file

THIS OPINION WAS NOT WRITTEN FOR PUBLICATION
and is not binding precedent of the Board

Paper 138

Filed by: Interference Trial Section Merits Panel
Box Interference
Washington, D.C. 20231
Tel: 703-308-9797
Fax: 703-305-0942

UNITED STATES PATENT AND TRADEMARK OFFICE

MAILED
DEC 21 2002
PAT. & T.M. OFFICE
BOARD OF PATENT APPEALS
AND INTERFERENCES

BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES

JOHN V. H. ROBERTS,
Junior Party,
(Patent 5,605,760; Reissue Application 09/596,023),

v.

MANOOCHER BIRANG and ALLAN GLEASON,
Senior Party
(Application 09/028,412).

Patent Interference No. 104,424

Before: SCHAFER, LEE and NAGUMO[1], Administrative Patent Judges.

SCHAFER, Administrative Patent Judge.

---

[1] Oral argument was heard before a panel of Administrative Patent Judge Schafer, Lee and Medley. APJ Nagumo was substituted for APJ Medley due to the latter's unavailability. See, In re Bose Corp., 772 F.2d 866, 869, 227 USPQ 1, 4 (Fed. Cir. 1985).

FINAL JUDGMENT

This interference is between (1) Roberts' Patent 5,605,760 and reissue Application 09/596,023 (seeking to reissue the Roberts Patent) and (2) Birang Application 09/028,412. We award judgment against Roberts.

I.

Background - the subject matter of the interference

The common inventive subject matter of the parties relates to polishing pads having a transparent portion used to planarize or polish the surface of silicon wafers in the production of integrated circuits. Polishing is said to be carried out at various points during the integrated circuit production process. The parties state that planarization is an important aspect of the production process. Birang explains:

> In the process of fabricating modern semiconductor integrated circuits (ICs), it is necessary to form various material layers and structures over previously formed layers and structures. However, the prior formations often leave the top surface topography of an in-process wafer highly irregular, with bumps, areas of unequal elevation, troughs, trenches, and/or other surface irregularities. These irregularities cause problems when forming the next layer. For example, when printing a photolithographic pattern having small geometries over previously formed layers, a very shallow depth of focus is required. Accordingly, it becomes essential to have a flat and planar surface, otherwise, some parts of the pattern will be in focus and other parts will not. In fact, surface variations on the order of less than 1000 Å over a 25 x 25 mm die would be preferable. In addition, if the aforementioned irregularities are not leveled at each major processing step, the surface topography of the wafer can become even more irregular, causing further problems as the layers stack up during further processing.

Birang Specification, p. 1, l. 21 - p. 2, l. 1. The parties say that chemical mechanical polishing (CMP) is often used to polish the wafers. In CMP, the wafer is typically held against a polishing pad affixed to a rotating table or platen. Chemicals and abrasives are applied to the pad during polishing. Roberts tells us:

> It is desirable to effect planarization of integrated circuit structures in the form of semiconductor wafers during the manufacture of multilayer integrated circuits. The planarization must be very precise, providing a wafer surface that varies from a given plane by as little as a fraction of a micron. This is usually accomplished by CMP, chemical-mechanical polishing, on an

> apparatus most often comprised of a rotating table, usually circular, onto which is affixed a polishing pad, a wafer carrier which presses the wafer flatly onto the polishing pad, and a means of supplying chemicals and abrasives to the polishing pad in the form of a slurry. Apparatus for polishing thin, flat semiconductor wafers are well known in the art.

R. Ex.[2] 2001, col. 1, ll. 13-26. Birang similarly states:

> One method for achieving the aforementioned semiconductor wafer planarization or topography removal is the chemical mechanical polishing (CMP) process. In general, the chemical mechanical polishing (CMP) process involves holding and/or rotating the wafer against a rotating polishing platen under a controlled pressure.

Birang Specification, p. 2, ll. 10-14. Both parties identify the same existing problem with respect to prior art CMP –determining when the desired degree of flatness (the "end-point") has been obtained. Roberts notes:

> A particular problem encountered when planarizing semiconductor wafers on such apparatus is the determination that a wafer has been polished to the desired degree of flatness. Most end-point detection methods shown in the art rely on the change in the surface structure of the wafer as an overlying layer is removed.

R. Ex. 2001, col. 1, ll. 29-34. Birang also speaks to this problem:

> A particular problem encountered during a CMP process is in the determination that a part has been planarized to a desired flatness or relative thickness. In general, there is a need to detect when the desired surface characteristics or planar condition has been reached.

Birang Specification, p. 3, ll. 1-5. Both parties describe prior techniques to determine the end-point. Birang says:

> Early on, it was not possible to monitor the characteristics of the wafer during the CMP process. Typically, the wafer was removed from the CMP apparatus and examined elsewhere. If the wafer did not meet the desired specifications, it had to be reloaded into the CMP apparatus and reprocessed. This was a time consuming and labor-intensive procedure. Alternately, the examination might have revealed that an excess amount of material had been removed, rendering the part unusable. There was, therefore, a need in the art for a device which could detect when the desired surface characteristics or thickness had been achieved, in-situ, during the CMP process.

---

[2] "R. Ex. means "Roberts Exhibit".

> Several devices and methods have been developed for the in-situ detection of endpoints during the CMP process. For instance, devices and methods that are associated with the use of ultrasonic sound waves, and with the detection of changes in mechanical resistance, electrical impedance, or wafer surface temperature, have been employed. These devices and methods rely on determining the thickness of the wafer or a layer thereof, and establishing a process endpoint, by monitoring the change in thickness. In the case where the surface layer of the wafer is being thinned, the change in thickness is used to determine when the surface layer has the desired depth. And, in the case of planarizing a patterned wafer with an irregular surface, the endpoint is determined by monitoring the change in thickness and knowing the approximate depth of the surface irregularities. When the change in thickness equals the depth of the irregularities, the CMP process is terminated.

Birang Specification, p. 3, ll. 6-36. Roberts notes several prior art patents relating to techniques and apparatus for end-point detection by measuring thickness. R. Ex. 2001, col. 1, ll. 36-46 and ll. 54-64. Roberts characterizes these prior art devices as too complicated:

> These devices for in-situ measurement of thickness are very complicated and rely on specialized electronic circuitry to accomplish the task. Most often, instead of using a complicated in-situ method, wafers are removed from the polishing apparatus and flatness is measured using a spectroscopic device to measure the oxide film thickness. Usually, the wafer is taken out of the polishing operation before the expected end point is reached so that excess polishing does not occur. Then the wafer is reinserted into the polishing machine for polishing to the desired endpoint.

R. Ex. 2001, col. 1, ll. 43-53. Roberts notes that the prior art also taught the use of laser light interferometry to measure the thickness. R. Ex. 2001, col. 1, ll. 54-64. Both parties note that there is a need for a better end-point detection technique during polishing. Roberts says:

> It would be very desirable to have a machine upon which such laser light measurements could be employed while the wafer is continuously under total polishing conditions.

R. Ex. 2001, col. 1, ll. 64-67. Birang similarly notes:

> Although these devices and methods work reasonably well for the applications for which they were intended, there is still a need for systems which provide a more accurate determination of the endpoint.

Birang Specification, p. 3, l. 36 - p. 4, l. 2.

The parties both address the problem by utilizing a polishing pad having at least a portion that is transparent. Roberts specification summarizes the invention as follows:

> A pad is provided for use on a machine for the polishing of silicon wafers which allows the use of optical detection of the wafer surface condition as it is being polished. This is accomplished by constructing the entire pad or a portion thereof out of a solid uniform polymer sheet with no intrinsic ability to absorb or transport slurry particles and which is transparent to the light beam being used to detect the wafer surface condition by optical methods. Polymers which are transparent to light having a wavelength within the range of 190 to 3500 nanometers are suitable for the construction of these pads.

R. Ex. 2001, col. 2, ll. 3-13, emphasis added. Birang also describes a polishing system using optical end-point detection during the polishing process. An essential part of the system is a polishing pad having a window transparent to laser light:

> 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.
>
> Specifically, the foregoing objective is attained by an apparatus and method of chemical mechanical polishing (CMP) employing a rotatable polishing platen with an overlying polishing pad, a rotatable polishing head for holding the wafer against the polishing pad, and an endpoint detector. The polishing pad has a backing layer which interfaces with the platen and a covering layer which is wetted with a chemical slurry and interfaces with the wafer. . . . And, the endpoint detector includes a laser interferometer capable of generating a laser beam directed towards the wafer and detecting light reflected therefrom, and a window disposed adjacent to a hole formed through the platen. This window provides a pathway for the laser beam to impinge on the wafer, at least during the time that the wafer overlies the window.
>
> The window can take several forms. . . . Alternately, the window can take the form of a portion of the polishing pad from which the adjacent backing layer has been removed. This is possible because the polyurethane covering layer is at least partially transmissive to the laser beam. Finally, the window can take the form of a plug formed in the covering layer of the pad and having no backing layer. This plug is preferably made of a polyurethane material which is highly transmissive to the laser beam.

Birang Specification, p. 4, l. 8 - p. 5, l. 11.

Birang's Claim 46 and Roberts' Claim 3 (dependent on Claim 1) are representative of the common invention of the parties:

Birang Claim 46.

46. A pad useful for polishing integrated circuit wafers, said pad having at least a portion comprised of a solid uniform polymer sheet with no intrinsic ability to absorb or transport slurry particles, said polymer sheet being transparent to light having a wavelength within the range that extends from the far infrared to ultraviolet, wherein said pad comprises a first portion comprised of said solid uniform polymer sheet transparent to light and a second portion comprised of a microporous polyurethane structure.

Roberts Claims 1 and 3.

1. A pad useful for polishing integrated circuit wafers, said pad having at least a portion comprised of a solid uniform polymer sheet with no intrinsic ability to absorb or transport slurry particles, said polymer sheet being transparent to light having a wavelength within the range of 190 to 3500 nanometers.

3. A pad according to claim 1 wherein said pad comprises a first portion comprised of said solid uniform polymer sheet transparent to light and a second portion comprised of a microporous polyurethane structure.

I.A.
The count and claim correspondence

The sole count of this interference is

Count 1.

A pad useful for polishing integrated circuit wafers according to claim 3 of Roberts patent 5,605,760.

The claims of the parties are:

Birang	42, 43, 46, 48, 49, 51 and 52
Roberts 5,605,760	1-8
Roberts 09/596,023	1-8

The claims of the parties which correspond to Count 1 are:

Birang	46, 48, and 49
Roberts 5,605,760	1-6
Roberts 09/596,023	1-6

The claims of the parties which do not correspond to Count 1 are:

Birang	42, 43, 51 and 52
Roberts 5,605,760	7-8
Roberts 09/596,023	7-8

II.

Patentability of Robert's Claims 1 and 2 over the Cook patent

II.A.

Background

During the preliminary motions phase, Birang filed a motion asserting that Roberts involved claims 1 and 2 were unpatentable under 35 U.S.C. § 102(e) as anticipated by U.S. Patent 5,489,233 (the Cook patent). Paper 25. That patent issued in the names of Lee M. Cook, John V. H. Roberts, Charles W. Jenkins and Raj R. Pillai. B. Ex.[3] 1002. In opposing the motion, Roberts did not assert that the Cook patent did not describe subject matter falling within the scope of Claims 1 and 2. Rather, Roberts asserted, inter alia, (1) that the relevant subject matter described in the Cook patent was Roberts' sole invention and (2) that Roberts was entitled to the benefit under 35 U.S.C. § 120 to the filing date of the Cook patent.[4] We originally granted that motion. Upon reconsideration of that motion and the additional evidence and briefs submitted by the parties, we again grant Birang's preliminary motion.

With respect to the first argument, that Claims 1 and 2 are not unpatentable under § 102(e) because the subject matter described in Cook was not the invention of "another" under § 102(e), Roberts relied solely on the declaration of John V. H. Roberts (R. Ex. 2006), the junior party in this interference. The declaration included the unsupported allegation that he was the sole inventor of the relevant subject matter of the Cook patent:

> 4. I unequivocally declare under 37 CFR 1.132 that the reference invention described in [the Cook patent], insofar as it relates to the invention claimed in U.S. Patent 5,605,760, is not by "another"; i.e., I declare that I

---

[3] "B. Ex. means "Birang Exhibit".

