

United States District Court,  
E.D. Virginia, Norfolk Division.

**APPLIED MATERIAL, INC,**  
Plaintiff.

v.  
**TOKYO SEIMITSU, CO., LTD., and Accretech USA, Inc,**  
Defendants.

Civil Action No. 2:05cv476

**Aug. 11, 2006.**

**Background:** Patent owners brought action alleging infringement of their patent describing apparatus and method for chemical mechanical polishing of silicon wafers used in manufacture of semiconductor integrated chips.

**Holdings:** The District Court, Jackson, J., held that:

- (1) term "light" was not limited to lasers;
- (2) term "window disposed adjacent to the hole formed through the platen" encompassed windows both in and near hole of platen; and
- (3) term "detector" was not confined to detection component of laser interferometer.

Ordered accordingly.

6,876,454. Construed.

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**MEMORANDUM OPINION AND ORDER ( CLAIM CONSTRUCTION )**

Applied Materials ("Plaintiff") filed a complaint against Tokyo Seimitsu, Co. and Accretech USA ("Defendants") alleging patent infringement of their United States Patent 6,876,454 (" '454 Patent") entitled "Apparatus and Method for In-Situ Endpoint Detection for Chemical Mechanical Polishing." The matter before the Court is the claim construction of the terms "light," "window" and "detector" found in the '454 Patent. The Court conducted a Markman hearing on July 17, 2006. For the reasons outlined below, the Court **FINDS** that the term "light" as defined in the '454 Patent is the spectrum of electromagnetic radiation which can be seen by the human eye and is not limited to lasers. The Court also **FINDS** that the proper construction of "window disposed adjacent to the hole" in the '454 Patent encompasses windows that are both in and near the hole. Finally, the Court **FINDS** that the term "detector" in the '454 Patent refers to a device for detecting the presence of electromagnetic waves and is not confined to the detection component of a laser interferometer.

## I. BACKGROUND

This case involves technology for chemical mechanical polishing of silicon wafers used in the manufacture of semiconductor integrated chips. Semiconductor integrated chips are manufactured by depositing multiple layers of conductive material onto a silicon wafer. The silicon wafers are typically circular and will have up to several hundred layers of semiconductor integrated chips on each wafer. The process by which the layers are deposited onto the wafer leaves an irregular surface on the top, causing a need for the wafer to be polished or "planarized" to smooth out the surface for the next layer. Chemical mechanical planarization ("CMP") is a technology which achieves this necessary polishing.

In a typical CMP machine, wafers are held upside down by a polishing head and rotated against a polishing pad that is placed on the platen rotating in the opposite direction. The polishing pad is treated with a chemical "slurry" which results in the removal of material from the wafer to produce a smooth surface onto which the next layer of the wafer can be deposited. It is important to determine the proper point at which the desired planarity and thickness of the layer has been reached, referred to as optical endpoint detection ("OEPD").

The '454 Patent was issued to Plaintiff on April 5, 2005. FN1 The ' 454 Patent describes an apparatus and method for *in situ* endpoint detection in the CMP processes, in which a light beam from a stationary light source located below the platen is directed through a hole or window in the platen and polishing pad to the surface of the wafer. The light that is reflected back from the wafer is then observed and analyzed by a stationary detector to determine the appropriate endpoint. The ' 454 Patent includes seventy-six (76) claims. Claims 1, 9, and 22 and their respective dependent claims are disputed in this case. Claim 1 reads:

FN1. Plaintiff alleged patent infringement of two other patents. United States Patent 6,676,717, entitled "Apparatus and Method for In-Situ Endpoint Detection for Chemical Mechanical Polishing Operations" was issued on January 13, 2004. The parties have agreed that there are no particular terms of the '717 Patent that require construction by the Court. United States Patent 6,860,791 entitled "Polishing Pad for In-Situ Endpoint Detection" was issued on March 1, 2005. Both parties have agreed that the '791 patent is no longer at issue.

