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Transcript of Martin C. Peckerar, Ph.D. (Volume 2)

Date: June 3, 2021

Case: PEAG LLC, et al -v- VARTA Microbattery GMBH. (PTAB)

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Transcript of Martin C. Peckerar, Ph.D. (Volume 2)
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1 (248 to 251)

248	250																								
<p>1 UNITED STATES PATENT AND TRADEMARK OFFICE BEFORE THE PATENT TRIAL AND APPEAL BOARD</p> <p>2</p> <p>3 PEAG LLC (d/b/a JLab Audio), AUDIO PARTNERSHIP LLC and AUDIO PARTNERSHIP PLC (d/b/a Cambridge Audio),</p> <p>4 Petitioner,</p> <p>5 v.</p> <p>6 VARTA MICROBATTERY GMBH,</p> <p>7 Patent Owner.</p> <p>8</p> <p>9 Case IPR2020-01211 Case IPR2020-01212 USP 9,496,581 UPS 9,153,835</p> <p>10 Case IPR2020-01213 Case IPR2020-01214 USP 9,799,858 USP 9,799,913</p> <p>11</p> <p>12</p> <p>13 VIDEOTAPED DEPOSITION OF:</p> <p>14 MARTIN C. PECKERAR, Ph.D. (Volume 2)</p> <p>15</p> <p>16 TRANSCRIPT OF TESTIMONY, as reported by</p> <p>17 Cindy A. Hayden, Certified Court Reporter, RMR, CRR</p> <p>18 and Notary Public of the State of North Carolina,</p> <p>19 conducted virtually via Zoom Videoconference on</p> <p>20 Thursday, June 2, 2021, commencing at 9:01 a.m.</p> <p>21 EST.</p> <p>22</p>	<p>1 I N D E X</p> <p>2 PAGE</p> <p>3 EXAMINATION BY MR. RAGUSA 253</p> <p>4 EXAMINATION BY MR. MUELLER 318</p> <p>5 EXAMINATION BY MR. RAGUSA 323</p> <p>6</p> <p>7 PREVIOUSLY MARKED EXHIBITS</p> <p>8</p> <table border="1"> <thead> <tr> <th>9 NUMBER</th> <th>DESCRIPTION</th> <th>PAGE</th> </tr> </thead> <tbody> <tr> <td>10 EXHIBIT 1001</td> <td>United States Patent US 9,153,835 B2</td> <td>309</td> </tr> <tr> <td>11 EXHIBIT 1005</td> <td>United States Patent Application Publication US 2005/0233212 A1</td> <td>315</td> </tr> <tr> <td>12 EXHIBIT 1006</td> <td>Japanese Patent Office Publication No. JP 2007-294111</td> <td>312</td> </tr> <tr> <td>13 EXHIBIT 1031</td> <td>Curriculum Vitae of Martin Peckerar, Ph.D.</td> <td>324</td> </tr> <tr> <td>14 EXHIBIT 2043</td> <td>Corrected Declaration of Martin C. Peckerar, Ph.D.</td> <td>254</td> </tr> </tbody> </table> <p>15</p> <p>16 NEWLY MARKED EXHIBITS</p> <p>17</p> <table border="1"> <thead> <tr> <th>18 NUMBER</th> <th>DESCRIPTION</th> <th>PAGE</th> </tr> </thead> <tbody> <tr> <td>19 EXHIBIT 1007</td> <td>European Patent Specification EP 1 886 364 B1,</td> <td>254</td> </tr> </tbody> </table> <p>20</p> <p>21</p> <p>22</p>	9 NUMBER	DESCRIPTION	PAGE	10 EXHIBIT 1001	United States Patent US 9,153,835 B2	309	11 EXHIBIT 1005	United States Patent Application Publication US 2005/0233212 A1	315	12 EXHIBIT 1006	Japanese Patent Office Publication No. JP 2007-294111	312	13 EXHIBIT 1031	Curriculum Vitae of Martin Peckerar, Ph.D.	324	14 EXHIBIT 2043	Corrected Declaration of Martin C. Peckerar, Ph.D.	254	18 NUMBER	DESCRIPTION	PAGE	19 EXHIBIT 1007	European Patent Specification EP 1 886 364 B1,	254
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249	251																								
<p>1 A P P E A R A N C E S:</p> <p>2 (All participated remotely via Zoom Videoconference)</p> <p>3</p> <p>4 ON BEHALF OF PETITIONER, PEAG LLC, AUDIO PARTNERSHIP LLC and AUDIO PARTNERSHIP PLC:</p> <p>5</p> <p>6 BAKER BOTTS LLP</p> <p>7 BY: PAUL A. RAGUSA, ESQ. NICK PALMIERI, ESQ. 30 Rockefeller Plaza New York, New York 10112 212.408.2500 paul.ragusa@bakerbotts.com nick.palmieri@bakerbotts.com</p> <p>8</p> <p>9 ON BEHALF OF PATENT OWNER, VARTA MICROBATTERY GMBH:</p> <p>10</p> <p>11 LEYDIG VOIT & MAYER, LTD. BY: WESLEY O. MUELLER, ESQ. ROBERT T. WITTMANN, ESQ. Two Prudential Plaza 180 N. Stetson Avenue, Suite 4900 Chicago, Illinois 60601 312.616.5600 wmueller@leydig.com bwittmann@leydig.com</p> <p>12</p> <p>13 ALSO PRESENT:</p> <p>14 DANIEL TERRY, Planet Depos Technician</p> <p>15</p> <p>16 BRENDAN CASE, Planet Depos Videographer</p> <p>17</p> <p>18</p> <p>19</p> <p>20</p> <p>21</p> <p>22</p>	<p>1 P R O C E E D I N G S</p> <p>2 * * *</p> <p>3 THE TECHNICIAN: Thank you to everyone</p> <p>4 for attending this proceeding remotely, which we</p> <p>5 anticipate will run smoothly. Also, please stand</p> <p>6 by for the technician read-on and backup recording.</p> <p>7 Zoom will prompt you for your consent to</p> <p>8 video-record this meeting for backup purposes.</p> <p>9 Please remember to speak slowly and do</p> <p>10 your best not to talk over one another. Please be</p> <p>11 aware that we are recording this proceeding for</p> <p>12 backup purposes.</p> <p>13 Any off-the-record discussions should be</p> <p>14 had away from the computer. Please remember to</p> <p>15 mute your mic for those conversations. Please have</p> <p>16 your video enabled to help the reporter identify</p> <p>17 who is speaking. If you're unable to connect with</p> <p>18 video and are connecting via phone, please identify</p> <p>19 yourself each time before speaking. I apologize in</p> <p>20 advance for any technical-related interruptions.</p> <p>21 Thank you.</p> <p>22 THE VIDEOGRAPHER: Here continues the</p>																								

