IN THE UNITED STATES DISTRICT COURT
FOR THE EASTERN DISTRICT OF TEXAS
MARSHALL DIVISION

MOLECULAR REBAR DESIGN, LLC, AND BLACK DIAMOND STRUCTURES, LLC, Plaintiffs, v. LG ENERGY SOLUTION, LTD., Defendant.	Case No. _____ **JURY TRIAL DEMANDED**

COMPLAINT FOR PATENT INFRINGEMENT

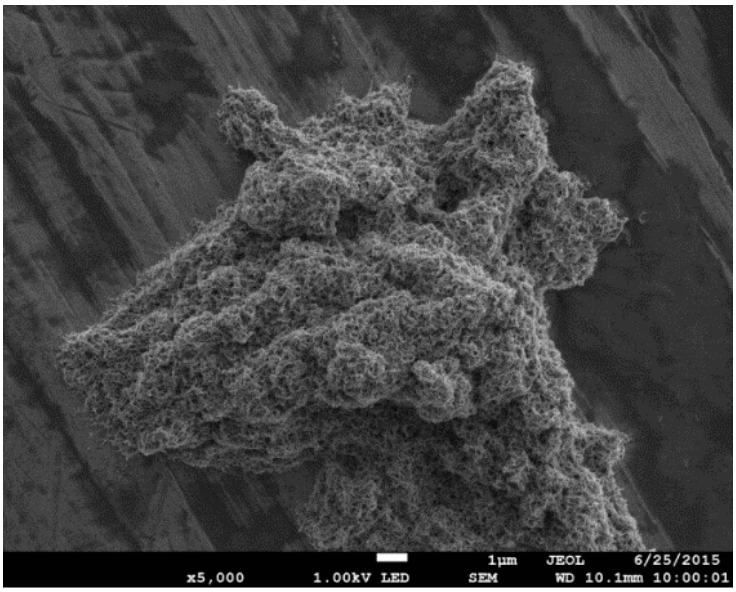
This is an action for patent infringement in which Plaintiffs Molecular Rebar Design, LLC ("MRD") and Black Diamond Structures, LLC ("BDS"; together, "MRD/BDS") make the following allegations against LG Energy Solution, Ltd. ("LG") ("Defendant").

BACKGROUND

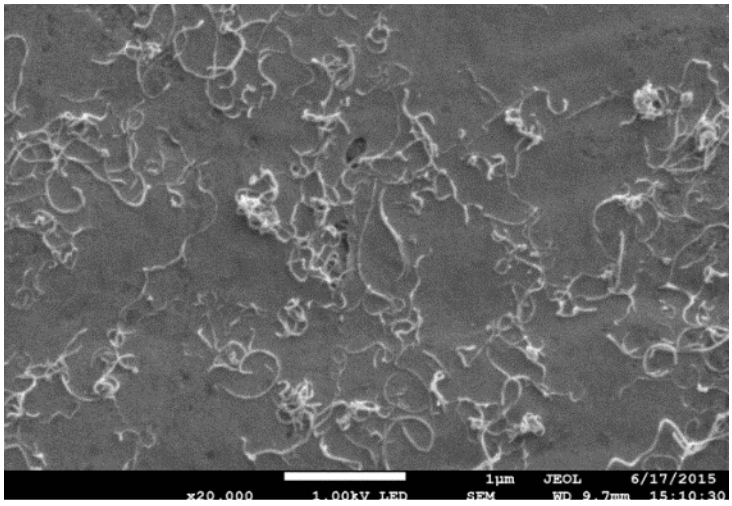
1. Formed over a decade ago in Austin, Texas, Plaintiff Molecular Rebar Design, LLC ("MRD"), is one of the world's leading researchers in battery- and nanotechnology. The company has been granted over 35 patents in the United States and over 150 patents abroad.

2. This case concerns what are known as detangled carbon nanotubes ("CNTs"), a proprietary technology created and commercialized by MRD to improve the performance of the batteries used in nearly every modern consumer electronic product, ranging from cell phones to automobiles. MRD's technology works by disentangling CNTs—a core component of batteries—thereby increasing their dispersibility. MRD's CNT materials are the world's first CNTs that are substantially disentangled, unlike typical CNTs, which are clumped and clustered.

3. Below is an example of clumped, clustered, and non-discrete CNTs:



4. By contrast, below is an example of disaggregated and de-bundled CNTs (also known as exfoliated or discrete CNTs):



5. MRD's subsidiary, Black Diamond Structures, LLC ("BDS"), was formed in 2014. BDS partners with manufacturers to create the next generation of batteries, based on MRD's CNT technology.

6. MRD is the owner of several patents that claim the underlying materials, processes, technologies, and other related information integral to its CNT technology. Those patents include

U.S. Patent Nos. 8,808,909; 8,968,924; 10,153,483; 9,636,649; and 10,608,282 (together, the "Asserted Patents").

PARTIES

7. Plaintiff MRD is a Delaware limited liability company with a principal place of business at 13477 Fitzhugh Road, Austin, TX 78736.

8. Plaintiff BDS is a Delaware limited liability company with a principal place of business at 12310 Trail Driver, Austin, TX 78737. BDS is the exclusive licensee of any and all patent applications and issued patents owned by MRD that have claims to any idea or invention related to the CNT Technology, methods of making the CNT Technology, and uses of the CNT Technology. BDS's license is limited, however, to applications and uses related to electrical energy storage, including without limitation anodes, cathodes, electrolytes, separators for batteries, capacitors and other storage devices.

9. On information and belief, Defendant LG Energy Solution, Ltd. ("LG") is a corporation organized under the laws of South Korea, having a principal place of business at 108 Yeouidaero, Yeongdeungpo-gu, Seoul 07335, South Korea. Prior to December 2020, LG Energy Solution was part of—in particular, was the battery division of—LG Chem, Ltd., another South Korean entity. LG Energy Solution was spun off as a separate entity in December 2020. LG can be served with process in accordance with the Hague Convention on the Service Abroad of Judicial and Extrajudicial Documents, in accordance with Fed. R. Civ. P. 4(f).

JURISDICTION AND VENUE

10. This action arises under the patent laws of the United States, Title 35 of the United States Code.

11. This Court has subject matter jurisdiction pursuant to 28 U.S.C. §§ 1331 and 1338(a).

12. This Court has personal jurisdiction over LG because, directly or through intermediaries, it has committed acts within Texas giving rise to this action and/or has established minimum contacts with Texas such that the exercise of jurisdiction would not offend traditional notions of fair play and substantial justice.

13. Specifically, during the infringing time period, LG has placed one or more infringing products—namely LG HG2 battery, HG6 battery, MJ1 battery, and the products containing those batteries—into the stream of commerce via an established distribution channel with the knowledge and/or understanding that such products were being offered for sale, and/or sold to customers, and/or utilized in Texas.

14. For example, LG announced in 2023 that it expected to triple energy storage "division's global sales in five years, fueled by the remarkable expansion of the U.S. market." LG Energy Solution, *LG Energy Solution Announces U.S. Market Strategies for ESS*, https://news.lgensol.com/company-news/press-releases/2108 (last visited February 15, 2024). It also announced in 2023 that it was "set to launch a new residential energy storage system in the U.S. in November." LG, *LG Energy Solution enblock S to Make U.S. Debut in November*, https://news.lgensol.com/company-news/press-releases/2210 (last visited February 15, 2024). It also announced in 2023 that it had "signed a supply agreement for lithium-ion battery modules to be used in Toyota battery electric vehicles (BEVs) that will be assembled in the United States." LG, *LG Energy Solution and Toyota Sign Long-term Battery Supply Agreement to Power Electric Vehicles in the U.S.*, https://news.lgensol.com/company-news/press-releases/2177 (last visited February 15, 2024).

15. Similarly, LG was identified by Black & Decker as one of its "peers in innovation" and, on information and belief, provides rechargeable battery packs to Black & Decker for use in its tools, including in those made in its manufacturing facility in Mission, Texas.

16. Indeed, the Texas Supreme Court recently found that personal jurisdiction existed for a pre-2020 suit against LG Chem—the battery division of which spun off in 2020 to become Defendant LG Energy Solution. Specifically, according to a declaration filed by a plaintiff in the action *Morgan* v. *LG Chem et al.*, 100728-cv (August 12, 2019, Brazoria County, Texas, 239th Judicial District), "import data available to the public by U.S. Customs" demonstrates that "LG Chem has substantial connections to Texas and that it imports LG Chem products *en masse* to over sixty (60) non-LG Texas entities." The declaration in the *Morgan* case further noted that "LG Chem shipped lithium-ion 18650 batteries to various entities located in Texas, including but not limited to Green Battery Technologies and Fairfield Nodal."[1] As the Texas Court of Appeals (First Division, Houston), later observed in upholding personal jurisdiction over LG Chem in that case, such contacts were "sufficient to meet [the plaintiff's] initial burden to show that [LG Chem] was doing business in Texas under the long-arm statute." *LG Chem Am., Inc. v. Morgan*, 663 S.W.3d 217, 231 (Tex. App. 2020), *aff'd*, 670 S.W.3d 341 (Tex. 2023). The Texas Supreme Court agreed. It held that LG Chem "intended to serve the Texas market for their model 18650 batteries" and "undisputedly sold and distributed model 18650 batteries in Texas." *LG Chem Am., Inc. v. Morgan*, 670 S.W.3d 341, 349 (Tex. 2023); *see also Morgan*, 663 S.W.3d at 233 ("[LG Chem] designed and manufactured its batteries for the Texas market and marketed and sold and

[1] The LG HG2 and MJ1 batteries are often referenced by their model number, "18650." The battery's model number refers to its dimensions—18 mm in diameter and 65 mm in length.

distributed them here. . . . [T]he evidence indicates an intent to serve the Texas market specifically . . . .").[2]

17. Because this Court has personal jurisdiction over LG—a foreign corporation—venue is proper pursuant to 28 U.S.C. § 1391(c).

18. Venue is also proper in this district pursuant to 28 U.S.C. §§ 1391 and 1400(b) because LG has done business in this District, has committed acts of infringement in this District, and continues to commit acts of infringement in this District, entitling MRD and/or BDS to relief.