[4] In opposing Birang's Preliminary Motion 1, Roberts also attempted to antedate the Cook patent under 37 CFR § 1.131. Paper 43, p. 6. The issue was decided adversely to Roberts. Paper 73, pp. 24-28. Roberts did not identify the issue for review at final hearing (Paper 105) nor raise in the briefs for final hearing. Accordingly, the issue is considered waived.

> conceived that portion of the subject matter of [the Cook patent] (of which I am named as a joint inventor), which is claimed in U.S. Patent 5,605,760.

R. Ex. 2006, p.2, ¶ 4. No other statement relating to who invented what was made in the declaration. A decision by this panel held that Roberts' sole inventorship had not been proved. We stated:

> The declaration is conclusory and is insufficient to attribute the relevant disclosure of the Cook patents to Roberts. What is required in such situations is a reasonable showing supporting Roberts' position.

Paper 73, p. 23. In re Katz, 687 F.2d 450, 455, 215 USPQ 14, 18 (CCPA 1982) and In re DeBaun, 687 F.2d 459, 214 USPQ 933 (CCPA 1982) were relied upon for the proposition that more than a mere conclusory statement by an inventor was necessary to show that the inventorship was different than indicated in the Cook patent. Paper 73, pp. 23-24.

Roberts requested reconsideration of the panel's decision. Paper 76. Robert's asserted that we overlooked relevant portions of the Manuel of Patent Examining Procedure (MPEP), in particular, §§ 706.02(b) and 716.10. Paper 76, p. 3.

In denying reconsideration, we noted that the MPEP is a guide for patent examiners conducting ex parte examination and provides little guidance with respect to the admissibility or sufficiency of evidence during an interference proceeding where the considerations, requirements and burdens on the parties are substantially different. Paper 80, pp. 2-3. We also noted that MPEP § 706.02(b), the only portion of the MPEP referenced in Roberts' opposition, merely provides a general statement that during ex parte examination a rejection under 35 U.S.C. § 102(e) may be overcome by an appropriate declaration under 37 CFR § 1.132 showing, inter alia, that the relevant portions of the reference were not the contribution of another. Paper 80, p. 3. Our decision also noted that, that Roberts' opposition did not direct our attention to any other part of the MPEP and that it was Roberts responsibility to direct our attention to all authority supporting his position. Paper 80, p. 3. Lastly, we reviewed all the portions of the MPEP Roberts cited in the request for reconsideration, including those not originally cited in Roberts' opposition, and held that we had not acted inconsistently with them.[5]

---

[5] In this regard Roberts asserts:

> This Brief, and consideration at final hearing of the question whether the '233 Patent is the work of another under 35 USC § 102(e), is necessary only because the Board

Notwithstanding the denial of reconsideration, we exercised our discretion and provided Roberts an opportunity to present additional evidence and rebrief the issue at final hearing. Paper 80, p. 5. Birang requested reconsideration of our decision allowing Roberts to rebrief the issue. Reconsideration of that issue was deferred to final hearing. Paper 82. We thus turn to Birang's request.

II.B.

Birang's opposition to further consideration of Roberts' Motion

In our decision authorizing rebriefing and submission of additional evidence, Roberts was ordered to address Birang's request for reconsideration in its principal brief on non-priority issues. Paper 105. Because Roberts did not address the issue in that brief, we consider Birang's request for reconsideration as unopposed.[6]

> has chosen, in this case, to apply a higher standard for showing that the subject matter described in a copending patent is not the work of "another" under 35 USC § 102(e) in the context of an interference, than would be required in ex parte prosecution according to procedures described in the Manual of Patent Examining Procedures ("MPEP"). Invoking MPEP § 706.02(b), pages 700-11 to 700-12 (7th ed., Rev. 1, February 2000), and following the standards set forth in MPEP § 715.01 (a)), Roberts filed a declaration under 37 CFR 1. 132 showing that the reference invention was not by "another." Only because the Board chose to apply this higher standard, does the Board need to address this issue once again. The Standing Order in this Interference (Paper 1 at page 8, paragraph 14), while warning the parties not to rely on MPEP Chapter 2300, does not require the Board to demand higher standards than imposed by other chapters of the MPEP, and does not warn the parties that the Board will do so. The Board could as easily reach the result sought by Roberts in this Brief by deciding that the procedures set forth in MPEP §§ 706.02(b) and 715.01 (a) govern procedures for removing a reference in interference proceedings, as they do in ex parte proceedings.

In addition to being incorrect about the portions of the MPEP cited in the opposition (Roberts only referred to § 706.02(b)), Roberts is simply incorrect in asserting that the "standards" relating to patentability are the same during an interference as during ex parte examination. Different procedural and substantive standards are mandated by the procedural and legal requirements which apply during inter partes interference proceedings. Here are two of many possible examples: (1) evidence relied upon in an interference must comply with the Federal Rules of Evidence (37 CFR § 1.671(b)) but the Fed. R. Evid. do not apply during ex parte examination (In re Epstein, 32 F.3d 1559, 1565, 31 USPQ2d 1817, 1821 (Fed. Cir. 1994)) and (2) in an interference the testimony of an inventor as to an actual reduction to practice must be corroborated by evidence independent of the inventor (Cooper v. Goldfarb, 154 F.3d 1321, 1330, 47 USPQ2d 1896, 1903 (Fed. Cir. 1998)) but such independent evidence is not required during ex parte examination (37 CFR § 1.131(b)).

[6] The order specifying the issues for final hearing stated:

> If Roberts chooses to address the issue, he shall do so in his principal brief directed to non-priority issues.

Paper 105, p. 3. Roberts asserts that the issue was addressed stating:

Birang asserts that contrary to 37 CFR § 1.640(c) we changed our decision on the motion without giving Birang an opportunity to oppose. Paper 81, p. 1-2. That section provides in pertinent part:

> A decision ordinarily will not be modified unless an opposition has been requested.

37 CFR § 1.640(c).

Our decision on Birang's motion was that Roberts' Claims 1 and 2 were unpatentable. We denied Roberts's request for reconsideration and declined to vacate our earlier decision. Paper 80, p. 5. Thus, the status of the Roberts' Claims 1 and 2 after our decision on reconsideration was the same as it was before that decision, i.e., Roberts' Claims 1 and 2 were unpatentable under 35 U.S.C. § 102(e). We did not change that decision on reconsideration.

Birang also relies on Hanagan v. Kimura, 16 USPQ2d 1791 (Comm'r Pat. 1990), and Orikasa v. Oonishi, 10 USPQ2d 1996 (Comm'r Pat. 1989) challenging the propriety of our allowing Roberts to submit additional evidence on the issue. Paper 81, pp. 1-2. Hanagan upheld a decision by the board not to allow further development of the record after motions were decided. Hanagan, 16 USPQ2d at 1794. Orikasa said that a party's evidence should be submitted with the motion and no further evidence should be received. Orikasa, 10 USPQ2d at 2000, n.12.

We have reviewed both opinions and do not read them as limiting our discretion to allow, based upon the particular facts of the case, further development of the record. Indeed, in Hanagan

---

> Contrary to Birang's statement, Roberts did indeed address the issue of additional evidence in his principal briefs. Clearly, Roberts disagreed with Birang's position on the reconsideration. Consequently Roberts presented the appropriate evidence in both Roberts' Brief Showing that Cook is Not Prior art to Claims 1 & 2, and in Roberts' Brief for Final Hearing on Non-Priority Issues. This uncontroverted evidence further confirms the unequivocal statements in Roberts' uncontested declaration initially submitted by Roberts in Opposition to Birang Motion 1, that the transparent pad described in '233 Patent "insofar as it relates to the invention claimed in U.S. Patent No. 5,605,760 is not by another."

Paper 119, pp. 11-12 (footnote deleted). Roberts, however, never addresses the procedural issue raised by Birang's request for reconsideration (Paper 81) and by Birang's Brief at Final Hearing on Non-Priority Issues (Paper 122, pp. 9-13). Birang's challenge was to the appropriateness of the process of allowing further briefing when Roberts had previously been given a full and fair opportunity to address the issue. Roberts never addressed the process issue. Rather, Roberts argued the merits of the issue and now argues that those arguments demonstrated implicit disagreement with the issues. Implied disagreement on the merits of an issue did not address the procedural issue raised by Birang. Accordingly, we consider Birang's request for reconsideration to be unopposed.

the Commissioner stated that the Board was authorized, based upon a showing as the board deemed sufficient, to allow further development of the record. Hanagan, 16 USPQ2d at 1794.

We deny Birang's request for reconsideration of our decision to allow further evidence and briefing on the § 102(e) issue.

II.C.

Anticipation under 35 U.S.C. § 102(e) by Cook

Section 102(e) provides in relevant part:

> A person shall be entitled to a patent unless —
>
> * * * * *
>
> (e) the invention was described in —
>
> * * * * *
>
> (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent . . . .

"Anticipation under 35 U.S.C. Section 102(e) requires that 'each and every element as set forth in the claim is found, either expressly or inherently described, in a single prior art reference.'" In re Robertson, 169 F.3d 743, 745, 49 USPQ2d 1949, 1950 (Fed. Cir. 1999), quoting Verdegaal Bros., Inc. v. Union Oil Co., 814 F.2d 628, 631, 2 USPQ2d 1051, 1053 (Fed. Cir. 1987). However, the prior art reference need only describe a single embodiment within the scope of that claim. Brown v. 3M, 265 F.3d 1349, 1351, 60 USPQ2d 1375, 1376 (Fed. Cir. 2001) ("When a claim covers several structures or compositions, either generically or as alternatives, the claim is deemed anticipated if any of the structures or compositions within the scope of the claim is known in the prior art."); Titanium Metals Corp. of America v. Banner, 778 F.2d 775, 782, 227 USPQ 773, 779 (Fed. Cir. 1985) ("It is also an elementary principle of patent law that when, as by a recitation of ranges or otherwise, a claim covers several compositions, the claim is 'anticipated' if one of them is in the prior art."); In re Petering, 301 F.2d 676, 682, 133 USPQ 275, 280 (CCPA 1962) (a compound described in a reference, and a generic claim including that compound, are unpatentable under 35 U.S.C. §102(b)); In re Slayter, 276 F.2d 408, 411, 125 USPQ 345, 347 (CCPA 1960) (a generic claim can not be allowed if the prior art describes a species within the claimed genus).

Roberts' Claims 1 and 2 provide:

> 1. A pad useful for polishing integrated circuit wafers, said pad having at least a portion comprised of a solid uniform polymer sheet with no intrinsic

ability to absorb or transport slurry particles, said polymer sheet being transparent to light having a wavelength within the range of 190 to 3500 nanometers.

2. A pad according to claim 1 wherein said solid uniform polymer sheet has a surface with a surface texture or pattern comprising both large and small flow channels which together permit the transport of polishing slurry containing particles across said surface, said surface texture or pattern being produced solely by external means upon said surface of said solid uniform polymer sheet.

We focus below on the subject matter of Roberts dependent claim 2, which if anticipated, renders both claims 1 and 2 unpatentable.

Roberts claim 2 covers polishing pads made entirely or partly of a transparent polymer. The polymer must be transparent to wavelengths of 190 to 3500 nanometers. This range extends well beyond the visible spectrum and includes substantial parts of the ultraviolet and infrared spectra.[7] The pads when used in conjunction with slurry particles are said to be suitable for polishing integrated circuit wafers. Typical prior art polishing pads for this purpose are said to be made of felted or woven polyurethane or natural fibers or of filled polyurethane (i.e., polyurethane having embedded particles) and were opaque. The prior art pads, because of their fibrous or filled structure, had the intrinsic ability to absorb and transport slurry particles. The pads claimed by Roberts are said to be structurally different in that they are made from a solid, uniform polymer sheet and therefore lack the "intrinsic" ability to absorb or transport slurry particles. Roberts' Claim 2 additionally requires that the surface of the polymer sheet have a surface texture including both "large and small flow channels." The flow channels are applied to the polymer by external means. The two types of flow channels are said to act together to permit the slurry particles to move across the surface of the polymer sheet during polishing. B. Ex. 1002, col. 3, ll. 34-42. The large and small flow channels are also described in Roberts' specification as macrogrooves and microgrooves

---

[7] We take official notice that the visible spectrum is considered to be approximately 400-700 nanometers, the ultraviolet to be about 5-400 nanometers and the infrared to be about 700-10,000 nanometers. Definition of "electromagnetic spectrum," The New IEEE Standard Dictionary of Electrical and Electronic Terms, 5th Ed., p. 425, Institute of Electrical and Electronics Engineers, 1993.

