

The opinion in support of the decision being entered today was not written for publication and is not binding precedent of the Board

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES

Ex parte KAZUE TAKAHASHI,
TOSHIO MASUDA,
TETSUNORI KAJI,
and KEN'ETSU YOKOGAWA

Appeal No. 2004-2192
Application 09/414,520

ON BRIEF

Before TIMM, JEFFREY T. SMITH, and PAWLIKOWSKI, Administrative Patent Judges.

PAWLIKOWSKI, Administrative Patent Judge.

DECISION ON APPEAL

This is a decision on appeal from the examiner's final rejection of claims 1, 2, 4-7, 9, and 10.

A copy of each of these claims is set forth in the attached appendix.

On page 6 of the brief, appellants state that the claims do not stand or fall together. To the extent any one claim is argued separately for patentability, we will consider such claim in this appeal.

Appeal No. 2004-2192
Application No. 09/414,520

The examiner relies upon the following references as evidence of unpatentability:

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| Ovshinsky et al. (Ovshinsky) | 5,324,553 | Jun. 28, 1994 |
| Satou et al. (Satou) | 5,961,850 | Oct. 5, 1999 |
| Akahori et al. (Akahori) | 6,215,087 | Apr. 10, 2001 |

Claims 1, 2, and 5 stand rejected under 35 U.S.C. §103 as being unpatentable over Satou in view of Ovshinsky.

Claims 4, 6, 7, 9, and 10 stand rejected under 35 U.S.C. § 103 as being unpatentable over Satou and Ovshinsky and further in view of Akahori.

OPINION

I. The rejection of claims 1, 2, and 5 under 35 U.S.C. § 103 as being obvious over Satou in view of Ovshinsky

On page 3 of the answer, the examiner refers to Paper No. 18 regarding his position for this rejection. In Paper No. 18, the examiner's position is set forth on pages 2-4.

Beginning on page 6 of the brief, appellants rebut the examiner's position. Appellants submit that the rejection is in error, *inter alia*, because the subject matter regarding the gas species, i.e., carbon and fluorine, is not set forth in the combination of references.

We agree with appellants that neither Satou nor Ovshinsky teach a gas species that contains carbon and fluorine. However, claim 1 is an apparatus claim (as well as claims 2, 4, and 5). As such, we note that a claim recitation with respect to the material intended to be worked upon by the claimed apparatus, does not impose structural limitations upon the claimed apparatus, which differentiates it from a prior art apparatus

Appeal No. 2004-2192
Application No. 09/414,520

satisfying the structural limitations of that claimed. See Ex parte Masham, 2 USPQ2d 1647, 1648 (Bd. Pat. App. & Int. 1987). Also see In re Rishoi, 197 F.2d 342, 344, 94 USPQ 71, 72 (CCPA 1952); and In re Young, 75 F.2d 996, 997, 25 USPQ 69, 70 (CCPA 1935). Similarly, a recitation with respect to the manner in which a claimed apparatus is intended to be employed does not differentiate the claimed apparatus from a prior art apparatus satisfying the structural limitations of that claimed. See Ex parte Masham, 2 USPQ 1647, 1648 (Bd. Pat. App. & Int. 1987). Also see In re Yanush, 477 F.2d 958, 959, 177 USPQ 705, 706 (CCPA 1973); In re Finsterwalder, 436 F.2d 1028, 1032, 168 USPQ 530, 534 (CCPA 1971); In re Casey, 370 F.2d 576, 580, 152 USPQ 235, 238 (CCPA 1967); and In re Otto, 312 F.2d 937, 939, 136 USPQ 458, 459 (CCPA 1963).

In the instant case, as pointed out by the examiner at the bottom of page 4 of the answer, the prior art structure meets the claims because the prior art apparatus is capable of performing the intended use. Appellants do not provide arguments showing that it is not capable of such.

In view of the above, we affirm the rejection of claims 1, 2, and 5 under 35 U.S.C. §103 as being unpatentable over Satou in view of Ovshinsky.

II. The 35 U.S.C. § 103 rejection of claims 4, 6, 7, 9, and 10 as being unpatentable over Satou and Ovshinsky and further in view of Akahori

We refer to page 4 of Paper No. 18 regarding the examiner's position in this rejection.

On page 8 of the brief, appellants argue that Ovshinsky relates to a method for the improved microwave deposition of thin films. The method does not relate to a plasma etching apparatus. The examiner rebuts and states that a recitation of intended use

Appeal No. 2004-2192
Application No. 09/414,520

must result in a structural difference. Answer, page 6. We agree with the examiner, with regard to apparatus claim 4, and refer to our above comments in this regard. However, with regard to process claims 6, 7, 9, and 10, we do not agree with the examiner's position.

