

ROBINS KAPLAN LLP
ATTORNEYS AT LAW
SILICON VALLEY

1 Christopher A. Seidl (*pro hac vice* filed)
CSeidl@RobinsKaplan.com
2 William E. Manske (*pro hac vice* filed)
WManske@RobinsKaplan.com
3 **ROBINS KAPLAN LLP**
800 LaSalle Avenue Suite 2800
4 Minneapolis, MN 55402
(612) 349-8500
5

6 Bryan J. Vogel (*pro hac vice* filed)
BVogel@RobinsKaplan.com
7 Derrick J. Carman (*pro hac vice* filed)
DCarman@RobinsKaplan.com
8 **ROBINS KAPLAN LLP**
399 Park Avenue, Suite 3600
9 New York, NY 10022-4690
(212) 980-7400
10

11 Li Zhu (Bar No. 302210)
LZhu@RobinsKaplan.com
12 **ROBINS KAPLAN LLP**
2440 W El Camino Real, Suite 100
Mountain View, CA 94040
13 (650) 784-4040

14 *Attorneys for Plaintiff CF Traverse, LLC*
15

16 UNITED STATES DISTRICT COURT
17 NORTHERN DISTRICT OF CALIFORNIA
18

19 CF TRAVERSE LLC,

20 Plaintiff,

21 v.

22 AMPRIUS, INC.,

23 Defendant.
24

Case No. 3:20-cv-00484-JSC

FIRST AMENDED COMPLAINT

JURY TRIAL DEMANDED

25 **COMPLAINT FOR PATENT INFRINGEMENT**

26 Plaintiff CF Traverse LLC (“Traverse”) files this Complaint against Defendant Amprius,
27 Inc. (“Amprius”). Traverse alleges as follows:
28

NATURE OF THE ACTION

1
2 1. Traverse brings this patent infringement action to protect its intellectual property
3 and stop Amprius from continuing its wrongful and unlicensed use of Traverse’s patented
4 technologies within and in conjunction with Amprius’ lithium-ion batteries and lithium-ion battery
5 components.

6 2. Traverse’s patent portfolio includes patents related to lithium-ion battery
7 technology, including, but not limited to, lithium-ion batteries comprising silicon composite
8 anodes.

9 3. Amprius provides certain products, including but not limited to, lithium-ion
10 batteries and anodes intended for use in lithium-ion batteries. Amprius’ products make use of
11 Traverse’s patented technology and infringe the following United States patents (the “Asserted
12 Patents”):

- 13 a. U.S. Patent No. 8,420,258 (the “’258 patent”), titled “High Capacity Electrodes.”
14 The ’258 patent was duly and legally issued on April 16, 2013. A true and correct
15 copy of the ’258 patent is attached hereto as Exhibit A.
- 16 b. U.S. Patent No. 8,652,683 (the “’683 patent”), titled “High Capacity Electrodes.”
17 The ’683 patent was duly and legally issued on February 18, 2014. A true and correct
18 copy of the ’683 patent is attached hereto as Exhibit B.
- 19 c. U.S. Patent No. 8,658,310 (the “’310 patent”), titled “High Capacity Electrodes.”
20 The ’310 patent was duly and legally issued on February 25, 2014. A true and correct
21 copy of the ’310 patent is attached hereto as Exhibit C.
- 22 d. U.S. Patent No. 9,431,181 (the “’181 patent”), titled “Energy Storage Devices
23 Including Silicon and Graphite.” The ’181 patent was duly and legally issued on
24 August 30, 2016. A true and correct copy of the ’181 patent is attached hereto as
25 Exhibit D.
- 26 e. U.S. Patent No. 9,979,017 (the “’017 patent”), titled “Energy Storage Devices.” The
27 ’017 patent was duly and legally issued on May 22, 2018. A true and correct copy
28 of the ’017 patent is attached hereto as Exhibit E.

ROBINS KAPLAN LLP
ATTORNEYS AT LAW
SILICON VALLEY

1 f. U.S. Patent No. 9,412,998 (the “’998 patent”), titled “Energy Storage Devices.” The
2 ’998 patent was duly and legally issued on August 9, 2016. A true and correct copy
3 of the ’998 patent is attached hereto as Exhibit F.

4 4. Traverse seeks, *inter alia*, damages in an amount adequate to compensate it for
5 Amprius’ infringement, including treble damages based on Amprius’ willful infringement of the
6 Asserted Patents, a permanent injunction barring Amprius from continuing to infringe the Asserted
7 Patents, and Traverse’s attorneys’ fees and costs associated with this action.

8 **THE PARTIES**

9 5. Traverse is a limited liability company organized and existing under the laws of
10 Delaware, with its principal place of business in Sunnyvale, California. Traverse is the owner of a
11 portfolio of dozens of issued patents and pending patent applications protecting innovative
12 advancements in lithium-ion battery technology. Traverse seeks to partner with companies around
13 the world to advance these new and innovative technologies.

14 6. Amprius is a corporation incorporated under the laws of Delaware, with a principal
15 place of business in Sunnyvale, California. Amprius is engaged in the unlicensed development,
16 manufacture, and sale of lithium-ion batteries and lithium-ion battery components that are protected
17 by Traverse’s Asserted Patents.

18 **JURISDICTION AND VENUE**

19 7. This lawsuit is a civil action for patent infringement arising under the patent laws of
20 the United States, 35 U.S.C. § 1 *et seq.*, and seeking damages, injunctive relief, and other relief as
21 appropriate under 35 U.S.C. § 281, *et seq.* This Court has subject-matter jurisdiction pursuant to 28
22 U.S.C. §§ 1331 and 1338(a).

23 8. The Court has personal jurisdiction over Amprius because Amprius maintains its
24 principal place of business, and therefore is subject to general jurisdiction in California.

25 9. This Court also has personal jurisdiction over Amprius because Amprius is
26 registered to do business with the California Secretary of State. Amprius has designated Michael
27 Danaher as its agent for service of process in the State of California.

28 10. On information and belief, Amprius regularly and continuously transacts business

1 in this District, including by selling and distributing batteries in the State of California, either on its
2 own or through affiliates. On information and belief, Amprius has at all relevant times purposefully
3 directed these activities at residents in the State of California, and plans to continue to do so.

4 11. Venue is proper in this Court under 28 U.S.C. § 1400(b) because Amprius maintains
5 a regular and established place of business in this District and has committed acts of infringement
6 in this District.

7 BACKGROUND OF THE TECHNOLOGY

8 12. Lithium-ion batteries operate based on the flow of positively charged lithium ions
9 between two electrodes—a negatively charged anode and a positively charged cathode. When the
10 battery is charged, the lithium ions are stored in the negatively charged anode by a process called
11 “intercalation.” The amount of energy per unit of weight (*e.g.*, gram) that can be stored in a battery,
12 called its “specific capacity,” is proportional to the weight of lithium that can be intercalated into
13 the anode per unit weight of the anode material. In other words, the more lithium that can be stored
14 in the anode, the more energy the battery can hold.

