

1 THE UNITED STATES  
2 PATENT AND TRADEMARK OFFICE  
3 PATENT TRIAL AND APPEAL BOARD  
4 (Case No. IPR2024-01005)  
5 X - - - - - X  
6 In the Matter  
7 of  
8 U.S. Patent 9.636.649  
9 LG ENERGY SOLUTIONS,  
10 LTD,  
11 Petitioner,  
12 versus  
13 MOLECULAR REBAR DESIGN,  
14 LLC.,  
15 Patent Owner.  
16 X - - - - - X  
17  
18 O R I G I N A L  
19 Remote Videoconferenced Deposition of  
20 Petitioner, by DR. SAMUEL P. GUIDO, BSECE., Ph.D.,  
21 CEPS, an Expert, taken by the Patent Owner,  
22 pursuant to Notice, hosted through Zoom Video  
23 Communications, Inc., on Thursday, March 13th,  
24 2025, commencing at 10:00 a.m., before Margaret  
25 Gmerek, a Certified Shorthand (Stenotype) Reporter  
and Notary Public within and for the State of  
Connecticut.

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2

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1                   IT IS STIPULATED AND AGREED that  
2 all objections, except as to the form of the  
3 question, be and the same are hereby reserved  
4 to the time of the trial;

5                   IT IS FURTHER STIPULATED AND  
6 AGREED that the within deposition may be sworn  
7 to before any Notary Public with the same force  
8 and effect as if sworn to before a Justice of  
9 this Court;

10                  IT IS FURTHER STIPULATED that  
11 the transcript is to be certified by the  
12 reporter.

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1 I N D E X

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3 Page

4 Witness: DR. SAMUEL P. GIDO

5 Direct/Redirect 6

6 Cross/Recross N/A

7 Errata Sheet 86

8 Witness' Certificate 87

9

10

11 E X H I B I T S

12

13 (No exhibits marked)

14

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21 (Proceedings audio/video recorded by

22 Huseby Global Litigations.)

23

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25

1 THE REPORTER: Good morning. Please  
2 indicate whether you consent to usual  
3 stipulations and to this deposition being  
4 recorded remotely by stating your name, and  
5 agreement on the record.

6 MR. GLENN: My name is James Glenn,  
7 I so agree.

8 MR. RIFFE: Tim Riffe with Fish &  
9 Richardson on behalf of the Petitioner, I  
10 agree.

11 THE WITNESS: Do I need to agree?

12 THE REPORTER: Yes, that would be  
13 nice.

14 THE WITNESS: I also agree with the  
15 recording. Sure.

16 THE REPORTER: Please raise your  
17 right hand.

18 THE WITNESS: (The Witness complied  
19 with the request of the Court Reporter.)

20 THE REPORTER: Do you swear or  
21 affirm the testimony you shall give will be  
22 the truth, the whole truth, and nothing but  
23 the truth to the best of your knowledge and  
24 recollection?

25 THE WITNESS: I do.

1 THE REPORTER: Please state and  
2 spell your full, legal name, for the record.

3 THE WITNESS: Samuel Patrick Guido,  
4 S-A-M-U-E-L P-A-T-R-I-C-K G-I-D-O.

5 THE REPORTER: Thank you.  
6 You may proceed, Attorney Glenn.

7 MR. GLENN: Thank you, ma'am.

8 D R. S A M U E L P. G I D O, called as a Witness  
9 having been first duly sworn by Margaret  
10 Gmerek, a Notary Public within and for the  
11 State of Connecticut, was examined and  
12 testified as follows:

13 DIRECT EXAMINATION

14 BY MR. GLENN:

15 Q Dr. Guido, my name is James Glenn and I  
16 represent the patent owner, Molecular Rebar, in  
17 this proceeding.

18 Do you understand you are being deposed;  
19 is that correct?

20 A I do.

21 Q Okay. Have you ever been deposed before?

22 A Yes.

23 Q How many times, approximately?

24 A I was thinking about that because I knew  
25 you would ask me, I would say more than fifteen,

1 and probably less than 30.

2 Q Okay. So it would be fair then to assume  
3 that you are relatively familiar with the process?

4 A I am.

5 Q Okay. So that you understand that you're  
6 under oath?

7 A I do.

8 Q And that this testimony with the same  
9 legal weight as if you were testifying at trial?

10 A Yes.

11 Q Okay. It is my intention that all my  
12 questions will be clear and understandable to you.  
13 I'm not trying to trick you for there to be a  
14 confusion. So if you do not understand my question  
15 or you think my question is not clear, I'm going to  
16 ask you to please stop me and ask me to clarify,  
17 I'm happy to rephrase; is that fair?

18 A Yes.

19 Q But if you do answer my question, I'm  
20 going to assume you understood the question and you  
21 found the question to be clear; is that fair?

22 A Yes.

23 Q All right. You understand that this is,  
24 this deposition is related to the Inter Partes  
25 review of Patent No.: 9,636,649 issued to Bosnyk

1 et. al.; is that correct?

2 A Yes.

3 Q All right. When were you first retained

4 or in what capacity were you retained with respect

5 to this proceeding?

6 A I'm not exactly sure because I think that

7 there were a couple of rounds of this. We may have

8 prepared a Petition and, you know, I didn't submit

9 it or something, and then we came back and

10 rejuvenated it. So I've been, you know, looking at

11 this 649 Patent, one way or another, probably for a

12 couple of years now.

13 Q Okay. Again, it's not meant to be a trick

14 question or in any way confusing, just --

15 A Yeah.

16 Q -- is it fair to say you were an expert

17 witness retained by LG?

18 A Yes.

19 Q Have you been retained by Samsung?

20 A (No response)

21 MR. RIFFE: Objection.

22 Form. It's outside of the scope.

23 Q It is not an attempt to be confusing.

24 A No, no, no. Let me clarify this because

25 this is a little confusing.

1 Q Sure.

2 A (Continuing) I'm involved in other  
3 matters and there is another matter, which I can't  
4 quote exactly off the top of my head, but I can get  
5 you the information, if you need it.

6 There is another matter where I'm working  
7 for a party, not Samsung, but somehow Samsung is  
8 joining the same side as me, I guess, in this. And  
9 so, you know, there were some conversation, you  
10 know, about this, with Samsung but I'm not really  
11 working for Samsung and they appear to be like a  
12 silent partner in this.

13 Yeah. I'm not exactly sure, you know,  
14 it's all....

15 Q Understood. I appreciate it.

16 It wasn't intended to be a trick question  
17 or to probe anything, other than, is it fair to say  
18 that you are an expert witness that has been  
19 retained by LG to analyze and offer an opinion on  
20 this 649 Patent?

21 A Yes, that's fair.

22 Q And did you submit a Sworn Affidavit or  
23 Declaration containing your opinions on the 649  
24 Patent?

25 A I did.

1 Q Do you have in front of you Exhibit 1003

2 entitled: "Declaration of Samuel P. Guido?"

3 A (Witness perusing documents.)

4 Well, I have it right here and I'll click

5 on it, and there it is.

6 Q Okay.

7 MR. GLENN: Just for everybody's

8 clarity, I'm going to hopefully here just so

9 everybody feels...I'm going to share my

10 screen really quick.

11 Q Okay. On the screen, Dr. Guido, do you see

12 "Declaration of Samuel P. Guido in the United States

13 Patent and Trademark Office?"

14 A I do.

15 Q Is that the same document that you were

16 referencing or that you had in front of you before?

17 A Well, it would appear to be.

18 Q Okay. And --

19 (Multiple parties speaking loudly

20 over one another in unison.)

21 A (Continuing) Yeah, it appears to be.

22 Q Yeah. I will represent to you that this

23 is a copy of the Declaration submitted in LG's

24 Petition on the 649 Patent. And I believe you have

25 the exact same document. I just want to make sure

1 that, on the record, we believe, we both believe

2 we're looking at the same document?

3 A Yeah. Yeah.

4 Q All right. In this document, if we turn

5 to Page, I guess, 4 of the PDF.

6 A (Witness perusing documents.)

7 All right. There is some confusion

8 because there are two page numbers on it.

9 Q There are two page numbers.

10 A You are giving me the PDF?

11 Q Let's do it by the PDF page number, I

12 think that's the clearest.

13 MR. GLENN: Are you okay with that,

14 Mr. Riffe?

15 MR. RIFFE: Yes. I think the PDF

16 page number corresponds to the added Exhibit

17 page number, as I refer to it, not the

18 document actual page number.

19 Q I will also try to give you paragraph

20 numbers when that helps, Doctor, again, if there is

21 any confusion as to what part of the document I'm

22 referring to, please stop and ask for

23 clarification, I'm happy to get give that to you.

24 On PDF Page 4, there are a number of

25 paragraphs providing your educational background;

1 would you summarize those for me, what's your  
2 educational background?  
3 A Well, I went to Princeton and got a Degree  
4 in Chemical Engineering in 1988. I then went to  
5 the graduate school at the Massachusetts Institute  
6 of Technology, or MIT, and got a Ph.D. in Chemical  
7 Engineering. And I participated in an  
8 interdisciplinary program in Polymer Science and  
9 Engineering, or Polymer Science and Technology, is  
10 what they called it at the time and I got my Ph.D.  
11 in 1993.

12 Q And in this Declaration, you have formed a  
13 number of conclusions with respect to the 649  
14 Patent; correct?

15 A Yes.

16 Q On PDF Page No. 14 at Paragraph 18 --

17 A (Witness perusing documents.)

18 Fourteen, yes.

19 Q Paragraph 18 contains an overview of  
20 conclusions formed; is that correct?

21 A Yes.

22 Q And this is an overview of the conclusions  
23 you formed in your analysis of, what I'm referring  
24 to as the 649 Patent; is that correct?

25 A Yes.

1 Q Okay. And it is your opinion, as  
2 contained in this Declaration, that the 649 Patent  
3 is obvious, as that term is used in the art, over a  
4 reference referred to as Sun; is that correct?

5 A Yes. That's what it says.

6 Q Okay. Thanks.

7 And I'm going to ask you to open up  
8 Exhibit 1004, that was attached to, attached as an  
9 Exhibit to LG's Petition on the 649 Patent.

10 A (The Witness complied with the request of  
11 counsel.)

12 Right.

13 Q And is that a United States Patent  
14 Application Publication dated August 5th, 2010 to  
15 Sun, et al.?

16 A It is.

17 Q Is this the reference you referred to in  
18 your Declaration as what renders the claims there  
19 on the 649 Patent?

