IN THE UNITED STATES DISTRICT COURT
FOR THE DISTRICT OF DELAWARE

RESEARCH FRONTIERS, INCORPORATED, Plaintiff, v. E INK CORPORATION, E INK HOLDINGS INC., SONY ELECTRONICS INC., SONY CORPORATION, BARNES & NOBLE INC., BARNESANDNOBLE.COM LLC, and AMAZON.COM INC., Defendants.	)	Civil Action No. 13-1231-LPS

REPORT AND RECOMMENDATION

In this action filed by Plaintiff Research Frontiers Inc. ("RFI" or "Plaintiff") against Defendants E Ink Corp. and E Ink Holdings Inc. (collectively, "E Ink"), Sony Corp., Sony Electronics Inc., Barnes & Noble Inc., BarnesandNoble.com LLC and Amazon.com Inc. (collectively with E Ink, "Defendants"), RFI alleges that Defendants directly infringe three of its patents (the "Asserted Patents" or the "patents-in-suit"). (D.I. 22) Presently before the Court is the matter of claim construction. The Court recommends that the District Court adopt the constructions as set forth below.

I. BACKGROUND

A. The Parties

RFI is a Delaware corporation and has its principal place of business in Woodbury, New York. (*Id.* at ¶ 2) It is a developer of suspended particle technology applicable for use in display

and light control applications. (*Id.* at ¶ 3) It is the owner of the patents-in-suit. (*Id.* at ¶¶ 5-7)

E Ink Corp. is a Delaware corporation and has its principal place of business in Billerica, Massachusetts. (*Id.* at ¶ 10) E Ink Corp. supplies electronic paper displays that are incorporated into eBooks, eReaders, and other display products. (*Id.* at ¶¶ 11-17) E Ink Holdings Inc. is a Taiwanese corporation and has its principal place of business in Taiwan. (*Id.* at ¶ 19) It is alleged that E Ink Holdings Inc. provides further assistance in the manufacture and/or assembly of E Ink Corp.'s products in Asia. (*Id.* at ¶ 20)[1]

B. The Asserted Patents

The Asserted Patents are: (1) United States Patent No. 5,463,491 ("the '491 patent"), entitled "Light Valve Employing a Film Comprising an Encapsulated Liquid Suspension, and Method of Making Such Film"; (2) United States Patent No. 6,606,185 ("the '185 patent"), entitled "SPD Films and Light Valves Comprising Liquid Suspensions of Heat-Reflective Particles of Mixed Metal Oxides and Methods of Making Such Particles"; and (3) United States Patent No. 6,271,956 ("the '956 patent"), entitled "Method and Materials for Enhancing Adhesion of SPD Films, and Light Valves Comprising Same." (*Id.*, exs. A-C)

The '491 patent relates in general to light valves, and more specifically, to improvements relating to incorporating within a plastic film a light valve suspension used to control light transmission in a light valve. ('491 patent, col. 1:15-18) The '185 patent relates to particles capable of reflecting heat for use in the light valve of a suspended particle device ("SPD") and

[1] On November 14, 2013, this Court granted a stipulation and issued an order staying RFI's claims against all Defendants except E Ink. Those additional Defendants agreed, *inter alia*, to be bound by any decision with respect to infringement or non-infringement of the asserted claims of the patents-in-suit based on the inclusion of the accused E Ink-manufactured components in their own accused products. (D.I. 13 at ¶ 4) In light of this order, no Defendants other than E Ink participated in this claim construction proceeding.

SPD light valve suspensions and films, with a particular focus on specific types of particles. ('185 patent, col. 1:9-14) The '956 patent relates to methods and materials useable with SPD films to improve film adhesion to different surfaces. ('956 patent, col. 1:7-11)

C. Procedural Posture

RFI commenced this action on July 12, 2013, (D.I. 1), and thereafter filed an Amended Complaint on December 2, 2013, (D.I. 22). On June 3, 2015, Chief Judge Leonard P. Stark referred the matter of claim construction to the Court. (D.I. 95) Initial claim construction briefing concluded on October 13, 2015, (D.I. 126), and the Court held a *Markman* hearing on November 2, 2015. (D.I. 142 (hereinafter, "Tr.")) On December 23, 2015, the Court granted Plaintiff's motion seeking leave to file a supplemental *Markman* brief, after which E Ink filed a responsive supplemental brief of its own. (D.I. 153; D.I. 156)

II. STANDARD OF REVIEW

It is well-understood that "[a] claim in a patent provides the metes and bounds of the right which the patent confers on the patentee to exclude others from making, using, or selling the protected invention." *Corning Glass Works v. Sumitomo Elec. U.S.A., Inc.*, 868 F.2d 1251, 1257 (Fed. Cir. 1989). Claim construction is a generally a question of law, although subsidiary fact finding is sometimes necessary. *Teva Pharms. USA, Inc. v. Sandoz, Inc.*, 135 S. Ct. 831, 837-38 (2015).

The Court should typically assign claim terms their "'ordinary and customary meaning[,]'" which is "the meaning that the term[s] would have to a person of ordinary skill in the art in question at the time of the invention, i.e., as of the effective filing date of the patent application." *Phillips v. AWH Corp.*, 415 F.3d 1303, 1312-13 (Fed. Cir. 2005) (citations

omitted). However, when determining the ordinary meaning of claim terms, the Court should not extract and isolate those terms from the context of the patent, but rather should endeavor to reflect their "meaning to the ordinary artisan after reading the entire patent." *Id.* at 1321.

To that end, the Court should look first and foremost to the language of the claims themselves, because "[i]t is a bedrock principle of patent law that the claims of a patent define the invention to which the patentee is entitled the right to exclude." *Id.* at 1312 (internal quotation marks and citations omitted). For example, the context in which a term is used in a claim may be "highly instructive." *Id.* at 1314. In addition, "[o]ther claims of the patent in question, both asserted and unasserted, can also be valuable" in discerning the meaning of a particular claim term. *Id.* This is "[b]ecause claim terms are normally used consistently throughout the patent, [and so] the usage of a term in one claim can often illuminate the meaning of the same term in other claims." *Id.* Moreover, "[d]ifferences among claims can also be a useful guide[,]" as when "the presence of a dependent claim that adds a particular limitation gives rise to a presumption that the limitation in question is not present in the independent claim." *Id.* at 1314-15.

In addition to the words of the claims, the Court should look to other intrinsic evidence. For example, the Court should analyze the patent specification, which "may reveal a special definition given to a claim term . . . that differs from the meaning [that term] would otherwise possess." *Id.* at 1316. In that case, "the inventor's lexicography governs." *Id.* Even if the specification does not contain a special definition of the term at issue, it "is always highly relevant to the claim construction analysis. Usually, it is dispositive; it is the single best guide to the meaning of a disputed term." *Id.* at 1315 (internal quotation marks and citation omitted).

That said, however, the specification "is not a substitute for, nor can it be used to rewrite, the chosen claim language." *SuperGuide Corp. v. DirecTV Enters., Inc.*, 358 F.3d 870, 875 (Fed. Cir. 2004). In addition to the specification, a court should also consider the patent's prosecution history, if it is in evidence, because it "can often inform the meaning of the claim language by demonstrating how the inventor understood the invention and whether the inventor limited the invention in the course of prosecution[.]" *Phillips*, 415 F.3d at 1317 (citations omitted).

Extrinsic evidence, "including expert and inventor testimony, dictionaries, and learned treatises[,]" can also "shed useful light on the relevant art[.]" *Id.* (internal quotation marks and citations omitted). Overall, while extrinsic evidence may be useful, it is "less significant than the intrinsic record in determining the legally operative meaning of claim language." *Id.* (internal quotation marks and citations omitted); *accord Markman v. Westview Instruments, Inc.*, 52 F.3d 967, 981 (Fed. Cir. 1995).

In utilizing these resources during claim construction, courts should keep in mind that "[t]he construction that stays true to the claim language and most naturally aligns with the patent's description of the invention will be, in the end, the correct construction." *Renishaw PLC v. Marposs Societa' per Azioni*, 158 F.3d 1243, 1250 (Fed. Cir. 1998).

III. DISCUSSION

A. Disputed Terms

The parties have put forward 10 terms or sets of terms for the Court's review.[2] The Court takes up the disputes in the order in which they were argued.

[2] Originally, the parties briefed an 11th term, "mixed metal oxide," but during the *Markman* hearing, they agreed that there was no dispute as to this term. (Tr. at 105-06) The Court therefore does not take it up below.

1. "the light-modulating unit of a light valve" or "light[-]modulating unit" and "light valve"

As an initial matter, the parties dispute whether the Court should simply provide a construction for the phrase "the light-modulating unit of a light valve" or whether it should instead provide separate constructions for two terms that appear within that phrase: "light[-]modulating unit"[3] and "light valve." Defendant E Ink argues for the former, (D.I. 107 at 7),[4]

[3] At times in the patents-in-suit, this term has a hyphen between "light" and "modulating" and at times it does not.

[4] As to multiple claim terms, including this first set, RFI contends that E Ink is judicially estopped from offering the constructions it now puts forward, in light of the fact that E Ink offered different constructions for the terms during *inter partes* review ("IPR") of the '185 patent. (D.I. 113 at 5, 8, 14, 17, 23; D.I. 126 at 1-2; *see also* D.I. 114, ex. F (E Ink's IPR petition)) In response, E Ink argues that a key requirement for implicating the doctrine of judicial estoppel—that a party is taking a clearly inconsistent position—is not met here, because the applicable claim construction standard in IPR proceedings ("the broadest reasonable interpretation" standard) differs from that used in a district court proceeding. (D.I. 123 at 1-2); 37 C.F.R. § 42.100(b); *see also New Hampshire v. Maine*, 532 U.S. 742, 750 (2001) (noting that a factor that typically informs whether the doctrine of judicial estoppel applies is whether a party's later position is "clearly inconsistent" with its earlier position) (internal quotation marks and citation omitted); *Krystal Cadillac-Oldsmobile GMC Truck, Inc. v. Gen. Motors Corp.*, 337 F.3d 314, 319 (3d Cir. 2003) (noting that one criterion for determining whether the doctrine of judicial estoppel should be applied is that the party to be estopped "must have taken two positions that are *irreconcilably inconsistent*") (emphasis in original). The Court agrees with E Ink that judicial estoppel should not be invoked under these circumstances. Even RFI acknowledges that the constructions E Ink offered during the IPR proceeding were in fact "broad[er]" than the assertedly "narrow constructions" it now puts forward for certain terms at issue. (D.I. 126 at 2) And E Ink could reasonably—and not inconsistently—have argued that the constructions it proposed during the IPR proceeding amounted to the "broadest reasonable interpretation" that the terms could support, and nevertheless now argue that, when taking into account guidance from cases like *Phillips*, the Court should adopt a different, narrower construction for the same terms. Moreover, RFI has provided no legal authority that supports invocation of the doctrine of judicial estoppel in this circumstance. (Tr. at 61-62) For all of these reasons, the Court cannot agree with RFI's position here. *Cf. Mike's Train House, Inc. v. Broadway Ltd. Imps., LLC*, Civil No. 1:09-cv-02657-JKB, 2012 WL 664498, at *22 (D. Md. Feb. 27, 2012), *aff'd,* 500 F. App'x 958 (Fed. Cir. 2013). With all of that said, the fact that E Ink took certain claim construction positions during the IPR proceeding may well be *relevant* to the Court in resolving claim construction disputes here (as might the PTAB's analysis of a particular term). The point is just that E Ink should not be prohibited from arguing for the constructions it

while RFI argues for the latter, (D.I. 113 at 4).