THE ASSERTED PATENTS

19. This lawsuit asserts causes of action for infringement of U.S. Patent Nos. 8,808,909; 8,968,924; 10,153,483; 9,636,649; and 10,608,282 (together, the "Asserted Patents").

A. U.S. Patent No. 8,808,909 B2

20. On August 19, 2014, the United States Patent and Trademark Office ("PTO") issued U.S. Patent No. 8,808,909 B2 (the "'909 Patent"), which is entitled "Lithium Ion Batteries Using Discrete Carbon Nanotubes, Methods for Production Thereof, and Products Obtained Therefrom."

21. MRD owns all substantial rights to the '909 Patent, except that MRD has granted BDS an exclusive license to the '909 Patent in the energy storage field, including applications and uses related to electrical energy storage, including without limitation anodes, cathodes, electrolytes, separators for batteries, capacitors and other storage devices.

[2] The underlying suit giving rise to the Texas Supreme Court's decision in *LG Chem Am., Inc. v. Morgan,* was filed in January 2019—prior to the spin-off of LG Energy Solution from LG Chem. *See Morgan v. LG Chem. America, Inc. et al.*, 100728-cv (Brazoria County, Texas, 239th Judicial District) (filed Jan. 23, 2019).

B. U.S. Patent No. 8,968,924 B2

22. On March 3, 2015, the PTO issued U.S. Patent No. 8,968,924 B2 (the "'924 Patent"), which is entitled "Lithium Ion Batteries Using Discrete Carbon Nanotubes, Methods for Production Thereof, and Products Obtained Therefrom."

23. MRD owns all substantial rights to the '924 Patent, except that MRD has granted BDS an exclusive license to the '924 Patent in the energy storage field, including applications and uses related to electrical energy storage, including without limitation anodes, cathodes, electrolytes, separators for batteries, capacitors and other storage devices.

C. U.S. Patent No. 10,153,483 B2

24. On December 11, 2018, the PTO issued U.S. Patent No. 10,153,483 B2 (the "'483 Patent"), entitled "Lithium Ion Batteries Using Discrete Carbon Nanotubes, Methods for Production Thereof, and Products Obtained Therefrom."

25. MRD owns all substantial rights to the '483 Patent, except that MRD has granted BDS an exclusive license to the '483 Patent in the energy storage field, including applications and uses related to electrical energy storage, including without limitation anodes, cathodes, electrolytes, separators for batteries, capacitors and other storage devices.

D. U.S. Patent No. 9,636,649 B2

26. On May 2, 2017, the PTO issued U.S. Patent No. 9,636,649 B2 (the "'649 Patent"), which is entitled "Dispersions Comprising Discrete Carbon Nanotube Fibers."

27. MRD owns all substantial rights to the '649 Patent, except that MRD has granted BDS an exclusive license to the '649 Patent in the energy storage field, including applications and uses related to electrical energy storage, including without limitation anodes, cathodes, electrolytes, separators for batteries, capacitors and other storage devices.

E. U.S. Patent No. 10,608,282 B2

28. On March 31, 2020, the PTO issued U.S. Patent No. 10,608,282 B2 (the "'282 Patent"), which is entitled "Binders, Electrolytes and Separator Films for Energy Storage and Collective Devices Using Discrete Carbon Nanotubes."

29. MRD owns all substantial rights to the '282 Patent, except that MRD has granted BDS an exclusive license to the '282 Patent in the energy storage field, including applications and uses related to electrical energy storage, including without limitation anodes, cathodes, electrolytes, separators for batteries, capacitors and other storage devices.

COUNT 1 – INFRINGEMENT OF U.S. PATENT NO. 8,808,909 B2

30. MRD repeats and incorporates by reference each preceding paragraph as if fully set forth herein, and further states:

31. LG has directly infringed, and continue to directly infringe, the '909 Patent in violation of 35 U.S.C. § 271(a) by making, using, selling, and/or offering for sale in the United States, and/or importing into the United States, without authorization, one or more products that practice various claims of the '909 Patent, literally or under the doctrine of equivalents (hereinafter the "'909 Accused Products"). At a minimum, such '909 Accused Products include all devices that infringe the claims of the '909 Patent. This includes products like the LG HG2 battery, HG6 battery, and MJ1 battery.

32. As detailed below, the '909 Accused Products are configured by LG to practice every element of at least Claim 1 of the '909 Patent literally or under the doctrine of equivalents.[3]

[3] This description is illustrative and is not intended to be an exhaustive or limiting explanation of every manner in which each '909 Accused Product infringes the '909 Patent.

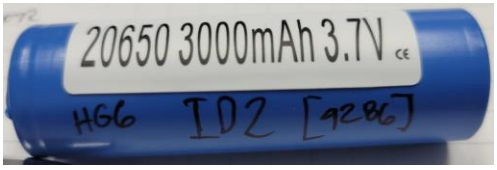
Further, the identified components and functionality are representative of the components and functionality present in all '909 Accused Products.

33. Claim 1 of the '909 Patent recites: "[a] composition useful for lithium ion batteries comprising: discrete carbon nanotubes having crystals or layers of lithium ion active material attached to their surface, wherein the discrete carbon nanotubes have an aspect ratio of 10 to 500 and oxidation levels from 1% to 15% by weight of the carbon nanotube."

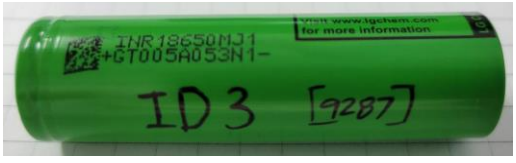
34. Each of the '909 Accused Products contains a composition useful for lithium-ion batteries. For example:

LG HG2

LG HG6

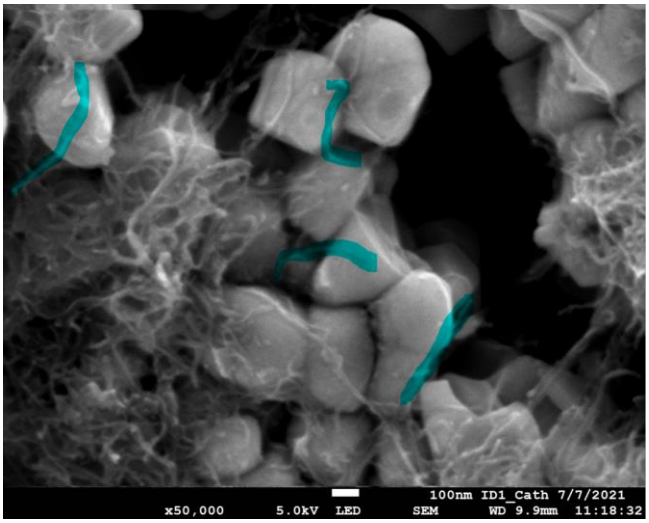


LG MJ1

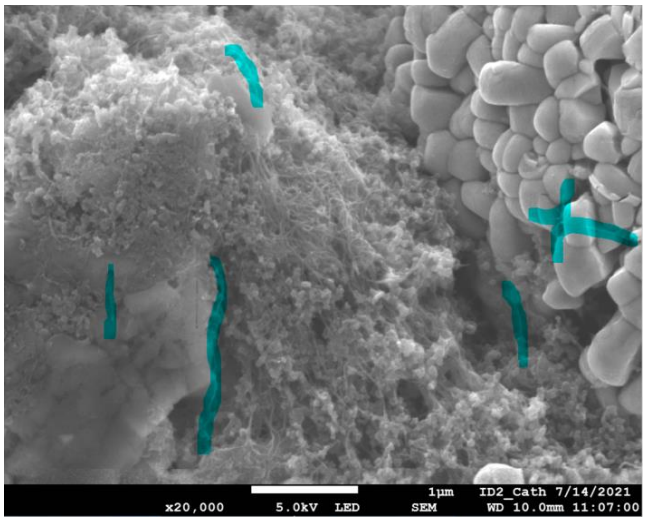


35. The composition in each of the '909 Accused Products comprises discrete carbon nanotubes having crystals or layers of lithium ion active material attached to their surface. The presence of such discrete carbon nanotubes having crystals or layers of lithium ion active material attached to their surface is shown below in blue highlighting, from scanning electron microscope ("SEM") images of example '909 Accused Products:

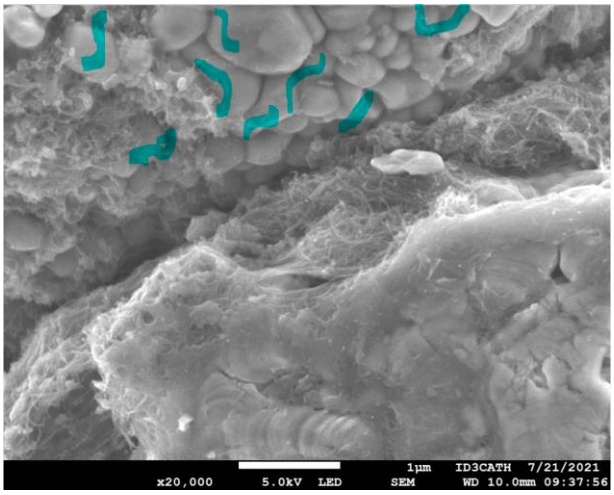
LG HG2


x50,000 5.0kV LED SEM
100nm ID1_Cath 7/7/2021
WD 9.9mm 11:18:32

LG HG6

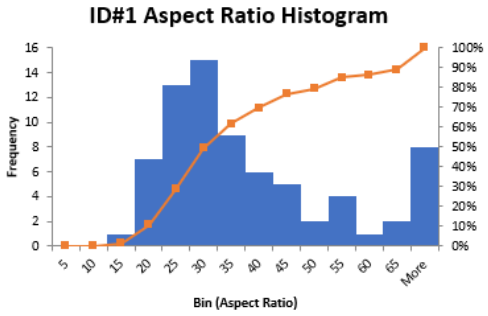

x20,000 5.0kV LED SEM
1µm ID2_Cath 7/14/2021
WD 10.0mm 11:07:00

LG MJ1

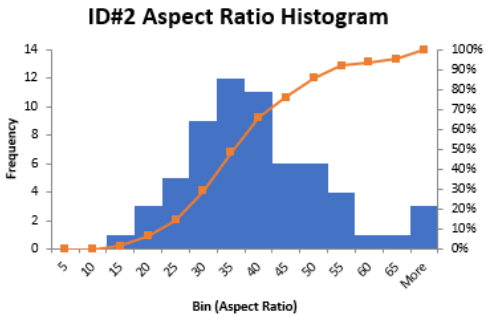


36. The composition in each of the '909 Accused Products comprises discrete carbon nanotubes having crystals or layers of lithium ion active material attached to their surface, wherein the discrete carbon nanotubes have an aspect ratio of 10 to 500, as illustrated in the graphical depictions below of example '909 Accused Products:

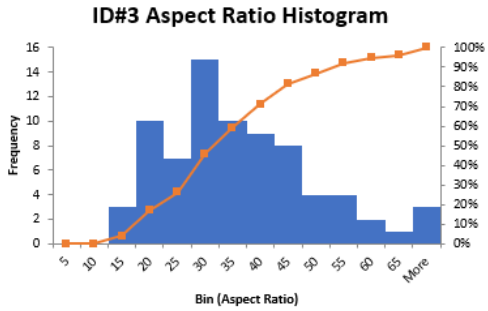
LG HG2



LG HG6



LG MJ1



37. The composition in each of the '909 Accused Products comprises discrete carbon nanotubes having crystals or layers of lithium ion active material attached to their surface, wherein the discrete carbon nanotubes have oxidation levels from 1% to 15% by weight of the carbon nanotube.