15 13. Traditionally, lithium-ion batteries have used carbon, in the form of graphite, as the
16 “anode active material”—the material into which the lithium ions are intercalated when the battery
17 is charged. The theoretical specific capacity of graphite is 372 milliamp hours per gram (mAh/g).
18 That is, for each gram of graphite in the anode, 372 milliamp-hours of energy can theoretically be
19 stored in the battery.

20 14. Today, smaller electronic devices require more energy in less space. And in recent
21 years, there has been significant research and development activity directed towards active
22 materials that can supplement or replace lower capacity graphite anodes.

23 15. One such active material is silicon. Silicon has a theoretical specific capacity of
24 4,200 mAh/g, which is more than eleven (11) times greater than the theoretical specific capacity of
25 graphite. Silicon, however, presents certain technical hurdles. For instance, when lithium ions
26 intercalate into a silicon anode, the silicon swells, dramatically increasing the anode’s volume. The
27 change in volume causes the anode to “pulverize” itself over the course of charging/discharging
28 cycles, greatly limiting the life of the battery. Researchers have long sought a way to incorporate

1 silicon into the anode active material to take advantage of the increased capacity offered by silicon,
 2 while also limiting the damage caused by the increase in anode volume associated with use of
 3 silicon.

4 16. The Asserted Patents protect innovative breakthroughs in the use of silicon in
 5 lithium-ion battery anodes. The Asserted Patents cover, among other things, batteries and anodes
 6 for use in lithium-ion batteries that include support filaments (*e.g.*, carbon or other fibers) with an
 7 intercalation material (*e.g.*, silicon) disposed on the support filaments. The patents also cover
 8 batteries and anodes for use in lithium-ion batteries in which an ion absorbing material, such as
 9 silicon, has an over-layer coating the ion absorbing material.

10 17. Ronald Rojeski is the inventor of multiple patents that relate to energy storage
 11 technology, including the Asserted Patents. Mr. Rojeski's innovations in the silicon anode space
 12 mark a significant advancement in energy storage technologies and the drive to produce batteries
 13 with increased energy density. Mr. Rojeski's use of silicon in combination with nanostructures such
 14 as nano-wires, nano-fibers, carbon nano-fibers and carbon nano-tubes dates to 2007, when Mr.
 15 Rojeski began developing his silicon anode technology. Since then, Mr. Rojeski has quickly gained
 16 recognition as a pioneer in the silicon anode space. His inventions are detailed in fifteen-plus U.S.
 17 patents and numerous foreign counterparts, with many applications currently pending.

18 **FIRST CLAIM FOR RELIEF**

19 **Infringement of the '258 patent**

20 18. Traverse incorporates by reference the foregoing paragraphs.

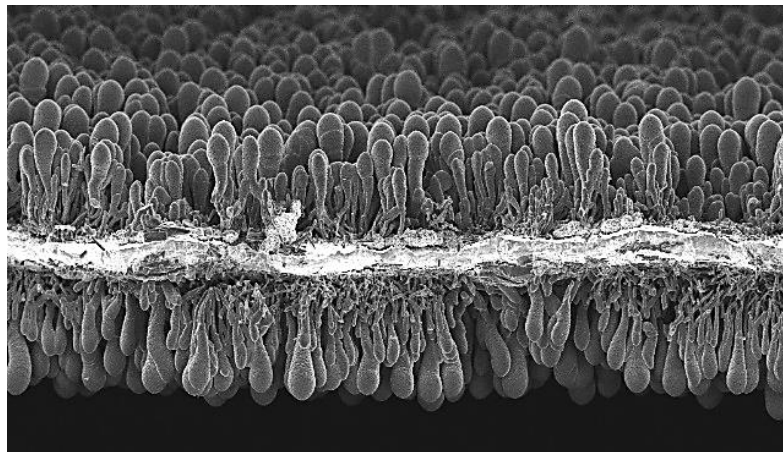
21 19. Traverse is the owner by assignment of all rights, title, and interest in the '258 patent.

22 20. The '258 patent is valid and enforceable.

23 21. Amprius has directly infringed, and is currently infringing, the '258 patent in
 24 violation of 35 U.S.C. §271(a) by making, using, selling, offering for sale, and/or importing into
 25 the United States, without authority, products that practice one or more claims of the '258 patent,
 26 including without limitation Amprius' lithium-ion batteries, including SiNW-1400, 4.25V; SiNW-
 27 1600, 4.3V; SiNW-1800, 4.35V; SiNW-2000, 4.4V; ANW3.6-455056; ANW2.6-405056;
 28 ANW10-7550106; ANW4.0-455056; ANW8.1-4551107; ANW14.2-8051110; Amprius Very

1 Long Endurance Battery; Amprius CWB and SiNW/NCM622.

2 22. These batteries infringe at least exemplary claim 1 of the '258 patent. The
 3 SiNW-1400, 4.25V battery, for example, is an energy storage system that includes a first electrode
 4 disposed in a first region of electrolyte and including a substrate. SiNW stands for "Silicon
 5 nanowire." According to a presentation given by Amprius's Chief Technology Officer (CTO) at
 6 the NASA Aerospace Battery Workshop (the "Amprius Presentation"), Amprius batteries,
 7 including the SiNW-1400, 4.25V battery include "ultra-high capacity silicon nanowire anodes for
 8 Li ion cells." A lithium ion cell is an energy storage system. The silicon nanowire anode is a first
 9 electrode. The anode is also disposed in a first region of an electrolyte. In describing the nanowire
 10 structure of Amprius's batteries, the Amprius Presentation refers to U.S. Pat. App. No.
 11 14/710,103—dated May 12, 2015 (the "'103 Application")—as describing the structure of
 12 Amprius's batteries. The '103 Application states that "Another aspect of the disclosure relates to a
 13 lithium battery including an anode as described above, a lithium-containing cathode, and *an*
 14 *electrolyte in ionic communication with both the anode* and the cathode."¹ Accordingly, the
 15 SiNW-1400, 4.25V battery includes a first electrode disposed in a first region of electrolyte. The
 16 anode of the SiNW-1400, 4.25V further includes a substrate. The Amprius Presentation includes a
 17 cross-section image taken by a scanning electron microscope ("SEM"), reproduced below:

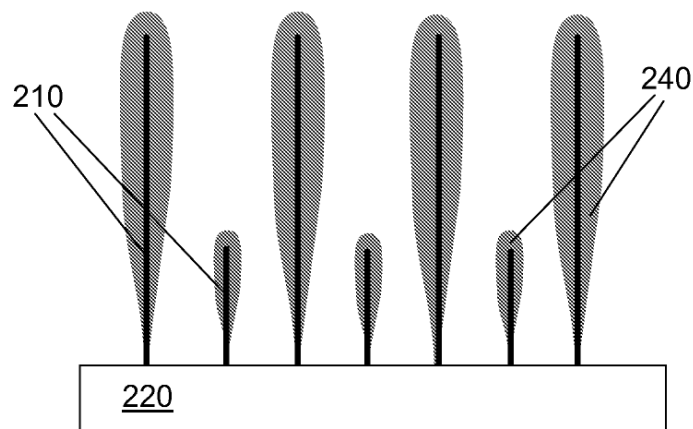


26 Figure 1

27
 28 ¹ '103 Application at ¶ [0008].