The Court agrees with RFI that constructions should be provided for both "light[-]modulating unit" and "light valve." As RFI points out, both of these terms appear as stand-alone terms in asserted claims of the '491 patent and the '185 patent—that is, they appear other than as part of the phrase "light-modulating unit of a light valve." (*See, e.g.*, '491 patent, col. 39:2; '185 patent, col. 6:63) The '491 patent specification also uses the term "light valve" as a stand-alone term, including when describing the field of invention and summarizing the invention. (*See, e.g.*, '491 patent, cols. 1:15-18, 2:15, 2:41) The parties will need to know what these separate, stand-alone terms mean in order to navigate infringement-related issues, and that augers in favor of construing them separately. (D.I. 113 at 4; Tr. at 60); *cf. Millipore Corp. v. W.L. Gore Assocs., Inc.*, Civil Action No. 11-1453 (ES), 2012 WL 5250386, at *7 (D.N.J. Oct. 24, 2012) (construing two terms separately where one term appeared in multiple places in the claims without the other term).

a. "light[-]modulating unit"

E Ink argues that the term "light[-]modulating unit [of a light valve]" should be construed as "a unit that opens and closes like a valve to control light transmission through the unit." (D.I. 107 at 7) RFI asserts that construction is not necessary because claim 1 of the '491 patent goes on to define what a "light[-]modulating unit" is, (D.I. 113 at 7; D.I. 126 at 5), but it notes that if the term is to be construed, it should be given the following construction: "a unit which modulates light using a suspension of particles, including but not limited to SPDs and EPDs

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now puts forward.

[electrophoretic displays]." (D.I. 113 at 7)[5] There appear to be two primary disputes between the parties as to this term. The Court will address them in turn below.

(1) Controlling light transmission

First, the parties dispute whether a "light[-]modulating unit" necessarily controls the transmission of light. The term "light[-]modulating unit" appears, *inter alia*, in multiple claims of the '491 patent. Claim 1 of that patent, for example, recites:

> **1.** A film suitable for use as the *light-modulating unit* of a light valve, comprising a cross-linked polymer matrix having droplets of a liquid light valve suspension distributed in and in direct contact with the cross-linked poller [sic] matrix, said liquid light valve suspension comprising organic particles suspended in a liquid suspending medium.

('491 patent, col. 38:39-44 (emphasis added)) Although this claim language provides some sense of what the requisite "light[-]modulating unit" is, it does not definitively resolve the parties' dispute.

E Ink, for its part, believes that the patent's specification and prosecution history do provide a definitive answer—that the "light[-]modulating unit" controls light transmission. (D.I. 107 at 7-9; D.I. 123 at 3-5) For the following reasons, the Court finds E Ink's arguments to be well taken.

(a) The examples in the patent "modulate" light by controlling the amount of light transmitted

E Ink first focuses on the specification, arguing that the patent conveys the idea, across the description of many disclosed embodiments of the invention, that the "light[-]modulating

[5] Alternatively, RFI proposes the construction of the term as "'a unit comprising a suspension of light absorbing or reflecting particles that changes its appearance when activated.'" (D.I. 113 at 8)

unit" controls light transmission. (D.I. 107 at 7-8) The Court agrees.

When discussing examples illustrating the present invention, the specification often indicates that the "film" (i.e., the component "suitable for use as the light-modulating unit" in claim 1) "goes from the darkened to the transmissive state[,]" or uses similar language relating to light transmission.[6] Additionally, when describing other examples, the specification sets out the "transmission [range] of the film[,]" or uses similar wording.[7] Admittedly, not every single example referenced in the patent includes language just like this. But even a number of the examples that do not still discuss concepts related to light transmission—and none suggest that a "light[-]modulating unit" should be construed in a manner different from what E Ink proposes.[8]

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[6] ('491 patent, col. 13:13-15 (Example 1); *see also id.*, cols. 13:19-20 (noting in Example 2 that a toluene in Example 1 is replaced by a different hydrocarbon "with substantially the same result" as that described in Example 1), 13:23-25 (same, as to Example 3), 13:29-30 (same, as to Example 4), 13:34-35 (same, as to Example 5), 13:59-61 (Example 6, noting that the "non-light scattering film goes from the darkened to the transmissive state"); 16:2-3 (Example 12, noting that the encapsulated particles were seen to "orient to a transmissive state"); 17:31-34 (Example 16, noting that the "film was observed to go from the darkened to the transmissive state with little or no light scatter"), 18:28-32 (Example 19, noting that the "film was observed to go from the dark to the transmissive state"), 18:52-56 (Example 20, noting that the "film was observed to change from the dark to the transmissive state"))

[7] ('491 patent, col. 27:29-32 (Example 1', noting that the transmission of the cell "changed from 7.11% OFF state to 18.25% ON state"); *see also id.*, cols. 28:35-29:1 (Example 4', noting the "OFF state transmission" of the cell, as compared to that expressed in Comparative Example A), 29:65-66 (same as to Example 6'), 31:52-67 (Example 10', comparing the OFF state and ON state transmission of the cell in discussing the preparation of a light valve), 32:4-7 (same, as to Example 11'), 32:34-36 (Example 12', noting the OFF state transmission of the cell), 32:64-67 (Example 13', noting the OFF state and ON state transmission of the cell), 33:26-29 (same, as to Example 14'), 33:58-61 (same, as to Example 15'), 35:49-53 (same, as to Example 19'), 35:59-61 (same, as to Example 20'), 35:66-36:2 (same, as to Example 21'), 37:13-16 (same, as to Example 23), 38:11-14 (same, as to Example 26'), 38:32-37 (same, as to Example 27'))

[8] For instance, RFI cites Examples 8-11, 13, 15, 17 and 18 in arguing that not every example in the patent refers to a change in the transmission of light. (D.I. 113 at 9; D.I. 126 at 4) In example 8, however, the concept of "decay time" is discussed, ('491 patent, col. 14:46, 61-64), which the specification indicates is the time it takes for the film to go from fully opened to fully

For all of these reasons, the Court finds E Ink's reference to the patent's examples to be persuasive evidence in its favor. *Cf. ICU Medical, Inc. v. Alaris Med. Sys., Inc.*, 558 F.3d 1368, 1375 (Fed. Cir. 2009) (construing the term "spike" to be pointed, in part because the specification "never suggests that the spike could be anything other than pointed[,]" because each figure depicts the spike as being pointed and piercing a seal, and because the patent never suggests that piercing is optional nor describes a non-piercing item as a spike); *Kinetic Concepts, Inc. v. Blue Sky Med. Grp., Inc.*, 554 F.3d 1010, 1018-19 (Fed. Cir. 2009) (limiting the scope of the term "wound" to skin wounds, when all examples in the specification involved skin wounds).

(b) The characterization of the "present invention"

E Ink also very persuasively points to the patent's characterization of "the present invention" in support of its argument. (D.I. 107 at 9) The "Field of the Invention" section provides that "[t]he present invention" relates to light valves and "more particularly to improvements relating to incorporating within a plastic film a light valve suspension used *to control light transmission* in a light valve." ('491 patent, col. 1:15-18 (emphasis added))[9]

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closed, (*id.*, col. 27:32-34). Examples 9-11 and 13, for their part, include observations that particles "were seen" or "were observed" "to orient" or describes particles having "oriented." (*Id.*, cols. 15:15, 30, 44; 16:29) These observations are consistent with the concept of light transmission because, in the light valves at issue in the patent, particles align or orient upon application of an electrical field, allowing light to pass through. (*Id.*, cols. 1:36-39, 2:18-22, 11:58-62) The remaining examples RFI cites do not discuss light transmission, decay time, or particle orientation, but they also do not say anything that contradicts the idea that a "light[-]modulating unit" controls light transmission.

[9] Although it does not involve the use of the phrase "the present invention," there is also a portion of the "Background" section of the '491 patent that amounts to similarly persuasive evidence in favor of E Ink's position. The section discusses early examples of light valves, stating that "[l]ight valves have been used for over fifty years for *modulation of light*." ('491 patent, col. 1:22-24 (emphasis added)) Later in the paragraph, the specification describes how particles contained in liquid suspending mediums in such light valves exhibit random Brownian movement and "reflect[,] transmit[] or absorb[]" light; it further explains how, when an electric

Moreover, the specification states that the "present invention is illustrated by" the examples set out therein, (*id.*, cols. 12:59-60, 26:41-42), and (as previously noted) those examples repeatedly reference the transmissive state of a film. Similarly, in describing Figures 9a and 9b, the specification discusses how a beam of light "impinges on a film . . . of the present invention" and how the film's particles either absorb light, or align so that a beam of light passes through the film. (*Id.*, col. 11:51-62) Taking all of this into account, the Court agrees that the patent's characterization of "the present invention" supports limiting the "light[-]modulating unit" to one that controls light transmission.[10] *See Retractable Techs., Inc. v. Becton, Dickinson & Co.*, 653 F.3d 1296, 1305 (Fed. Cir. 2011) (limiting the scope of a term where one consideration was that the specifications at issue "expressly recite that 'the invention' has a body constructed as a single structure . . ."); *Am. Piledriving Equip., Inc. v. Geoquip, Inc.*, 637 F.3d 1324, 1334 (Fed. Cir.

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field is applied to that suspension, the particles become aligned such that "most of the light can pass through the cell." (*Id.*, col. 1:29-39; *see also* Tr. at 19) And at the end of the paragraph, the specification then states that such light valves "have been proposed for many purposes including, e.g., alphanumeric displays, television displays, windows, mirrors, eyeglasses and the like to *control the amount of light passing therethrough.*" ('491 patent, col. 1:39-42 (emphasis added)) This paragraph will be discussed in more detail below, as it relates to other disputed issues between the parties. But for now, it is simply worth noting that the paragraph's strong implication is that when the patent refers to how light valves "modulat[e] light[,]" it is referring to how light valves control light transmission.