"which transform the solid uniform sheet into an excellent polishing pad." R. Ex. 2001, col. 2, ll. 35-39.

Birang specifically relies upon Cook Examples 3 and 4 as describing subject matter within the scope of Roberts claims 1 and 2. Paper 25, pp. 8-10. We limit our consideration to these two examples. The complete text of the examples is reproduced in the footnote.[8]

Cook Example 3 describes tests of wafer polishing pads apparently made entirely of Rodel JR111, a visually transparent homogenous polyurethane polymer. The example compares the

---

[8] EXAMPLE 3

A series of annular grooves having a pitch of 0.055 in. and a depth of 0.012 in. were cut into two sheets of smooth, solid, unfilled, essentially homogenous polyurethane of dimensions and composition identical to the pad of Example 2. One sheet was used to polish a series of 25 samples of thermally oxidized silicon wafers using the same polishing machine and conditions cited in Example 1, except that the diamond conditioner was not used to produce microtexture prior to the polishing of each sample. Thus only macrotexture was present on the pad surface during use. A very low polishing rate of 570 Angstroms/min was observed, indicating a general lack of good polishing activity. Non-uniformity of polishing rate across the wafers was quite high.

The second sheet was then used to polish a series of 25 samples of thermally oxidized silicon wafers using the same polishing machine and conditions cited in Example 1, i.e. the diamond conditioner was used to produce microtexture prior to the polishing of each sample so that both micro- and macrotexture were extant on the pad surface during use. In sharp contrast to the first pad of the example, a high and uniform polishing rate of 1300 Angstrom/min was observed. Non-uniformity of polishing rate across the wafers was very low, fully equivalent to that of Example 1.

EXAMPLE 4

To further illustrate the importance of simultaneously maintaining macro- and microtexture in pads of the present invention, a series of annular grooves having a pitch of 0.055 in. and a depth of 0.010 in. were cut into a sheet of solid, unfilled, essentially homogenous polyurethane of differing composition from the previous examples (Dow Isoplast 302EZ). The macrotexture employed was of dimensions and patterning identical to the pads of Example 3. It was then used to polish a series of 100 samples of thermally oxidized silicon wafers using the same polishing machine and conditions cited in Example 1, i.e. the diamond conditioner was used to produce microtexture prior to the polishing of each sample. Thus the pad of this example had a surface texture during use which fully followed the teaching of the present invention. A high and uniform polishing rate of 1584 Angstroms/min was observed. Non-uniformity of polishing rate across the wafers was very low, equivalent to that of Example 1. At this point the conditioner was turned off (i.e., microtexture was not renewed) and 6 more wafers were processed. The polishing rate immediately dropped to less than 200 Angstroms/min. Examination of the pad after polishing showed an absence of microtexture when conditioning was not employed, i.e., cold flow or pad wear had completely removed microtexture, although macrotexture was unaffected.

B. Ex. 1002, col. 7, l. 38 - col. 8, l. 23.

polishing characteristics of pads having a series of annular grooves (macrotexture) cut into the pad with pads having annular grooves and additionally having a microtexture from diamond conditioning. The first pad was said to have demonstrated an average polishing rate of 564 Angstroms per minute. The polishing rate of the first pad was also said to be "quite variable" and not uniform across the surface. B. Ex 1002. col. 7, ll. 39-52. The second type of pad (which includes both microtexture as well as macrotexture) was said to have a high and uniform polishing rate of 1300 Angstroms per minute with very low non-uniformity of polishing rate across the wafer. B. Ex. 1002, col. 7, ll. 53-62. In terms of Roberts claim language, the macrotexture and microtexture are the large and small flow channels, respectively.[9]

Cook Example 4 also describes comparative tests of wafer polishing pads apparently made entirely of another visually transparent polyurethane polymer, Dow Isoplast 302EZ.[10] Like Example 3, the tests were said to compare pads having only macrotexture with pads having both macrotexture and microtexture. Polishing with pads having both microtexture and macrotexture is said to result in a "high and uniform polishing rate of 1584 Angstroms/min . . ." with a very low non-uniformity of polishing rate across the wafer. The polishing rate of the pads without microtexture was said to be less than 200 Angstroms per minute.

Each of the examples describes two embodiments of visually transparent polishing pads: (1) pads having macrotexture and (2) pads having both macrotexture and microtexture. It is uncontested that the pads described were visually transparent. The examples also state that the pads having both macrotexture and microtexture are far superior to polishing pads having only macrotexture. The

---

[9] The Cook patent states:

> An improved polishing pad is provided comprising a solid uniform polymer sheet having no intrinsic ability to absorb or transport slurry particles which during use has a surface texture or pattern comprised of both large and small flow channels present simultaneously, said channels permitting the transport of slurry across the surface of the polishing pad, wherein said channels are not part of the material structure but are mechanically produced-upon the pad surface. In a preferred version of the invention, the pad texture consists of a macrotexture produced prior to use and a microtexture which is produced by abrasion by a multiplicity of small abrasive points at a regular selected interval during the use of the pad.

B. Ex. 1002, "Summary of the Invention," col. 3, ll. 34-46.

[10] Neither Roberts' Examples 3 or 4 describes a pad having a microporous portion as required by Roberts' Claim 3.

described pads having only macrotexture meet the limitations of claim 1. The embodiments having both macrotexture and microtexture also meet the additional limitation of Roberts' dependent Claim 2 of "a surface texture or pattern comprising both large and small flow channels which together permit the transport of polishing slurry containing particles across said surface, said surface texture or pattern being produced solely by external means upon said surface." In this regard Cook identifies the macrotexture and microtexture as large and small flow channels, respectively. B. Ex. 1002, col. 3, ll. 34-46.

Birang's Preliminary Motion 1 identified where each element of Roberts' Claims 1 and 2 was expressly or inherently described by Examples 3 and 4 of the Cook patent. Paper 25, Appendix A and pp. 7-10. Roberts did not dispute that the Cook patent expressly meets all the limitations of Roberts Claims 1 and 2 except for the limitation that the polymer sheet be "transparent to light having a wavelength within the range of 190 to 3500 nanometers." Compare Paper 25, p. 4, ¶ 7 with Paper 43, p. 3, first paragraph. Roberts, however, does not dispute that the polishing pads described in Examples 3 and 4 of the Cook patent are visually transparent to light within the specified wavelength. Compare Paper 25, pp. 4-5, ¶¶ 8-10 with Paper 43, p. 3, first paragraph. Indeed, Birang has provided uncontested evidence that the Rodel JR111 and Isoplast 302EZ polymers described in Cook Examples 3 and 4 transmit wavelengths in the range of 400-800 nanometers. B. Ex. 1004, p. 1-2, ¶¶ 3 and 4. Thus, Birang made out a prima facie case of anticipation under 35 U.S.C. § 102(e). This places the burden on Roberts to present argument and/or evidence in rebuttal.

II.C.1.

Attribution of the portions of the Cook disclosure to Roberts

Roberts argues that the relevant portions of the Cook patent are not prior art under § 102(e) because the relevant description was the sole contribution of inventor John V. H. Roberts and therefore is not the invention of "another." Paper 112, pp. 15-23. A party may remove a reference as prior art by showing the relevant description in the reference is the party's own work. See In re Costello, 717 F.2d 1346, 1350, 219 USPQ 389, 391 (Fed. Cir. 1983). Where the reference is a patent the issue is whether the subject matter constructively reduced to practice in the patent is shown to be the applicant's own work. In re DeBaun, 687 F.2d 459, 463, 214 USPQ 933, 936 (CCPA 1982). A party attempting to attribute authorship or inventorship of a description in the prior art must

provide a reasonable showing that the subject matter described originated with that party. In re Katz, 687 F.2d 450, 455, 215 USPQ 14, 18 (CCPA 1982). The evidence must be satisfactory to show, in light of the total circumstances of the case, that the relevant description in the reference was that party's work. DeBaun, 687 F.2d at 463, 214 USPQ at 936; In re Facius, 408 F.2d 1396, 1404, 161 USPQ 294, 300 (CCPA 1969); In re Land, 368 F.2d 866, 879-80, 151 USPQ 621 , 633 n. 11 (CCPA 1966).

Thus, the specific issue for us to decide is whether what was constructively reduced to practice by Examples 3 and 4 of the Cook patent has been shown to be the sole invention of John V. H. Roberts. See DeBaun, 687 F.2d at 463, 214 USPQ at 936. Under the above cases, subject matter which is shown to be the sole invention of John V. H. Roberts does not constitute prior art against Roberts' Claims 1 and 2. On the other hand, subject matter described in the Cook patent which meets all the limitations of Roberts' Claims 1 and 2 and is not the sole invention of John V. H. Roberts remains prior art under 35 U.S.C. § 102(e). See DeBaun, 687 F.2d at 463, 214 USPQ at 936.

Examples 3 and 4 of the Cook patent constitute a constructive reduction to practice of all the subject matter disclosed therein. The filing of a patent application serves as a constructive reduction to practice of the subject matter described in the application. Hyatt v. Boone, 146 F.3d 1348, 1352, 47 USPQ2d 1128, 1130 (Fed. Cir. 1998). The examples describe a constructive reduction to practice, inter alia, of polishing pads which are transparent and have (1) macrotexture and (2) which have both macro- and microtexture (large and small flow channels). Since the pads having both macro- and microtexture meet the limitations of Claim 2 and, therefore, of Claim 1 from which Claim 2 depends, we confine our consideration to whether the evidence shows John V.H. Roberts was the sole inventor of polishing pads having both textures.

We have carefully reviewed Roberts' evidence, including the testimony of both John V. H. Roberts and Lee Cook, as well as the arguments of counsel. However, the evidence is insufficient to conclude that Roberts was the sole inventor of the polishing pads having both macrotexture and microtexture described in Cook Examples 3 and 4.

In our decision on reconsideration of Birang's Preliminary Motion 1 (Paper 80), allowing Roberts to submit additional evidence and to rebrief the issue, Roberts was instructed to "specifically

identify, by column and line, the portions of the Cook patent which were the sole invention of Roberts." Paper 80, p. 5. Roberts' brief responds:

> Roberts' invention of a transparent pad is described in the specification (Birang Exhibit 1002, col. 6, lines 29-31) and certain examples (Birang Exhibit 1002, col. 7, l. 20-col. 8, 1. 22, col. 8, 1. 52-col. 9, 1. 8 (other than polyethylene terephthalate)) of the application.

Paper 112, p. 8, ¶ 6. The first referenced portion of the Cook specification refers to a pad made of "a single layer of homogeneous plastic material." B. Ex 1002, col. 6, ll. 29-31. The other identified portions are Examples 2-4 and 7 (excluding the references to polyethylene terephthalate). Roberts also testified as to the subject matter that he considered to be his sole invention:

> Application serial number 224,768, issued on February 6, 1996 as [the Cook Patent] (Birang Exhibit 1002). My work with pads having at least a transparent portion is described in this application. I thought of and worked on the following concepts described in the application. First, I found that pressing, embossing, casting and cutting could produce macrorecesses on the pads (col. 5, lines 5-7 of U.S. Patent No. 5,489,233). I also found that a single layer of homogeneous plastic material could be used as a polishing pad (col. 6, lines 30-31 of U.S. Patent No. 5,489,233). The homogenous plastic material used was transparent. Experimental work conducted under my direction with transparent JR- I I I and Dow Isoplast is described in Examples 2, 3, and 4 (col. 7, line 20 - col. 8, line 22 of U.S. Patent No. 5,489,233). Also, Example 7, other than the sample relating to polyethylene terephthalate, describes my work or work done under my direction with different types of transparent materials (col. 8, line 52- col. 9, line 8 of U.S. Patent No. 5,489,233). The description and examples of my work were included in this application because they were the preferred materials we tested in proving the invention described in U.S. Patent No. 5,489,233.

