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UNITED STATES INTERNATIONAL TRADE COMMISSION
WASHINGTON, D.C.

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In the Matter of) Investigation No.
CERTAIN BIO-LAYER) 337-TA-1344
INTERFEROMETERS AND)
COMPONENTS THEREOF)
)

)

ZOOM VIDEOTAPED DEPOSITION OF MICHAEL SAILOR
New York, New York
Thursday, May 25, 2023
Volume I

Reported by:
LORI M. BARKLEY
CSR No. 6426
Job No. 5924944

1 UNITED STATES INTERNATIONAL TRADE COMMISSION 2 WASHINGTON, D.C. 3 4 5) 6) 7 In the Matter of) 8 CERTAIN BIO-LAYER) Investigation No. INTERFEROMETERS AND) 337-TA-1344 9 COMPONENTS THEREOF) 10) 11) 12) 13 Zoom Videotaped deposition of MICHAEL SAILOR, 14 Volume I, taken on behalf of Respondent at New York, New 15 York, beginning at 9:12 a.m. and ending at 9:04 p.m. on 16 Thursday, May 25, 2023, before LORI M. BARKLEY, 17 Certified Shorthand Reporter No. 6426. 18 19 20 21 22 23 24 25	1 APPEARANCES (Continued): 2 3 Videographer: Shawna Hynes 4 5 Concierge: Dan Acosta 6 7 Also Present: Paul Gennari (USITC) 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25
Page 2	Page 4
1 APPEARANCES: 2 3 PERKINS COIE LLP 4 BY: Hari Santhanam Esq. 5 and 6 James B. Coughlan 7 Attorneys at Law 8 110 North Wacker, Suite 3400 9 Chicago, IL 60606 10 312-324-8447 11 HSanthanam@perkinscoie.com 12 Jcoughlan@perkinscoie.com 13 14 HAUG PARTNERS LLP 15 BY: Jonathan Herstoff 16 and 17 Conrad Stumpf 18 Attorneys at Law 19 745 5th Avenue, 10th Floor 20 New York, NY 10151 21 212-588-0800 22 Jherstoff@haugpartners.com 23 Cstumpf@haugpartners.com 24 25	1 I N D E X 2 WITNESS 3 MICHAEL SAILOR 4 PAGE 5 Direct Examination by Mr. Santhanam 8 6 Cross-Examination by Mr. Stumpf 370 7 8 EXHIBITS 9 NUMBER DESCRIPTION PAGE 10 11 Exhibit 1 Sailor Rebuttal Expert Report 14 12 Exhibit 2 Sailor Declaration in Support of 15 Sartorius' Opening Claim Construction Brief 13 14 Exhibit 3 Sailor Materials Considered List 18 15 Exhibit 4 US Patent Number 7394547 24 16 Exhibit 5 US Patent Number 7728982 25 17 Exhibit 6 US Patent Number 8305585 25 18 Exhibit 7 US Patent Number 7445887 25 19 Exhibit 8 Appendix A to Sailor Report 27 20 Exhibit 9 Article Titled A Porous 36 Silicon-Based Optical Interferometric Biosensor 21 22 Exhibit 10 Article Titled A Label-Free 67 Porous Alumina Interferometric Immunosensor 23 24 25
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2 (Pages 2 - 5)

1 INDEX (Continued):		1 in this action, nor am I financially interested in the 06:13:29	
2 Exhibit 11 Publication Titled Real-Time 148		2 outcome. 06:13:32	
3 Monitoring of Enzyme Activity in		3 If there are any objections to proceeding, 06:13:33	
4 a Mesoporous Silicon Double		4 please state them at the time of your appearance. 06:13:36	
5 Layer		5 Counsel and all present will now state their appearances 06:13:40	
6 Exhibit 12 FOA Reference Guide For Fiber 165		6 and affiliations for the record, beginning with this 06:13:43	
7 Optics -- Connector Types and		7 noticing attorney. 06:13:46	
8 Terminology		8 MR. SANTHANAM: This is Hari Santhanam from 06:13:48	
9 Exhibit 13 Fiber Optics Technician's Manual 165		9 Perkins Coie LLP on behalf of the Respondent Greater 06:13:50	
10 Exhibit 14 Exhibit Used at the Deposition 279		10 Bio, Inc. 06:13:56	
11 of Dr. Hong Tan		11 MR. HERSTOFF: Jonathan Herstoff. I'm from the 06:13:58	
12 Exhibit 15 Paper Titled Direct Monitoring 281		12 law firm Haug Partners LLP on behalf of complainant 06:14:01	
13 of Antigen-Antibody Interactions		13 Sartorius Bioanalytical Instruments, Inc., and with me 06:14:06	
14 by Optical Fiber Bioprobe		14 is my colleague Conrad Stumpf. 06:14:09	
15 Exhibit 16 Article Titled Fiber Optic 299		15 MR. GENNARI: This is Paul Gennari of the OUII. 06:14:14	
16 Direct-Sensing Biosensor Applied		16	
17 In Detecting Bio layer Thickness		17	
18 of Nanometer Grade		18 MICHAEL SAILOR, 06:12:39	
19 Exhibit 17 Yu Article in Clinical Chemistry 321		19 having been administered an oath, was examined and	
20 Exhibit 18 US Patent Number 5804453 327		20 testified as follows:	
21 Exhibit 19 Declaration of Nathaniel E. 335		21 06:14:41	
22 Frank-White With Metrotek		22 BY MR. SANTHANAM:	
23 Website Listing		23 Q. Good morning, Dr. Sailor. Just for the record, 06:14:45	
24 Exhibit 20 Brecht Article Titled Recent 341		24 would you go ahead and spell out your full name. 06:14:49	
25 Developments in Optical		25 A. Sure. It's Michael Joseph Sailor, 06:14:53	
Transducers for Chemical or			
Biochemical Applications			
Exhibit 21 Birkert Article Titled 344			
Development of an Assay For			
Label-Free High-Throughput			
Screening of Thrombin Inhibitors			
By Use of Reflectometric			
Interference Spectroscopy			
Exhibit 22 Patent Owner's Preliminary 347			
Response			
	Page 6		Page 8
1 New York, New York, Thursday, May 25, 2023		1 M-I-C-H-A-E-L, J-O-S-E-P-H, S-A-I-L-O-R. 06:14:58	
2 9:12 a.m.		2 Q. Now, I understand you're in New York City at the 06:15:08	
3		3 moment. Are you at the offices of Haug Partners? 06:15:11	
4 06:11:47		4 A. I am, yes. 06:15:15	
5 VIDEO OPERATOR: Good morning. We are going on 06:11:47		5 Q. Okay, and where is your, you know, aside from 06:15:16	
6 the record at 9:12 a.m. on May 25th, 2023. Please note 06:11:58		6 today, which city and state do you reside in? 06:15:19	
7 that this deposition is being conducted virtually. 06:12:07		7 A. I live in San Diego, well in La Jolla, 06:15:22	
8 Quality of recording depends on the quality of 06:12:11		8 California. City of San Diego. 06:15:26	
9 camera and internet connection of participants. What is 06:12:13		9 Q. And some of these questions I'm going to be 06:15:30	
10 seen from the witness and heard on screen is what will 06:12:19		10 asking because we're in this age of remote depositions. 06:15:34	
11 be recorded. Audio and video recording will continue to 06:12:21		11 Is there anyone else in the room with you right 06:15:36	
12 take place unless all parties agree to go off the 06:12:27		12 now? 06:15:39	
13 record. 06:12:31		13 A. Yes. 06:15:41	
14 This is media unit one of the video-recorded 06:12:32		14 Q. Who are those individuals? 06:15:42	
15 deposition of Dr. Michael Sailor, taken by counsel for 06:12:36		15 A. They're the two gentlemen on the screen, 06:15:44	
16 Respondent in the matter of Certain Bio-Layer 06:12:44		16 Jonathan Herstoff -- well, actually you're not on the 06:15:48	
17 Interferometers and Components Thereof filed in the 06:12:52		17 screen. And Conrad Stumpf. 06:15:54	
18 United States International Trade Commission, case 06:12:53		18 I think they're counsel for -- I understand 06:15:56	
19 number -- I'm sorry, INZ number 337-TA-1344. 06:12:56		19 they're counsel for Haug Partners. 06:15:58	
20 This deposition is being conducted remotely, 06:13:05		20 Q. And do you have any documents in front of you in 06:16:01	
21 using virtual technology. My name is Shawna Heinz, 06:13:08		21 the room? 06:16:05	
22 representing Veritext Legal Solutions and I'm the 06:13:13		22 A. I do. 06:16:05	
23 videographer. 06:13:17		23 Q. And what are those documents? 06:16:06	
24 The court reporter is Lori Barkley from the firm 06:13:19		24 A. It's two very large binders. The first one is 06:16:10	
25 Veritext Legal Solutions. I'm not related to any party 06:13:23		25 titled Rebuttal Expert Report of Michael J. Sailor PhD, 06:16:16	
	Page 7		Page 9

3 (Pages 6 - 9)

1 5, this is Bates labeled for the record SBAI-ITC040 06:41:39 2 through 057. And it is US Patent Number 7728982. 06:41:47 3 Doctor, can you confirm that this is US patent 06:41:58 4 Number 7728982? 06:42:01 5 A. Give me a second. Yes. 06:42:05 6 Q. And if we refer to this for short as the '982 06:42:15 7 patent, will you understand what I'm referring to? 06:42:19 8 A. Yes. 06:42:22 9 Q. If we go to Exhibit 6, what's been marked as 06:42:23 10 Exhibit 6. For the record, this is SBAI-ITC 58 through 06:42:27 11 75. It is US Patent Number 8305585. 06:42:41 12 Doctor, can you confirm that this is US Patent 06:42:49 13 Number 8305585? 06:42:42 14 A. Yes. 06:42:56 15 Q. And -- 06:42:58 16 A. Let me just scroll and make sure. Sorry, I 06:42:59 17 didn't quite get to the bottom of it. I just want to 06:43:02 18 make sure that all the pages came through. 06:43:04 19 Yep. 06:43:08 20 Q. If we refer to this as the '585 patent for 06:43:08 21 short, will you understand what I'm referring to? 06:43:11 22 A. Yes. 06:43:18 23 Q. And let's go to what's been marked as Exhibit 7 06:43:18 24 for identification. For the record this is SBAI-ITC 18 06:43:21 25 through 39. 06:43:27 Page 26	1 THE CONCIERGE: Go ahead and refresh your 06:45:16 2 folder. It will be available. 06:45:18 3 THE WITNESS: Okay, that one's a lot easier, a 06:45:30 4 lot shorter. Yes, I've got it, Exhibit 8. 06:45:32 5 BY MR. SANTHANAM: 06:45:35 6 Q. Can you confirm that Sailor Exhibit 8 is 06:45:35 7 appendix A to your report, Doctor? 06:45:37 8 A. Yes. 06:45:47 9 Q. And is a copy of your C.V.; is that right? 06:45:48 10 A. That's correct. 06:45:50 11 Q. Doctor, I'm going to be asking some questions a 06:45:51 12 little bit about your background. I just want to get 06:46:12 13 first at a high level your educational background. 06:46:13 14 You have a bachelor's in chemistry from Harvey 06:46:17 15 Mudd College that you obtained in 1983; is that right? 06:46:20 16 A. That's correct. 06:46:23 17 Q. You have a Ph.D. in inorganic chemistry from 06:46:25 18 Northwestern University in 1988; is that right? 06:46:28 19 A. That's correct. 06:46:31 20 Q. And you did your post-doc at Stanford University 06:46:32 21 and California University of Technology from 1988 to 06:46:36 22 1990; is that right? 06:46:40 23 A. I'm not sure I heard that last part. I did my 06:46:47 24 post-doctoral work at Stanford University and the 06:46:49 25 California Institute of Technology. 06:46:52 Page 28
1 Doctor, can you confirm that this is US Patent 06:43:29 2 Number 7445887? 06:43:32 3 A. Yes. 06:43:52 4 Q. And if we refer to this as the '887 patent for 06:43:53 5 today's purposes, will you understand what I'm referring 06:43:56 6 to? 06:43:57 7 A. Yes. 06:44:00 8 Q. Now, before your involvement in this case, 06:44:00 9 Doctor, had you come across any of these four asserted 06:44:02 10 patents? 06:44:06 11 A. Come across? I look at a lot of documents in 06:44:09 12 my, you know, in my daily job. And I can't say for sure 06:44:14 13 that I didn't view these at one point over the years. 06:44:20 14 As you know, this is an area in which I work. I 06:44:23 15 don't recall specifically seeing them. 06:44:29 16 Q. So you have no specific recollection of having 06:44:31 17 reviewed any of these four asserted patents? 06:44:34 18 A. Not before -- I hadn't -- not before they had 06:44:45 19 been brought to my attention by Haug Partners in the 06:44:50 20 context of this case. 06:44:53 21 MR. SANTHANAM: Dan, can you mark document 06:44:57 22 number 8 as Sailor Exhibit 8. 06:45:03 23 THE CONCIERGE: Yes, sir. 06:45:06 24 (Exhibit 8 was marked for identification by the 06:45:07 25 court reporter and is attached hereto.) 06:45:16 Page 27	1 Q. You did your post-doc work at Stanford 06:46:58 2 University and the California Institute of Technology 06:47:00 3 from 1988 to 1990; is that right? 06:47:03 4 A. Correct. 06:47:06 5 Q. Does that accurately summarize your educational 06:47:08 6 background prior to beginning your professional work? 06:47:10 7 A. Yes, that's my formal education. 06:47:18 8 Q. Now, after you did your post-doc, Doctor, you 06:47:19 9 joined the University of California San Diego; is that 06:47:26 10 right? 06:47:29 11 A. Yes. 06:47:29 12 Q. You had a number of positions at UCSD from 1990 06:47:31 13 through present; is that right? 06:47:36 14 A. Yes. 06:47:38 15 Q. And you currently hold appointments in the 06:47:38 16 Department of Chemistry, Biochemistry, Bioengineering 06:47:43 17 and Nanoengineering; is that right? 06:47:48 18 A. That's a little bit a misstatement. My 06:47:49 19 appointment is in the Department of Chemistry and 06:47:52 20 Biochemistry. That's a distinct department. 06:47:55 21 And then there's another distinct department at 06:48:00 22 the university in which I'm an affiliate. And so my 06:48:05 23 appointment, my official appointment is chemistry and 06:48:08 24 biochemistry, and my affiliate appointments, as the 06:48:12 25 University calls them, are in the Department of 06:48:17 Page 29

8 (Pages 26 - 29)