An apparatus for chemical polishing (CMP) of a wafer, comprising:

(a) a rotatable polishing platen to support a polishing pad, the platen having a hole formed therethrough and rotatably mounted to a chassis;

(b) a polishing head for holding the wafer against the polishing pad and,

(c) an endpoint detector, comprising,

(c1) a stationary light source capable of generating a light beam directed towards the wafer from a side of the wafer contacting the polishing pad,

(c2) a window disposed adjacent to the hole formed through the platen, the window rotating with the platen and intermittently providing a pathway for the light beam to impinge on the wafer during at least a part of the period of time when the wafer overlies the window, and

(c3) a stationary detector to receive light from the light beam reflected by the wafer through the window.

Claim 9 is directed to a method of CMP processing. Claim 9 states:

A method for chemical mechanical polishing (CMP) of a wafer, the method comprising the steps of:

(a) holding the wafer in a polishing head against a polishing pad;

(b) moving the polishing pad to polish the wafer;

(c) determining an endpoint whereat polishing is terminated, the determining step comprising the steps of,

(c1) generating a stationary light beam directed towards the wafer from a side of the wafer contacting the polishing pad;

(c2) intermittently passing the light beam through a window that moves with the polishing pad, the window intermittently providing a pathway for the light beam to impinge on the wafer during at least a part of a period of time when the wafer overlies the window, and,

(c3) detecting light of the light beam reflected from the wafer through the window to a stationary detector.

Claim 22 defines the device used for CMP processing as envisioned by the patentee:

An apparatus for chemical mechanical polishing (CMP) of a wafer, comprising:

(a) a polishing pad support to hold a polishing pad and cause the polishing pad to move relative to the wafer;

(b) a polishing head for holding the wafer against the polishing pad; and

(c) an optical monitoring system, comprising,

(c1) a stationary light source to direct a light beam toward the wafer from a side of the wafer contacting the polishing pad,

(c2) a window that moves with the polishing pad, the window intermittently providing a pathway for the light beam to impinge on the wafer during at least a part of a period of time when the wafer overlies the window,

(c3) a stationary detector to receive reflections of the light beam from the wafer through the window.

## II. LEGAL STANDARDS

[1] Claim construction is "a question of law, to be determined by the court." *Markman v. Westview Instruments, Inc.*, 517 U.S. 370, 384, 116 S.Ct. 1384, 134 L.Ed.2d 577 (1996). "When construing patent claims, the Court must look first to the intrinsic evidence in the record: 'The claims, the specification, and the prosecution history.'" *Markman v. Westview Instruments, Inc.* 52 F.3d 967, 979 (Fed.Cir.1995) (en banc). The claims, specifications, and prosecution history constitute the public record of the claim. "[C]ompetitors are entitled to review the public record, apply the established rules of claim construction, ascertain the scope of the patentee's claimed invention, and, thus, design around the claimed invention." *Vitronics Corp. v. Conceptoronic, Inc.*, 90 F.3d 1576, 1583 (Fed.Cir.1996).

## III. DISCUSSION

### A. Phillips v. AWH Corp.

As both parties have argued, the claim construction of the '454 Patent relies on the Court's interpretation of *Phillips v. AWH Corp. et al.*, 415 F.3d 1303 (Fed.Cir.2005). In *Phillips*, the Federal Circuit, in light of numerous converging opinions, sought to clarify the proper method of claim construction. "The principal question that this case presents us is the extent to which we should resort to and rely on a patent's specification in seeking to ascertain the proper scope of its claims." *Id.* at 1312.

### 1. Claim Language

[2] "It 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." *Phillips*, 415 F.3d at 1312 (internal quotations and citations omitted). The Court's claim construction analysis must begin with the words of the claim. "[T]he words of a claim are generally given their ordinary and customary meaning ... the meaning that the term would have to a person of ordinary skill in the art in question at the time of the invention." *Id.* at 1312-13.

[3] "In some cases, the ordinary meaning of claim language as understood by a person of skill in the art may be readily apparent even to lay judges, and claim construction in such cases involves little more than the application of the widely accepted meaning of commonly understood words. In such circumstances, general purpose dictionaries may be helpful." *Id.* at 1315. If the meaning of a term is not immediately apparent, courts must look to the written description and prosecution history to provide guidance as to the meaning of the claim terms. *Id.* at 1314.