[10] To be sure, as RFI notes, (D.I. 126 at 4 & n.2), the specification uses the phrase "the present invention" a number of times, including to describe other aspects of the "present invention" that do not directly discuss the concept of controlling light transmission, (*see, e.g.*, '491 patent, col. 2:40-53 ("The present invention *also provides* a light valve [that has certain physical characteristics].") (emphasis added) (*cited in* D.I. 126 at 4)). Yet unlike the scenarios in some of the cases that RFI cites, here the Court is not aware of any place in the patent where the specification uses the term "the present invention" in a way that expressly contradicts the patent's earlier reference to the invention's control of light transmission. *See Absolute Software, Inc. v. Stealth Signal, Inc.*, 659 F.3d 1121, 1137 (Fed. Cir. 2011) (*cited in* D.I. 126 at 4 n.2). Nor is the Court aware of any particular language in the patent's claims indicating that a "light[-]modulating unit" is not necessarily limited to controlling light transmission. *See Voda v. Cordis Corp.*, 536 F.3d 1311, 1320 (Fed. Cir. 2008) (*cited in* D.I. 126 at 4 n.2).

2011) ("This court has indicated that a statement in a specification that describes the invention as a whole can support a limiting construction of a claim term.").

(c) Statements made during prosecution of the '491 patent

Additionally, E Ink asserts that the '491 patent's file history confirms that the "light[-]modulating unit" at issue is one that controls light transmission. (D.I. 107 at 9; Tr. 25-26) During prosecution and in order to overcome a rejection by the United States Patent and Trademark Office ("PTO"), the patentee submitted a document amending his patent application, and in it, he explained:

> As discussed at the interview, [certain prior art references] are irrelevant to claims 1, 4-10 and 22 because these references describe liquid crystal displays. The distinction between the liquid crystal displays ("LCD's") of [the prior art] and the light valves or suspended particle displays ("SPD's") of Claims 1, 4-10 and 22 is clear and unequivocal.
>
> SPD's are based on the use of particles suspended in a liquid to modulate light. To keep the particles in suspension, a polymeric stabilizer is dissolved in the liquid. In the OFF state, the suspended particles are in Brownian motion and absorb or reflect light passing through the suspension. When an electric field is applied to the suspension the SPD is ON, and the particles become aligned and hence transmit more light than in the OFF state . . . .
>
> Liquid crystals do not comprise suspensions of particles suspended in a liquid. Since liquid crystals do not rely on Brownian movement of suspended particles to modulate light, liquid crystals are not SPD's. Conversely, SPD's are not liquid crystals.

(D.I. 104-5 at Joint Appendix ("JA") 0140-41) (emphasis in original)) E Ink argues that this explanation confirms that the claims are directed to, *inter alia*, "light[-]modulating units" of light valves that control the transmission of light. (D.I. 107 at 9; D.I. 123 at 6)

In response, RFI contends that the above statement's primary focus was not on the question of light modulation or of controlling light transmission, but instead on the fact that the claimed invention utilized "particles suspended in a liquid" (and that prior art LCD devices did not). (D.I. 113 at 12-13) And the Court does not disagree that, in the passage above, the patentee was clearly making that distinction. He did so, among other things, by placing emphasis on the phrases "liquid crystal displays" and "particles suspended in a liquid." (*Cf.* D.I. 104-5 at JA 0141 ("Hence, the droplets of the liquid crystal [in the prior art LCD devices] "do not contain any suspended particles.") (emphasis in original))

But the *way* in which the patentee decided to make the above point—to really bring home the idea that his invention utilized particles suspended in a liquid (and not liquid crystal displays)—was to double down, and to provide further detail as to exactly what the suspended particles in the invention are, what they do, and how they do it. As relevant to this particular dispute, what is important about the patentee's statement is that he clearly explained that the referenced "light valves[,]" or "SPD's": (1) are used to "modulate light"; and (2) that when the particles therein are in the "OFF state," they are in Brownian motion and "absorb or reflect light passing through the suspension[,]" but that when they are in the "ON state," the particles "become aligned and *hence transmit more light*" than when in the "OFF state." (*Id.* at JA 0140 (emphasis added)) Because the Court believes that the patent's specification makes clear that the "light[-]modulating unit" at issue is one that necessarily controls light transmission, this portion of the prosecution history simply amounts to further intrinsic evidence supporting that same conclusion.

(d) Conclusion

The "unit" at issue here is a "light[-]modulating" unit, and contrary to what RFI's proposed construction suggests, the term "modulating" must mean something. (Tr. at 20 (E Ink's counsel noting that the dispute here is about "what does it mean to modulate light in the context of a light valve"); *see also id.* at 23)[11] Based on the substantial and consistent description of the function of a "light[-]modulating unit" in the intrinsic record, the Court agrees with E Ink that a "light[-]modulating unit" is one that necessarily controls the transmission of light.

(2) The inclusion of "EPDs"

The parties' second dispute is whether the particles used in the "light[-]modulating unit" of a light valve should be limited to being directed to SPDs or may also be directed to EPDs.

E Ink asserts that the particles in the "light[-]modulating unit" described in the patents are directed only to SPDs, in light of RFI's statements during prosecution and due to the absence of any mention of EPDs in the patent. (D.I. 107 at 9-10; D.I. 123 at 6-7) RFI disagrees, arguing that its proposal's inclusion of the language "including but not limited to SPDs and EPDs" is proper, primarily because the PTO's Patent Trial and Appeal Board used this same language in formulating its own construction of the term at issue. (D.I. 113 at 7; D.I. 126 at 6)

The Court again agrees with E Ink. The patentee's statements during prosecution—statements made in the same document previously referenced above—clearly and unambiguously set out that the light valves described in claim 1 are SPDs. There, in describing

[11] RFI's proposal begins by simply re-formulating the term as "a unit which modulates light . . . ." (D.I. 113 at 7) This approach is disfavored, as it simply avoids addressing what is clearly a fundamental dispute between the parties: what does it mean to modulate light? *Cf. Vir2us, Inc. v. Invincea, Inc.*, Civil Action No. 2:15CV162, 2016 WL 453486, at *4 (E.D. Va. Feb. 5, 2016); *Comp. Stores Nw., Inc. v. Dunwell Tech, Inc.*, No. CV-10-284-HZ, 2011 WL 2160931, at *15 (D. Or. May 31, 2011) (citing *Sparton Corp. v. United States*, 68 Fed. Cl. 34, 47 (2005)).

the "light valves" referred to in what later became claim 1 of the '491 patent, the patentee explained that it was "clear and unequivocal" that these were "suspended particle displays ('SPD's')" and that such "SPD's are based on the use of particles suspended in a liquid to modulate light." (D.I. 104-5 at JA 0140 (emphasis in original)) The patentee went on to again emphasize that the claim was directed to SPDs by noting the following: "Since liquid crystals do not rely on Brownian movement of suspended particles to modulate light, *liquid crystals are not SPD's*[,]" and that "[c]onversely, *SPD's are not liquid crystals.*" (*Id.* at JA 0141 (emphasis added))

The Court cannot interpret these statements as being meant to convey anything other than that claim 1 (and the other claims referring to a "light-modulating unit of a light valve") are directed to "SPDs" and not to "EPDs." That is, these statements from the prosecution history amount to a "clear and unambiguous" disavowal of broader claim scope on this point. *Storage Tech. Corp. v. Cisco Sys., Inc.*, 329 F.3d 823, 833 (Fed. Cir. 2003). Here, the patentee emphasized not only that the claims reference the use of particles suspended in a liquid, but also that those particles are utilized *in SPDs*. It may be that the patentee did not absolutely have to go into that level of detail in order to make his point to the Examiner and to get around the prior art. But he did, and he did so clearly. Having done so, he cannot walk away from the impact of his statement. *Cf. Saffran v. Johnson & Johnson*, 712 F.3d 549, 559 (Fed. Cir. 2013) ("Rather, as we have made clear, an applicant's argument that a prior art reference is distinguishable on a particular ground can serve as a disclaimer of claim scope even if the applicant distinguishes the reference on other grounds as well.") (internal quotation marks and citation omitted); *Norian Corp. v. Stryker Corp.*, 432 F.3d 1356, 1361-62 (Fed. Cir. 2005) ("[T]here is no principle of

patent law that the scope of a surrender of subject matter during prosecution is limited to what is absolutely necessary to avoid a prior art reference that was the basis for an examiner's rejection.").

For what it is worth, nothing in the remainder of the evidence before the Court as to this issue suggests that the Court's conclusion regarding the impact of RFI's statements during prosecution is incorrect. For example, the parties submitted extrinsic evidence as to what SPDs and EPDs are and how they function, which clearly suggests that such devices were known to work differently. Although SPDs and EPDs both modulate light through the movement of particles in a liquid suspending medium upon the application of an electric field, (D.I. 113 at 1), in a 1996 article, RFI founder Robert Saxe (an inventor on two of the Asserted Patents) noted that "[e]xcept for the fact that electrophoretic image displays . . . use a particle suspension in a cell, there is little similarity between them and SPDs." (D.I. 109, ex. C at EINK00031969) One difference cited by Mr. Saxe and many other authorities of record before the Court, is that a typical SPD light valve blocks light when its suspended particles are randomized by Brownian movement (i.e., the "OFF state"), but allows light to pass through when a voltage is applied to rotate these particles into alignment (i.e., the "ON state").[12] (*See id.*, ex. C at EINK00031969; *see also id.*, ex. A at EINK00038672; *id.*, ex. B at RF022074; *id.*, ex. E at EINK_00002868; *id.*, ex. F at EINK00032024; *id.*, ex. G at EINK00031941) In a typical EPD, however, an electric field is applied to tiny microcapsules containing particles of oppositely charged black and white

[12] In describing further differences between typical SPDs and EPDs, Mr. Saxe explained in his article that: "SPDs use ac voltage; [EPDs] use dc voltage. SPDs generally use light-absorbing particles; [EPDs] use light-scattering particles . . . . [EPD] suspensions contain a dark dye to hide their particles from view when the particles are on the rear electrode; no such dye is needed in an SPD." (D.I. 109, ex. C at EINK00031969)

pigments, causing either black or white particles to migrate to the top of the microcapsule (a process known as "electrophoresis"). (*Id.*, ex. C at EINK00031969 ("Particles in an [EPD] are deliberately caused to migrate between the front and rear electrodes by the applied dc voltages; SPD particles just orient or randomize within the suspension."); *id.*, ex. E at EINK_00002868)[13]

Similarly, the '491 patent itself describes only light valves containing particles that behave like those in a typical SPD as described above. As E Ink notes, (D.I. 107 at 10; Tr. at 27),