The issue is whether one skilled in the art would have been motivated to incorporate the teachings of Ovshinsky (directed to an improved chemical vapor deposition method) to modify the method for etching as set forth in Satou. We find that the examiner's position fails to explain why one of ordinary skill in the art would have selected the frequency used in the PECVD method of Ovshinsky, involving different precursor gases than Satou, in the etching method of Satou, which involves different precursor gases than Ovshinsky. Satou is directed to etching, and uses gases such as BCl_1 and Cl_2 , whereas Ovshinsky is directed to depositing materials using gases as set forth in claim 17, in column 20, of Ovshinsky.

Also, the examiner relies upon Akahori for teaching plasma generation by ECR, including carbon and fluorine species, and for the use of intermittent microwave application. However, the examiner does not explain why one of ordinary skill in the art would have used the precursor gases of Akahori in the process of Satou.

Because the examiner has not provided an explanation as discussed above, we determine that the examiner has not met his burden of setting forth a prima facie case of obviousness with regard to the process claims.

In view of the above, we reverse the 35 U.S.C. §103 rejection of claims 6, 7, 9 and 10.

Appeal No. 2004-2192
Application No. 09/414,520

III. Other Issues

Upon return of this application to the jurisdiction of the examiner, consider whether claim 10 complies with the requirements of 35 U.S.C. § 112, second paragraph.

Also, consider Japanese application patent laid-open publication No. Hei 8-300039, discussed on page 9 of appellants' specification, with regard to the patentability of the claimed invention.

IV. Conclusion

The rejection of claims 1, 2, 4, and 5 is affirmed.

The rejection of claims 6, 7, 9, and 10 is reversed.

Appeal No. 2004-2192
Application No. 09/414,520

No time period for taking any subsequent action in connection with this appeal may be extended under 37 CFR § 1.136(a)(1)(iv) (effective Sept. 13, 2003; 69 Fed. Reg. 49960 (Aug. 12, 2004); 1286 Off. Gaz. Pat., Office 21 (Sept. 7, 2004)).

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| Catherine Timm |) | |
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| Jeffrey T. Smith |) | APPEALS AND |
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| Beverly A. Pawlikowski |) | |
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BAP/cam

Appeal No. 2004-2192
Application No. 09/414,520

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APPENDIX

1. In a plasma processing apparatus for etching an electrically insulating film, the plasma processing apparatus having a vacuum processing chamber, a sample table for mounting a sample which is processed in said vacuum processing chamber, and a plasma generation means, wherein a plasma processing is carried out by generating a plasma in response to introduction of a gas which contains at least carbon and fluorine, and a gas species is generated which contains carbon and fluorine according to a plasma dissociation, the plasma processing apparatus comprising :

plasma generation means comprising an electron cyclotron resonance system in which a microwave is provided having a frequency of from 300 MHz to 1 GHz and which generates a plasma in which the degree of plasma dissociation is an intermediate degree and said gas species containing carbon and fluorine is generated fully in the plasma, and a temperature of a region which forms a side wall of said vacuum processing chamber is controlled to have a range of 10°C to 120°C and wherein the sample for etching by the plasma is an insulating film.

2. A plasma processing apparatus according to Claim 1, wherein

said plasma generation means is a source of plasma in which an electron energy is in a range of from 0.25 eV to 1 eV.

4. A plasma processing apparatus according to claim 1, wherein in said plasma generation means, a drive of a plasma exciting power supply is carried out intermittently.

5. A plasma processing apparatus according to any one of Claim 1, Claim 2 or Claim 4, wherein

as a means for adjusting a temperature of said vacuum wall, a temperature adjusted coolant medium is used.

6. In a plasma processing method using a vacuum processing chamber, a sample table for mounting a sample which is processed in said vacuum processing chamber wherein the sample is an electrically insulating film, and a plasma generation means, wherein a plasma processing is carried out by generating a plasma

Appeal No. 2004-2192
Application No. 09/414,520

in response to introduction of a gas which contains at least carbon and fluorine, and a gas species is generated which contains a carbon and fluorine according to a plasma dissociation, the plasma processing method comprising the steps of:

generating a plasma, wherein said plasma generation is effected using an electron cyclotron resonance system in which a microwave having a frequency of from 300 MHz to 1 GHz is employed and wherein a degree of plasma dissociation is an intermediate degree and said gas species containing carbon and fluorine is generated fully in the plasma, and controlling a temperature of a region which forms a side wall of said vacuum processing chamber to have a range of 10°C to 120°C.

7. A plasma processing method according to claim 6, wherein said plasma generation produces a plasma in which an electron energy is a range of from 0.25 eV to 1 eV.

9. A plasma processing method according to claim 6, wherein in said plasma generation, a drive of a plasma exiting power supply is carried out intermittently.

10. A plasma processing apparatus according to Claim 6, Claim 7 or Claim 9 wherein as a means for adjusting a temperature of said vacuum wall, a temperature adjusted coolant medium is used.