UNITED STATES PATENT AND TRADEMARK OFFICE

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BEFORE THE PATENT TRIAL AND APPEAL BOARD

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MOTOROLA MOBILITY LLC,
Petitioner,

v.

LARGAN PRECISION CO., LTD.,
Patent Owner.

_____

Case IPR2024-00688
U.S. Patent No. 9,997,660

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PATENT OWNER PRELIMINARY RESPONSE

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TABLE OF CONTENTS

Page

I. INTRODUCTION....1
II. THE STATE OF THE ART....2
III. CLAIM CONSTRUCTION....12
IV. LEVEL OF SKILL IN THE ART....12
V. THE PETITION FAILS TO SHOW A REASONABLE LIKELIHOOD THAT MOTOROLA WOULD PREVAIL IF TRIAL WERE INSTITUTED. 13
A. The Petition's scant evidence regarding etching is inadequate to show a POSA would have read CN182 as teaching a direct or predictable relationship between duration of the process and the amount of material removed.....15
B. There is no evidence to support Dr. Milster's assumption that a POSA would have been motivated to create a light trap between two carbon powder layers in CN182 by "prolonging" the etching process. 19
1. There is no evidence that a POSA would have regarded CN182 as teaching a three-layer light blocking sheet, absent some indication that an "antistatic coating" "carbon powder layer" could serve as light trap wall. 22
2. There is no evidence to suggest "prolonging" the CN182 etching process would result in a 2 μm deep light trap, given enough time. 24
C. Objective evidentiary sources undermine the integrity of Dr. Milster's opinions. 25
1. Fischer's 2008 book undermines Dr. Milster's opinions. 26
2. Schaub's 2009 book undermines Dr. Milster's opinions. 27
3. The '660 prosecution undermines Dr. Milster's opinions. 27
VI. CONCLUSION 28

TABLE OF AUTHORITIES

Page(s)

Cases

Hockerson-Halberstadt, Inc. v. Avia Grp. Int'l, Inc.,
222 F.3d 951 (Fed. Cir. 2000) 23

Statutes

35 U.S.C § 314.....1, 19

Other Authorities

37 C.F.R. § 42.65 19

EXHIBIT LIST

Exhibit No.	Description
2001	U.S. Pat. App. Pub. No. 2015/0198779 (“Cho ’779”)

Patent Owner Largan Precision Co., Ltd. ("Largan") submits the following preliminary response ("POPR") to the petition for *inter partes* review ("Petition") of claims 1–22 (the "Challenged Claims") of U.S. Patent No. 9,997,660 (the "'660 patent"), filed by Motorola Mobility LLC ("Motorola").

I. INTRODUCTION

The '660 patent is directed to reducing the amount of stray light reaching the image sensor of a camera lens module of an electronic device, thereby eliminating "ghosts" and "glare," and improving the image quality. The claims cover a three-layer light blocking sheet in which the middle layer is recessed (or deep) enough to allow the two outer layers to act as baffles, so that incoming stray light rays are trapped (and can only bounce around) within the recessed space, in order to reduce the unwanted stray light. Largan was the first to integrate such a "light trap" into the interior opening of a light blocking sheet. Motorola argues that would have been obvious based on a surface-etching process taught by CN182,[1] but the Petition's arguments and evidence fail to show a reasonable likelihood that Motorola would prevail if the Board were to institute trial. 35 U.S.C § 314(a).

[1] Largan adopts and uses herein the shorthand exhibit identifiers Motorola defines in its table of exhibits, including "CN182" and "Cho" for Motorola's main asserted references, EX1004 and EX1006, respectively. *See* Pet., vii–ix, 3.

Most notably, the Petition includes no evidence that a person of ordinary skill in the art ("POSA"), as Motorola has defined their skill level, would have had any expertise or knowledge in the chemistry or materials science behind CN182's etching process, nor does Motorola's expert, Dr. Milster, purport to have any such expertise. There is also no evidence of how CN182's "antistatic coating" "carbon powder layer" would or could behave without a substrate to support it, or of how CN182's surface treatment by an alkaline solution would or could form a light trap as claimed by the '660 patent, so there is nothing to inform as to a skilled artisan's views in November 2016.[2] There is, in short, no evidence to support Dr. Milster's mere assumption that a POSA would have been motivated to "prolong" CN182's etching process to create a light trap between its carbon powder layers.

II. THE STATE OF THE ART

By November 2016, the use of ring-shaped light blocking sheets was a known means of blocking stray light, but it was also known that a flat surface at the interior circumference of the ring's central opening, if reflective, could create new stray light. For example, the '660 patent explains that "when the inner hole is formed by stamping, the surface of the inner hole is smooth and bright and has a

[2] The'660 patent claims priority to Taiwanese App. No. 105137120 A, filed November 14, 2016. EX1001, face page, item no. (30).

high reflectivity." EX1001, 1:49–51. The '660 patent's solution to that problem was to manipulate the diameters of each of the three layers' openings such that "an inner space (shown in FIG. 2C) is defined by the first outer layer 110, the second outer layer 120 and the inner substrate layer 130," consisting of "an air layer 140," if "no other materials are disposed in the inner space." EX1001, 5:6–23 (excerpted). An annotated detail from the referenced Fig. 2C is provided on the left, below, alongside Fig. 2B showing an exploded view of the entire ring:

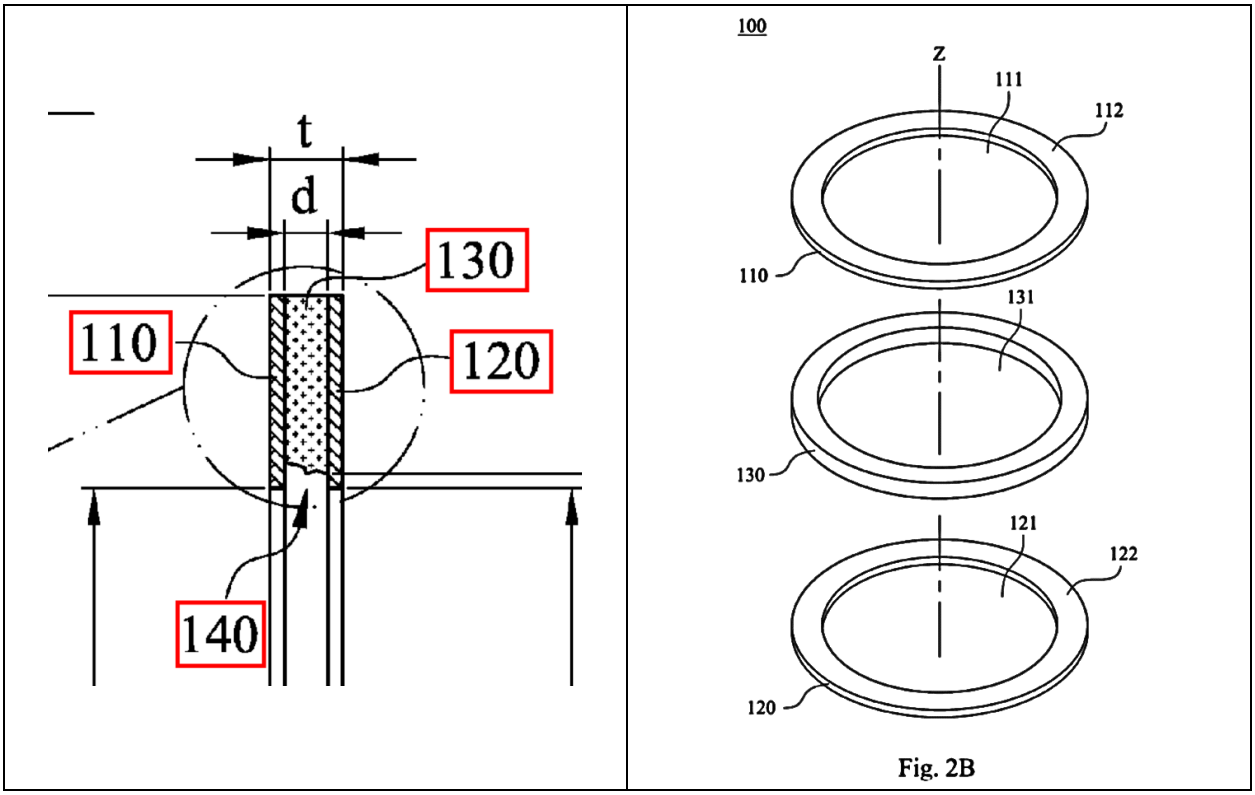
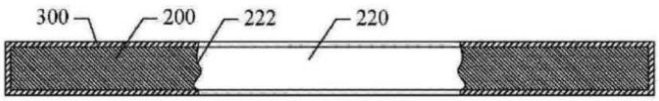
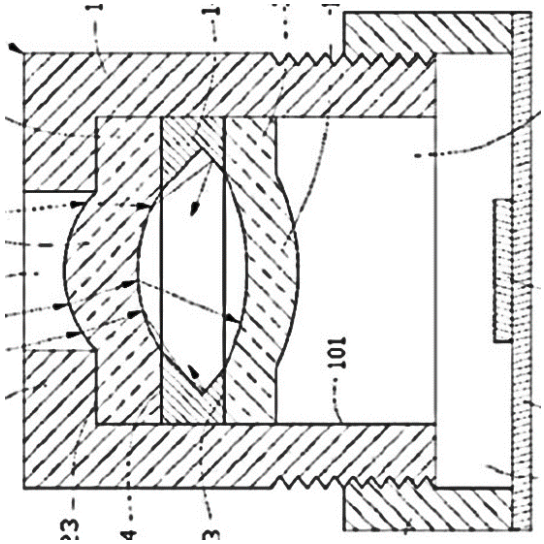
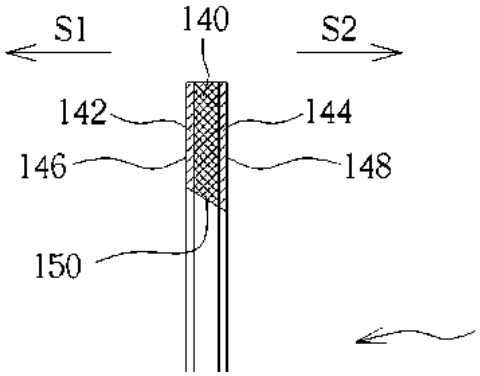
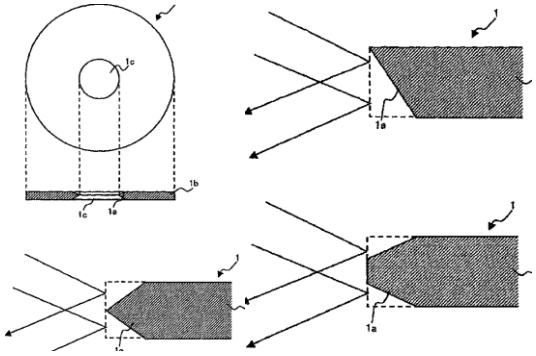
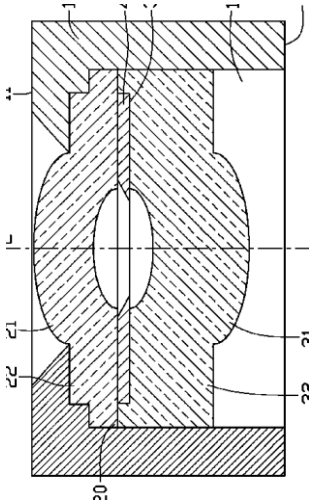