1 Bioengineering and the Department of Nanoengineering. 06:48:17 2 Q. Now, Doctor, just so that I understand the scope 06:48:21 3 of your educational background and the work that you've 06:48:26 4 done at UCSD, you don't purport in this case to have any 06:48:30 5 degrees in economics; is that right? 06:48:36 6 A. That's correct, no degrees in economics. 06:48:39 7 Q. Yeah, and you don't purport to an expert in 06:48:42 8 economics; is that right? 06:48:45 9 A. I am not an expert in economics. 06:48:47 10 Q. Okay, you don't have any degrees in marketing, 06:48:49 11 is that right? 12 A. I have no degrees in marketing. 06:48:54 13 Q. You don't purport to be an expert in marketing, 06:48:55 14 correct? 06:48:59 15 A. I do not, that's correct. 06:48:59 16 Q. And you don't purport to be an expert on the 06:49:02 17 market landscape for the bio-layer interferometers 06:49:05 18 products that are at issue in this case, correct? 06:49:10 19 A. That's correct. 06:49:14 20 Q. Dr. Sailor, you've started a few companies, one 06:49:14 21 of which is called Precis Therapeutics; is that right? 06:49:18 22 A. Yes, it's pronounced Precis. 06:49:23 23 Q. Precis. Now, what does Precis Therapeutics do? 06:49:26 24 A. So Precis is a biotech, what we would refer to 06:49:33 25 as a biotech startup company. So it's very early stage. 06:49:36 Page 30	1 background sort of the chronology of that company. 06:51:27 2 It was merged with Cend Therapeutics, that's 06:51:32 3 spelled C-E-N-D. And I can't give you the exact dates 06:51:35 4 for that, I don't recall. 06:51:41 5 At that point, then Cend sometime later was 06:51:49 6 involved in a merger with Caladrius Biosciences, 06:51:52 7 C-A-L-A-D-R-I-U-S, and the outcome of that merger, that 06:51:56 8 became the NASDAQ-listed company Lysata, L-Y-S-A-T-A. 06:52:03 9 Q. Doctor, do any of these companies that we refer 06:52:18 10 to -- do any of those companies use interferometers 06:52:21 11 products sold by Sartorius or Gator Bio, to your 06:52:24 12 knowledge? 06:52:29 13 A. Not to my knowledge. 06:52:29 14 Q. And in the course of your research, to your 06:52:31 15 knowledge, have you used any interferometers products 06:52:35 16 sold by Sartorius or Gator Bio? 06:52:38 17 A. No, not to my knowledge. 06:52:42 18 The reason I say not to my knowledge, I'd just 06:52:45 19 like to qualify a little bit is I direct a research 06:52:48 20 laboratory. 06:52:53 21 I have graduate students who work with me, and I 06:52:54 22 engage pretty closely with them. But often they are off 06:52:57 23 doing experiments on their own. 06:53:01 24 And so they, you know, it's a possibility that 06:53:02 25 they have used those products. But not under my 06:53:07 Page 32
1 And it focuses on treatment of infectious 06:49:40 2 diseases using nanomaterials and other chemicals, 06:49:47 3 peptides in particular. 06:49:59 4 That's probably all I should say. It's an 06:50:00 5 early-stage company. 06:50:03 6 Q. And you've also been involved in founding a 06:50:04 7 company called Spinnaker Biosciences, S-P-I-N-N-A-K-E-R; 06:50:07 8 is that right? 06:50:14 9 A. Correct. 06:50:15 10 Q. And what does Spinnaker Biosciences do? 06:50:16 11 A. Spinnaker Biosciences is developing therapeutics 06:50:20 12 for treatment of diseases of the back of the eye, 06:50:23 13 focused on nanostructured silicon and silicon oxide 06:50:27 14 materials. 06:50:32 15 Q. And you've also been involved in founding or 06:50:39 16 starting Impilo Therapeutics; is that right? Impilo 06:50:42 17 Therapeutics? 06:50:47 18 A. Yeah, correct. 06:50:48 19 Q. For the record that's I-M-P-I-L-O. What is 06:50:50 20 Impilo Therapeutics do? 06:50:54 21 A. Impilo is no longer in existence. Impilo was a 06:50:58 22 company that was founded by me and a few others to 06:51:06 23 develop nano-therapeutics and therapeutic treatments 06:51:13 24 with a primary focus on treatment of cancer. 06:51:18 25 I believe I stated in my declaration, in my 06:51:23 Page 31	1 direction. 06:53:11 2 I don't recall ever having them tell me that 06:53:12 3 they've worked with them, or I don't recall ever having 06:53:14 4 them ever -- and I never told them to go use one of 06:53:18 5 those instruments. 06:53:22 6 Q. And so just to be clear, you personally haven't 06:53:24 7 used any of the interferometers products sold by 06:53:27 8 Sartorius or Gator Bio, correct? 06:53:30 9 A. That's correct. 06:53:33 10 Q. And you're not relying on any personal 06:53:33 11 experience with the Sartorius or Gator products in 06:53:36 12 reaching the opinions in this case; is that correct? 06:53:39 13 A. That's correct. 06:53:42 14 Q. Doctor, if you go to page 6 of your rebuttal 06:53:47 15 report, and this is deposition Exhibit 1, paragraph 6. 06:53:51 16 MR. HERSTOFF: Sorry, page 6 or paragraph 6? 06:54:15 17 MR. SANTHANAM: Paragraph 6. 06:54:18 18 THE WITNESS: Paragraph 6 of that report 06:54:28 19 beginning, "I am an expert in the field of sensing 06:54:31 20 technology, comma." 06:54:33 21 BY MR. SANTHANAM: 06:54:34 22 Q. Yeah. And if you go to the second sentence, you 06:54:34 23 say (as read): 06:54:52 24 25 In the context of my academic 06:54:53 Page 33

1 labels, correct? Including RIFs? 09:00:16	1 Okay, sorry, can you state it again? Let me 09:03:13
2 A. So you're asking as of 2003, there was 09:00:22	2 just -- 09:03:15
3 label-free sensors? 09:00:28	3 BY MR. SANTHANAM: 09:03:17
4 Q. Let me rephrase. As of 2003, there were known 09:00:31	4 Q. Let me -- I want a clean record. So, Doctor, as 09:03:17
5 label-free sensors including those based on RIFs, 09:00:35	5 of 2003, it was known that you could use horseradish 09:03:23
6 correct? 09:00:38	6 peroxidase as an enzyme label in immunoassays, correct? 09:03:30
7 MR. HERSTOFF: Objection to form. 09:00:40	7 MR. HERSTOFF: Object to form. 09:03:36
8 THE WITNESS: Were no -- I'm sorry, there 09:00:43	8 THE WITNESS: As of 2003, it was known that you 09:03:38
9 were -- well, I'm not sure I'm answering your question. 09:00:45	9 could use horseradish peroxidase in immunoassays such as 09:03:40
10 But there were lots of sensors that in 2003 that did not 09:00:48	10 in ELISA, for example. 09:03:47
11 use labels. 09:00:56	11 BY MR. SANTHANAM: 09:03:54
12 BY MR. SANTHANAM: 09:00:59	12 Q. And horseradish peroxidase in that context of an 09:03:54
13 Q. And among those that were in existence in 2003 09:00:59	13 ELISA is a label; is that right? 09:03:58
14 had been published about there were RIFs sensors that 09:01:04	14 MR. HERSTOFF: Object to form. 09:03:59
15 did not use labels, correct? 09:01:07	15 THE WITNESS: It can be referred to as a label. 09:04:03
16 A. Yes. All the Gauglitz and Brecht well predates 09:01:11	16 BY MR. SANTHANAM: 09:04:05
17 2003. And that was, you know, one of the -- one of many 09:01:17	17 Q. Doctor, you refer in your report -- if you go to 09:04:05
18 papers that came out on using -- attempting to do 09:01:22	18 paragraph 38, you say, "label biosensing typically 09:04:22
19 label-free sensing. 09:01:26	19 involves spatially localizing the label with the 09:04:24
20 Q. And when we refer to a label, that's a molecule 09:01:28	20 molecule that's being analyzed." 09:04:27
21 that could be used to detect an analyte, right? 09:01:34	21 Do you see that? 09:04:28
22 A. No. 09:01:39	22 A. Yes. 09:04:29
23 MR. HERSTOFF: Objection to form. 09:01:40	23 Q. And then if you go to the next paragraph, 09:04:32
24 THE WITNESS: No. The label is really broad 09:01:41	24 paragraph 39, you say that "a common solution to the 09:04:33
25 term. So you can't really just say it's a molecule. 09:01:48	25 problem of spatially localizing the analyte with the 09:04:40
Page 106	Page 108
1 For example, gold nanoparticles is used as labels all 09:01:51	1 label is what is known as a sandwich assay." 09:04:43
2 the time, not a molecule. 09:01:56	2 Do you see that? 09:04:46
3 BY MR. SANTHANAM: 09:01:59	3 A. Yes. 09:04:49
4 Q. So let me backup, Doctor. So one form of a 09:01:59	4 Q. So at a high level in an sandwich assay, you 09:04:50
5 label could be a fluorescent label; is that right? 09:02:02	5 have multiple layers of binding molecules; is that 09:04:55
6 A. Yes. 09:02:07	6 right? 09:05:06
7 Q. Another form of a label could be a radiolabel 09:02:08	7 A. See multiple layers. Do you mean by multiple 09:05:07
8 that uses a radioactive isotope; is that right? 09:02:12	8 two? 09:05:09
9 A. Yes. 09:02:18	9 Q. Sure, two. More than one. 09:05:13
10 Q. And another form of a label can be an enzyme; is 09:02:18	10 A. Yeah so sandwich assay generally has two what 09:05:17
11 that right? 09:02:26	11 I've been referring to as capture probes, and that's 09:05:20
12 A. That's right. 09:02:26	12 where the sandwich comes from. 09:05:26
13 Q. And in particular, one type of enzyme label that 09:02:27	13 You have one -- let's say for one example of 09:05:28
14 was used in the art was horseradish peroxidase; is that 09:02:31	14 using antibodies, which is a common one. 09:05:31
15 right? 09:02:31	15 The sandwich assay would be sandwiching your 09:05:35
16 MR. HERSTOFF: Objection to form. 09:02:40	16 analyte between two antibodies and both of these 09:05:38
17 THE WITNESS: What do you mean by the art? 09:02:40	17 antibodies have an affinity for that analyte that's 09:05:43
18 BY MR. SANTHANAM: 09:02:42	18 somewhat different. 09:05:46
19 Q. Well, as of 2003, it was known that you could 09:02:42	19 So that they don't bind to the same spot 09:05:47
20 use horseradish peroxidase as a label in immunoassays, 09:02:46	20 necessarily so they actually can -- can actually bind to 09:05:50
21 correct? 09:02:56	21 that analyte in separate spots to make the sandwich. 09:05:54
22 MR. HERSTOFF: Objection to form. 09:02:57	22 In other words, you can't put two slices of 09:05:57
23 THE WITNESS: I think it's spelled -- I think 09:03:01	23 bread down and then a piece of bologna on top and call 09:05:59
24 he's referring to assays, immunoassays, A-S-S-A-Y-S, not 09:03:04	24 it a sandwich. You have to the bologna in between the 09:06:01
25 acids. 09:03:12	25 two pieces of bread. 09:06:04
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28 (Pages 106 - 109)