1 The horizontal white line across the center of Figure 1 is a substrate for the first electrode. The
 2 Amprius Presentation further states that “Amprius’ solution” is “nanowires . . . rooted to [a]
 3 substrate.”

4 23. The SiNW-1400, 4.25V battery has a plurality of electron conductive support
 5 filaments attached to the substrate, and an ion absorbing material attached to the support filaments
 6 that is configured to expand in volume at least 5 percent up to 400 percent when absorbing ions.
 7 As shown in Figure 1, above, support filaments, which Amprius refers to as “nanowires” branch
 8 out from the central substrate. The support filaments are attached, or “rooted” as Amprius says, to
 9 the substrate. The Amprius Presentation, for example, describes the point of contact between the
 10 nanowires and the substrate as an “intact point of constraint.” The SiNW-1400, 4.25V battery also
 11 includes an ion absorbing material attached to the support filaments. Thus, support filaments are
 12 coated in silicon, which acts as an ion-absorbing material. For example, the Amprius Presentation
 13 points to the ’103 Application as embodying the Amprius silicon nanowire structure, including that
 14 used in the SiNW-1400, 4.25V battery. According to the ’103 Application, “a nanowire
 15 template 210 is grown from a substrate 220. A silicon layer 240 is deposited onto the nanowire
 16 template 210.” The “silicon layer,” for example, is an ion-absorbing material that is attached to
 17 support filaments (the nanowire template). Fig. 3 of the ’103 Application (reproduced below as
 18 Figure 2) shows a similar structure to that shown in Figure 1, above.

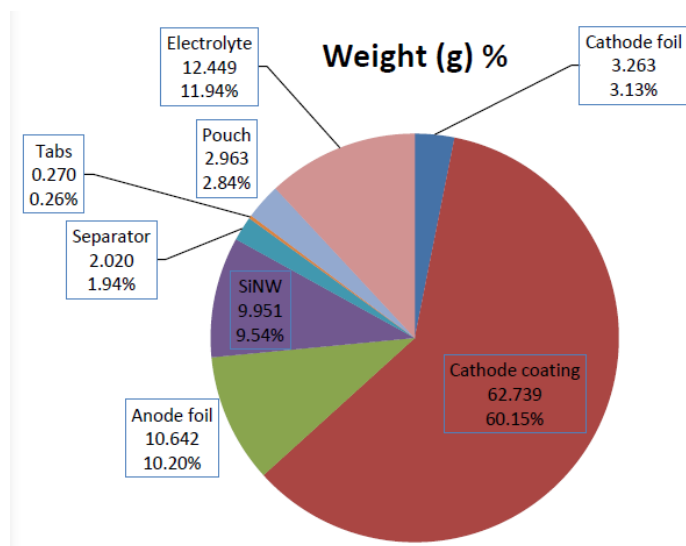


19
 20
 21
 22
 23
 24
 25
 26
 27
 28
 Figure 2

On information and belief, The SiNW-1400, 4.25V battery utilizes the structure described in the

1 Amprius Presentation and the '103 Application. The ion absorbing material of the SiNW-1400,
2 4.25V battery is also configured to expand in volume at least 5 percent up to 400 percent when
3 absorbing ions. According to the Amprius Presentation, "silicon swells 300% when charged with
4 lithium."

5 24. Further, the SiNW-1400, 4.25V battery includes a separator configured to separate
6 the first region and a second region of electrolyte, and a second electrode disposed in the second
7 region of electrolyte, the first and second electrodes and separator configured to operate as a
8 rechargeable battery. According to the Amprius Presentation, Amprius batteries include a separator
9 and a cathode, which is a second electrode. The pie chart below (Figure 3) from the Amprius
10 Presentation shows the weight distribution of the components (including a separator, electrolyte,
11 and cathode) of Amprius batteries, including the SiNW-1400, 4.25V battery:



12
13
14
15
16
17
18
19
20
21
Figure 3

22 25. The '103 Application referenced in the Amprius Presentation describes exemplary
23 Amprius batteries as having "a separator 906a between the positive electrode active layer 902a and
24 the negative electrode active layer 904a. The separator sheets 906a and 906b serves to maintain
25 mechanical separation between the positive electrode active layer 902a and the negative electrode
26 active layer 904a and acts as a sponge to soak up the liquid electrolyte (not shown) that will be
27 added later." The '103 Application specifies that the lithium ion battery has, for example, "an
28

1 electrolyte in ionic communication with both the anode and the cathode.” The “positive electrode
2 active layer” and “cathode” are examples of the “a second electrode.” The region of the electrolyte
3 in which the cathode is located is an example of the claimed “second region of electrolyte.” The
4 “separator sheets 906a and 906b” are examples of the claimed separator. On information and belief,
5 The SiNW-1400, 4.25V battery has the structure described in the Amprius Presentation and the
6 ’103 Application.

7 26. Upon information and belief, Amprius’ products, including without limitation
8 Amprius’ lithium-ion batteries, including SiNW-1600, 4.3V; SiNW-1800, 4.35V; SiNW-2000,
9 4.4V; ANW3.6-455056; ANW2.6-405056; ANW10-7550106; ANW4.0-455056; ANW8.1-
10 4551107; ANW14.2-8051110; Amprius Very Long Endurance Battery; Amprius CWB and
11 SiNW/NCM622, practice one or more claims of the ’258 patent, including exemplary claim 1, in
12 the same or similar manner as the SiNW-1400, 4.25V battery.

13 27. Upon information and belief, Amprius also induced and continues to induce
14 infringement of at least claim 1 of the ’258 patent in violation of 35 U.S.C. § 271(b).