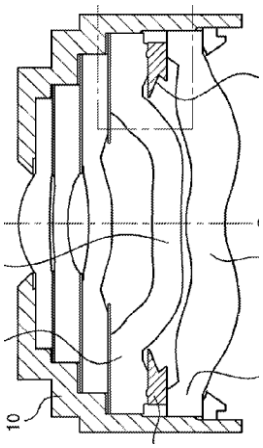
Fig. 2B

As summarized in the table below, the documentary evidence (i.e., non-opinion evidence) submitted with the Petition shows two other ways known before November 2016 for controlling stray light created by a reflective inner surface of

the central opening: alter its shape or alter its reflective properties. One asserted reference, Cho, and four background art references show altering the shape: Hirata, CN738, Lai, and Yang. Motorola's primary asserted reference, CN182, is alone in the record as showing altering reflective properties.

Method	Petition Evidence	Example Figure
alter the reflective nature of the offending surface	**CN182 (EX1004)** chemical etching to achieve matte structure on surface (texturing)	 Fig. 2
alter the shape of the reflective surface	**CN738 (EX1005)** v-shape inclined inner wall	 Fig. 1

Method	Petition Evidence	Example Figure
alter the shape of the reflective surface	**Cho (EX1006)** bevel surfaces of opposite inclined directions, protruding surface, bevel and parallel surface combinations with respect to the optical axis	 Fig. 2
alter the shape of the reflective surface	**Hirata (EX1018)** bevel surface, bevel and parallel surface combinations with respect to the optical axis	 Figs. 3A, 3B, 4, 5
alter the shape of the reflective surface	**Lai (EX1020**) bevel surface	 Fig. 1

Method	Petition Evidence	Example Figure
alter the shape of the reflective surface	**Yang (EX1022)** v-shape inclined surface (light shielding hole)	 Fig. 2

Schaub's 2009 book also recognized altering surface shape or reflective properties, but in the context of "a number of nonoptical surfaces that stray light reflections can come from, … include[ing] any housings, baffles or sun shields, spacers, lens flanges, barrel walls or openings, and even the aperture stop of the system." EX1007, 120:31–34. In this context, i.e., not focused solely on the interior surface of the opening in a light blocking sheet, Schaub explained that "[s]tray light due to reflection from a nonoptical surface is usually handled using one or more of three methods" (*id.*, 120:37–38), namely, the two discussed above, i.e., altering the surface's shape or reflective properties (*id.*, 120:39–121:32), and "prevent[ing] the reflection from reaching the image plane through the use of baffling" (*id.*, 120:37–39).

According to the evidence filed with the Petition, the term "baffle" could "describe conical structures (including cylindrical) that can also be described as

tubelike structures[, which] function is to shade, or occult, stray light from the source to one or more system components." EX1010, 7.10:33–35. This is the kind of ***external baffle structure*** described in the Arnoux article (EX1014), positioned before the light-collecting end of a telescope, or in the Wang patent (EX1012), positioned in front a vehicle dashcam. Or, if in a lens system like those described in the '660 patent, "baffle" could mean "a light vignetting aperture and/or a glare stop." EX1032, 11:26–32, 13:2–9, Fig. 9, Fig. 10. Dr. Milster concedes, in any case, that "baffle" in this context is essentially synonymous with "glare stop," "light blocking sheet," and several other terms that refer to "light-blocking elements" used to reduce stray light, including "light shield sheets, shading rings, … flare stops, spacers, [and] vanes." EX1003, ¶ 43. What all the "baffles" in evidence have in common is that they block stray light ***before*** it reaches a reflective surface, or ***after*** it emerges from one. There is no evidence to support a reasonable inference that a POSA would have understood Schaub's reference to the "use of baffling" as suggesting physically attaching baffles or other light blocking elements to the interior surface surrounding the central opening of a light blocking sheet.

This is clear from the context of Schaub's discussion of the "three methods." The "use of baffling" is described in one short sentence only, and simply as a way "to prevent the reflection from reaching the image plane." EX1007, 120:37–39.

The description of altering the surface's reflective properties by "texturing or roughening" or "applying an absorptive coating" is far more thorough, but neither it nor the "use of baffling" sentence includes any mention of the ***interior surface*** surrounding the central opening of a light blocking sheet. *Id.*, 121:16–32.