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[13] In its supplemental briefing, RFI points to information it recently obtained as confirmation "that there is no fundamental distinction in the art, relevant to claim construction, between the embodiments described in the RFI patents and what E Ink has labeled as 'electrophoretic' technology." (D.I. 153 at 2) This information came in a supplemental answer to an RFI interrogatory, in which E Ink stated that it had "affixed patent numbers to the accused products and identified the patent numbers, all of which were E Ink patents." (D.I. 147 at 3) RFI focuses, for example, on one such patent—United States Patent No. 6,392,785 (the "'785 patent")—asserting that it discloses two embodiments of an EPD, one operating through "suspended particles migrating to the surface of a capsule surface," and the other through "particles orienting upon the application of an electric field to allow light to pass through the capsule." (D.I. 153 at 2 (citing the '785 patent, col. 7:5-34)) The second of these embodiments, RFI argues, confirms that one skilled in the art would view EPDs to include devices that control light transmission through particle orientation, and that the term "electrophoretic" does not mean that the particles move "in only a migration sense[,]" but rather also equally describes "particle orientation and rotational movement." (*Id.* at 2-3) E Ink, in response, makes multiple arguments as to why its marked products are of no import. (*See* D.I. 156) As to the '785 patent specifically, E Ink acknowledges that the patent does disclose an embodiment that, *inter alia*, "includes anisotropic particles that rotate to align in an electric field to allow light to pass (an aspect of SPDs)[,]" but asserts that this EPD is "a hybrid device that incorporates components of both EPD and SPD technology." (*Id.* at 4 n.5) E Ink believes that this disclosure has no bearing on the instant proceeding because the asserted patents do not disclose such "hybrid" embodiments, nor do the accused products operate in this manner. (*Id.*)

The Court does not believe that the evidence RFI points to here should have any effect on its conclusion regarding this issue. For one thing, as noted above, the patent was clear in the prosecution history that the patent's claims are directed to "SPDs"—not "EPDs." And secondly, the extrinsic evidence (including the materials set out in RFI's supplemental briefing) tells a fairly consistent story. That is that, in the main, it describes a typical SPD as containing particles that rotate to align in an electric field to allow light to pass through, while associating particles that migrate with EPD technology.

"EPDs" are not specifically mentioned anywhere in the '491 patent. Instead, the '491 patent explains that as to the "present invention[,]" the particles found in the light valve suspension "exhibit random Brownian movement in the absence of an electric field applied" to the suspension and "become aligned in the presence of an electric field applied to the" suspension. ('491 patent, col. 2:14-22; *cf. id.*, col. 1:20-39 (discussing conventional prior art light valves and how they utilize such particles in a similar manner); *id.*, col. 11:51-62) In other words, the light valves that the patent is referring to have characteristics that, as described in the extrinsic evidence, are typically associated with SPD light valves (and not EPD light valves).

Lastly, the Court notes that it does not find RFI's main argument in support of this portion of its construction to be persuasive. RFI focuses on the fact that the PTAB's construction of "light[-]modulating unit" tracked its proposal: "'a unit which modulates light using a suspension of particles, *including but not limited to, SPDs and EPDs*.'" (D.I. 114, ex. G at 7-8 (emphasis added); *see also* D.I. 113 at 7; D.I. 126 at 6) But after reading the PTAB's decision, it appears that on the question of whether it was appropriate to adopt the phrase "including but not limited to, SPDs and EPDs" in a final construction, the decision was not driven by any intrinsic evidence. Instead, in the one portion of the decision where this issue (the inclusion of "EPDs") is referenced, the PTAB said:

> Furthermore Petitioner [E Ink] contends the definition must encompass both electrophoretic displays ("EPDs") and SPDs, due to the Patent Owner's [RFI's] infringement allegations, although EPDs are not SPD light valves.

(D.I. 114, ex. G. at 7) In other words, the decision reads as if the sole reason why the adopted construction contained the phrase "including but not limited to, SPDs and EPDs" is because RFI

was arguing that E Ink's products (which, it is not disputed, can be described as "EPDs") infringe the '185 patent. Here, however, the Court cannot base its claim construction decision on the bare fact that RFI is making an allegation of infringement. Instead, it has looked to the patentee's statements during prosecution, and those statements settle this dispute.

(3) The Court's construction of the term

For the foregoing reasons, the Court recommends construction of the term "light[-] modulating unit" as "a unit which controls light transmission using a suspension of particles."[14]

b. "light valve"

With regard to the term "light valve," RFI asks that it be construed as "a cell formed of two walls that are spaced apart by a small distance, at least one wall being transparent, the walls having electrodes thereon usually in the form of transparent coatings[.]" (D.I. 113 at 4) As was previously noted, E Ink argues that separate construction of the term "light valve" is unnecessary and redundant. But if the term is to be separately construed, E Ink proposes that it means "a device that opens and closes like a valve to control light transmission through the device." (D.I. 107 at 11 n.10)

In the briefing, the parties' real dispute with this term seemed to be whether a light valve, as E Ink asserts, "opens and closes like a valve." Yet during the *Markman* hearing, E Ink

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[14] The Court finds the inclusion of the phrase "using a suspension of particles[,]" which was proposed by RFI, (D.I. 113 at 7), to be apt (if a little redundant) in light of the content of the patents-in-suit. Claim 1 of the '491 patent describes the "light-modulating unit of a light valve" as comprising a "cross-linked polymer matrix having droplets of a liquid light valve suspension[,]" which suspension in turn comprises "organic *particles suspended* in a liquid suspended medium." ('491 patent, col. 38:39-44 (emphasis added); *see also id.*, cols. 39:9-10, 39:39-40, 40:32-34) The patent specification also explains that the present invention provides a film comprising a "light valve suspension," (*id.*, col. 2:14-16), and that this suspension comprises "particles suspended in a liquid suspending medium[,]" (*id.*, col. 2:17-18).

conceded that this part of its proposal is "not critical." (Tr. at 43) According to E Ink, so long as it is clear that the "light-modulating unit of a light valve" controls the transmission of light, the "opens and closes like a valve" language might not even be needed. (*Id.*) Because the Court has in fact construed the term "light[-]modulating unit" to require that such a unit controls the transmission of light, and because the phrase "functioned as a light valve by opening and closing" appears only once in the '491 patent in relation to what a "light valve" does, ('491 patent, col. 14:28-29), the Court declines to include E Ink's proposed language in any construction.

As to what *is* an appropriate construction for "light valve," the Court finds multiple data points confirming the appropriateness of RFI's proposal. That proposal is taken in part from the '491 patent specification's description of a "conventional prior art light valve": as "a cell formed of two walls that are spaced apart by a small distance, at least one wall being transparent, the walls having electrodes thereon usually in the form of transparent conductive coatings." ('491 patent, col. 1:24-29) It also draws support from the fact that the '185 patent and the '956 patent explicitly define the term "light valve" in a nearly identical manner. ('185 patent, col. 1:18-22; '956 patent, col. 1:16-20) And lastly, in the "Summary of the Invention" section of the '491 patent, the specification confirms that "the present invention provides a light valve that comprises "a cell having spaced apart cell walls and a film between the cell walls[.]" ('491 patent, col. 2:41-43)[15] All of this evidence gibes with the content of RFI's proposed

[15] The Court notes that E Ink proposed, in its petition for IPR of the '185 patent, that "light valve" be construed in a very similar fashion to what RFI has proposed here: as "'a cell, containing a light modulating unit, formed of two walls that are spaced apart, at least one wall being transparent, the walls having electrodes thereon.'" (D.I. 114, ex. F at 24-25) The PTAB adopted a construction for the term that was very close to E Ink's proposal—one nearly identical to RFI's proposal here. (*Id.*, ex. G at 8 (construing "light valve" to mean "'a cell formed of two walls that are spaced apart by a small distance, at least one wall being transparent, the walls having electrodes thereon usually in the form of transparent conductive coatings'" and noting

construction.

For all of these reasons, the Court recommends that the term "light valve" be construed as "a cell formed of two walls that are spaced apart by a small distance, at least one wall being transparent, the walls having electrodes thereon usually in the form of transparent conductive coatings."

2. "liquid light valve suspension"

The next term, "liquid light valve suspension," also appears in claim 1, as well as in additional claims in the '491 patent. E Ink argues that the term should be construed as "a liquid suspension of particles that operates like a valve, opening through rotational particle alignment and closing through Brownian movement." (D.I. 107 at 11) RFI contends that the term should be construed as "a liquid suspending medium in which a plurality of small particles are dispersed." (D.I. 113 at 13) The parties' primary dispute is whether the term is limited to "opening through rotational particle alignment and closing through Brownian movement."[16]

RFI focuses most prominently on one portion of the "Summary of the Invention" section of the patent, which states: "[t]he term 'liquid light valve suspension' as used herein means a 'liquid suspending medium' in which a plurality of small particles are dispersed." ('491 patent, col. 2:53-55) And indeed, there are other portions of the intrinsic record that utilize similar language. These include claim 1's explanation of what comprises a "liquid light valve suspension," (*id.*, col. 38:43-44 ("said liquid light valve suspension comprising organic particles

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that this language was taken from the '185 patent's definition of the term))

[16] The parties also dispute E Ink's inclusion of "that operates like a valve" in its construction. For the same reasons discussed with respect to the term "light valve," the Court finds insufficient support for including that language, and will not do so.

suspended in a liquid suspending medium")), and language found in other portions of the specification, (*id.*, cols. 1:28:30, 2:45-46). If this were all that was in the intrinsic record, the Court would agree with RFI that a construction of "liquid light valve suspension" should be no more limited than what RFI proposes.

But, crucially, this is *not* all that is in the intrinsic record. As E Ink points out, (D.I. 107 at 12), an earlier portion of the "Summary of the Invention" section provides:

> The *present invention* now provides a film suitable for use in a light valve, comprising a cross-linked polymer matrix having droplets of a light valve suspension distributed in the matrix, *the light valve suspension comprising particles suspended in a liquid suspending medium*. The *particles exhibit random Brownian movement* in the absence of an electric field applied to the light valve suspension and *become aligned* in the presence of an electric field applied to the light valve suspension.

('491 patent, col. 2:14-22 (emphasis added)) This explanation aligns with a portion of the "Background" section of the patent, which, in discussing what a conventional light valve is, states:

> The cell contains a *"light valve suspension"* namely small particles suspended in a liquid suspending medium. In the absence of an applied electrical field, *the particles in the liquid suspension exhibit random Brownian movement*, and hence a beam of light passing into the cell is reflected, transmitted or absorbed, depending upon the nature and concentration of the particles and the energy content of the light. When an electric field is applied through the *light valve suspension* in the light valve, the particles *become aligned* and for many suspensions most of the light can pass through the cell.