1			1	THE WITNESS: Got it.	14:53:56
2	So the optical element includes a	14:50:00	2	MR. SANTHANAM: For the record, document 30 was	14:53:57
3	plurality flexible gripping arms such	14:50:03	3	used as an exhibit at the deposition of Dr. Hong Tan.	14:53:59
4	as arms, 54, designed to slide over the	14:50:05	4	Q. Now, Dr. Sailor, do you recall looking at this	14:54:09
5	end of fiber and grip the fiber by	14:50:08	5	as part of your report?	14:54:11
6	engagement of an annular or detente 56,	14:50:10	6	A. Yes.	14:54:14
7	on the fiber --	14:50:14	7	Q. And if you look at the post that you	14:54:14
8			8	discussed -- you discussed this as a prototype that	14:54:19
9	I'm slowing down on purpose because I realized	14:50:15	9	Dr. Tan had developed of bio-layer interferometry; is	14:54:24
10	we've got a person typing --	14:50:17	10	that right?	14:54:30
11	BY MR. SANTHANAM:	14:50:21	11	A. That's correct.	14:54:32
12	Q. I'd like you to just read to yourself, Doctor.	14:50:21	12	Q. My question to you, Doctor, is if you look at	14:54:32
13	A. Okay, yeah, good point, okay.	14:50:24	13	the post, LinkedIn post in Exhibit 14, there's no	14:54:37
14	Yes, so in that section, as you indicated,	14:50:52	14	reference in this post to an air gap, correct?	14:54:44
15	they're describing the parameters that are kind of the	14:50:59	15	A. Let me reread it. Give me a second. Yeah so	14:54:49
16	preferred dimensions of that air gap.	14:51:04	16	this document does not make clear that there's an -- or	14:55:14
17	Q. So in column 9, lines 29 through 37, that	14:51:11	17	even imply that there's an air gap in the design.	14:55:20
18	passage, the patent doesn't provide an explanation for	14:51:14	18	Q. Exhibit 14 also doesn't make reference to or	14:55:27
19	why there's an air gap in the first place, correct?	14:51:18	19	imply that there was an optical element greater than 50	14:55:30
20	A. Yeah, I guess it's -- you know, if you look a	14:51:46	20	nanometers, correct?	14:55:36
21	little bit further down on line 52 they state kind of	14:51:48	21	A. That's not in this document, no.	14:55:39
22	more giving the description of what -- how this would be	14:51:56	22	Q. And as far as you're aware, the prototype that's	14:55:42
23	operated (as read):	14:52:00	23	discussed in Exhibit 14, you're not aware otherwise	14:55:47
24			24	whether it included an air gap or an optical element	14:55:51
25	In operation, the optical assembly	14:52:00	25	greater than 50 nanometers, correct?	14:55:55
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1	is placed over the distal fiber end and	14:52:02	1	A. I really have no knowledge of this instrument	14:55:58
2	snapped into place on the fiber. Lower	14:52:05	2	from that era. And I only have the knowledge of what's	14:56:01
3	surface of assembly is then exposed to	14:52:08	3	been provided to me on this.	14:56:06
4	the sample analyte, etc.	14:52:12	4	MR. SANTHANAM: Can we turn to, Dan, can you	14:56:12
5			5	mark document number 9 as Exhibit 15?	14:56:26
6	And so I think -- I guess your question was do	14:52:15	6	THE CONCIERGE: Yes, sir, just a moment.	14:56:37
7	they give an actual reason for that air gap? I think	14:52:21	7	(Exhibit 15 was marked for identification by the	14:56:39
8	it's implied that it's to make that part removable.	14:52:25	8	court reporter and is attached hereto.)	14:56:51
9	BY MR. SANTHANAM:	14:52:30	9	(Technology discussion.)	14:56:51
10	Q. It doesn't actually state that, right? It	14:52:30	10	MR. SANTHANAM: For the record, Exhibit 15 is	14:57:01
11	doesn't actually state anywhere in the '547 patent that	14:52:34	11	Bates labeled Gator 2755 through Gator 2763.	14:57:06
12	the purpose of the air gap is to make the device -- the	14:52:37	12	Q. Dr. Sailor, can you confirm that this is the	14:57:15
13	optical element removable, correct?	14:52:40	13	Yang reference that you address in your report?	14:57:21
14	A. Yeah, I don't think this patent gives a reason	14:53:00	14	A. Scanning down. Yes, this is the Yang reference	14:57:26
15	for that air gap other than that implied in that	14:53:03	15	I referenced in my report.	14:57:29
16	statement that I've already read, that removability	14:53:09	16	Q. Now, if you can go to page 433, which the fourth	14:57:31
17	portion.	14:53:14	17	page of the PDF.	14:57:34
18	MR. SANTHANAM: Dan, can you mark document 30 as	14:53:17	18	A. Yes.	14:57:40
19	the next exhibit, which will be number 14.	14:53:21	19	Q. There's a section entitled reflectometric	14:57:41
20	(Exhibit 14 was marked for identification by the	14:53:25	20	interference spectroscopy (RIFS).	14:57:46
21	court reporter and is attached hereto.)	14:53:25	21	Do you see that?	14:57:51
22	THE CONCIERGE: Yes, sir. Just a moment.	14:53:25	22	A. Yes.	14:57:52
23	MR. SANTHANAM: For the record, document 30 --	14:53:38	23	Q. And there's a diagram there in that section,	14:57:54
24	THE CONCIERGE: Go ahead and refresh. It should	14:53:49	24	figure 3; you see that?	14:57:59
25	be available to pull the document up.	14:53:50	25	A. Yes, figure 3, I see that.	14:58:01
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1 Q. And Doctor, do you agree that Yang discloses a 14:58:02	1 apparatus shown on the right. 15:00:44
2 setup for reflectometric interference spectroscopy? 14:58:09	2 Q. And then the light is -- to your understanding, 15:00:46
3 A. Yes, this paper is referring to the RIfS setup. 14:58:15	3 is reflected back from the distal end of the probe, it's 15:00:50
4 This is -- this diagram is meant to depict 14:58:20	4 reflected back through the Y-shaped fiber to the 15:00:54
5 reflectometric interference spectroscopy system. 14:58:28	5 detector; is that right? 15:00:57
6 Q. And Yang's RIfS setup has a light source, 14:58:29	6 A. That's right. 15:01:01
7 correct? 14:58:34	7 Q. And in Yang's RIfS setup, the distal end of the 15:01:01
8 A. Yes. 14:58:34	8 Y-shaped optical fiber, the tip of the Y-shaped optical 15:01:07
9 Q. And in particular, Yang describes that light 14:58:35	9 fiber is mechanically coupled to the bioprobe; is that 15:01:12
10 source as a tungsten and halogen lamp; is that right? 14:58:38	10 right? 15:01:18
11 A. I believe so, yes. Yes, it's right there. 14:58:42	11 MR. HERSTOFF: Objection to form. 15:01:18
12 Q. And Yang's -- 14:58:47	12 THE WITNESS: The optical bioprobe is -- in 15:01:24
13 A. I'm sorry, could I just -- I don't know if it's 14:58:49	13 this -- what's indicated in the image is the optical 15:01:29
14 relevant. But it's actually a tungsten light not a 14:58:52	14 bioprobe is, you know, is coupled into or is part of 15:01:32
15 tungsten halogen light source. 14:58:55	15 the, you know, part of the optical chain and the 15:01:39
16 Back in this era, they call it out as a tungsten 14:58:57	16 experiment that goes through this SMA connector. 15:01:43
17 source. I think back in that era there weren't tungsten 14:59:00	17 BY MR. SANTHANAM: 15:01:47
18 halogen sources or they weren't as common. 14:59:05	18 Q. And via the SMA connectors, Doctor, the bioprobe 15:01:47
19 I could be wrong -- 14:59:07	19 is optically -- is mechanically coupled to the Y-shaped 15:01:53
20 Q. Doctor, if you read right below the header of 14:59:08	20 optical fiber; is that right? 15:01:58
21 section 3.1, it says the RIfS setup, figure 3, include a 14:59:10	21 A. Well, it's not clear. It could be glued in 15:02:04
22 12 watt tungsten halogen lamp with a fiber in coupling 14:59:16	22 place. This reference only refers to an SMA, a single 15:02:07
23 optics. 14:59:21	23 SMA connector. 15:02:11
24 Do you see that? 14:59:21	24 I would assume that that would be at the top of 15:02:12
25 A. Sorry, I was on where it says just the tungsten 14:59:26	25 that -- that box. And I don't know if it's clear that 15:02:14
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1 lamp. Hang on. 14:59:31	1 that fiber -- the thing that's called optical bioprobe 15:02:25
2 Where are you again? 14:59:32	2 on the bottom, is -- is not glued in place, physically 15:02:33
3 Q. On the fourth page, right below section 3.1, the 14:59:33	3 attached. 15:02:36
4 header, first line, the RIfS setup includes -- 14:59:38	4 Q. Doctor, you see right above the figure it says, 15:02:38
5 (Speaking simultaneously.) 14:59:43	5 all sections connected with standard sma905 connectors. 15:02:42
6 THE WITNESS: Sorry, I didn't, that's right. 14:59:44	6 Do you see that? 15:02:47
7 Sorry, you're correct. 14:59:46	7 A. Yes. 15:02:49
8 BY MR. SANTHANAM: 14:59:50	8 Q. So Yang is describing in its RIfS setup that the 15:02:51
9 Q. So Doctor, you agree that Yang's RIfS setup 14:59:50	9 optical bioprobe is mechanically coupled via SMA 15:02:55
10 includes a light source, specifically a tungsten halogen 14:59:54	10 connectors to the Y-type or Y-shaped optical fiber; is 15:03:00
11 lamp; is that right? 14:59:58	11 that right? 15:03:05
12 A. Yes. 14:59:59	12 A. Yes. 15:03:05
13 Q. Yang's RIfS setup includes a detector in the 15:00:00	13 Q. Now, if you look at figure 1B of Yang. This is 15:03:12
14 form of a spectrometer; is that right? 15:00:04	14 on the previous page, page 3 of the PDF, Bates labeled 15:03:15
15 A. Yes. 15:00:06	15 Gator 2759, if you look at figure 1B, Yang's bioprobe 15:03:25
16 Q. And Yang explains that that spectrometer is 15:00:07	16 includes an optical fiber portion to it, correct? 15:03:32
17 connected to a PC computer; is that right? 15:00:11	17 A. That's correct. 15:03:37
18 A. Yes. 15:00:14	18 Q. The optical fiber portion of the probe is coded 15:03:37
19 Q. And based on your understanding of Yang, during 15:00:16	19 on its distal end with an interference layer or film and 15:03:42
20 the operation of Yang's RIfS setup, light from the light 15:00:20	20 an antibody layer, correct? 15:03:47
21 source, travels through a Y-shaped optical fiber to a 15:00:25	21 A. Yeah, that's what's depicted in figure 1B, yes. 15:03:49
22 bioprobe; is that right? 15:00:29	22 Q. And to your understanding, the purpose of the 15:03:53
23 A. Yes, that's what I gathered from that. The 15:00:34	23 antibody layer in Yang's RIfS setup is to bind an 15:03:57
24 light emanates from the light source goes to the optical 15:00:36	24 analyte in a sample; is that correct? 15:04:12
25 fiber and then eventually ends up at the bottom of the 15:00:40	25 A. Yes, that's correct. 15:04:14
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1 Q. So let me re-ask that question so that we have a 15:04:15 2 clear record. To the best of your understanding, 15:04:18 3 Doctor, the purpose of the antibody layer in Yang's RIfS 15:04:20 4 setup is to bind analyte in a sample; is that correct? 15:04:24 5 A. That's correct. 15:04:29 6 Q. Now, if you look over to figure 1A, Yang's 15:04:31 7 interference layer, you would agree has two reflecting 15:04:35 8 surfaces? 15:04:37 9 A. Yeah, what's depicted in figure 1A is meant to 15:04:42 10 indicate the schematic of the light path. And as you 15:04:47 11 see, as I described earlier, the things depicted I1 and 15:04:50 12 I2 are the reflections from those two interfaces. 15:04:56 13 Q. And in particular, when infinite light reaches 15:04:59 14 the interference layer, it's partially reflected on the 15:05:05 15 proximal reflecting surface of the interference layer; 15:05:08 16 is that right? 15:05:12 17 A. Correct. 15:05:12 18 Q. And when it's reflect on the proximal reflecting 15:05:13 19 surface of the interference layer, it produces light 15:05:16 20 beam I1; is that right? 15:05:19 21 A. Correct. 15:05:22 22 Q. And then some of the incident light, Doctor, 15:05:23 23 continues on and is partially reflected at the distal 15:05:26 24 surface of the interference layer; is that correct? 15:05:30 25 A. Yes. 15:05:34 Page 286	1 Q. Now, we talked earlier about, you know, a 15:07:05 2 concept of a transducer. In the context of Yang's RIfS 15:07:10 3 setup, the bioprobe is a transducer, correct? 15:07:16 4 A. Yes, you could refer to it as transducer. 15:07:24 5 Q. If you turn to page 432 of Yang, which is the 15:07:28 6 third page of the PDF. 15:07:31 7 A. 432? 15:07:40 8 Q. Yeah, right below the two figures, figure 1A and 15:07:42 9 figure 1B, the text there, it reads (as read): 15:07:46 10 11 During the manufacturing process of 12 bioprobe, interference layers (10 to 20 13 nanometers, Tantalum pentoxide 50-600 14 nanometers special material.) 15 16 Do you see that? 15:08:01 17 A. Yes, yes. 15:08:02 18 Q. Yang's RIfS probe, Doctor, you would agree 15:08:03 19 includes a layer of Tantalum pentoxide that's 15:08:08 20 approximately 10 to 20 nanometers thick? 15:08:11 21 A. That's what they're depicting. 15:08:15 22 Q. And Yang's RIfS probe also includes a 15:08:16 23 interference layer of special material that's 15:08:20 24 approximately 550 to 600 nanometers thick; is that 15:08:23 25 correct? 15:08:23 Page 288
1 Q. And when light is reflected at the distal 15:05:35 2 reflecting surface of the interference layer produces a 15:05:38 3 light beam I2; is that correct? 15:05:41 4 A. Correct. 15:05:44 5 Q. And to your understanding, the way that the RIfS 15:05:44 6 setup works is that when the two light beams I1 and I2 15:05:48 7 interfere with one another it produces an interference 15:05:54 8 pattern; is that correct? 15:05:57 9 A. Correct. 15:06:00 10 Q. And so during the operation of Yang's RIfS 15:06:00 11 setup, when analyte binds to the layers of antibodies, 15:06:05 12 the interference will bear in that's that the RIfS setup 15:06:10 13 detects, correct? 15:06:14 14 A. Yes. 15:06:15 15 Q. If you look at figure 6 of Yang. And this is on 15:06:17 16 page 435 of Yang, I believe it's the second-to-last 15:06:30 17 page, it is Bates number 2762 -- can you let me know 15:06:38 18 when you're there. 15:06:41 19 A. This is figure 6 of the Yang reference? 15:06:45 20 Q. Correct. 15:06:49 21 A. Yes, I'm on that figure. 15:06:50 22 Q. And figure 6, Doctor, provides an example of a 15:06:52 23 reflectance spectrum showing a shift in the interference 15:07:00 24 pattern due to analyte binding, correct? 15:07:02 25 A. Correct. 15:07:04 Page 287	1 A. Correct. 15:08:27 2 Q. And as the two reflecting surfaces that we 15:08:29 3 talked about in Yang, the two sides of the interference 15:08:33 4 layer, you'd agree that those are separated by at least 15:08:36 5 50 nanometers; is that correct? 15:08:41 6 A. Yes, the two reflecting surfaces are separated 15:08:44 7 by at least 50 nanometers based on the dimensions that 15:08:47 8 are given. 15:08:52 9 Q. And more specifically, the two reflecting 15:08:53 10 surfaces are separated by about 50 to 600 nanometers, 15:08:56 11 correct -- 550 to 600 nanometers, correct? 15:09:01 12 A. Thank you, sorry. I thought we were going to 15:09:04 13 have another argument. 15:09:05 14 Well, depending on how you count the ten to 20 15:09:08 15 nanometers of tantalum oxide and where that reflection 15:09:15 16 is coming from, really what I would say is that you 15:09:16 17 would have to add ten nanometers to the 550 to 620 15:09:27 18 because the whole thickness of that interference film 15:09:27 19 you're talking about in figure 1A is actually the 15:09:30 20 combination of those two. 15:09:33 21 Q. Okay. So the two reflecting surfaces in Yang's 15:09:35 22 bioprobe are separated by about 560 to 620 nanometers; 15:09:40 23 is that right? 15:09:46 24 A. Yeah. 15:09:47 25 Q. And Doctor, if you turn to -- right when you 15:09:47 Page 289

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1 turn to page 433, which is the next page -- 15:10:02	1 evaporate, thermal evaporation, which is how the 15:12:33
2 A. Yeah. 15:10:02	2 tantalum oxide, I know, can be put on. 15:12:37
3 Q. Right below figure 3 there's the sentence that 15:10:10	3 So the special material would have to be some 15:12:38
4 starts with the light is partially? 15:10:12	4 material that be heated to it's vaporization temperature 15:12:41
5 Do you see that? 15:10:14	5 and then redeposited. 15:12:45
6 A. The light is partially; yes. 15:10:16	6 So that would be probably the limits of what I'd 15:12:49
7 Q. So it reads, "the light is partially reflected 15:10:17	7 be able to know about -- what I'd be able to guess 15:12:53
8 on the interfaces from the transparent interference 15:10:19	8 intuitive about that material and what I might use. 15:12:59
9 layer in front of the bioprobe. (Figure one)." 15:10:23	9 Q. I guess my question is slightly different. I 15:13:02
10 Do you see that? 15:10:26	10 think we're on the same track. But my question's 15:13:06
11 A. Yes. 15:10:26	11 slightly different. 15:13:08
12 Q. And so Yang, Doctor, describes its interference 15:10:27	12 If you wanted to use Yang's RfS setup and make 15:13:09
13 layer as a transparent interference layer, correct? 15:10:32	13 it functional, and you wanted to recreate it -- not 15:13:13
14 A. Yes, that's what they say. 15:10:37	14 necessarily to use the same material Yang did, how would 15:13:17
15 Q. And from a practical standpoint, for the RfS 15:10:38	15 you have selected the material for the interference 15:13:21
16 setup to work, the interference layer would have to be 15:10:42	16 layer? 15:13:25
17 transparent and transmit light, correct? 15:10:45	17 MR. HERSTOFF: Objection, asked and answered. 15:13:26
18 A. Sorry, I have to differ a little bit. But I 15:10:50	18 THE WITNESS: Based on how it's written, I would 15:13:29
19 don't think it's substantive. 15:10:52	19 try to find a material that is transparent and that can 15:13:32
20 But the interference layer doesn't have to be 15:10:54	20 be deposited by a standard vacuum-plated technique. 15:13:38
21 completely transparent. The films that we work with 15:10:56	21 BY MR. SANTHANAM: 15:13:45
22 have some absorption of light as well. 15:10:58	22 Q. And Doctor, if you needed guidance, you would 15:13:45
23 You just have to have enough light -- if the 15:11:02	23 have looked to other sources of information and 15:13:47
24 layer is absorbing, enough light has to make it to the 15:11:04	24 publications, correct? 15:13:50
25 bottom layer and back up to be able to get the 15:11:07	25 A. Most likely rather -- yeah, I think I agree with 15:13:55
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1 interference effect. 15:11:10	1 you. Rather than sending my students on a wild goose 15:13:58
2 So they said transparent interference layer, I 15:11:11	2 chase and just grabbing everything out of the lab and 15:14:02
3 take them that which is -- and based on the -- the 15:11:14	3 trying it, we would try to identify what might be a 15:14:04
4 tantalum oxide, anyway, it's a transparent layer. 15:11:20	4 suitable special material, if that answers your 15:14:07
5 It could be partially absorbing and still work. 15:11:21	5 question. 15:14:09
6 So I'd have to modify what you said a little bit. 15:11:27	6 Q. Correct, and -- 15:14:09
7 Q. For Yang's RfS setup to work, Doctor, the 15:11:31	7 A. And we would go to literature or use our own 15:14:11
8 interference layer would have to be able to transmit 15:11:37	8 experience to do that. 15:14:13
9 light to and from the distal end of the probe, correct? 15:11:40	9 Q. And among the things you would look for, Doctor, 15:14:14
10 A. It has to transmit some of the light, yes. 15:11:43	10 would be to see how -- what materials others in the art 15:14:17
11 Q. Now, you note in your opinions that Yang does 15:11:47	11 had used for an interference layer in a RfS setup, 15:14:21
12 not specifically identify what the special material of 15:11:52	12 correct? 15:14:24
13 the interference layer is; is that correct? 15:11:57	13 A. Not necessarily. I would look for a -- you 15:14:26
14 A. Correct. 15:12:00	14 know, a transparent material that I know that I can 15:14:31
15 Q. Now, if you read Yang when it was published and 15:12:00	15 attach an antibody to. 15:14:33
16 you wanted to replicate Yang's RfS setup, can you 15:12:05	16 Q. You would agree it would be helpful in setting 15:14:36
17 explain what you would have done to identify the 15:12:09	17 up Yang's RfS setup to look to what others in the art 15:14:41
18 interference layer? 15:12:13	18 had identified as a material for an interference layer 15:14:44
19 A. You mean to produce the interference layer? 15:12:15	19 that worked in a RfS setup, correct? 15:14:49
20 Q. Correct. 15:12:18	20 MR. HERSTOFF: Objection to form. 15:14:51
21 A. Yeah, so if I were to follow their recipe, I'd 15:12:20	21 THE WITNESS: I would look for a material to try 15:14:53
22 have to know what the special material is. That special 15:12:23	22 to follow the recipe as best I could. That's usually 15:14:56
23 material also has to be compatible with standard 15:12:26	23 what I tell my graduate students is, look, duplicate 15:14:58
24 vacuum-plated techniques. 15:12:30	24 this experiment but before you go doing something crazy 15:15:01
25 And so what they're talking about there is 15:12:31	25 and I trying your own experiment, duplicate this 15:15:04
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1 experiment exactly -- and I'm not referring to you being 15:15:06 2 crazy. 15:15:10 3 I hope you know this is sort of how I would 15:15:10 4 speak to my students, please try to reproduce the 15:15:12 5 experiment as written as close as you can. 15:15:15 6 So first at least you know your baseline. 15:15:20 7 BY MR. SANTHANAM: 15:15:23 8 Q. Right, and so among the materials you would look 15:15:23 9 at, Doctor, you would ask your students to look at other 15:15:26 10 researchers who have used RIFS setups and see what types 15:15:33 11 of interference layers they used, correct? 15:15:37 12 A. Yes, I probably would have to start with what 15:15:41 13 they're calling out, which is some material that I'd 15:15:47 14 tell them, you know, go find a material that can be 15:15:52 15 deposit -- vacuum deposited, thermally deposited on your 15:15:54 16 surface. 15:15:58 17 Q. And Doctor, do you have an opinion one way or 15:15:58 18 another as to whether someone in the 2003-2004 timeframe 15:16:02 19 would have been able to replicate Yang's RIFS setup? 15:16:07 20 MR. HERSTOFF: Objection to form. 15:16:14 21 THE WITNESS: 2003, so, sorry, let me go back 15:16:18 22 and check the publication. I'm not quite sure I 15:16:20 23 understand what you said but -- 15:16:22 24 BY MR. SANTHANAM: 15:16:26 25 Q. I can repeat the question so that we're on the 15:16:26 Page 294	1 could have put together all of this apparatus and done 15:18:00 2 the measurement as described. 15:18:03 3 I don't have any problem with the optical fiber 15:18:08 4 piece and everything. The chemistry, I guess, is where 15:18:11 5 there's a problem. Because, again, this is not a very 15:18:13 6 well-written paper in that regard. 15:18:17 7 I shouldn't say -- I don't want to criticize 15:18:19 8 these authors. But I think maybe they didn't, as I said 15:18:21 9 in my report, maybe they -- there was some special 15:18:27 10 property of some special material that they were not 15:18:30 11 disclosing to make it work. 15:18:32 12 I don't deny that you could put some films, 15:18:38 13 maybe a fully thick film of tantalum oxide or, you know, 15:18:42 14 silicon oxide material and replicate the interference 15:18:48 15 pattern that's seen or get close to it and get close 15:18:54 16 to -- yeah, so that's the main data they show there. 15:18:58 17 BY MR. SANTHANAM: 15:19:02 18 Q. I think that's in part what my question was. So 15:19:02 19 someone skilled in the art as of the 2003-2004 15:19:06 20 timeframe, would have been able to setup Yang's RIFS 15:19:10 21 setup and identify some material that they could put in 15:19:14 22 for the special material to make the RIFS setup work, 15:19:17 23 correct? 15:19:20 24 A. Correct, they would have -- yeah with some 15:19:22 25 experiment and some literature reading. There were 15:19:25 Page 296
1 same wavelength. So as of the 2003-2004 timeframe, do 15:16:29 2 you have an opinion one way or another whether a person 15:16:38 3 of ordinary skill in the art, would have been able to 15:16:41 4 replicate Yang's RIFS setup? 15:16:46 5 A. Well, let's see. Someone of ordinary skill in 15:16:59 6 the art -- you know, I think they probably would have 15:17:03 7 tossed this paper and gone to some other one because 15:17:07 8 special material, they don't define what it is. 15:17:09 9 And so you kind of, as I sort of indicated, 15:17:11 10 you'd be going on a wild goose chase to try to identify 15:17:13 11 what that special material is. 15:17:17 12 And there's a whole range of possibilities 15:17:20 13 within the realm of materials that could be deposited by 15:17:23 14 standard vacuum-plated techniques. 15:17:27 15 Q. So Doctor, I don't know if you understood my 15:17:30 16 question. 15:17:33 17 A. I'm sorry. 18 Q. My question -- my question is someone of 15:17:33 19 ordinary skill in the art in the 2003-2004 timeframe, is 15:17:37 20 it your opinion that they could have replicated Yang's 15:17:43 21 RIFS setup. 15:17:46 22 Not necessarily identically but to get it to 15:17:48 23 work? 15:17:50 24 MR. HERSTOFF: Objection, asked and answered. 15:17:51 25 THE WITNESS: I think they could have -- they 15:17:56 Page 295	1 materials -- they could have -- the RIFS -- let me give 15:19:28 2 you an example, the RIFS system itself, you know, was 15:19:32 3 reported with glass. 15:19:39 4 And in that timeframe, glass could be deposited 15:19:41 5 -- I don't know if that would, you know, coincide with 15:19:46 6 the special material, the tantalum oxide then a glass, 15:19:49 7 you know, silicon oxide could have been vapor deposited 15:19:56 8 onto it. 15:19:59 9 So yes, I think we're in agreement there. 15:20:00 10 Q. Doctor, if you go back to figure 3, this is on 15:20:03 11 page 433, Gator 2760. 15:20:06 12 In figure 3, Yang describes the bioprobe as 15:20:12 13 being attached to the tip of the Y-shaped optical fiber 15:20:17 14 via the sma905 connector, correct? 15:20:21 15 A. Correct. 15:20:27 16 Q. And I think as you mentioned, SMA connectors are 15:20:27 17 threaded coaxial connectors, correct? 15:20:31 18 A. Correct. 15:20:35 19 Q. And if you wanted to remove Yang's bioprobe from 15:20:35 20 the RIFS setup, you could unscrew the SMA connectors to 15:20:41 21 remove it, correct? 15:20:45 22 A. Assuming that there was an SMA connector on the 15:20:46 23 top -- so they only have an arrow going to one part. 15:20:49 24 And so assuming that there were, you know, SMA 15:20:55 25 connectors don't connect to each other. They only 15:20:57 Page 297