But there is when Schaub's discussion turns to the remaining method, "alter[ing] the shape, location, or orientation of the surface that is causing the stray-light reflection." *Id.*, 120:39–121:15. Here, Schaub describes the very problem addressed by the references described in the table above, and by the'660 patent: "it is possible for a reflection off of the inner diameter of the lens spacer [i.e., light blocking sheet] to go directly to the image plane." *Id.*, 120:40–121:9. Schaub suggests changing the shape of the opening from "cylindrical" to "conical," that is, to bevel the interior surface. *Id.*, 121:9–10. But circumstances could require "multiple techniques to prevent unwanted reflections from reaching the image plane," so a baffle in the form of "a 'sunshade' may be necessary ***at the front of the system to limit the angular range of input rays***."[3] *Id.*, 121:12–14. "The sunshade, in combination with selection of the appropriate spacer angle, may solve the stray light problem." *Id.*, 121:14–15. Schaub thus makes clear that "use

[3] All instances of emphasis are provided by Largan unless otherwise indicated.

of baffling" does not refer to adding structure to the ***interior surface*** surrounding the central opening of a light blocking sheet.[4]

Of the three known ways to deal with problem reflective surfaces at that location in November 2016, two of them involved direct alterations to the offending surface by (1) altering the surface's shape or (2) altering the surface's reflective nature. EX1007, 120:39–121:32. The third known way did not involve any contact with or alterations to the reflective surface; it involved the "use of baffling" to redirect stray light, which could be before or after contact with the reflective interior surface surrounding the ring's central opening. Before Largan did it, no one had thought to use the outer layers of a three-layer light blocking sheet as baffles to form a light trap.

The reason for that is simple. Very few were using three-layer light blocking sheets before Largan. Indeed, there is only one reference included with the Petition that did so. It was Cho, one of Motorola's asserted references (Pet., 3), who

[4] Note that the graphic at page 17 of the Petition and ¶ 58 of Dr. Milster's declaration has been altered to depict light traps integrated into the interior surface of a light blocking sheet. The graphic is purportedly Figure 4.25 from page 124 of Schaub (EX1007), but Schaub does not show or discuss the depicted use of light traps, nor does Figure 4.25 depict a light blocking sheet at all.

disclosed "two outside layers" made of "carbon leather" and "attached to the inside layer [] by bonding or adhesion." EX1006, [0020]. And Largan overcame Cho during prosecution of the '660 patent. EX1002, 220–221 (notice of allowability, citing applicant remarks and amendment of December 18, 2017), 205–209 (said remarks and amendment, distinguishing Cho over now-issued claims). The Petition cites only two other references as allegedly teaching three-layer light blocking sheets—one is Motorola's primary reference, CN182 (Pet., 3), and the other Motorola admits is not even prior art, CN249 (*id.*, 60)—but both teach only an outer coating, not a sheet of material that can stand on its own. EX1004, [0026], [0036] (CN182 describing "powder coating layer"); EX1015, [0039] (CN249 describing "sheet 1 comprises a substrate 4 and a black coating 3 and 5 applied on two opposite surfaces of the substrate 4").[5]

[5] Motorola uses Fig. 1B of the '660 patent, to imply that three-layer light blocking sheets were well-known in the art. Pet., 8, 14, 31, 42, 51. But the "prior art" that Fig. 1B depicts is Cho. The examiner found Cho during prosecution (EX1002 179 (office action)), but Largan had already cited the published continuation of Cho (EX2001, Cho '779) in an IDS filed with its application for the '660 patent (EX1002, 1 (IDS)), the disclosure of which is identical to that of Cho. *Compare* EX2001 *with* EX1006. A review of the other five references identified on the '660

Using baffles, whether to form light traps or just to redirect stray light, was known, but not on the interior surface surrounding the central opening of a light blocking sheet. And the advent of three-layer light blocking sheets with Cho did nothing to render it obvious. True stray light specialists in and around 2016 had a different view than what Motorola's expert, Dr. Milster, thinks—today—about what their views would have been. Cho's five-person invention team, for example, did not think to integrate a light trap into the interior surface surrounding the central opening of their three-layer sheet. EX1006, 1, item no. (71). Cho used beveling, i.e., altering the shape of the reflective surface, to handle stray light at that location, not baffling, and maintained all layer surfaces flush with one another. *Id.*, Figs. 2–7; EX2001, Figs. 2–7. And the examiner that granted the application for the '660 patent did not see Largan's innovation as obvious, despite considering Cho in detail and initially rejecting the claims over Cho. EX1002, 177–180. The claims were allowed once amended to more clearly define "a light trap with a proper depth." *Id.*, 206–207, 220–221. Largan's '660 patent solution was indeed the first to manipulate the diameters of the respective openings of the three layers to effectively trap incoming stray light so that it does not reach the image sensor

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patent's face page (EX1001, 1, item no. (56)), which are publicly accessible, confirms that Cho is the only three-layer reference filed with the Petition.

and thus does not produce unwanted effects like "glare" or "ghosts" in the final image.

III. CLAIM CONSTRUCTION

For purposes of the present POPR only, Largan agrees with Motorola's statement regarding claim construction. Pet., 36–37; EX1003, ¶¶ 82–87. To be clear, Largan does not agree with Motorola's apparent position that the "outer layer" language of the Challenged Claims is met by the "antistatic coating … carbon powder layer" of CN182, but no construction is needed to deny the Petition. The Petition fails not because Motorola is wrong about the proper construction of "outer layer" but because the Petition includes no evidence at all to support a conclusion in Motorola's favor that a POSA would have understood "antistatic coating … carbon powder layer" to mean an independent layer capable of existing without its substrate and of functioning as a wall of "a light trap on the inner surface of a three-layer light-blocking sheet, formed by recessing the middle substrate layer at least 2μm and no more than 200μm, with respect to each outer layer, along the inner circumference of the sheet." *See* EX1003, ¶ 86.