38. LG thus directly infringed, and continues to directly infringe, each element of Claim 1 of the '909 Patent by selling and offering to sell in the United States, and by importing into the United States, without authorization, '909 Accused Products.

39. LG also actively induced, and will continue to actively induce after the filing of this complaint, the direct infringement of the '909 Patent by distributors, customers, and other end users of the '909 Accused Products by distributing the '909 Accused Products knowing that they will be further sold, offered for sale, and/or used in the United States. For example, as detailed

above, LG announced in 2023 that it expected to triple energy storage "division's global sales in five years, fueled by the remarkable expansion of the U.S. market." LG Energy Solution, *LG Energy Solution Announces U.S. Market Strategies for ESS*, https://news.lgensol.com/company-news/press-releases/2108 (last visited February 15, 2024). It also announced in 2023 that it was "set to launch a new residential energy storage system in the U.S. in November." LG, *LG Energy Solution enblock S to Make U.S. Debut in November*, https://news.lgensol.com/company-news/press-releases/2210 (last visited February 15, 2024). It also announced in 2023 that it had "signed a supply agreement for lithium-ion battery modules to be used in Toyota battery electric vehicles (BEVs) that will be assembled in the United States." LG, *LG Energy Solution and Toyota Sign Long-term Battery Supply Agreement to Power Electric Vehicles in the U.S.*, https://news.lgensol.com/company-news/press-releases/2177 (last visited February 15, 2024). As also detailed above, on information and belief, LG also provides the rechargeable battery packs contained in certain Black and Decker tools.

40. In addition, LG's ongoing infringement of the '909 Patent is willful. As detailed herein, LG now has notice of the '909 Patent and its infringement of it. Nevertheless, without authorization, LG deliberately continues to infringe the '909 Patent and also encourages others to infringe the '909 Patent, including by selling and/or using '909 Accused Products in the United States.

41. LG's acts of infringement have caused damage to MRD and BDS, and MRD and BDS are entitled to recover from Defendant the damages they have sustained as a result of such wrongful acts in an amount to be proven at trial.

COUNT 2 – INFRINGEMENT OF U.S. PATENT NO. US 8,968,924 B2

42. MRD repeats and incorporates by reference each preceding paragraph as if fully set forth herein, and further states:

43. LG has directly infringed, and continue to directly infringe, the '924 Patent in violation of 35 U.S.C. § 271(a) by making, using, selling, and/or offering for sale in the United States, and/or importing into the United States, without authorization, one or more products that practice various claims of the '924 Patent, literally or under the doctrine of equivalents (hereinafter the "'924 Accused Products"). At a minimum, such '924 Accused Products include all devices that infringe the claims of the '924 Patent. This includes products like the LG HG2 battery, HG6 battery, and MJ1 battery.

44. As detailed below, the '924 Accused Products are configured by LG to practice every element of at least Claim 1 of the '924 Patent literally or under the doctrine of equivalents.[4] Further, the identified components and functionality are representative of the components and functionality present in all '924 Accused Products.

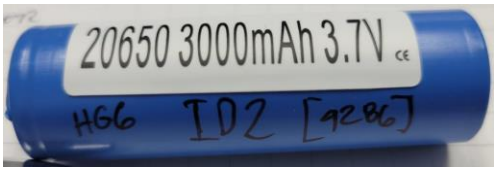
45. Claim 1 of the '924 Patent recites: "[a] composition used in lithium ion batteries comprising: discrete carbon nanotubes having ion active material attached to their surface, wherein the discrete carbon nanotubes have an aspect ratio of 10 to 500 and oxidation levels from 1 % to 15% by weight of the carbon nanotube, and wherein the ion active material comprise a lithium metal salt and an element selected from the group consisting of: iron, manganese, cobalt, copper, nickel, vanadium, titanium, and mixtures thereof."

[4] This description is illustrative and is not intended to be an exhaustive or limiting explanation of every manner in which each '924 Accused Product infringes the '924 Patent.

46. Each of the ’924 Accused Products contains a composition useful for lithium-ion batteries. For example:

LG HG2

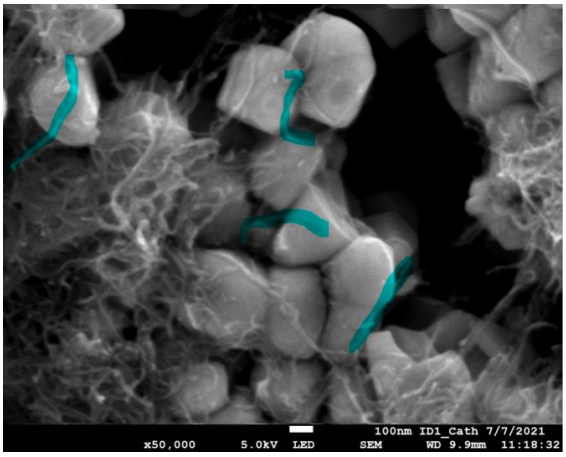
LG HG6



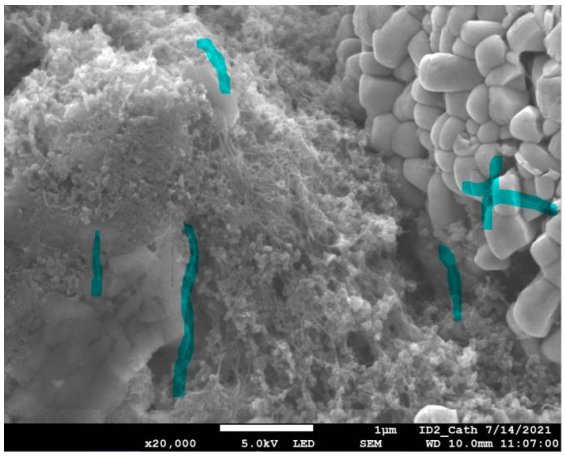
LG MJ1

47. The composition in each of the ’924 Accused Products comprises discrete carbon nanotubes having ion active material attached to their surface. The presence of such discrete carbon nanotubes having ion active material attached to their surface is shown below in blue highlighting from SEM images of example ’924 Accused Products:

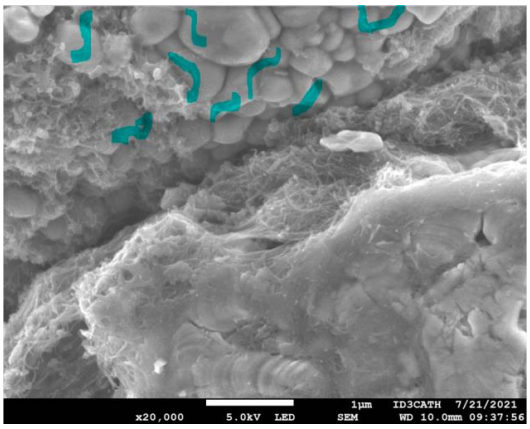
LG HG2



LG HG6

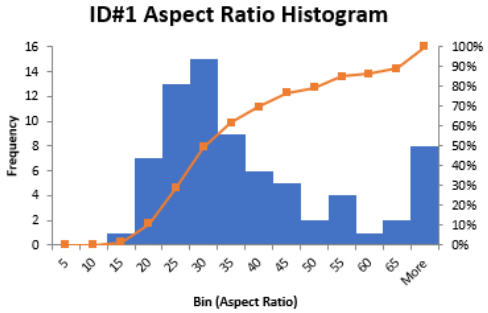


LG MJ1

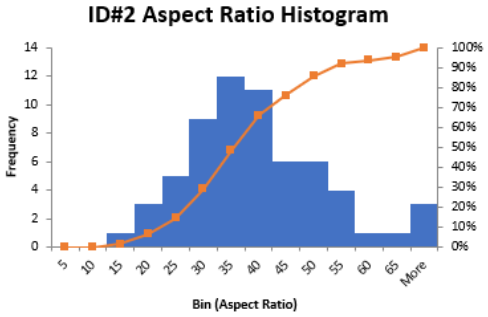


48. The composition in each of the ’924 Accused Products comprises discrete carbon nanotubes having crystals or layers of lithium ion active material attached to their surface, wherein the discrete carbon nanotubes have an aspect ratio of 10 to 500, as illustrated in the graphical depictions of example ’924 Accused Products below:

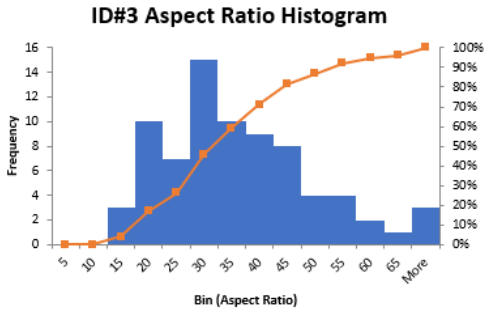
LG HG2



LG HG6



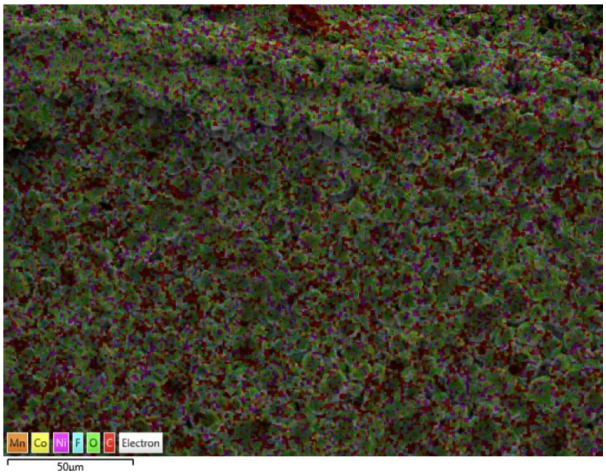
LG MJ1



49. The composition in each of the ’924 Accused Products comprises discrete carbon nanotubes having crystals or layers of lithium ion active material attached to their surface, wherein the discrete carbon nanotubes have oxidation levels from 1% to 15% by weight of the carbon nanotube.