20 A Yes.

21 Q Okay. And it is over this reference alone  
22 that Claims 1 through 7, 11, 13 to 14, and 17 to 19  
23 are obvious; is that correct?

24 A Yes.

25 Q So that in that conclusion, the first

1 bullet point of Paragraph 18 from your Declaration,  
2 Sun is not used in combination with any other  
3 reference?

4 A That's correct.

5 Q If we look at bullet points, the fourth  
6 bullet point, excuse me, the fifth bullet point in  
7 that same paragraph, it says: "Claims 1 through 8,  
8 11 through 15, 17 to 19 and 21 are obvious over  
9 Farrugia and Narayan;" is that correct?

10 A That's what it says. Yes.

11 Q Okay. And that is your opinion?

12 A It is.

13 Q I would like you to open up Exhibit No.  
14 1007, that was attached to the Petition for inter  
15 parte's review by LG Energy on the 649?

16 A (The Witness complied with the request of  
17 counsel.)

18 Okay.

19 Q And is that U.S. Patent Publication No.  
20 124713 to Farrugia, et. al.?

21 A It is.

22 Q And is that the Farrugia that you  
23 reference in Bullet Point No. 5 that we've just  
24 read from your Declaration?

25 A It is.

1 Q Okay. I'm going to ask you to open up

2 Exhibit 1008 that was attached to the Petition for

3 Inter Partes review by LG on the 649 Patent?

4 A (The Witness complied with the request of  
5 counsel.)

6 Okay.

7 Q And that is U.S. Patent Publication No.:

8 213939 to Narayan, et al.; is that correct?

9 A Yes.

10 Q And is that the Narayan that you  
11 referenced in Bullet Point No. 5 of Paragraph 18 of  
12 your Declaration?

13 A It is.

14 Q Okay. Let's turn back to Exhibit, I  
15 believe it was, 1004 so Sun. --

16 A Okay.

17 Q And in your Declaration you believe that  
18 the 649 Patent, Claims 1 and 20, excuse me, at  
19 least Claim 1, are obvious in light of Sun?

20 A Yes.

21 Q Okay. Turn to Page 18 of the PDF of Sun  
22 and we see an annotated excerpts.

23 A Eighteen is a PDF of Sun, my PDF only goes  
24 up to 17 of Sun.

25 Q Oh, I apologize, I was looking, sorry, I

1 was looking at Exhibit 1003, your Declaration, my  
2 apologies. If you would turn to Page 18 of your  
3 Declaration?

4 A (Witness perusing documents.)

5 Okay.

6 Q There we have, just before Paragraph 27,  
7 we've an excerpted and annotated Figure 1; that's  
8 your understanding, that's Figure 1 from Sun?

9 A It is.

10 Q And what is being pointed to as No. 10,  
11 that is, I believe, boxed in red there, titled:  
12 "Aqueous Suspension of CNTs and Nanoplatelets?"

13 A Yes.

14 Q And it is your opinion that this aqueous  
15 suspension, as depicted here as described by Sun,  
16 is a dispersion that meets all the limitations of  
17 Claim 1 of the 649 Patent?

18 A Yes.

19 Q Okay. And the epoxy nanocomposite labeled  
20 1 and 4 on this figure boxed in green; is it also  
21 your opinion that this epoxy nanocomposite is a  
22 dispersion that meets all of the claim limitations  
23 of Figure 1?

24 Excuse me. I'll strike that and let me  
25 rephrase.

1           So is it your opinion that the epoxy  
2 nanocomposite labeled 24 here, in your Exhibit, is  
3 a dispersion that meets all of the limitations of  
4 Claim 1 in the 649 Patent?

5       A   Yes.

6       Q   Is the depiction in Figure 1 an  
7 illustration?

8       A   Is it an illustration?

9       Q   Yes.

10      A   Are you referring to as it exists in the  
11 patent, or as it exists here on Page 18 of my  
12 report?

13      Q   Well, that's an excellent question, that's  
14 an excellent point of clarification.

15           Let's turn to Exhibit 1004, the actual  
16 reference of Sun.

17      A   (Witness perusing documents.)

18           Right.

19      Q   There on the first page is the full and  
20 unannotated form of that figure; is that correct?

21      A   Yes.

22      Q   Okay. And that is Figure 1 of the Sun  
23 reference that we are talking about?

24      A   That is Figure 1 of Sun.

25      Q   Okay. Is Figure 1 of Sun an illustration?

1 A (No response)

2 MR. RIFFE: Objection.

3 THE WITNESS: Well, let me see, let  
4 me see what Sun calls it. It is a drawing,  
5 it illustrates a conceptual scheme for the  
6 preparation of epoxy nanocomposites  
7 containing individually dispersed carbon  
8 nanotubes and exfoliated nanoplatelets, so  
9 it says it illustrates it, so, presumably,  
10 it is an illustration.

11 Q It's not a picture of actual carbon  
12 nanotubes and actual nanoplatelets; is it?

13 A It is not.

14 Q Okay. And you were referencing Paragraph  
15 14 from Sun and it refers to it there as a  
16 "conceptual scheme?"

17 A Let me go back again and see what it says.

18 You know, this is just a place in the  
19 patent where they describe all the figures. And,  
20 yes, it says a "conceptual scheme."

21 Q Okay. Is that, in your opinion, an  
22 accurate depiction of ten there, the aqueous  
23 suspension of CNT and nanoplatelets as Sun created  
24 it?

25 A (No response)

1 MR. RIFFE: Objection, form.

2 THE WITNESS: It depends on, you  
3 know, what aspects you are referring to. It  
4 qualitatively captures what's going on,  
5 nanotubes dispersed with nanoplatelets in an  
6 aqueous suspension.

7 Q But it's not a picture of that suspension;  
8 correct?

9 A It is not a picture of that suspension.

10 Q Yes. I apologize and I will be clearer in  
11 my language.

12 It's not a photograph of carbon nanotubes  
13 in suspension; is it?

14 A It is not.

15 Q Is it illustrated to scale?

16 A Not necessarily. You know, it could be,  
17 there is no scale bar on it. You know, if you look  
18 at, for instance, Sun has some electron-microscope  
19 images of these things and there is a scale bar,  
20 which tells you what you the scale is; this is not  
21 drawn to necessarily be any particular scale, but  
22 rather, to just represent conceptually what's going  
23 on.

24 Q In your opinion, does Figure 1 accurately  
25 represent the sizes of the nanoplatelets as

1 compared to the carbon nanotubes?

2 A It represents a relative size that is  
3 within the claimed ranges of Sun but those ranges  
4 are such that, you know, the relative size could  
5 vary.

6 You could have bigger nanoplatelets,  
7 relative to the nanotubes, or smaller ones, and  
8 still be within the ranges taught by Sun.

9 Q What are the ranges for the diameters of  
10 the carbon nanotubes taught by Sun?

11 A I would have to go and --

12 Q I will direct you to Paragraph 37 --

13 A Okay.

14 Q -- of Exhibit 104.

15 A Okay. Hold on.

16 (Witness perusing documents.)

17 Paragraph 37.

18 MR. GLENN: Off the record.

19 (Whereupon, there was an off the  
20 record discussion had.)

21 (The deposition resumed with all  
22 parties present.)

23 D R. S A M U A L P. G I D O, resumed and  
24 testified further as follows.

25 MR. GLENN: If we can go back on the

1 record.

2 DIRECT EXAMINATION

3 BY MR. GLENN:

4 Q We're back on the record, Dr. Guido, and we  
5 were talking about Figure 1 from Exhibit 1004; is  
6 it okay if I call that Sun reference, will you know  
7 what I am talking about?

8 A Of course.

9 Q Okay. So we're not just throwing around  
10 lots of numbers.

11 So in the Sun reference, Figure 1 in the  
12 Sun reference, and we were discussing the fact that  
13 it's an illustration; correct?

14 A Yes.

15 Q Yes. And that it is intended to, as you  
16 described, depict what is going on in the aqueous  
17 suspension of CNTs and nanoplatelets in the Sun  
18 reference; correct?

19 A Yes.

20 Q And I asked you if it was an accurate  
21 depiction and can you reanswer that question: Is  
22 it an accurate, what is indicated as 10, in Figure  
23 1 of Sun, an accurate depiction of the aqueous  
24 suspension of CNTs and nanoplatelets?

25 A (No response)

1 MR. RIFFE: Objection, form.

2 THE WITNESS: Well, it's an  
3 illustration of what's going on, so, it's  
4 accurate in that it represents a suspension  
5 of carbon nanotubes and nanoplatelets. As  
6 we discussed, it's not to a particular scale  
7 like an electron-microscope photograph, for  
8 instance, would be.

9 Q And I had previously asked you what the  
10 range of diameters of carbon nanotubes that Sun  
11 gives, and directed you to Paragraph 37 of the Sun  
12 reference; are you able to answer what ranges of  
13 diameters Sun describes?

14 A Well, at 37 Sun describes a diameter  
15 between one nanometer and 20 nanometers, or greater  
16 than 20 nanometers, or greater than 50 nanometers,  
17 that's what it says.

18 Q Okay. Does Sun give a description of the  
19 size of its nanoplatelets?

20 A Yeah, I believe they do. Again, I would  
21 have to search --

22 Q I will direct you to the paragraph...I  
23 apologize, I didn't mean to interrupt you, if you  
24 want to finish your answer?

25 A No. I was just saying exactly what you

1 thought I was saying, which is, you need to show me  
2 where to find that but I know they do.

3 Q I appreciate that. I don't want to be in  
4 the habit of just cutting you off while you're  
5 still speaking. Mr. Riffe will have significant  
6 issues with me, and rightly so, if I continue to do  
7 that. So I would like to try to make sure your  
8 answers are complete.

9 And, again, if you feel like I have cut  
10 you off or you have not been able to give a  
11 complete answer, please stop me, and I will  
12 absolutely allow you to do so. It is not my  
13 intention to cut you off.

14 A I found it. I found an appropriate place.

15 Q Okay. I was looking at Paragraph 40 of  
16 the Sun reference; is that a place you are  
17 indicating as well?

18 A Yes.

19 Q And so what size of nanoplatelets does Sun  
20 describe there?

21 A Ten nanometers to 20,000 nanometers and  
22 gives preferable ranges, you know, they are narrow  
23 within that broader range.

