

IN THE UNITED STATES DISTRICT COURT  
FOR THE DISTRICT OF DELAWARE

SEMCON TECH, LLC,

Plaintiff;

v.

MICRON TECHNOLOGY, INC.,

Defendant.

Civil Action No. 12-532-RGA

MEMORANDUM OPINION

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ANDREWS, U.S. DISTRICT JUDGE:

Presently before the Court is Defendant's motion for summary judgment of invalidity. (D.I. 187). It has been fully briefed. (D.I. 190, 212 & 224).<sup>1</sup> For the reasons provided below, Defendant's motion for summary judgment of invalidity is granted. All other motions currently pending are dismissed as moot.

## I. BACKGROUND

Plaintiff now asserts four claims (1, 12, 37, and 56) of U.S. Patent No. 7,156,717 ("the '717 patent"). Defendant asserts that each of the asserted claims is anticipated by U.S. Patent No. 6,010,538 ("Sun"). The four asserted claims (disputed terms italicized) are:

1. A method of finishing a tracked semiconductor wafer having a semiconductor wafer surface and a finishing cycle time, the method comprising the steps of:
  - providing the tracked semiconductor wafer having *tracked information*;
  - providing a finishing surface;
  - providing a finishing aid to an interface formed between the finishing surface and the semiconductor wafer surface;
  - providing a finishing control subsystem having:
    - at least three operative process sensors for sensing *in situ process information* during the finishing cycle time;
    - access to the *tracked information*; and
    - a processor to evaluate the *in situ process information* and the *tracked information*;
  - applying an operative finishing motion in the interface forming at least one region having the finishing aid and wherein the at least one region has a tangential force of friction; and
  - changing a plurality of control parameters in response to an evaluation of both the *in situ process information* sensed with the at least three operative process sensors and the *tracked information* and wherein changing the control parameters changes the tangential force of friction in the at least one region having the finishing aid during at least a portion of the finishing cycle time.

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<sup>1</sup> Plaintiff incorporates by reference the arguments from its opening brief (D.I. 189) in support of its motion for partial summary judgment of non-invalidity for anticipation (D.I. 186). (D.I. 212 at 20 n.8).

12. A method of finishing a tracked semiconductor wafer having a semiconductor wafer surface and a finishing cycle time, the method comprising the steps of:

providing the tracked semiconductor wafer having *tracked information*;

providing a finishing surface;

providing a finishing aid to an interface formed between the finishing surface and the semiconductor wafer surface;

providing a finishing control subsystem having:

at least three operative process sensors for sensing *in situ process information* during the finishing cycle time;

access to the *tracked information*; and

a processor to evaluate the *in situ process information* and the *tracked information*;

applying an operative finishing motion in the interface formed between the finishing surface and the semiconductor wafer surface forming at least one region having the *finishing aid which reacts with the semiconductor wafer surface* and wherein the at least one region has a tangential force of friction; and

changing a plurality of control parameters in response to an evaluation of both the *in situ process information* sensed with the at least three operative process sensors and the *tracked information* and wherein changing the control parameters changes the tangential force of friction in the at least one region having the *finishing aid which reacts with the semiconductor wafer surface* during at least a portion of the finishing cycle time.

37. A method of finishing a tracked semiconductor wafer having a semiconductor wafer surface and a finishing cycle time, the method comprising the steps of:

providing the tracked semiconductor wafer having *tracked information*;

providing a finishing surface;

providing a finishing aid to an interface formed between the finishing surface and the semiconductor wafer surface having a *first uniform region* and a *second uniform region*;

providing a finishing control subsystem having:

at least three operative process sensors for sensing *in situ process information* during the finishing cycle time;

access to the *tracked information*; and

a processor to evaluate the *in situ process information* and the *tracked information*;

applying an operative finishing motion in the interface forming a *first uniform region* having the finishing aid and wherein

the *first* and the *second uniform regions* have different finishing rates measured in angstroms per minute; and

changing a plurality of control parameters in response to an evaluation of both the *in situ process information* sensed with the at least three operative process sensors and the *tracked information* and wherein changing the control parameters changes the a finishing rate measured in angstroms per minute in at least one uniform region during at least a portion of the finishing cycle time.