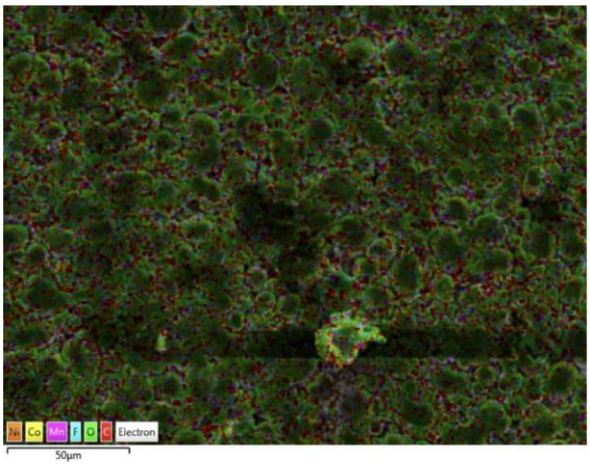
50. The composition in each of the ’924 Accused Products comprises discrete carbon nanotubes having crystals or layers of lithium ion active material attached to their surface, wherein the ion active material comprise a lithium metal salt and an element selected from the group consisting of: iron, manganese, cobalt, copper, nickel, vanadium, titanium, and mixtures thereof. The presence of discrete carbon nanotubes having crystals or layers of lithium ion active material attached to their surface, wherein the ion active material comprise a lithium metal salt and an element selected from the group consisting of: iron, manganese, cobalt, copper, nickel, vanadium, titanium, and mixtures thereof is shown below through energy dispersive spectroscopy (“EDS”) imaging of example ’924 Accused Products:

LG HG2



LG HG6

LG MJ1



51. LG thus directly infringed, and continues to directly infringe, each element of Claim 1 of the '924 Patent by selling and offering to sell in the United States, and by importing into the United States, without authorization, '924 Accused Products.

52. LG also actively induced, and continues to actively induce, the direct infringement of the '924 Patent by customers and other end users of the '924 Accused Products by distributing at least the '924 Accused Products in the United States. For example, as detailed above, LG announced in 2023 that it expected to triple energy storage "division's global sales in five years, fueled by the remarkable expansion of the U.S. market." LG Energy Solution, *LG Energy Solution Announces U.S. Market Strategies for ESS*, https://news.lgensol.com/company-news/press-releases/2108 (last visited February 15, 2024). It also announced in 2023 that it was "set to launch a new residential energy storage system in the U.S. in November." LG, *LG Energy Solution enblock S to Make U.S. Debut in November*, https://news.lgensol.com/company-news/press-releases/2210 (last visited February 15, 2024). It also announced in 2023 that it had "signed a supply agreement for lithium-ion battery modules to be used in Toyota battery electric vehicles (BEVs) that will be assembled in the United States." LG, *LG Energy Solution and Toyota Sign Long-term Battery Supply Agreement to Power Electric Vehicles in the U.S.*, https://news.lgensol.com/company-news/press-releases/2177 (last visited February 15, 2024). As also detailed above, on information and belief, LG also provides the rechargeable battery packs contained in certain Black and Decker tools.

53. In addition, LG's ongoing infringement of the '924 Patent is willful. As detailed herein, LG now has notice of the '924 Patent and its infringement of it. Nevertheless, without authorization, LG deliberately continues to infringe the '924 Patent and also encourages others to

infringe the ’924 Patent, including by selling and/or using ’924 Accused Products in the United States.

54. LG’s acts of infringement have caused damage to MRD and BDS, and MRD and BDS are entitled to recover from Defendant the damages they have sustained as a result of such wrongful acts in an amount to be proven at trial.

COUNT 3 – INFRINGEMENT OF U.S. PATENT NO. 10,153,483

55. MRD repeats and incorporates by reference each preceding paragraph as if fully set forth herein and further states:

56. LG has directly infringed, and continue to directly infringe, the ’483 Patent in violation of 35 U.S.C. § 271(a) by making, using, selling, and/or offering for sale in the United States, and/or importing into the United States, without authorization, one or more products that practice various claims of the ’483 Patent, literally or under the doctrine of equivalents (hereinafter the “’483 Accused Products”). At a minimum, such ’483 Accused Products include all devices that infringe the claims of the ’483 Patent. This includes products like the LG HG2 battery, HG6 battery, and MJ1 battery.

57. As detailed below, the ’483 Accused Products are configured by LG to practice every element of at least Claim 1 of the ’483 Patent literally or under the doctrine of equivalents.[5] Further, the identified components and functionality are representative of the components and functionality present in all ’483 Accused Products.

58. Claim 1 of the ’483 Patent recites: “[a] composition useful for lithium ion batteries comprising: discrete, non-agglomerated, and exfoliated carbon nanotubes having a surface, and

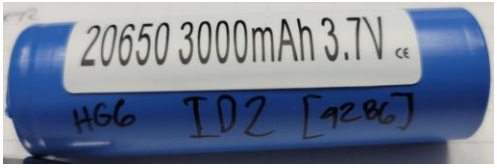
[5] This description is illustrative and is not intended to be an exhaustive or limiting explanation of every manner in which each ’483 Accused Product infringes the ’483 Patent.

mixtures of ion active materials comprising migratable ions said materials comprising crystals or layers of lithium ion active material, wherein a ratio of lithium ion to other total ions in the ion active materials is at least 2:1 to 25:1, and wherein the discrete carbon nanotubes have crystals or layers of lithium ion active material ionically attached to their surface and wherein the discrete carbon nanotubes comprise oxidized species selected from the group consisting of carboxylic, ketone, or hydroxyl functionalities, and wherein the discrete carbon nanotubes have an aspect ratio of 10 to 500 and oxidation levels from 1 % to 15% by weight of the carbon nanotube."

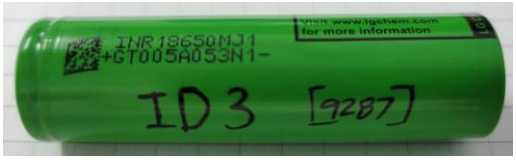
59. Each of the '483 Accused Products contains a composition useful for lithium-ion batteries. For example:

LG HG2

LG HG6



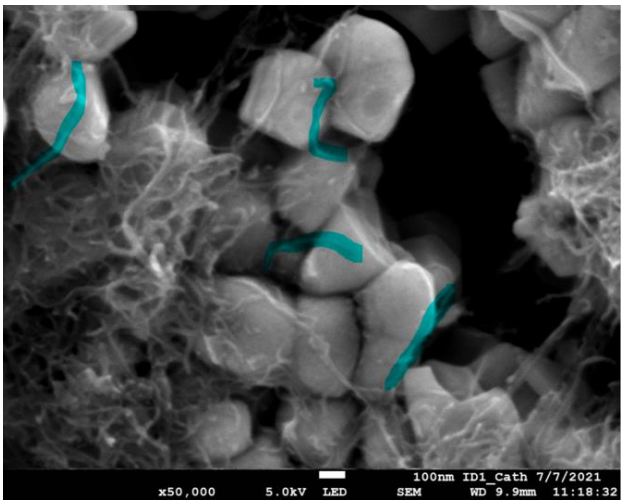
LG MJ1



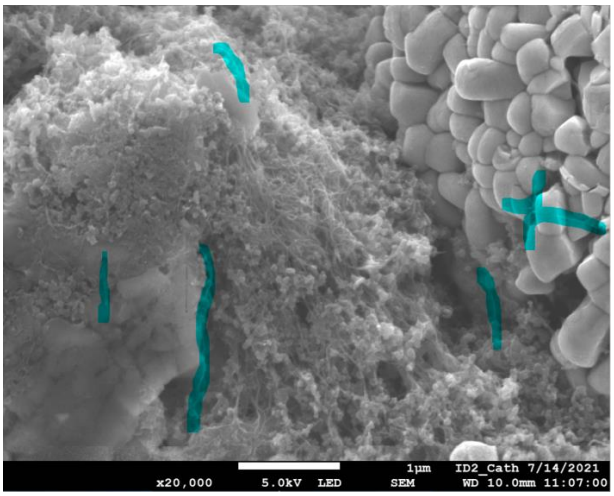
60. The composition in each of the '483 Accused Products comprises discrete, non-agglomerated, and exfoliated carbon nanotubes having a surface. The presence of such discrete,

non-agglomerated, and exfoliated carbon nanotubes having a surface is shown below in blue highlighting from SEM images of example ’483 Accused Products.