(*Id.*, col. 1:29-38 (emphasis added)) In addition, as previously noted, nearly every listed embodiment in the patent that speaks to the issue uses language that connotes a suspension of particles that exhibit random Brownian movement when closed, and that open through particle

rotation. And no listed embodiments disclose any other type of particle behavior.

Considering all this together, the Court determines that the above-referenced portions of the intrinsic record are not in conflict with each other. Instead, the evidence highlighted by E Ink simply serves to help define the meaning of the "liquid light valve suspension" term "in more detail[.]" (D.I. 107 at 14) That is: (1) although RFI is right that the specification states that the *form* of a "liquid light valve suspension" implicates a liquid suspending medium in which a plurality of small particles are dispersed; (2) E Ink is also right that the patent further explains that the *function* of the liquid light valve suspension (and the light-modulating unit of a light valve that contains that suspension), is to open through particle alignment and close through Brownian movement. *Cf. Trading Techs. Int'l v. eSpeed, Inc.*, 595 F.3d 1340, 1353 (Fed. Cir. 2010) (noting that although the patentee provided an express definition of the term "static" in the patent, the district court did not err in making two additional alterations to that definition, as the claims, specification and prosecution history all supported those changes). These two sources of meaning for the term should be considered together, as E Ink suggests.[17]

The patentee's statements during prosecution provide further confirmatory support for the Court's conclusion. As noted above, in attempting to overcome a rejection over LCD prior art, the patentee insisted that the current invention "clear[ly] and unequivocal[ly]" claimed:

> SPDs that are based on the use of <u>particles suspended in a liquid</u> to

[17] In making the contrary argument, RFI also points to a portion of the specification stating that "the liquid light valve suspension distributed in the film of the present invention may be any liquid light valve suspension known in the art[.]" ('491 patent, col. 2:50-52) Yet this language from the patent simply suggests that there should be a broad conception as to what *form* the "liquid light valve suspension" (that is part of a "light-modulating unit of a light valve") referenced in claim 1 need take. But as to its *function*, the patent is clear that this is limited to opening through rotational particle alignment and closing through Brownian movement.

> modulate light. To keep the particles in suspension, a polymeric stabilizer is dissolved in the liquid. *In the OFF state, the suspended particles are in Brownian motion and absorb or reflect light passing through the suspension. When an electric field is applied to the suspension the SPD is ON, and the particles become aligned and hence transmit more light than in the OFF state.*

(D.I. 104-5 at JA 0140 (underlining in original, additional emphasis added)) Thereafter, the patentee continued:

> Liquid crystals do <u>not</u> comprise suspensions of particles suspended in liquid. Since liquid crystals *do not rely on Brownian movement of suspended particles to modulate light, liquid crystals are not SPD's.*

(*Id.* at JA 0141 (underlining in original, additional emphasis added)) In doing so, RFI clearly stated that the scope of the invention includes only devices that function based on Brownian movement and particle alignment.[18]

In light of this consistent and compelling evidence, the Court recommends that the term

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[18] It is also worth noting that '491 patent's inventor, Joseph A. Check, concurrently filed another patent application, which later issued as United States Patent No. 5,463,492 (the "'492 patent"). The '492 patent's specification explains that the application for the '491 patent describes:

> [A] film suitable for use in a light valve, comprising a cross-linked polymer matrix having droplets of a *light valve suspension* distributed in the cross-linked polymer matrix, the light valve suspension comprising particles suspended in a liquid suspending medium. *The particles exhibit random Brownian movement in the absence of an electric field applied to the light valve suspension and become aligned in the presence of an electric field applied to the light valve suspension.*

('492 patent, col. 1:43-52 (emphasis added)) Thus, this additional piece of extrinsic evidence—regarding the patentee's own, contemporaneous explanation of the technology claimed in the '491 patent—also describes the suspension particles exhibiting random Brownian movement and becoming aligned in the presence of an electric field. It further confirms the appropriateness of the Court's recommended construction.

"liquid light valve suspension" be construed as "a liquid suspension of particles opening through particle alignment and closing through Brownian movement."

3. "light modulating unit" or "light modulating unit comprising a suspension"

The parties' next disputed term appears in claim 1 of the '185 patent. E Ink contends that the term "light modulating unit comprising a suspension" should be construed as "a unit comprising a suspension that operates like a valve to control light transmission through the unit, opening through rotational particle alignment and closing through Brownian movement." (D.I. 107 at 17) RFI, however, argues that the Court should construe only the term "light modulating unit" and that it do so as follows: "a unit which modulates light using a suspension of particles, including but not limited to SPDs and EPDs." (D.I. 113 at 17)

The term, which presents issues similar to those previously addressed as to terms in the '491 patent, is found in claim 1 as follows:

> **1.** An electro-optical device comprising a cell formed of opposed cell walls, *a light modulating unit comprising a suspension* containing anisometrically shaped particles comprising a heat-reflective mixed metal oxide suspended in a liquid suspending medium between said cell walls, and opposed electrodes operatively associated with the cell walls for applying an electrical field across the suspension, wherein said particles have an average length in a range between about 1 micron and about 50 nanometers.

('185 patent, cols. 6:62-7:3 (emphasis added)) The parties' two main disputes here are about: (1) which term to construe; and (2) whether to limit the construction of that term to devices that control light transmission through particle alignment and Brownian movement.

With respect to the first issue, the Court concludes the that the term "light modulating unit comprising a suspension" is the term that should be construed. It does so in significant part

because here, as will be made clearer below, one of the parties' key disputes is what the "comprising a suspension" portion of this term requires. (D.I. 107 at 17 (E Ink noting that "the parties' real dispute concerns[, *inter alia*,] what the construction should stay about such a suspension . . .""))

As to the second issue, the patent's specification is particularly helpful. The "Field of the Invention" section begins by explaining that the "present invention" is directed generally "to particles capable of reflecting heat . . . for use in SPD light valves and SPD light valve suspensions and films[.]" ('185 patent, col. 1:9-12; *see also id.*, col. 1:40-42 (noting that "[l]ight valves of the type described herein are also known as . . . 'SPDs'")) From there, the "Background of the Invention" section explains that the cell of a light valve "contains a light-modulating element" (i.e., a reference to the "light modulating unit" in claim 1). (*Id.*, col. 1:18-23) Importantly, the patent then states that this "light-modulating element" may take two forms: it may "be either a liquid suspension of particles or a plastic film in which droplets of a liquid suspension of particles are distributed." (*Id.*, col. 1:23-25) The "liquid suspension" that is present in either of these two types of light-modulating elements is noted to be "sometimes herein referred to as 'a liquid light valve suspension' or simply a 'light valve suspension[.]'" (*Id.*, col. 1:26-28) The specification then goes on to describe how the particles in this liquid suspension function. As did the '491 patent, the '185 patent explains that the particles, in "the absence of an applied electrical field, . . . *assume random positions due to Brownian movement*," resulting in light being reflected, transmitted or absorbed. (*Id.*, col. 1:26-35 (emphasis added)) When an electric field is applied, however, those "*particles become aligned*[,]" and "for *many suspensions most of the light can pass through the cell.*" (*Id.*, col. 1:36-40 (emphasis added))

These portions of the specification demonstrate that a "light modulating unit comprising a suspension," as E Ink argues, (1) controls light transmission and (2) does so using a suspension of particles that operate through particle alignment and Brownian movement. This conclusion is also supported by the patent's description of the "present invention" as relating to particles used in "SPD light valves" and "SPD light valve suspensions," in that (as previously discussed above with regard to the '491 patent), SPDs are devices that control light transmission via Brownian movement and particle alignment. And lastly, it is underscored by the fact that various embodiments of the invention are described as utilizing particles that function in just this way (i.e., particles that are a part of the above-described "liquid suspension" or "liquid light valve suspension" or "light valve suspension"). (*See id.*, col. 4:1-7, 21-25, 47-51)

Perhaps RFI's best argument to the contrary—that the "light modulating unit comprising a suspension" does not contain these limitations—is a claim differentiation-type argument unique to the '185 patent. Relevant here are the contents of claims 2 and 3 of the patent, which state:

> **2.** The device according to claim **1**, wherein said electro-optical device is a light valve and said suspension is a light valve suspension.
>
> **3.** The device according to claim **1**, wherein said electro-optical device is a light-valve and wherein said particles are suspended in droplets of a liquid suspension distributed throughout a polymeric film.

(*Id.*, col. 7:4-10) RFI's multi-step argument, which is primarily focused on claim 2, goes as follows: (1) claim 2 states that the "suspension" referenced therein is a "light valve suspension"; (2) even assuming that this "light valve suspension" referenced in claim 2 operates only through Brownian movement and particle alignment, claim 1 uses the broader term "suspension" in the

phrase "light modulating unit comprising a suspension"; (3) thus, claim 1's reference to a "suspension" should not be limited solely to "those that operate[] through Brownian movement and . . . particle alignment[.]" (D.I. 126 at 11-12)

The Court disagrees. As was noted above, the specification explains that the "light modulating element" of the invention (i.e., claim 1's "light modulating unit") may either be "a liquid suspension of particles *or* a plastic film in which droplets of a liquid suspension of particles are distributed." ('185 patent, col. 1:23-25 (emphasis added)) Thus, when claim 1 references an electro-optical device that, *inter alia*, contains a light modulating unit comprising a "suspension[,]" the broader term "suspension" is clearly meant to cover both of these two possible options: a "liquid suspension of particles" (what E Ink refers to as the "'pool' embodiment") or "a plastic film in which droplets of a liquid suspension of particles are distributed" (what E Ink refers to as the "'film' embodiment"). (D.I. 123 at 9) This is also demonstrated by the content of claim 2 (which, in referencing "a light valve [wherein] said suspension is a light valve suspension[,]" is referencing the pool embodiment) and claim 3 (which, in referencing "a light valve . . . wherein said particles are suspended in droplets of a liquid suspension distributed throughout a polymeric film[,]" is referencing the film embodiment). ('185 patent, col. 7:4-10) And it is further made clear elsewhere in the specification, which makes particular note of the different "pool" and "film" embodiments, foreshadowing their separate appearance in claims 2 and 3:

> In one embodiment . . . the electro-optical device as described above is a light valve, and the suspension is a light valve suspension. Alternatively, in a preferred embodiment, instead of a purely liquid suspension, the anisometric particles of the invention may be suspended in droplets of liquid suspension distributed throughout a

polymeric film.

(*Id.*, col. 4:1-7)

Ultimately, the fact that claims 2 and 3 call out these different embodiments of the "suspension" referenced in claim 1 is of no moment as to the claim construction dispute here. That is because, as noted previously, both "pool" and "film" embodiments utilize particles that function the same way—they control the transmission of light through particle alignment and Brownian movement. (*Id.*, col. 1:26-42) And so this is true as to the "suspension" referenced in claim 1, which includes both of these embodiments.