[4] In analyzing the claim language, *Phillips* instructs that the court analyze the context in which the term appears and other claims of the patent to gain insight on the patentee's intention for the claim definition. "Differences among claims can also be a useful guide in understanding the meaning of the particular claim terms. For example, 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 1315-16.

However, claim differentiation cannot be used to broaden the claims beyond their intended scope. *Bristol-Myers Squibb Co. v. Ben Venue Laboratories, Inc.*, 246 F.3d 1368 (Fed.Cir.2001). Claim differentiation is at its strongest "where the limitation sought to be read into an independent claim already appears in a dependent claim." *Liebel-Flarsheim Co. v. Medrad, Inc.*, 358 F.3d 898, 910 (Fed.Cir.2004)

## **2. Specification**

The specification

shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains ... to make and use the same, and shall set forth the best mode contemplated by the inventor of carrying out his invention.

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention."

35 U.S.C. 112 (Section 112 of the Patent Act). "It is always necessary to review the specification to determine whether the inventor has used any terms in a manner inconsistent with their ordinary meaning." *Vitronics*, 90 F.3d at 1582. The court in *Phillips* stressed the importance of the specification and required that the claims be read in light of the specification. *Phillips*, 415 F.3d at 1315.

Additionally, the *Phillips* court distinguished between using the specification to analyze the claim terms and incorporating limitations from the specification into the claim language.

Moreover, we recognize that the distinction between using the specification to interpret the meaning of a claim and importing limitations from the specification into the claim can be a difficult one to apply in practice. However, the line between construing terms and importing limitations can be discerned with reasonable certainty and predictability if the court's focus remains on understanding how a person of ordinary skill in the art would understand the claim terms.

*Id.* at 1323. In *Liebel-Flarsheim*, the court dealt with the issues that arise when the specification description is narrow and the claim language is broad "that it can be read to encompass features not described in the written description, either by general characterization or by example in any of the illustrative embodiments." 358 F.3d at 905. The court enumerated the prior reasons stated for giving claims a more narrow reading based on the specification, including, distinguishing close prior art in the prosecution history, characterization of the invention narrowly during the prosecution history, and specifying that the patent used certain structures in the specification. The *Liebel-Flarsheim* court found that because the specification did not describe the invention as being limited to a certain type of embodiment and none of the other reasons for construing the claim more narrow were present, the court would not read the claim with the limitations.

## **3. Prosecution History**

The prosecution history contains the complete record of all proceedings before the Patent and Trademark Office ("PTO"), including any express representations made by the applicant regarding the scope of the claims. "The Court should consult the prosecution history to determine whether the patent applicant 'consistently and clearly use[s] a term in a manner either more or less expansive than its general usage in the relevant community.'" *Ortho-McNeil*, 348 F.Supp.2d. 713, 723 (N.D.W.Va.2004). However, the court in

Phillips cautioned against relying heavily on the prosecution history because the "prosecution history represents an ongoing negotiation between the PTO and the applicant, rather than the final product of that negotiation, it often lacks the clarity of the specification and thus is less useful for claim construction purposes." Phillips, 415 F.3d at 1317. The prosecution history is useful in determining how the inventor understood the patent and invention. Additionally, the prosecution history may provide evidence that the inventor limited the invention during the course of prosecution and thereby restricts the scope of the claim language. Id.

#### **4. Extrinsic Evidence**

[5] A court may also consider extrinsic evidence, "which consists of all evidence external to the patent and prosecution history, including expert and inventor testimony, dictionaries, and learned treatises." Phillips, 415 F.3d at 1317. However, extrinsic evidence should not be used "to contradict claim meaning that is unambiguous in the light of the intrinsic evidence." Id. at 1324.

The Phillips court found that the methodology adopted in *Texas Digital Systems, Inc. v. Telegenix, Inc.*, 308 F.3d 1193 (Fed.Cir.2002), placed too much emphasis on the use of extrinsic evidence, particularly dictionaries and treatises, in defining claim language prior to looking at all available intrinsic evidence. Id. at 1320. The court in *Texas Digital* required the specification to be consulted in every case but only after a determination was made, by dictionary or other extrinsic evidence, as to the ordinary meaning of the disputed claim term. The Phillips court argued that the "Texas Digital approach limits the role of the specification in claim construction to serving as a check on the dictionary meaning of a claim term" and was inconsistent with rulings that "the specification was the single best guide to the meaning of a disputed term." Id. at 1321 (internal quotations omitted).