R. Ex. 2056, p. 6, ¶ 19. Lee M. Cook (one of the named inventors of the Cook patent) similarly testified as to the subject matter considered to be Roberts' sole invention:

> Application serial number 224,768, issued as [the Cook Patent] (Birang Exhibit 1002). Some of John's work is described in this application. John thought of and worked on the following concepts described in the specification. First, John found that pressing, embossing, casting and cutting could produce macrorecesses on the pads (col. 5, lines 5-7 of U.S. Patent No. 5,489,233). Second, John found that a single layer of homogeneous plastic material could be used as a polishing pad (col. 6, lines 30-31 of U.S. Patent No. 5,489,233). The homogeneous plastic materials used were transparent. Furthermore, work by John, or others under his direction, with transparent

> JR- 111 and Dow Isoplast materials is described in Examples 2, 3, and 4 (column 7, line 20-column 8, line 22 of U.S. Patent No. 5,489,233). John's work, as well as work under his direction, with various transparent materials (other than polyethylene terephthalate) such as acrylics and polycarbonates can be found in Example 7 (column 8, line 52-column 9, line 8 of U.S. Patent No. 5,489,233). The disclosure and examples of John's work were included because they were the preferred materials we tested in showing our invention described in this U.S. Patent.

Roberts' Ex. 2055, pp. 5-6, ¶ 15.

While Roberts and Cook testify that Roberts' "work" is described in the examples, neither testifies that all the subject matter described in Examples 3 and 4 was the sole invention of John V. H. Roberts. Stating that an inventor's "work" is described in an example is far different from stating that everything described in the example is the inventor's "work." The example may include the work of others in addition to the work of the inventor. In particular, neither Roberts nor Cook testifies that Roberts invented polishing pads having both macrotexture and microtexture described in at least Cook Examples 3 and 4. Pads described in Cook's Examples 3 and 4 having both macrotexture and microtexture meet all the limitations of Roberts' Claims 1 and 2. Roberts' testimony does not mention pads having both macrotexture and microtexture. Cook's testimony mentions pads having microtexture but he testifies that Charles Jenkins (one of the named inventors of the Cook patent) contributed pads including both macrotexture and microtexture which are described in the Cook patent. R. Ex. 2055, p. 6, ¶ 16.

Thus, the record does not establish that the polishing pads described in Cook Examples 3 and 4 were the sole invention of John V. H. Roberts. Specifically, the record does not establish that polishing pads having both macrotexture and microtexture (large and small flow channels) were the sole invention of John V. H. Roberts. The Cook patent, at least to the degree in which it describes transparent polishing pads having both macrotextures and microtexture, describes the invention of another under 35 U.S.C. § 102(e). Since Roberts claims 1 and 2 read on these embodiments, the claims are anticipated by the Cook patent.

Roberts' arguments appear to focus solely on the visual transparency aspect of the pads described in Cook Examples 3 and 4. However, the Cook examples are a constructive reduction to practice of the polishing pads disclosed therein. Hyatt, 146 F.3d at 1352, 47 USPQ2d at 1130.

Examples 3 and 4 constitute a constructive reduction to practice of visually transparent polishing pads having both microtexture and macrotexture. Those pads meet all the limitations of Roberts' Claims 1 and 2. The record does not demonstrate that transparent pads including macrotexture and microtexture constructively reduced to practice by the filing of the application which became the Cook patent was Roberts' sole invention. DeBaun, 687 F.2d at 463, 214 USPQ at 936. Any disclosure present in the Cook patent which meets the limitations of Roberts' Claims 1 and 2 which is not the sole invention of John V. H. Roberts, anticipates Roberts Claims 1 and 2 under 35 U.S.C § 102(e). Looking at the totality of the evidence, we cannot conclude that Roberts is the sole inventor of all the subject matter disclosed in Examples 3 and 4 of the Cook patent. In particular, Roberts has not demonstrated that he is the sole inventor of the pads having both macrotexture and microtexture disclosed in those examples. Thus, on this record, we find that pads meeting all the limitations of Roberts' Claims 1 and 2 are described in a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent. These pads anticipate Roberts' Claims 1 and 2 under 35 U.S.C. § 102(e).[11]

II.C.2.

Benefit of the filing date of the Cook application under 35 U.S.C. § 120

In opposing Birang's Preliminary Motion 1, Roberts also asserted that he was entitled to the benefit of the filing date of the Cook patent under 35 U.S.C. § 120 with respect to Roberts claims 1 and 2. Paper 114, pp. 18-22. We denied benefit noting that the Cook patent did not meet the requirements of 35 U.S.C. § 112, ¶ 1, for the subject matter of Roberts Claims 1 and 2. In particular, we found that Cook failed to provide a written description of the full scope of the wavelength range of 190 to 3500 nanometers required by Roberts' Claims 1 and 2. Paper 73, pp. 26-29. Roberts has not challenged our finding. Rather, Roberts argues:

> Roberts demonstrated that he met the requirements for priority under 35 USC § 120 and was entitled to the benefit of the filing date of the [Cook] Patent. Specifically, Roberts showed that the application for the [Cook] Patent was

[11] With respect to polishing pads made of polyethylene terephthalate described in Cook's Example 7 and said not be the contribution of John V. H. Roberts, it is not clear from the record that those pads meet the transparency limitation of the claims. If polyethylene terephthalate meets the transparency limitation, then the pads described in Cook's Example 7 anticipate Roberts Claims 1 and 2 under 35 U.S.C. § 102(e) as well.

> co-pending with the application for [Robert's involved] Patent and that the two applications had an inventor in common, namely Roberts himself. In addition, the [Roberts involved] Patent had been amended by reissue application to contain a specific reference to the [Cook] Patent.

Paper 114, p. 19 (citations to Roberts preliminary motions deleted.).

Roberts argument appears to ignore the express requirement for patentability benefit under § 120 that the later claimed invention be

> disclosed in the manner provided by the first paragraph of section 112 of this title in an application previously filed in the United States.

For a claim in a later-filed application to be entitled to the filing date of an earlier application under 35 U.S.C. § 120, the earlier application must, inter alia, comply with the written description requirement of 35 U.S.C. § 112, ¶ 1, for the currently claimed subject matter. Tronzo v. Biomet, Inc., 156 F.3d 1154, 1158, 47 USPQ2d 1829, 1832 (Fed. Cir. 1998); Lockwood v. American Airlines, Inc., 107 F.3d 1565, 1571, 41 USPQ2d 1961, 1965-66 (Fed. Cir. 1997). Section 112, paragraph 1 requires, inter alia, that the specification "contain a written description of the invention, and of the manner and process of making and using it . . . ." The "invention is, for the purpose of the 'written description' inquiry, whatever is now claimed." Vas-Cath, Inc. v. Mahurkar, 935 F.2d 1555, 1564, 19 USPQ2d 1111, 1117 (Fed. Cir. 1991) (Emphasis original). The Cook patent must have support for the full scope of the claimed subject matter to meet the description requirement of 35 U.S.C. § 112, ¶ 1. In deciding the motion we held that Roberts was not entitled to priority under § 120 because the Cook patent did not describe the range of 190 to 3500 nanometers for the transparency of the pads. Paper 73, pp. 26-27. This range encompasses the visible spectrum as well as substantial portion of the infrared and ultraviolet spectra.

The parties agree that the Cook patent explicitly discloses all the elements of Claims 1 and 2 except for the limitation that "said polymer sheet being transparent to light having a wavelength within the range of 190 to 3500 nanometers." Compare Paper 25, p. 4, ¶ 9 with Paper 43, p. 3, first paragraph. The Roberts patent says that the pads disclosed in the Cook patent "can be made of a polymer which is transparent to light having a wavelength within the range of 190 to 3500 nanometers . . . ." However, there is nothing in the Cook patent itself which expressly says that any of the polymer pad materials are transparent. More importantly, Cook also fails to expressly

describe the range of 190 to 3500 nanometers, and Roberts has not explained how the Cook patent describes the full scope of this range. The earlier application must have support for the full scope of the claimed subject matter to meet the description requirement of 35 U.S.C. § 112, ¶ 1. We note that Birang has provided undisputed evidence demonstrating that the pads described in Cook Examples 3 and 4 are transparent to wavelengths in the range of 400 to 800 nanometers. Thus, a range of 400 to 800 nanometers may have been shown to be inherent in the Cook disclosure. But an inherent description of 400 to 800 nanometers is not a description of a range of 190 to 3500 nanometers. While Roberts has asserted that this range is inherent (Paper 114, pp. 20-21), we have not been directed to evidence showing that the pads expressly described by Roberts were transparent for the full range claimed. As we noted above, the range covers much of the infrared and ultraviolet spectra as well as the entire visible spectrum. Thus, even if the pads were recognized to be visually transparent as asserted by Roberts, we have not been directed to any evidence demonstrating that the pads were transparent or would have been recognized to be transparent to infrared and ultraviolet within the wavelength range specified in Roberts' Claims 1 and 2.

Thus, Roberts has not demonstrated that Roberts claims 1 and 2 are entitled to the benefit under § 120 of the filing date of the Cook patent.

II.C.3.

Finding of Fact on Anticipation

We find that Roberts claims 1and 2 are anticipated by the Cook patent under 35 U.S.C. § 102(e).

III.

Priority

III.A.

The benefit for priority of the filing date of Application 08/224,768 which issued as the Cook patent

III.A.1

Background

During the preliminary motion phase, Roberts filed a preliminary motion under 37 CFR § 1.633(f) requesting the benefit of the April 8, 1994, filing date of Application 08/224,768. Paper 39. An opposition and reply to the opposition were filed. Papers 47 and 59. Consistent with current Interference Trial Section practice, cross examination of witnesses was authorized in the Notice Declaring Interference. Paper 1, p. 20, ¶ 35. Thus, the parties were given a full opportunity to litigate the issue. After an oral argument, this panel denied the motion. Paper 73, pp. 9-19. As a denied motion, Roberts was entitled to raise the motion again at final hearing (37 CFR § 1.655(b)). As required by 37 CFR § 1.640(b) and the order setting times for the priority phase (Paper 78) Roberts filed a notice indicating that the matter would be raised at final hearing. Paper 103. In view of the full opportunity to present evidence and cross-examine witnesses, no additional testimony period was set:

> The parties were given an opportunity to present evidence and cross examine any witnesses on these issues. A panel decision was entered on that motion. Accordingly, no additional evidence or new argument will be considered on these issues. Further consideration of these issues will be treated as a request for reconsideration. Roberts shall specify with particularity (i.e., identify page and line numbers from the preliminary motion and quote) those points believed to have been misapprehended or overlooked in rendering the panel decision on the motion.

Paper 105, pp. 2-3. Roberts did not follow the panel's order to specifically identify and quote the portions of the preliminary motion Roberts thought we misapprehended or overlooked. However, rather than deny consideration of the reconsideration on procedural grounds, we exercise our discretion and consider the merits of Roberts' request.

Roberts argues that we improperly denied Roberts the benefit of the filing date of the Cook patent. Paper 114, pp. 19-22. Roberts states:

> In Roberts Motion No. 5, Roberts demonstrated that he met the requirements for priority under 35 U.S.C. § 120 and was entitled to the benefit of the filing date of the [Cook] patent.

Paper 114, p. 19.

III.A.2.

Patentability benefit and priority benefit distinguished

Roberts' argument confuses two distinct concepts: (1) benefit under 35 U.S.C. § 120 (patentability benefit) and (2) benefit for the purpose of priority in an interference (priority benefit). Benefit of the filing date of an earlier application for the purpose of priority in an interference is not governed by § 120. While "benefit" under § 120 has some features in common with benefit of an earlier application for the purpose of priority in an interference, they are separate concepts involving significantly different considerations. Most notably, under § 120 the focus is on the claims in the later application which must meet the requirements of 35 U.S.C. § 112, first paragraph, in the earlier application. A claim is entitled to the filing date of an earlier application if that claim meets the requirements of § 112, ¶ 1, for the full scope of the claim. On the other hand, benefit for the purpose of priority in an interference focuses on the count and whether the earlier application is a constructive reduction to practice of an embodiment within the scope of the count. A party's claim may be entitled to benefit under § 120 while at the same time that party would not be entitled to the benefit of the earlier filing date with respect to the subject matter of the count and vice-versa.

Issues under § 120 arise only when a claim of a party is alleged to be unpatentable under 35 U.S.C. §§ 102 or 103 over a reference with a date prior to the filing date of the party. One way of overcoming an allegation of unpatentability is to obtain benefit, under § 120, of a filing date of an earlier filed U.S. patent application.