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1 connect via a tube as I mentioned in my report. 15:21:01	1 the PDF, there's a section titled detection system 15:43:00
2 So, yes, it's possible that this could have been 15:21:07	2 structure. 15:43:08
3 setup with two SMA connectors, then butted to each 15:21:10	3 Do you see that? 15:43:09
4 other. 15:21:15	4 A. Yes, I do. 15:43:10
5 Q. And so based on your understanding, you would be 15:21:16	5 Q. And below there there's a figure 3. 15:43:10
6 able to detach the optical bioprobe, whether or not it's 15:21:21	6 Do you see that? 15:43:16
7 connected to an SMA connectors, etc., you would be able 15:21:26	7 A. Yes. 15:43:16
8 to detach the optical bioprobe from the Y-shaped optical 15:21:29	8 Q. We have a similar set of questions for you, 15:43:19
9 fiber, correct? 15:21:33	9 Doctor, hopefully we can get through this pretty 15:43:21
10 A. Well, again I'm not sure -- maybe they glued it 15:21:34	10 quickly. 15:43:24
11 in place from the, you know, the top of the SMA. 15:21:36	11 So in figure 3, you would agree that Sun 15:43:25
12 Again, it's not quite clear what they are doing 15:21:44	12 describes a RfS reflectometric interference 15:43:30
13 there. But I believe you could have, you know, 15:21:49	13 spectography setup? 15:43:36
14 unscrewed that SMA connector and then removed at some 15:21:51	14 A. Yes, Sun describes a RfS, as we've been 15:43:37
15 point in that apparatus. 15:21:56	15 discussing. 15:43:39
16 MR. SANTHANAM: Dan, can you mark document 10 as 15:22:11	16 Q. And Sun's RfS setup includes a light source, 15:43:40
17 the next exhibit. 15:22:12	17 specifically a tungsten halogen lamp, correct? 15:43:44
18 THE CONCIERGE: Yes, just a moment. 15:22:14	18 A. Correct. 15:43:49
19 MR. SANTHANAM: Exhibit 15. 15:22:16	19 Q. And Sun's RfS setup includes a detector in the 15:43:49
20 THE REPORTER: Can we take a break? 15:22:18	20 form of a spectrometer; is that correct? 15:43:55
21 MR. SANTHANAM: Yes, we can. 15:22:19	21 A. Correct. 15:43:58
22 VIDEO OPERATOR: This marks the end of media 15:22:23	22 Q. Sun's RfS setup includes a bioprobe, correct? 15:43:59
23 number six. Going off the record. The time is 6:22. 15:22:24	23 A. Correct. 15:44:04
24	24 Q. And we've used that terminology transducer. You 15:44:05
25 (Recess taken.)	25 would describe Sun's bioprobe as a transducer, correct? 15:44:14
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1 15:41:18	1 A. Yeah, let me qualify that. Typically in our 15:44:18
2 VIDEO OPERATOR: This marks the beginning of 15:41:32	2 field we have -- usually we separate a capture probe 15:44:21
3 media number seven in the deposition of Dr. Sailer. 15:41:34	3 from the transducer. 15:44:24
4 We're back on the record. The time is 6:41. 15:41:38	4 So the biosensor would be a combination 15:44:26
5 MR. HERSTOFF: Okay, just before we got started, 15:41:42	5 including all the apparatus of a transducer which takes 15:44:32
6 to let you know, I have to leave at 7:00 to catch a 15:41:46	6 the molecular recognition element into some physically 15:44:37
7 flight. So my colleague, Mr. Stumpf, will be taking 15:41:51	7 measurable -- observable here of the optical spectrum. 15:44:40
8 over then. 15:41:57	8 So the transducer doesn't necessarily include 15:44:47
9 But before I go, I just want to mark the 15:41:58	9 the capture probe. 15:44:49
10 transcript confidential and note that Dr. Sailor 15:42:00	10 Q. But the probe comprises the transducer itself, 15:44:51
11 reserves signature on the deposition transcript. 15:42:04	11 correct? 15:44:56
12 MR. SANTHANAM: Dan, can you mark document 15:42:12	12 A. Yes. 15:44:59
13 number 10 as -- 15:42:16	13 Q. Sun's RfS setup also includes a Y-shaped 15:45:02
14 THE CONCIERGE: Yes, sir, that was marked 15:42:24	14 optical fiber; is that right? 15:45:05
15 Exhibit 16. 15:42:26	15 A. Correct. 15:45:07
16 (Exhibit 16 was marked for identification by the 15:42:27	16 Q. So during the operation of Sun's RfS setup to 15:45:08
17 court reporter and is attached hereto.)	17 your understanding, Dr. Sailor, the light from the light 15:45:12
18 BY MR. SANTHANAM: 15:42:31	18 source traveled through the Y-shaped optical fiber to 15:45:15
19 Q. Let's go to Exhibit 16, Dr. Sailor. 15:42:31	19 the distal end before the bioprobe; is that right? 15:45:18
20 A. I have it, this is the Sun reference? 15:42:35	20 A. Yes. 15:45:21
21 Q. Yeah, for the record, this is Bates labeled 15:42:36	21 Q. And the light from the distal end of the 15:45:23
22 Gator_SAR 3220 through 3224. And just to confirm, 15:42:39	22 bioprobe is reflected back through the probe and the 15:45:25
23 Doctor, this is the Sun reference that you reviewed? 15:42:46	23 Y-shaped fiber to the spectrometer or the detector; is 15:45:28
24 A. Yes. 15:42:52	24 that correct? 15:45:33
25 Q. If we go to page 658, which is the third page of 15:42:53	25 A. Correct. 15:45:34
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1 Q. In Sun's RfS setup, the distal end or the tip 15:45:37 2 of the Y-shaped fiber, that is mechanically coupled to 15:45:41 3 the bioprobe using an SMA standard splice bushing; is 15:45:48 4 that right? 15:45:53 5 A. Indicate a standard SMA splice bushing as part 15:45:53 6 of the apparatus, yes. 15:45:57 7 Q. And the distal end or tip of the Y-shaped 15:45:59 8 optical fiber is mechanically coupled to the bioprobe, 15:46:06 9 correct? 15:46:18 10 A. The distal end, what you mean there is the 15:46:20 11 optical fiber probe, I believe, at the lower part of the 15:46:24 12 section of the straight line that goes from the box 15:46:29 13 that's marked with the two lenses down into the sample 15:46:32 14 solution, that is, you know, is -- appears to be 15:46:36 15 connected to the apparatus. 15:46:43 16 Q. And Doctor, my question was the distal end of 15:46:46 17 that Y-shaped optical fiber that is mechanically coupled 15:46:51 18 to the bioprobe through this standard SMA spliced bush, 15:46:57 19 correct? 15:47:03 20 A. I'm sorry, I want to correct you a little bit 15:47:03 21 because typically when we talk about a Y-shaped optical 15:47:05 22 fiber that would just be the first part of that thing 15:47:08 23 that's the shaped like a Y. 15:47:11 24 When they say coupled by lenses using a standard 15:47:12 25 SMA connector then kind of the end of the Y would be at 15:47:16 Page 302	1 just stay. 15:49:59 2 MR. SANTHANAM: Yeah, why don't we go off the 15:50:00 3 record. 15:50:02 4 VIDEO OPERATOR: Off the record. The time is of 15:50:02 5 6:50. 15:50:03 6 15:52:49 7 (Whereupon a discussion was held off 8 the record.) 9 15:52:53 10 VIDEO OPERATOR: We're back on the record. The 15:52:55 11 time is 6:52. 15:52:56 12 BY MR. SANTHANAM: 15:52:59 13 Q. Doctor, before we went off the record, we were 15:52:59 14 talking about the Y-shaped optical fiber in Sun's RfS 15:53:03 15 as having a distal end or tip. 15:53:11 16 Do you recall that? 15:53:15 17 In Sun's RfS setup, the tip or distal end of 15:53:17 18 the Y-shaped optical fiber is mechanically coupled to 15:53:23 19 the -- to Sun's RfS probe; is that correct? 15:53:28 20 A. Yeah, it says that the Y-shaped optical fiber is 15:53:34 21 coupled by lenses using a standard SMA connector. And 15:53:37 22 then that goes to the optical -- my understanding is it 15:53:43 23 goes to the optical probe. 15:53:45 24 Q. And that configuration is a mechanical coupling, 15:53:47 25 to the best of your understanding, correct? 15:53:50 Page 304
1 the top of that box that is indicated with the lenses. 15:47:21 2 So that Y-shaped optical fiber then, you know, 15:47:25 3 it enters the Y-shaped optical fiber as -- I'll slow 15:47:31 4 down, sorry. 15:47:35 5 It enters the Y-shaped optical fiber through -- 15:47:36 6 travels forward directly to the fiber optic coupler and 15:47:41 7 then enters the fiber optic probe. 15:47:44 8 So I don't think -- we would typically not refer 15:47:47 9 to that entire apparatus as the Y-shaped optical fiber. 15:47:50 10 That would just be the top three black segments drawn in 15:47:54 11 there, black lines. 15:48:00 12 Q. So let me try to break this down. 15:48:01 13 First off, the Y-shaped optical fiber has a 15:48:07 14 terminal end or tip that's connected to the SMA sliced 15:48:14 15 bushing, correct? 15:48:18 16 A. Correct. 15:48:20 17 Q. And the other side of the SMA spliced bushing is 15:48:21 18 connected to the optical fiber portion of some probe; is 15:48:25 19 that correct? 15:48:28 20 A. Yes, that's what's depicted in the image. 15:48:28 21 Q. And this setup, the standard SMA spliced bushing 15:48:31 22 mechanically coupled the Y-shaped optical fiber to the 15:48:37 23 optical fiber portion of the bioprobe, correct? 15:48:42 24 (Technology discussion.) 25 VIDEO OPERATOR: Should we go off the record or 15:49:58 Page 303	1 A. Yes. 15:53:57 2 Q. Doctor, if you turn to page 657, which is the 15:54:00 3 second page of the PDF, again we're on Exhibit 16. 15:54:07 4 Let's go to figure 1. If you look at figure 1, 15:54:13 5 Sun's bioprobe itself includes an optical fiber portion, 15:54:18 6 correct? 15:54:22 7 A. Correct. 15:54:26 8 Q. And if you look at the bottom paragraph on the 15:54:26 9 left column, there's the paragraph starting with before 15:54:29 10 conducting. 15:54:33 11 Do you see that? 15:54:34 12 A. Yes. 15:54:35 13 Q. It reads (as read): 15:54:37 14 15 Before conducting a detection on 15:54:37 16 the thickness of a bio-layer, the 15:54:39 17 fiberoptic probe end portion is covered 15:54:43 18 by a siliconization film. And the 15:54:45 19 thickness of the film is from 1 to 2 15:54:48 20 micrometers. 15:54:51 21 22 Do you see that? 15:54:51 23 A. Yes. 15:54:53 24 Q. And then at the bottom of that paragraph it says 15:54:54 25 (as read): Page 305