While the court cautioned against using dictionaries as the primary method of constructing claims, the Phillips court did not preclude the use of dictionaries. Instead the Phillips court reiterated the holding in *Vitronics*: "[j]udges are free to consult such resources at any time in order to better understand the underlying technology and may also rely on dictionary definitions when construing claim terms, so long as the dictionary definition does not contradict any definition found in or ascertained by a reading of the patent documents." Id. at 1322-23.

Extrinsic evidence has been found to be generally less reliable than intrinsic evidence and accordingly should be considered in light of the intrinsic evidence. Id. at 1320. If analysis of the intrinsic evidence will resolve any ambiguity, it is improper to consider extrinsic evidence in determining the meaning of the claims.

#### **B. Claim Construction of "Light" FN3**

FN3. Plaintiff also request that the Court construe the terms "endpoint detector," "interferometer" and "optical monitoring system." The Court agrees with Defendants that these terms are already defined by the claims and the interpretation of those terms are dependent on the Court's construction of "light," "window," and "detector."

#### **1. Claim Language**

The first place to start the claim construction is with the language of the claim itself. The term "light" is

used throughout the '454 Patent but the primary claim language can be found in Claim 1. Specifically, limitation (c1) of Claim 1 states "a stationary light source capable of generating a light beam directed towards the wafer from a side of the wafer contacting the polishing pad." ('454 Patent, Col. 16, lines 32-34).

Plaintiff argues that there is no ambiguity as to the meaning of the terms "light," "light source," and "light beam" and that the term "light" encompasses both laser light and broadband light. Defendants argue that the term "light" in the patent refers only to light from a laser. Defendants do not address the issues of claim language but instead rely heavily on imputing the restriction from the specification into the claim language.

In analyzing the language of the claim, the Court must determine what a person of ordinary skill in the art would understand the term "light" to mean. The ordinary and plain meaning of the term "light" is broader than, and not limited to, a laser. FN4 A lay person would also understand that a light source is not restricted to only a laser. Defendants have completely ignored that "light" has a "widely accepted meaning" that is readily apparent even to lay judges which would not require the court to look at the written description in the specification. Phillips, 415 F.3d at 1314. ("In some cases, the ordinary meaning of claim language as understood by a person of skill in the art may be readily apparent even to lay judges, and claim construction in such cases involves little more than the application of the widely accepted meaning of commonly understood terms.").

FN4. While the Court determined that there was not a need for expert testimony, it is telling that Defendants' expert witness, Dr. Gutmann, conceded that no ordinary person of skill in the art would ever have understood the ordinary meaning of "light" to be limited to "laser." (Gutmann Tr. 36:2-7).

In addition to the plain language of the claims themselves, it is also important to note key differences between related claims. Claim differentiation can be a "useful guide in understanding the meaning of particular claim terms." Id. at 1314-15. The terms "light" and "laser" are used in the '454 Patent in different claims to mean two different things. Independent Claim 1 defines the apparatus to be used with a light source. Dependent Claim 8 specifically delineates the type of light to be used for Claim 1 as a laser source: "[t]he apparatus of claim 1, wherein the light source comprises a laser and the light beam is a laser beam." ('454 Patent, Col. 16, lines 62-63). This particular limitation "gives rise to the presumption that the limitation in question is not present in the independent claim." Id. Additionally, independent Claim 9 describes "generating a light beam." ('454 Patent, Col. 17, line 4). However, dependent Claim 11 describes "the method of claim 9, wherein the step of generating a light beam comprises generating a laser beam." ('454 Patent, Col. 17, lines 17-18).