15 28. Amprius induces its customers, purchasers, users, and/or developers of its batteries
16 to infringe at least claim 1 of the ’258 patent and does so with specific intent, by providing
17 instructions, directions, information, and/or knowledge on how to use its batteries and/or
18 incorporate their batteries into other products. For example, Amprius has had actual knowledge of
19 the ’258 patent since at least July 20, 2018 when Traverse sent Amprius a letter advising Amprius
20 of Traverse’s patents, including the ’258 patent, which also indicated Amprius’ “research in and/or
21 manufacture[] [of] products related to or including composite anodes containing silicon.” Amprius’
22 customers include at least Airbus. In a press release dated October 31, 2019, Amprius’ COO stated
23 that Amprius is “supplying batteries for the Zephyr program,” Airbus’ high altitude pseudo satellite
24 initiative. That same press release stated that “Amprius Inc.’s high energy density batteries are used
25 for smartphones, wearables, drones, robotics, aerospace vehicles, electrical transportation, and
26 military equipment.” Amprius also gave the Amprius Presentation in November 2018, after it had
27 knowledge of its infringement of the Asserted Patents. Amprius also advertises its infringing
28 batteries on its website, using many of the same images and statements that were used in the

1 Amprius Presentation. For example, Amprius touts the benefits of its batteries that used the claimed
2 technology, stating “Nanowires tolerate volume expansion and are rooted to the substrate,”
3 “Nanowires have micro and macro porosity that accommodate swell,” “Nanowires improve
4 Solid-Electrolyte-Interphase & cycle life,” and “Anode thickness is reduced to half of a graphite
5 electrode thickness.” These statements directly instruct Amprius’ customers and potential
6 customers to use Amprius’ batteries, which Amprius knew to infringe the Asserted Patents.

7 29. The components sold or offered for sale by Amprius have no substantial
8 noninfringing uses. Further, they are not staple articles of commerce and constitute a material part
9 of the invention. Thus, Amprius knew or should have known that the combination for which their
10 components were made was protected by the ’258 patent, and yet Amprius infringed upon the ’258
11 patent in spite of this knowledge.

12 30. As such, Amprius has contributorily infringed and continues to contributorily
13 infringe the ’258 patent, as set forth herein, knowing that the materials and/or components would
14 be made or adapted for use in an infringing manner.

15 31. Amprius has had actual knowledge of the ’258 patent since at least July 20, 2018
16 when Traverse sent Amprius a letter advising Amprius of Traverse’s patents, including the ’258
17 patent, which also indicated Amprius’ “research in and/or manufacture[] [of] products related to or
18 including composite anodes containing silicon.” Amprius’ continued infringement after July 20,
19 2018 is in spite of an objectively high likelihood that its activities constitute infringement of a valid
20 patent, and this risk was either known or so obvious that it should have been known to Amprius.
21 Thus, Amprius’ continued infringement as of July 20, 2018 is willful and deliberate.

22 32. Traverse has suffered and continues to suffer damages and irreparable harm as a
23 result of Amprius’ past and ongoing infringement.

24 33. Unless Amprius’ infringement is permanently enjoined, Traverse will continue to
25 be damaged and irreparably harmed.

26 **SECOND CLAIM FOR RELIEF**

27 **Infringement of the ’683 patent**

28 34. Traverse incorporates by reference the foregoing paragraphs.

1 35. Traverse is the owner by assignment of all rights, title, and interest in the '683 patent.

2 36. The '683 patent is valid and enforceable.

3 37. Amprius has directly infringed, and is currently infringing, the '683 patent in
4 violation of 35 U.S.C. §271(a) by making, using, selling, offering for sale, and/or importing into
5 the United States, without authority, products that practice one or more claims of the '683 patent,
6 including without limitation Amprius' lithium-ion batteries, including SiNW-1400, 4.25V; SiNW-
7 1600, 4.3V; SiNW-1800, 4.35V; SiNW-2000, 4.4V; ANW3.6-455056; ANW2.6-405056;
8 ANW10-7550106; ANW4.0-455056; ANW8.1-4551107; ANW14.2-8051110; Amprius Very
9 Long Endurance Battery; Amprius CWB and SiNW/NCM622.

10 38. These batteries infringe at least exemplary claim 1 of the '683 patent. The model
11 SiNW-1400, 4.25V battery, for example, is an energy storage system that includes a first electrode
12 disposed in a first region of electrolyte and including a substrate for at least the same reasons stated
13 above in paragraph 22.

14 39. The model SiNW-1400, 4.25V battery, for example, further includes a plurality of
15 support filaments attached to the substrate for at least the same reasons as stated above in paragraph
16 23.

17 40. The model SiNW-1400, 4.25V battery, for example, further includes a conformal
18 ion absorbing material attached to the support filaments that is configured to expand in volume at
19 least 5 percent when absorbing ions for at least the same reasons as stated above in paragraph 23.
20 Additionally, the '103 Application referred to in the Amprius Presentation as describing the
21 SiNW-1400, 4.25V battery states that the described battery includes "nanowires over which a
22 conformal silicon layer has been deposited using thermal CVD." On information and belief, the
23 SiNW-1400, 4.25V battery includes the conformal silicon layer described in the '103 Application.

24 41. The SiNW-1400, 4.25V battery also includes a separator configured to separate the
25 first region and a second region of electrolyte, and a second electrode disposed in the second region
26 of the electrolyte, with the first and second electrodes and separator configured to operate as a
27 rechargeable battery for at least the same reasons as stated above in paragraph 24.

28 42. Upon information and belief, Amprius' products, including without limitation

1 Amprius' lithium-ion batteries, including SiNW-1600, 4.3V; SiNW-1800, 4.35V; SiNW-2000,
2 4.4V; ANW3.6-455056; ANW2.6-405056; ANW10-7550106; ANW4.0-455056; ANW8.1-
3 4551107; ANW14.2-8051110; Amprius Very Long Endurance Battery; Amprius CWB and
4 SiNW/NCM622, practice one or more claims of the '683 patent, including exemplary claim 1, in
5 the same or similar manner as the SiNW-1400, 4.25V battery.

6 43. Upon information and belief, Amprius also induced and continues to induce
7 infringement of at least claim 1 of the '683 patent in violation of 35 U.S.C. § 271(b).

8 44. Amprius induces its customers, purchasers, users, and/or developers of its batteries
9 to infringe at least claim 1 of the '683 patent for at least the same reasons stated above in paragraph
10 28.

11 45. The components sold or offered for sale by Amprius have no substantial
12 noninfringing uses. Further, they are not staple articles of commerce and constitute a material part
13 of the invention. Thus, Amprius knew or should have known that the combination for which their
14 components were made was protected by the '683 patent, and yet Amprius infringed upon the '683
15 patent in spite of this knowledge.

16 46. As such, Amprius has contributorily infringed and continues to contributorily
17 infringe the '683 patent, as set forth herein, knowing that the materials and/or components would
18 be made or adapted for use in an infringing manner.