56. A method of finishing a tracked semiconductor wafer having a semiconductor wafer surface and a finishing cycle time, the method comprising the steps of:

providing the tracked semiconductor wafer having *tracked information*;

providing a finishing surface;

providing a finishing aid to an interface formed between the finishing surface and the semiconductor wafer surface;

providing a finishing control subsystem having:

at least three operative process sensors for sensing *in situ process information* during the finishing cycle time;

access to the *tracked information*; and

a processor to evaluate the *in situ process information* and the *tracked information*;

applying an operative finishing motion in a finishing interface having a *first region* and a *second region* and wherein at least the *first uniform region* has a finishing aid and wherein the *first* and the *second regions* have different finishing rates measured in angstroms per minute;

evaluating both the *in situ process information* sensed with the at least three operative process sensors and the *tracked information*; and

changing a plurality of control parameters to change the finishing rate measured in angstroms per minute in at least one of the regions during the finishing cycle time.

(D.I. 1-1, claims 1, 12, 37 & 56). I construed the disputed claims of the patent. (D.I. 98 & 101). I construed “tracked information” as “pre-polishing information about the wafer being polished that is associated with the wafer.” I construed “in situ process information” as “information that is sensed from the wafer currently undergoing CMP.” I gave “first uniform region” and “second uniform region” their plain and ordinary meanings. I did not construe

“finishing aid which reacts with the semiconductor wafer surface,” but I now give the term its plain and ordinary meaning.

## II. LEGAL STANDARD

### A. Summary Judgment

“The court shall grant summary judgment if the movant shows that there is no genuine dispute as to any material fact and the movant is entitled to judgment as a matter of law.” Fed. R. Civ. P. 56(a). The moving party has the initial burden of proving the absence of a genuinely disputed material fact relative to the claims in question. *Celotex Corp. v. Catrett*, 477 U.S. 317, 330 (1986). Material facts are those “that could affect the outcome” of the proceeding, and “a dispute about a material fact is ‘genuine’ if the evidence is sufficient to permit a reasonable jury to return a verdict for the nonmoving party.” *Lamont v. New Jersey*, 637 F.3d 177, 181 (3d Cir. 2011) (quoting *Anderson v. Liberty Lobby, Inc.*, 477 U.S. 242, 248 (1986)). The burden on the moving party may be discharged by pointing out to the district court that there is an absence of evidence supporting the non-moving party’s case. *Celotex*, 477 U.S. at 323.

The burden then shifts to the non-movant to demonstrate the existence of a genuine issue for trial. *Matsushita Elec. Indus. Co. v. Zenith Radio Corp.*, 475 U.S. 574, 586–87 (1986); *Williams v. Borough of West Chester, Pa.*, 891 F.2d 458, 460–61 (3d Cir. 1989). A non-moving party asserting that a fact is genuinely disputed must support such an assertion by: “(A) citing to particular parts of materials in the record, including depositions, documents, electronically stored information, affidavits or declarations, stipulations . . . , admissions, interrogatory answers, or other materials; or (B) showing that the materials cited [by the opposing party] do not establish the absence . . . of a genuine dispute . . . .” Fed. R. Civ. P. 56(c)(1).

When determining whether a genuine issue of material fact exists, the court must view the evidence in the light most favorable to the non-moving party and draw all reasonable inferences in that party's favor. *Scott v. Harris*, 550 U.S. 372, 380 (2007); *Wishkin v. Potter*, 476 F.3d 180, 184 (3d Cir. 2007). A dispute is "genuine" only if the evidence is such that a reasonable jury could return a verdict for the non-moving party. *Anderson*, 477 U.S. at 247–49. If the non-moving party fails to make a sufficient showing on an essential element of its case with respect to which it has the burden of proof, the moving party is entitled to judgment as a matter of law. *See Celotex Corp.*, 477 U.S. at 322.