A later filed domestic application is not examined to determine whether a party is actually entitled to the benefit of an earlier filing date except when an earlier filing date is actually needed. In re Shaw, 202 USPQ 285, 292 (Comm'r Pat. 1978). In an interference, the need for benefit under 35 U.S.C. § 120 arises when (1) a party files a preliminary motion under 37 CFR §1.633(a) for

judgment alleging that an opponents claims are unpatentable over the prior art and (2) the opponent opposes on the ground that it is entitled to benefit under 35 U.S.C. § 120.

To obtain benefit under 35 U.S.C. §120, a party must establish that an earlier U.S. application complies with the first paragraph of 35 U.S.C. §112 with respect to each claim for which benefit is desired. 35 U.S.C. §120; In re Lukach, 442 F.2d 967, 169 USPQ 795 (CCPA 1971) (to be entitled to §120 benefit, subject matter claimed in continuing application must be described in parent in manner required by §112). A party may be entitled to benefit under § 120 as to one claim, but not for another claim. Accordingly, a party claiming benefit to overcome prior art under 35 U.S.C. § 120, must independently establish its entitlement to benefit for each claim for which benefit is urged. As to those claims where the benefit date is prior to the effective prior art date of a reference, the reference is overcome.

Benefit for the purpose of priority in an interference declared under 35 U.S.C. §135(a) is something different than benefit for the purpose of overcoming prior art. Anderson v. Norman, 185 USPQ 371 (Comm'r Pat. 1968) (an earlier disclosure of a species is a constructive reduction to practice of a count expressing a genus; according benefit for purpose of priority is different from according benefit to get around prior art). Benefit for the purpose of priority focuses on the count, not the claims.

In each interference, there is at least one count. The initial count is set out in a notice declaring interference. A count defines the interfering subject matter. 37 CFR §1.601(f). The claims of the parties which are involved in the interference within the meaning of 35 U.S.C. §135(a) are designated to correspond to the count. A claim designated as corresponding to a count may be broader or narrower in scope than the count. A presumption exists that all claims of all parties which are designated as corresponding to a count cover, in whole or in part, subject matter which defines the same patentable invention. A party may seek to overcome the presumption by filing a preliminary motion to designate a claim as not corresponding to the count. 37 CFR §1.633(c)(4).

The presumption is important. If a party believes that a claim designated as corresponding to a count does not interfere-in-fact with any claim of its opponent, the party should file a preliminary motion to have its claim designated as not corresponding to the count. If no preliminary motion is filed, and a party loses on the issue of priority, then on that issue all of a party's claims

designated as corresponding to the count fall together. Likewise, if a preliminary motion is filed, but is denied, then on the issue of priority all claims designated as corresponding to a count fall together. On the other hand, if a party files a preliminary motion for judgment based on alleged unpatentability of its opponent's claims, the party must address each claim individually. 37 CFR §1.633(a). Thus, on unpatentability issues raised under 37 CFR §1.633(a), the claims do not fall together on the merits of the prior art or attempts to obtain benefit under 35 U.S.C. § 120.[12] However, with respect to priority, all claims designated as corresponding to the count fall together both as to priority proofs and benefit for the purpose of priority.

According benefit for the purpose of priority establishes a party's date which an opponent must "overcome." If the opponent cannot overcome a benefit date, the opponent loses on the issue of priority. Since at least some of the subject matter of all of the opponent's claims which have been designated as corresponding to the count cover a single patentable invention and because the party established priority vis-a-vis the opponent, all of the opponent's claims corresponding to the count become unpatentable.

The fact that a party "wins" an interference does not per se mean the party is entitled to a patent. What is clear, however, is that a party who loses an interference is not entitled to a patent with claims designated as corresponding to the count. Entry of a judgment against a party in an interference is a final decision of the Patent and Trademark Office refusing those claims. 35 U.S.C. §135(a). Hence, it becomes manifest that an adverse decision on priority is patent defeating.

According benefit for the purpose of priority (i.e., a constructive reduction to practice) and proof of priority on the merits (i.e., conception, actual reduction to practice and, if necessary, diligence) involve similar concepts. Proof of a prior actual reduction to practice of a species within the scope of a count, prior to an opponent's date, results in an award of priority against the opponent. Benefit for the purpose of priority functions in much the same way. Thus, a benefit application need only describe a single enabled embodiment within the scope of the count to constitute a constructive reduction to practice of the invention of the count. Hunt v. Treppschuh, 523 F.2d 1386, 1389, 187 USPQ 426, 429 (CCPA 1975); see also Weil v. Fritz, 572 F.2d 856, 865 n.16, 196 USPQ 600, 608

---

[12] Unless the opponent fails to oppose separately.

n.16 (CCPA 1978) (as Hunt v. Treppschuh, 523 F.2d at 1389, 187 USPQ at 429 explains, "the §112, first paragraph requirements need only be met for an embodiment within the count" where the count is drawn to a genus and the previously-filed application discloses only a species thereof). In establishing benefit for the purpose of priority, it is not necessary to establish that a benefit application complies with the first paragraph of 35 U.S.C. §112 as to a claim of a party's involved patent or application.

III.A.3.

Construction of Roberts' claim 3 and the count

In opposing Roberts' Motion for priority benefit, Birang argued that Roberts' opaque layered pad was not within the scope of the count because "the Count, properly construed, requires a pad that is transparent from the bottom pad surface to the top pad surface so that optical end point detection is permitted during polishing . . . ." Paper 53, p. 13. Since the count of this interference is Roberts Claim 3, to construe the count we must construe Roberts Claim 3 in light of Roberts' specification.

The layered pads relied upon by Roberts as an embodiment within the scope of the count could not be used for in-situ end point detection because of the opaque underlayer. Birang argued that the construction of the count was required by Roberts specification because

> every single section of the [Roberts] specification--the Abstract of the Disclosure (Fact 28), the Technical Field (Fact 29), the Background (Fact 18), the Summary of the Invention (Fact 19), and the Detailed Description of the Invention (Facts 21-23)--refers to optical end point detection. Such detection requires that the polishing pad be transparent from the bottom pad surface to the top pad surface so that optical end point detection is permitted during polishing (Fact 20).

Paper 53, p.14. Roberts neither traversed this statement nor directed our attention to portions of Roberts' written description which described expressly or by implication that opaque pads were contemplated as part of the Roberts invention. Our decision on motions agreed with Birang to the extent that Roberts' Claim 3, and thus the count, implicitly requires that the pads must be suitable for use with optical end point detection. The opaque layered pad said to be described by Cook would not be within the scope of the count because it would be inherently unsuitable for optical end point detection. Noting precedent related to claim construction, our earlier decision stated:

> In our view, looking to the specification as we must (Watts [v. XL Systems, Inc.], 232 F.3d [877,] 882, 56 USPQ2d [1836,] 1839 [(Fed. Cir. 2000)]; Vitronics [Corp. v. Conceptronic Inc.], 90 F.3d [1576,] 1582, 39 USPQ2d [1573,] 1577 [(Fed. Cir. 1996)]), Roberts has provided a more limited definition then the claim language would require if considered separate from the specification. When the phrase "a first portion comprised of said solid uniform polymer sheet transparent to light and a second portion comprised of a microporous polyurethane structure" is read in light of the specification, it requires that the pad must be suitable for "optical in-situ end point detection" such as when a transparent portion extends from the bottom surface to the top surface of the pad. There is nothing in Roberts' disclosure that indicates that an opaque pad was contemplated as part of the Roberts invention. Indeed, Roberts specification repeatedly indicates that the invention is pads suitable for in situ end point detection.

Paper 73, p. 14. Our earlier decision then quoted extensively from Roberts' specification to demonstrate the basis for our conclusion that Roberts' invention is a pad suitable for use with optical end point detection. Paper 73, pp. 14-16. Roberts, while asserting that our claim construction is in error, does not direct our attention to any portion of the written description that is inconsistent with our construction or would support a different construction. Roberts argues:

> The Board read into Claim 3 the limitation of "optical in-situ end-point detection while polishing." (Decision on Motions, p. 14.) This limitation is not found anywhere within the literal language of Claim 3 itself (or Claim 1). In addition, the Board improperly construed the claim to require a pad having a transparent portion from the top to the bottom surface, even though there is no such structural limitation in either Claim 1 or 3. Id. Therefore, as a matter of law, this is improper claim construction. The correct interpretation is defined by the language of Claim 3 without any limitation of "end-point detection while polishing" and structural relationship between the top and bottom surface.

Paper 114, p. 18.

Roberts reads too much into our construction. We construed the claim as implicitly requiring the pads have the functionality of being suitable for "optical in-situ end point detection." We did not read into the claim any particular structure. The statement "such as when a transparent portion extends from the bottom surface to the top surface of the pad" was merely an example of a structure, described in both parties specifications, which would have that function. Compare B. Ex. 1001, col. 2, ll. 59-67 with Birang Specification, pp. 12-13 and Fig. 3B.

In reaching our decision we were mindful of the Federal Circuit's admonishments against reading limitations into the claim from the specification. However, when determining the meaning of a claim, we are required to consider the specification to determine if the patentee has provided a definition of terms and phrases in the claim. Watts, 232 F.3d at 882, 56 USPQ2d at 1839; Vitronics, 90 F.3d at 1582, 39 USPQ2d at 1577. When the phrase "a first portion comprised of said solid uniform polymer sheet transparent to light and a second portion comprised of a microporous polyurethane structure" is read in light of the specification, it requires that the pad must be suitable for "optical in-situ end point detection." Roberts has not directed us to any portion of the Roberts' disclosure that indicates that a pad which was not suitable for end point detection, such as an opaque pad, was described or contemplated as part of the Roberts invention. Indeed, Roberts' specification repeatedly indicates that the invention is pads suitable for in situ endpoint detection during polishing. Thus, Roberts' Summary of the invention states:

> A pad is provided for use on a machine for the polishing of silicon wafers which allows the use of optical detection of the wafer surface condition as it is being polished. This accomplished by constructing the entire pad or a portion thereof out of a solid uniform polymer sheet with no intrinsic ability to absorb or transport slurry particles and which is transparent to the light beam being used to detect the wafer surface condition by optical methods. [Emphasis added.]

B. Ex. 1001, col. 2, ll. 2-10. An opaque polishing pad does not "allow" the use of optical detection of the wafer surface conditions as it is being polished. With respect to the technical field of the "invention," Roberts states:

> This invention relates to polishing pads used for creating a smooth, ultra-flat surface on such items as glass, semiconductors, dielectric/metal composites and integrated circuits. It particularly relates to the bulk structure of such pads and their ability to allow optical in-situ end point detection during the polishing or planarization process. [Emphasis added.]

B. Ex. 1001, col. 1, ll. 6-11. Roberts' specification also differentiates prior art pads from the invention by describing the prior art pads as opaque:

> All prior art pads have a bulk structure which is made up of fibers, contains pores as a result of either being filled with microballoons or blown during manufacturing, or are filled with abrasive. These pads although they might be made from a solid polymer clearly have a bulk structure which is opaque

> to a beam of light because they are not a uniform structure and will severely scatter any light beam directed onto them. [Emphasis added.]

B. Ex. 1001, col. 2, ll. 27-35. Roberts further distinguishes the pads of the invention from the prior art opaque pads by the transparent portion allowing the use of optical techniques for end-point detection:

> Since all of these can be made of a polymer which is transparent to light having a wavelength within the range of 190 to 3500 nanometers, pads can be made which allow in situ end-point detection using optical methods such as interferometry.

B. Ex. 1001, col. 2, ll. 42-46. The Roberts patent also specifically describes embodiments having two portions where the transparent portion is a window in an otherwise opaque pad resulting in a pad suitable for optical end point detection:

> If one wishes to have just a transparent window in an otherwise opaque pad, a possible method of manufacture would be to cast a rod or a plug of the transparent polymer. This casting can then be inserted in the opaque polymer in its mold while it is still liquid making sure that there is complete contact between the transparent plug and the opaque polymer. After the opaque polymer has set it may be unmolded and sheets for pads with transparent windows may be sliced from the casting.
>
> * * * * *
>
> It is also possible for one to insert a window into any of the types of polishing pads which are currently being used for chemical mechanical polishing of integrated circuit wafers. . . . A hole could be cut through any of these pads and a plug of solid transparent polymer inserted to act as a window for optical end-point detection. It would be best that the surface of the solid polymer plug have a surface texture or pattern as described in U.S. Pat. No. 5,489,233 so that polishing activity is close to being uniform over the entire polishing pad.