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252	<p>1 video deposition of Dr. Martin Peckerar in the 2 matter of PEAG, LLC, et al., versus VARTA 3 Microbattery GmbH, held in the United States Patent 4 and Trademark Office. Cause Number IPR2020-01211; 5 -12, -13, and -14. 6 Today's date is Thursday, June 3rd, 2021. 7 The time is 9:01 a.m. Eastern Standard Time. Your 8 videographer today is Brendan Case, representing 9 Planet Depos. This deposition is taking place by 10 video teleconference via Zoom. 11 Would counsel present please identify 12 themselves and whom they represent. 13 MR. RAGUSA: Paul Ragusa and Nicholas 14 Palmieri for the petitioners, PEAG and JLab. 15 MR. MUELLER: Wes Mueller and Bob 16 Wittmann, representing the patent owner, VARTA 17 Microbattery GmbH. 18 THE VIDEOGRAPHER: Your court reporter 19 today is Cindy Hayden, representing Planet Depos. 20 Counsel, please proceed. 21 MR. RAGUSA: Thank you. 22 * * *</p>	254	<p>1 me know what exhibit number that is, we'll -- we'll 2 get that on the record. 3 (PECKERAR EXHIBIT 1007, European Patent 4 Specification EP 1 886 364 B1, was marked for 5 identification.) 6 BY MR. RAGUSA: 7 Q Okay. Do you now see the Ryou patent? 8 A Yes, I do. 9 (EXHIBIT 2043, Corrected Declaration of 10 Martin C. Peckerar, Ph.D., was previously marked 11 for identification.) 12 BY MR. RAGUSA: 13 Q Okay. And I think what we'll -- we'll go 14 back and forth, but why don't we turn to your 15 declaration, as we did yesterday. I think you have 16 nicer figures than the patent doc is themselves, as 17 I've said. Let's turn to -- 18 A Yes. 19 Q Let's turn to Figure 6. And I see that 20 this is -- was marked as IPR Exhibit 1007, so we'll 21 stay with that nomenclature. 22 What type of cell is disclosed in Ryou?</p>
253	<p>1 MARTIN C. PECKERAR, Ph.D., 2 having been previously sworn, was examined and 3 testified as follows: 4 * * * 5 EXAMINATION 6 BY MR. RAGUSA: 7 Q Good morning, Dr. Peckerar. 8 A Good morning. 9 Q I just would like to remind you that you 10 are still under oath from yesterday, and I would 11 like to just start off by again asking the same 12 question I started off with yesterday. 13 Are you physically okay? Is there any 14 health issue or otherwise that would prevent you 15 from giving testimony today? 16 A No. 17 Q Okay. Terrific. 18 So we had gone through some prior art 19 yesterday, and I think we'll continue with that 20 same pattern. Let's turn to the next exhibit, 21 which will be the Ryou patent. 22 MR. RAGUSA: And if Mr. Palmieri can let</p>	255	<p>1 A It's a zinc-air cell. 2 Q Okay. Is it a button cell? 3 A It could be formed as a button cell. 4 Q And turning to the type of battery, can 5 you describe your experience, if any, with zinc-air 6 batteries? 7 A A lot of experience with zinc. I did a 8 little zinc-air, of course, in my explorations, 9 certainly at FlexEL. What would you like to know? 10 Q Yeah. Let's start from the beginning. 11 When did you first have exposure to a zinc-air 12 battery, and what was that experience? 13 A Of course, in my career as an electrical 14 engineer, I'm well aware of the large number of 15 battery types, and zinc-air is one. We -- the -- 16 the primary cell that I started my own research 17 with was what's called a Leclanché cell, which is a 18 zinc metal battery and -- but -- but one that 19 doesn't require exposure to -- to atmosphere to -- 20 to generate a -- an electric current or -- or a 21 voltage draw. 22 Q Okay. Was that a zinc-air battery,</p>

