same for the purposes and
17 consideration therein expressed.

18 Given under my hand and seal of office this
19 _____ day of _____, 2025.

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21
22 _____
NOTARY PUBLIC IN AND FOR

23
24 THE STATE OF _____
25

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UNITED STATES PATENT AND TRADEMARK OFFICE
BEFORE THE PATENT TRIAL AND APPEAL BOARD

SHENZHEN TUOZHU TECHNOLOGY	§	Petition for Inter Partes
CO., LTD.	§	Review of U.S. Patent No.
	§	9,592,660
Petitioner,	§	
	§	
VS.	§	
	§	Case No. IPR2025-00257
STRATASYS, INC.,	§	
	§	
Patent Owner.	§	
	§	

REPORTER'S CERTIFICATION
ORAL AND ZOOM
DEPOSITION OF TIMOTHY OSSWALD, Ph.D.
NOVEMBER 6, 2025

I, Nicole A. Hatler, Certified Shorthand
Reporter No. 11275 in and for the State of Texas, hereby
certify to the following:

That the witness, TIMOTHY OSSWALD, Ph.D., was
duly sworn by the officer and that the transcript of the
oral deposition is a true record of the testimony given
by the witness;

That the deposition transcript was submitted
on November 13, 2025 to the witness by and
through his attorney, AASHISH KAPADIA, for examination,
signature and return to me by _____;

That the amount of time used by each party at

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1 the deposition is as follows:

2 KENNETH DARBY: 2 hours, 48 minutes;

3 AASHISH KAPADIA: 0 hours, 01 minute;

4 That pursuant to information given to the
5 Deposition officer at the time said testimony was taken,
6 the following includes counsel for all parties of
7 record:

8 KENNETH DARBY, Attorneys for the Petitioner;

9 AASHISH KAPADIA, Attorneys for Patent Owner;

10 I further certify that I am neither counsel
11 for, related to, nor employed by any of the parties or
12 attorneys in the action in which this proceeding was
13 taken, and further that I am not financially or
14 otherwise interested in the outcome of the action.

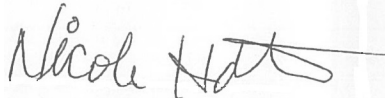
15 Further certification requirements pursuant to
16 Rule 203 of TRCP will be certified to after they have
17 occurred.

18

19 Certified to by me this 13th day of November,
20 2025.

21

22



23

Nicole A. Hatler Texas CSR 11275
Expiration Date: 11/30/26
California CSR 13730, EXP 6/30/26
New Mexico CCR 588, EXP 12/31/25
NHatler@Ymail.com

24

25

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FURTHER CERTIFICATION UNDER RULE 203 TRCP

The original deposition of TIMOTHY OSSWALD, Ph.D.,
_____ was / _____ was not returned to the deposition
officer on _____;

If returned, the attached Changes and Signature
page contains any changes and the reasons therefor;

If returned, the original deposition was delivered
to MR. KENNETH DARBY, the Custodial Attorney;

That \$_____ is the deposition officer's
charges to the Petitioner for preparing the original
deposition transcript and any copies of exhibits;

That the deposition was delivered in accordance
with Rule 203.3, and that a copy of this certificate was
served on all parties shown herein on and filed with the
Clerk.

Certified to by me this _____ day of
_____, 2025.

Nicole A. Hatler Texas CSR 11275
Expiration Date: 11/30/26
California CSR 13730, EXP 6/30/26
New Mexico CCR 588, EXP 12/31/25
NHatler@Ymail.com

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