B. Ex. 1001, col. 2, l. 59 - col. 3, l. 32.

The Cook patent specification (B. Ex. 1002), portions of which are incorporated by reference into the Roberts patent, does not help Roberts' position. Review of the portions of the Cook patent which are referred to by the Roberts patent indicate that the incorporated portions provide more detailed information about the solid uniform polymer material which has no intrinsic ability to absorb or transport slurry particles. While Roberts indicates the polymers described in Cook might be suitable for use in pads which allow in situ end-point detection, nothing in Roberts directs one

having ordinary skill in the art to consider an opaque multilayered pads described in Cook as part of the Roberts' invention. Thus, Roberts' specification identifies certain prior art pad materials and notes the suitability of these materials for use in pads which allow optical in situ end point detection:

> There are polishing pads now being used for the polishing of silicon wafers which are made [] from a solid uniform polymer sheet. These are described in [the Cook patent], which is made part of this specification by reference. The solid uniform polymer sheet has no intrinsic ability to absorb or transport slurry particles. This inability to absorb or transport slurry particles distinguishes the bulk properties of polishing pads made from the solid uniform polymer sheet from the bulk properties of any prior art polishing pads. . . . As pointed out in the referenced specification, such pads can be made out of any solid uniform polymer including polyurethanes, acrylics, polycarbonates, nylons and polyesters. Since all of these can be made of a polymer which is transparent to light having a wavelength within the range of 190 to 3500 nanometers, pads can be made which allow in situ end-point detection using optical methods such as interferometry. [Emphasis added.]

B. Ex. 1001, col. 2, ll. 18-46.

The Cook patent is also referenced in a discussion of the surface texture which the transparent polymer must have in order to be used for polishing integrated circuit wafers. The Roberts patent notes that the surface texture disclosed in the Cook patent would not affect the in situ end point detection during polishing. The concern again is with the transparency and in situ end point detection. Roberts' patent states:

> As shown in [the Cook patent], pads useful for chemical-mechanical polishing of integrated circuit wafers which are made of a polymer sheet which has no intrinsic ability to absorb or transport slurry particles must have in use a surface texture or pattern comprising both large and small flow channels. There will be, therefore, some interference due to the small amount of slurry in these flow channels when one makes in situ optical measurements through a transparent portion of the polishing pad. One can compensate for this interference. Since the slurry in the flow channels is relatively constant, its effect can be nulled out of the signal which is measuring the changes in the wafer surface.

B. Ex. 1001, col. 3, ll. 1-13, emphasis added.

Roberts again refers to the Cook patent with respect to the modification of prior art opaque pads by inserting a transparent window to allow optical end point detection. The Roberts' patent states:

> A hole could be cut through any of these pads and a plug of solid transparent polymer inserted to act as a window for optical end-point detection. It would be best that the surface of the solid polymer plug have a surface texture or pattern as described in [the Cook patent] so that polishing activity is close to being uniform over the entire polishing pad.

B. Ex. 1001, col. 3, ll. 25-32.

Thus, each of the references in the Roberts patent to Cook relates to the transparent polymer portion of the pad and suitability of this material for optical end point detection. Nothing in Roberts, including the parts said to be incorporated by reference from the Cook patent, indicates that Roberts contemplated pads that did not include at least a transparent portion which would allow optical end point detection during polishing. Indeed, it is clear from the Roberts patent that transparency is important only because transparency is what makes in situ end point detection during polishing possible.

We conclude that Roberts Claim 3, in requiring "a first portion comprised of said solid uniform polymer sheet transparent to light and a second portion comprised of a microporous polyurethane structure," implicitly requires that the transparent portion allow "the use of optical detection of the wafer surface condition as it is being polished."

III.A.4.

Roberts Priority benefit for the subject matter of the count

Relying on Weil and Hunt, Roberts argues that

> to be accorded benefit of the filing date of the [Cook] patent, Roberts need only demonstrate that [the Cook patent] describes an enabling embodiment of one of the independent Roberts **Claims** designated as corresponding to the Count.

Paper 114, p. 20 (underlining and bold added).

This is simply an incorrect statement of the law. In order to be entitled to the benefit of the filing date of an earlier application, an earlier application must be a constructive reduction to practice of the count. 37 CFR § 1.637(f)(3). In the context of benefit for the purpose of priority, the desired benefit application must describe the subject matter of the count and provide an enabling disclosure of it. Hyatt v. Boone, 146 F.3d 1348, 1352, 47 USPQ2d 1128, 1130 (Fed. Cir. 1998); Fiers v. Revel, 984 F.2d 1164, 1170, 25 USPQ2d 1601, 1606 (Fed. Cir. 1993). However, these requirements need

to be met only with respect to a single embodiment within the scope of the count. Weil, 572 F.2d at 865-66 n.16, 196 USPQ at 608 n.16; Hunt, 523 F.2d at 1389, 187 USPQ at 429. As noted in Hunt, a constructive reduction to practice requires that "§ 112, first paragraph requirements need only be met for an embodiment within the count" Hunt, 523 F.2d at 1389, 187 USPQ at 429 (emphasis added). See also, Utter v. Hiraga, 845 F.2d 993, 998, 6 USPQ2d 1709, 1713 (Fed. Cir. 1988) (benefit of the filing date of an earlier application properly accorded where the earlier application described a species encompassed by the generic count). The proper focus, therefore, is on the count which in this case is Roberts' Claim 3. Thus, in order to be entitled to benefit for the purpose of priority of the Cook patent, Roberts must demonstrate that the Cook patent describes and enables an embodiment within the scope of Roberts' Claim 3.

Roberts argues that Cook discloses polishing pads within in the scope of Roberts Claims 1, 2 and 3. Paper 114, pp. 20-22. Claims 1 and 2 do not require the limitation of the count that the pads have "a first portion comprised of said solid uniform polymer sheet transparent to light and a second portion comprised of a microporous polyurethane structure." Thus, the description of an enabled embodiment which meets the limitations of Roberts' Claims 1 and 2 and not the additional limitation of Claim 3 is not sufficient to provide priority benefit. Roberts is not entitled to benefit unless Cook also discloses an embodiment within the scope of Claim 3.

Roberts also argues that Cook discloses an embodiment within Claim 3. Paper 114, pp. 21-22. Roberts states:

> In addition, Roberts demonstrated that the '233 Patent disclosed a pad that meets Roberts Claim 3. Specifically, the '233 Patent discloses a pad having a first portion comprising a solid uniform polymer sheet and a second portion comprising a microporous polyurethane. The '233 Patent specifically states: "it is also possible to add additional underlying layers of differing mechanical characteristics so as to modify pad deflection properties, along the lines outlined in U.S. Pat. Nos. 5,257,478...." (Birang Exhibit 1002, col. 6, ll. 29-36.) U.S. Pat. No. 5,257,478 states that suitable materials for the pad disclosed include "materials made by Rodel, Inc. under the trade names Politex, Suba, MH and IC." (Roberts Exhibit 2005, col. 5, ll. 43-48.) The '233 Patent indicates that Politex pads are made of a microporous polyurethane. (Birang Exhibit 1002, col. 2, ll. 55-57.) Therefore, the '233 Patent discloses a pad comprising a first portion comprised of a solid uniform polymer sheet transparent to light and a second portion comprised of a microporous polyurethane structure as called for by Claim 3.

Paper 114, pp. 21-22 (citations to Roberts Motion 5 and Reply 5 deleted). Thus, Robert argues that Cook teaches pads having an inherently transparent top layer and an underlying microporous layer, the underlying microporous material exemplified by the prior art Politex pad. However, Roberts' specification characterizes such prior art pads as opaque:

> All prior art pads have a bulk structure which is made up of fibers, contains pores as a result of either being filled with microballoons or blown during manufacturing, or are filled with abrasive. These pads although they might be made from a solid polymer clearly have a bulk structure which is opaque to a beam of light because they are not a uniform structure and will severely scatter any light beam directed onto them.

B. Ex. 1001, col. 2, ll. 27-34 (emphasis added). Thus, the embodiment asserted to be within the count is a layered structure having a transparent polymer upper layer and an opaque underlayer. This embodiment does not meet the elements of the count since it is not suitable for use with end point detection. Cook does not describe an embodiment having this functionality as well as meeting the other requirements of the count. Cook does not disclose an embodiment within the scope of the count. Accordingly, Roberts is not entitled to the filing date of the application which became the Cook patent.

III.B.

Roberts' Case for priority

Birang is the senior party with an effective filing date of March 28, 1995. Roberts asserts conception and actual reduction to practice in October of 1993. Since Roberts asserts both prior conception and prior reduction to practice, diligence is not an issue and Roberts has not presented a diligence case. As the junior party Roberts has the burden of proof.

Conception is "the formation in the mind of the inventor [] of a definite and permanent idea of the complete and operative invention, as it is thereafter to be applied in practice." Singh v. Brake, 222 F.3d 1362, 1367, 55 USPQ2d 1673, 1676 (Fed. Cir. 2000) quoting Kridl v. McCormick, 105 F.3d 1446, 1449, 41 USPQ2d 1686, 1689 (Fed. Cir. 1997) (internal quotation marks omitted). Proof of conception must show possession of every feature recited in the count, and that every limitation of the count must have been known to the inventor at the time of the alleged conception. Coleman v. Dines, 754 F.2d 353, 359, 224 USPQ 857, 862 (Fed. Cir. 1985); Davis v. Reddy, 620 F.2d 885, 889, 205 USPQ 1065, 1069 (CCPA 1980).

An actual reduction to practice requires the existence of a physical embodiment within the scope of the count. Correge v. Murphy, 705 F.2d 1326, 1329, 217 USPQ 753, 755 (Fed. Cir. 1983); 1 C. Rivise & A. Caesar, Interference Law and Practice § 137 (1940). "In order to establish an actual reduction to practice, the inventor must prove that: (1) he constructed an embodiment or performed a process that met all the limitations of the interference count; and (2) he determined that the invention would work for its intended purpose." Manning v. Paradis, 296 F.3d 1098, 1102, 63 USPQ2d 1681, 1684 (Fed. Cir. 2002) quoting Cooper v. Goldfarb, 154 F.3d 1321, 1327, 47 USPQ2d 1896, 1901 (Fed. Cir. 1998). This is so even if the "intended purpose" is not explicitly set forth in the counts of the interference. DSL Dynamic Sciences, Ltd. v. Union Switch & Signal, 928 F.2d 1122, 1125, 18 USPQ2d 1152, 1154 (Fed. Cir. 1991); Elmore v. Schmitt, 278 F.2d 510, 125 USPQ 653 (CCPA 1960) (no actual reduction to practice by a device meeting the limitations of the count but not shown to work for any practical use of the invention); Burns v. Curtis, 172 F.2d 588, 80 USPQ 587 (CCPA 1949) (no actual reduction of subject matter within count (pump assembly) which did not state intended purpose because it was not shown that the assembly would work for the purpose for which it was designed (airplane systems)). In proving an actual reduction to practice, the inventor, must provide independent corroborating evidence in addition to his own statements and documents. Hahn v. Wong, 892 F.2d 1028, 1032, 13 USPQ2d 1313, 1317 (Fed. Cir. 1989). The corroboration "may consist of testimony of a witness, other than an inventor, to the actual reduction to practice or it may consist of evidence of surrounding facts and circumstances independent of information received from the inventor." Hahn, 892 F.2d at 1032-33, 13 USPQ2d at 1317; Reese v. Hurst, 661 F.2d 1222, 1225, 211 USPQ 936, 940 (CCPA 1981). When considering the sufficiency of corroborating evidence of an actual reduction to practice a reasonableness standard is used. Scott, 34 F.3d 1058, 1061-62, 32 USPQ2d 1115, 1118; Holmwood v. Sugavanam, 948 F.2d 1236, 1238, 20 USPQ2d 1712, 1714 (Fed. Cir. 1991).

The count is claim 3 of Roberts' involved patent, which is dependent upon claim 1. For convenience Claim 3 is rewritten below in independent form with paragraphing and numbering added and duplicate language deleted:

3. A pad useful for polishing integrated circuit wafers, comprising
[1] a first portion comprised of
a solid uniform polymer sheet
with no intrinsic ability to absorb or transport slurry particles, and
transparent to light having a wavelength within the range of 190 to 3500 nanometers, and
[2] a second portion comprised of a microporous polyurethane structure.