IV. LEVEL OF SKILL IN THE ART

For purposes of the present POPR only, Largan does not dispute Motorola's articulation of the level of skill in the art in November 2016. Pet., 35–36. Largan notes, however, that neither the Petition nor Dr. Milster's more detailed description

(EX1003, ¶¶ 31–37) includes any competency in materials science or chemistry, which a POSA would have required to support a belief that CN182's etching process, which creates only a "matte structure" after "3 to 5 hours," would, if simply "prolonged," "recess[] the middle substrate layer at least 2μm and no more than 200μm, with respect to each outer layer, along the inner circumference of the sheet." *See* EX1003, ¶ 86.

V. THE PETITION FAILS TO SHOW A REASONABLE LIKELIHOOD THAT MOTOROLA WOULD PREVAIL IF TRIAL WERE INSTITUTED.

Every claim of the '660 patent includes, expressly or by dependence, a conditional expression to define the depth of the light trap formed within the interior surface of the central opening of a three-layer light blocking sheet:

$2.0\ \mu m<(\Phi smin-\Phi 1)/2<200\ \mu m$; and

$2.0\ \mu m<(\Phi smin-\Phi 2)/2<200\ \mu m$.

The condition is stated in terms of the differences between the diameters, Φ1 and Φ2, of the openings of the two outer layers and the larger diameter, Φsmin, of the opening of the middle layer, called the "inner substrate layer." Motorola refers to it as Element 1.6 (Pet., 32) and notes correctly that it requires the diameter

difference to be between 4 μm and 400 μm, which makes the depth of the claimed light trap half of that, or between 2 μm and 200 μm (*id.*, 37).[6]

Motorola's three asserted grounds for unpatentability purport to rely on three published patent applications, but CN182 lies at the center of each ground. Pet., 3. The other two references, Cho and Takahashi, are cited mainly as sources for the "imaging lens module" and "electronic apparatus" elements of some of the Challenged Claims. *Id.*, 73, 82. CN182 is the alleged source for the claimed Element 1.6 light trap. *Id.*, 43–45.

CN182 teaches no such light trap; it teaches using an "alkali solution" to etch an exposed surface of a plastic material to form a "matte structure," where the plastic material has an "antistatic coating" on its non-exposed surfaces made of a "carbon powder layer." EX1004, [0028], [0038]. Dr. Milster opines that a POSA would have been motivated to "prolong" the disclosed 3- to 5-hour etching process because the POSA would have known that doing so would "naturally and predictably" consume so much of the plastic material flanked on either side by the "antistatic coating … carbon powder layer" as to result in the light trap structure of the Challenged Claims. EX1003, ¶ 104.

[6] The identical conditional expression is found the '660 patent's only other independent claim, claim 15. EX1001, cl. 15.

Missing from the non-opinion evidence submitted with the Petition, however, is the evidence Dr. Milster would need to take this opinion from baseless speculation to informed conclusion.

A. The Petition's scant evidence regarding etching is inadequate to show a POSA would have read CN182 as teaching a direct or predictable relationship between duration of the process and the amount of material removed.

First, the POSA's skill set, as Dr. Milster defines it, does not include any knowledge, experience, or training in chemistry or materials science. EX1003, ¶¶ 31–37. He does include certain skills associated with "the fundamentals of stray light suppression" (*id.*, ¶ 35), but he neither states, nor is there any evidence to suggest, that such "fundamentals" would have included the chemistry or materials science knowledge needed to draw the conclusions from CN182's etching disclosure that he says a POSA would have drawn. A great chef, by the same token, is not assumed to know or understand the chemical reactions that give rise to the flavors produced.

Putting aside the failure to define the POSA as one having chemistry and materials science knowledge, Dr. Milster points to three documents as proof that a POSA "would have immediately recognized that further etching of the shading ring [in CN182] would lead to the PET layer being etched deeper across the opening." EX1003, ¶ 124. It is telling that he was unable to find a standard lens design or stray light suppression reference that speaks to the alleged commonality

of etching, its chemistry, rates, solvents, or substrates. It suggests that etching was not something typical in either stray light suppression or lens design, at least not before CN182. Indeed, CN182 is the only alleged prior art filed with the Petition that employs etching at all, and it requires "3 to 5 hours" just to achieve "a matte structure."[7] Even if CN182 were emblematic of etching as a common and well-understood technique for removing plastic material from a middle layer of a light blocking sheet, there is nothing to suggest a POSA would have found acceptable the weeks or months that would be required to get from "matte structure" on a surface to removal of a full 2.0 μm of the plastic beneath that surface.

Finding no reference material regarding etching in the lens design or stray light suppression fields, Dr. Milster points instead to a chapter in Braunecker (EX1027) about micro-optics and its discussion of "the reactive ion etch (RIE)

[7] CN249 (EX1015) employs etching, but Motorola admits that it is not prior art. Pet., 60. Also, Dr. Milster implies that Schaub taught it as among "the 3 common techniques for reducing stray light reflections," by testifying that "CN182 already applies 1 of the 3 …, namely, roughening the PET surface by etching it." EX1003, ¶ 105. He points to ¶¶ 53–67 of his own declaration for support, where he discusses Schaub, but there is no mention of chemical etching there, nor any in the Schaub excerpts filed with the Petition. *See* EX1007.

transfer process" used to shape the aspheric surfaces of microlenses. EX1003, ¶ 123. Though he tries to genericize its teachings with parenthetical descriptions (*id.*), there is no explanation of the relevance of "the reactive ion etch (RIE) transfer process" to the plastic etching disclosed by CN182. Most notably, there is nothing to support the bare assumption that "prolonging" the etching time in CN182 automatically prolongs the reaction and hence removal of plastic material. For that, Dr. Milster takes a general observation in Braunecker (EX1027) that the micro-optics industry borrows from technology previously perfected by the semiconductor industry, and springs from there to Plummer (EX1016), a book about semiconductor technology, for its mention of etching as used in that industry. EX1003, ¶¶ 123–124. But, again, nothing connects that discussion with anything in CN182, other than the word "etching."