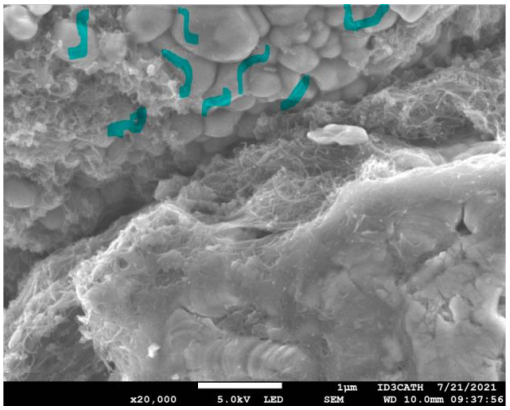
LG HG2



LG HG6

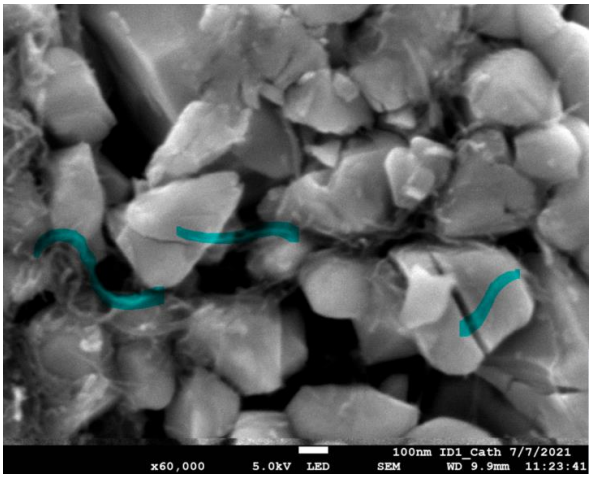


LG MJ1

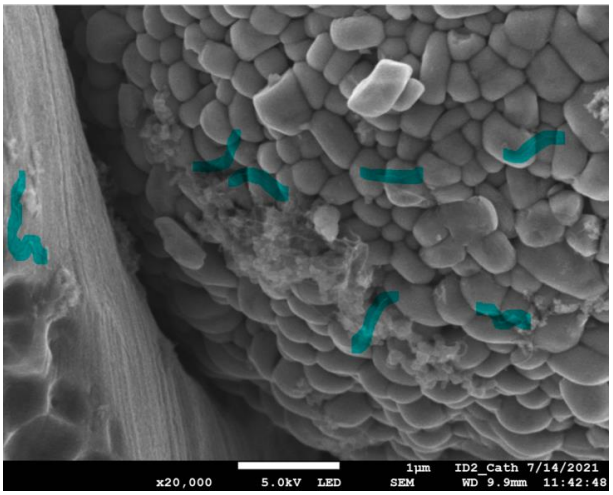


61. The composition in each of the ’483 Accused Products comprises discrete, non-agglomerated, and exfoliated carbon nanotubes having a surface and mixtures of ion active materials comprising migratable ions said materials comprising crystals or layers of lithium ion active material, wherein the discrete carbon nanotubes have crystals or layers of lithium ion active material ionically attached to their surface. The presence of such discrete, non-agglomerated, and exfoliated carbon nanotubes having a surface and mixtures of ion active materials comprising migratable ions said materials comprising crystals or layers of lithium ion active material, wherein the discrete carbon nanotubes have crystals or layers of lithium ion active material ionically attached to their surface, is shown below in blue highlighting from SEM images of example ’483 Accused Products:

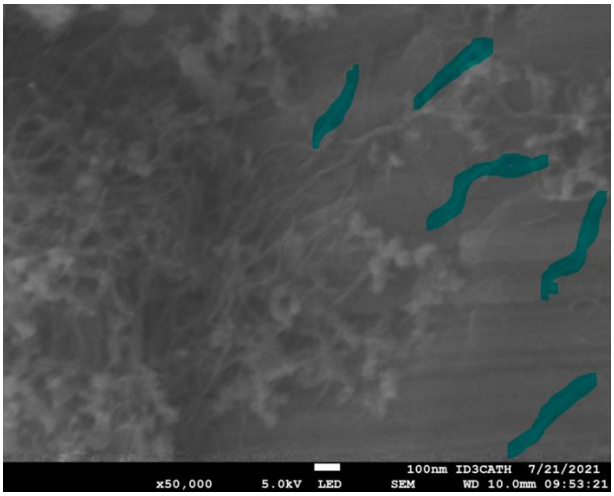
LG HG2


100nm ID1_Cath 7/7/2021
x60,000 5.0kV LED SEM WD 9.9mm 11:23:41

LG HG6


1µm ID2_Cath 7/14/2021
x20,000 5.0kV LED SEM WD 9.9mm 11:42:48

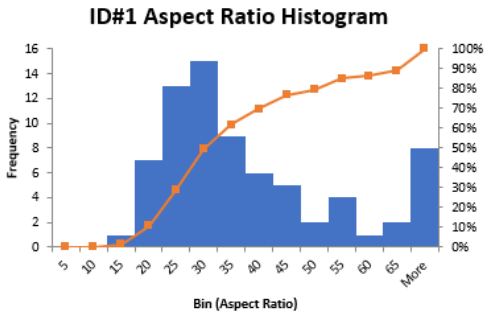
LG MJ1



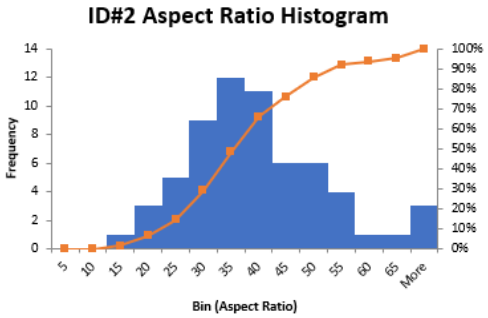
62. The composition in each of the ’483 Accused Products comprises discrete, non-agglomerated, and exfoliated carbon nanotubes having a surface, and mixtures of ion active materials comprising migratable ions said materials comprising crystals or layers of lithium ion active material wherein a ratio of lithium ion to other total ions in the ion active materials is at least 2:1 to 25:1, and wherein the discrete carbon nanotubes comprise oxidized species selected from the group consisting of carboxylic, ketone, or hydroxyl functionalities, and wherein the discrete carbon nanotubes have oxidation levels from 1 % to 15% by weight of the carbon nanotube.

63. The composition in each of the ’483 Accused Products comprises discrete, non-agglomerated, and exfoliated carbon nanotubes having a surface, and mixtures of ion active materials comprising migratable ions said materials comprising crystals or layers of lithium ion active material wherein the discrete carbon nanotubes have an aspect ratio of 10 to 500, as illustrated in the graphical depictions of example ’483 Accused Products below:

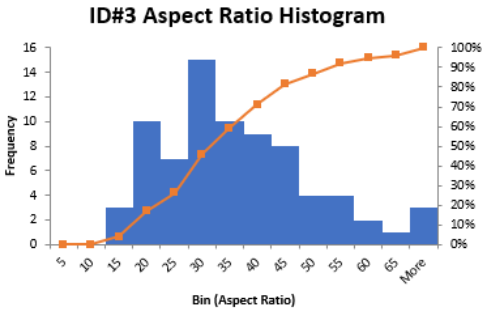
LG HG2



LG HG6



LG MJ1



64. LG thus directly infringed, and continues to directly infringe, each element of Claim 1 of the ’483 Patent by selling and offering to sell in the United States, and by importing into the United States, without authorization, ’483 Accused Products.

65. LG also actively induced, and continues to actively induce, the direct infringement of the ’483 Patent by customers and other end users of the ’483 Accused Products by distributing

at least the '483 Accused Products in the United States. For example, as detailed above, LG announced in 2023 that it expected to triple energy storage "division's global sales in five years, fueled by the remarkable expansion of the U.S. market." LG Energy Solution, *LG Energy Solution Announces U.S. Market Strategies for ESS*, https://news.lgensol.com/company-news/press-releases/2108 (last visited February 15, 2024). It also announced in 2023 that it was "set to launch a new residential energy storage system in the U.S. in November." LG, *LG Energy Solution enblock S to Make U.S. Debut in November*, https://news.lgensol.com/company-news/press-releases/2210 (last visited February 15, 2024). It also announced in 2023 that it had "signed a supply agreement for lithium-ion battery modules to be used in Toyota battery electric vehicles (BEVs) that will be assembled in the United States." LG, *LG Energy Solution and Toyota Sign Long-term Battery Supply Agreement to Power Electric Vehicles in the U.S.*, https://news.lgensol.com/company-news/press-releases/2177 (last visited February 15, 2024). As also detailed above, on information and belief, LG also provides the rechargeable battery packs contained in certain Black and Decker tools.

66. In addition, LG's ongoing infringement of the '483 Patent is willful. As detailed herein, LG now has notice of the '483 Patent and its infringement of it. Nevertheless, without authorization, LG deliberately continues to infringe the '483 Patent and also encourages others to infringe the '483 Patent, including by selling and/or using '483 Accused Products in the United States.

67. LG's acts of infringement have caused damage to MRD and BDS, and MRD and BDS are entitled to recover from Defendant the damages they have sustained as a result of such wrongful acts in an amount to be proven at trial.

COUNT 4 – INFRINGEMENT OF U.S. PATENT NO. 9,636,649 B2

68. MRD repeats and incorporates by reference each preceding paragraph as if fully set forth herein, and further states:

69. LG has directly infringed, and continue to directly infringe, the '649 Patent in violation of 35 U.S.C. § 271(a) by making, using, selling, and/or offering for sale in the United States, and/or importing into the United States, without authorization, one or more products that practice various claims of the '649 Patent, literally or under the doctrine of equivalents (hereinafter the "'649 Accused Products"). At a minimum, such '649 Accused Products include all devices that infringe the claims of the '649 Patent. This includes products like the LG HG2 battery, HG6 battery, and MJ1 battery.

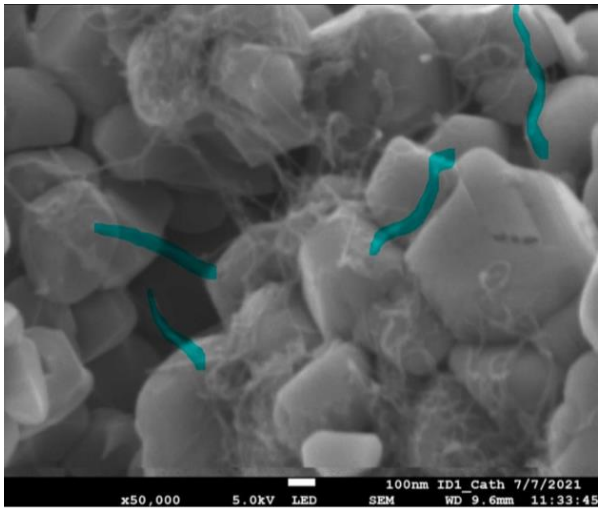
70. As detailed below, the '649 Accused Products are configured by LG to practice every element of at least Claim 1 of the '649 Patent literally or under the doctrine of equivalents.[6] Further, the identified components and functionality are representative of the components and functionality present in all '649 Accused Products.

