

The opinion in support of the decision being entered today was not written for publication and is not binding precedent of the Board.

Paper No. 12

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES

Ex parte JIONG-PING LU and CHANGMING JIN

Appeal No. 2004-0681
Application No. 09/899,743

ON BRIEF

Before GARRIS, MOORE, and POTEATE, Administrative Patent Judges.
GARRIS, Administrative Patent Judge.

DECISION ON APPEAL

This is a decision on an appeal which involves claims 6 and 7. In this regard, we observe that the appellants have not pursued an appeal of the examiner's final rejection of claims 2 and 3 (e.g., see page 2 of the brief) and that claims 4 and 5 have been allowed by the examiner (e.g., see page 3 of the final

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Office action mailed February 6, 2003). These are all of the claims remaining in the application.

The subject matter on appeal relates to an integrated circuit dielectric method which comprises forming an opening in a porous dielectric layer which has hydrophobic pore surfaces, using a hydrogen-containing plasma to convert pore surfaces exposed in the opening from hydrophobic to hydrophilic, and forming a conductive liner layer on the surfaces which have been converted to hydrophilic. This appealed subject matter is adequately illustrated by independent claim 6 which reads as follows:

6. An integrated circuit dielectric method, comprising:

(a) forming an opening in a porous dielectric layer, said porous dielectric with hydrophobic pore surfaces;

(b) using a hydrogen-containing plasma to convert pore surfaces exposed in said opening from hydrophobic to hydrophilic;

(c) after step (b) forming a conductive liner layer on said surfaces converted to hydrophilic.

The reference set forth below has been relied upon by the examiner in the section 102 rejection before us:

Dixit et al. (Dixit)

5,849,367

Dec. 15, 1998
(filed Dec. 11, 1996)

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Claims 6 and 7 are rejected under 35 U.S.C. § 102(e) as being anticipated by Dixit.¹

We refer to the brief and to the answer for a complete discussion of the contrary viewpoints expressed by the appellants and by the examiner concerning this rejection.

OPINION

For the reasons which follow, we will sustain this rejection.

As correctly indicated by the examiner, Dixit discloses an integrated circuit dielectric method which includes forming an opening in a dielectric layer such as xerogel and exposing this opening to a plasma such as a hydrogen-containing plasma. It is the examiner's position that, since the appellants disclose their claimed porous dielectric layer to be xerogel which has hydrophobic pore surfaces, the corresponding xerogel of Dixit necessarily would have hydrophobic pore surfaces. Similarly, the examiner urges that the here claimed plasma exposure corresponds to patentee's plasma exposure (i.e., as revealed by a comparison of appellants' disclosure on pages 13 and 14 of the specification

¹ On page 2 of the brief, the appellants indicate that the appealed claims will stand or fall together. Accordingly, in assessing the merits of the above noted rejection, we will focus on independent claim 6 with which dependent claim 7 will stand or fall. See 37 CFR § 1.192(c) (7) (2002).

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with Dixit's disclosure in lines 25-52 of column 6) and accordingly that Dixit's plasma exposure must necessarily convert his xerogel pore surfaces from hydrophobic to hydrophilic in the same manner as the appellants' corresponding plasma exposure.

The appellants' sole argument in response to the above discussed anticipation finding of the examiner is set forth on page 3 of the brief as follows:

Dixit only mentions porous dielectrics (aerogels, xerogels) in passing (column 4, line 7; column 7, line 41; and column 8, line 8) and without any hydrophobic or hydrophilic comments. Consequently, Dixit has no suggestion of the plasma conversion of hydrophobic to hydrophilic. In short, Dixit fails to anticipate the claims 6-7.