24 Q Okay. For the ten nanometers to 20,000  
25 nanometers, that was for what parameter of the

1 nanoplatelet?

2 A That is for, I believe, let's see what it  
3 says, but it's for the kind of in-plane diameter  
4 so, right, so these things are a plate or a very  
5 thin disc and this is the diameter in the plane of  
6 that plate.

7 Q If you would look at Figure 1 again for  
8 me.

9 A (Witness perusing documents.)

10 Q The nanoplatelets depicted there at ten,  
11 can you describe what, for one of those  
12 nanoplatelet, what the diameter is there, what the  
13 dimensions we are talking about, as you understand  
14 it?

15 A Yeah. Let me go back up.

16 Q Sure.

17 A It will take me a little while here, let's  
18 see.

19 Okay. So I'm back. What do you want me  
20 to comment on?

21 Q When Sun says, ten nanometers to 20  
22 nanometers, in specificity, in embodiments the  
23 nanoplatelets have a diameter range from about ten  
24 nanometers to 20 nanometers; looking at the Figure  
25 10 --

1 A Sorry. Where does it say ten nanometers?

2 Q I'm sorry. I'll strike the question.

3 Turning to Paragraph 40 of the Sun Exhibit

4 --

5 A Yeah.

6 Q -- he says in the middle, and I was just  
7 quoting the sentence you had quoted, in the  
8 middle of that paragraph: "In embodiments, when  
9 nanoplatelets have a diameter range from ten  
10 nanometers to about 20 nanometers and preferably  
11 between a 100 nanometers and 1,000 nanometers;" is  
12 that correct?

13 A No, you're not reading that correctly.

14 Q I apologize.

15 A Ten nanometers to 20,000 nanometers.

16 Q I apologize. So for clarity of the record  
17 the sentence reads: "In embodiments, the  
18 nanoplatelets have a diameter range from about ten  
19 nanometers to about 20,000 nanometers, and  
20 preferably between about a 100 nanometers and a  
21 1,000 nanometers;" is that correct?

22 A Yes.

23 Q Okay. In Figure 1's depiction of  
24 nanoplatelets, this is in Figure 1 of Sun, what is  
25 the diameter of those nanoplatelets, what dimension

1 or what parameter of the nanoplatelets we're  
2 looking at there that Sun is calling the diameter?  
3 A It is the in-plane distance, right? So,  
4 you know, these things are like little platelets  
5 and there is a dimension in the plane of that  
6 platelet and that's the dimension that Sun is  
7 talking about.

8 Q As depicted in Figure 1, these appear to  
9 be or are illustrated as roughly two dimensional  
10 little sheets; is that fair?

11 A Yes. That's what it looks like.

12 Q Okay. That's what it looks like in Figure  
13 1; right?

14 A Yes.

15 Q And the diameter then would be roughly the  
16 size of the surface of that sheet?

17 A Yeah. I mean, the size of the surface  
18 could be, say, the area of the surface, but what it  
19 is, it's like, just like a dimension from one side  
20 of that sheet to the other in the plane of that  
21 sheet.

22 Q Okay. Understood. Thank you.

23 Looking back at Paragraph 40, does Sun  
24 give us a range for any other dimensions of these  
25 nanoplatelets?

1 A Hold on.

2 Q Sure.

3 A (Witness perusing documents.)

4 Sun doesn't say anything at 40 and I don't  
5 recall whether Sun said anything about the  
6 thickness of the platelets anywhere else.

7 But, you know, Sun does provide X-ray  
8 scattering data from which one can get some  
9 information about the thickness or a POSITA,  
10 familiar with that technique can get information  
11 about the thickness.

12 Q Okay. I asked you to look at Paragraph 40  
13 again, and look at the sentence directly after the  
14 one you and I read before. And it starts:  
15 "Nanoplatelets have an aspect ratio, diameter to  
16 thickness ratio, --

17 A Yeah!

18 Q -- "of between about ten and about 20,000,  
19 preferably the aspect ration is between about a  
20 1,000 and about 4,000 and most preferably between  
21 100 and 500;" do you see that?

22 A I see that.

23 Q So he does give additional dimension  
24 ranges for these nonpalatals; correct?

25 A Well, he gives aspect ratios. So if he

1 tells you what the diameter is, the aspect ratio is  
2 the ratio of that in-plane diameter that we were  
3 talking about, to the thickness of the  
4 nanoplatelets. And, so if he gives you a range of  
5 diameters and then a range of aspect ratios, one  
6 could back out of that a range or thicknesses.

7 Q Sure. All right. Looking again at Figure  
8 1 depiction of nanoplatelets, if we agree that the  
9 diameter is a length across the surface, described  
10 in the...getting some sense inside of that surface  
11 of that depicted two dimensional object; what is  
12 the thickness, what is thickness referring to?

13 A Well, the thickness is, you know, if you  
14 are looking at a drawing or an illustration of a  
15 plate that is, you know, it's facing you, you just  
16 see the surface area of that plate, the thickness  
17 is not in view.

18 Now, some of these are in prospective and  
19 you can kind of see the thickness, but they  
20 foreshortened. I'm not sure that there is any  
21 single illustration of a platelet there that is  
22 exactly as drawn in which you can see the  
23 thickness.

24 They are all sort of tilted around at  
25 various orientations. Some of them are pretty much

1 face-on but I don't see any one there that I would  
2 interpret as being exactly edge-on so you could see  
3 the thickness directly.

4 Q What I'm getting at is, because we've  
5 agreed that Figure 1 is an illustration, and that  
6 Sun does give ranges for the sizes; I'm just trying  
7 to get an understanding of whether or not we can  
8 look at Figure 1 and say that that accurately  
9 depicts what that aqueous suspension would look  
10 like; is that fair?

11 A (No response)

12 MR. RIFFE: Objection. Objection,  
13 form.

14 THE WITNESS: It is a reasonable  
15 illustration. Yeah, I mean, it's a  
16 reasonable illustration.

17 Sun provides electron-microscope  
18 images of composites, right, it's not  
19 possible to take an electron-microscope  
20 image of a liquid suspension. But to the  
21 extent that this structure is preserved or  
22 is similar, when you basically harden the  
23 matrix around it, those electron-microscope  
24 images are consistent with this  
25 illustration.

1 Q And in this Figure 1 with carbon nanotubes  
2 that are illustrated there, Sun does not  
3 differentiate, in this particular illustration,  
4 whether they are single wall, double wall, or  
5 multiwall carbon nanotubes; does it?

6 A I would have to look at what it says in  
7 the text where it describes that.

8 But it's my understanding that Sun teaches  
9 that this could be done with either single wall or  
10 multiwall nanotubes and this illustration is meant  
11 to be applied to either.

12 Q It is your understanding that Sun intends,  
13 in Figure 1, to illustrate his belief as to  
14 behavior of the carbon nanotubes regardless of the  
15 number of walls?

16 A Let me just check and see.

17 Q Sure.

18 A (Witness perusing documents.)

19 So I just did a search for Figure 1 on the  
20 document and it says Figure 1, Paragraph 36,  
21 illustrates some of the features of the present  
22 disclosure, oxidized carbon nanotubes, CNTs, so Sun  
23 generally refers to, uses CNT to mean, either  
24 single wall or multiwall. And then in some  
25 instances where he is being specific, he will say,

1 he will specify multiwall or single wall so....

2 (Witness perusing documents.)

3 I am looking at Paragraph 45, referring,

4 again, to Figure 1, and further on down in that

5 paragraph the nanotubes that are being described

6 are multiwall in that particular case.

7 (Witness perusing documents.)

8 Paragraph 68, again, referring to Figure

9 1, and they are referring to CNTs there, carbon

10 nanotubes there, which could be either, and then

11 specifically to multiwall nanotubes.

12 Q Okay. If you turn to your Declaration,

13 that is Exhibit 1003, at Paragraph 26.

14 A (Witness perusing documents.)

15 Yes.

16 Q In that paragraph you were discussing

17 Figure 1 and in the last sentence of that paragraph

18 you say: "Sun describes that the nanotubes can be

19 single wall carbon nanotubes or multiwall carbon

20 nanotubes," and then you cite Paragraph 38 of Sun;

21 correct?

22 A Yes. That is what it says and that's

23 consistent, I believe, with the answer I just gave

24 you. Sure.

25 Q And just for clarification then, it is

1 your opinion that Figure 1 is an illustration  
2 intended to represent the behavior for both single  
3 wall carbon nanotubes and multiwall carbon  
4 nanotubes; is that correct?

5 A Yeah. That appears to be the way Sun is  
6 using it.

7 Q Okay. And that's your opinion of what Sun  
8 is using?

9 A (No response)

10 MR. RIFFE: Objection. Asked and  
11 answered.

12 Q I just want to make sure that there's not  
13 another figure we ought be looking at, if we're  
14 talking about single wall carbon nanotubes or if  
15 we're talking about multiwall carbon nanotubes;  
16 fair?

17 A Fair.

18 Q If we look at Exhibit No. 1001 that was  
19 attached to LG's Inter Partes Petition for the 649  
20 Patent; do you have that?

21 A (Witness perusing documents.)

22 I do.

23 Q And that's the actual 649 Patent at issue;  
24 correct?

25 A Yes.

1 Q Okay. Can you turn to Claim 1 of that  
2 particular Patent?

3 A (Witness perusing documents.)

4 Okay.

5 Q I believe that's found at Column 13,  
6 starting around Line 49 or 50; right?

7 A Yes.

8 Q And that reads: "A dispersion comprising  
9 a plurality of oxidized discrete carbon nanotubes  
10 and at least one additive were in the oxidized  
11 discrete carbon nanotubes have an aspect ratio of  
12 25 to 500, are multiwall and are present in the  
13 data and the range greater than zero to about  
14 30 percent, by weight, based on the total weight of  
15 the dispersion;" did I read that correctly?

16 A You did.

17 Q Are the carbon nanotubes in Claim 1 single  
18 wall?

19 A The carbon nanotubes, Claim 1 does not  
20 specify multiwall or single wall -- wait.

21 Oh, wait, let's see, they are multiwall.  
22 Yes.

23 Q Claim 1 is exclusively directed to  
24 multiwall carbon nanotubes; correct?

25 A Yes, it is.

1 Q Okay. So you can understand why I'm  
2 trying to figure out whether or not Figure 1, Sun  
3 intends Figure 1 to be equally applicable to single  
4 wall or multiwall; correct?