For these reasons, the Court recommends that the term "light modulating unit comprising a suspension" be construed as "a unit which controls light transmission using a suspension of particles opening through particle alignment and closing through Brownian movement."[19]

4. "light valve" / "light valve suspension"

The '185 patent next presents disputed terms that are similar to previous disputed terms found in the '491 patent: "light valve" and "light valve suspension." E Ink believes that construction of the terms is unnecessary, but if they are to be construed, it asks that "light valve" be construed as "a device that opens and closes like a valve to control light transmission through the device," and "light valve suspension" as "a suspension of particles that operates like a valve, opening through rotational alignment and closing through Brownian movement." (D.I. 107 at 20) RFI contends that the terms should be construed as "a cell formed of two walls that are spaced apart by a small distance, at least one wall being transparent, the walls having electrodes

[19] The Court has not been provided with a sufficient basis for adding the word "rotational" to its construction. It finds less of a basis for including "that operates like a valve," since the '185 patent (unlike the '491 patent) does not use that phraseology even once in the written description.

thereon usually in the form of transparent conductive coatings" and "suspending medium in which a plurality of small particles are dispersed[,]" respectively. (D.I. 113 at 19)

The disputed issues as to these terms (which are, *inter alia*, found in claims 2 and 3 of the patent) are the same as those debated above as to the same terms used in the '491 patent: whether the "light valve" should be described as one that "opens and closes like a valve" and whether the "light valve suspension" is limited to particle alignment and Brownian movement. The Court recommends constructions for these terms that are identical to those it recommended for their counterparts in the '491 patent.

With respect to "light valve," the '185 provides an explicit definition of the term, identical to the recommended construction of the same term for the '491 patent: "As used herein, the term 'light valve' is defined as a cell formed of two walls that are spaced apart by a small distance, at least one wall being transparent, the walls having electrodes thereon usually in the form of transparent conductive coatings." ('185 patent, col. 1:18-22) E Ink offers no new, persuasive reason as to why RFI's proffered construction is incorrect, (D.I. 103 at 20), and the Court is aware of none.

As for "light valve suspension," the Court recommends that it be construed in the same manner as was "liquid light valve suspension" in the '491 patent. The '185 patent specification explicitly states:

> *The liquid suspension (sometimes referred to as "a liquid light valve suspension" or simply a "light valve suspension") comprises small particles* suspended in a liquid suspending medium. *In the absence of an applied electrical field, the particles in the liquid suspension assume random positions due to Brownian movement*, and hence a beam of light passing into the cell is reflected, transmitted or absorbed, depending upon the cell

> structure, the nature and concentration of the particles and the energy content of the light. The light valve is thus relatively dark in the OFF state. *However, when an electric field is applied through the liquid light valve suspension in the light valve, the particles become aligned* and for many suspensions most of the light can pass through the cell. The light valve is thus relatively transparent in the ON state.

('185 patent, col. 1:27-40 (emphasis added)) In light of this clear statement as to the requisite form and function of a "light valve suspension," the Court determines that the bulk of E Ink's proffered construction (other than its inclusion of the phrase "operates like a valve") is appropriate.

Therefore, the Court recommends that the term "light valve" be construed as "a cell formed of two walls that are spaced apart by a small distance, at least one wall being transparent, the walls having electrodes thereon usually in the form of transparent conductive coatings," and that the term "light valve suspension" be construed as "a liquid suspension of particles opening through particle alignment and closing through Brownian movement."

5. "SPD film"

The parties next dispute the meaning of "SPD film," a term appearing in the '956 patent. E Ink contends that the term should be construed as "a film comprising a suspension of particles that operates like a valve to control light transmission through the film, opening through rotational particle alignment and closing through Brownian movement." (D.I. 107 at 23) RFI argues that the Court should construe the term as "a film comprising a suspension of particles whose positions may be changed upon the application of an electric field to control light." (D.I. 113 at 24) As with previous disputed terms, the key issue here is whether the SPD film's particles may change position through means other than through particle alignment and Brownian

movement. In light of the content of the '956 patent, as well as the content of other intrinsic evidence, the Court agrees with E Ink's position.

The term "SPD film" appears in numerous claims of the '956 patent, including claim 1, but the claims themselves provide no definition or further description of the term. (*See, e.g.*, '956 patent, col. 5:54-64 ("In a method for adhering an SPD film to a substrate of a light valve . . . .")) The specification, however, provides great insight into what an "SPD film" is. In the "Background" section, the patentee describes light valves, which it equates to SPDs. ('956 patent, col. 1:40-42 ("Light valves of the type described herein are also known as . . . 'SPDs.'")) Similar to the '185 patent, the '956 patent states that an SPD contains, *inter alia*, a "light-modulating element[,]" which may take the form of a "a plastic film in which droplets of a liquid suspension of particles are distributed." (*Id.*, col. 1:20-25; *see also id.*, col. 2:4-6 (describing a "'light valve film'" as a "film having droplets of a liquid suspension of particles distributed in the film or in part of the film")) The specification then further describes the "liquid suspension" contained in such films as being comprised of small particles, which "assume random positions due to Brownian movement[]" in the absence of an applied electrical field, but "become aligned" when an electric field is applied to the suspension. (*Id.*, col. 1:26-40) Such movement results in light being reflected, transmitted, or absorbed in the absence of an electric field, or alternatively, light passing through the cell when an electric field is applied. (*Id.*) These clear, explicit statements, taken together, explain that an "SPD film" contains a suspension of particles that change position through alignment and Brownian movement, in order to control the transmission of light.

Patents included in the intrinsic record support this description. The Federal Circuit has

explained that "'prior art cited in a patent or cited in the prosecution history of the patent constitutes intrinsic evidence'" that may be considered during claim construction. *V–Formation, Inc. v. Benetton Grp. SpA*, 401 F.3d 1307, 1311 (Fed. Cir. 2005) (citing cases); *cf. Arthur A. Collins, Inc. v. N. Telecom Ltd.*, 216 F.3d 1042, 1045 (Fed. Cir. 2000) ("When prior art that sheds light on the meaning of a term is cited by the patentee, it can have particular value as a guide to the proper construction of the term, because it may indicate not only the meaning of the term to persons skilled in the art, but also that the patentee intended to adopt that meaning."). In discussing SPD films and liquid suspending media, the '956 patent incorporates, *inter alia*, two of RFI's patents—the '491 patent-in-suit and United States Patent No. 5,463,492 (the "'492 patent"). ('956 patent, col. 2:9, 39) These patents similarly describe films suitable for use in SPD light valves, and explain how those films contain particles that change position through Brownian movement and alignment. ('491 patent, col. 2:14-22; '492 patent, cols. 1:43-52, 13:1-16)

In light of this evidence, the Court construes the term "SPD film" as "a film comprising a suspension of particles to control light transmission through the film, opening through particle alignment and closing through Brownian movement."

6. "in direct contact with the cross-linked [polymer] matrix"

The next term, "in direct contact with the cross-linked [polymer] matrix," is found in claim 1 of the '491 patent. That claim describes a film "comprising a cross-linked polymer matrix having droplets of a liquid light valve suspension distributed in and *in direct contact with the cross-linked poller [sic] matrix*[.]"[20] ('491 patent, col. 38:39-42 (emphasis added)) E Ink

[20] All parties agree that the word "poller" in the claim is a typographical error; the word is meant to be "polymer."

asserts that "in direct contact with the cross-linked [polymer] matrix" should be construed as "touching the cross-linked polymer matrix without an intervening microcapsule wall[.]" (D.I. 107 at 15) RFI contends that the term should be given its plain and ordinary meaning, or alternatively, be construed as "touching the cross-linked polymer matrix[.]" (D.I. 113 at 15)

There is no dispute here that the phrase "in direct contact" in the term at issue means "touching." (D.I. 113 at 15-16) Rather, the dispute relates to whether the droplets of the liquid light valve suspension at issue can be "in direct contact" with the cross-linked polymer matrix if there is an intervening microcapsule wall between the droplets and the polymer matrix. (Tr. at 78, 86-87)

E Ink puts forth two arguments as to why the term should be construed to exclude "an intervening microcapsule wall": (1) the '491 patent does not describe a process for making films that uses polymer microcapsule walls to contain the light valve suspension; and (2) during prosecution of the '491 patent, the patentee disavowed "a film in which a capsule wall intervenes between the droplets [of the liquid light valve suspension] and the polymeric matrix." (D.I. 107 at 15-16; *see also* D.I. 123 at 7-8) The Court addresses the strength of these two arguments in turn.

As to the first argument, the Court finds numerous references in the specification to "capsules" and to similar concepts. The '491 patent explicitly discusses the presence of capsules when describing the manufacturing of the films. As to Examples 9-11, the specification describes the film before and after it is "swollen with the liquid," stating that after swelling, "the film contains a liquid light valve suspension of *individual particles in capsules distributed within*

the matrix polymer." ('491 patent, col. 15:45-52 (emphasis added)) Because "the particles are thus individually encapsulated," a protective polymer is not required to prevent agglomeration and/or settling of the particles. (*Id.*) Examples 12 and 13 also disclose "encapsulated" particles or droplets, (*id.*, cols. 15:55-16:30), while example 14 provides measurements of a capsule, (*id.*, col. 16:44-46). The specification subsequently discusses liquid polymeric stabilizers, stating that a light valve suspension consisting only of a lower viscosity liquid polymeric stabilizer and particles can "be encapsulated in a[] matrix polymer[.]" (*Id.*, col. 19:65-66) And in describing film manufacturing using a specific type of emulsifier, the specification states that an emulsion can be "cast as a film and allowed to cure, thus yielding a film containing encapsulated droplets of the liquid light valve suspension." (*Id.*, col. 20:32-34)

E Ink argues briefly that the patent's reference to capsules are not meant to allow for or to indicate the "presence of microcapsules" of the kind at issue here. (D.I. 107 at 15 n.14) But that is not clear to the Court after reviewing the portions of the specification referenced above, and E Ink did not further articulate its argument in this regard.