Dr. Milster also cites EX1028, the expert report that Dr. Julie Bentley provided in a litigation matter in India involving the Indian counterpart of the '660 patent, Indian Patent No. 363,203 (IN203). EX1003,¶ 125. The cited parts are general statements about etching in the present day, not about its use in lens design or stray light suppression before 2016, or the adequacy of its disclosure in CN182. Regarding the citation to ¶ 42, that testimony is about the adequacy of the disclosure of IN203, which does not say anything about etching, and the perspective applied is "an average skilled or skilled person," but no definition is

provided for what that means in the Indian case. Since Dr. Bentley ties it to knowledge of etching, the definition in the Indian matter presumably includes persons having such skill. In addition, the statements about etching are premised on Dr. Bentley's stated understanding that Motorola had admitted that such knowledge was common, so her subsequent statement is based purely on that admission, not what would have been known or common in 2016.

But there is no evidence about the chemistry of the presumed reaction in CN182, nor any about the materials science of the physical and chemical properties of the plastic material being removed or the "antistatic coating … carbon powder layer" that would allegedly survive the removal. Such evidence is required to show what a POSA would have understood and expected. Without it, Dr. Milster's testimony about what a POSA would have done with the etching technology of CN182 is not an opinion; it's just an assumption. And this is not just a clerical oversight. All indications are that Dr. Milster does not independently possess the education or experience to put himself in the position of a POSA having the requisite understanding of the science involved in the CN182 etching process. EX1003, ¶¶ 4–14, Appx. A.

Without the missing documentary evidence of the chemistry and materials science involved in the CN182 etching process, Dr. Milster's testimony is the only evidence filed with the Petition to support the "prolonged" etching argument. Since

it is unsupported, "it is entitled to little or no weight," 37 C.F.R. § 42.65(a), leaving the Petition entirely unsupported. Motorola has thus failed to carry its burden to show with "the information presented in the petition … that there is a reasonable likelihood that the petitioner would prevail" if trial were instituted. 35 U.S.C. § 314(a).

B. There is no evidence to support Dr. Milster's assumption that a POSA would have been motivated to create a light trap between two carbon powder layers in CN182 by "prolonging" the etching process.

As explained above, CN182 discloses a light blocking sheet covered with an "antistatic coating" which "is a carbon powder layer." EX1004, [0026]. After the "carbon powder layer" is applied, CN182's "through-hole is formed on the body by stamping," which "leaves a shiny cut-off section surface of the inner hole" that has no "carbon powder layer." *Id.*, [0002], [0028]. CN182 proposes a solution that involves etching that surface with an "alkali solution" to achieve a "matte" surface to scatter beams of stray light that come into contact with it.

The '660 patent, in contrast, claims a three-layered light blocking sheet in which the reflective inner surface of the middle layer is removed (not just roughened) by recessing the inner substrate layer by more than 2 microns (while generally maintaining the two outer layers) to ***trap*** the incident stray light. This is very different from ***scattering*** the incident light due to a matte surface as proposed

by CN182. Therefore, CN182's solution to the stray light problem is not suggestive of the '660 patent's solution.

Nonetheless, it is Motorola's unsupported assumption that extending the duration of CN182's disclosed etching process—which prolonging is neither taught nor suggested by CN182—would result in the light blocking sheet claimed in '660 patent. But this is pure hindsight. CN182 says nothing of prolonging the disclosed 3- to 5-hour etching process, nor is there any evidence that the rates of etching between the plastic body and its carbon powder coating are so dramatically different that a POSA would have readily envisioned a "light trap" as being the "natural[] and predictabl[e]" result of prolonging the etching session beyond the disclosed time period. *See* EX1003 ¶ 104. Rather, CN182 says "the carbon powder layer, … is ***less sensitive to alkali solution***," not that it is ***impervious***. EX1004 [0028] [0038]. There is no evidence filed with the Petition that carbon is imparting the resistive properties, nor any about what else other than carbon might be required to impart the requisite amount of diminished sensitivity. So neither CN182 nor any other evidence filed with the Petition would have informed a POSA what a "carbon powder layer" needs to make it less sensitive to alkali solution.

In any case, the point CN182 makes is that the carbon powder layer "basically"—not absolutely—"will not be etched with the alkali solution," and that

this, in turn, "ensur[es] the feasibility of the method." *Id.* In other words, the CN182 method allows for "placing the shading ring in the alkaline solution," *id.* [0033], that is, the ***entire*** ring. This avoids the labor-intensive step of isolating the exposed "hole-wall" of the "through-hole" for application of the alkali solution, and the protection offered by the carbon powder layer relieves the need to avoid contact between the alkali solution and the rest of the sheet's outer surface. The entire shading ring is thus submerged in the alkali solution just long enough, i.e., "from 3 to 5 hours," *id.* [0034], "***to form a matte structure*** on the hole-wall of the through-hole of the shading ring," *id.* [0035], because the "hole-wall of the through-hole" is not coated with the carbon powder layer.