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256	<p>1 though?</p> <p>2 A No.</p> <p>3 Q Okay. And so let's turn to specific</p> <p>4 experience with zinc-air batteries. Have you</p> <p>5 worked with zinc-air batteries in your career?</p> <p>6 A We made a -- to -- to understand the --</p> <p>7 the physical processes going on in various cells</p> <p>8 and seeing if we can carry over different</p> <p>9 techniques or technologies into our own batteries,</p> <p>10 we made a number of different cells. I -- I will</p> <p>11 say I don't have extensive experience with</p> <p>12 zinc-air, but -- but I'm aware of the basic</p> <p>13 operation.</p> <p>14 Q Okay. Did you make a zinc-air battery?</p> <p>15 A Myself, no.</p> <p>16 Q And as part of the businesses that you've</p> <p>17 worked with, have those businesses worked with</p> <p>18 zinc-air batteries?</p> <p>19 A Yeah, to understand their limitations, to</p> <p>20 understand where they fit in the -- in the array of</p> <p>21 possible battery types. And I supervised other</p> <p>22 employees and reviewed the data that they</p>	258	<p>1 A Yes.</p> <p>2 Q -- called "fusion bonding"; is that</p> <p>3 correct?</p> <p>4 A I don't recall the exact term. But</p> <p>5 the -- the cup and can, what passes through that,</p> <p>6 at least in Figure 6, are held together by an</p> <p>7 adhesive bond 56.</p> <p>8 Q And let me -- let's actually turn to</p> <p>9 Ryou. It's always good to go to the document. If</p> <p>10 we could turn to Paragraph 33, I think there's some</p> <p>11 information.</p> <p>12 And in Paragraph 33 -- let me make the</p> <p>13 text a little bit bigger for everybody -- Ryou</p> <p>14 states: In order to accomplish the above objects</p> <p>15 of the invention, according to one aspect of the</p> <p>16 invention, there is provided a battery comprising:</p> <p>17 an anode; a cathode; an anode can disposed to</p> <p>18 enable electrons to transfer against the anode; a</p> <p>19 cathode can disposed to enable electrons to</p> <p>20 transfer against the cathode; and a body forming a</p> <p>21 battery body, wherein one end of the body is</p> <p>22 fusion-bonded with an end portion of the anode can</p>
257	<p>1 generated.</p> <p>2 Q Okay. Which company was that for?</p> <p>3 A FlexEl.</p> <p>4 Q And what -- what exactly did you do for</p> <p>5 FlexEl that involved zinc-air batteries?</p> <p>6 A Well, as I said, we were constantly</p> <p>7 experimenting with new -- new battery chemistries,</p> <p>8 and we wanted to understand the full range of -- of</p> <p>9 strengths and weaknesses of each of these cells to</p> <p>10 possibly bring on those technologies into our</p> <p>11 mainline product, which we discussed in some detail</p> <p>12 yesterday.</p> <p>13 Q Okay. And so what was your role in</p> <p>14 connection with that study?</p> <p>15 A Well, as the chief technology officer, I</p> <p>16 oversaw them. I mean, some batteries, the -- the</p> <p>17 Leclanché-type batteries, the -- the baticator, as</p> <p>18 I mentioned yesterday, I made with my own hands,</p> <p>19 okay? These I did not. I just looked at the</p> <p>20 output data.</p> <p>21 Q Now, were you -- this type of zinc --</p> <p>22 excuse me -- the zinc-air battery uses something --</p>	259	<p>1 and the other end of the body is fusion-bonded to</p> <p>2 an end portion of the cathode can, thereby</p> <p>3 hermetically sealing the battery.</p> <p>4 Do you see that passage, sir?</p> <p>5 A Yes, I see it.</p> <p>6 Q Okay. Does that refresh your</p> <p>7 recollection that fusion bonding is used to</p> <p>8 hermetically seal the can in Ryou?</p> <p>9 A Yes, it's consistent with what I said</p> <p>10 earlier.</p> <p>11 Q And so my question is --</p> <p>12 A There is a line between --</p> <p>13 Q I'm sorry. Go ahead.</p> <p>14 A Yeah. Yeah, I didn't remember the exact</p> <p>15 term that they used, but thank you for refreshing</p> <p>16 my memory.</p> <p>17 Q Okay. Can you describe the process of</p> <p>18 fusion bonding?</p> <p>19 A Well, it appears to me -- I mean,</p> <p>20 normally -- and this is an issue of ambiguity here.</p> <p>21 Normally, when you fuse two materials together, one</p> <p>22 would create an intermingling of the two materials,</p>