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1			1	A. Yes. It's labeled in mine as antibody layer or	15:57:43
2	The entire film layer, including	15:54:58	2	-- yeah, as we've agreed, that entire black rectangle is	15:57:45
3	the siliconization film, the antibody	15:55:00	3	the film layer.	15:57:49
4	and the antigen can be considered as a	15:55:03	4	Yes, I agree.	15:57:52
5	single layer from an optical	15:55:06	5	Q. And if you look at figure 1, the reflection at	15:57:53
6	perspective.	15:55:08	6	interface 1 forms a light beam A; is that correct?	15:58:00
7			7	A. Correct.	15:58:04
8	Do you see that?	15:55:09	8	Q. And some of the -- and at interface 1, you agree	15:58:05
9	A. Yes.	15:55:10	9	is a reflecting surface?	15:58:09
10	Q. So Sun's RfS includes a siliconization layer	15:55:11	10	A. Yes.	15:58:13
11	that's applied on the distal end of the optical fiber	15:55:17	11	Q. Some of the incident light that continues on is	15:58:14
12	portion of the probe, correct?	15:55:20	12	further partially reflected at interface 2 between the	15:58:19
13	A. Correct.	15:55:25	13	film layer and the external environment; is that right?	15:58:23
14	Q. The layer of antibody is applied over the	15:55:25	14	A. Correct.	15:58:27
15	siliconization layer; is that correct?	15:55:28	15	Q. And if you look at figure 1, the reflection is	15:58:28
16	A. That's what appears to be the case in the	15:55:33	16	at the interface 2 forms light beam B; is that correct?	15:58:32
17	drawing and the diagram and in the description, yes.	15:55:36	17	A. Correct.	15:58:36
18	Q. And to the best of your understanding, the	15:55:41	18	Q. And interface 2 in Sun's probe is a second or	15:58:37
19	antibody layer includes antibodies that serve as analyte	15:55:43	19	distal reflecting surface, correct?	15:58:43
20	binding molecules designed to analyze a sample, correct?	15:55:49	20	A. Correct.	15:58:48
21	A. Correct.	15:55:54	21	Q. Now, the way that Sun's RfS setup works to the	15:58:49
22	Q. Sun refers to the combination of the	15:55:54	22	best of your understanding is that the two reflected	15:58:53
23	siliconization layer, the antibody layer, and the bound	15:55:59	23	light beams A and B interfere with one another to	15:58:57
24	antigen together as the film layer.	15:56:04	24	produce an interference pattern that is detected by the	15:59:01
25	Do you see that?	15:56:06	25	spectrometer; is that correct?	15:59:05
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1	A. Sorry, say it again, please.	15:56:09	1	A. That is correct.	15:59:07
2	Q. If you look at the very last sentence on the	15:56:11	2	Q. So during the operation of Sun's RfS setup,	15:59:07
3	left-hand column, starting with as a result.	15:56:14	3	when analytes bind to the layer of antibody, the	15:59:12
4	A. Yes.	15:56:18	4	interference will vary and that's what the detector	15:59:16
5	Q. Sun refers to the combination of the	15:56:19	5	detects, correct?	15:59:19
6	siliconization layer, the antibody layer, and bound	15:56:22	6	A. Yes, the interference spectrum will vary and	15:59:21
7	antigen together as the film layer; is that correct?	15:56:26	7	that is detected by the spectrometer.	15:59:24
8	A. Okay, so, considered as a single layer from an	15:56:34	8	Q. And if you look at figure 5 of Sun, this is on	15:59:28
9	optical perspective, yes.	15:56:36	9	page 659, page 4 of 5 of the PDF.	15:59:37
10	Q. To the best of your understanding, Doctor, the	15:56:38	10	A. Yes, yes, I'm there.	15:59:41
11	Sun's siliconization layer serve as an interference	15:56:43	11	Q. If you look at figure 5 it provides an example	15:59:43
12	layer in the RfS setup; is that correct?	15:56:46	12	of the shift in the interference pattern that occurs due	15:59:47
13	A. Yes, that is my understanding.	15:56:49	13	to the binding of analyte; is that correct?	15:59:52
14	Q. If you look the description below figure 1, it	15:56:51	14	A. That's correct, that's what I believe they're	15:59:54
15	describes how light travels through the RfS setup; is	15:57:02	15	depicting.	15:59:56
16	that right?	15:57:08	16	Q. Now, if you turn to section 4 in the same page,	15:59:57
17	A. That's correct.	15:57:08	17	659, there's a section 4 titled test results.	16:00:08
18	Q. Now, Sun's RfS probe has two reflecting	15:57:10	18	Do you see that?	16:00:12
19	surfaces; you would agree?	15:57:14	19	A. I'm there.	16:00:12
20	A. Yes, that would -- and that constitutes a RfS	15:57:16	20	Q. And in that section, it's describing an	16:00:16
21	sensor.	15:57:20	21	experiment in which the -- actually if you go to the	16:00:20
22	Q. And so when infinite light reaches the distal	15:57:22	22	right-hand column right below the figures, do you see	16:00:28
23	end of Sun's probe, it is partially reflected at an	15:57:26	23	the sentence starting with according?	16:00:30
24	interface called interface one between the optical fiber	15:57:31	24	A. Yes.	16:00:35
25	portion of the probe and the film layer; is that right?	15:57:35	25	Q. It says (as read):	16:00:35
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1			1	and it's a standard piece of equipment called an	16:03:34
2	According to the sampling data, the	16:00:35	2	ellipsometer.	16:03:39
3	thickness of the siliconization film is	16:00:38	3	And so can you ask your question again?	16:03:41
4	about 0.987 micrometers including the	16:00:40	4	BY MR. SANTHANAM:	16:03:47
5	antibody layer and the antigen layer.	16:00:45	5	Q. So Sun explains that the antibody layer has a	16:03:47
6	And the increased thickness of the	16:00:47	6	thickness of about 5 to 7.5 nanometers; is that right?	16:03:51
7	film, that is the antigen layer, is	16:00:49	7	MR. STUMPF: Object to form.	16:03:57
8	about 7 nanometers.	16:00:52	8	THE WITNESS: They are trying to indicate in	16:03:59
9			9	this paper that the -- I think what they're trying to	16:04:01
10	Do you see that?	16:00:54	10	get at is they've measured the layer, the antibody layer	16:04:06
11	A. Yes.	16:00:55	11	separately, and the implication is that 5 to nanometers	16:04:10
12	Q. Sun describes an experiment where the	16:00:58	12	is, you know, part of -- that's the thickness of the	16:04:15
13	combination of the siliconization layer, the antibody	16:01:02	13	single molecule antibody layer component of the entire	16:04:20
14	layer, and the antigen layer together had a thickness of	16:01:05	14	RfS sensor.	16:04:25
15	about 0.987 micrometers, or 987 nanometers, correct?	16:01:11	15	BY MR. SANTHANAM:	16:04:28
16	A. Yes, and then plus the 7 nanometers for what	16:01:17	16	Q. So if the combination of the siliconization	16:04:28
17	they call the antigen layer --	16:01:20	17	layer, antibody layer and antigen layer is 987	16:04:32
18	Q. So the 7 nanometers for the antigen layer,	16:01:25	18	nanometers, Doctor, you'd agree that the siliconization	16:04:38
19	that's included in the 987, correct?	16:01:28	19	layer thickness is somewhere between 7 -- I'm sorry,	16:04:44
20	A. I don't think so. I think that they are saying	16:01:38	20	somewhere between 970 and 980 nanometers, correct?	16:04:50
21	is that the thickness of the siliconization film is 987	16:01:40	21	A. I think that's roughly speaking, yes.	16:05:00
22	nanometers and that --	16:01:44	22	MR. STUMPF: Sorry, I lost my Realtime, I think,	16:05:05
23	Oh, sorry you're right, yeah, 'cause it says	16:01:44	23	hold on. Give me one second. Let me try to -- did you	16:05:07
24	including the antibody layer and the antigen layer, got	16:01:47	24	catch my objection earlier, Lori?	
25	it. Sorry, I was misreading it.	16:01:51	25	THE REPORTER: I caught a few of them.	
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1	Yes, I agree with you.	16:01:54	1	MR. STUMPF: Okay, the one that -- misstates	
2	Q. So just to be clear, so Sun's, Sun explains that	16:01:55	2	documents?	
3	the thickness of the analyte or antigen layer is 7	16:02:01	3	(Technology discussion.)	
4	nanometers, correct?	16:02:05	4	THE REPORTER: No, I didn't get -- I don't think	
5	A. They are referring to -- yes.	16:02:12	5	I got one mistakes documents.	
6	Q. And if you look at section 3.4 on the left	16:02:15	6	MR. SANTHANAM: And I will suggest we stop and	16:05:36
7	column, the first sentence says, "the thickness of a	16:02:19	7	we refrain from using coaching objections. We'll stick	16:05:38
8	single molecule antibody layer as measured by	16:02:22	8	to form and foundation objections, which are the proper	16:05:40
9	ellipsometry is about 5 to 7.5 nanometers."	16:02:27	9	objections for a proceeding like this.	16:05:43
10	Do you see that?	16:02:31	10	MR. STUMPF: Sounds great.	16:05:46
11	A. Yes.	16:02:33	11	(Technology discussion.)	16:06:09
12	Q. Sun explains experimentally that they measure	16:02:34	12	BY MR. SANTHANAM:	16:06:18
13	the antibody layer as a thickness of about 5 to 7.5	16:02:37	13	Q. Doctor, for Sun's RfS setup to work, the	16:06:19
14	nanometers; is that right?	16:02:42	14	siliconization layer would necessarily have to be	16:06:24
15	MR. STUMPF: Objection to form.	16:02:47	15	transmit -- necessarily have to be transparent and be	16:06:26
16	THE WITNESS: Can you say it again, please.	16:02:49	16	able to at least partially transmit light, correct?	16:06:30
17	BY MR. SANTHANAM:	16:02:50	17	A. Thank you for that "partial" part. I agree	16:06:35
18	Q. So Sun explains that the antibody layer has a	16:02:50	18	completely.	16:06:37
19	thickness of about 5 to 7.5 nanometers; is that right?	16:02:53	19	Q. If you turn to page -- let's stick with section	16:06:39
20	MR. STUMPF: Object to form.	16:02:59	20	3, at the -- at section 3.1, on page 659, it reads (as	16:06:51
21	THE WITNESS: The reference is indicating that	16:03:02	21	read):	
22	they made a separate measurement by the ellipsometry,	16:03:06	22		
23	E-L-L-I-P-S-O-M-E-T-R-Y.	16:03:24	23	The end face of an optical fiber is	16:06:58
24	So they measured that thickness separately in a	16:03:24	24	treated by a siliconization method in	16:07:01
25	separate experiment with a separate piece of equipment,	16:03:32	25	which a film of a polymer, the main	16:07:04
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1	component is polystyrene, is prepared	16:07:06	1	question what's slightly different. I'm not asking	16:09:53
2	on the end face of the optical fiber.	16:07:10	2	whether someone would produce it exactly as described in	16:09:55
3	This siliconization film is mainly for	16:07:14	3	Sun. I'm asking you in the 2003-2004 timeframe, if a	16:09:58
4	the purpose of increasing the thickness	16:07:16	4	person of ordinary skill in the art would have been able	16:10:05
5	of the film layer and increasing the	16:07:18	5	to put together Sun's RfS setup, and identify some	16:10:07
6	adhesion ability of the optical fiber	16:07:20	6	material that they could used in place of the	16:10:13
7	to the antibody.	16:07:23	7	siliconization film to make the RfS apparatus work,	16:10:15
8			8	correct?	16:10:20
9	See that?	16:07:25	9	MR. STUMPF: Object to form and lacks	16:10:22
10	A. Yes.	16:07:25	10	foundation.	16:10:22
11	Q. And Sun explains that the main component of the	16:07:27	11	THE WITNESS: I think in that timeframe, someone	16:10:26
12	siliconization film is polystyrene; is that right?	16:07:33	12	could have figured out to put some film on the end of	16:10:29
13	A. That's how I read that statement, yes.	16:07:38	13	the fiber. They didn't designate that there needs to be	16:10:35
14	Q. And Sun explains that the siliconization film	16:07:41	14	a polymer placed on -- or some film with a polymer	16:10:38
15	should serve to increase the adhesion ability of the	16:07:46	15	placed at the end of the fiber.	16:10:41
16	optical fiber to the antibody layer; is that right?	16:07:49	16	I'm speculating. If I were to do that, I'd try	16:10:42
17	A. Yes, that's what they state, that the main	16:07:58	17	polystyrene.	16:10:45
18	purpose is to increase the thickness of the film layer,	16:08:02	18	I don't know if that answers your question.	16:10:50
19	increase the adhesion ability of the optical fiber to	16:08:06	19	BY MR. SANTHANAM:	16:10:52
20	the antibody, yes.	16:08:09	20	Q. Doctor, polystyrene at that time in the	16:10:52
21	Q. And you note in your opinions, Doctor, that Sun	16:08:12	21	2003-2004 timeframe, was a material that was known to	16:10:58
22	doesn't specifically describe the siliconization process	16:08:17	22	adsorb antibodies for immunoassays, correct?	16:11:04
23	that produced the siliconization film; is that right?	16:08:20	23	A. Correct, it was well known in the ELISA	16:11:10
24	A. Correct.	16:08:26	24	community and in the bio-sensors community, protein	16:11:13
25	Q. Now, similar question to you: A person skilled	16:08:26	25	stick really well to polystyrene.	16:11:17
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1	in the art, of ordinary skill in the art in the	16:08:32	1	Q. And in the 2003-2004 timeframe it was	16:11:19
2	2003-2004 timeframe, would have been able to set up	16:08:36	2	also those -- strike that.	16:11:27
3	Sun's RfS setup and come up with some material for the	16:08:40	3	In the 2003-2004 timeframe, polystyrene had also	16:11:28
4	interference layer or siliconization layer, correct?	16:08:45	4	been previously been used by people skilled in the art	16:11:32
5	MR. STUMPF: Object to form.	16:08:49	5	as an interference layer in RfS applications; is that	16:11:36
6	THE WITNESS: Quite frankly, even reading it	16:08:55	6	correct?	16:11:42
7	today with all my knowledge of silicon chemistry, I	16:08:57	7	MR. STUMPF: Object to form.	16:11:42
8	don't really know what they mean by a siliconization	16:09:00	8	THE WITNESS: Polystyrene had been used -- in	16:11:44
9	method in which a film of a polymer, the main component	16:09:03	9	that timeframe, polystyrene had been used in the kind of	16:11:47
10	is polystyrene.	16:09:08	10	large chip formats similar to the bottom of an ELISA	16:11:50
11	Siliconization to me would be an evaporating of	16:09:09	11	plate.	16:12:01
12	elemental silicon. Or they might have made	16:09:14	12	BY MR. SANTHANAM:	16:12:01
13	siliconization film, which means part of that polymer	16:09:15	13	Q. And my question was slightly different, Doctor.	16:12:01
14	was silicon, and so I'm not quite sure what they're	16:09:17	14	The polystyrene in the 2003-2004 timeframe, had been	16:12:05
15	saying but I think a POSITA would have thought that it	16:09:21	15	used as an interference layer in a RfS setup, correct?	16:12:09
16	was a film that has primarily composed of polystyrene --	16:09:26	16	A. A polystyrene film had been used in a RfS setup	16:12:17
17	again, I'm not quite sure that they would have been able	16:09:31	17	in that timeframe.	16:12:23
18	to reproduce an exact experiment 'cause that	16:09:33	18	Q. Now, if we go back to figure 3, and you look at	16:12:29
19	siliconization method is not -- they don't specify the	16:09:36	19	the Y-shaped optical fiber, the end of the Y-shaped	16:12:42
20	other components.	16:09:39	20	optical fiber is connected via the SMA sliced bushing to	16:12:47
21	They say main component. And it's not clear	16:09:42	21	the optical fiber probe, as we discussed?	16:12:55
22	even today in the state of the art what siliconization	16:09:43	22	A. Yes.	16:12:58
23	means in this context.	16:09:46	23	Q. Correct? Okay. And the SMA -- again SMA	16:12:59
24	BY MR. SANTHANAM:	16:09:51	24	connectors are threaded coaxial connectors, correct?	16:13:04
25	Q. And Doctor, I appreciate that information. My	16:09:51	25	A. Correct.	16:13:09
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1 Q. And if you wanted, you could unscrew the Sun's 16:13:11 2 RfS probe from the rest of the apparatus, correct? 16:13:18 3 MR. STUMPF: Object to form, lacks foundation. 16:13:23 4 THE WITNESS: You know, in this paper they -- if 16:13:26 5 you look at the, the under that section 2, in the 16:13:30 6 paragraph it starts detecting systems structure, they 16:13:36 7 say, as I pointed out -- if we go down, sort of halfway 16:13:41 8 down that first paragraph, it says, "and the Y-shaped 16:13:45 9 optical fiber are coupled by lenses using a standard SMA 16:13:50 10 connector." 16:13:55 11 Which implies to me that they used one 16:13:56 12 connector. And so that might have been probably at the 16:13:58 13 top of the lens. 16:14:02 14 So that square assembly, the box that's labeled 16:14:03 15 with the two lenses, that would imply that the SMA 16:14:06 16 connector is at the top. 16:14:11 17 BY MR. SANTHANAM: 16:14:15 18 Q. So Doctor, I guess I'll ask the question 16:14:15 19 slightly differently. In Sun's RfS setup, you could 16:14:18 20 remove the probe, whether individually or along with the 16:14:24 21 spliced bushing, and you could remove it from the 16:14:31 22 Y-shaped optical fiber, correct? 16:14:32 23 MR. STUMPF: Object to form. 16:14:35 24 THE WITNESS: I don't -- not necessarily. They 16:14:39 25 could have glued that optical fiber probe in place at 16:14:41 Page 318	1 But the way that you understand Sun's RfS 16:16:18 2 setup, is that you can detach the optical fiber probe 16:16:22 3 from the RfS setup; whether or not you pull along the 16:16:29 4 spliced bushing with it, that's something that you can 16:16:33 5 do, correct? 16:16:36 6 MR. STUMPF: Object to form. 16:16:37 7 THE WITNESS: As the diagram indicates, and the 16:16:41 8 reading of it indicates, that I would not -- not not 16:16:43 9 disagree with -- 16:16:49 10 Let me see, I agree with the possibility that 16:16:51 11 you could remove the standard -- the box labeled 16:16:57 12 standard SMA spliced bushing, as the two lenses on it, 16:17:01 13 and the optical fiber probe. 16:17:05 14 That whole assembly could be removed at the top 16:17:08 15 point where I believe they indicated this SMA connector 16:17:13 16 is located. 16:17:16 17 BY MR. SANTHANAM: 16:17:18 18 Q. Doctor, can you turn to Exhibit 17. 16:17:19 19 A. Page 17? 16:17:26 20 Q. Exhibit 17. 16:17:27 21 16:17:37 22 (Whereupon a discussion was held off 23 the record.) 24 16:17:38 25 MR. SANTHANAM: Dan, I believe we've marked it. 16:17:38 Page 320
1 the bottom of that lens assembly. 16:14:44 2 BY MR. SANTHANAM: 16:14:49 3 Q. Okay, so somewhere there's an SMA connector, 16:14:49 4 correct? 16:14:52 5 A. Yeah, that's made quite clear in the 16:14:55 6 description. 16:14:58 7 Q. And the SMA connector allows you to detach the 16:14:59 8 Sun's RfS probe whether you're attaching it with some 16:15:03 9 other thing along with it, that you can detach Sun's 16:15:08 10 RfS probe from the rest of the setup, correct? 16:15:12 11 MR. STUMPF: Object to form. 16:15:15 12 THE WITNESS: As I said, I think you could 16:15:19 13 detach the part that's labeled with the two lenses and 16:15:23 14 the optical fiber probe and the, what's called, in that 16:15:26 15 one I think stand, SMA spliced bushing. 16:15:33 16 And they say only one "a standard SMA 16:15:37 17 connector." To me, that implies that would be 16:15:40 18 disconnected right at the bottom of the Y, the top of 16:15:42 19 the square box marked lens. 16:15:48 20 I think it's kind of silent on whether that 16:15:53 21 thing labeled optical fiber probe is how it's attached. 16:15:57 22 BY MR. SANTHANAM: 16:16:04 23 Q. Doctor, let me just try to clarify here. I'm 16:16:06 24 not asking whether you would remove just the probe or 16:16:11 25 the probe and the spliced bushing as well. 16:16:13 Page 319	1 But, Dan, can you verify that document number 11 has 16:17:39 2 been marked as Exhibit 17. 16:17:45 3 THE CONCIERGE: Yes, just a moment. Go ahead 16:17:49 4 and refresh. It should be available now. 16:18:01 5 MR. SANTHANAM: For the record, Exhibit 17 is 16:18:06 6 Bates labeled Gator_SAR 2125 through Gator_SAR 2169. 16:18:10 7 (Exhibit 17 was marked for identification by the 8 court reporter and is attached hereto.) 9 BY MR. SANTHANAM: 16:18:25 10 Q. Doctor, can you confirm that this Exhibit 17 16:18:25 11 includes the Yu reference that you address in your 16:18:30 12 report? 16:18:33 13 A. It does, it's titled Clinical Chemistry, just to 16:18:34 14 confirm? 16:18:42 15 Q. Correct. And if we go to the 12th page, which 16:18:42 16 is Gator_SAR 2136 and that's where the Yu reference 16:18:49 17 starts in this exhibit; is that right? 16:18:59 18 A. I'm there. 16:19:02 19 Q. Okay. Doctor, the Yu article, you would agree 16:19:03 20 describes an application of reflectometric interference 16:19:10 21 spectroscopy, or RfS, correct? 16:19:16 22 A. Correct. 16:19:17 23 Q. If you look at figure 1A of Yu, that Yu 16:19:18 24 describes a RfS transducer that they used in their 16:19:25 25 experiment; is that correct? 16:19:29 Page 321