Nothing about this statement (or any other in CN182) suggests leaving the shading ring in the alkali solution any longer than is necessary "to form a matte structure on the hole-wall," and nothing suggests that doing so results in a hole-wall that is recessed from the carbon powder coated outer layers in any way. Notably, neither Motorola nor Dr. Milster has conducted any experiment or provided any evidence (e.g., an image of the CN182 shading ring after such proposed prolonged etching) to back up their speculation.

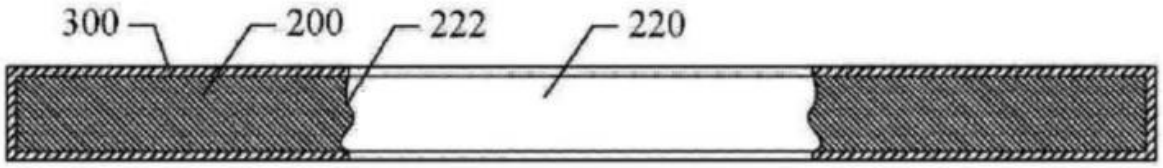
1. There is no evidence that a POSA would have regarded CN182 as teaching a three-layer light blocking sheet, absent some indication that an "antistatic coating" "carbon powder layer" could serve as light trap wall.

The Petition includes no evidence that a "carbon powder layer" that serves as an "antistatic coating" could stand on its own, without its substrate, such that a POSA would have viewed it as forming a distinct layer capable of serving as a baffle (wall) of a light trap. There is no evidence about "antistatic coating" "carbon powder layers" generally, nor any evidence that POSAs knew these terms and associated certain characteristics with them, nor is there any detail about the "antistatic coating" "carbon powder layer" that CN182 specifically discloses. Nothing supports the supposition, therefore, that a POSA would have regarded CN182 as teaching a three-layer light blocking sheet.

Thickness would be one way to infer fitness for service as a light trap wall. CN182 teaches a specific thickness for the "shading ring" itself: 0.025 mm. EX1004, [0027]. But it is silent as to the thickness of the "antistatic coating." There is indeed nothing in CN182 that would have caused a POSA in November 2016 to infer that the "antistatic coating" "carbon powder layer" was any more thick than necessary to serve its "antistatic" purpose. Taylor disclosed in 1956 that "coatings [] only a few molecules thick" could provide sufficient glare stop functionality (EX1013, 2:11), so a POSA would have had no reason to assume,

some 60 years later, that the mere mention of a "coating" or a "layer" implied a thickness of more than "a few molecules."

The sole graphical depiction of the disclosed "shading ring," reproduced below, arguably depicts at 300 the "antistatic coating" "carbon powder layer," but not a three-layered structure. The antistatic coating 300 is shown as wrapping around the outermost edge of the ring and connecting the top and bottom sides (as shown) of the shading ring 200. A POSA would thus have viewed this antistatic coating 300 as one single outside layer instead of two distinct layers (i.e., a first outer layer on the top and a second outer layer in the bottom).



Moreover, CN182 does not state that the depiction is to scale, so it would not have told POSAs anything about the thickness of the coating/layer 300, or about any other measure of substantiality they could expect from it. *See Hockerson-Halberstadt, Inc. v. Avia Grp. Int'l, Inc.*, 222 F.3d 951, 956 (Fed. Cir. 2000) ("[I]t is well established that patent drawings do not define the precise

proportions of the elements and may not be relied on to show particular sizes if the specification is completely silent on the issue.").[8]

The Petition thus includes no evidence that would reasonably have caused a POSA to see a three-layer light blocking sheet or a coating/layer having the substantiality, once removed from its substrate, needed to serve as a wall of a light trap. Dr. Milster sees a wall only because he is looking for one.

2. There is no evidence to suggest "prolonging" the CN182 etching process would result in a 2 µm deep light trap, given enough time.

There is no evidence that a "5% to 35% … 35 to 55°C" "sodium bicarbonate solution" disclosed as an etching solution that requires "3 to 5 hours" just to accomplish "a matte structure" would consume or disintegrate an amount of a "polyethylene terephthalate" plastic material more than 2 µm deep if left in contact for a "prolonged" period. There is likewise no meaningful evidence of the role played by the ultrasonic generator of the CN182 etching process, or the effects of varying the temperature or the concentration levels of the sodium bicarbonate

[8] This "well established" principle makes particularly disingenuous Dr. Milster's repeated assertions that this figure "shows portions of the middle PET layer recessed relative to the first and second outer carbon layer." EX1003, ¶ 109; *see also id.*, ¶¶ 94, 108.

solution. CN182 provides only pablum: "[t]he ultrasonic generator emits ultrasonic waves to cause vibrations in the sodium bicarbonate solution placed in the ultrasonic generator, thereby ensuring the etching effect," and "[h]eating and stirring further guarantee the etching effect; at the same time, the etching time is shortened and the processing efficiency is improved." EX1004, [0032], [0034].

There is likewise no evidence of the stoichiometry of the reaction that allegedly produces the etching to achieve the matte structure, or that the reaction continues indefinitely without reaching equilibrium in which no more depth would be consumed, or that the surface oxidation on the plastic is not a key component of the reaction, as either catalyst or reactant, such that the reaction would cease once the surface oxygen is depleted.

There is, consequently, no evidence that a POSA would have envisioned the "prolonged etching" as an option, let alone would have pursued it with any expectation of success. Dr. Milster's opinion that the POSA "naturally and predictably" would have done so is simply not supported.