19 47. Amprius has had actual knowledge of the '683 patent since at least July 20, 2018
20 when Traverse sent Amprius a letter advising Amprius of Traverse's patents, including the '683
21 patent, which also indicated Amprius' "research in and/or manufacture[] [of] products related to or
22 including composite anodes containing silicon." Amprius' continued infringement on or after July
23 20, 2018 is in spite of an objectively high likelihood that its activities constitute infringement of a
24 valid patent, and this risk was either known or so obvious that it should have been known to
25 Amprius. Thus, Amprius' continued infringement as of July 20, 2018 is willful and deliberate.

26 48. Traverse has suffered and continues to suffer damages and irreparable harm as a
27 result of Amprius' past and ongoing infringement.

28 49. Unless Amprius' infringement is permanently enjoined, Traverse will continue to

1 be damaged and irreparably harmed.

2 **THIRD CLAIM FOR RELIEF**

3 **Infringement of the '310 patent**

4 50. Traverse incorporates by reference the foregoing paragraphs.

5 51. Traverse is the owner by assignment of all rights, title, and interest in the '310 patent.

6 52. The '310 patent is valid and enforceable.

7 53. Amprius has directly infringed, and is currently infringing, the '310 patent in
8 violation of 35 U.S.C. §271(a) by making, using, selling, offering for sale, and/or importing into
9 the United States, without authority, products that practice one or more claims of the '310 patent,
10 including without limitation Amprius' lithium-ion batteries, including models SiNW-1400, 4.25V;
11 SiNW-1600, 4.3V; SiNW-1800, 4.35V; SiNW-2000, 4.4V; ANW3.6-455056; ANW2.6-405056;
12 ANW10-7550106; ANW4.0-455056; ANW8.1-4551107; ANW14.2-8051110; Amprius Very
13 Long Endurance Battery; Amprius CWB and SiNW/NCM622.

14 54. These batteries infringe at least exemplary claim 1 of the '310 patent. The SiNW-
15 1400, 4.25V battery, for example, is a system that includes a first electrode disposed in a first region
16 of electrolyte and including a substrate for at least the same reasons stated above in paragraph 22.

17 55. The SiNW-1400, 4.25V includes a plurality of support filaments attached to the
18 substrate for at least the same reasons stated above in paragraph 23.

19 56. The SiNW-1400, 4.25V includes a non-particulate ion absorbing material attached
20 to the support filaments that is configured to expand in volume at least 5 percent when absorbing
21 ions. The SiNW-1400, 4.25V includes an ion-absorbing material attached to the support filaments
22 that is configured to expand in volume at least 5 percent when absorbing ions for at least the same
23 reason as stated above in paragraph 23. The ion absorbing material of the SiNW-1400, 4.25V
24 battery is also non-particulate. For example, as shown in Fig. 2 of the '103 Application discussed
25 above, the '103 Application illustrates the silicon ion-absorbing material as a continuous layer, and
26 not as a particulate.

27 57. The SiNW-1400, 4.25V battery also includes a separator configured to separate the
28 first region and a second region of electrolyte, and a second electrode disposed in the second region

1 of the electrolyte, with the first and second electrodes and separator configured to operate as a
2 rechargeable battery for at least the same reasons as stated above in paragraph 24.

3 58. Upon information and belief, Amprius' products, including without limitation
4 Amprius' lithium-ion batteries, including SiNW-1600, 4.3V; SiNW-1800, 4.35V; SiNW-2000,
5 4.4V; ANW3.6-455056; ANW2.6-405056; ANW10-7550106; ANW4.0-455056; ANW8.1-
6 4551107; ANW14.2-8051110; Amprius Very Long Endurance Battery; Amprius CWB and
7 SiNW/NCM622, practice one or more claims of the '310 patent, including exemplary claim 1, in
8 the same or similar manner as the SiNW-1400, 4.25V battery.

9 59. Upon information and belief, Amprius also induced and continues to induce
10 infringement of at least claim 1 of the '310 patent in violation of 35 U.S.C. § 271(b).

11 60. Amprius induces its customers, purchasers, users, and/or developers of its batteries
12 to infringe at least claim 1 of the '310 patent for at least the same reasons stated above in paragraph
13 28.

14 61. The components sold or offered for sale by Amprius have no substantial
15 noninfringing uses. Further, they are not staple articles of commerce and constitute a material part
16 of the invention. Thus, Amprius knew or should have known that the combination for which their
17 components were made was protected by the '310 patent, and yet Amprius infringed upon the '310
18 patent in spite of this knowledge.

19 62. As such, Amprius has contributorily infringed and continues to contributorily
20 infringe the '310 patent, as set forth herein, knowing that the materials and/or components would
21 be made or adapted for use in an infringing manner.

22 63. Amprius has had actual knowledge of the '310 patent since at least July 20, 2018
23 when Traverse sent Amprius a letter advising Amprius of Traverse's patents, including the '310
24 patent, which also indicated Amprius' "research in and/or manufacture[] [of] products related to or
25 including composite anodes containing silicon." Amprius' continued infringement on or after July
26 20, 2018 is in spite of an objectively high likelihood that its activities constitute infringement of a
27 valid patent, and this risk was either known or so obvious that it should have been known to
28 Amprius. Thus, Amprius' continued infringement as of at least July 20, 2018 is willful and

1 deliberate.

2 64. Traverse has suffered and continues to suffer damages and irreparable harm as a
3 result of Amprius' past and ongoing infringement.

4 65. Unless Amprius' infringement is permanently enjoined, Traverse will continue to
5 be damaged and irreparably harmed.

6 **FOURTH CLAIM FOR RELIEF**

7 **Infringement of the '181 patent**

8 66. Traverse incorporates by reference the foregoing paragraphs.

9 67. Traverse is the owner by assignment of all rights, title, and interest in the '181 patent.

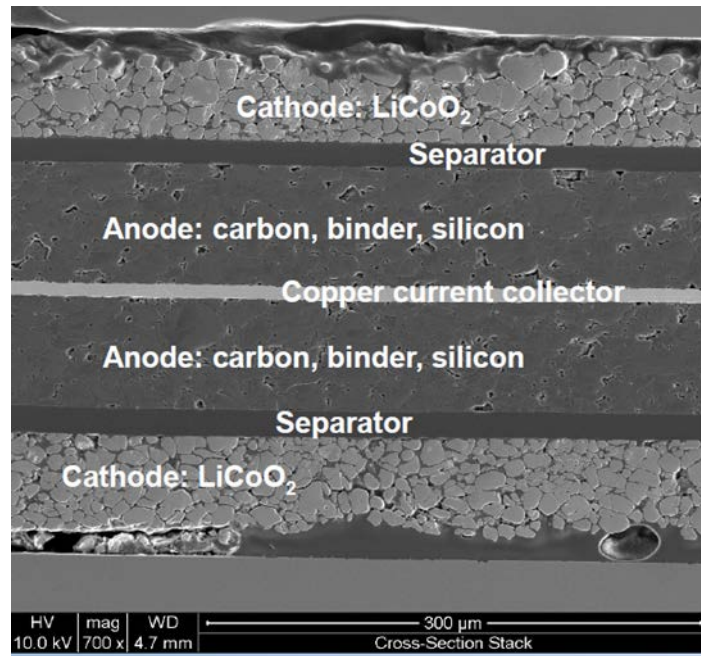
10 68. The '181 patent is valid and enforceable.