### **B. Anticipation**

"To show that a patent claim is invalid as anticipated, the accused infringer must show by clear and convincing evidence that a single prior art reference discloses each and every element of a claimed invention." *Silicon Graphics, Inc. v. ATI Tech., Inc.*, 607 F.3d 784, 796 (Fed. Cir. 2010). "[E]very element of the claimed invention [must be described], either expressly or inherently, such that a person of ordinary skill in the art could practice the invention without undue experimentation." *Callaway Golf Co. v. Acushnet Co.*, 576 F.3d 1331, 1346 (Fed. Cir. 2009). As with infringement, the court construes the claims and compares them against the prior art. *See Enzo Biochem, Inc. v. Applera Corp.*, 599 F.3d 1325, 1332 (Fed. Cir. 2010). "While anticipation is a question of fact, it may be decided on summary judgment if the record reveals no genuine dispute of material fact." *Encyclopaedia Britannica, Inc. v. Alpine Elecs. of Am., Inc.*, 609 F.3d 1345, 1349 (Fed. Cir. 2010).

### III. DISCUSSION

#### A. Litvak Is Incorporated by Reference

The first question is whether Sun (D.I. 191-4) incorporates by reference “Litvak,” a piece of prior art. Sun states: “This [invention] is an improvement and expansion of the invention described in allowed U.S. patent application Ser. No. 08/122,207 of Herbert E. Litvak, filed Sep. 16, 1993, now U.S. Pat. No. 5,499,733. This earlier application is being expressly incorporated herein by this reference, and is referred to hereinafter as the ‘Prior Application.’” (*Id.* at 14, col. 1:8–14.). Plaintiff argues that Sun does not incorporate Litvak. I think it does. “[M]aterial not explicitly contained in the single, prior art document may still be considered for purposes of anticipation if that material is incorporated by reference into the document.” *Callaway Golf*, 576 F.3d at 1346. It is hard to imagine what is required to incorporate something by reference if stating that it is “expressly incorporated herein by this reference” does not suffice. Nevertheless, Plaintiff argues that the incorporation by reference is ineffective because it does not specify what particular material it is incorporating and where it may be found. Plaintiff relies upon language in *Advanced Display Sys., Inc. v. Kent State Univ.*, 212 F.3d 1272, 1282 (Fed. Cir. 2000). The cases cited in *Advanced Display* for the proposition that “the host document must identify with detailed particularity what specific material it incorporates and clearly indicate where that material is found,” *id.*, were cases that did not involve incorporation by reference at all. A more pertinent case, in my opinion, is *Ultradent Prods., Inc. v. Life-Like Cosmetics, Inc.*, 127 F.3d 1065, 1069 (Fed. Cir. 1997). There the Federal Circuit, in the context of an anticipation discussion, accepted that one patent could incorporate another patent by

reference and together be one piece of art for purposes of anticipation. That is this case. Thus, I conclude as a matter of law that Litvak is entirely incorporated into Sun.<sup>2</sup>

### **B. Sun Anticipates the Asserted Claims**

There is no dispute that Sun constitutes relevant prior art. (*See* D.I. 190 at 18; D.I. 212 (not addressing the issue)). There is also no dispute that it was not considered by the PTO when issuing the patent-in-suit. (D.I. 190 at 18).

Defendant relies upon the declaration of its expert, Dr. Dornfeld, in support of its motion. (*Id.* at 19 (citing D.I. 192-2)). Dr. Dornfeld's declaration indeed identifies where, in his opinion, each limitation of each asserted claim is disclosed in Sun. (D.I. 192-2 at 17–18, ¶¶ 41–43 & Ex. A [D.I. 192-2 at 23–76]). Plaintiff responds by citing extensively to Dr. Dornfeld's deposition testimony. (D.I. 212 at 10–12). Plaintiff offers limited opinions of its own expert on anticipation of the patent-in-suit by Sun. (*See id.* at 23–24). No portion of what Plaintiff cites to as its expert's opinions states that Sun is not anticipating prior art, or that there is some limitation in the patent-in-suit that is not disclosed by Sun.