1 A. Correct. Sort of again using the terminology 16:19:35	1 A. Yes. 16:22:26
2 that is more common in the sensors community. It 16:19:36	2 Q. And it goes on to state to enhance interference 16:22:28
3 represents a capture probe along with the transducer. 16:19:41	3 contrast. 16:22:32
4 Q. Now, in Yu's RfS transducer there's a 16:19:50	4 Do you see that? 16:22:33
5 transparent polystyrene layer; is that correct? 16:19:53	5 A. Yes. 16:22:34
6 A. Yes. 16:19:57	6 Q. So Yu teaches that the purpose of the tantalum 16:22:36
7 Q. And the transparent polystyrene layer serves as 16:20:00	7 pentoxide layer in the RfS setup is to enhance 16:22:44
8 an interference layer in Yu's RfS setup; is that right? 16:20:03	8 interference contrast; is that right? 16:22:46
9 MR. STUMPF: Object to form. 16:20:09	9 A. Yes, I agree with that statement. 16:22:48
10 THE WITNESS: The polystyrene unit acts as one 16:20:13	10 Q. And Yu's RfS transducer also has a layer of 16:22:50
11 component of the transducer in the RfS setup. The part 16:20:19	11 antibodies on the polystyrene layer; is that right? 16:22:56
12 labeled anti -- can't quite read it. 16:20:27	12 A. Yes, Yu's -- the picture on this Yu reference 16:23:02
13 Anti-something or other that I think we could 16:20:30	13 depicts antibodies on top of the polystyrene layer. 16:23:07
14 agree are antibodies are, you know, are at the top, and 16:20:33	14 Q. And the antibodies in the antibody layer, 16:23:12
15 there's a tantalum oxide layer at the bottom, and then 16:20:39	15 Doctor, to your understanding served to bind antigen or 16:23:15
16 there's a substrate below that. 16:20:43	16 analyte in a sample; is that be right? 16:23:21
17 BY MR. SANTHANAM: 16:20:46	17 A. That would be, I think, the clear interpretation 16:23:24
18 Q. Doctor, if you look at the bridging sentence 16:20:46	18 that that is a capture probe that we've been discussing 16:23:26
19 between the two columns, it reads (as read): 16:20:48	19 earlier in this particular sensor. 16:23:28
20	20 Q. Now, if you look at the left-hand column, you 16:23:30
21 A transparent polystyrene layer 16:20:52	21 know, there's a -- the -- I'd say the third full 16:23:38
22 with thickness of about 650 nanometers 16:20:54	22 paragraph starting with we describe. 16:23:42
23 was then generated and served as both 16:20:59	23 Do you see that? 16:23:45
24 the interference film and the 16:21:02	24 A. Yes, yes, I got it. 16:23:50
25 hydrophobic surface for immobilization 16:21:03	25 Q. And in the middle of that paragraph there's a 16:23:52
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1 of antibodies. 16:21:06	1 sentence starting about halfway down, "the optics used 16:23:57
2 Do you see that? 16:21:07	2 Y-shaped reflective optical fibers." 16:24:00
3 A. I remember reading it. But can you tell me 16:21:09	3 Do you see that? 16:24:06
4 where it is? 16:21:12	4 A. You said halfway down? Oh, yeah, I got it. 16:24:08
5 Q. It's the sentence that bridges the two columns, 16:21:13	5 "The optics used Y-shaped." 16:24:11
6 the bottom of the left column, top of the right column. 16:21:16	6 Q. So the sentence reads (as read): 16:24:13
7 A. Got it, yes. "A transparent polystyrene layer 16:21:18	7
8 with thickness." 16:21:22	8 The optics used Y-shaped reflective 16:24:16
9 Q. Yes, so you described the polystyrene layer in 16:21:26	9 optical fibers to illuminate and 16:24:19
10 the RfS setup as having a thickness of approximately 16:21:31	10 collect the reflective light of the 16:24:21
11 650 nanometers; is that right? 16:21:36	11 transducer chip on a windowless Teflon 16:24:24
12 A. That's correct. 16:21:39	12 cell, flow cell, with volume of about 16:24:27
13 Q. And Doctor, Yu teaches that the purpose of the 16:21:40	13 30 microliters. 16:24:31
14 transparent polystyrene layer in the RfS setup is to 16:21:44	14
15 serve as both an interference layer and a hydrophobic 16:21:49	15 Do you see that? 16:24:32
16 surface for immobilization of antibodies; is that right? 16:21:52	16 A. Yes. 16:24:34
17 A. Correct. 16:21:56	17 Q. Doctor, Yu's RfS setup includes a Y-shaped 16:24:36
18 Q. And Yu's RfS transducer document also includes 16:21:57	18 optical fiber to illuminate and collect light from the 16:24:43
19 a tantalum pentoxide layer; is that right? 16:22:04	19 RfS transducer; is that right? 16:24:47
20 A. Yes. 16:22:06	20 A. That's my understanding, yes. 16:24:51
21 Q. And if you look at the bottom of the left-hand 16:22:07	21 Q. If you go to the sentence right above where we 16:24:54
22 column, it states "a schematic of the transducer is 16:22:10	22 were reading, says (as read): 16:25:02
23 shown in figure 1A, a 10 nanometer tantalum pentoxide 16:22:16	23
24 film was deposited on the last substrate." 16:22:22	24 The change of optical thickness 16:25:05
25 Do you see that? 16:22:25	25 caused by the interfacial binding can 16:25:07
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1	be probed with a spectrometer using	16:25:11	1	A. Yes.	16:28:16
2	white light interference. In our	16:25:14	2	Q. And the light from the distal end of probe 700	16:28:17
3	apparatus, a CCD spectrometer is used	16:25:16	3	is reflected back to a spectrometer; is that right?	16:28:21
4	instead of a diode array spectrometer	16:25:21	4	A. That's right.	16:28:27
5	to decrease size.	16:25:22	5	Q. And if you look at the lower right-hand corner	16:28:28
6			6	of figure 8, there's a blowup of the probe 700.	16:28:31
7	Do you see that?	16:25:24	7	Do you see that?	16:28:36
8	A. Yes.	16:25:25	8	A. Yes.	16:28:38
9	Q. So in Yu's RIfS setup, there was a CCD	16:25:27	9	Q. And Chen's probe includes an optical fiber	16:28:39
10	spectrometer detector that was used to detect	16:25:32	10	portion; is that right?	16:28:43
11	interference patterns, correct?	16:25:36	11	A. Yes.	16:28:47
12	A. Correct.	16:25:39	12	Q. And Chen's RIfS probe is -- an optical fiber	16:28:48
13	Q. And to your understanding the way that Yu's RIfS	16:25:39	13	portion of Chen's RIfS probe is coated with a reagent	16:28:53
14	transducer worked is that the light reflected from the	16:25:47	14	coating which is a element 704; is that right?	16:28:57
15	transducer would produce an interference pattern that	16:25:49	15	MR. STUMPF: Object to form.	16:29:04
16	was detected by the spectrometer; is that right?	16:25:51	16	THE WITNESS: Distal end of the fiber on the	16:29:07
17	A. Yes.	16:25:56	17	portion labeled 704 is indicated in this as the reagent	16:29:09
18	Q. And to the best of your understanding, when	16:25:57	18	coding.	16:29:19
19	analyte binds to the antibody layer in the RIfS setup,	16:26:01	19	BY MR. SANTHANAM:	16:29:20
20	it will produce a change in the interference signal that	16:26:08	20	Q. And the reagent 704, the reagent layer 704,	16:29:21
21	the detector will detect; is that right?	16:26:13	21	binds analyte, which is identified as element 732; is	16:29:28
22	A. Correct.	16:26:17	22	that right?	16:29:33
23	MR. SANTHANAM: Dan, can you mark exhibit -- I'm	16:26:20	23	A. My understanding of this patent is that that is	16:29:33
24	sorry, document number 40 as the next exhibit.	16:26:23	24	the function -- the reagent coating is there and in the	16:29:37
25	THE CONCIERGE: Yes, sir, just a moment. So 40	16:26:28	25	specification, it indicates that it's there to provide	16:29:43
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1	will be Exhibit 18.	16:26:35	1	capability of binding the analyte.	16:29:47
2	(Exhibit 18 was marked for identification by the		2	Q. And to the best of your understanding, the	16:29:50
3	court reporter and is attached hereto.)		3	reagent coating comprises analyte binding molecules; is	16:29:52
4	BY MR. SANTHANAM:	16:26:49	4	that right?	16:29:58
5	Q. Doctor, Exhibit 18 is Bates labeled Gator_SAR	16:26:49	5	MR. STUMPF: Object to form, lacks foundation.	16:29:58
6	2838 through 2858, and is US patent number 5804453.	16:26:56	6	THE WITNESS: My understanding is the reagent	16:30:04
7	Doctor, can you confirm that Exhibit 18 is the	16:27:07	7	coding is there to bind analyte.	16:30:06
8	Chen patent that you described in your report?	16:27:09	8	BY MR. SANTHANAM:	16:30:14
9	A. Yes, that is the '453 patent. I'm just	16:27:14	9	Q. Let's turn to column 9 of Chen. And if we could	16:30:15
10	scrolling to the bottom to make sure that it's all here.	16:27:19	10	go to line 10, the second paragraph on the column.	16:30:24
11	Got it.	16:27:29	11	Let me know when you're there.	16:30:28
12	Q. If you go to figure 8 -- let me know when you're	16:27:29	12	A. I'm on line 10.	16:30:30
13	there.	16:27:37	13	Q. It -- actually, starting on line 11, it says (as	16:30:34
14	A. I'm there.	16:27:37	14	read):	
15	Q. You would agree that Chen describes another	16:27:38	15		
16	example of a RIfS setup; is that right?	16:27:43	16	As shown in figure 7A, a bio-sensor	16:30:37
17	A. Yes.	16:27:51	17	probe includes an optical fiber 702 and	16:30:41
18	Q. And then Chen's RIfS setup, if you look at	16:27:51	18	a reagent 704 which is bonded to a	16:30:45
19	element 804, includes a broadband light source; is that	16:27:54	19	distal tip of the optical fiber. The	16:30:48
20	right?	16:27:59	20	reagent may be an antigen such as an	16:30:51
21	A. Yes.	16:27:59	21	immunoglobulin. The reagent may also be	16:30:56
22	Q. And to your understanding the way that Chen's	16:28:01	22	a particular antibody, chemical, DNA	16:30:59
23	RIfS setup works, is that the light from the light	16:28:04	23	segment, enzyme or protein.	16:31:02
24	source travels to the distal end of a probe 700; is that	16:28:06	24		
25	right?	16:28:16	25	Do you see that?	16:31:05
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1 A. Yes. 16:31:06	1 and if you had an inhibitor that's called a competitive 16:34:14
2 Q. So Doctor, to your understanding, the reagent 16:31:08	2 inhibitor, the inhibitor would bind very tightly to the 16:34:18
3 layer 704 in Chen's RfFS probe comprises analyte binding 16:31:12	3 enzyme and not get off. 16:34:21
4 molecules, correct? 16:31:17	4 And in that case, you'd have something 16:34:22
5 A. Yes. 16:31:25	5 essentially equivalent to an antibody. 16:34:24
6 Q. And in particular, Chen says that the analyte 16:31:25	6 BY MR. SANTHANAM: 16:34:28
7 binding molecules in the RfFS probe can be an antibody, 16:31:28	7 Q. Doctor, you could use an enzyme as a capture 16:34:28
8 chemical, DNA segment, enzyme or a protein, correct? 16:31:32	8 molecule or binding molecule to capture substrate, 16:34:34
9 A. Correct. 16:31:37	9 right? 16:34:37
10 Q. And this is an example in which people in the 16:31:38	10 MR. STUMPF: Object to form. 16:34:39
11 art refer to the use of RfFS probes to study enzymes, 16:31:49	11 THE WITNESS: Yes, you could use -- 16:34:42
12 correct? 16:31:57	12 BY MR. SANTHANAM: 16:34:45
13 MR. STUMPF: Object to form, lacks foundation. 16:31:59	13 Q. Go ahead. 16:34:46
14 THE WITNESS: I think the detailed description, 16:32:05	14 A. Go ahead. 16:34:47
15 as they make it quite clear, that the reagent may also 16:32:06	15 Q. And you could potentially even set it up so that 16:34:48
16 be a particular antibody, chemical, DNA segment, enzyme 16:32:09	16 you can have antibodies that bind enzymes that in turn 16:34:52
17 or protein. 16:32:14	17 bind substrate, correct? 16:34:58
18 BY MR. SANTHANAM: 16:32:17	18 You can set it up as a sandwich? 16:34:59
19 Q. And so Chen, Doctor, Chen teaches that a RfFS 16:32:17	19 MR. STUMPF: Object to form. 16:35:03
20 probe may be used to study enzymes, correct? 16:32:21	20 THE WITNESS: That's not really taught in this 16:35:07
21 MR. STUMPF: Objection, asked and answered. 16:32:25	21 patent specifically. 16:35:09
22 Form. 16:32:31	22 BY MR. SANTHANAM: 16:35:11
23 THE WITNESS: The reagent layer may also be a 16:32:34	23 Q. Yeah, I'm just going to ask you in general. So 16:35:11
24 particular antibody, chemical, DNA segment, enzyme or 16:32:38	24 you could set up a RfFS probe with an antibody that 16:35:16
25 protein. It doesn't really specify more than that. 16:32:42	25 binds an enzymes that in turn binds a substrate to study 16:35:24
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1 BY MR. SANTHANAM: 16:32:49	1 the binding of the -- of the substrate, correct? 16:35:28
2 Q. It does say that you can use the RfFS probe to 16:32:50	2 A. Yes. 16:35:34
3 study enzymes, correct? It specifies that the reagent 16:32:53	3 Q. Doctor, the way you understand Chen's risk probe 16:35:36
4 layer can be an enzyme, correct? 16:32:56	4 to work is that the light reflected from the distal end 16:35:44
5 MR. STUMPF: Object to form. 16:33:00	5 of the probe creates an interference pattern that is 16:35:48
6 THE WITNESS: States the reagent may be an 16:33:05	6 detected by the spectrometer; is that right? 16:35:54
7 enzyme and the reagent layer is assumed to be the 16:33:06	7 A. That's right. 16:36:02
8 capture probe. 16:33:09	8 Q. Now, if you go back to figure 8 of Chen -- I 16:36:02
9 BY MR. SANTHANAM: 16:33:13	9 apologize for jumping around. But if you go back to 16:36:10
10 Q. And how would you use an enzyme as a capture 16:33:13	10 figure 8, Chen's RfFS probe 700 is connected to a 16:36:13
11 probe? 16:33:18	11 optical fiber from the instrument through a fiber 16:36:23
12 A. So there's a lot of ways you could do that. 16:33:18	12 connector 802. 16:36:27
13 The enzyme -- enzymes like antibodies will bind 16:33:21	13 See that? 16:36:30
14 molecules. And so if the enzyme has a binding pocket 16:33:27	14 A. Correct. 16:36:31
15 for a molecule, the enzyme, like an antibody, can bind 16:33:33	15 Q. Now if you turn to column 12 of Chen, and again 16:36:33
16 that molecule, that molecule could be called the 16:33:41	16 we're on Exhibit 18. 16:36:38
17 analyte. 16:33:43	17 Let me know when you're there. 16:36:49
18 And so the enzyme would bind it just like an 16:33:44	18 A. Column 12, okay. 16:36:50
19 antibody would. Difference, of course, with an enzyme 16:33:47	19 Q. And starting on say line 24, it reads, "the 16:36:50
20 is the enzyme is designed to catalyze some reaction 16:33:50	20 fiber connector 802 may be part number BFA-MM 16:36:55
21 associated with what we call its substrate. 16:33:55	21 manufactured by Metrotek." 16:37:00
22 So there's a little bit more than just 16:33:58	22 Do you see that? 16:37:02
23 capturing. In this case, it could just be capturing. 16:34:01	23 A. Yes. 16:37:05
24 Or, for example, if you've used an inhibitor in 16:34:07	24 Q. So Doctor, Chen teaches that you can connect a 16:37:05
25 this experiment, the enzyme would capture the inhibitor 16:34:11	25 RfFS probe to the fiber of an instrument using a 16:37:11
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1 Metrotek bare fiber adapter; is that right? 16:37:16 2 A. Chen in their description attaches the fiber 16:37:21 3 probe to their apparatus via the fiber connector that 16:37:26 4 they labeled 802. 16:37:31 5 Q. And Chen does not otherwise describe that fiber 16:37:36 6 in the description, right? It just has the part number? 16:37:38 7 A. You said fiber. Do you mean the BFA-MM 16:37:46 8 manufactured by Metrotek? 16:37:50 9 Q. Let me repeat the question. 16:37:51 10 So Chen does not specifically explain what the 16:37:53 11 Metrotek part number BFA-MM is that's referenced as the 16:37:57 12 part number, correct? 16:38:03 13 MR. STUMPF: Object to form. 16:38:07 14 THE WITNESS: They do call it a -- they say 16:38:08 15 fiber connector so... 16:38:10 16 (Speaking simultaneously.) 16:38:18 17 BY MR. SANTHANAM: 16:38:19 18 Q. Chen doesn't provide a description of the 16:38:19 19 Metrotek BFA-MM connector, correct? 16:38:20 20 A. Chen doesn't describe any additional description 16:38:30 21 of the BFA-MM connector, other than the only part -- the 16:38:33 22 only time they mention BFA-MM connector, I believe is 16:38:43 23 just in that section, that line 25. 16:38:48 24 MR. SANTHANAM: Dan, can you mark document 16:38:55 25 number 13 as the next exhibit, which I believe is 18. 16:38:57 Page 334	1 A. Yes, I believe the table at the very bottom of 16:40:36 2 this document is listing part numbers and different 16:40:39 3 connectors types and different fiber sizes. 16:40:41 4 And I assume that -- those are products that 16:40:44 5 they sold at the time. 16:40:47 6 Q. And if you look at the description above it says 16:40:50 7 (as read): 8 9 The kit comes complete with the 16:40:54 10 most popular connector adapters for 16:40:55 11 single mode or multimode as well as 16:40:58 12 instructions and clean out wires, all 16:41:00 13 contained in a soft case. 16:41:02 14 15 Do you see that? 16:41:04 16 A. Yes. 16:41:05 17 Q. The Metrotek website is talking about a kit with 16:41:08 18 a bare fiber adapter with multiple different connectors; 16:41:13 19 is that right? 20 A. I think we just said that. This table shows 16:41:24 21 that they carried multiple different kinds of bare fiber 16:41:27 22 connectors. 16:41:32 23 Q. And the Metrotek bare fiber adapter, in 16:41:35 24 particular, can be used with SMA connectors, correct? 16:41:40 25 A. SMA -- 16:41:45 Page 336
1 THE CONCIERGE: The next exhibit will be 19 and 16:39:02 2 you said 13, correct? 16:39:05 3 MR. SANTHANAM: You're right, 19. 16:39:07 4 THE CONCIERGE: You said document 13, correct? 16:39:09 5 MR. SANTHANAM: Correct. 16:39:12 6 (Exhibit 19 was marked for identification by the 16:39:01 7 court reporter and is attached hereto.) 8 BY MR. SANTHANAM: 9 Q. For the record, Exhibit number 19 is Bates 16:39:33 10 labeled Gator_SAR 8090 through 8094. 16:39:38 11 Doctor, do you have access to it? 16:39:44 12 THE CONCIERGE: Refresh, you should have it now. 16:39:47 13 THE WITNESS: I have it. 16:39:56 14 BY MR. SANTHANAM: 16:39:57 15 Q. And Doctor, can you confirm looking at the last 16:39:58 16 page of Exhibit 19 that this refers to the Metrotek 16:40:01 17 website that you address in your report? 16:40:07 18 A. That's my understanding, yes. 16:40:13 19 Q. The Metrotek website describes a kit that 16:40:14 20 includes a number of Metrotek bare fiber adapters; is 16:40:20 21 that right? 16:40:27 22 A. Are you referring to the table? 16:40:28 23 Q. Correct. 16:40:31 24 A. Below that? 16:40:33 25 Q. Correct. 16:40:34 Page 335	1 MR. STUMPF: Lacks foundation. 16:41:46 2 THE WITNESS: The table given there is depicting 16:41:49 3 the different connectors types that they sell in 16:41:53 4 combination with this bare fiber adapter. And the one 16:41:57 5 on the bottom is labeled SMA. 16:42:00 6 So I assume that the coupling into this bare 16:42:03 7 fiber adapter would be an SMA connector in that -- for 16:42:07 8 that particular part number. 16:42:11 9 BY MR. SANTHANAM: 16:42:13 10 Q. If you look at the description, Doctor, the 16:42:13 11 website describes the Metrotek bare fiber adapter "as 16:42:17 12 the ideal tool for temporarily installing connectors of 16:42:24 13 a bare fiber." 16:42:27 14 Do you see that? 16:42:28 15 A. Yes. 16:42:29 16 Q. And it goes on to describe it as a strong 16:42:29 17 clothespin-type adapter body. 16:42:35 18 Do you see that? 16:42:36 19 A. Yes. 16:42:37 20 Did you hear me? 16:42:48 21 Q. Yes, I heard you. And your understanding is 16:42:49 22 that the Metrotek fibers -- strike that. 16:42:53 23 Your understanding given that the Metrotek bare 16:42:59 24 fiber adapter being ideal for temporarily installing 16:43:03 25 connectors of a bare fiber that is a removable 16:43:07 Page 337

