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IN THE UNITED STATES DISTRICT COURT
FOR THE DISTRICT OF ARIZONA

DuPont Air Products Nanomaterials, LLC,) No. CV 06-2952-PHX-ROS
Plaintiff,)
vs.) ORDER
Cabot Microelectronics Corp.,) <u>SEALED</u>
Defendant.)

This matter is before the Court for patent claim construction, as described in Markman v. Westview Instruments, Inc., 52 F.3d 967 (Fed. Cir. 1995), aff'd, 517 U.S. 370 (1996). There are five patents in dispute, all owned by Defendant and Counterclaim Plaintiff Cabot Microelectronics Corp. (“Cabot”): U.S. Patent Nos. 4,954,142 (the “Carr patent” or “142 patent”); 5,958,288, 5,980,775, and 6,068,787 (collectively the “Grumbine/Mueller patents”); and 5,527,423 (the “Neville patent” or “423 patent”).

Having considered the submissions by the Parties, as well as argument of counsel at the February 13, 2008 Markman hearing, the Court interprets the disputed claim terms as set forth below.

1 **PROCEDURAL BACKGROUND**

2 On December 8, 2006, Dupont Air Products NanoMaterials LLC (“Dupont”) filed a
3 declaratory judgment action for a determination of patent non-infringement, patent invalidity,
4 and patent unenforceability against Cabot. (Doc 1). On October 19, 2007, Cabot filed an
5 answer, counterclaims against Dupont for infringement, and a third-party complaint for
6 patent infringement against Precision Colloids, L.L.C. (Doc. 23). On September 13, 2007,
7 the Court granted Cabot’s Motion to Amend Answer, adding Virkler Co., d/b/a Chemical
8 Technologies L.L.C as a defendant to its counterclaims for patent infringement. (Doc. 72).

9 **FACTUAL BACKGROUND**

10 **I. Technology Background**

11 Integrated circuits (“IC”) are tiny electrical circuits that control the functions of
12 electronic devices, such as computers and cell phones. Hundreds of IC chips are built on a
13 single silicon wafer, which is then cut up into individual ICs. ICs are manufactured by
14 repeatedly running the wafer through reactor chambers in which thin films of conducting
15 material, semiconducting material, and insulating material are deposited. After each
16 film-deposition step, portions of the film are stripped away and/or shaped through various
17 processes to mold the layer into particular shapes at precisely controlled locations.

18 Chemical-mechanical planarization (“CMP”), also known as chemical-mechanical
19 polishing, is a technique used during the manufacture process to planarize (flatten) the
20 surface of the IC between other manufacturing steps. The silicon wafer is mounted in a
21 wafer carrier, pressed face down, and rotated against a porous pad mounted on a rotating
22 table. Slurry is continuously introduced between the polishing pad and the wafer surface.
23 The rotation and downward pressure on the wafer against the polishing pad causes abrasive
24 particles in the slurry to act like a super-fine liquid sand paper to polish the wafer surface.

25 **II. Patents in Suit**

26 The five patents-in-suit are in the field of CMP with a focus on the ingredients of
27 CMP slurry. To effect planarization, CMP employs chemical and mechanical ingredients in
28 combination. A chemical ingredient, such as an oxidizer like hydrogen peroxide, weakens

1 the surface of the wafer by creating a thin layer of “rust” on top of the metal layer. Then, a
2 mechanical ingredient, such as alumina or silica, scrubs-off the rust so as to flatten the
3 surface. Other chemical ingredients may also be included that can perform other functions,
4 such as facilitating the removal of one substance from the wafer faster than the removal of
5 another substance on the wafer.