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<p style="text-align: right;">260</p> <p>1 creating a very firm atomic bond. 2 The -- as I read Ryou and I looked at the 3 figure which you just cited, it appeared as though 4 there were -- there was a secondary material, an 5 epoxy, a sealant, that was used to -- to hold 6 the -- the cup and -- well, the anode -- what 7 passes through the anode contacting cathode contact 8 together. And that would of necessity be an 9 insulator because you couldn't -- you couldn't 10 short the anode to the cathode cans. 11 Q That would be, as we discussed yesterday, 12 an inherent feature that -- that you would -- you, 13 as somebody of ordinary skill, would understand 14 would need to be there? 15 MR. MUELLER: Objection to form. 16 THE WITNESS: Well, someone of ordinary 17 skill would -- would understand what I just 18 relayed. 19 BY MR. RAGUSA: 20 Q Okay. And to be clear, somebody of 21 ordinary skill would understand that there would 22 need to be something between the anode can and the</p>	<p style="text-align: right;">262</p> <p>1 the furnace, yes, physically. 2 Q Okay. And let me ask you, in connection 3 with -- well, let me -- let me take a step back. 4 Can you describe how zinc-air batteries 5 function? And I can go back to Figure 6, if that's 6 helpful. 7 A Yeah. I mean, it's -- there's an aqueous 8 electric-based electrolyte, which forms hydroxyls, 9 which oxidize the anode, zinc. And on formation of 10 the zinc hydroxide, two free electrons are 11 generated, which can be transported to the opposite 12 side of the battery when those are connect -- when 13 the -- when the anode and -- can and the cathode 14 can are connected via a load. 15 The -- the anode region supplies oxygen 16 for the -- for the formation of the hydroxyls, and 17 the -- the net result is a battery which cannot be 18 truly sealed. It has to be open to atmosphere or 19 some -- or some source of oxygen in order to 20 function. 21 Q Did we just -- okay. Sorry. Just -- my 22 screen changed. Everything went blank for a</p>
<p style="text-align: right;">261</p> <p>1 cathode can to prevent a short; is that your 2 testimony? 3 A Yes. 4 Q Okay. What is your experience, if any, 5 with fusion bonding? 6 A As I said, I mean, you -- you can -- in 7 integrated circuits, for example, one does 8 metallization. And one -- in order to form an 9 anode contact, a substrate, one would place the 10 interconnect over an insulating layer. And there 11 would be a hole cut in the insulating layer where 12 you wanted to make contact, for example, through 13 the substrate. 14 The metal would drape over that hole, and 15 then you would heat it up, heat the material up. 16 It's called -- a process called "sintering." And 17 the sinter forms a fusion contact, and that is a 18 process which I am very familiar with. 19 Q Okay. Have you performed fusion bonding 20 yourself? 21 A In the sense that I've just given, yes. 22 I've placed the material on a bolt, stuck it into</p>	<p style="text-align: right;">263</p> <p>1 second. I wanted to make sure I didn't lose you. 2 (Technical difficulties.) 3 BY MR. RAGUSA: 4 Q So let's go to your Paragraph 179 where 5 you note that conventional zinc-air batteries like 6 Ryou do not use a jelly-roll design. Are you aware 7 of other nonconventional zinc-air batteries that 8 either use a jelly roll or use a different 9 configuration? 10 A No, and I don't -- maybe -- to my 11 knowledge, okay, if you do a jelly roll, you're 12 shielding one of the -- you're shielding one of the 13 electrode surfaces from -- from oxygen, and so that 14 would impede the functioning of the battery. But 15 I'm sure somebody can come up with something 16 clever. 17 Q Okay. So let's talk about that a little 18 further. 19 A But these are -- 20 Q Go ahead. I'm sorry. You can say -- 21 A As I said, that is not the general 22 config -- yeah, that's not the general</p>

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