5 A Okay. Yeah.

6 Q You would agree then, it is important to  
7 understand whether or not Figure 1 accurately  
8 depicts the behavior of multiwall carbon nanotubes;  
9 correct?

10 A (No response)

11 MR. RIFFE: Objection, form.

12 THE WITNESS: Well, it is useful to  
13 understand whether that depicts multiwall  
14 nanotubes. Yes.

15 Q But if it only depicted the behavior of  
16 single wall carbon nanotubes, it would not be  
17 applicable to Claim 1 of the 649 Patent; would it?

18 A (No response)

19 MR. RIFFE: Objection. Incomplete  
20 hypothetical.

21 THE WITNESS: First of all, single  
22 wall and multiwall carbon nanotubes behave  
23 relatively similarly in, you know, this  
24 invention of Sun.

25 And Sun, you know, basically

1 describes that. They basically are  
2 interchangeable, to some degree.

3 So I would say that if those  
4 illustrations in Figure 1 were for single  
5 wall carbon nanotubes, which I am not saying  
6 they are, but if they were, a POSITA would  
7 be able to look at that and draw conclusions  
8 for multiwall nanotubes as well, but I don't  
9 think that's the situation, anyway. I think  
10 that based on the teachings of Sun that I'm  
11 seeing, it could be either.

12 Q Starting at Paragraph 54 of Sun, Sun  
13 describes running experiments; correct?

14 A All right. Let me go back to 54.  
15 (Witness perusing documents.)

16 Oh! Oh! Oh! Oh! Sorry, I am in the 649  
17 Patent.

18 Q Yeah. I apologize, that could be  
19 confusing.

20 We are talking about the Sun reference,  
21 which was Exhibit 1004, of LG Inter Partes  
22 Petition.

23 A Yeah, no, 54 you said.

24 Well, I'm moving along here and I am not  
25 seeing any paragraph numbers, I'm seeing columns

1 and I'm like, look, this can't be Sun.

2 Okay. I am at 54.

3 Q So starting at Paragraph 54, Sun describes  
4 some experiments that he has run; is that fair?

5 A (Witness perusing documents.)

6 Yes.

7 Q And he runs them on both single wall  
8 carbon nanotubes and he runs them on multiwall  
9 carbon nanotubes; is that fair?

10 A Yes, that's what it says.

11 Q Does he get the same results?

12 A (Witness perusing documents.)

13 MR. RIFFE: Objection, form.

14 THE WITNESS: I'm not sure what you  
15 mean by the same results. There is a lot of  
16 different things going on here, a lot of  
17 different intermediate steps, you know. So  
18 you would have to, you would have to clarify  
19 that.

20 Q Well, you testified, just a minute ago,  
21 that in your opinion, for this particular  
22 invention, I guess, or this particular description,  
23 that single wall and multiwall are interchangeable?

24 A (Witness perusing documents.)

25 MR. RIFFE: Objection.

1 Mischaracterizes the testimony.

2 THE WITNESS: Yeah. That's not what  
3 I said.

4 You were asking me about Figure 1,  
5 you were not asking me, which is a schematic  
6 illustration and whether that relates to  
7 single wall or multiwall.

8 Now you are asking me about the  
9 actual invention which, you know, Sun  
10 teaches both and gives examples of both and  
11 there is reason to electron-microscope  
12 images of both and they are an analogous but  
13 they are not the same.

14 Q Sun does provide electron-microscope  
15 images of both, but he only provides one  
16 illustrative figure; correct?

17 A Certainly Figure 1 is an illustrative  
18 figure. I don't have all of these memorized. So  
19 let me go back --

20 Q Sure.

21 A -- and look quickly through that.

22 (Witness perusing documents.)

23 But, yes, it appears that Figure 1 is the  
24 only drawing, to some extent Figure 5, includes  
25 some illustrations along with the X-ray scattering

1 data, but, okay.

2 Q My point is that Sun does not provide a  
3 figure depicting his believed behavior of single  
4 wall carbon nanotubes and a separate figure for his  
5 believed behavior of a multiwall carbon nanotubes;  
6 correct?

7 A I'm not sure why that is, but I interpret  
8 it and I draw the interpretation, as would a  
9 POSITA, I believe, that, at least with respect to  
10 the exfoliation process and association with  
11 nanoplatelets and dispersion, the things that Sun  
12 is teaching, that the multiwall and single walls  
13 are similar enough, in that general framework, to  
14 both be depicted by that Figure 1.

15 Q And in your analysis, contained in your  
16 Declaration, you used Figure 1 as a depiction of  
17 multiwall carbon nanotubes behavior; correct?

18 A I do.

19 Q And looking, again, at the example  
20 starting at Paragraph 54 of Sun, I refer to those  
21 as his experiments; is that clear?

22 A Yes.

23 Q Is that a fair characterization of what's  
24 described starting at Paragraph 54 or experiments  
25 that Sun ran?

1 A Yes. They are laboratory exercises or  
2 experiments. Yes.

3 Q And he achieved some results that he then  
4 describes; is that fair?

5 A Yes.

6 Q And he ran those experiments on both  
7 single wall nanotubes and multiwall nanotubes;  
8 correct?

9 A I would have to go back and check and make  
10 sure exactly where he is using single wall and  
11 where he is using multiwall, but that is my  
12 recollection.

13 Q Okay. I am looking again at Paragraph  
14 54 --

15 A Yeah.

16 Q -- where he says: "Preparation of carbon  
17 nanotubes and..." I'm probably going to butcher the  
18 pronunciation, "zirconium phosphate nanoplatelets,  
19 single nanotubes were obtained from carbon  
20 nanotechnologies and multiwall nanotubes were  
21 purchased from Aldridge;" do you see that?

22 A Yes.

23 Q He ran the experiments on both single wall  
24 carbon nanotubes and multiwall carbon nanotubes;  
25 correct?

1 A Yes. Paragraph 54 is just describing the  
2 initial step of oxidizing the nanotubes and then  
3 there is, in following paragraphs, he is doing  
4 things with both of those.

5 I did just scroll down and check, so he  
6 does do the experiments with the multiwalled and  
7 then also with the single wall.

8 Q Correct. If we look at, starting at  
9 Paragraph 22, this is where Sun, the Sun  
10 Application is describing the figures.

11 A Twenty-two?

12 Q Yes.

13 A Figure 6(a)?

14 Q Yes. Starting at Paragraph 22 and going  
15 to paragraph, I believe, 26. We see that Sun is  
16 describing those figures as applying to single wall  
17 carbon nanotubes for Figure 7, and multiwall  
18 nanotubes for Figure 6; do you see that?

19 A Yes, that's what it says.

20 Q Right. My description that then is, it's  
21 accurate that Figure 7 is image of single wall  
22 nanotubes and Figure 6 are figures, pictures of  
23 multiple carbon nanotubes; correct?

24 A Yes.

25 Q So he is representing them separately,

1 that these are the images when I ran on single wall

2 nanotubes and these are the images when I ran it on

3 multiwall nanotubes; correct?

4 A Yes.

5 Q What were his results then, according to

6 these paragraphs, for single wall nanotubes?

7 A Well, I mean, these paragraphs refer to

8 figures.

9 Q Correct.

10 A So we would need to go and look at those

11 figures.

12 So I don't know; do you want me to look at

13 the figures?

14 Q Well, let's just stick with these

15 paragraphs. In Paragraphs 25 he describes Figure

16 7(b); right?

17 A Yeah.

18 Q And the last sentence of that Paragraph

19 25, the white arrows indicate some of the

20 exfoliated ZRP nanoplatelets and the black arrows

21 are individually dispersed in straight single wall

22 nanotubes; correct?

23 A That's what it says.

24 Q Okay. So would you characterize that or

25 do you believe that then to be the results that Sun

1 got for single wall carbon nanotubes?

2 A Well, again, I would look at the image.

3 I am actually, you know, my most basic

4 training is as an electron microscopist, a

5 transmission electron microscopist. And so, you

6 know, if I'm reading a description of a figure

7 that's an electron-microscope image, I'm always

8 going to look at the image.

9 Q Okay.

10 A So that's what it says. I don't have any

11 reason to double that, but I would confirm that by

12 looking at the image.

13 Q Okay. But we don't have the image; do we?

14 A Figure 7(b)?

15 Q Um-hmm.

16 A No, I have that.

17 Q Well, again, I'm not trying to be tricky.

18 That's a photocopy of the image; correct? That's

19 not...the image, as you sit on the microscope, be

20 in more detail than what we have here?

21 A Certainly, I mean, all electron-microscopy

22 images are photographs, that's the way they are

23 recorded.

24 You know, when I first started in the

25 business they were actually recorded on

1 photographic film plates and now they are recorded  
2 digitally, but they are photographs.

3       You know, there is this recurring issue  
4 with patents not reproducing photographs all that  
5 well.

6       But this one I can see, you know, what's  
7 being indicated, and it's visible, and  
8 distinguishable and discernible to me.

9       Q   Okay, understood. But Figure 7 represents  
10 an image of single wall carbon nanotubes; correct?

11      A   That's what the caption or description  
12 says, yes.

13      Q   And what about Figure 6, 6(a) and Figure  
14 6(b)?

15      A   I think, I would have to check but at  
16 least one of those is the multiwall nanotubes.

17       Let me go back and check here what it  
18 says.

19       (Witness perusing documents.)

20       6(a) illustrates TEM images of epoxy  
21 composites containing Point 2 weight percent  
22 multiwall nanotubes, nanoplatelets. So both 6(a)  
23 and 6(b) have multiwall nanotubes in them.

24      Q   What are the arrows in 6(a) and 6(b)  
25 pointing to?

1 A Let me go back and see what it says.

2 Q Um-hmm.

3 A (Witness perusing documents.)

4 The arrows indicate exfoliated

5 nanoplatelets, that's what it says, the arrows

6 indicate exfoliated nanoplatelets.

7 Q Does Sun claim that the images contain

8 exfoliated multiwall carbon nanotubes?

9 A In the description of 6(a) and 6(b)?

10 Q That's correct.

11 A I believe that's what it says.

12 (Witness perusing documents.)

13 Yes.

14 Q Really?

15 A So 6(a) and 6(b) contain multiwall carbon

16 nanotubes, arrows pointing to the platelets.