Plaintiff argues that Sun does not disclose two limitations that are in all the asserted claims, and one additional limitation that is in claim 12 and another additional limitation that is in claims 37 and 56.

#### **1. Tracked Information (“pre-polishing information about the wafer being polished that is associated with the wafer”)**

Dr. Dornfeld stated, “Sun discloses that the polishing process can be controlled in real-time in response to pre-polish thickness information and information that is sensed from the

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<sup>2</sup> I am supposed to make that determination from the point of view of one reasonably skilled in the art. *See Advanced Display*, 212 F.3d at 1283. Given the express nature of the incorporation in this case, I do not need to determine what the standard for a PHOSITA is.



wafer by sensors before reaching its endpoint.” (D.I. 192-2 at 19, ¶ 39). He cited for that proposition the Sun patent at 8:41–67 and Figure 13. He also provided his “claim chart,” in which he stated, “Sun discloses a controller and processor algorithm which, in response to rate information calculated from the initial thickness of the wafer being polished and information detected from sensors, can control the CMP [chemical mechanical polishing] process.” (*Id.* at 42 [Exh. A, p. 20]). In support of this, among other things, Dr. Dornfeld provides a copy of Figure 13A of the Sun patent, which begins with “Input Initial Film Thickness & Target Amount of Film to be Removed.” Dr. Dornfeld stated the same proposition in reply (D.I. 208-1 at 27–28, ¶ 60), that is, that Sun discloses using the initial thickness of the wafer during the finishing process, and, in particular, uses that information in connection with in situ information to change the control parameters. The initial thickness is “pre-polishing information.” Plaintiff offers no contrary expert testimony, but instead provides snippets of deposition examination. The snippets do not create a disputed material fact.

Thus, Sun discloses “tracked information.”

## **2. In Situ Process Information (“information that is sensed from the wafer currently undergoing CMP”)**

Dr. Dornfeld stated, “Sun discloses that the polishing process can be controlled in real-time in response to pre-polish thickness information and information that is sensed from the wafer by sensors before reaching its endpoint. (D.I. 192-2 at 19, ¶ 39). He cited for that proposition the Sun patent at 8:41-67 and Figure 13. He also provided his “claim chart,” in which he stated, “Sun discloses a controller and processor algorithm which, in response to rate information calculated from the initial thickness of the wafer being polished and information detected from sensors, can control the CMP [chemical mechanical polishing] process.” (*Id.* at

42 [Exh. A, p. 20]). The “information detected from sensors” is “in situ process information.” All the claims require “a processor to evaluate the in situ process information.” Plaintiff offers no contrary expert testimony. Instead, it concedes that “the sensors in Sun measure reflected radiation during the polishing process,” but argues that “calculations are needed to determine changes in film thickness from this measured information.” (D.I. 212 at 20). Sun states that the “controller” makes those calculations. (D.I. 192-2 at 42 [Exh. A, p. 20]). The controller of Sun is the processor of the patent-in-suit. Thus, Plaintiff’s argument is meritless.

Thus, Sun discloses “in situ process information.”

### **3. Finishing Aid Which Reacts with the Semiconductor Wafer Surface**

This term, which is only relevant to asserted claim 12, and which no one asked me to construe, has its plain meaning.

Dr. Dornfeld opined that Sun disclosed this limitation: “Sun discloses that the abrasive fluid contains a chemical agent that converts the surface to be planarized into a more easily removable chemical form.” (*Id.* at 47 [Exh. A., p. 25]). He quoted Sun, which discloses: “The [chemical] slurry provides both abrasive particles (to accomplish the mechanical grinding) and reactive chemicals (to assist the film removal by chemical modification of the film surface).” *Id.* (quoting Sun, col. 1:38–41 [D.I. 191-4 at 14]).