For both conception and actual reduction practice, Roberts relies on an embodiment said to have a first (top) portion of "JR-111" polymer and a second (bottom) portion of a material referred to as "Suba-IV." Paper 113, pp. 16-18.

It appears to be uncontested that JR-111 is visually transparent and an embodiment within the scope of the count as to the first portion of the pad.

Whether Suba-IV meets the "second portion" of the count depends upon whether Suba-IV includes a "microporous polyurethane structure." Roberts says it does. E.g., Paper 113, p. 17. Birang argues that Roberts proofs do not establish Suba-IV meets this limitation of the count. Paper 125, p. 26.

Roberts has not directed us to any testimony or exhibit which indicates that Suba-IV includes "a microporous polyurethane structure." In Roberts Brief for Final Hearing on Priority Issues (Paper 113) Roberts relies upon a purported admission by Birang.:

> Birang Admits so in Birang Additional Fact No. 20 by stating "[t]he two-layer embodiments relied upon by Roberts have a lower layer of opaque Politex or opaque Suba IV and are not useable for end-point detection and the existence of microporous polyurethane is not discernible from the other exhibits referenced by Roberts." Moreover, in describing an embodiment of his invention, Birang uses the same material, Suba IV for the microporous portion of the pad.

Paper 113, p. 17, internal references to exhibits and briefs omitted. With respect to Politex, Birang referenced, col. 2, ll. 55-59 of the Cook patent (B. Ex. 1002) and col. 2, ll. 27-35 of the Roberts patent (B. Ex. 1001). With respect to Suba IV Birang referenced R. Exs. 2004 and 2008. The other exhibits for which microporosity was said not to be "discernible" were identified as R. Exs. 2010, 2012, 2014 and 2016.

The purported admission is, in part, an alleged statement of fact made in Birang Reply 1. Paper 73, p. 2, ¶ 20. We have reviewed Birang's statement and the portions of the record referenced by Birang's purported admission. Our review also included the Roberts and Cook patents, the declaration of John V. H. Roberts, R. Ex. 2006, as well as the exhibits said to be copies of Roberts' notebook pages and documents said to be transcripts of those pages, i.e. R. Ex. 2007, 2009, 2011, 2013, 2015 and 2017 said to be transcripts of R. Exs. 2004, 2008, 2010, 2012, 2014 and 2016, respectively. Since Roberts did not provide a particularized discussion of the exhibits (see 37 CFR § 1.671(f)), we have reviewed the exhibits as best as we can without guidance or explanation from Roberts. Based on our review we make the following observations:

1. Roberts Ex. 2006 is a declaration by John V. H. Roberts asserting, inter alia, that he reduced the invention to practice before the effective date of the Cook patent. The declaration made a general reference to and relied upon R. Ex. 2004 and 2007-2017.

2. The Roberts and Cook patents describe pads having a top polymer layer and a bottom opaque Politex layer.

3. R. Exs. 2004 and 2008 appear to be notebook pages which apparently relate to pads having a JR111 top layer and an opaque Suba IV bottom layer.

4. R. Ex. 2010 appears to related to groove sizes in JR111 pads and does not mention any other layer or material.

5. R. Ex 2012 mentions JR111 and, for example, says:

> JR111, 22 1/2" Dia. 0.060" thick, UA20 laminated to top surface (polyether TPU).

A similar statement is made with respect to something called P820 which we assume is Polyester TPU. We do not understand what structure is described in this exhibit. Assuming that a two-layer pad including a JR111 layer was described, we have not been advised of the properties of UA20 (polyether TPU) or P820 (polyester TPU). The document does not indicate whether UA 20 and P820 are themselves transparent or microporous.

6. R. Ex. 2014 mentions Dow Isoplast 302 but does not mention any other layer or material. We note that Dow Isoplast 302 is said to be a transparent polymer.

7. R. Ex. 2016 identifies acrylic, polycarbonate and Nylon, without identifying any other layer or material. We are not directed to evidence explaining the properties of these materials including whether or not they are transparent or microporous.

Birang's proposed Fact must be considered in the context in which it was made. Birang had raised the patentability of Roberts Claims 1 and 2 over the Cook patent. Paper 25. Roberts responded in an opposition (Paper 43) which, inter alia, asserted that Roberts had conceived and reduced the invention to practice prior to the effective date of the Cook patent. Paper 43, p. 4, ¶ 9. Roberts relied upon a declaration under 37 CFR § 1.131. Paper 43, p. 4, ¶ 9; R.Ex. 2006. The subject matter asserted to support conception and reduction to practice was the same as relied upon now for priority, a two layered pad having a polymer top layer and an opaque bottom layer. R. Exs. 2006, ¶ 5, 2004 and 2007-2017. Birang argued that the embodiments relied upon by Roberts did not show conception or reduction to practice stating

> [t]he two-layer embodiments relied upon by Roberts have a lower layer of opaque Politex or opaque Suba IV and are not useable for end-point detection and the existence of microporous polyurethane is not discernible from the other exhibits referenced by Roberts.

Paper 73, p.2, ¶ 20, references to exhibits deleted.

Viewed in light of the exhibits referred to and the context of the statement, we do not consider Birang's statement to be an admission as to the characteristics of Suba IV. Birang's statement merely points out defects in Roberts proofs of a conception and actual reduction to practice, i.e. that the documents showing pads having a Politex of Suba IV layer were not transparent making them unsuitable for end point detection during polishing, and the other documents did not show a pad including a microporous layer.

Roberts also says that Birang implicitly admitted that Suba IV is a microporous polyurethane referring a pad having a Suba IV layer as an embodiment of Birang's invention. Roberts refers us to the "EX2000 embodiment" of B. Ex. 1020, and page 100 of the cross-examination declaration of Robert Tolles, an employee of Applied Materials, Inc., the assignee of the Birang application. Paper 113, p. 17. We have reviewed the exhibit and the referenced portion of the testimony and do not see that Birang has made an admission that Suba IV includes microporous polyurethane.

B. Ex 1020 is a three page document. Only the third page of the document relates to EX2000. It appears to show a pad with an EX 2000 layer above a Suba IV layer. The Suba IV layer appears to have a hole through which laser light is shown to pass. Manoocher Birang, one of the named inventors of the Birang application, testified as to the content of the document:

> 19. At that meeting, I described my ideas for end point detection by transmitting a laser beam through a transparent polishing pad or a window in an opaque polishing pad. Copies of three transparencies that I had prepared prior to the meeting on February 23, 1995 and were used by me in my presentation of my ideas to Mr. Roberts and Ms. Koppenbrink are designated Birang Exh. 1020.
>
> 20. The first transparency shows a polishing pad with a "See through Aperture" of "CLEAR, TRANSPARENT MATERIAL" at "up to 4 locations". The rest of the polishing pad is made of different material. The aperture with the clear transparent material is located over a cutout in a supporting sublayer.
>
> 21. The second transparency shows an opening in an IC 1000 polishing pad aligned with an opening in a Suba IV sublayer underneath. A quartz window, which would be supported by the underlying rotating table, extends through the sublayer and part way into the opening in the IC1000 layer. Light from a transmitter is shown passing through the window and opening to the wafer and back through opening and window to the detector. IC1000 is made of microporous polyurethane and is opaque.
>
> 22. The third transparency shows an EX2000 pad without any window or hole in the translucent top layer, but having a hole cut through the gray foam sublayer. Light from a transmitter is shown passing through the hole in the gray foam sublayer and the transparent top layer of the EX2000 pad to the wafer and back through the EX2000 pad and the hole to a detector.
>
> 23. The three transparencies thus show three different approaches for transmitting detecting light through a polishing pad for endpoint detection. These three approaches described in the transparencies correspond to the three approaches described in our patent application Birang Exh. 1008. The first transparency corresponds to the window in the pad idea shown in Fig. 3C and described at p. 13, lines 22-36 of the application. The second transparency corresponds to the hole in the pad idea shown in Fig. 3A and described at p. 12, lines 3-28 of the application and also described in the original invention disclosure, Birang Exh. 1016. The third transparency corresponds to the idea of transmitting light through a pad that is made

> entirely of transparent material, e.g. EX2000, shown in Fig. 3B and described at p. 12, line 30-p. 13, line 21 of the application.
>
> 24. The first transparency describes a window of clear transparent material in a polishing pad of other material that would be less transparent. We stated at the meeting that the polishing pad material could be IC 1000 (made of microporous polyurethane) or any other common polishing pad material.

BR 74-75.

As can be seen from the above quoted testimony, Birang never characterizes Suba IV as a microporous polyurethane. The only material characterized as microporous polyurethane is IC1000. BR 74-75, ¶¶ 21, 24. While Suba IV is shown in the pads depicted on pages 2 and 3, neither indicates Suba IV includes a microporous polyurethane structure.

The portion of the Tolle cross-examination testimony specifically referenced by Roberts (p. 100 (BR 312)) does not mention Suba IV or microporosity.

In response to Birang's challenge on this point, Roberts' Reply to Birang's Brief at Final Hearing on Priority Issues (Paper 118) directs us not to evidence submitted as part of the record but to a document said to be present in Application 08/224,768. Paper 118, p. 7. That application became the Cook patent. We decline to consider this document since it has not been properly introduced into evidence and its presentation at this time is untimely. The document should have been introduced as part of Roberts case-in-chief on priority.

However, even considering what Roberts proffers the document to show, it would be insufficient to prove either conception or an actual reduction to practice of the subject matter of the count. The count expressly requires that the polishing pad have a portion including a "microporous polyurethane structure." Roberts asserts the document shows that Suba IV has " '. . . an open pore structure . . .' with '. . . urethane composition . . .'" Paper 118, p. 7. Roberts has not directed us to evidence which explains that the quoted phrase would be understood to describe a "microporous polyurethane structure."

In this regard we also note that while Roberts' conception and actual reduction to practice are said to have used Suba IV, the Roberts patent itself makes no express mention of it. The only material characterized as having a microporous polyurethane structure is a pad referred to as Politex. B. Ex 1001, col. 3, ll. 17-22. The Cook patent, to the extent incorporated by reference, only

mentions Suba as a "textured pad." B. Ex. 1002, col. 1., ll. 30-33. Like the Roberts patent, the Cook patent only mentions Politex as being microporous. B. Ex. 1002, col. 2, l. 47 - col. 3, l. 3.

Roberts also argues that Birang is being disingenuous in its arguments relating to Suba IV. Paper 118, pp. 10-12. Roberts notes that Birang used Suba IV in some of the embodiments of Birang's "invention." However, Roberts looks to the wrong issue. The use of Suba IV as part of a polishing pad is not the issue. The issue is whether Suba IV has been shown to include a microporous polyurethane structure as required by the count. Roberts has not directed us to any testimony or documents which show that it does.

As the junior party Roberts has the burden of proof to show conception and actual reduction to practice of each element of the count. Thus, it is part of Roberts' burden to demonstrate that Suba IV, which is relied upon to show conception and actual reduction to practice of a pad having a "microporous polyurethane structure," in fact has that structure. Roberts has not done so. Roberts has failed to prove either a conception or actual reduction to practice of an embodiment falling within the scope of the count.

Roberts' showing of an actual reduction to practice fails for yet another reason. Roberts evidence does not prove that the pads relied upon worked for their intended purpose, end point detection while polishing. It is clear from a reading of both the Roberts and Birang specifications that this is the contemplated use of the parties' common invention. Thus, for example, Roberts states:

> A pad is provided for use on a machine for the polishing of silicon wafers which allows the use of optical detection of the wafer surface condition as it is being polished. This [is] accomplished by constructing the entire pad or a portion thereof out of a solid uniform polymer sheet with no intrinsic ability to absorb or transport slurry particles and which is transparent to the light beam being used to detect the wafer surface condition by optical methods. Polymers which are transparent to light having a wavelength within the range of 190 to 3500 nanometers are suitable for the construction of these pads.