17 Q Does Paragraph 22 of Sun, in his

18 description of 6(a), claim to be depicting fully

19 exfoliated multiwall carbon nanotubes?

20 A (No response)

21 MR. RIFFE: Objection, form.

22 THE WITNESS: There at Paragraph 22

23 and 23, these are kind of like the captions

24 for the figures, it's not a discussion in

25 depth of what's there.

1 I think in order to better  
2 understand what Sun, you know, has to say  
3 about these, we have to find in the document  
4 where it talks about, further down in the  
5 specification, where it talks about 6(a) and  
6 6(b).

7 Q Fair enough. For Figure 7(b), however,  
8 does Sun claim that the image depicts individually  
9 dispersed single wall carbon nanotubes?

10 A That's what it says.

11 Q That's what Sun claims?

12 A That's what, what?

13 Q That's what Sun is claiming, that the  
14 images depict, that the images depict individually  
15 dispersed and straight single wall carbon  
16 nanotubes?

17 A That's what the statement says. You using  
18 "claim" which is kind of a loaded term in this  
19 business, and I don't know what you mean by that.

20 Q I apologize, I didn't intend it to be  
21 loaded and I do not mean that as in a patent claim,  
22 even though it says this is a patent application.

23 A Right.

24 Q Sun is stating that his Image 7(b),  
25 depicts individually dispersed and straight single

1 wall carbon nanotubes; correct?

2 A That's what it says there.

3 Q But Sun does not state that either 6(a) or

4 6(b) contain individually dispersed multiwall

5 nanotubes?

6 A It doesn't say that at 22 and 23. I don't

7 know, it may say that, you know, later on in the

8 specification.

9 Q Does it ever say that in the

10 specification?

11 A I don't know. I would have to look.

12 Q Well, you claimed that Sun, all by itself,

13 renders Claims 1 of the 649 obvious; correct?

14 A Yes.

15 Q And you've also agreed that Claim 1

16 relates exclusively to multiwall carbon nanotubes;

17 correct?

18 A Claim 1 of 649?

19 Q Yes.

20 A Yes.

21 Q But you don't know whether or not Sun ever

22 states that he has created individually dispersed

23 multiple carbon nanotubes?

24 A (No response)

25 MR. RIFFE: Objection.

1 Mischaracterizes his testimony.

2 MR. GLENN: Counsel, limit your  
3 objections, as required, to objections to  
4 form.

5 MR. RIFFE: They are not required as  
6 objection to form, counsel, they required to  
7 not be speaking objections and to state my  
8 objections in a concise manner, which is  
9 what I'm doing.

10 MR. GLENN: Okay.

11 Q Do you need me to repeat the question, Dr.  
12 Gido?

13 A I would like you to repeat the question.

14 Q Sure. Are you telling me you don't know  
15 whether or not Sun states he has created  
16 individually dispersed multiwall carbon nanotubes?

17 A I'm not saying that at all.

18 Again, I don't have these references  
19 memorized, but I think if you look, but I'm sure if  
20 you look through Sun, you will find statements to  
21 the effect that multiwall nanotubes are dispersed.

22 Q I've looked through Sun and I do not find  
23 one place in which he claims to have actually  
24 generated a dispersion of individually dispersed  
25 multiwall carbon nanotubes; and I'm asking you if

1 you found a play in which he did?

2 A Again, I would have to look at my

3 Declaration. I would have to --

4 (Multiple parties speaking spontaneously)

5 Q Sorry. I didn't mean to interrupt.

6 A You know, I haven't memorized all this

7 stuff. I believe that there are citations about

8 this in my Declaration and I believe that there are

9 statements in Sun that indicate, you know,

10 individually dispersed multiwall nanotubes, if

11 nothing else, because Sun describes them as being

12 produced by this oxidation process, which gives

13 individually dispersed carbon nanotubes.

14 Q Well, you have your Declaration in front

15 of you?

16 A Yes.

17 Q And you have Sun in front of you; correct?

18 A I do.

19 Q Take the time you need and locate for me

20 wherein in Sun he claims to have generated

21 individually dispersed multiwall carbon nanotubes?

22 A (Witness perusing documents.)

23 Well, in Paragraph 69, Sun does talk about

24 well dispersed multiwall nanotubes and fully

25 exfoliated nanoplatelets.

1 In other locations, he mentions exfoliated  
2 nanotubes.

3 Q Did he ever say, fully exfoliated  
4 multiwall carbon nanotubes?

5 A In a lot of places he says, exfoliated  
6 CNTs. So when Sun is using carbon nanotube, I  
7 interpret that to mean both multiwall and single  
8 wall. That's clear from the way, you know, it was  
9 used in the specification.

10 At 69, he's talking about well dispersed  
11 multiwall nanotubes.

12 Q Correct. But he doesn't say fully  
13 exfoliated; does he?

14 A Well, no.

15 Q But he does say that about single wall  
16 nanotubes; directing you to Paragraph 65 of Sun?

17 A Well, before we get to that --

18 Q Sure.

19 A -- let me finish.

20 So I am looking at the detailed  
21 description of preferred embodiment, starting at  
22 Paragraph 36. And he is referring to oxidized  
23 suspended CNT, so these are carbon nanotubes, it  
24 can be either single wall or double wall. And at  
25 38, he is describing, you know, single wall and

1 multiwall nanotubes, at 37 also. So the CNTs can  
2 be either single wall or double wall.

3 And then later on, sort of in the same  
4 discussion in the same CNT, after the separation of  
5 the nanotubes, the nanoplatelets have individual  
6 exfoliated or separated tubes attached.

7 So, he's talking here, again, about  
8 individual exfoliated or separated tubules and,  
9 again, that's generic, it could be single wall or  
10 multiwall.

11 Q And that's referring to Figure 1; correct?

12 A As shown in Figure 1, yes.

13 Q It's referring to the illustrated  
14 conceptual scheme of Figure 1, not an actual image  
15 of a dispersion; is it?

16 A Figure 1 is not an actual image.

17 Q So the paragraphs you are referencing are  
18 referencing an illustration; correct?

19 A It's referencing an illustration that Sun  
20 has produced to show what they invented or what  
21 they are teaching.

22 Q Figure 1, that is a conceptual  
23 illustration that could be single wall of multiwall  
24 and, in your opinion, applicable to both?

25 A That's what Sun says, or at least what Sun

1 implies. Sure.

2 Q But in his experimental results, does Sun  
3 actually generate fully exfoliated multiwall carbon  
4 nanotubes?

5 A It says, again, at 69, it says: "Well  
6 dispersed multiwall nanotubes," so really, you can  
7 argue about whether well dispersed, what that means  
8 exactly. I would interpret, well dispersed, to  
9 mean separate individual nanotubes or substantially  
10 so.

11 I would also look at Figure 6 for images  
12 illustrating that because that's what Sun directs  
13 you to.

14 Q Read the next line, the next sentence of  
15 Paragraph 69, you are referencing well dispersed  
16 multiwall nanotubes and full exfoliation of  
17 nanoplatelets can be observed, right, he does say  
18 exfoliated nanoplatelets. He never says the same  
19 thing about the tubes themselves. But read the  
20 next sentence.

21 A So let me first mention, what you are  
22 doing here, and what you did previously, when we  
23 were talking about the figure captions, you are  
24 trying to make me infer something affirmatively  
25 from an omission. And I would not necessarily say

1 that an omission, necessarily, is an affirmative  
2 statement of the opposite, basically.

3 So you want me to read the statement that  
4 begins with "TEM images?"

5 Q Just for clarity, all I'm asking or all  
6 I'm seeking is what Sun himself claims to have done  
7 or what Sun does not claim he has done.

8 The next sentence of Figure 69 reads:  
9 "The TEM images shown here, clearly suggest that  
10 through the aqueous dispersion, of organic  
11 dispersion approach, both, multiwall nanotubes and  
12 nanoplatelets, can be fully dispersed down to the  
13 individual level in the epoxy matrixes;" did I read  
14 that correct?

15 A That's what that says.

16 Q So the image suggests that it can be;  
17 correct?

18 A Yes. That's what it says.

19 Q It does not say, the image shows that it  
20 does?

21 A (No response)

22 MR. RIFFE: Objection, form.

23 THE WITNESS: "The TEM images shown  
24 here clearly suggest that through the  
25 aqueous dispersion..." it does say that it

1 does.

2 I mean, you know, I've written lots  
3 of papers using electron-microscopy and, you  
4 know, describing things in these images and  
5 that's how I would describe, you know,  
6 something that I observed in the image. I  
7 don't think there is anything ambiguous  
8 about that.

9 Q So you think that's the way he would  
10 describe it, if he, he, being Sun, you think that's  
11 the way Sun would think to describe it having fully  
12 individualized multiwall carbon nanotubes?

13 A Well, yeah, here he is referring to the  
14 epoxy, you know, the epoxy composite, not to the  
15 aqueous dispersion that led to the epoxy composite.

16 You know, there are technical reasons for  
17 that. Like I said, you can't take an  
18 electron-microscope image of a liquid, but, you  
19 know, the two are related, of course.

20 You need to get that dispersion, an  
21 aqueous dispersion in order to get that dispersion  
22 in the epoxy matrix composite.

23 But that statement to me indicates that  
24 Sun believes that the image shows that the  
25 multiwall nanotubes and nanoplatelets are fully

1 dispersed down to the individual level.

2 Q Look at Paragraph 65, the last sentence in

3 Paragraph 65: "This experimental observation also

4 demonstrates their approach can fully exfoliate at

5 single nanotube bundles and individual tubes;" it

6 seems like Sun knows exactly how to describe it

7 when he can do it?

8 A (No response)

9 MR. RIFFE: Objection, form.

10 THE WITNESS: So your contention

11 with 69 is the term "clearly suggests,"

12 you're saying that that somehow is weakening

13 this statement at 69 and that that clearly

14 suggests is not present at 65; is that what

15 you want me to opine about?

16 Q I'm suggesting that Sun ran two

17 experiments, one with single wall carbon nanotubes

18 and another one with multiwall carbon nanotubes;

19 would you agree with that?

20 A Yes, at least two. I have to go through

21 and look at what they did, but they certainly did

22 experiments with single wall and with multiwall,

23 yes.