By construing the term "light" in Claims 1 and 9 to constitute a "laser," the Court would render Claims 8 and 11 superfluous and redundant. Comark Communications, Inc. v. Harris Corp., 156 F.3d 1182, 1187 (Fed.Cir.1998) (quoting Tandon Corp. v. United States Int'l Trade Comm'n, 831 F.2d 1017, 1023 (Fed.Cir.1987)) ("There is presumed to be a difference in meaning and scope when different words or phrases are used in separate claims. To the extent that the absence of such difference in meaning and scope would make a claim superfluous, the doctrine of claim differentiation states the presumption that the difference between claims is significant.")

## **2. Specification**

The Court must also look at the specification to determine the proper construction of the claim language.

The '454 Patent specification clearly expresses that the embodiments shown and described in the figures were "preferred embodiments":

-> " **Preferred** embodiments of the invention will now be described with reference to the drawings" ('454 Patent, Col. 6, lines 25-29).

-> "Figure 2 depicts a portion of a CMP apparatus modified in accordance with **one** embodiment of the present invention." ('454 Patent, Col. 6, lines 29-30).

-> Summary section states that "the present invention is directed to a novel apparatus and method for endpoint detection which can provide this improved accuracy. The apparatus and method of the present invention employ interferometric techniques for the in-situ determination of the thickness of material removed or planarity of a wafer surface, during the CMP process." ('454 Patent, Col. 2, lines 46-51).

(emphasis added).

In *Liebel-Flarsheim*, the court stressed the inherent tension between determining whether a statement is a clear lexicographic definition or a description of a preferred embodiment. 358 F.3d at 905. "The problem is to interpret claims 'in view of the specification' without unnecessarily importing limitations from the specification into the claims." *Id.* The court in *Liebel-Flarsheim* found that even though the written description of the invention was narrow, the claim language was sufficient to maintain a general interpretation. "Even when the specification describes only a single embodiment, the claims of the patent will not be read restrictively unless the patentee has demonstrated a clear intention to limit the claim scope using words or expressions of manifest exclusion or restriction." *Id.* at 906 (internal quotations and citations omitted).

Defendants are seeking to do expressly what Phillips cautioned against: using the specification to import limitations into the claims. The Phillips court recognized that sometimes there is a "fine line between reading a claim in light of the specification and reading a limitation into the claim from the specification." *Id.* at 1323 (citing *Comark Communications, Inc. v. Harris Corp.*, 156 F.3d 1182, 1186-87 (Fed.Cir.1998)). However, the court focused on several examples that go directly to the matters in this case:

For instance, although the specification often describes very specific embodiments of the invention, we have repeatedly warned against confining the claims to those embodiments. In particular, we have expressly rejected the contention that if a patent describes only a single embodiment, the claims of the patent must be construed as being limited to that embodiment. That is not just because section 112 of the Patent Act requires that the claims themselves set forth the limits of the patent grant, but also because persons of ordinary skill in the art rarely would confine their definitions of terms to the exact representations depicted in the embodiments.

*Id.* at 1323 (internal citations omitted).

The specification only deals with the "preferred embodiment" and nothing in the written description uses the term "light" in a manner inconsistent with its ordinary meaning.

### **3. Prosecution History**



Next, the Court must look to the prosecution history "to determine whether it contains statements that narrow the scope of the claims." Phillips, 415 F.3d at 1317. During the prosecution of the patent, parties may make statements that clearly restrict the scope of the patent. "This may occur, for example, when the patentee explicitly characterizes an aspect of his invention in a specific manner to overcome prior art." Id. (internal citations omitted). During the prosecution of the '454 Patent, there is no evidence that Plaintiff made any explicit disavowal of scope during prosecution. The prosecution history actually shows that Plaintiff sought to increase the scope of the '454 Patent by changing several instances of the term "laser" to "light." These changes are clearly delineated. For example:

-> On March 26, 1997, in an Amendment, the term "laser beam" was replaced with "light beam" in Claim 1. Remarks section points out that the patentees have "amended the claims to more particularly point out and distinctly claim the invention." Patent Office reviewed the Amendment and allowed the relevant new claims.

-> The original Claim 1 was cancelled and added a new proposed Claim 45 that dropped requirement of laser and instead used an "interferometer which generates a light beam ..."

-> Dependent Claim 47 further required that it be a "laser interferometer" and that the light beam "is a laser light beam"

-> In a Preliminary Amendment-in 22 different claims, "laser" terms were crossed out and replaced with the word "light."