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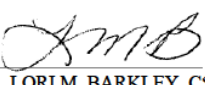
1 attachment mechanism? 16:43:12 2 MR. STUMPF: Object to form. 16:43:15 3 THE WITNESS: I believe what's shown here is 16:43:16 4 that the Metrotek fiber adapter can hold bare fibers 16:43:18 5 through the clothespin adapter. 16:43:25 6 BY MR. SANTHANAM: 16:43:33 7 Q. And you'd agree that it can hold a bare fiber in 16:43:34 8 a removable fashion, correct? 16:43:38 9 A. I believe the point of this is, as they say, 16:43:42 10 temporarily installing is pretty clear that this is 16:43:44 11 meant to be a temporary connector. 16:43:49 12 Q. And temporary implies removable, correct, 16:43:57 13 Doctor? 16:43:59 14 MR. STUMPF: Object to form, lacks foundation. 16:44:00 15 THE WITNESS: I think the -- the intent of this 16:44:06 16 is to temporarily install connectors with a bare fiber. 16:44:12 17 They mention that it's also used for polishing the bare 16:44:18 18 fiber end, which is -- gives you an ability to connect 16:44:21 19 the fiber temporarily to an apparatus. 16:44:28 20 These, I think, were typically used for trouble 16:44:31 21 shooting an optical setup. So you would place the fiber 16:44:37 22 in and then remove it. 16:44:40 23 And then put it into a more permanent fixture. 16:44:43 24 When you -- 16:44:47 25 (Speaking simultaneously.) 16:44:49 Page 338	1 probes and the light that's reflected from the probes 16:47:38 2 returns, and is routed through a demultiplexer to a 16:47:42 3 spectrometer; is that right? 16:47:47 4 A. That's correct. 16:47:51 5 Q. And Chen's multiplex system contemplates using 16:47:52 6 at least two but up to N risk probes in parallel; is 16:47:56 7 that right? 16:48:03 8 A. Yes, that's how I read that. 16:48:03 9 Q. Doctor, one of the reasons that Chen explains 16:48:08 10 why you want a multiplex RIFS probe is so that you can 16:48:15 11 use different probes to detect different substances in a 16:48:20 12 sample; is that right? 16:48:25 13 MR. STUMPF: Objection, lacks foundation. 16:48:27 14 THE WITNESS: My understanding of a multiplex 16:48:30 15 system would be to be able to use multiple fibers in a 16:48:33 16 single solution to analyze for either multiple 16:48:38 17 components or the same component multiple times, to 16:48:45 18 provide you with better signal noise in your experiment. 16:48:50 19 BY MR. SANTHANAM: 16:48:55 20 Q. And Doctor, another reason why one would want a 16:48:55 21 multiplex RIFS probe is so that you can increase the 16:49:01 22 throughput of the sensor apparatus, correct? 16:49:05 23 A. Yes, that's correct, that would increase your 16:49:14 24 throughput by having multiple probes either in the same 16:49:17 25 analyte solution or in different analyte solutions. 16:49:21 Page 340
1 BY MR. SANTHANAM: 16:44:50 2 Q. So you agree, Doctor, that the Metrotek bare 16:44:50 3 fiber adapter provides a removable connection, removable 16:44:53 4 attachment mechanism? 16:44:57 5 A. Yes, the -- that bare fiber adapter does -- and 16:45:03 6 you can remove a fiber from that bare fiber adapter. 16:45:09 7 It's a removable connection. 16:45:13 8 Q. Go back to Chen, which is Exhibit 18. 16:45:14 9 If we could go to column 12 at the bottom, 16:45:22 10 column 12. Doctor, would you just read to yourself, not 16:45:24 11 aloud, the paragraph at the bottom of column 12, and I 16:45:39 12 think it goes on a little bit onto column 13. 16:45:44 13 For the record that's column 12, line 54 to 16:45:47 14 column 13, line 8. 16:45:50 15 A. Okay, I got down to the part that says 16:46:47 16 associated input of an optical demultiplexer, column 13. 16:46:48 17 Q. Doctor, the Chen patent teaches that you can use 16:46:55 18 multiple RIFS probes, and combine them together in a 16:47:00 19 multiplexed format; is that right? 16:47:04 20 A. Yes, that's my understanding of this section. 16:47:09 21 Q. If you go to figure 11 that's referenced. 16:47:12 22 Let me know when you get there. 16:47:16 23 A. Okay, I'm there. 16:47:27 24 Q. Chen figure 11, Doctor, shows a setup where 16:47:29 25 light from a light source is multiplexed to several RIFS 16:47:33 Page 339	1 Either way, multiplexing helps speed up the 16:49:24 2 analysis process. 16:49:28 3 Q. Now, just while we're figure 11 here, the fact 16:49:29 4 that multiple probes are multiplexed together that 16:49:36 5 doesn't necessarily imply that the probes are removably 16:49:42 6 attached, correct, Doctor? 16:49:45 7 A. Yeah, that -- I think -- well, are you referring 16:49:50 8 to this figure? 16:49:53 9 Q. In general. But we can look at figure 11. 16:49:56 10 A. So ask your question again. 16:50:03 11 Q. Yeah, so let me just put it this way: Does the 16:50:04 12 fact that you're using multiple probes or bundling them 16:50:08 13 together and using them in a multiplexed format, does 16:50:13 14 that imply to you that the probes are removably attached 16:50:17 15 to the instrument? 16:50:23 16 A. No, they don't have to be removably attached. 16:50:29 17 MR. SANTHANAM: And Dan, can you mark document 16:50:37 18 23 as the next exhibit, which I believe is 20. 16:50:41 19 THE CONCIERGE: Yes, sir, 23 coming up. 16:50:45 20 (Exhibit 20 was marked for identification by the 16:51:10 21 court reporter and is attached hereto.) 22 THE WITNESS: Exhibit 20, go it. 16:51:13 23 MR. SANTHANAM: For the record, Exhibit 20 is 16:51:16 24 Gator_SAR 2738 to Gator_SAR 2744. 16:51:22 25 Q. Doctor, can you confirm that this is the Brecht 16:51:27 Page 341