24 Q And when describing his results for single

25 wall carbon nanotubes, he has no problem saying

1 that he was able to generate individually dispersed

2 or fully exfoliated or however one wants to

3 describe it, single wall carbon nanotube; correct?

4 A That's what he is saying at 65.

5 Q Sure. And also at Paragraph 22, right,

6 where he is actually describing the figures?

7 A Yeah, I'm not going back to go back to

8 Paragraph 22, but I believe I remember that. Yes.

9 Q I'm sorry, it's Paragraph 25 and Paragraph

10 26, where he has arrows pointing to individually

11 dispersed single wall carbon nanotubes?

12 A Okay. I would have to go and look and see

13 exactly what he says. This is where?

14 Q Paragraph 25, the description in 6(b) or

15 7(b). Excuse me.

16 A The red arrows are individually dispersed

17 in straight single wall nanotubes.

18 Q We have to assume, we have to intuit which

19 ones is red, unfortunately, the patent applications

20 are in black-and-white. But the arrows are

21 pointing to --

22 A Yeah, there are blue arrows and red

23 arrows, so I'm not sure what they're saying,

24 but...yeah.

25 Q It's hard to know which one but at least

1 he's pointing out some, with one of the arrows and  
2 it's hard to know which one, but he is highlighting  
3 that he had individually dispersed single wall  
4 nanotubes; correct?

5 A That's what appears to be happening there.  
6 Yes.

7 MR. RIFFE: We've been going for  
8 about an hour and a half or so, can we've  
9 take a break?

10 MR. GLENN: We're almost done with  
11 this section in just a minute or two.

12 MR. RIFFE: Okay.

13 Q So to round this out, though, Paragraphs  
14 22 and 23, when he is describing Figure 6(b), his  
15 experiment with multiwall nanotubes, he has no  
16 arrows pointing to nanotubes at all; does he?

17 A Not the nanotubes.

18 Q Individually dispersed or otherwise;  
19 correct?

20 A Well, the arrows in those figures,  
21 according to the descriptions, are pointing to, you  
22 know, nanoplatelets.

23 Q So Sun does not claim to have individually  
24 dispersed multiwall carbon nanotubes?

25 A Well --

1 MR. RIFFE: Objection.

2 THE WITNESS: No. That's, again,  
3 you are trying to get me to infer something  
4 affirmative from an omission, and that's not  
5 the case.

6 If I'm looking at, for instance  
7 Figure 6, because these nanotubes are  
8 multiwalled, they are thicker, the walls are  
9 thicker, the tubes are bigger, and it's  
10 really easy to see what a nanotube is there.  
11 And in fact, they are very distinctive.

12 The nanoplatelets are harder to see  
13 because they are very thin. We talked about  
14 their thickness before, but their thickness  
15 is, you know, less than two nanometers, but  
16 1.7 nanometer, right, I calculated that from  
17 X-ray and that's also consistent with the  
18 conversion from aspect ratios with an  
19 in-plate diameter. I said you could infer a  
20 thickness, and you infer a thickness of that  
21 in the order of approximately, one. Right,  
22 so, if something is at 1.7 it's kind of in a  
23 very rough sense, approximately, one.

24 And so, the ranges of aspect ratios,  
25 are similar to the ranges of plate

1 dimensions, which he indicates that, you  
2 know, these nanoplatelets are very thin.

3 So in Figure 6, you can barely see  
4 them, they're very faint, and that's why  
5 there are using arrows. But I think there  
6 is no problem at all telling what a  
7 nanotubes is in those images.

8 Whereas when you go to Figure 7,  
9 because those are single wall, the nanotubes  
10 are very, very faint, and faint, in fact, at  
11 a similar level of faintness to some degree  
12 as the nanoplatelets.

13 And so there it is more important  
14 for the inventor to point out which one of  
15 these things they are interpreting as a  
16 nanotube and which one is a nanoplatelet.

17 So there, again, I do not interpret  
18 the fact that they didn't put an arrow on  
19 those obvious nanotubes in Figure 6, as  
20 indicating that they don't believe that  
21 those nanotubes are separate from one  
22 another. In fact, you can see they are  
23 separate from one another in the image.

24 Q Okay. For accurateness, I never asked you  
25 to opine on what he believes, nor have I asked you

1 to make a positive assignation.

2 All I am asking you is whether or not the  
3 omission exists?

4 A Whether or not omission exists?

5 Q Yes.

6 MR. RIFFE: Objection, form.

7 THE WITNESS: Well, remind me  
8 specifically which omission?

9 Q Does Sun ever claim to have actually  
10 generated individually dispersed multiwall carbon  
11 nanotubes?

12 A (No response)

13 MR. RIFFE: Objection. Asked and  
14 answered.

15 THE WITNESS: Yes. At 69, you're  
16 the one who found that for me, but TEM  
17 images show, here clearly suggest, through  
18 the aqueous dispersion, organic  
19 re-dispersion approach, both multiwall  
20 nanotubes and nanoplatelets can be fully  
21 dispersed down to individual level in epoxy  
22 matrixes.

23 And, again, I would say, I've  
24 written a lot of scientific papers and, you  
25 know, a scientist, when they are showing an

1 electron-microscope image like this, could  
2 very well say, and I've done this many times  
3 myself, could say that the image suggests  
4 something, which is what I believe the image  
5 shows, but that's just a direction to a  
6 POSITA to look at the image and draw their  
7 own conclusion.

8 And I think if you look at Figure 6,  
9 you would agree with that that suggestion, a  
10 POSITA would agree with that suggestion.

11 Q Claim 1 of the 649 Patent requires  
12 multiwall carbon nanotubes that are discrete;  
13 correct?

14 A (No response)

15 MR. RIFFE: Objection. Legal  
16 conclusion.

17 THE WITNESS: Yes, it says,  
18 "discrete carbon nanotubes and/or  
19 multiwall..."

20 Q So you would agree that to render Claim 1  
21 obvious, in your opinion, Sun would actually have  
22 to depict discrete multiwall carbon nanotubes;  
23 correct?

24 A I'm not sure...did you say depict, Sun  
25 would need to teach that.

1 Q Okay.

2 A (Continuing) And there are many different  
3 ways that Sun could be teaching that and I believe  
4 Sun does teach it.

5 Q But, again, for clarity, to render Claim 1  
6 of the 649 obvious, it would have to teach that;  
7 correct?

8 A Yes.

9 Q Okay.

10 MR. GLENN: We can take a break,  
11 counsel.

12 About how long do you need, do you  
13 think?

14 We can go off the record now, Ms.  
15 Gmerek.

16 (Whereupon, a recess was taken.)

17 (The deposition resumed with all  
18 parties present.)

19 S A M U E L P. G I D O, Ph.D., resumed and  
20 testified further as follows

21 MR. GLENN: Back on the record.

22 DIRECT EXAMINATION

23 BY MR. GLENN:

24 Q Doctor, I would like you to open up your  
25 Declaration, again, that's Exhibit 1003.

1       A   (The Witness complied with the request of  
2 counsel.)

3       Okay.

4       Q   At PDF Page 49 at Paragraph 74, take a  
5 look at that paragraph.

6       A   (Witness perusing documents.)

7               MR. RIFFE: James, which paragraph,  
8 again, I'm sorry?

9               MR. GLENN: Paragraph 74.

10              MR. RIFFE: Thank you.

11       Q   Do you see at the bottom of Page 49, in  
12 Paragraph 74, you make the following statement:  
13 "At least some of the aspect ratios indicated by  
14 the dimensions given by Sun fall within the claimed  
15 25 to 500 range of aspect ratio;" do you see that?

16       A   I do.

17       Q   And you go on to say: "For instance,  
18 taking the smallest length, that's a 100 nanometer,  
19 and the smallest diameter, one nanometer, gives an  
20 aspect ratio of 100;" do you see that?

21       A   Yes.

22       Q   Is a one nanometer diameter a reasonable  
23 diameter for a multiwall carbon nanotube?

24       A   (No response)

25              MR. RIFFE: Objection, form.

1 THE WITNESS: Multiwalls tend to be  
2 bigger than that.

3 Q Are one nanometer diameter multiwall  
4 carbon nanotubes commercially available?

5 A (No response)

6 MR. RIFFE: Objection. Speculation.

7 THE WITNESS: I haven't researched  
8 the market but...yeah, I don't know. I  
9 don't know of any.

10 Q In your expertise, what's a reasonable  
11 diameter for a multiwall carbon nanotube?

12 A (No response)

13 MR. RIFFE: Objection. Scope.

14 THE WITNESS: Certainly greater than  
15 one.

16 MR. GLENN: Okay.

17 Q So taking the smallest diameter of one  
18 nanometer and the smallest length of a 100  
19 nanometer, to get an aspect ratio of a 100; is that  
20 a reasonable thing to do for a multiwall carbon  
21 nanotube aspect ratio?

22 A (No response)

23 MR. RIFFE: Objection, form.

24 Speculation.

25 THE WITNESS: That's what I did.

1 I think in hindsight, there are  
2 other combinations and other teachings in  
3 Sun that I could have highlighted, perhaps,  
4 it would have been a better choice.

5 Q Does Sun say what aspect ratio he uses in  
6 his examples, his experiment, starting at the  
7 Paragraph 54?

8 A I am not going to read through all of  
9 this, but it is my recollection that he does not.

10 Q Is it your recollection that he gives  
11 diameters for the carbon nanotubes he uses in his  
12 experiment?

13 A I don't recall. I don't recall him doing  
14 so.

15 Q Okay. I'll represent to you that he  
16 didn't. It's not a trick question, I'm not trying  
17 to trip you up.

18 Would you accept my representation that he  
19 does not give a diameter for multiwall carbon  
20 nanotubes that he uses in his experiment?

21 A Yeah, that's consistent with my best  
22 recollection.

23 Q And, again, I will represent to you that  
24 he doesn't give aspect ratios, and he doesn't give  
25 lengths; will you accept that representation?

1 A Yeah. I mean, again, that's consistent  
2 with what I recall.

3 Q Okay. Given that absence of knowledge, a  
4 POSITA would then not really know what aspect ratio  
5 multiwall carbon nanotubes were use in an  
6 experiment like that?

7 A (No response)

8 MR. RIFFE: Objection.

9 THE WITNESS: A POSITA would believe  
10 or conclude that those aspect ratios were  
11 consistent with the teachings elsewhere in  
12 Sun.