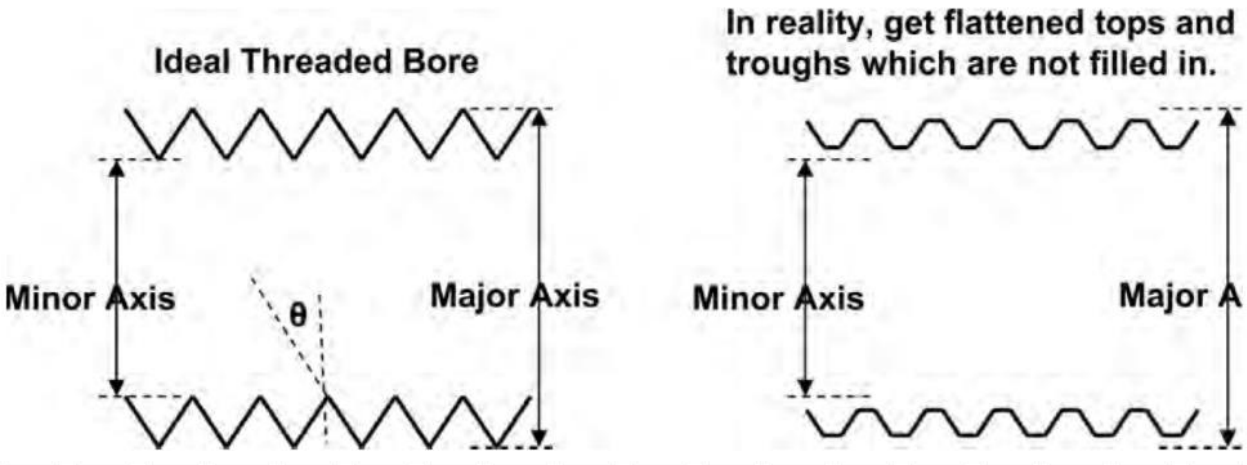
C. Objective evidentiary sources undermine the integrity of Dr. Milster's opinions.

Objective evidentiary sources undermine Dr. Milster's opinion evidence that the mere co-existence, in the art, of three-layered sheets, and baffles, and light traps would have caused POSAs to envision or pursue integrating a light trap into the interior surface of a sheet opening (which Largan was the first to do, in

November 2016) by removing more than 2 microns from the surface of the middle layer.

1. Fischer's 2008 book undermines Dr. Milster's opinions.

Fischer (EX1008) describes the "reflective surface" problem in the very context of a lengthy and detailed discussion of the use of baffles to deal with stray light (pp. 718-728), and illustrates how machined threads intended to serve as baffles invariably have a flat surface at the apex of each thread:



Figures 24.21
Ideal and Real Thread Profiles

EX1008, 727. As an expert in 2008, not just a POSA, Fischer did not propose applying his detailed baffle discussion to these flat surfaces, even though he acknowledged them as problematic while discussing baffles. More specifically, he did not see attaching a light trap to the flat surfaces on the threads shown above as something he should try himself or suggest to his readers.

2. Schaub's 2009 book undermines Dr. Milster's opinions.

As discussed above, Schaub (EX1007) describes three methods for suppressing stray light reflected from non-optical surfaces. EX1007, 120–121. He also describes "use of baffling" as one of the three solutions, but describes the other two as things done to "the offending surface" itself (e.g., reshaping or retexturing) while describing "use of baffling" only as "prevent[ing] the reflection from reaching the image plane." *Id.*, 120. In the same discussion, he describes the "reflective inner surface" problem in the context of the central opening of light blocking sheets. *Id.*, 120–121. Schaub himself, as an expert in 2009, was not moved to discuss using baffling on the reflective inner surface itself to form a light trap, even in the context of noting the specific problem. As is clear from the Fischer discussion, what Schaub had in mind was the use of baffling to redirect stray light before even reaching the "offending surface."

3. The '660 prosecution undermines Dr. Milster's opinions.

In the prosecution that resulted in the '660 patent, the examiner rejected the claims (in part) over Cho (EX1006), a three-layered sheet. EX1002, 179. The applicant added Element 1.6 and described it as defining a light trap, missing from Cho. EX1002, 205–29. The examiner allowed the claims, finding them patentable over Cho's three-layered sheet. EX1002, 220–222. The examiner did not reject the amended claims covering a light trap integrated into the interior surface of the

central opening of a light blocking sheet as obvious over Cho's three-layered light blocking sheet, despite the applicant's express use of the term "light trap" to describe the difference between the amended claims and Cho. EX1002, 207.

VI. CONCLUSION

In light of the foregoing, Largan respectfully submits that the Petition does not show a reasonable likelihood that Motorola would prevail if trial were instituted. The Board should therefore deny the Petition.

DATED: July 30, 2024

Respectfully submitted,

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WORD COUNT CERTIFICATION

The undersigned hereby certifies pursuant to 37 C.F.R. § 42.24(d) that the foregoing **PATENT OWNER PRELIMINARY RESPONSE** contains 5,838 words according to the word count of the word-processing software used to prepare the document, excluding table of contents, table of authorities, this certificate, the certificate of service, mandatory notices under § 42.8, appendix of exhibits or claim listing, or the signature block of counsel.

Dated: July 30, 2024 By: */R. Parrish Freeman/*
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CERTIFICATE OF SERVICE

The undersigned hereby certifies that a copy of the foregoing **PATENT OWNER PRELIMINARY RESPONSE** was served on July 30, 2024, via electronic mail on the following counsel of record for Petitioner:

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