

THIS OPINION WAS NOT WRITTEN FOR PUBLICATION

The opinion in support of the decision being entered today (1) was not written for publication in a law journal and (2) is not binding precedent of the Board.

Paper No. 21

UNITED STATES PATENT AND TRADEMARK OFFICE

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BEFORE THE BOARD OF PATENT APPEALS  
AND INTERFERENCES

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Ex parte KOJI YAMANAKA

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Appeal No. 95-4115  
Application No. 07/932,714<sup>1</sup>

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HEARD: MARCH 11, 1999

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Before GARRIS, Weiffenbach, and KRATZ, Administrative Patent Judges.

KRATZ, Administrative Patent Judge.

DECISION ON APPEAL

This is a decision on appeal from the examiner's final rejection of claims 12-16, which are all of the claims pending in this application.

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<sup>1</sup> Application for patent filed August 20, 1992.

BACKGROUND

The appellant's invention relates to a method of forming a phase shifting reticle. An understanding of the invention can be derived from a reading of exemplary claim 12, which has been reproduced below.

12. A method of fabricating a phase shifter of a reticle comprising the steps of:

forming both light shielding layers and apertures on a substrate of an optically transparent material;

forming a thin film of silicon dioxide by a chemical vapor deposition on said light shielding layers and on parts of a surface of said substrate which are exposed through said apertures;

applying a photo-resist film over an entire surface of said silicon dioxide film for a subsequent patterning so that said apertures of said light shielding layers are alternatively overlaid by remaining portions of said photo-resist film and its apertures;

selectively forming a phase shifter of silicon dioxide on a part of a surface of said silicon dioxide thin film exposed through said apertures of said photo-resist film, said selective forming being by a liquid phase epitaxial growth; and

removing said remaining photo-resist film.

The prior art references of record relied upon by the examiner in rejecting the appealed claims are:

|                           |           |                                     |
|---------------------------|-----------|-------------------------------------|
| Morrison et al.(Morrison) | 4,612,072 | Sep. 16, 1986                       |
| Okamoto                   | 5,045,417 | Sep. 3, 1991<br>(filed Sep.3, 1989) |

JP-1236544 as admitted by appellant on pages 6 and 7 of the specification.

Claims 12-16 stand rejected under 35 U.S.C. § 103 as being unpatentable over Okamoto in view of Morrison.

Claims 12-16 stand rejected under 35 U.S.C. § 103 as being unpatentable over Okamoto in view of JP-1236544 as admitted by appellant on pages 6 and 7 of the specification.<sup>2</sup>

Rather than reiterate all of the conflicting viewpoints advanced by the examiner and the appellant regarding the above-noted rejections, we make reference to the examiner's answer dated November 9, 1994 and the supplemental answer dated June 16, 1995, and to the appellant's brief and reply

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<sup>2</sup> This rejection was denoted a new ground of rejection at page 3 of the answer. A communication mailed August 1, 1996 furnished the signature of a supervisory patent examiner approving the new ground in response to a Remand dated July 29, 1996. We note that a reply brief responsive to the new ground of rejection filed May 8, 1995 was entered as advised in a supplemental answer dated June 16, 1995.

brief for a complete exposition of the opposing viewpoints expressed by the examiner and the appellant concerning the above-noted rejections.

OPINION

We have carefully considered all of the arguments advanced by appellant and the examiner and agree with appellant that the aforementioned rejections are not well founded. Accordingly, we cannot sustain the rejections presented by the examiner in this appeal.

On the record of this appeal, it is our view that the examiner has not carried the burden of establishing a prima facie case of obviousness with respect to the subject matter defined by the appealed claims. In this regard, all of the claims on appeal describe a method requiring several specific steps including selectively forming a silicon dioxide phase shifter via liquid phase epitaxial growth on a part of a chemically vapor deposited thin film of silicon dioxide that is exposed via apertures of a photo-resist film previously applied over the surface of the chemically vapor deposited thin film.