As to E Ink's argument regarding the prosecution history, the Court ultimately cannot agree that the patentee's statements during prosecution should have the effect suggested by E Ink. During prosecution, as to what became claim 1 of the '491 patent, the patentee stated:

> Note that claim 1 defines a film in which the droplets are in direct contact with the polymeric matrix. *In the film of claim 1, there is no "capsule wall" between the droplets and the polymeric matrix.* In contrast, the Japanese patent [the "Toyota" reference] says it embeds microcapsules of the liquid light valve suspension in the film, and *hence the polymer matrix of the film does not directly contact the liquid light valve suspension.*

(D.I. 104-5 at JA 0147 (emphasis added)) The applicant also reproduced figures from the Toyota

reference, explaining that "the liquid light valve suspension 7 is covered by the wall 8 and is not in direct contact with the polymer matrix 6." (*Id.* at JA 0160 (emphasis in original))

E Ink asserts that these statements "surrendered coverage of a film in which a capsule wall intervenes between the droplets and the polymeric matrix." (D.I. 107 at 16; *see also* D.I. 123 at 7-8)

In response, RFI explains that, in this case, it plans to argue that E Ink's accused products have microcapsule walls *that are themselves formed of a cross-linked polymer matrix*. (D.I. 113 at 16; D.I. 126 at 10) And so, it intends to assert that E Ink's products contain "droplets of a liquid light valve suspension" that are "in direct contact with" (or touch) the requisite "cross-linked [polymer] matrix"—because the suspension in E Ink's microcapsules are in direct contact with the *walls of the microcapsules* (which themselves are a part of or make up the requisite cross-linked polymeric matrix). (*Id.*) This line of argument has relevance to E Ink's prosecution history disclaimer argument, in that RFI asserts that the Toyota reference described droplets of a suspension that were surrounded by an intervening microcapsule wall that was *not formed* from a cross-linked polymeric matrix. (*Id.*) And so, in RFI's view, when the patentee was highlighting to the PTO the lack of a "'capsule wall' *between* the droplets and the polymeric matrix" in claim 1, what the patentee was really doing was emphasizing only that the cross-linked polymer matrix that *did* exist in Toyota (i.e., the matrix resin) was not *in direct contact* with the liquid light valve suspension mentioned in that reference. (*Cf.* D.I. 104-5 at JA 0158 (describing Toyota's resin as the "cross-linked polymer matrix resin")) What the patentee was not doing, according to RFI, was disclaiming the possibility that the cross-linked polymer matrix in claim 1 "cannot be a microcapsule." (D.I. 113 at 16; Tr. at 88 (RFI's counsel asserting that the true nature of the issue

the patentee was addressing as to the Toyota reference related to the use of the words "'in direct contact'" and that the patentee "didn't say anywhere that the capsule walls can't be a cross-linked polymer matrix"))

The Court acknowledges the initial force of E Ink's argument regarding the statements in the prosecution history. But the quoted statements above must be read in the entire context of the patentee's remarks regarding the Toyota reference. *Storage Tech.*, 329 F.3d at 833. So read, it is not clear to the Court that the applicant's statements amount to the clear disavowal of claim scope that E Ink suggests. At a minimum, it does not appear that in distinguishing Toyota, the patentee had to deal with a set of circumstances like those fueling the infringement dispute between the parties here. That is, it was not faced with a reference in which the capsule wall was itself formed of a cross-linked polymer matrix—and so it did not need to distinguish claim 1 from such a reference.

It may be that the parties' dispute here is really more of an infringement dispute, as RFI suggests. (Tr. at 89); *see also W.L. Gore & Assoc. Inc. v. C.R. Bard, Inc.*, Civil Action No. 11-515-LPS-CJB, 2015 U.S. Dist. LEXIS 75076, at *25-26 (D. Del. Apr. 21, 2015); *Novartis Pharm. Corp. v. Actavis, Inc.*, Civil Action No. 12-366-RGA-CJB, 2013 WL 6142747, at *8 n.10 (D. Del. Nov. 21, 2013). Or it may be that it is truly a claim construction dispute about what "a cross-linked polymer matrix" in claim 1 can (and cannot) amount to. (Tr. at 87 (RFI's counsel confirming that "Your honor has it right that we are accusing the microcapsules themselves as the cross-linked polymer matrix."); *id.* at 99-100 (RFI's counsel suggesting that the term "'cross-linked polymer matrix' hasn't been proposed for construction")) But even if it is the latter, then that claim construction dispute is not well teed up here, and would need to be addressed in a

more fulsome fashion later in this case. That is because there is little discussion in the briefs as to why, based on the intrinsic or extrinsic record, a capsule wall can or cannot *be* the requisite cross-linked polymer matrix.[21]

For now, the Court cannot find that, as to the term "in direct contact with the cross-linked [polymer] matrix[,]" the limitations proposed by E Ink are warranted by the record. *See N. Telecom Ltd. v. Samsung Elecs. Co., Ltd.*, 215 F.3d 1281, 1293-95 (Fed. Cir. 2000) (declining to find a prosecution history disclaimer where the statements made during prosecution were amenable to multiple reasonable interpretations); *see also Storage Tech.*, 329 F.3d at 833. For these reasons, the Court recommends that the term be given its plain and ordinary meaning. (Tr. at 88 (RFI's counsel noting that "we're not asking for anything other than the plain and ordinary meaning of [']in direct contact with the [cross-linked] polymer matrix,['] [which is] touching a [cross-linked] polymer matrix"))

7. "heat-reflective"

The next term, "heat-reflective," appears in multiple claims in the '185 patent. E Ink contends that the term is indefinite under 35 U.S.C. § 112. (D.I. 107 at 20) RFI asserts that the term is not indefinite, and proposes that the Court give the term its plain and ordinary meaning, or alternatively, construe it to mean "capable of reflecting heat[.]" (D.I. 113 at 20)

Section 112 requires that patent claim "particularly point[] out and distinctly claim[] the subject matter which the inventor . . . regards as the invention." 35 U.S.C. § 112(b). If it does not, the claim is indefinite and therefore invalid. *Nautilus, Inc. v. Biosig Instruments, Inc.*, 134 S.

[21] In its briefing, the most E Ink offers as to what the patent itself says on that score is the following: "RFI now argues that a device with 'capsule walls' should not be excluded from the scope of claim 1 because a 'capsule wall' can be a polymeric matrix. Yet the '491 patent never says that . . . ." (D.I. 123 at 8)

Ct. 2120, 2125 (2014). In *Nautilus*, the Supreme Court of the United States set out the test to be applied in the indefiniteness inquiry: "a patent is invalid for indefiniteness if its claims, read in light of the specification delineating the patent, and the prosecution history, fail to inform, with reasonable certainty, those skilled in the art about the scope of the invention." *Nautilus*, 134 S. Ct. at 2124.

The primary purpose of the definiteness requirement is to ensure that patent claims are written in such a way that they give notice to the public of what is claimed, thus enabling interested members of the public (e.g., competitors of the patent owner) to determine whether they infringe. *All Dental Prodx, LLC v. Advantage Dental Prods., Inc.*, 309 F.3d 774, 779-80 (Fed. Cir. 2002). Put another way, "[a] patent holder should know what he owns, and the public should know what he does not." *Festo Corp. v. Shoketsu Kinzoku Kogyo Kabushiki Co., Ltd.*, 535 U.S. 722, 731 (2002). Indefiniteness is to be evaluated from the perspective of someone skilled in the relevant art at the time the patent was filed. *Nautilus*, 134 S. Ct. at 2128 (citing cases).

Like claim construction, indefiniteness is a question of law for the court. *H-W Tech., L.C. v. Overstock.com, Inc.*, 758 F.3d 1329, 1332 (Fed. Cir. 2014); *Pi-Net Int'l Inc. v. JPMorgan Chase & Co.*, 42 F. Supp. 3d 579 , 585 (D. Del. 2014). The Federal Circuit has stated that "[a]ny fact critical to a holding on indefiniteness . . . must be proven by the challenger by clear and convincing evidence." *Intel Corp. v. VIA Techs., Inc.*, 319 F.3d 1357, 1366 (Fed. Cir. 2003); *see also Tech. Licensing Corp. v. Videotek, Inc.*, 545 F.3d 1316, 1338 (Fed. Cir. 2008).[22]

[22] In *Nautilus*, the Supreme Court left open the question of whether factual findings subsidiary to the ultimate issue of indefiniteness should, in fact, trigger the application of a "clear and convincing evidence" standard, noting that it would "leave th[is] question[] for another day." *Nautilus*, 134 S. Ct. at 2130 n.10.

Turning to the term at issue, "heat-reflective" appears in the claims as a term modifying either "mixed metal oxide" or "mixed metal oxide particles[.]" The way the term is used in claim 1 of the '185 patent is representative:

> **1**. An electro-optical device comprising a cell formed of opposed cell walls, a light modulating unit comprising a suspension containing anisometrically shaped particles comprising a *heat-reflective* mixed metal oxide suspended in a liquid suspending medium between said cell walls . . . .

('185 patent, col. 6:62-66 (emphasis added))

As E Ink points out, (D.I. 107 at 21), the specification says a little more about the heat-reflective ability of particles comprising mixed metal oxides: "[particles comprising mixed metal oxides] described herein are advantageous in light valve suspensions because of their great environmental stability and because of their ability to reflect heat (infrared radiation) efficiently, especially near-infrared radiation." (*Id.*, col. 5:10-14) E Ink argues, however, that this statement "introduces ambiguity as to which band (infrared or near-infrared) must be reflected to infringe[.]" (D.I. 107 at 21) In addition, it asserts that the '185 patent does not disclose, with reasonable certainty, how much heat a material must reflect to qualify as "heat-reflective." (*Id.*; D.I. 123 at 11 (noting, for example, that the specification simply states that the particles reflect heat "efficiently")) And it further argues that the '185 patent uses "heat-reflective" in a manner that contradicts key intrinsic evidence, as well as the understanding of those skilled in the relevant art. (D.I. 107 at 22) In support of this last point, E Ink relies heavily on the declaration of Dr. Timothy J. Drabik. (*Id.*; *see also* D.I. 110)

The Court, in its discretion, defers taking up E Ink's indefiniteness challenge at this stage. Were it to decide the question, as noted above, the Court would be required to assess whether a

person skilled in the art would understand the scope of the term with reasonable certainty. *See Nautilus*, 134 S. Ct. at 2124. Yet here, the parties clearly disagree as to what qualifications a person skilled in the relevant art would have, and RFI disputes that Dr. Drabik qualifies as a skilled artisan. (D.I. 126 at 12; Tr. at 102) And there is scant information in the record about what *is* the relevant level of skill in the art. Thus, when E Ink makes indefiniteness arguments and cites to Dr. Drabik's declaration for support, (D.I. 107 at 21-22), the Court is not now well-positioned to decide to what degree it can rely on Dr. Drabik's opinion.[23]