6 CLAIMS CONSTRUCTION LAW

7 Claim construction is a question of law for the Court. Regent of Univ. of Cal. v.
8 Dakocytomation Cal., Inc., —F.3d—, Nos. 2006-1334, 2006-1452, 2007-1202, 2008 WL
9 516705, at *5 (Feb. 28, 2008). “It is a ‘bedrock principle’ of patent law that ‘claims of a
10 patent define the invention to which the patentee is entitled the right to exclude.’” Phillips
11 v. AWH Corp., 415 F.3d 1303, 1312 (Fed. Cir. 2005) (en banc). The words of a patent claim
12 “are generally given their ordinary and customary meaning.” Id. “The ordinary and
13 customary meaning of a claim is the meaning that the term would have to a person of
14 ordinary skill in the art in question at the time of the invention” Id. at 1313; see also
15 Tex. Digital Sys., Inc. v. Telegenix, Inc., 308 F.3d 1193, 1202 (Fed. Cir. 2002) (“The terms
16 used in the claims bear a ‘heavy presumption’ that they mean what they say and have the
17 ordinary meaning that would be attributed to those words by persons skilled in the relevant
18 art.”).

19 In cases where the ordinary meaning of claim language is not readily apparent to a lay
20 judge, “the courts look to ‘those sources available to the public that show what a person of
21 skill in the art would have understood disputed claim language to mean.’” Phillips, 415 F.3d
22 at 1314 (quoting Innova/Pure Water, Inc. v. Safari Water Filtration Sys., Inc., 381 F.3d 1111,
23 1116 (Fed. Cir. 2004)). “Those sources include the words of the claims themselves, the
24 remainder of the specification, the prosecution history, and extrinsic evidence concerning
25 relevant scientific principles, the meaning of technical terms, and the state of the art.” Id.
26 The Court may consider extrinsic evidence, such as “expert and inventor testimony,
27 dictionaries, and learned treatises,” if the intrinsic evidence does not make clear the meaning
28 of the asserted claim. Markman, 52 F.3d at 980.

1 Where, as here, “the written description of the invention is narrow, but the claim
2 language is sufficiently broad that it can be read to encompass features not described in the
3 written description,” there is tension between the two maxims that “[o]n the one hand, claims
4 must be read in view of the specification, of which they are a part,” and “[o]n the other hand,
5 it is improper to read a limitation from the specification into the claims.” Liebel-Flarsheim
6 Co. v. Medrad, Inc., 358 F.3d 898, 904 (Fed. Cir. 2004) (internal citations and quotations
7 omitted).

8 Nevertheless, the Federal Circuit has resolved that “claims will not be read
9 restrictively unless the patentee has demonstrated a clear intention to limit the claim scope.”
10 Saunders Group, Inc. v. Comfortrac, Inc., 492 F.3d 1326, 1331 (Fed. Cir. 2007); see also
11 Liebel-Flarsheim, 358 F.3d at 904-05 (Patent claims “will not be read restrictively unless the
12 patentee has demonstrated a clear intention to limit the claim scope using words or
13 expressions of manifest exclusion or restriction.” (internal quotation omitted))

14 That said, a patentee may act as his or her own lexicographer—i.e., specifically define
15 his own terms. If the intrinsic evidence reveals a “special definition,” then “the inventor’s
16 lexicography governs.” Phillips, 415 F.3d at 1316.

17 **BURDEN OF PROOF**

18 There is a statutory presumption that a patent is valid. 35 U.S.C. § 282. As a result,
19 “claims should be [] construed, if possible, as to sustain their validity.” MBO Labs., Inc. v.
20 Bechton, Dickinson & Co., 474 F.3d 1323, 1332 (Fed. Cir. 2007) (internal quotations
21 omitted). And “the evidentiary burden to show facts supporting a conclusion of invalidity,
22 which rests on the accused infringer, is one of clear and convincing evidence.” Takeda
23 Chem. Indus., Ltd. v. Alphapharm Pty., Ltd., 492 F.3d 1350, 1355 (Fed. Cir. 2007).

1 ANALYSIS

2 I. The Carr Patent (the ‘142 Patent): “Transition Metal Chelated Salt”

3 The Carr inventors discovered that the use of a particular kind of oxidizer—a
4 “transition metal chelated salt”—improved the slurry. The parties dispute centers around the
5 meaning of the term “chelate.”

6 During the prosecution of the Carr patent, the issue arose as to whether prior art
7 disclosed a transition metal chelated salt. In response, one of the inventors, Lawrence David,
8 submitted a declaration that expressly defined chelate: “A chelating agent is a molecule
9 which coordinates to a central metal atom at more than one coordination site and the
10 complexes so formed are chelates.” (JA 165).