Plaintiff argues that these changes show that the Patent Office examiners and inventors understood that the terms "light," "light source" and "light beam" were not being restricted to lasers. Defendants argue that the examiners did not understand the nature of the changes in the claim language because there is no affirmative showing by the Patent Office to suggest a broader claim scope for the word "light." Essentially, Defendants argue that the examiner "simply reiterated the claim language without commenting on its meaning" and that the examiner was, in essence, silent as to the broader meaning of the word "light." (Def. Claim Construction Mem. at 16). While the Court does not find that the prosecution history clearly explains that the examiners were in agreement with the inventors as to the effect of the changes, the Court must presume that the Patent Office examiners have done their job. There is no basis to conclude that examiner failed to understand and agree to proposed changes. *Amgen Inc. v. Hoechst Marion Roussel, Inc.*, 314 F.3d 1313, 1327 (Fed.Cir.2003) ("We must presume the examiner did his job, and if he truly thought that the specification taught or enabled only the use of exogenous DNA, the asserted claims would not have issued.") Therefore, the changes that were accepted by the office must have been considered and found to be sufficient.

#### **4. Extrinsic Evidence**

Because the Court finds that the claim language is clear and supported by the specification and prosecution history, there is no need to consider extrinsic evidence. However, in keeping with *Vitronics* and *Phillips*, the Court finds it appropriate to use the dictionary to define the term "light." Phillips, 415 F.3d at 1324 ("Nor is the court barred from considering any particular sources or required to analyze sources in any specific sequences, as long as those sources are not used to contradict claim meaning that is unambiguous in light of the intrinsic evidence."). Merriam-Webster dictionary defines light as "electromagnetic radiation of any wavelength and traveling in a vacuum with a speed of about 186,281 miles (300,000 kilometers) per second; *specifically*: such radiation that is visible to the human eye." (emphasis in original). Defendants argue that it is inappropriate to use dictionaries. However, the Court is not attempting to use a dictionary definition in

place of analysis of the intrinsic evidence. The dictionary definition is to be used to provide a working definition of a commonly understood word. This definition does not "contradict any definition found in or ascertained by a reading of the patent documents." Vitronics, 90 F.3d at 1584.

[6] The Court finds it problematic that Defendants wish to restrict the term "light" to "laser" based only on the specification. Defendants interpret Phillips too narrowly and ignores the plain meaning of the claim language. The court in Phillips emphasized the importance of the specification but not at the expense of the ordinary and plain meaning of the claim language. The plain and ordinary meaning of the word "light" is clear to a lay person and is not restricted to only light from a laser source. The specification and prosecution history also provide support that Plaintiff had no intention of restricting the term to only include laser light. "The 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." Id. at 1316. Accordingly, the Court **FINDS** that the term "light" as defined in the '454 Patent is the spectrum of electromagnetic radiation which can be seen by the human eye and is not limited to lasers.

### C. Claim Construction of "Window Disposed Adjacent to the Hole"

Claim 1 refers to a rotatable platen "having a hole formed therethrough" and an endpoint detector comprising "a window disposed adjacent to the hole formed through the platen, the window rotating with the platen and intermittently providing a pathway for the light beam to impinge on the wafer." ('454 Patent, Col. 16, lines 26-28, 35-38). Plaintiff argues that the claim only requires that the window rotate with the polishing pad. Specifically, Plaintiff points to the three (3) figures that are a part of the patent specification. Figures 3A-3C represent simplified cross-sectional views of respective embodiments of the windows. Figure 3A shows a window as an insert made of light transmissive material which is mounted securely in a hole in the platen.