13 So Sun, there are places, again, I  
14 don't have all this memorialized, but there  
15 are various paragraphs where Sun gives  
16 ranges of lengths, ranges of aspect ratios,  
17 and, yeah, at 38, I believe.

18 And the POSITA would, you know,  
19 believe that what is being used in the  
20 examples, is, at least consistent with what  
21 he taught, you know, elsewhere in the  
22 specification.

23 Q Understood. But we agreed that the  
24 diameter range given but Sun of one to 20, greater  
25 than 20 and 50, multiwall carbon nanotubes don't

1 encompass that entire range; do they?

2 A What do you mean, that they don't have

3 diameters encompassing that entire range?

4 Q Well, in that range, one to 50, if you

5 will, again, for clarity, Paragraph 37, gives

6 specific diameters that range from one to 50;

7 correct?

8 A Well, that's not what it says. It

9 actually says, may have diameter that is greater

10 than 50.

11 Q Okay.

12 A (Continuing) So the upper limit is, at

13 least here in Sun, is not specified. But --

14 Q If a POSITA would look at that range and

15 believe that that entire range applies to multiwall

16 carbon nanotubes?

17 A I mean, I think, well, no, they wouldn't

18 believe it from one to anything applies to

19 multiwall carbon nanotubes. But, I think that they

20 would also be more concerned with the aspect ratio

21 than the diameter by itself, which is only one

22 component of the aspect ratio.

23 Q Sure.

24 A (Continuing) Yes.

25 Q But it's not reasonable to apply a one

1 nanometer diameter to a multiwall carbon nanotube?

2 A (No response)

3 MR. RIFFE: Objection, form.

4 THE WITNESS: I certainly wouldn't  
5 do that.

6 Q How would you describe or what would you  
7 call a bundle of carbon nanotubes that have not  
8 been disentangled?

9 A Well, you might call them a bundle, I  
10 think that in one of these references they're  
11 called a bale, or an agglomeration.

12 There are various possible terms.

13 Q And, again, I'm really not trying to trip  
14 you, I want to use whatever term you are you  
15 comfortable using; are you comfortable using  
16 bundle, do you want to use bale?

17 A Bundle is fine.

18 Q Okay. In your experience, if you have a  
19 bundle of carbon nanotubes; is it easier to  
20 disentangle that bundle if the aspect ratio is low  
21 or if the aspect ratio is high?

22 A Low.

23 Q So it's easier to disentangle lower aspect  
24 ratio carbon nanotubes than it is a higher carbon  
25 nanotube ratio?

1 A (No response)

2 MR. RIFFE: Objection, form.

3 THE WITNESS: Correct.

4 Q So if you were running an experiment and  
5 you failed to disentangle carbon nanotubes; do you  
6 have that hypothetical so for?

7 A Okay. I'm following your hypothetical.

8 Q If you were going to change only one thing  
9 about the experiment and run it again; would you  
10 make the aspect ratio bigger or would you make the  
11 aspect ratio lower?

12 A (No response)

13 MR. RIFFE: Objection, form.

14 THE WITNESS: I probably wouldn't do  
15 either one of those.

16 I probably would make the oxidation  
17 process a little more harsh, maybe a little  
18 longer, a little bit higher temperature, a  
19 little bit stronger acid.

20 MR. GLENN: Okay.

21 Q If you were to run the experiment a second  
22 time and only change the aspect ratio; would  
23 changing the aspect ratio higher, more likely lead  
24 to success, or changing the aspect ratio lower?

25 A Yeah, well, first of all, you don't

1 necessarily get to pick an aspect ratio, right. In  
2 fact, it's something that you sort of find out  
3 after the fact, somewhat laboriously, by looking at  
4 a bunch of electron-microscope pictures and stuff  
5 like this.

6 But, in general, if the nanotubes were  
7 shorter, they would be easier to separate.

8 Q Fair enough. Let's turn to the second  
9 combination that you use in your Declaration.

10 That would be the combination of Farrugia  
11 and Narayan.

12 A Yes.

13 Q I'm not sure how to pronounce Narayan; are  
14 you familiar with that pronunciation?

15 A Sure. I don't know that either, I've been  
16 calling Farrugia, Farrusia (Phonetic) but you're  
17 probably saying it right. So we will go with  
18 Farrugia, that's fine.

19 Q Okay. I just started calling it Farrugia  
20 and that's what it is in my head.

21 A I think that's right.

22 Q All right. Looking at your Declaration,  
23 we will get to the part of your Declaration where  
24 you were talking about that combination. I think  
25 that's somewhere around Paragraph 195.

1 A (Witness perusing documents.)

2 Yeah. Okay.

3 Q That's in your Declaration, that's deeper  
4 into the analysis, but that's 195, it starts there.

5 A Right. Yeah. Okay.

6 Q Okay. It is your belief or your opinion,  
7 I should say, that the combination of Farrugia and  
8 Narayan teaches discrete multiwall carbon  
9 nanotubes?

10 A It does.

11 Q And if we look at your detailed analysis,  
12 again, that starts at Paragraph 202, PDF Page 121.

13 A (Witness perusing documents.)

14 Okay. Yes.

15 Q I'm trying to get down to the part where  
16 you find discreteness. I forgot to write the  
17 individual paragraph number for that, for that one.

18 Oh, here it is, Paragraph 215.

19 A That's page what?

20 Q Sorry. Page 129.

21 A Okay.

22 Q Here you say: "Third, Farrugia describes  
23 that the nanotubes are discrete, example, that the  
24 nanotubes in the dispersion are generally  
25 individually distinct, e.g., lacking direct

1 association with other nanotubes along  
2 substantially the length of the nanotubes. Indeed,  
3 Farrugia specifically states that 'discrete  
4 nanotubes aggregates of nanotubes, or both discrete  
5 and aggregate nanotubes may be suitable for use  
6 according to the present disclosure.'"

7 Did I read that correctly?

8 A Yes.

9 Q Is there any other aspect of Farrugia, in  
10 your opinion, that teaches the use of discrete  
11 nanotubes in a dispersion?

12 A See, that's Paragraph 24. I can't say  
13 definitively, but this is the only place, or not  
14 the only place, but, certainly, this is the place  
15 that I have cited to. And, yeah, in fact, I've  
16 switched over to the Farrugia Exhibit and I'm  
17 looking at that statement right now.

18 Q Correct. And I'll represent to you, as I  
19 read Farrugia, that one sentence that you quote in  
20 Paragraph 215 is the only place in Farrugia I can  
21 find that discusses whether the nanotubes are  
22 discrete or not discrete.

23 I wanted to make sure you didn't know of a  
24 place I missed; do you know of a place, other than  
25 that sentence?

1 A Well, I just did a search on discrete and  
2 it found the two occurrences of discrete in 24.

3 You know, I think Farrugia, you know,  
4 talks about, you know, dispersions, dispersed and  
5 all this sort of thing. And so those may be  
6 synonyms for discrete or implications of discrete,  
7 but this is, as far as I could tell, this is the  
8 only place that the actual word, "discrete" is  
9 used.

10 Q Okay. And it's the only place you cite in  
11 your Declaration to this concept of discreteness  
12 being taught by Farrugia; correct?

13 A To the best of my recollection.

14 Q And Narayan doesn't teach or describe  
15 anything about discreteness of nanotubes; does it?

16 A (No response)

17 MR. RIFFE: Objection, form.

18 THE WITNESS: I am not sure. Again,  
19 I did a search for the word "discrete" and I  
20 did not find it.

21 Q Did you base any aspect of your opinion,  
22 that the combination teaches discrete carbon  
23 nanotubes, on some teaching in Narayan?

24 A The combination was based on Farrugia for  
25 elements such as discrete and Narayan was used to

1 add in specific aspect ratios.

2 I have to look carefully at my motivation

3 to combine sections, but, you know, there may be

4 some observation of similarities of Narayan

5 producing a dispersion, which a POSITA would

6 interpret as indicating that at least some of the

7 nanotubes are discrete, but I was not using Narayan

8 in the combination to get discreteness.

9 Q Fair enough. I just want to make sure I

10 wasn't missing something. It's always difficult,

11 when we talk about it, as you say, in the negative

12 and I didn't want to misrepresent your opinion.

13 If I was trying to create a resin that was

14 conductive and I used carbon nanotubes in that

15 resin; would discrete carbon nanotubes cause that

16 resin to be more electrically conductive, or would

17 none discrete carbon nanotubes cause that resin to

18 be more electrically conductive?

19 A (No response)

20 MR. RIFFE: Objection. Scope.

21 THE WITNESS: It's a little

22 complicated, it sort of depends on how they

23 might be none discrete. But, certainly, if

24 they are discrete, you can use a smaller

25 amount of the nanotubes to get a similar

1 conductivity, right. These things become  
2 conductive because the nanotubes introduce a  
3 conductivity.

4 And if you've got a single nanotube  
5 versus a bundle of nanotubes, that bundle is  
6 not giving you much more conductivity than a  
7 discrete one but it's adding a lot more  
8 nanotubes, right. So you can get a similar  
9 property with a lower amount of nanotubes if  
10 they're discrete.

11 Q Do you get greater conductivity if the  
12 nanotubes have a higher aspect ratio or a lower  
13 aspect ratio?

14 A (No response)

15 MR. RIFFE: Objection.

16 THE WITNESS: Well, again, none of  
17 this stuff is simple.

18 To some degree, making the aspect  
19 ratio higher makes the conductivity better,  
20 but if the aspect ratio becomes too high, it  
21 becomes hard to disperse the nanotubes. And  
22 the viscosity of the, you know, either the  
23 solution that you initially produced them  
24 in, the liquid, or the polymer precursor,  
25 you know, monomer solution that you

1 polymerize, those things become very viscous  
2 if the aspect ratio is too high.

3 And so, you know, there is kind of a  
4 good range, you know, a compromise in aspect  
5 ratios, you want it high enough, but not too  
6 high.

7 Q And you would agree that Farrugia is  
8 trying to make his toner conductive; correct?

9 A That, yeah, that's basically what Farrugia  
10 is trying to do. I mean, both of these patents  
11 give off wide range of...well, Farrugia gives a  
12 range of properties that she is trying to achieve  
13 and, certainly, conductivity is one of them.