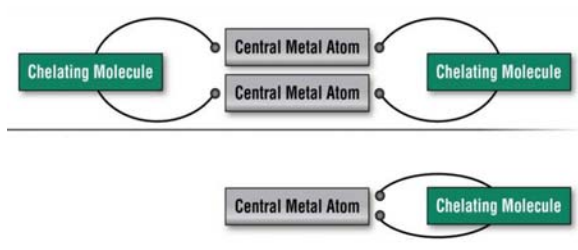
11 Thus, the parties agree that the construction of the term “transition metal chelated salt”
12 should include “the salt formed when a molecule coordinates to a central transition metal
13 atom at more than one coordination site.” Dupont, however, would like to add three
14 limitations: “formed in solution,” “same molecule,” and “to form a stable ring complex.”

15 A. “Formed in Solution”

16 Dupont’s proposed construction requires that the salt be “formed in solution.” While
17 it is true that the specification discusses a solvent for the salt, the specification does not
18 demonstrate a clear intention to limit the claim scope to “formed in solution.” Therefore, the
19 Court will not construe the claim to require that it be formed in solution. See Saunders
20 Group., 492 F.3d at 1331 (“Claims will not be read restrictively unless the patentee has
21 demonstrated a clear intention to limit the claim scope.”).

22 B. “Same Molecule”

23 The parties agree that each chelating molecule must provide multiple coordination
24 sites, and each central metal atom must have multiple coordination sites. As shown in the
25 illustration below, the atom’s multiple coordination sites can be on the same molecule or
26 different molecules:
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 6 Dupont’s proposed construction seeks to limit the invention so that the atom’s
 7 multiple coordination sites must be on the same molecule (as shown in the lower image). To
 8 support its proposed construction, Dupont points to two portions of David’s inventor
 9 declaration. First, the declaration states that “[a] chelating agent is **a** molecule which
 10 coordinates to a central metal atom at more than one coordination site.” But “[i]t is well
 11 settled that the term ‘a’ or ‘an’ ordinarily means ‘one or more.’” Tate Access Floors, Inc. v.
 12 Interface Architectural Res., Inc., 279 F.3d 1357, 1370 (Fed. Cir. 2002) (collecting cases).

13 Second, it states that the prior art did not form a chelate because each water molecule
 14 coordinates at only one site with the metal atom. This does not, however, limit the invention
 15 to the same molecule. David was simply pointing out that a chelate must have a central metal
 16 atom to which molecules coordinate at more than one coordination site. He did not state that
 17 the metal atom’s multiple coordination sites had to be with the same molecule.

18 Dupont also asks the Court to examine extrinsic definitions contained in chemistry
 19 textbooks and dictionaries. Such evidence, though, “is less significant than the intrinsic
 20 record in determining the legally operative meaning of claim language.” Phillips, 415 F.3d
 21 at 1317. Moreover, both parties have adduced extrinsic evidence supportive of their cause.
 22 These conflicting extrinsic definitions do not aid this Court’s construction of the claims. See
 23 McNeil-PPC, Inc. v. Perrigo Co., 443 F. Supp. 2d 492, 507 (S.D.N.Y. 2006).

24 Accordingly, the inventor’s lexicography governs, see Phillips, 415 F.3d at 1316, and
 25 there is no requirement that the coordination sites be with the same molecule.

26 C. “To Form a Stable Ring Complex”

27 The Court agrees with Dupont to the extent that a chelate is a “complex,” as the
 28 inventor stated that: “[a] chelating agent is a molecule which coordinates to a central metal

1 atom at more than one coordination site and the complexes so formed are chelates.” (JA 165)
2 (emphasis added). As stated above, the inventor’s lexicography governs.

3 There is no requirement, however, that the complex be stable, and the use of the term
4 “ring” is without basis.

5 **II. The Grumbine/Mueller Patents (the ‘288, ‘775, and ‘787 Patents)**

6 The three Grumbine/Mueller patents stem from the same original patent application.
7 The key innovations of the Grumbine/Mueller patents are the use of a catalyst and stabilizer
8 to improve slurry performance.