11 69. Amprius has infringed, and is currently infringing, the '181 patent in violation of 35
12 U.S.C. §271(a) by making, using, selling, offering for sale, and/or importing into the United States,
13 without authority, products that practice one or more claims of the '181 patent, including without
14 limitation Amprius' lithium-ion batteries, including batteries used in Thl 5000 mobile phones
15 (hereinafter, "model Thl 5000 batteries.")

16 70. The model Thl 5000 battery infringes at least exemplary claim 1 of the '181 patent.
17 The model Thl 5000 battery is an energy storage system that includes a first electrode disposed in
18 a first region of an electrolyte. For example, below is an annotated cross-section image of the model
19 Thl 5000 battery showing the first electrode, which includes the "anode" and the "copper current
20 collector":

21
22
23
24
25
26
27
28

ROBINS KAPLAN LLP
ATTORNEYS AT LAW
SILICON VALLEY



12 Figure 4

13 The electrolyte permeates the anode to provide electrical conductivity between the anode and the
14 cathode.

15 71. The model Th1 5000 battery also includes a separator. For example, as shown above
16 in Figure 4, the layer labeled “separator” is a separator.

17 72. The model Th1 5000 battery also includes a second electrode disposed in a second
18 region of electrolyte. For example, as shown above in Figure 4, the second electrode is the layer
19 labeled “cathode.” The electrolyte permeates the cathode to provide electrical conductivity between
20 the anode and the cathode.

21 73. The first electrode of the model Th1 5000 battery includes a substrate. For example,
22 as shown above in Figure 4, the layer labeled “copper current collector” is a substrate.

23 74. The first electrode of the model Th1 5000 battery includes an ion absorbing material
24 including silicon attached to the substrate. For example, shown below is a false color X-Ray
25 fluorescence (“XRF”) image of the model Th1 5000 battery showing a portion of the anode:
26
27
28

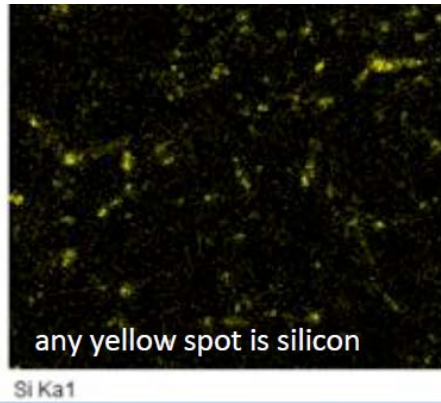
1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
21
22
23
24
25
26
27
28

Figure 5

The anode of the model Thl 5000 battery includes an ion-absorbing material that includes silicon, as shown in yellow in the left-hand image of Figure 5. The ion-absorbing material is attached to the copper current collector, which is a substrate, as shown above in Figure 4.

75. The model Thl 5000 battery also includes an over-layer including graphite covering at least part of the silicon. For example, shown below is an annotated SEM image of a portion of the anode of a model Thl 5000 battery:

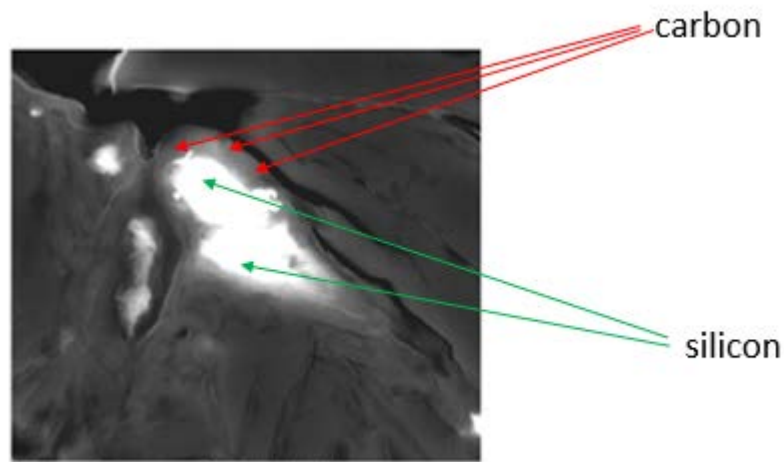


Figure 6

As shown in Figure 6, the bright white region is silicon, which is at least partially covered by an over-layer that is made up of carbon graphite, shown in gray in Figure 6.

76. The model Thl 5000 battery includes support filaments in contact with the ion absorbing material. For example, shown below Figure 7 is (1) an unaltered cross-sectional SEM image of a portion of the anode of the model Thl 5000 battery and (2) an annotated version of the same image outlining support filaments in yellow:

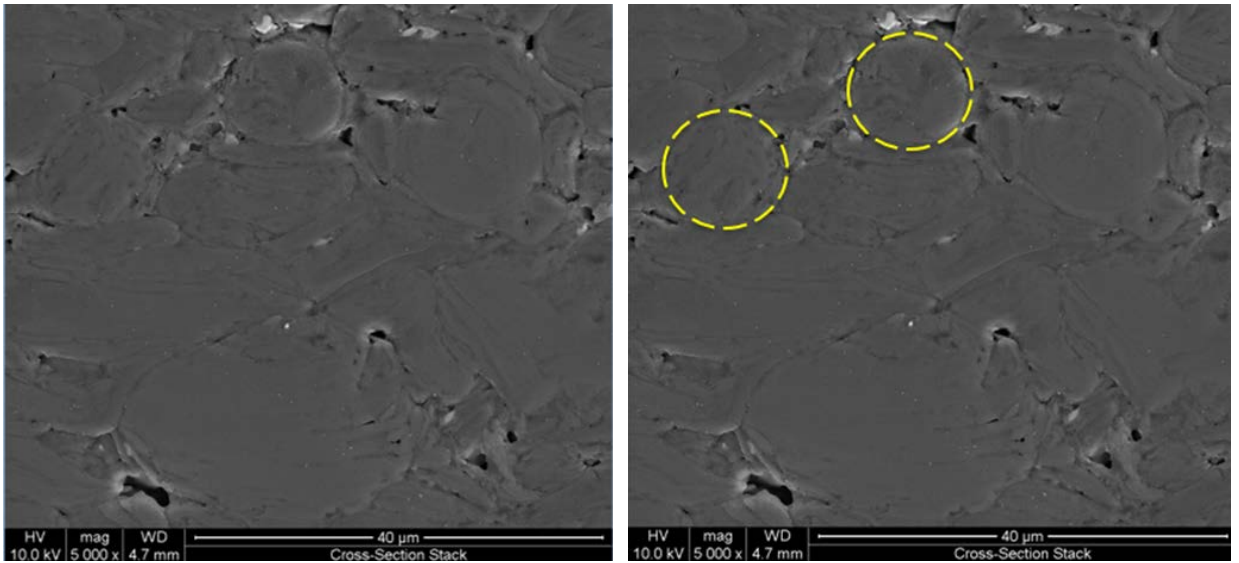


Figure 7

The support filaments of the model Thl 5000 battery are in contact with the silicon ion-absorbing material, which is shown in Figure 7, for example, as bright white flecks.