Plaintiff submitted a declaration from its expert which explained that to a PHOSITA, a “finishing aid” refers to “the abrasives and chemicals added to water to form a polishing slurry for CMP, but not the water itself,” and that “reacts” requires a chemical reaction. (D.I. 193 at 7–8, ¶¶ 20 & 22). The declaration does not address the relevance of these opinions to the applicability of Sun as anticipating prior art.

Defendant points out that Plaintiff's expert, when asked about Sun, agreed that Sun disclosed the limitations at issue. (See D.I. 213-8 at 26, p. 367:5-9 ["Q. Would you agree with me, then, that the abrasive particles and the reactive chemicals that are described here in the Sun '538 patent qualify as a finishing aid within the meaning of the seven one—'717 patent? A. Yes."]; *id.* at 6, p. 285:18-25 [Q. "[T]he slurry described in Sun for use with the oxide CMP could have—is described as having reactive chemicals in it, which could then react with the surface of the oxide in such a fashion as to sort of overwhelm that hydration reaction that you described. Did I get that accurately? A. Yes."]).

Plaintiff's expert's declaration is ineffective to create a disputed issue of material fact. Thus, Sun discloses a "finishing aid which reacts with the semiconductor wafer surface."

#### **4. First Uniform Region and Second Uniform Region**

This term, which is only relevant to claims 37 and 56, has its plain and ordinary meaning. Dr. Dornfeld opines that the first and second uniform regions are disclosed in Sun, including through its incorporation by reference of Litvak. (D.I. 192-2 at 20, ¶ 43).<sup>3</sup> He offers three opinions on this point. First, he says, if what Plaintiff states in its infringement contentions is the case, then Sun necessarily discloses the same thing. Second, he states that Sun discloses a technique for CMP of a semiconductor wafer "having multiple levels of metallization, resulting in planarization of the surface being polished." (*Id.* at 51 [Exh. A, p. 29]). Third, he states that "Sun discloses that the semiconductor wafer surface to be polished may have first unwanted raised uniform regions and second recessed regions." (*Id.* at 52 [Exh. A, p. 30]). Dr. Dornfeld

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<sup>3</sup> Defendant argues in its answering brief to Plaintiff's motion for partial summary judgment of non-invalidity for anticipation that the language of claim 56 is different from that of claim 37 "because it does not specify a 'second uniform region,' and because the term 'the first uniform region' lacks antecedent basis." (D.I. 206 at 17 n.10). Dr. Dornfeld, nevertheless, opines that Sun discloses a "first [uniform] region" and a "second [uniform] region," and thus addresses the language of both claims 37 and 56 in his analysis. (D.I. 192-2 at 20, ¶ 43).

incorporates his analysis for claim 37 into his analysis for claim 56. (*Id.* at 59–60 [Exh. A, p. 37–38]). Defendant also points out that Plaintiff’s expert at deposition appeared to agree that Litvak disclosed first and second uniform regions. (D.I. 190 at 21 (citing D.I. 213-7 at 45, pp. 172:24–173:16 [“Q. [I]n Figure 11 [of Litvak], would you agree with me that the regions that are labeled 309 on the left and the right, that those qualify as first uniform regions within the meaning of the ’717 patent? A. [I]n this sketch, that’s correct. Q. And in the area that is labeled 311 in Figure 11 of the Litvak patent . . . would you agree with me that what is shown there is a second uniform region . . . [w]ithin the meaning of the ’717 patent? A. [I]n the artist’s sketch, the answer is yes.”])).

Plaintiff responds to Dr. Dornfeld’s first point as if it were the only point raised (D.I. 212 at 22–23). Thus, Dr. Dornfeld’s opinion is unrebutted, and there is no disputed issue of material fact.

Thus, Sun discloses a “first [uniform] region” and a “second [uniform] region.”

#### **IV. CONCLUSION**

Sun discloses each and every limitation of the four asserted claims. I will thus grant Defendant’s motion for summary judgment of invalidity. (D.I. 187).

An appropriate order will be entered.