In light of these outstanding issues of fact, among others, the Court believes it better to address an indefiniteness challenge at a later time with a more developed record. *See Alcon Research, Ltd. v. Barr Labs. Inc.*, Civil Action No. 09-CV-0318-LDD, 2011 WL 3901878, at *16 (D. Del. Sept. 6, 2011); *see also CSB-Sys. Int'l Inc. v. SAP Am., Inc.*, Civil Action No. 10-2156, 2011 WL 3240838, at *20 n.16 (E.D. Pa. July 28, 2011). In the meantime, the Court determines that the term "heat-reflective" is amenable to construction, and recommends (based on the intrinsic evidence cited above) that it be construed to mean "capable of reflecting heat (infrared radiation)." The Court makes this recommendation without prejudice to E Ink's ability to raise

[23] There are other reasons to believe that a more full factual record on this question of indefiniteness would be helpful. For example, among other issues, the impact of E Ink's argument that the '185 patent contradicts the intrinsic evidence is a bit unclear. The '185 patent states that copper chromium oxides are a type of particle capable of reflecting infrared radiation, and as a result, useful in the disclosed invention. ('185 patent, col. 4:11-14 & claim 4) Citing Dr. Drabik's declaration, however, E Ink asserts that this oxide "is known as one of the least infrared-reflective materials on earth." (D.I. 107 at 22) E Ink also cites to United States Patent No. 6,221,147 (the "Sakoske patent"), which is cited in the '185 patent, ('185 patent, col. 4:15-16), and which contains certain results indicating relatively little infrared reflectance by a sample containing copper chromium oxide, (D.I. 107 at 22; Tr. at 92-93). Neither E Ink nor Dr. Drabik, however, address additional samples noted in the Sakoske patent containing copper chromium oxide that exhibit relatively more infrared reflectance. (*See* Sakoske patent, cols. 5:17-19, 6:1-3 & Tables 2-3) It is unclear to the Court how a person skilled in the art would understand these varying results, and whether those results, in fact, contradict statements in the '185 patent.

an indefiniteness challenge at summary judgment—that is, to later argue that the now-construed claims fail to inform, with reasonable certainty, those skilled in the art about the scope of the invention. *See Bristol-Myers Squibb Co. v. Mylan Pharm. Inc.*, Civil Action No. 09-651-LPS, 2012 WL 1753670, at *7 (D. Del. May 16, 2012); *Alcon Research*, 2011 WL 3901878, at *16; *CSB-Sys.*, 2011 WL 3240838, at *18; *Pharmastem Therapeutics, Inc. v. Viacell, Inc.*, No. 02-148 GMS, 2003 WL 124149, at *1 n.1 (D. Del. Jan. 13, 2003).

8. "said particles"

The next disputed term, "said particles," appears in multiple claims in the '185 patent. E Ink suggests that the term be construed as "all of the anisometrically shaped particles in the device[.]" (D.I. 107 at 23) RFI proposes that the Court construe the term as "the group of anisometrically shaped particles[.]" (D.I. 113 at 22)

The parties' dispute appears to relate to the fact that in claims like claim 1, there is a reference to "anisometrically shaped particles" and then later in claim 1 (and in subsequent dependent claims), there are references to "said particles" having certain features (e.g., in claim 1, that "said particles" have an average length within a certain range). The parties disagree as to whether, when independent claims (e.g., claim 1) or subsequent dependent claims refer to "said particles" with certain characteristics, does this mean that *all* of the "anisometrically shaped particles" *in the device* must have these additional characteristics called out by the independent claim (and, if implicated, by the dependent claims as well)? (Tr. at 106-07, 109-10) E Ink argues that they must. (*Id.* at 109) RFI asserts instead that "said particles" need only refer to certain of the anisometrically shaped particles in a device, not all of them; so long as certain particles have the requisite characteristics, it says, that is all that is needed for a device to

infringe. (*Id.* at 110)

The Court agrees with RFI. As was already noted (and again using claim 1 as an example), the particles mentioned in claim 1 are anisometrically shaped particles. ('185 patent, col. 6:64) Here, the disputed term "said particles," as used in claim 1 (or in a claim dependent on claim 1), would be referencing those anisometrically shaped particles previously mentioned in claim 1 by the use of the word "said." *See Cloud Farm Assocs., L.P. v. Volkswagen Grp. of Am., Inc.*, C.A. No. 10-502-LPS, 2012 WL 3069405, at *13 (D. Del. July 27, 2012). Thus, all of "said" anisometrically shaped particles will have the specified features set out after the use of that term in claim 1 and—were a dependent claim implicated—further set out in a dependent claim. *Id.* But there is no clear limitation in claim 1 that the referenced "anisometrically shaped particles" must be the *only* type of anisometrically-shaped particles in the claimed device. Instead, claim 1 simply states that the "suspension" of the light modulating unit is one "*containing* anisometrically shaped particles [that have certain features.]" (*See, e.g.*, '185 patent, col. 6:64 (emphasis added)); *see also Mars, Inc. v. H.J. Heinz Co., L.P.*, 377 F.3d 1369, 1375 (Fed. Cir. 2004) (noting that the term "containing," when used in a patent claim, is typically "open-ended"). The claim language, on its face, would not seem to foreclose the possibility that the device also contains, for example, at least one other type of anisometrically shaped particle (e.g., a particle that does not necessarily bear all of the attributes required in claim 1, or in claim 1 and a further dependent claim). And, importantly, E Ink has pointed to no other intrinsic or extrinsic evidence that shows, despite how the claims read, that the term "said particles" should be construed in the manner it suggests.

For these reasons, the Court recommends that the term "said particles" be construed as

"the group of anisometrically shaped particles."

9. "the walls are formed of a substrate and the film and the substrate are adhered to one another by coating either the film or the substrate or both the film and the substrate with an adhesive, placing the film and the substrate into contact and adhering the film and the substrate"

The next disputed term also appears in the '956 patent, comprising the majority of claim 14. E Ink asserts that the term is indefinite. (D.I. 107 at 24) RFI contends that the meaning is clear and that construction is unnecessary, but it offers a construction to add clarity (which amounts to a similar version of the term):

> The walls are *each* formed of a substrate and the film and *either or both of* the substrate*s* are adhered to one another by coating either the film, or *either or both of* the substrate*s*, or both the film and *either or both of* the substrate*s* with an adhesive, placing the film and *either or both of* the substrate*s* into contact and adhering the film and *either or both of* the substrate*s*

(D.I. 113 at 25 (emphasis added); D.I. 107 at 24) The parties' dispute is focused on whether the term is indefinite under Section 112.

As with the term "heat reflective," the Court believes an indefiniteness challenge should be addressed with the benefit of a more developed record. Here, declining to address E Ink's argument is appropriate, as E Ink provides only attorney argument in support of its position, which is insufficient to establish indefiniteness. *See, e.g., WesternGeco LLC v. ION Geophysical Corp.*, 876 F. Supp. 2d 857, 875 (S.D. Tex. 2012) ("Defendants' unsupported attorney argument fails to prove indefiniteness by clear and convincing evidence."); *Cacace v. Meyer Mktg. Co., Ltd.*, 812 F. Supp. 2d 547, 561 (S.D.N.Y. 2011) (explaining that "mere attorney argument is insufficient to establish invalidity based on indefiniteness").

The Court recommends adoption of RFI's proposed construction. The term (and the

specification) describes walls that are each formed of a substrate and that are adhered to the film by coating (1) only the film with an adhesive; (2) only one or both of the substrate walls with an adhesive; or (3) both the film and one or both of the substrate walls with an adhesive, all so that the film and one or both of the substrate walls are in contact and adhered to one another. ('956 patent, cols. 4:25-58, 6:58-62)

For these reasons, the Court recommends adoption of RFI's proposed construction.

10. "the walls are formed of a substrate and the film and the substrate are adhered to one another by the method of"

E Ink argues that the final disputed term, appearing in claims 8-11 of the '956 patent, suffers from the same ambiguities as the previous "walls" term. (D.I. 107 at 25) RFI proposes that the term be construed as "the walls are each formed of a substrate and the film and one or both of the substrates are adhered to one another by the method of[.]" (D.I. 113 at 25) For the same reasons as applied to previous term, the Court recommends adoption of RFI's proposed construction.

B. Recommended Constructions

1. '491 patent

a. "light[-]modulating unit" means "a unit which controls light transmission using a suspension of particles"

b. "light valve" means "a cell formed of two walls that are spaced apart by a small distance, at least one wall being transparent, the walls having electrodes thereon usually in the form of transparent conductive coatings"

c. "liquid light valve suspension" means "a liquid suspension of particles opening through particle alignment and closing through Brownian movement"

d. "in direct contact with the cross-linked [polymer] matrix" should be afforded its plain and ordinary meaning

2. '185 patent

a. "light modulating unit comprising a suspension" means "a unit which controls light transmission using a suspension of particles opening through particle alignment and closing through Brownian movement"

b. "light valve" means "a cell formed of two walls that are spaced apart by a small distance, at least one wall being transparent, the walls having electrodes thereon usually in the form of transparent conductive coatings"

c. "light valve suspension" means "a liquid suspension of particles opening through particle alignment and closing through Brownian movement"

d. "heat-reflective" means "capable of reflecting heat (infrared radiation)"

e. "said particles" means "the group of anisometrically shaped particles"

3. '956 patent

a. "SPD film" means "a film comprising a suspension of particles to control light transmission through the film, opening through particle alignment and closing through Brownian movement"

b. "the walls are formed of a substrate and the film and the substrate are adhered to one another by coating either the film or the substrate or both the film and the substrate with an adhesive, placing the film and the substrate into contact and adhering the film and the substrate" means "the walls are each formed of a substrate and the film and either or both of the substrates are adhered to one another by coating either the film, or either or both of the substrates, or both the film and either or both of the substrates with an adhesive, placing the film and either or both of the substrates into contact and adhering the film and either or both of the substrates"

c. "the walls are formed of a substrate and the film and the substrate are adhered to one another by the method of" means "the walls are each formed of a substrate and the film and one or both of the substrates are adhered to one another by the method of"

IV. CONCLUSION

The Court recommends the constructions set forth in Section III.B.

This Report and Recommendation is filed pursuant to 28 U.S.C. § 636(b)(1)(B), Fed. R. Civ. P. 72(b)(1), and D. Del. LR 72.1. The parties may serve and file specific written objections

within fourteen (14) days after being served with a copy of this Report and Recommendation. Fed. R. Civ. P. 72(b)(2). The failure of a party to object to legal conclusions may result in the loss of the right to de novo review in the district court. *See Sincavage v. Barnhart*, 171 F. App'x 924, 925 n.1 (3d Cir. 2006); *Henderson v. Carlson*, 812 F.2d 874, 878–79 (3d Cir. 1987).

The parties are directed to the Court's Standing Order for Objections Filed Under Fed. R. Civ. P. 72, dated October 9, 2013, a copy of which is available on the District Court's website, located at http://www.ded.uscourts.gov.

Dated: March 24, 2016

Christopher J. Burke
United States Magistrate Judge