B. Ex. 1001, col. 2, ll. 3-13. The remainder of the Roberts specification similarly emphasizes the suitability for end point detection. Birang similarly emphasizes end point detection:

> 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.
>
> Specifically, the foregoing objective is attained by an apparatus and method of chemical mechanical polishing (CMP) employing a rotatable polishing platen with an overlying polishing pad, a rotatable polishing head for holding the wafer against the polishing pad, and an endpoint detector. The polishing pad has a backing layer which interfaces with the platen and a covering layer which is wetted with a chemical slurry and interfaces with the wafer. . . . And, the endpoint detector includes a laser interferometer capable of generating a laser beam directed towards the wafer and detecting light reflected therefrom, and a window disposed adjacent to a hole formed through the platen. This window provides a pathway for the laser beam to impinge on the wafer, at least during the time that the wafer overlies the window.
>
> The window can take several forms. . . . Alternately, the window can take the form of a portion of the polishing pad from which the adjacent backing layer has been removed. This is possible because the polyurethane covering layer is at least partially transmissive to the laser beam. Finally, the window can take the form of a plug formed in the covering layer of the pad and having no backing layer. This plug is preferably made of a polyurethane material which is highly transmissive to the laser beam.

Birang Specification, p. 4, l. 8 - p. 5, l. 11.

While the count does not specifically specify end point detection, this is not determinative. Proof of actual reduction to practice requires a showing that "the embodiment relied upon as evidence of priority actually worked for its intended purpose even if the 'intended purpose' is not explicitly set forth in the counts of the interference." DSL Dynamic Sciences, 928 F.2d at 1125, 18 USPQ2d at 1154. It is clear from both parties specifications that end point detection is the intended purpose of the claimed polishing pads. In light of clear statements in Roberts' specification, Roberts' arguments that the intended use is simply polishing is not persuasive.[13]

---

[13] We held above that Roberts claim 3 and, therefore the count, implicitly requires that the pads be suitable for end point detection. However, in view of our holding with respect to the intended use, we would have reached the same result whether or not the count implicity requires that the pads must be suitable for use with end point detection.

Roberts has failed to prove conception or actual reduction to practice of an embodiment within the scope of the count.

III.C.

Birang's case for derivation

Birang argues that Roberts' derived the invention from Birang. Paper 114½, pp. 10-15 and 27-31. Since we have held that Roberts has not proved conception or actual reduction to practice, it is unnecessary to consider Birang's derivation case.

IV.

Roberts' Due Process Argument

Roberts argues that he was denied due process in the use of Roberts Claim 3 as the count. Paper 114, pp. 23-29. Claim 3 is dependent on Claim 1 and is necessarily narrower than Claim 1. In particular, Roberts argues that the use of Claim 3 as the count was contrary to 37 CFR § 1.606 as that rule existed at the time the interference was declared. At that time the rule provided:

> At the time an interference is initially declared (§ 1.611), a count shall not be narrower in scope than any application claim that is patentable over the prior art and designated to correspond to the count or any patent claim designated to correspond to the count.

37CFR § 1.606 (1999). When the interference was declared Roberts Claim 3, a dependent claim, was used as the count. Roberts argues that the use of this narrow claim violated his due process rights.

The above-quoted provision of the regulations was deleted effective October 20, 2000. Interim Rule, Simplification of Certain Requirements in Patent Interference Practice, 1239 Official Gazette 125, 126 (October 17, 2000). The decision on preliminary motions (Paper 73) was rendered, after the regulation was amended. We apply the rule as it is at the time of our decision. See, United States Olympic Comm. v. Toy Truck Lines, Inc., 237 F.3d 1331, 1334, 57 USPQ2d 1380, 1382 (Fed. Cir. 2001). ("The general rule is that a tribunal must apply the law as it exists at the time of the decision."). Roberts argues U.S. Olympic is not applicable because the case says rules should not be applied retroactively if vested rights were affected. Roberts, however, never says what vested rights were affected by the choice of the count. While the declaration of the interference might itself have some impact on Roberts' vested patent rights, it is not apparent, and Roberts has not explained,

what additional impact on any vested rights results from the choice of the count which is distinct from that resulting from the mere declaration of the interference involving the Roberts patent.

In any event, Roberts has not demonstrated that due process has been violated by the choice of the count. A failure to follow regulations is not a per se violation of due process unless the rule is required by the Constitution or a statute. Arzanipour v. Immigration and Naturalization Service, 866 F.2d 743, 746 (5th Cir.), cert. denied, 493 U.S. 814 (1989). The provisions of §1.606 are neither required by the Constitution nor statute. More importantly, due process requires that a party be given adequate notice of the proceedings and an opportunity to respond and present a position. See, Cleveland Bd. of Educ. v. Loudermill, 470 U.S. 532, 543 (1985); Mullane v. Central Hanover Bank & Trust Co., 339 U.S. 306, 313 (1950). The Notice Declaring Interference informed Roberts that the count was Claim 3 of Roberts' patent. Paper 1, p. 32. Interference procedures permit the parties to file preliminary motions including motions to change the count. Roberts was given an opportunity to present a position on the matter by filing a preliminary motion under 37 CFR § 1.633(c)(1) arguing that the count was inappropriate and argue for a different count. While Roberts filed two contingent motions under that section, those motions were dismissed as moot because the contingency did not occur. Roberts could have filed a non-contingent motion but chose not to do so.

Roberts argues that the failure to file a non-contingent motion should be excused because of the belief that the board had inadvertently deviated from then existing 37 CFR §1.606, that he chose to bring the error to the attention of the board by means of contingent motions, and that he thought it would be inappropriate to file a non-contingent motion because he believed that Birang could not support a claim corresponding to the scope of Roberts Claim 1. Paper 114, p. 23. However, an opportunity to address the propriety of the count and seek to change the count was provided. 37 CFR § 1.633(c)(1). The procedure for challenging the suitability of the count as representative of the common invention of the parties is to file the appropriate preliminary motion. The motion informs the board and the opponent of the specific reasons supporting the motion and gives the opponent an opportunity to respond. Roberts chose not to take advantage of the opportunity to file an appropriate preliminary motion. Due process requirements are not violated where a party voluntarily fails to take advantage of available procedures designed to provide an

opportunity to address the issue. While Roberts filed contingent motions to substitute a count, he ran the risk that the contingency would not be fulfilled and the motions would not be considered. It is not the practice of this board to review and evaluate contingent motions for which the contingency has not been satisfied.

We are somewhat at a loss with regard to Roberts' belief that filing a non-contingent motion to change the count to Roberts' Claim 1 was inappropriate because Birang did not have a pending claim corresponding to the scope of Roberts Claim 1. Roberts has not provided any basis supporting the "belief." The count defines the interfering subject matter between the parties. 37 CFR § 1.601(f). Stated another way, it represents the common inventive subject matter of the parties. There is nothing that prevents a count from being broader than the broadest claims that either or both parties could make as long as the count represents the common invention of the parties. See e.g., Aelony v. Arni, 547 F.2d 566, 192 USPQ 486 (CCPA 1977) (interference held to exist where the count covered subject matter not described by both parties - i.e., neither party could have a pending claim the scope of the count). Thus, the fact that Birang could not make a claim of the same scope as Roberts Claim 1 was no impediment to moving for a broader count. Contrary to Roberts' assertions, Roberts did not take all reasonable and appropriate steps he could have in attempting to secure the count he thought would be appropriate.

Roberts argues that he has been prejudiced because he will be deprived of rights to a separate and distinct patentable invention. Roberts asserts that Roberts Claim 1 is generic to two patentably distinct inventions. Paper 97, p. 20. Roberts also argues that it is unfair to permit Birang to defeat Roberts Claim 1 by proving priority as an invention within the scope of Roberts Claim 3 while not allowing Roberts to prove priority as to invention apparently outside the scope of Roberts claim 3, but within the scope of Roberts claim 1. Paper 97, p. 19. Roberts further argues that he

> should be allowed to present proofs of the dates on invention for the separately patentable Roberts Patent Claim 1 if Roberts Patent Claim 1 is to be designated as corresponding to a count in the interference.

Paper 97, pp. 21-22.

If Roberts thought that an interference existed between separately patentably inventions of the parties, Roberts could have submitted a preliminary motion seeking to substitute or add a count directed to the alleged separately patentable invention. Roberts did not do so. Due process is not

violated where a party fails to take advantage of the specific procedures made available to protect its interests.

In any event, Roberts' arguments misperceive the affect of an adverse judgment on priority. The effect on Roberts of "losing" on priority as to the subject matter of the count (Roberts claim 3) is to preclude Roberts from patenting a claim that encompasses the Claim 3 subject matter. Under the particular facts of this case, the judgment on priority against Roberts makes Roberts claim 1 unpatentable to Roberts because it encompasses the narrower subject matter of the count (Roberts' claim 3).[14] Roberts is not entitled to a claim encompassing that subject matter because he has not shown he is first inventor of the claim 3 subject matter. Roberts' claim 1 is at risk in this interference because of its breadth. That another invention also encompassed by generic Roberts claim 1 may be patentably distinct from the invention of Roberts claim 3 does not negate the fact that Roberts claim 1 is anticipated by the count, i.e., Roberts Claim 3. The effect is essentially the same as a generic patent claim being held invalid over a prior art reference that discloses only a single species within the patented genus. The patent claim is unpatentable even if the species itself is patentably distinct from the genus or other species encompassed by the genus. With respect to both the prior art and with respect to the count, the generic claim is unpatentable because it encompasses subject matter unpatentable to the patentee. In both situations, the patentee is not precluded from seeking, through reissue, to limit the claims to subject matter which excludes the prior art or the count subject matter and which is patentably distinct from the prior art or the count. See, In re Johnson, 558 F.2d 1008, 1013, 1017-18, 194 USPQ 187, 191, 195-96 (CCPA 1977) (applicant was not barred from claiming generic subject matter which excluded the narrower subject matter lost during an interference) and In re Deckler, 977 F.2d 1449, 1452, 24 USPQ2d 1448, 1449 (Fed. Cir. 1992) (an interference judgment bars applicant from obtaining patent on claims that are patentably indistinguishable from claim on which applicant lost interference). Thus, Roberts is not barred by an adverse priority decision from obtaining claims directed to subject matter patentably distinct from the subject matter of the count and there is no unfairness in contesting the interference on the basis of a narrow count. In other words, to the extent that Roberts claim 1 encompasses

[14] Claim 2 corresponds to the Count for this same reason. 37 CFR §§ 1.601(n) and 1.606, last sentence.

subject matter patentably distinct from the count, an adverse judgment in this interference will not necessarily preclude Roberts from obtaining protection as to that subject matter. [15]

Additionally, a count which was as broad as Roberts Claim 1 was not an appropriate vehicle for contesting priority because it was not representative of the common invention of the parties. Roberts' Claim 3 is representative of the patentable subject matter common to both parties. Indeed, according to Roberts, Claim 1 reads on multiple patentably distinct inventions making it unsuitable for the count. If the interference had been "initially" declared using such a count, the interference would have been sua sponte redeclared using a more appropriate count.

Lastly, even if it was error to use Roberts Claim 3 "initially" as the count, it was harmless error. Nothing in 37 CFR § 1.606 prevents a narrower count being substituted subsequent to the initial declaration. Roberts Claims 1 and 2 have been held to be unpatentable over the prior art. As a result, had the interference been initially declared using a count as broad as Roberts Claim 1, the interference would have been redeclared using Roberts' Claim 3. The subject matter of the count must be patentable over the prior art. The error is harmless because whether or not the count was initially at least as broad as Roberts Claim 1, the count would have been narrowed during the preliminary motions phase of the interference to the scope of Claim 3.

IV.

ORDER

Upon consideration of the parties' Briefs, it is

ORDERED that judgment on Count 1 is awarded against junior party Roberts;

FURTHER ORDERED that Roberts is not entitled to a patent containing Claims 1-6 of Roberts Patent 5,605,760 or Claims 1-6 Roberts reissue application 09/596,023, corresponding to Count 1 (Paper 1, p. 32); and

[15] Any amended claim, of course, must meet the statutory requirements of patentability.

FURTHER ORDERED that a copy of this decision be given a paper number and be entered in the administrative records of Patent 5,605,760, Application 09/596,023 and Application 09/028,412.

RICHARD E. SCHAFER Administrative Patent Judge	)
JAMESON LEE Administrative Patent Judge	) BOARD OF PATENT) APPEALS AND
MARK NAGUMO Administrative Patent Judge	) INTERFERENCES

cc (via FedEx):

Attorney for Roberts

Raymond W. Green, Esq.
BRINKS HOFER GILSON & LIONE
NBC Tower-Suite 3600
455 N. Cityfront Plaza Drive
Chicago, IL 60611-5599

Tel: 312-321-4299

Attorney for Birang

William E. Booth, Esq.
FISH AND RICHARDSON, P.C.
225 Franklin Street
Boston, MA 02110

Tel: 617-542-5070