9 A. “Oxidizing Agent” (All Three Grumbine/Mueller Patents)

10 The term “oxidizing agent” is used in the specification and file history in a manner
11 consistent with its ordinary meaning, and is not given a special meaning. Therefore, the plain
12 meaning of the term to those skilled in the art controls. See Phillips, 415 F.3d at 1312.

13 Cabot’s proposed construction tracks the term’s ordinary meaning, and is
14 word-for-word from relevant technical dictionaries defining “oxidizing agent.” (See JA 3079,
15 3082). The Court will adopt Cabot’s construction. See Nystrom v. Trex Co., 424 F.3d 1136,
16 1146-48 (Fed. Cir. 2005) (applying dictionary definition of term “convex” where that
17 definition was consistent with the specification and file history, and where inventors did not
18 “redefine or disclaim” the dictionary definition).

19 B. “Catalyst” (All Three Grumbine/Mueller Patents)¹

20 During prosecution of the Grumbine/Mueller patents, the inventors defined “catalyst”:
21 “It is well known that catalysts are substances that increase the rate of a chemical reaction
22 without being consumed.” (JA 517-18). Thus, the parties agree that the construction of the
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24 ¹ Because, in the context of claim construction, reliance on representations made to foreign
25 patent offices is inappropriate due to the differences in international requirements for patent
26 prosecution, the Court declines to consider representations made by Cabot to foreign patent
27 offices. See Pfizer Inc. v. Ranbaxy Labs., 457 F.3d 12 1284, 1290 (Fed. Cir. 2006); TI
Group Auto. Sys., Inc. v. VDO N. Am., LLC, 375 F.3d 1126, 1136 (Fed. Cir. 2004); Burns,
Morris & Stewart Ltd v. Masonite Int’l Corp., 401 F. Supp. 2d 692, 698 (E.D. Tex. 2005);
28 Astra Aktiebolag v. Andrx Pharm., Inc., 222 F. Supp. 2d 423, 466 (S.D.N.Y. 2002).

1 term “catalyst” should include “a substance that increases the rate of a chemical reaction
2 without being consumed.”

3 Dupont, however, would like to add three limitations: “present in less than the
4 stoichiometric amount necessary to react with the oxidizing agent,” “without undergoing a
5 chemical change,” and “must be able to shuffle electrons efficiently and rapidly between the
6 oxidizing agent and the substrates surface.”

7 1. *“Present in Less than the Stoichiometric Amount”*

8 The patent examiner rejected that the invention was limited to a particular amount of
9 catalyst. (See JA 645 (“It is thus not clear why the claims should not be read as including
10 stoichiometric amounts.”)). Therefore, the Court will not read this limitation into the claim.

11 2. *“Without Undergoing a Chemical Change”*

12 The prosecution history demonstrates that the catalyst must not undergo a chemical
13 change. First and importantly, when contrasting an oxidizing agent and a catalyst, the
14 inventor stated that “[an oxidizing agent] is consumed and does not remain unchanged as a
15 catalyst must.” (JA 518). Second, the inventors also included two chemical dictionary
16 definitions to support their definition of “catalyst,” both of which require that the catalyst not
17 undergo a chemical change. (See JA 525, 531). Thus, a proper construction of an “oxidizing
18 agent” must specify that it cannot undergo a chemical change.

19 3. *“Must Be Able to Shuffle Electrons Efficiently and Rapidly Between the*
20 *Oxidizing Agent and the Substrate’s Surface”*

21 In its description of the “current embodiment,” the ‘288 specification states that the
22 catalyst of the embodiment “must shuffle electrons efficiently and rapidly between the
23 oxidizer and the metal substrate surface.” (‘288 Patent, 5:29-31). Relying upon this language,
24 Dupont argues that the construction of “catalyst” must include this limitation.