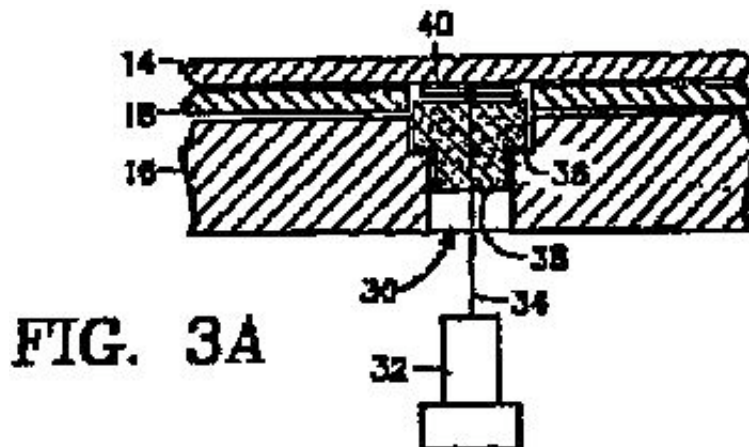
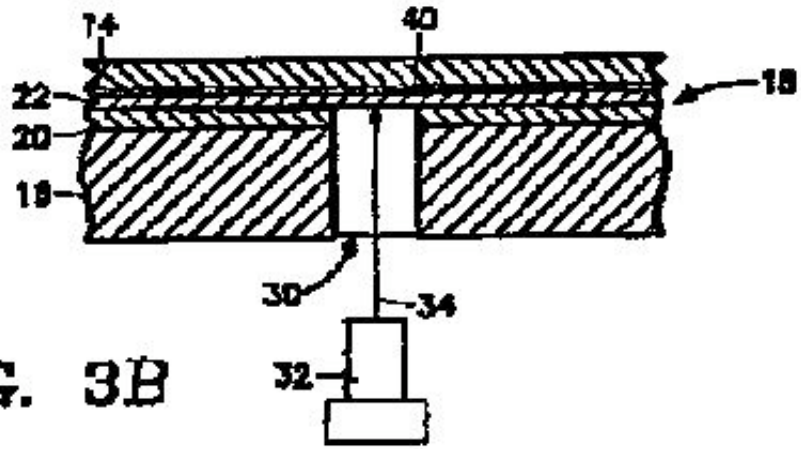
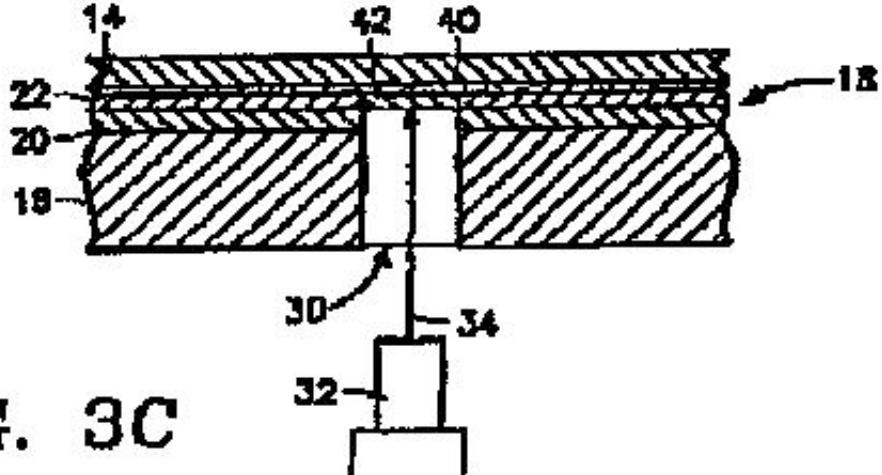


Figure 3B represents an embodiment that allows the pad itself to be used as a window. The light is transmitted through the hole in the platen and through a light-transmissive portion of the polishing pad surface, thereby allowing light to transmit through the pad.



**FIG. 3B**

Figure 3C-the window is essentially a plug that is inserted into the pad.



**FIG. 3C**

Defendants argue that Figure 3A does not conform with the specification because the claim requires that the window be a part of the pad. Defendants focus on the limitation that the "window moves with the polishing pad." Defendants' interpretation would require that when the pad is removed from the machine, the window must still be attached.

The Court does not interpret the claim the same. Looking at the claim language, it is clear that Plaintiff intended to incorporate all three figures as part of the patent. Dependent Claim 2 states "wherein the window comprises an insert mounted within the hole in the platen, the insert being transmissive to the light beam" and is depicted as Figure 3A. Dependent Claim 6 describes the window as comprising "a portion of the polishing pad, the portion being at least partially transmissive to the light beam" as depicted in Figures 3B and 3C. (454 Patent, Co. 16, lines 57-59). Several other dependent claims also refer to both

embodiments of the window:

-> Dependent Claim 14: "wherein the window comprises a light-transmitting insert mounted in a hole through the platen." ('454 Patent, Col. 17, lines 23-25).