77. The model Thl 5000 battery includes support filaments where the ion absorbing material covers less than 25% of the support filaments. For example, shown below is an SEM image of the model Thl 5000 battery anode:

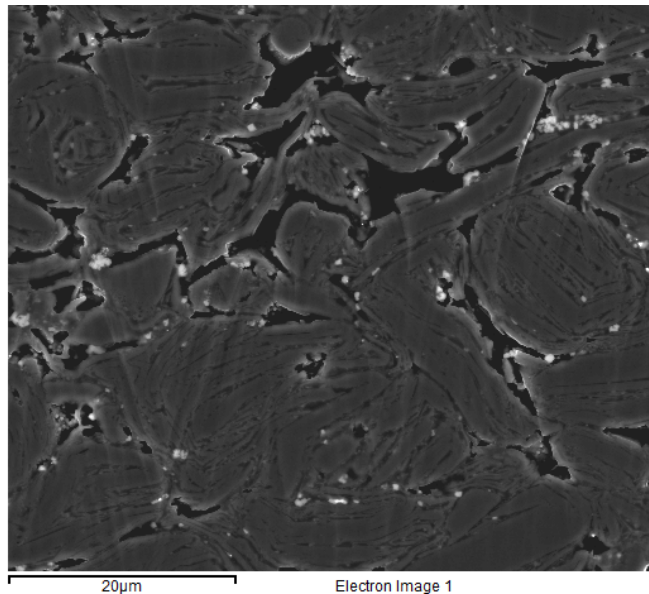


Figure 8

In the example of Figure 8, the silicon ion-absorbing material is shown in bright white. The carbon support filaments are shown in gray. The silicon ion-absorbing material shown in Figure 8 covers

ROBINS KAPLAN LLP
ATTORNEYS AT LAW
SILICON VALLEY

1 less than 25% of the carbon support filaments.

2 78. Upon information and belief, Amprius also induced and continues to induce
3 infringement of at least claim 1 of the '181 patent in violation of 35 U.S.C. § 271(b).

4 79. Amprius induces its customers, purchasers, users, and/or developers of its batteries
5 to infringe at least claim 1 of the '181 patent for at least the same reasons stated above in paragraph
6 28.

7 80. The components sold or offered for sale by Amprius have no substantial
8 noninfringing uses. Further, they are not staple articles of commerce and constitute a material part
9 of the invention. Thus, Amprius knew or should have known that the combination for which their
10 components were made was protected by the '181 patent, and yet Amprius infringed upon the '181
11 patent in spite of this knowledge.

12 81. As such, Amprius has contributorily infringed and continues to contributorily
13 infringe the '181 patent, as set forth herein, knowing that the materials and/or components would
14 be made or adapted for use in an infringing manner.

15 82. Amprius has had actual knowledge of the '181 patent since at least July 20, 2018
16 when Traverse sent Amprius a letter advising Amprius of Traverse's patents, including the '181
17 patent, which also indicated Amprius' "research in and/or manufacture[] [of] products related to or
18 including composite anodes containing silicon." Amprius' continued infringement on or after July
19 20, 2018 is in spite of an objectively high likelihood that its activities constitute infringement of a
20 valid patent, and this risk was either known or so obvious that it should have been known to
21 Amprius. Thus, Amprius' continued infringement as of July 20, 2018 is willful and deliberate.

22 83. Traverse has suffered and continues to suffer damages and irreparable harm as a
23 result of Amprius' past and ongoing infringement.

24 84. Unless Amprius' infringement is permanently enjoined, Traverse will continue to
25 be damaged and irreparably harmed.

26 **FIFTH CLAIM FOR RELIEF**

27 **Infringement of the '017 patent**

28 85. Traverse incorporates by reference the foregoing paragraphs.

1 86. Traverse is the owner by assignment of all rights, title, and interest in the '017 patent.

2 87. The '017 patent is valid and enforceable.

3 88. Amprius has directly infringed, and is currently infringing, the '017 patent in
4 violation of 35 U.S.C. §271(a) by making, using, selling, offering for sale, and/or importing into
5 the United States, without authority, products that practice one or more claims of the '017 patent,
6 including without limitation Amprius' lithium-ion batteries, including model Thl 5000 batteries.

7 89. The model Thl 5000 battery infringes at least exemplary claim 17 of the '017 patent.
8 The model Thl 5000 battery is an energy storage system that includes a first electrode disposed in
9 a first region of an electrolyte, a separator that separates the first region and a second region of the
10 electrolyte, and a second electrode disposed in the second region of the electrolyte for at least the
11 same reasons stated above in Paragraphs 70-72.

12 90. The first electrode of the model Thl 5000 battery includes a substrate for at least the
13 same reasons as stated above in paragraph 73.

14 91. The model Thl 5000 battery includes ion absorbing material attached to the substrate
15 and an over-layer including carbon that coats the ion absorbing material for at least the same reasons
16 as stated above in paragraph 74-75.

17 92. Upon information and belief, Amprius also induced and continues to induce
18 infringement of at least claim 1 of the '017 patent in violation of 35 U.S.C. § 271(b).

19 93. Amprius induces its customers, purchasers, users, and/or developers of its batteries
20 to infringe at least claim 1 of the '017 patent for at least the same reasons stated above in paragraph
21 28.

22 94. The components sold or offered for sale by Amprius have no substantial
23 noninfringing uses. Further, they are not staple articles of commerce and constitute a material part
24 of the invention. Thus, Amprius knew or should have known that the combination for which their
25 components were made was protected by the '017 patent, and yet Amprius infringed upon the '017
26 patent in spite of this knowledge.

27 95. As such, Amprius has contributorily infringed and continues to contributorily
28 infringe the '017 patent, as set forth herein, knowing that the materials and/or components would

1 be made or adapted for use in an infringing manner.