1	1997 reference that you discuss in your report?	16:51:32	1	Do you see that?	16:53:32
2	A. Yes, this is the Brecht 1997 reference that I	16:51:35	2	A. Yes. I think you might have broken up at the	16:53:33
3	discuss.	16:51:39	3	word array. As I'm reading this it says (as read):	16:53:37
4	Q. If you can go to the fourth page of the PDF,	16:51:40	4		
5	it's also page 4 of the article.	16:51:45	5	The simplicity of the optical	16:53:39
6	Let me know when you get there.	16:51:48	6	arrangement allows a sensor array.	16:53:41
7	A. Page 4 of 7, I'm there.	16:51:51	7		
8	Q. And on the left-hand column do you see it starts	16:51:53	8	And then the word array dropped out of your	16:53:45
9	with reflectometric interference spectroscopy.	16:51:56	9	call. Everything else, it was the same, and I agree	16:53:49
10	Do you see that?	16:52:01	10	that's what the sentence says.	16:53:51
11	A. Left -- are you on figure 3?	16:52:04	11	BY MR. SANTHANAM:	16:53:53
12	Q. Yeah.	16:52:08	12	Q. Doctor, this is another instance where those in	16:53:53
13	A. Oh, yeah.	16:52:11	13	the art at the time as of 1997 had proposed to multiplex	16:53:57
14	Q. -- column at the top.	16:52:12	14	multiple RfS sensors together; is that right?	16:54:04
15	A. Yes, yes, the words "reflectometric interference	16:52:16	15	A. Yes, this is an example of doing multiple RfS	16:54:08
16	spectroscopy has been applied."	16:52:19	16	sensor analyses in a multiplex manner.	16:54:13
17	Q. So it states (as read):	16:52:20	17	Q. And in particular, the Brecht 1997 article	16:54:17
18			18	proposes to multiplex six to 13 RfS sensors in an array	16:54:21
19	Reflectometric interference	16:52:24	19	format; is that right?	16:54:27
20	spectroscopy has been applied to both	16:52:25	20	A. Yes, that's how I read it.	16:54:37
21	chemical and biochemical sensing. In	16:52:27	21	MR. SANTHANAM: Dan, can you take document 45	16:54:41
22	the first field of application, a	16:52:32	22	and mark it as the next exhibit. Should be Exhibit 21.	16:54:42
23	polymer layer is coated onto the	16:52:34	23	THE CONCIERGE: Yes, sir, just a moment.	16:54:46
24	substrate.	16:52:36	24	(Exhibit 21 was marked for identification by the	
25			25	court reporter and is attached hereto.)	16:54:52
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1	Do you see that?	16:52:36	1	MR. SANTHANAM: For the record, Exhibit 21 is	16:54:52
2	A. Yes.	16:52:38	2	Bates labeled Gator_SAR 5132 to Gator_SAR 5318.	16:54:54
3	Q. And if you go onto the next paragraph, starting	16:52:41	3	(Exhibit 21 was marked for identification by the	16:55:05
4	on the second sentence, it says (as read):	16:52:46	4	court reporter and is attached hereto.)	16:55:06
5			5	THE CONCIERGE: Should now be available.	16:55:06
6	The simplicity of the optical	16:52:47	6	BY MR. SANTHANAM:	16:55:11
7	arrangement allows a sensor array	16:52:50	7	Q. Doctor, can you confirm that Exhibit 21 is the	16:55:11
8	consisting of six to 13 polymer	16:52:52	8	Birkert reference that you address in your report?	16:55:15
9	elements to be set up.	16:52:55	9	A. Yes, the 2002 Birkert and Gauglitz paper.	16:55:19
10			10	Q. Now, if you look at the abstract, if you could	16:55:27
11	Do you see that?	16:52:57	11	just read that to yourself.	16:55:29
12	A. Sorry, I can't -- where were you? That last	16:52:59	12	Let me know when you're finished.	16:55:31
13	place, where are you?	16:53:02	13	And if you could also read the first paragraph	16:56:14
14	Q. Second paragraph, left column, sorry --	16:53:04	14	of the introduction to yourself.	16:56:16
15	A. Simplicity, yes, I've got that, I'm there.	16:53:09	15	A. Will do.	16:56:18
16	Q. Thank you. So it reads (as read):	16:53:13	16	Okay, I'm finished.	16:56:48
17			17	Q. Doctor, in this 2002 paper Birkert and Gauglitz	16:56:50
18	The simplicity of the optical	16:53:14	18	proposed to combine multiple RfS sensors together in a	16:56:59
19	arrangement allows a sensor consisting	16:53:16	19	microplate format; is that right?	16:57:04
20	of six to 13 polymer elements to be set	16:53:19	20	A. Actually this paper was published online 2001.	16:57:09
21	up. By using an optical multiplexer, a	16:53:22	21	But it is labeled as a 2002 paper.	16:57:14
22	simple diode array detector is able to	16:53:26	22	Sorry, I -- you were -- that confused me for a	16:57:18
23	monitor all transducer elements	16:53:28	23	second. Can you please repeat your question?	16:57:22
24	sequentially.	16:53:31	24	Q. Let me repeat. In this paper in Exhibit 21,	16:57:24
25			25	Birkert and Gauglitz proposed to combine multiple RfS	16:57:31
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1 sensors together in a microplate format; is that right? 16:57:35	1 22? 17:01:07
2 A. Correct. 16:57:38	2 A. Let me check. Sorry, it's late in the day. 17:01:09
3 Q. And Birkert and Gauglitz, they teach that if you 16:57:40	3 I can't find it in my list of materials that I 17:03:03
4 read multiple samples in parallel, that facilitates 16:57:46	4 considered. But I may be -- maybe it's late in the day 17:03:09
5 high-throughput screening or HTS as they call it? 16:57:50	5 for me. Hang on. 17:03:17
6 A. Correct. 16:57:56	6 Q. Does Exhibit 22 look familiar to you in any way? 17:03:20
7 Q. And in particular, Birkert and Gauglitz describe 16:57:57	7 A. It does look familiar vaguely but... 17:03:27
8 a RIFS setup for screening samples in a complete 16:58:03	8 Q. Well, we can jump ahead. 17:03:35
9 184-well microplate format; is that right? 16:58:07	9 A. Okay. 17:03:39
10 A. That's correct. 16:58:12	10 Q. If you turn to page 43, I believe it's page 50 17:03:40
11 Q. And they also note possible 96-well format, 16:58:16	11 of the PDF, there's a section D that starts there, "even 17:03:44
12 correct? 16:58:21	12 assuming." 17:03:53
13 A. Yes. They mention 96- or 388-well formats. 16:58:24	13 A. Page 43? 17:04:01
14 Q. Doctor, Birkert and Gauglitz also teach that 16:58:30	14 Q. Yeah. 17:04:03
15 there was a need in pharmaceutical research at the time 16:58:33	15 A. Yes, I'm on page 43. 17:04:14
16 for screening methods that facilitate high-throughput 16:58:38	16 Q. There's a section there starting section D. 17:04:15
17 screening; is that right? 16:58:42	17 Do you see that? 17:04:17
18 A. Yes. 16:58:44	18 A. Yes. 17:04:20
19 Q. And from your own background, do you agree that 16:58:45	19 Q. Doctor, I'm going to ask you to read, you know, 17:04:21
20 there was a need in the pharmaceutical research space 16:58:49	20 the section D to yourself. You don't need to read it 17:04:25
21 for screening methods that facilitate high-throughput 16:58:53	21 out loud or anything. 17:04:28
22 screening? 16:58:57	22 I'm going to ask you some questions about it, 17:04:30
23 A. Indeed, it still is. 16:58:58	23 but it may be best if you just read it to yourself. 17:04:32
24 Q. And that was the motivation for Birkert and 16:59:02	24 It's about ten pages, page 43 to 54. 17:04:34
25 Gauglitz to combine multiple RIFS sensors in a 16:59:07	25 THE REPORTER: I need to go off the record. 17:06:44
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1 microplate format; is that right? 16:59:12	1 VIDEO OPERATOR: Off the record. The time is 17:06:46
2 A. I can't speak to their motivation other than 16:59:17	2 8:06. 17:06:54
3 their introduction. That's how I read their motivation 16:59:20	3 17:11:37
4 for this work based on their introduction, yes. 16:59:25	4 (Recess taken.)
5 Q. Dan, can you label document number 24 as the 16:59:31	5 17:12:23
6 next exhibit. We'll mark it as Exhibit 22. 16:59:34	6 VIDEO OPERATOR: This marks the beginning of 17:12:33
7 THE CONCIERGE: All right, should now be 16:59:59	7 media number 8 in the deposition of Dr. Michael Sailor. 17:12:35
8 available. 17:00:00	8 Back on the record. The time is 8:12. 17:12:39
9 MR. SANTHANAM: And I will state on the record 17:00:02	9 BY MR. SANTHANAM: 17:12:43
10 that this document, Exhibit 22 is Bates labeled Gator 17:00:03	10 Q. Doctor, have you had a chance to read through 17:12:44
11 _SAR 7728 to Gator_SAR 7796. It is entitled Patent 17:00:07	11 section D? 17:12:46
12 Owners Preliminary Response Pursuant to 37 CFR section 17:00:13	12 A. Yes. 17:12:48
13 42.107 and IPR number 2023-000215. 17:00:20	13 Q. Now, if you go page 46. 17:12:50
14 (Exhibit 22 was marked for identification by the 17:00:30	14 Let me know when you're there. 17:12:58
15 court reporter and is attached hereto.)	15 A. I'm there. 17:13:02
16 BY MR. SANTHANAM: 17:00:34	16 Q. At the top of page 46, Sartorius states (as 17:13:03
17 Q. Doctor, I will represent to you that this is a 17:00:34	17 read):
18 paper that Sartorius filed in a proceeding before the 17:00:37	18
19 Patent Trial Appeal Board, the Patent Office, in which 17:00:41	19 The specification makes it clear 17:13:08
20 Gator Bio filed a petition asserting invalidity of the 17:00:48	20 that the claimed optical element is not 17:13:10
21 '585 patent, and Sartorius filed a preliminary response. 17:00:51	21 merely a continuation of the optical 17:13:13
22 And this is their preliminary response; I'll 17:00:55	22 fiber but is instead a separate 17:13:16
23 make that representation. 17:00:58	23 component of the optical assembly. 17:13:18
24 A. Thank you. 17:01:00	24 The optical element, unlike the 17:13:20
25 Q. Have you reviewed this document, this Exhibit 17:01:00	25 optical fiber, has first and second 17:13:23
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1 THE WITNESS: Of course. 18:03:52 2 MR. STUMPF: So that's fine, Dr. Sailor. I 18:03:56 3 don't want to waste anybody else's time. It's already 9 18:03:59 4 o'clock here. We haven't eaten in nine hours so no 18:04:02 5 further questions. 18:04:05 6 MR. SANTHANAM: No further questions for me, Dr. 18:04:08 7 Sailor. We can close this deposition. 18:04:11 8 VIDEO OPERATOR: Off the record at 9:04 p.m. 18:04:15 9 Eastern Time. And this concludes today's testimony 18:04:18 10 given by Dr. Michael Sailor, the total number of media 18:04:21 11 used was 8 and will be retained by Veritext Legal 18:04:24 12 Solutions. 18:04:27 13 14 15 16 17 18 19 20 21 22 23 24 25 Page 378	1 STATE OF CALIFORNIA) ss. 2 COUNTY OF LOS ANGELES) 3 4 I, Lori M. Barkley, CSR No. 6426, do hereby 5 certify: 6 That the foregoing deposition proceedings were 7 taken before me at the time and place therein set forth 8 and were recorded stenographically by me, and were 9 thereafter transcribed under my direction and 10 supervision, and that the foregoing pages contain a 11 full, true and accurate record of all proceedings and 12 testimony to the best of my skill and ability. 13 I further certify that I am neither counsel for 14 any party to said action, nor am I related to any party 15 to said action, nor am I in any way interested in the 16 outcome thereof. 17 IN WITNESS WHEREOF, I have subscribed my name 18 this 31st day of May, 2023. 19  20 LORI M. BARKLEY, CSR No. 6426 21 22 23 24 25 Page 380
1 I declare under penalty of perjury under the laws of the 2 State of California that the foregoing is true and 3 correct. 4 Executed on _____, 2023, at 5 _____, 6 _____. 7 8 9 10 SIGNATURE OF WITNESS 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 Page 379	1 MICHAEL SAILOR 2 msailor@ucsd.edu 3 MAY 31, 2023 4 RE: CERTAIN BIO-LAYER INTERFEROMETERS AND COMPONENTS THEREOF 5 MAY 25, 2023, MICHAEL SAILOR, JOB NO. 5924944 6 7 The above-referenced transcript has been completed by 8 Veritext Legal Solutions and review of the transcript is being 9 handled as follows: 10 11 ___ Per CA State Code (CCP 2025.520 (a)-(e)) – Contact Veritext 12 to schedule a time to review the original transcript at 13 a Veritext office. 14 15 XX Per CA State Code (CCP 2025.520 (a)-(e)) – Locked .PDF 16 Transcript - The witness should review the transcript and 17 make any necessary corrections on the errata pages included 18 below, notating the page and line number of the corrections. 19 The witness should then sign and date the errata and penalty 20 of perjury pages and return the completed pages to all 21 appearing counsel within the period of time determined at 22 the deposition or provided by the Code of Civil Procedure. 23 24 25 Page 381

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1 __ Waiving the CA Code of Civil Procedure per Stipulation of 2 Counsel - Original transcript to be released for signature 3 as determined at the deposition. 4 5 __ Signature Waived – Reading & Signature was waived at the 6 time of the deposition. 7 8 __ Federal R&S Requested (FRCP 30(e)(1)(B)) – Locked .PDF 9 Transcript - The witness should review the transcript and 10 make any necessary corrections on the errata pages included 11 below, notating the page and line number of the corrections. 12 The witness should then sign and date the errata and penalty 13 of perjury pages and return the completed pages to all 14 appearing counsel within the period of time determined at 15 the deposition or provided by the Federal Rules. 16 17 __ Federal R&S Not Requested - Reading & Signature was not 18 requested before the completion of the deposition. 19 20 21 22 23 24 25 Page 382	
1 RE: CERTAIN BIO-LAYER INTERFEROMETERS AND COMPONENTS THEREOF 2 MICHAEL SAILOR, JOB NO. 5924944 3 4 ERRATA SHEET 5 PAGE ____ LINE ____ CHANGE ____ 6 ____ 7 REASON ____ 8 PAGE ____ LINE ____ CHANGE ____ 9 ____ 10 REASON ____ 11 PAGE ____ LINE ____ CHANGE ____ 12 ____ 13 REASON ____ 14 PAGE ____ LINE ____ CHANGE ____ 15 ____ 16 REASON ____ 17 PAGE ____ LINE ____ CHANGE ____ 18 ____ 19 REASON ____ 20 PAGE ____ LINE ____ CHANGE ____ 21 ____ 22 REASON ____ 23 24 _____ 25 WITNESS DATE Page 383	

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