25 “Claims[, however,] may not be limited by functions or elements disclosed in the
26 specification.” Kahn v. General Motors Corp., 135 F.3d 1472, 1476 (Fed. Cir. 1998); see also
27 Phillips, 415 F.3d at 1320 (noting that reading a limitation from the patent specification into
28 the claim is “one of the cardinal sins of patent law); Catalina Mktng. Int’l, Inc. v.

1 Coolsavings.com, Inc., 289 F.3d 801, 809 (Fed. Cir. 2002). The proposed language is not
2 a “definition” of a catalyst, but merely describes the function of a catalyst. Thus, there is no
3 basis to add the proposed limitation into the claim.

4 C. “Synergistic Combination” (‘288 Patent)

5 During prosecution of the ‘288 patent, the inventors defined “synergistic combination”:
6 “it is to be noted that any catalyst/oxidizing agent combination is a synergistic combination
7 so long as the metal polishing rate of the synergistic combination is greater than the sum of
8 the meal polishing rates of compositions including the individual ingredients.” (JA 696).

9 The inventors’ lexicography governs. See Phillips, 415 F.3d at 1316.

10 D. “Stabilizer” (‘775 and ‘787 Patent)

11 The term “stabilizer” is not specially defined, so it should be given its ordinary and
12 customary meaning. See Phillips, 415 F.3d at 1312. Cabot proposes that the Court adopt the
13 dictionary definition. Dupont, however, would like to add three limitations.

14 First, Dupont wants to limit “stabilizer” to one that “complexes with the catalyst.”
15 Although the specification states that the invention is “presently understood to create a
16 stabilizer/catalyst complex,” it expressly disavows that the stabilizer and catalyst must form
17 a complex: “the [claim term] refers to an admixture of both ingredients as used in a
18 composition and slurry whether or not the combination of ingredients forms a complex in the
19 end product.” (‘775 patent, 8:14-22). Given the clear language in the specification that the
20 stabilizer need not complex with the catalyst, the Court will not adopt Dupont’s proposed
21 limitation requiring the stabilizer to complex with the catalyst.

22 Dupont’s proposed construction also adds: “significantly decreases the rate at which
23 the oxidizing agent decomposes” and “reduces the effectiveness of the catalyst.” These extra
24 limitations merely state two particular results that the inventors believed could be achieved
25 by using the stabilizer in the invention, as discussed in the specification and file history. But
26 claims are not limited to the results that are described, or thought to be achieved, by practicing
27 an invention. See Boehringer Ingelheim Vetmedica, Inc. v. Schering-Plough Corp., 320 F.3d
28 1339, 1346 (Fed. Cir. 2003) (“An intended use or purpose usually will not limit the scope of

1 the claim because such statements usually do no more than define a context in which the
2 invention operates.”); Catalina Mkt’g, 289 F.3d at 809 (composition claims do no depend on
3 the “use or purpose” of claimed structure); Kahn, 135 F.3d 1472, 1476 (Fed. Cir. 1998)
4 (claims are not “limited by functions . . . disclosed in the specification.”); Tex. Instruments
5 Inc. v. U.S. Int’l Trade Comm’n, 988 F.2d 1165, 1172 (Fed. Cir. 1993) (language that “merely
6 states the results of the limitation in the claim adds nothing to the patentability or substance
7 of the claim”).

8 Because the specification does not define the term “stabilizer” either explicitly or
9 implicitly, the Court will adopt the dictionary definition. See MIT v. Abacus, 462 F.3d 1344,
10 1351 (Fed. Cir. 2006); Nystrom, 424 F.3d at 1146-48.

11 **III. The Neville Patent (the ‘423 Patent): “Stable”**

12 Claim 1 of the Neville patent claims alumina abrasive particles (“aggregates”) that are
13 “uniformly dispersed” in a “stable” slurry. Aggregate particles have a tendency to clump
14 together, i.e., “agglomerate” or “re-agglomerate.” When this re-agglomeration happens, the
15 abrasive aggregate particles that are supposed to be small and evenly distributed through the
16 slurry, “settle out” to form a “hard dense sediment” or “cake.” (‘423 patent, 4:26-30;
17 10:1-13.)