2 96. Amprius has had actual knowledge of the '017 patent since at least July 20, 2018
3 when Traverse sent Amprius a letter advising Amprius of Traverse's patents, including the '017
4 patent, which also indicated Amprius' "research in and/or manufacture[] [of] products related to or
5 including composite anodes containing silicon." Amprius' continued infringement on or after July
6 20, 2018 is in spite of an objectively high likelihood that its activities constitute infringement of a
7 valid patent, and this risk was either known or so obvious that it should have been known to
8 Amprius. Thus, Amprius' continued infringement as of July 20, 2018 is willful and deliberate.

9 97. Traverse has suffered and continues to suffer damages and irreparable harm as a
10 result of Amprius' past and ongoing infringement.

11 98. Unless Amprius' infringement is permanently enjoined, Traverse will continue to
12 be damaged and irreparably harmed.

13 **SIXTH CLAIM FOR RELIEF**

14 **Infringement of the '998 patent**

15 99. Traverse incorporates by reference the foregoing paragraphs.

16 100. Traverse is the owner by assignment of all rights, title, and interest in the '998 patent.

17 101. The '998 patent is valid and enforceable.

18 102. Amprius has directly infringed, and is currently infringing, the '998 patent in
19 violation of 35 U.S.C. §271(a) by making, using, selling, offering for sale, and/or importing into
20 the United States, without authority, products that practice one or more claims of the '998 patent,
21 including without limitation Amprius' lithium-ion batteries, including model Thl 5000 batteries.

22 103. The model Thl 5000 battery infringes at least exemplary claim 36 of the '998 patent.
23 The model Thl 5000 battery is an energy storage system that includes an electrode disposed in a
24 first region of electrolyte for at least the same reasons as stated above in paragraph 70.

25 104. The model Thl 5000 battery includes a substrate for at least the same reasons as
26 stated above in paragraph 73.

27 105. The model Thl 5000 battery includes a plurality of support filaments for at least the
28 same reasons as stated above in paragraph 76.

1 106. The model Thl 5000 battery includes an ion absorbing material attached to the
2 support filaments and including silicon where the ion adsorbing material covers less than 25% of
3 the supporting filaments for at least the same reasons as stated above in paragraphs 77.

4 107. The Thl 5000 battery also includes a separator configured to separate the first region
5 and a second region of electrolyte, and a cathode disposed in the second region of electrolyte, with
6 the cathode, anode and separator configured to operate as a rechargeable battery for at least the
7 same reasons as stated above in paragraphs 71-72.

8 108. Upon information and belief, Amprius also induced and continues to induce
9 infringement of at least claim 1 of the '998 patent in violation of 35 U.S.C. § 271(b).

10 109. Amprius induces its customers, purchasers, users, and/or developers of its batteries
11 to infringe at least claim 1 of the '998 patent for at least the same reasons stated above in paragraph
12 28.

13 110. The components sold or offered for sale by Amprius have no substantial
14 noninfringing uses. Further, they are not staple articles of commerce and constitute a material part
15 of the invention. Thus, Amprius knew or should have known that the combination for which their
16 components were made was protected by the '998 patent, and yet Amprius infringed upon the '998
17 patent in spite of this knowledge.

18 111. As such, Amprius has contributorily infringed and continues to contributorily
19 infringe the '998 patent, as set forth herein, knowing that the materials and/or components would
20 be made or adapted for use in an infringing manner.

21 112. Amprius has had actual knowledge of the '998 patent since at least July 20, 2018
22 when Traverse sent Amprius a letter advising Amprius of Traverse's patents, including the '998
23 patent, which also indicated Amprius' "research in and/or manufacture[] [of] products related to or
24 including composite anodes containing silicon." Amprius' continued infringement on or after July
25 20, 2018 is in spite of an objectively high likelihood that its activities constitute infringement of a
26 valid patent, and this risk was either known or so obvious that it should have been known to
27 Amprius. Thus, Amprius' continued infringement as of July 20, 2018 is willful and deliberate.

28 113. Traverse has suffered and continues to suffer damages and irreparable harm as a

1 result of Amprius' past and ongoing infringement.

2 114. Unless Amprius' infringement is permanently enjoined, Traverse will continue to
3 be damaged and irreparably harmed.

4 **JURY DEMAND**

5 Traverse hereby requests a trial by jury pursuant to Rule 38 of the Federal Rules of Civil
6 Procedure.

7 **REQUEST FOR RELIEF**

8 Traverse respectfully asks that the Court enter judgment in its favor as follows:

- 9 A. Finding that Amprius has infringed and is infringing each of the Asserted Patents;
10 B. Finding that Amprius' infringement of the Asserted Patents has been and continues
11 to be willful;
12 C. Finding that each of the Asserted Patents is valid and enforceable;
13 D. Awarding Traverse damages adequate to compensate for Amprius' past and present
14 infringement, but in no event less than a reasonable royalty;
15 E. Awarding an accounting and supplemental damages for those acts of infringement
16 committed by Amprius subsequent to the discovery cut-off date in this action
17 through the date Final Judgment is entered;
18 F. Ordering that damages for infringement of the Asserted Patents be trebled as
19 provided for by 35 U.S.C. § 284 for Amprius' willful infringement of the Asserted
20 Patents;
21 G. Finding that this case is exceptional;
22 H. Awarding Traverse with its attorneys' fees and costs, together with prejudgment and
23 post-judgment interest;
24 I. Permanently enjoining Amprius and its parents, subsidiaries, affiliates, officers,
25 directors, agents, servants, employees, successors and assigns, and all others in
26 active concert or participation with any of the foregoing from any further acts of
27 infringement, including contributing to and/or inducing infringement, of the
28 Asserted Patents, or, in the alternative, an award of a reasonable ongoing royalty for

future infringement of the Asserted Patents by such entities; and

J. Any further relief that this Court deems just and proper.

DATED: February 5, 2020

ROBINS KAPLAN LLP

By: /s/ Li Zhu
Li Zhu (Bar No. 302210)

Christopher A. Seidl (*pro hac vice* filed)
CSeidl@RobinsKaplan.com
William E. Manske (*pro hac vice* filed)
WManske@RobinsKaplan.com
ROBINS KAPLAN LLP
800 LaSalle Avenue Suite 2800
Minneapolis, MN 55402
(612) 349-8500

Bryan J. Vogel (*pro hac vice* filed)
BVogel@RobinsKaplan.com
Derrick J. Carman (*pro hac vice* filed)
DCarman@RobinsKaplan.com
ROBINS KAPLAN LLP
399 Park Avenue, Suite 3600
New York, NY 10022-4690
(212) 980-7400

Li Zhu (Bar No. 302210)
LZhu@RobinsKaplan.com
ROBINS KAPLAN LLP
2440 W El Camino Real, Suite 100
Mountain View, CA 94040
(650) 784-4040

ATTORNEYS FOR PLAINTIFF
CF TRAVERSE LLC

ROBINS KAPLAN LLP
ATTORNEYS AT LAW
SILICON VALLEY

1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
21
22
23
24
25
26
27
28