14 Q If we turn to Page 117, and this is  
15 Paragraph 195, the back half of Paragraph 195, of  
16 your Declaration.

17 A (The Witness complied with the request of  
18 counsel.)

19 Q Do you see that on Page 117?

20 A 117?

21 Q Yeah, PDF Page 117, it's Paragraph 195.

22 A (Witness perusing documents.)

23 Right, okay. And 195 starts on 116.

24 Q It does start on 116, yes.

25 And 116, Paragraph 195 is talking about

1 your primary reason or your first reason a POSITA  
2 would be motivated to combine these two references;  
3 correct?

4 A Yeah. Yes, yes.

5 Q And in it you say: "Narayan's specific  
6 guidance about the property aspect ratio already  
7 identified by Farrugia as being relevant to a  
8 shared objective, electrically conductive  
9 nanotube/polymer compositions," it's shared  
10 objective of for both Narayan and Farrugia for  
11 electrical conductivity; correct?

12 A Yes. Yes, I guess Farrugia has a whole  
13 bunch of different properties that they want to  
14 improve, and electrical conductivity is one of  
15 them.

16 But to the extent that a POSITA is  
17 particularly interested in the electrical  
18 conductivity, then Narayan has useful teachings on  
19 that.

20 Q And Narayan teaches some aspect ratios,  
21 aspect ratios to achieve this electrical  
22 conductivity; correct?

23 A Narayan teaches a range of electrical  
24 conductivities and I would have to go look to be  
25 sure what they are. I think it's greater than

1 five, greater than 20, greater than a 100, I mean,

2 I am going by memory, so don't hold me to it.

3 Q Understood. If you look at Page 113, PDF

4 Page 113 of your Declaration, at Paragraph 195, you

5 cite to those ranges; if that refreshes your

6 memory?

7 A PDF page, what, 120?

8 Q 113.

9 A Oh, 113. Okay.

10 Q At Paragraph 189.

11 A (Witness perusing documents.)

12 Sorry, I'm just...yes. All right. I

13 didn't do it quite right from memory. I said it's

14 greater than five, greater than ten, greater then a

15 100. Yes. Yeah.

16 I think, to be fair, Narayan gives some

17 other numbers as well, which I do quote elsewhere

18 in the Declaration, but I didn't quote there,

19 because I am not really relying on those numbers.

20 Q Paragraph 14...Let's look at what Narayan

21 actually says.

22 A Yeah, that would be good.

23 Q Yeah. Why don't we go to Exhibit 1008.

24 A (Witness perusing documents.)

25 Got it.

1 Q It's LG-1008. Let me make sure we are  
2 talking about the same thing. We did that at the  
3 beginning, but this is U.S. Patent Application  
4 Publication, dated November 20th, 2003, to Narayan  
5 et. al.; right?

6 A Yes.

7 Q And the section that you quote, I believe  
8 that's at Paragraph 14.

9 A Okay. Yes.

10 Q And that quote, if you see it in 14 say:  
11 "Preferably carbon the nanotubes have an aspect  
12 ratio greater than or equal to about ten, more  
13 preferably, greater than or equal to about a 100;"  
14 that's what you quote; right?

15 A Yes.

16 Q That's not what the whole thing says  
17 though; does it?

18 A No. And I don't think I was trying to  
19 hide that. There is at least one place in the  
20 Declaration where I give the whole quote.

21 Q To be fair to you, yes, you do give the  
22 entire quote.

23 But, again, for clarity here, nine says  
24 that more preferably greater than or equal to about  
25 a 1,000; correct?

1 A That's what it says.

2 Q Okay. So in Narayan's teaching, bigger  
3 than a 1,000 is what's most preferred?

4 A (No response)

5 MR. RIFFE: Objection, form.

6 THE WITNESS: That's what Narayan  
7 says.

8 Q Okay. Why would a person of ordinary  
9 skill in the art then see Narayan as teaching a  
10 range of 25 to 500?

11 A Because, while Narayan teaches a range of  
12 greater than five greater, than ten, greater than a  
13 100, my understanding of how a POSITA can draw  
14 teachings from ranges quoted in patents, is that  
15 they can, you know, draw instruction or teaching  
16 from any part of that range.

17 It doesn't have to necessarily be what  
18 that reference says is most preferred; it just has  
19 to be something that they teach.

20 And, in addition to that, I think that a  
21 POSITA, if I were doing this, and I were reading  
22 those teachings in Narayan, I would think about  
23 this and I would say, well, okay, it's teaching  
24 that I can use aspect ratios of greater than five  
25 to improve conductivity.

1 And it could be that aspect ratios of a  
2 1,000, again, that's increasing the viscosity,  
3 making it more difficult to disperse the nanotubes  
4 and so forth, I might look for a compromise. I  
5 might look for something that is, you know, not as  
6 high as a 1,000, higher than five, maybe higher  
7 than ten, I would look for a compromise.

8 As we discussed, the conductivity is  
9 better when it's higher, but then the  
10 processability goes down, if it's higher. So, you  
11 know, the range in the 649 Patent is a good  
12 compromise, you know, it's consistent with the  
13 teaching of Narayan, so, a POSITA could certainly  
14 conclude that.

15 Q You don't talk about any of this  
16 compromise motivation in your Declaration; do you?

17 A I do not.

18 Q Your motivation, as stated in your  
19 Declaration, is the shared conductivity, the  
20 shared, how is it referenced there, the shared  
21 objective of electric conductivity, that's the  
22 motivation for combining Farrugia and Narayan in  
23 your Declaration; correct?

24 A (No response)

25 MR. RIFFE: Objection, form.

1 THE WITNESS: Well, that's certainly  
2 is a motivation. I would have to look  
3 through what I wrote in that, reasons to  
4 combine, let's see, the first reason to  
5 increase conductivity.

6 I think, let's see, yeah, the other  
7 reasons are sort of the comparable  
8 materials, comparable compositions, I think,  
9 yeah, comparable compositions and so forth.

10 So, yes, electrical conductivity is  
11 the thing that I cited to as the motivation.  
12 But, you know, in order to practice it, you  
13 have to make it, right? And, so you have to  
14 have a formulation, for instance, which is  
15 processable.

16 And I think somewhere in Farrugia it  
17 talks about, you know, pouring this stuff  
18 into a mold or making --

19 Q I'm sorry. Is it your testimony, your  
20 belief that the aspect ratios of over a 1,000  
21 Farrugia believes are not processable or teaches  
22 that they are not processable?

23 A No, I --

24 MR. RIFFE: Objection.

25 Mischaracterized testimony.

1 THE WITNESS: Well, certainly, at  
2 some point over a 1,000, that's going to  
3 become an issue. I'm not sure that a 1,000  
4 is the, you know, decision point.

5 But, again, I think that Narayan  
6 teaching a range greater than five, greater  
7 than ten, greater than a 100, there is lots  
8 of aspect ratios in that range that a POSITA  
9 could choose which fall in the range of the  
10 649 Patent.

11 And the POSITA might choose those  
12 aspect ratios for a number of reasons, you  
13 know, including, that they have sufficient  
14 processability. Maybe those are the  
15 nanotubes that the POSITA has available.

16 But they in the range taught by  
17 Narayan and so they're in the range of the  
18 649 Patent.

19 Q But it's not disputable that Narayan  
20 believes that the most preferable aspect ranges are  
21 above a 1,000; is it?

22 A That's what Narayan says.

23 Q Okay. Fair enough.

24 MR. GLENN: I think that's about all  
25 I've got, counsel.

1 MR. RIFFE: Okay. Can we take a  
2 short break, maybe five minutes, and we will  
3 be right back?

4 MR. GLENN: Sure.

5 MR. RIFFE: All right. We'll be  
6 back at let's say we'll be back at 12:30  
7 maybe 11:30 Central.

8 (Whereupon, a recess was taken.)

9 (The deposition resumed with all  
10 parties present.)

11 MR. RIFFE: Let's go back on the  
12 record.

13 MR. GLENN: We are ready to go back  
14 on the record.

15 MR. RIFFE: All right. We have no  
16 further questions either. So, I think we  
17 can close the record.

18 MR. GLENN: Agreed.

19 THE REPORTER: Before we disconnect,  
20 please indicate which format you would like  
21 the transcript in.

22 MR. GLENN: Do you have a  
23 preference, Tim?

24 MR. RIFFE: In terms of like --

25 THE REPORTER: In terms of the

1 format, ASCII or PDF?

2 MR. RIFFE: PDF I think is fine for

3 us.

4 MR. GLENN: Same here. As long as

5 we can OCR, if we have to, if you can send

6 it reachable.

7 MR. RIFFE: Yeah, OCR would be

8 great, if you can do it?

9 THE REPORTER: Is the witness  
10 reading and signing?

11 MR. RIFFE: Yes, he'll read.

12 MR. GLENN: Off the record.

13

14

15 (Whereupon, at 12:40 o'clock p.m.,

16 the deposition was concluded.)

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1                    E R R A T A   S H E E T

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1 CERTIFICATE

2

3 STATE OF \_\_\_\_\_:

4 COUNTY/CITY OF \_\_\_\_\_:

5

6 Before me, this day, personally

7 DR. SAMUEL P. GIDO, who, being duly sworn, states

8 that the foregoing transcript of his Deposition,

9 taken in the matter, on the date, and at the time

10 and place set out on the title page hereof,

11 constitutes a true and accurate transcript of said

12 deposition.

13

14

15 \_\_\_\_\_  
DR. SAMUEL P. GIDO

16

17 SUBSCRIBED and SWORN to before me this \_\_\_\_\_

18 day of \_\_\_\_\_, 2025, in the jurisdiction

19 aforesaid.

20

21 \_\_\_\_\_

22 My Commission Expires Notary Public

23

24

25

1                   C E R T I F I C A T E

2

3   STATE OF CONNECTICUT )

4                                 ) ss.

5   COUNTY OF HARTFORD    )

6

7           I, Margaret Gmerek, a Shorthand (Stenotype)

8   Reporter and Notary Public of the State of

9   Connecticut, do hereby certify that the foregoing

10   Deposition, of the witness, DR. SAMUEL P. GIDO,

11   taken at the time and place aforesaid, is a true

12   and correct transcription of my shorthand notes.

13           I further certify that I am neither counsel

14   for nor related to any party to said action, nor

15   in any wise interested in the result or outcome

16   thereof.

17           IN WITNESS WHEREOF, I have hereunto set my

18   hand this 14th, day of March 2025.

19

20

21

Margaret Gmerek  
MARGARET GMERЕК

22

23

24

25

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