18 The Neville patent was construed by the United States District Court for the District
19 of North Carolina in Cabot Corp. v. Solution Tech., Inc., Case No. 3:96CV505-P (hereinafter
20 “the STI court”). Cabot proposes that the Court adopt the construction of “stable” already
21 adopted by the STI court.

22 Because this Court is not bound to follow the decision of another district court, it is not
23 bound by the decision of the STI court. That said, the Supreme Court in Markman indicated
24 that uniformity in claim construction is important. 517 U.S. at 390. Accordingly, courts
25 generally have accorded another court’s claim construction deference. See Visto Corp. v.
26 Sproqit Techs., Inc., 445 F. Supp. 2d 1104, 1109 (N.D. Cal. 2006) (giving “reasoned
27 deference” to claim construction of another district court outside the jurisdiction regarding the
28 same patents); Verizon California Inc. v. Ronald A. Katz Tech. Licensing, P.A., 326 F. Supp.

1 2d 1060, 1069 (C.D. Cal. 2003) (finding a different district court's construction of patent
2 claim terms “persuasive and highly relevant” authority).

3 In the specification, the inventors defined “stable”: “By stable is typically meant that
4 the aggregates will not re-agglomerate and settle out (e.g. form a hard, dense sediment).”
5 (‘423 patent, 4:26-28). Because a patentee’s lexicography governs, the STI court adopted this
6 construction of “stable.” (See JA 3044). This Court will do the same.²

7 The STI court also added a time component, namely that the slurry must be stable
8 “during the slurry’s reasonable or customary period of use.” (JA 3052 & n.2). To support this
9 time component, it relied upon the preferred embodiment of the invention and experiments
10 with prior-art slurries. (JA 3052 n.2). The Court finds this approach reasonable, and will
11 adopt the a temporal limitation.

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26 ² The parties argued extensively about how much settling may occur before the slurry is no
27 longer stable. This is a matter for the finder of fact. See Acumed LLC v. Stryker Corp., 483
28 F.3d 800, 806 (Fed. Cir. 2007); PPG Indus. v. Guardian Indus. Corp., 156 F.3d 1351, 1355
(Fed. Cir. 1998).

1 Accordingly,

2 **IT IS ORDERED** that this Order is **SEALED**.


3 **IT IS FURTHER ORDERED** that the claims are constructed as follows:

4 '142 Claim Language	Construction
5 transition metal chelated salt	The salt formed when a molecule coordinates to a central transition metal atom at more than one coordination site to form a complex.
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7 '288, '775, and '787 Claim Language	Construction
8 catalyst	A substance that increases the rate of a chemical reaction without being consumed or undergoing a chemical change.
9	
10 oxidizing agent	A compound that gives up oxygen easily, removes hydrogen from another compound, or attracts negative electrons.
11	
12	
13 the catalyst is selected from the group of inorganic iron compounds and organic iron compounds	No construction needed.
14	
15 '288 Claim Language	Construction
16 synergistic combination	A combination is a synergistic combination so long as the metal polishing rate of the synergistic combination is greater than the sum of the metal polishing rates of compositions including the individual ingredients.
17	
18	
19 '775 and '787 Claim Language	Construction
20 stabilizer	Any substance that tends to maintain the physical and chemical properties of a material.
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22 '775 Claim Language	Construction
23 A chemical mechanical polishing composition comprising the admixture of	No construction needed.
24 '787 Claim Language	Construction
25 A chemical mechanical polishing composition precursor comprising	No construction needed.
26 '423 Claim Language	Construction
27 stable	The aggregates will not re-agglomerate and settle out (e.g. form a hard, dense sediment) during the slurry's reasonable or customary period of use.
28	

1 colloidally stable	Same as "stable."
2 3 4 a force sufficient to repel and overcome the van der Waals forces between the particles	The surface potential or the hydration force of the metal oxide particles must be sufficient to repel and overcome the van der Waals attractive forces between the particles.
5 6 7 oxidizing component	A compound that gives up oxygen easily, removes hydrogen from another compound, or attracts negative electrons.

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10 DATED this 25th day of July, 2008.

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 Roslyn O. Silver
 United States District Judge