Both of the rejections advanced by the examiner rely on Okamoto for teaching the manufacture of a phase shifting

reticle using a silicon dioxide phase shifter made with a transparent film of a material such as silicon dioxide applied via a sputtering technique or the like onto a substrate (column 7, lines 30-37, and column 19, lines 59-64). In one of the separate rejections, the examiner relies on Morrison and in the other on JP-1236544 as admitted by appellant on pages 6 and 7 of the specification<sup>3</sup> each for teaching liquid phase epitaxial growth to "selectively form silicon dioxide."

We agree with appellant that Morrison describes a liquid phase epitaxial growth process as an optional method for forming a silicon layer of a semiconductor (brief, pages 9 and 10 and reply brief, pages 2 and 3), not a silicon dioxide layer over exposed portions of a chemically vapor deposited thin film of silicon dioxide. Thus, from our perspective, it is not clear how the combined teachings of Okamoto and

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<sup>3</sup> We note that JP-1236544 is not listed on a Notice of References Cited by Examiner (PTO-892), a Notice of Art Cited by Applicant (PTO-1449) that was acknowledged by the examiner, or listed separately in the examiner's answer as new prior art (answer, page 2). In view of the above and the examiner's reference to the specification at pages 6 and 7 for an admission by appellant regarding JP-1236544 (answer, page 3), our consideration of the new ground of rejection set forth at pages 3 and 4 of the answer is based on appellant's admissions in the carryover paragraph at pages 6 and 7 of the specification as the applied secondary reference teaching.

Morrison would have suggested the claimed process herein to a skilled artisan.

While the admitted prior art in the specification (JP-1236544) does indicate that a method of forming a silicon dioxide layer via liquid phase epitaxial growth is known, the examiner has not carried his burden to show how that known technique would have rendered the specifically claimed process herein obvious to one of ordinary skill in the art.

To establish a prima facie case of obviousness, an examiner must explain why the teachings from the prior art itself would have suggested the claimed subject matter to one of ordinary skill in the art. See In re Rinehart, 531 F.2d 1048, 1051, 189 USPQ 143, 147 (CCPA 1976). The mere fact that the prior art could be modified as proposed by the examiner is not sufficient to establish a prima facie case of obviousness. See In re Fritsch, 972 F.2d 1260, 1266, 23 USPQ2d 1780, 1783 (Fed. Cir. 1992).

In our view, the motivation relied upon by the examiner for combining the teachings of the references to arrive at appellant's claimed invention herein appears to have come from

the disclosure of appellant's method in his specification rather than from the prior art. Accordingly, we agree with appellant that the applied prior art, even if properly combinable, would not have rendered the specifically claimed process herein prima facie obvious without the impermissible use of hindsight reasoning. See W.L. Gore & Associates v. Garlock, Inc., 721 F.2d 1540, 1553, 220 USPQ 303, 312-13 (Fed. Cir. 1983); In re Rothermel, 276 F.2d 393, 396, 125 USPQ 328, 331 (CCPA 1960). For the above reasons, we find that the examiner has not set forth a factual basis which is sufficient to support a conclusion of obviousness of appellant's claimed invention.

#### CONCLUSION

To summarize, the decisions of the examiner to reject claims 12-16 under 35 U.S.C. § 103 as unpatentable over Okamoto in view of Morrison, and to reject claims 12-16 under 35 U.S.C. § 103 as unpatentable over Okamoto in view of JP-1236544 as admitted by appellant on pages 6 and 7 of specification are reversed. No time period for taking any subsequent action in connection with this appeal may be extended under 37 CFR §

§ 1.136(a).

REVERSED

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|-----------------------------|---|-----------------|
| BRADLEY R. GARRIS           | ) |                 |
| Administrative Patent Judge | ) |                 |
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|                             | ) | BOARD OF PATENT |
| Cameron Weiffenbach         | ) | APPEALS         |
| Administrative Patent Judge | ) | AND             |
|                             | ) | INTERFERENCES   |
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| PETER F. KRATZ              | ) |                 |
| Administrative Patent Judge | ) |                 |

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