

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 TOSHIHITO TSUGA

Appeal 2007-0096
Application 09/969,467
Technology Center 1700

Decided: March 29, 2007

Before PETER F. KRATZ, JEFFREY T. SMITH, and CATHERINE Q. TIMM, *Administrative Patent Judges*.

KRATZ, *Administrative Patent Judge*.

DECISION ON APPEAL

This is an appeal from the Examiner's final rejection of claims 1, 3-6, and 8. We have jurisdiction pursuant to 35 U.S.C. §§ 6 and 134.

Appellant's invention is directed to a method for removing photoresist (an organic substance) from a semiconductor wafer using vapor obtained from ultrapure water. The vapor is blown at an elevated temperature onto a surface of the wafer. The vapor is irradiated with ultraviolet (UV) rays resulting in an increase in hydroxyl radicals. Claim 1 is illustrative and reproduced below:

1. A method for cleaning a photoresist or an organic substance from a semiconductor wafer, consisting essentially of:

generating vapor by heating ultrapure water;

increasing the number of hydroxyl radials in the vapor by irradiating ultraviolet rays into the vapor; and

removing an organic substance from said semiconductor wafer surface by blowing the vapor at a temperature of 85°C or higher onto the semiconductor wafer surface.

The Examiner relies on the following prior art references as evidence in rejecting the appealed claims:

Pokharna	US 6,596,343 B1	July 22, 2003
Miki	US 6,610,168 B1	Aug. 26, 2003

Claims 1, 3-6, and 8 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Miki in view of Pokharna. Appellant argues the appealed claims together as a group. Thus, we select claim 1 as representative of the appealed claims in deciding this appeal.

The Examiner has determined that Miki teaches "generating steam/vapor by heating ultrapure water (col. 2, lines 34-36)" and spraying/blowing steam/water vapor at a temperature of 75-85° C onto the semiconductor substrate/wafer surface to peel/remove photoresist (col. 12, lines 1-5)."

Answer 3. The Examiner has also found that “Miki discloses using UV light in combination with the steam/vapor to peel/remove resist (col. 17, lines 5-7; col. 21, lines 11-12)”. *Id.*

Appellant does not contest the above-noted determinations of the Examiner. Rather, Appellant seemingly contends that the applied references, including Miki, would not have resulted, *prima facie*, in the claimed method because the applied references do not teach an application of UV irradiation to the vapor used in removing an organic substance from the semiconductor, which application causes an increase in the number of hydroxyl radicals in the vapor.

Thus, the issue raised in this appeal is: Whether the evidence furnished by the Examiner is sufficient to establish, *prima facie*, the unpatentability (obviousness) of the claimed method? More particularly, the issue is: Whether the Examiner has established that the UV irradiation, as taught by Miki, would have resulted, *prima facie*, in an increase in hydroxyl radicals in the vapor/steam?

We answer these questions in the affirmative. Hence, we affirm the Examiner’s rejection.

Concerning the UV irradiation, Miki teaches that the UV lamp (24, Fig. 4), a quartz window board (25, Fig. 4), and a steam supply nozzle (14, Fig. 4) can be arranged in a position to effect peeling (removal) of resist from a substrate (21, Fig. 4) with the steam sprayed onto the surface of the substrate (21, Fig. 4). See, e.g., column 16, lines 3-37 of Miki. Miki discloses that irradiation with the UV rays can occur while the steam stripping of the resist is occurring at temperatures corresponding to those claimed by Appellant (col. 3, ll. 36-47, col. 5, ll. 7-11, col. 11, ll. 8-27, and

col. 12, ll. 1-9). As an example, Miki shows the use of an ultraviolet lamp with a wave length of 191nm used in such a combination process (Ex. 6). This disclosure of Miki substantially corresponds with Appellant's disclosed UV irradiation which results in the formation of hydroxyl radicals in the irradiated vapor. In this regard, we note that Appellant discloses that the ultraviolet rays may be supplied with a wave length of 242 nm or less and may be irradiated into the vapor and onto the substrate surface in forming hydroxyl radicals (Specification 6). Inasmuch as Miki uses the same approximate steps and materials as recited in the representative appealed claim 1, it logically follows that the reference inferentially obtains the same results in terms of hydroxyl formation. *In re Myers*, 401 F.2d 828, 159 USPQ 339 (CCPA 1968). The recitation of an alleged newly discovered function or property, inherently possessed by processes in the prior art does not cause claims drawn thereto to patentably distinguish over the prior art, especially where, as here, the method steps, ingredients and products are or appear to be substantially the same. See *In re Best*, 562 F.2d 1252, 195 USPQ 430, 433 (CCPA 1977).

In light of the above, Appellant's arguments in the Brief to the effect that Pokharna is not combinable with Miki for a lack of presentation of motivation, a lack of presentation based on the nature of problem to be solved, and/or a lack of a reasonable expectation of success are unconvincing. This is because a *prima facie* case of obviousness has been established by the teachings of Miki without the need for any modification based on the additional teachings of Pokharna. In a similar vein, Appellant's argument concerning the "consisting essentially of" clause in claim 1 is ineffective in establishing a patentable distinction over the process

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embodiment(s) employing UV irradiation and vapor (steam) as taught by Miki.

We determine that the Examiner has reasonably established that the UV irradiation, as taught by Miki, would have implicitly resulted, *prima facie*, in an increase in hydroxyl radicals in the vapor/steam used in the wafer cleaning of Miki. Appellant has not refuted the *prima facie* case of obviousness presented. Accordingly, we determine that the appealed claims are obvious, within the meaning of § 103(a), over the applied prior art. It follows that we shall sustain the Examiner's obviousness rejection.

DECISION

The decision of the Examiner to reject claims 1, 3-6, and 8 under 35 U.S.C. § 103(a) as being unpatentable over Miki in view of Pokharna is affirmed.

No time period for taking any subsequent action in connection with this appeal may be extended under 37 C.F.R. § 1.136(a)(1)(iv).

AFFIRMED

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