71. Claim 1 of the '649 Patent recites: "[a] dispersion comprising a plurality of oxidized, discrete carbon nanotubes and at least one additive, wherein the oxidized, discrete carbon nanotubes have an aspect ratio of 25 to 500, are multiwall, and are present in the range of greater than zero to about 30% by weight based on the total weight of the dispersion."

72. Each of the '649 Accused Products comprises a dispersion comprising a plurality of oxidized, discrete carbon nanotubes, as shown below in blue highlighting derived from a SEM image of an example '649 Accused Product:

[6] This description is illustrative and is not intended to be an exhaustive or limiting explanation of every manner in which each '649 Accused Product infringes the '649 Patent.

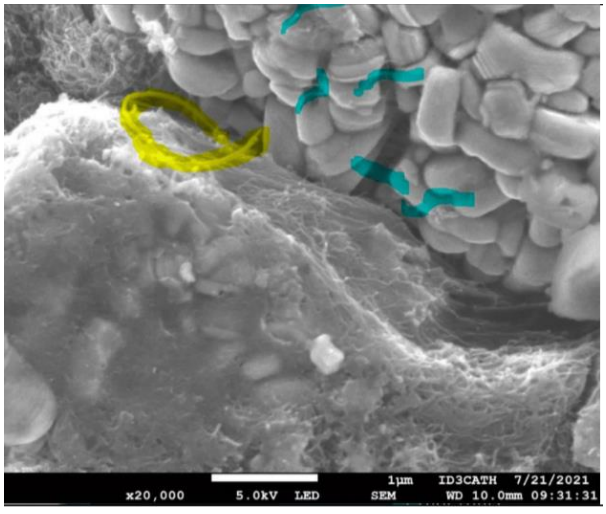
LG H2



73. The dispersion in each of the ’649 Accused Products is also comprised of at least one additive, such as binder molecules (for example, Poly(vinylidene fluoride) binder) or conductive additives (for example, Carbon black).

74. Further, as shown below in blue and yellow highlighting derived from a SEM image of an example ’649 Accused Product, the dispersion in each of the ’649 Accused Products comprises oxidized, discrete carbon nanotubes that have an aspect ratio of 25 to 500 and are multiwall:

LG H2



75. Further, the discrete carbon nanotubes in each of the ’649 Accused Products are present in the range of greater than zero to about 30% by weight based on the total weight of the dispersion.

76. LG thus directly infringed, and continues to directly infringe, each element of Claim 1 of the ’649 Patent by selling and offering to sell in the United States, and by importing into the United States, without authorization, ’649 Accused Products.

77. LG also actively induced, and continues to actively induce, the direct infringement of the ’649 Patent by customers and other end users of the ’649 Accused Products by distributing at least the ’649 Accused Products in the United States. For example, as detailed above, LG announced in 2023 that it expected to triple energy storage “division’s global sales in five years, fueled by the remarkable expansion of the U.S. market.” LG Energy Solution, *LG Energy Solution Announces U.S. Market Strategies for ESS,* https://news.lgensol.com/company-news/press-releases/2108 (last visited February 15, 2024). It also announced in 2023 that it was “set to launch a new residential energy storage system in the U.S. in November.” LG, *LG Energy Solution enblock S to Make U.S. Debut in November*, https://news.lgensol.com/company-news/press-releases/2210 (last visited February 15, 2024). It also announced in 2023 that it had “signed a supply agreement for lithium-ion battery modules to be used in Toyota battery electric vehicles (BEVs) that will be assembled in the United States.” LG, *LG Energy Solution and Toyota Sign Long-term Battery Supply Agreement to Power Electric Vehicles in the U.S.*, https://news.lgensol.com/company-news/press-releases/2177 (last visited February 15, 2024). As also detailed above, on information and belief, LG also provides the rechargeable battery packs contained in certain Black and Decker tools.

78. In addition, LG's ongoing infringement of the '649 Patent is willful. As detailed in a complaint filed against LG on August 29, 2022, in the United States District Court for the District of Delaware, *see Molecular Rebar Design et al. v. LG Chem, Ltd. et al.*, Case No. 22-cv-1130 (D. Del.), LG has notice of the '649 Patent and its infringement of it. Nevertheless, without authorization, LG deliberately continues to infringe the '649 Patent and also encourages others to infringe the '649 Patent, including by selling and/or using '649 Accused Products in the United States.

79. LG's acts of infringement have caused damage to MRD and BDS, and MRD and BDS are entitled to recover from Defendant the damages they have sustained as a result of such wrongful acts in an amount to be proven at trial.

COUNT 5 – INFRINGEMENT OF U.S. PATENT NO. 10,608,282 B2

80. MRD repeats and incorporates by reference each preceding paragraph as if fully set forth herein, and further states:

81. LG has directly infringed, and continues to directly infringe, the '282 Patent in violation of 35 U.S.C. § 271(a) by making, using, selling, and/or offering for sale in the United States, and/or importing into the United States, without authorization, one or more products that practice various claims of the '282 Patent literally or under the doctrine of equivalents (hereafter "'282 Accused Products"). At a minimum, such '282 Accused Products include all devices that infringe the claims of the '282 Patent. This includes products like the LG HG2 battery, HG6 battery, and MJ1 battery.

82. As detailed below, the ’282 Accused Products are configured by LG to practice every element of at least Claim 1 of the ’282 Patent literally or under the doctrine of equivalents.[7] Further, the identified components and functionality are representative of the components and functionality present in all ’282 Accused Products.

83. Claim 1 of the ’282 Patent recites “[a] composition for use as a binder material, an electrolyte material or a separator film material of an energy storage or collection device, comprising: a plurality of discrete carbon nanotube fibers, said fibers having an aspect ratio of from about 10 to about 500, and wherein at least a portion of the discrete carbon nanotube fibers are open ended and wherein 40% to 90% by number of the discrete carbon nanotubes have an aspect ratio of 30-70 and wherein from 1 % to 30% by number of discrete carbon nanotubes have an average aspect ratio 80-140.”

84. Each of the ’282 Accused Products are “energy storage or collection devices.”

[7] This description is illustrative and is not intended to be an exhaustive or limiting explanation of every manner in which each ’282 Accused Product infringes the ’282 Patent.

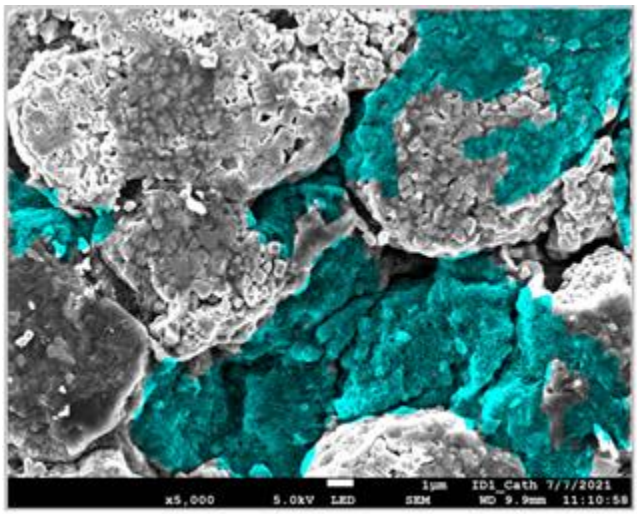
LG HG2:

LG HG6:

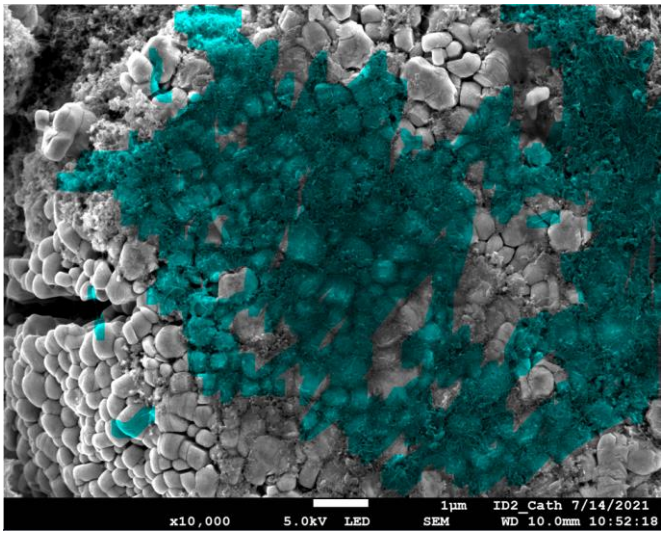
LG MJ1:

85. Further, each of the ’282 Accused Products contains a composition for use as a binder material, an electrolyte material, or a separator film. Such binder material is depicted below in blue highlighting derived from SEM imaging of exemplar ’282 Accused Products.