In stating that "Dixit only mentions porous dielectrics (aerogels, xerogels) in passing (column 4, line 7; column 7, line 41; and column 8, line 8)," the appellants have failed to explain with any reasonable specificity how this statement militates against the examiner's section 102 rejection. It may be that the appellants consider the Dixit reference to be non-anticipatory because it discloses dielectrics other than the xerogels under consideration. While this characterization of patentee's disclosure is accurate, it does not forestall a finding of anticipation. Given the limited number of dielectrics disclosed by Dixit and his preference for a low dielectric constant (the

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xerogels constant being the lowest) (e.g., see the paragraph bridging columns 3 and 4, lines 38-45 in column 7 and the paragraph bridging columns 7 and 8), we are convinced that the Dixit reference anticipatorily discloses a method of the type under consideration wherein the dielectric layer comprises xerogels. See In re Sivaramakrishnan, 673 F.2d 1383, 1384-85, 213 USPQ 441, 442 (CCPA 1982) and In re Schaumann, 572 F.2d 312, 316-17, 197 USPQ 5, 9 (CCPA 1978).

Under these circumstances, there is no discernable relevance in the appellants' comment that patentee discloses xerogels "without any hydrophobic or hydrophilic comments" (brief, page 3). This is because the xerogels of Dixit would necessarily include hydrophobic pore surfaces just as do the appellants' disclosed xerogels. We here remind the appellants of the well established principle that, from the standpoint of patent law, a compound and all of its properties are inseparable. In re Papesch, 315 F.2d 381, 391, 137 USPQ 43, 51 (CCPA 1963).

The foregoing discussion leads us to the appellants' previously quoted remark that "Dixit has no suggestion of the plasma conversion of hydrophobic to hydrophilic" (brief, page 3). Even if this remark is accurate, it does not resolve the anticipation issue on appeal. It is well settled that

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anticipation is established when a single prior art reference discloses, expressly or under principles of inherency, each and every element of the claimed invention. RCA Corp. v. Applied Digital Data Sys., Inc., 730 F.2d 1440, 1444, 221 USPQ 385, 388 (Fed. Cir. 1984). Here, the examiner has advanced a factual and technical basis in support of his position that Dixit's plasma exposure would necessarily and inherently convert the pore surfaces of his xerogels from hydrophobic to hydrophilic as required by step(b) of appealed independent claim 6. In response, the appellants have not even acknowledged much less contested the examiner's basis for his inherency position.

It is the examiner's initial burden to establish a prima facie basis for denying patentability, and, if relying upon a theory of inherency, the examiner must provide a basis in fact and/or technical reasoning to reasonably support a determination that the allegedly inherent characteristic necessarily flows from the teachings of the applied prior art. Ex parte Levy, 17 USPQ2d 1461, 1463-64 (Bd. Pat. App. & Int. 1990). In the appeal under consideration, the basis for the examiner's inherency position is not without merit. More importantly, the appellants have not in any way challenged this basis including the factual and technical accuracy thereof. We are compelled by these circumstances to

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determine that the examiner's inherency position is reasonably supported by the factual and technical basis advanced in the answer (as well as in the final Office action).

For these reasons, it is our ultimate determination that the examiner has established a prima facie case of unpatentability which the appellants have failed to successfully rebut with argument and/or evidence of patentability. We shall sustain, therefore, the examiner's section 102 rejection of claims 6 and 7 as being anticipated by Dixit.² See In re Oetiker, 977 F.2d 1443, 1445, 24 USPQ2d 1443, 1444 (Fed. Cir. 1992).

The decision of the examiner is affirmed.

² In any further prosecution that may occur, the examiner and the appellants should explore the alternative issue of whether the here claimed subject matter would have been obvious within the meaning of 35 U.S.C. § 103(a) in view of the teachings of Dixit.

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No time period for taking any subsequent action in connection with this appeal may be extended under 37 CFR § 1.136(a).

AFFIRMED

Bradley R. Garris)	
Administrative Patent Judge)	
)	
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James T. Moore)	BOARD OF PATENT
Administrative Patent Judge)	APPEALS AND
)	INTERFERENCES
)	
Linda R. Poteate)	
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BRG:tdl

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