-> Dependent Claim 18: "wherein the window comprises a light-transmitting portion of the polishing pad." ('454 Patent, Col. 17, lines 39-40).

-> Dependent Claim 25: "wherein the polishing pad support comprises a metal portion and the window comprises a hole through the metal portion of the polishing pad support." ('454 Patent, Col. 18, lines 17-20).

-> Dependent Claim 26: "wherein the window comprises a light-transmitting portion of the polishing pad." ('454 Patent, Col. 18, lines 22-24).

Defendants' construction is inconsistent with the claim language and seeks to limit the claim language only to the embodiment in dependent Claim 6.

Additionally, the specification clearly describes Figures 3A-3C as part of the preferred embodiments of the apparatus. The specification goes into great detail to explain the difference in the figures and how to achieve the results as tested in the embodiment. ('454 Patent, Cols. 6-7). There is no additional evidence provided by the prosecution history.

[7] The plain and ordinary meaning, which is not contradicted by the intrinsic evidence, would leave a person to conclude that the window must move with the polishing pad while the machine is in motion. Accordingly, the Court **FINDS** that the "window disposed adjacent to the hole formed through the platen" encompasses windows that are both in and near the hole of the platen.

### C. Claim Construction of "Detector"

Claim 1 of the '454 Patent claims an "apparatus for chemical polishing (CMP) of a wafer comprising: ... (c) an endpoint detector." Defendants seek to have the term "detector" construed as the detection component of a laser interferometer because the specification only uses the term "endpoint detector" to refer to the detection component of a laser interferometer. Plaintiff's argue that the term "detector" should be given its plain and ordinary meaning as a device used in determining when the polishing or planarization process should be terminated.

To construe the term "detector," Plaintiff points to the Background section of the '454 Patent that discusses the early devices and methods used in prior art to perform *in situ* detection of endpoints during the CMP process. None of the discussed devices or methods involve the use of lasers. ('454 Patent, Col. 2, lines 23-43). On the other hand, Defendants argue that the summary section of the specification expressly describes the "endpoint detector" as a component of CMP that includes a laser interferometer.

[8] The intrinsic evidence does not provide much guidance as to the proper construction of the term "detector." A "detector" is only mentioned in Claims 1 and 22 without much description. As Defendants point out, the specification describes the endpoint detector as a component of the laser interferometer. However, as with the construction of the term "light," the term "detector" cannot be narrowly construed based on the preferred embodiment of the patent. Phillips, 415 F.3d at 1323. Accordingly, the Court deems it

proper to consult extrinsic evidence to define the term "detector." Defendants' expert, Dr. Gutmann, agreed that "a person of ordinary skill in the art would understand from reading the '454 specification that there were other end-point detector devices other than a laser interferometer device." (Gutmann Transcript at 210.) Additionally, Merriam-Webster defines "detector" as a device for detecting the presence of electromagnetic waves. Both of these sources provides broader definitions than that proffered by Defendants. Accordingly, the Court **FINDS** that the term "detector" refers to a device for detecting the presence of electromagnetic waves and is not confined to the detection component of a laser interferometer.

#### **IV. CONCLUSION**

For the foregoing reasons, the Court **FINDS** that the term "light" as defined in the '454 Patent is the spectrum of electromagnetic radiation which can be seen by the human eye and is not limited to lasers. The Court also **FINDS** that the "window disposed adjacent to the hole" encompasses windows that are both in and near the hole. Finally, the Court **FINDS** that the term "detector" refers to a device for detecting the presence of electromagnetic waves and is not confined to the detection component of a laser interferometer.

The Clerk is **DIRECTED** to mail a copy of this Order to counsel for the parties. **IT IS SO ORDERED.**

E.D.Va.,2006.

Applied Material, Inc. v. Tokyo Seimitsu, Co., Ltd.

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