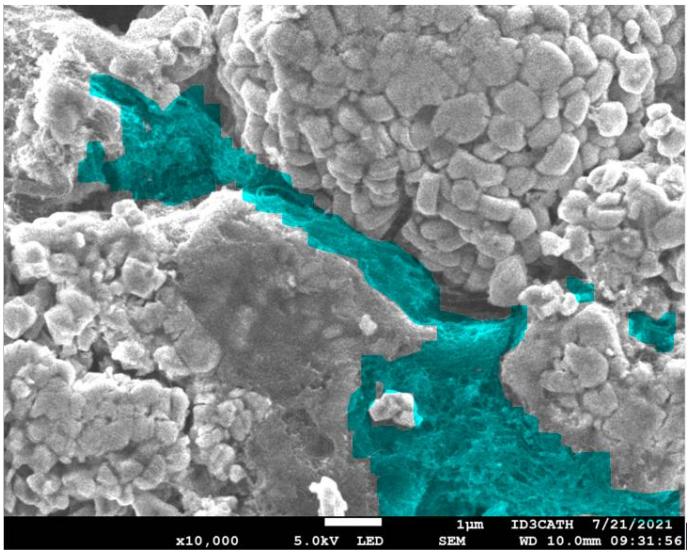
LG HG2



LG HG6

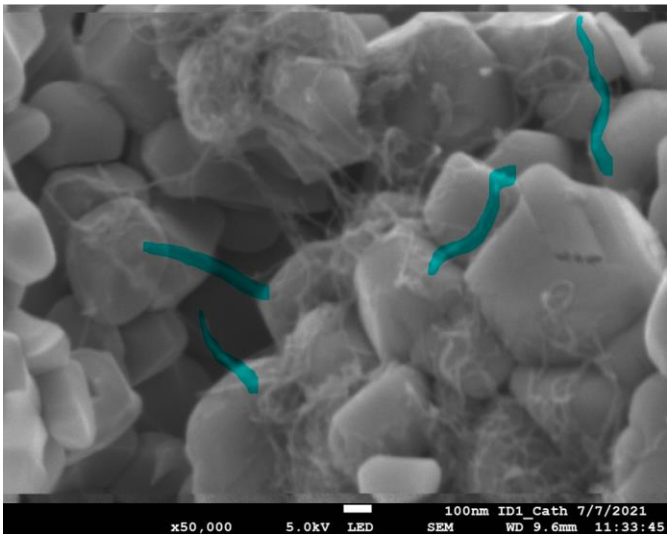


LG MJI

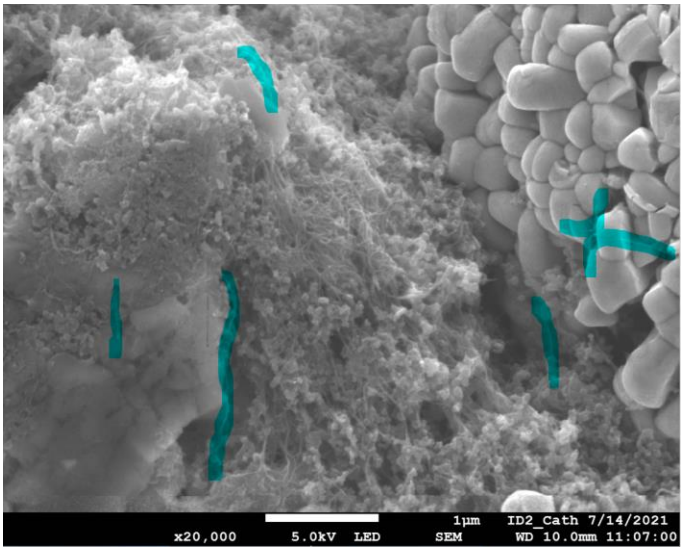


86. Further, the electrolyte material or a separator film material in each the of '282 Accused Products comprises a plurality of discrete carbon nanotube fibers. Below are examples of the electrolyte material or a separator film material in example '282 Accused Products comprising a plurality of discrete carbon nanotube fibers (reflected in blue highlighting, derived from SEM imaging).

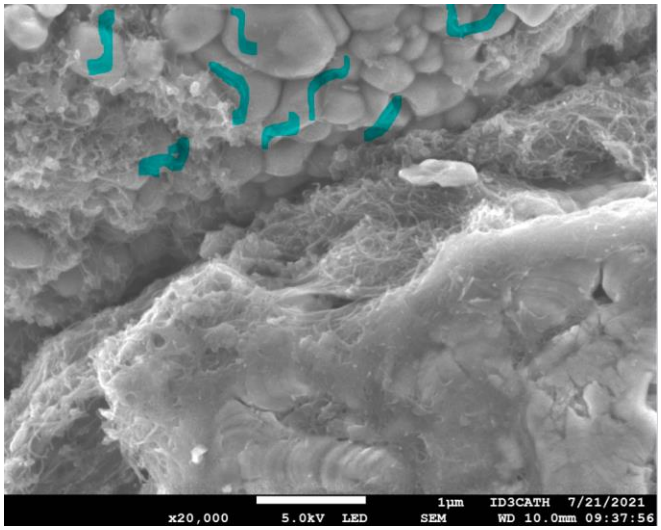
LG HG2


100nm ID1_Cath 7/7/2021
x50,000 5.0kV LED SEM WD 9.6mm 11:33:45

LG HG6

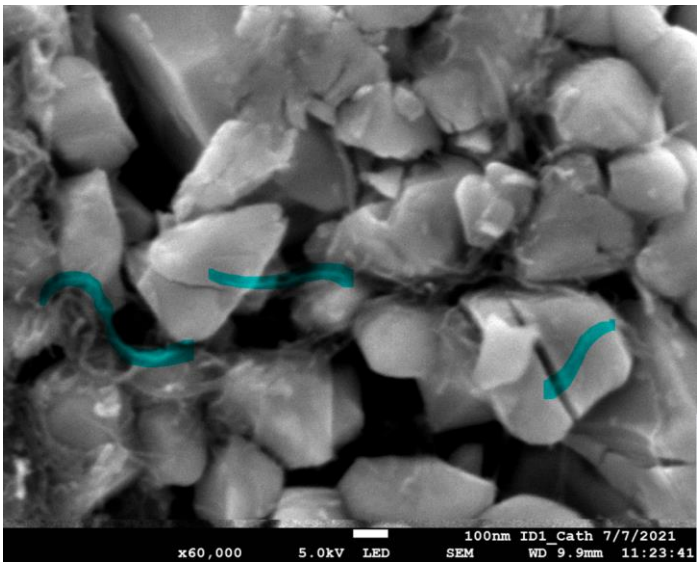

1µm ID2_Cath 7/14/2021
x20,000 5.0kV LED SEM WD 10.0mm 11:07:00

LG MJ1

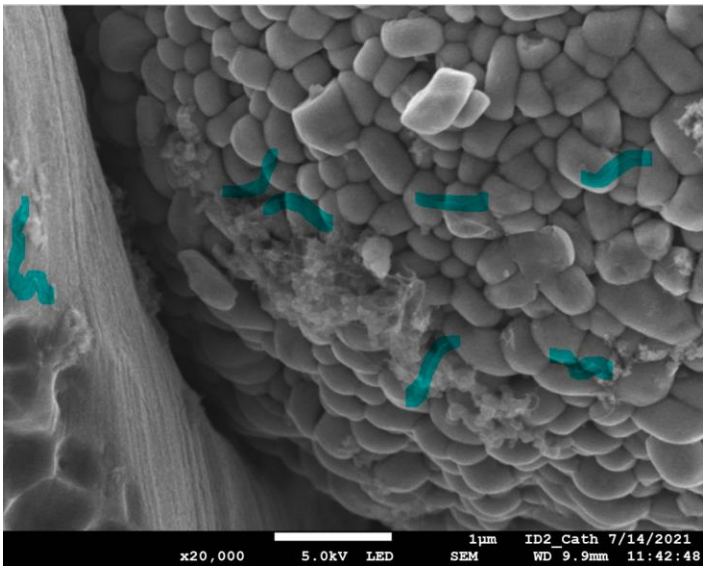


87. Further, at least a portion of the plurality of discrete carbon nanotubes used in the ’282 Accused Products fibers have an aspect ratio from about 10 to about 500, as depicted below in blue highlighting derived from SEM imaging of example ’282 Accused Products:

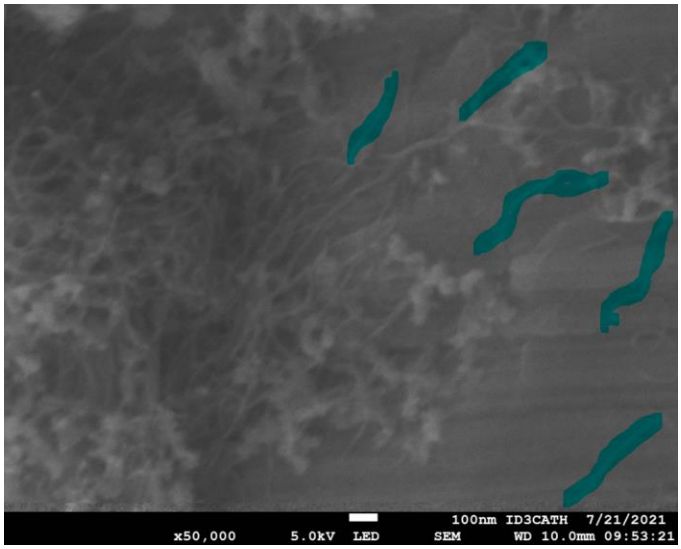
LG HG2



LG HG6

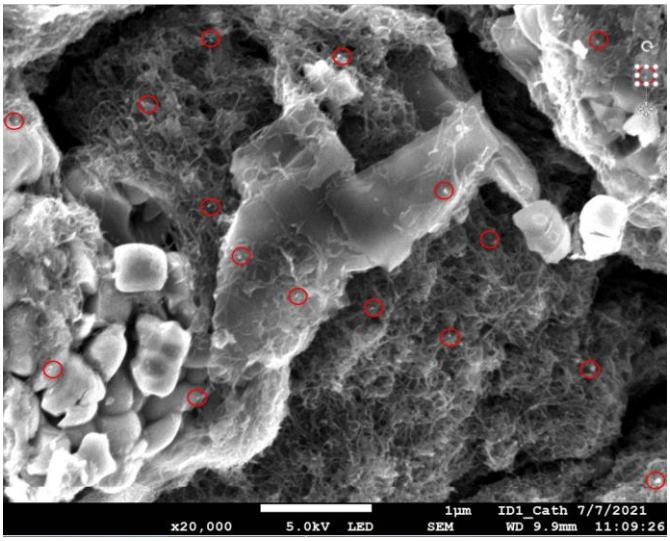


LG MJ1

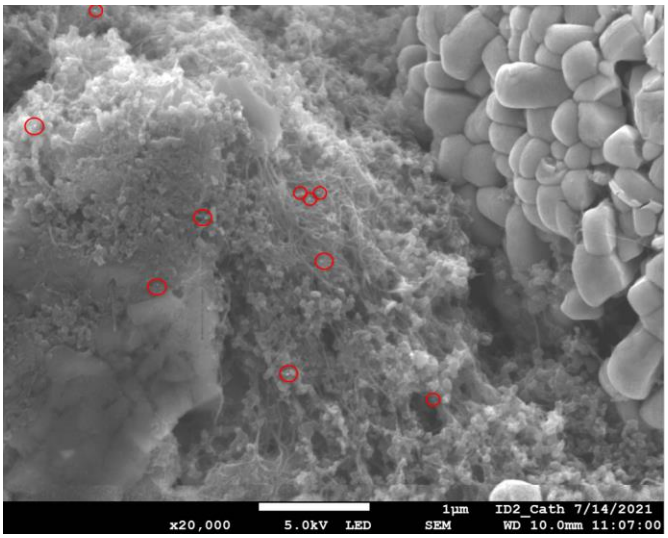


88. Further, at least a portion of those fibers are open ended, depicted below in red circles derived from SEM imaging of example ’282 Accused Products.

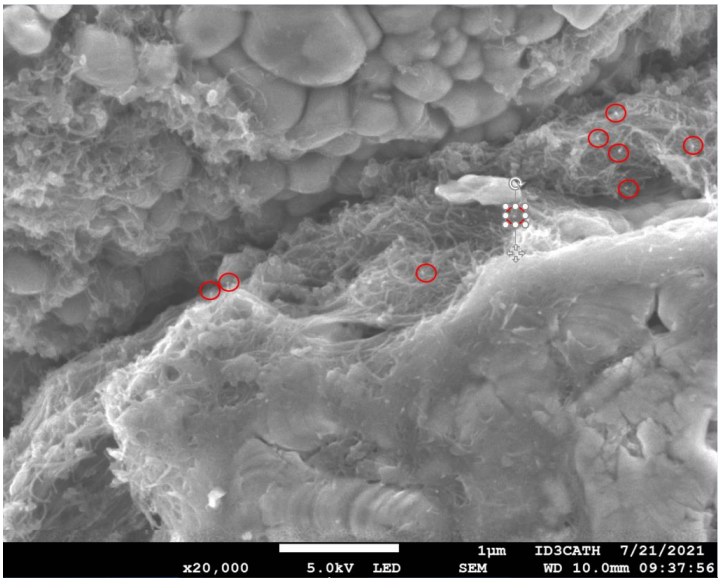
LG HG2


x20,000 5.0kV LED 1µm SEM ID1_Cath 7/7/2021 WD 9.9mm 11:09:26

LG HG6

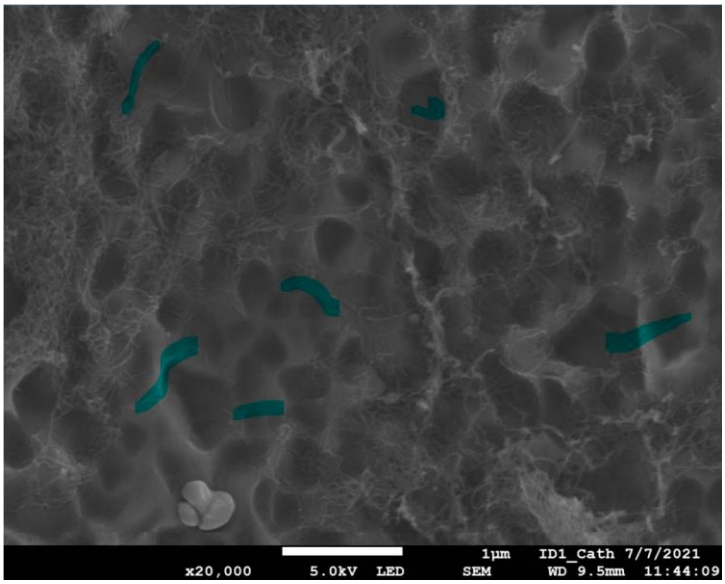

x20,000 5.0kV LED 1µm SEM ID2_Cath 7/14/2021 WD 10.0mm 11:07:00

LG MJ1

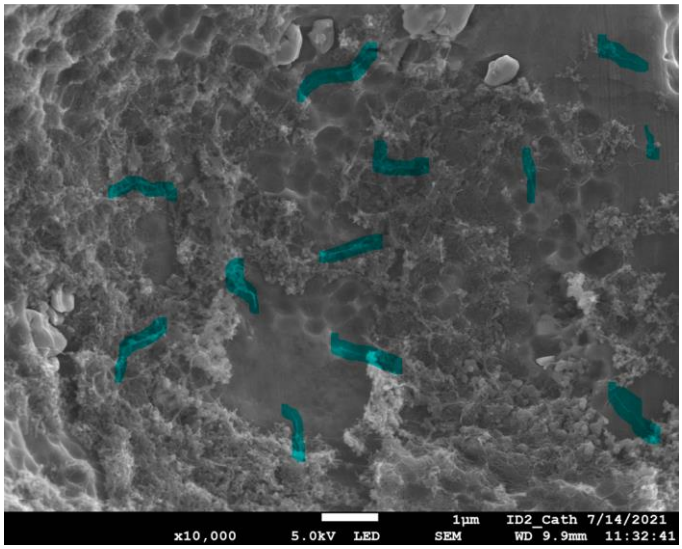


89. Further, 40% to 90% by number of the discrete carbon nanotubes have an aspect ratio of 30-70, as indicated below in blue highlighting derived from SEM imaging of example ’282 Accused Products.

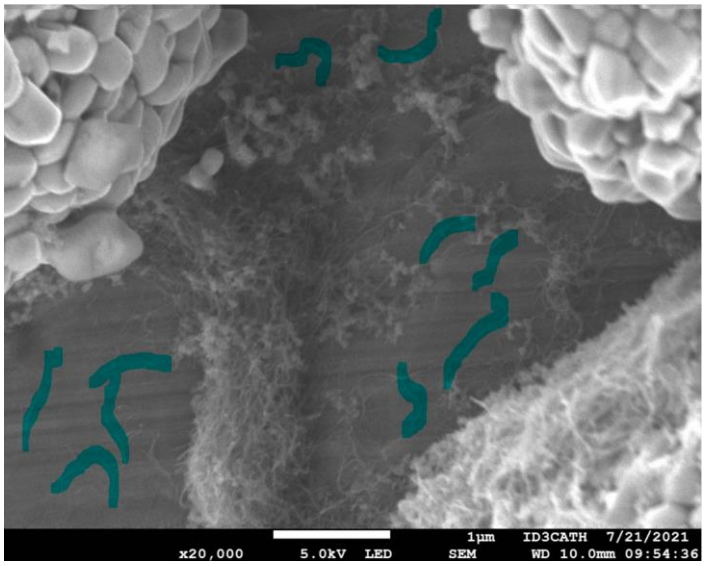
LG HG2



LG HG6



LG MJ1



90. Further, from 1% to 30% by number of the discrete carbon nanotubes have an average aspect ratio 80-140.

91. LG thus directly infringed, and continues to directly infringe, each element of Claim 1 of the '282 Patent by selling and offering to sell in the United States, and by importing into the United States, without authorization, '282 Accused Products.

92. LG also actively induced, and continues to actively induce, the direct infringement of the '282 Patent by customers and other end users of the '282 Accused Products by distributing at least the '282 Accused Products in the United States. For example, as detailed above, LG announced in 2023 that it expected to triple energy storage "division's global sales in five years, fueled by the remarkable expansion of the U.S. market." LG Energy Solution, *LG Energy Solution Announces U.S. Market Strategies for ESS*, https://news.lgensol.com/company-news/press-releases/2108 (last visited February 15, 2024). It also announced in 2023 that it was "set to launch a new residential energy storage system in the U.S. in November." LG, *LG Energy Solution enblock S to Make U.S. Debut in November*, https://news.lgensol.com/company-news/press-releases/2210 (last visited February 15, 2024). It also announced in 2023 that it had "signed a supply agreement for lithium-ion battery modules to be used in Toyota battery electric vehicles (BEVs) that will be assembled in the United States." LG, *LG Energy Solution and Toyota Sign Long-term Battery Supply Agreement to Power Electric Vehicles in the U.S.*, https://news.lgensol.com/company-news/press-releases/2177 (last visited February 15, 2024). As also detailed above, on information and belief, LG also provides the rechargeable battery packs contained in certain Black and Decker tools.

93. In addition, LG's ongoing infringement of the '282 Patent is willful. As detailed in a complaint filed against LG on August 29, 2022, in the United States District Court for the District of Delaware, *see Molecular Rebar Design et al. v. LG Chem, Ltd. et al.*, Case No. 22-cv-1130 (D. Del.), LG has notice of the '282 Patent and its infringement of it. Nevertheless, without

authorization, LG deliberately continues to infringe the '282 Patent and also encourages others to infringe the '282 Patent, including by selling and/or using '282 Accused Products in the United States.

94. LG's acts of infringement have caused damage to MRD and BDS, and MRD and BDS are entitled to recover from Defendant the damages they have sustained as a result of such wrongful acts in an amount to be proven at trial.

DEMAND FOR JURY TRIAL

95. Plaintiffs hereby demand a jury trial for all issues so triable.

PRAYER FOR RELIEF

WHEREFORE, Plaintiffs pray for judgment as follows:

A. Declaring that LG infringed each of the Asserted Patents;

B. Awarding damages to MRD and BDS for such infringement, including enhanced damages pursuant to 35 U.S.C. § 284, pre- and post-judgment interest without any limitation by 35 U.S.C § 287, and going-forward damages through the life of each Asserted Patent;

C. Awarding MRD and BDS their attorneys' fees pursuant to 35 U.S.C. § 285 or as otherwise permitted by law;

D. Awarding all other costs and relief that the Court deems just and proper.

Date: February 16, 2024

Respectfully submitted,

/s/ Andres C. Healy
Andres C. Healy
Washington State Bar No. 45578
ahealy@susmangodfrey.com
SUSMAN GODFREY L.L.P.
401 Union Street, Suite 3000

Seattle, WA 98101
Telephone: (206) 505-3843
Facsimile: (206) 516-3883

Lexie G. White
Texas State Bar No. 24048876
lwhite@susmangodfrey.com
Ryan Caughey
Texas State Bar No. 24080827
rcaughey@susmangodfrey.com
SUSMAN GODFREY, L.L.P.
1000 Louisiana Street, Suite 5100
Houston, Texas 77002
Telephone: (713) 651-9366
Facsimile: (713) 654-6666

Samir Doshi (*pro hac vice forthcoming*)
New York Bar No. 5689963
sdoshi@susmangodfrey.com
SUSMAN GODFREY L.L.P.
1301 Avenue of the Americas, 32nd Floor
New York, NY 10019
Telephone: 212-336-8330

Attorneys for MRD and BDS