

The opinion in support of the decision being entered today was not written for publication and is not binding precedent of the Board.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 SRINIVAS DODDI, LAWRENCE LANE, VI
VUONG, MIKE LAUGHERY, JUNWEI BAO, KELLY BARRY,
NICKHIL JAKATDAR and EMMANUEL DREGE

Appeal No. 2006-0996
Application No. 10/162,516

ON BRIEF

Before HAIRSTON, JERRY SMITH, and SAADAT, Administrative Patent Judges.
JERRY SMITH, Administrative Patent Judge.

DECISION ON APPEAL

This is a decision on the appeal under 35 U.S.C. § 134 from the examiner's rejection of claims 1, 6, 8-11, 13, 27, 29, 38-41, 48 and 54. Pending claims 2-5, 7, 12, 28, 46 and 47 have been indicated by the examiner to contain allowable subject matter.

The disclosed invention pertains to a method and apparatus of selecting wavelengths for use in optical metrology of an integrated circuit structure having a nominal profile.

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Representative claim 1 is reproduced as follows:

1. A method of selecting wavelengths for use in optical metrology of an integrated circuit structure having a nominal profile, the method comprising:

determining one or more termination criteria;

determining one or more selection criteria;

selecting wavelengths using one or more input diffraction spectra for the integrated circuit structure and the selection criteria; and

performing the selecting step until the termination criteria are met.

The examiner relies on the following references:

Lee et al. (Lee)	5,835,221	Nov. 10, 1998
Kaji et al. (Kaji)	6,716,300	Apr. 06, 2004
		(filed Mar. 06, 2002)

Claims 1, 6, 8, 9, 13, 27, 29, 38-41, 48 and 54 stand rejected under 35 U.S.C. § 102(b) as being anticipated by the disclosure of Lee. Claims 10 and 11 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over the teachings of Lee in view of Kaji.

Rather than repeat the arguments of appellants or the examiner, we make reference to the briefs and the answer for the respective details thereof.

OPINION

We have carefully considered the subject matter on appeal, the rejections advanced by the examiner and the evidence of anticipation and obviousness relied upon by the examiner as support for the rejections. We have, likewise, reviewed and taken into

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consideration, in reaching our decision, the appellants' arguments set forth in the briefs along with the examiner's rationale in support of the rejections and arguments in rebuttal set forth in the examiner's answer.

It is our view, after consideration of the record before us, that the evidence relied upon supports each of the examiner's rejections. Accordingly, we affirm.

We consider first the rejection of claims 1, 6, 8, 9, 13, 27, 29, 38-41, 48 and 54 as being anticipated by Lee. Anticipation is established only when a single prior art reference discloses, expressly or under the principles of

inherency, each and every element of a claimed invention as well as disclosing structure which is capable of performing the recited functional limitations. RCA Corp. v. Applied Digital Data Systems, Inc., 730 F.2d 1440, 1444, 221 USPQ 385, 388 (Fed. Cir.); cert. dismissed, 468 U.S. 1228 (1984); W.L. Gore and Associates, Inc. v. Garlock, Inc., 721 F.2d 1540, 1554, 220 USPQ 303, 313 (Fed. Cir. 1983), cert. denied, 469 U.S. 851 (1984). The examiner has indicated how the invention of these claims is deemed to be fully met by the disclosure of Lee [final rejection, pages 2-6].

With respect to independent claims 1, 27, 38 and 48, which are argued as a single group, appellants argue that the section of Lee cited by the examiner fails to support the rejection because it does not disclose that the wavelengths are selected using the model traces. Appellants assert that the cited section only teaches that wavelengths

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are selected that produce traces that are amenable to being correlated to model traces [brief, pages 5-6]. With respect to independent claim 54, appellants argue that the area fractions of Lee can not be used as the termination criteria for the fitting process [id., pages 6-7].

With respect to claims 1, 27, 38 and 48, the examiner responds that Lee teaches that model traces indicating diffraction are generated at various wavelengths and are monitored for oscillations, and wavelengths at these oscillations are selected for use. With respect to claim 54, the examiner responds that Lee teaches that etching endpoints are used to control the etching process which teaches a selection of wavelengths and one or more termination criteria [answer, pages 4-6].

With respect to claims 1, 27, 38 and 48, appellants respond that the cited portion of Lee fails to disclose that the wavelengths are selected after model traces are generated at various wavelengths, and that the traces generated in Lee are actual traces rather than model traces [reply brief, pages 4-6]. With respect to claim 54, appellants respond that the etching endpoints now referenced by the examiner are not associated with the selected wavelengths, but instead, are only associated with times [id., pages 6-8].

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With respect to claims 1, 27, 38 and 48, we will sustain the examiner's anticipation rejection based on Lee. We do not agree with appellants' argument that the wavelengths selected in Lee do not use the model traces. As appellants point out, the wavelengths 2.8eV and 3.3eV were selected because changes in Δ and Ψ of traces were observed at these wavelengths. These changes in Δ and Ψ were determined from previous model input spectra that indicated oscillations at wavelengths of 2.8eV and 3.3eV. In other words, the wavelengths 2.8eV and 3.3eV were not selected at random, but instead, were selected based on previous observations of spectrum data using a spectrum of wavelengths. Therefore, we find that the wavelengths selected in Lee come from model selection criteria based on what wavelengths produce observable changes in Δ and Ψ over time.

With respect to claim 54, we will also sustain the examiner's anticipation rejection based on Lee. Although we agree with appellants that the examiner has changed positions from the final rejection to the answer, we find, nevertheless,

that the disclosure of Lee supports the rejection. The recitation in claim 54 that "each set of selected wavelengths is associated with one or more termination criteria and wavelength selection criteria" is met by a single termination criterion and a single selection criterion. The set of selected wavelengths in Lee (2.0eV, 2.8eV, 3.3eV and

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4.0eV) is associated with a single etching termination criterion as shown in Figures 6 and 7. This same set of wavelengths is associated with the selection criteria where polysilicon is transparent and opaque, and where TiN produces observable changes in Δ and Ψ over time. Therefore, we find that Lee fully meets the recitations of claim 54.

We also sustain the examiner's rejection of each of the dependent claims on appeal because appellants have not argued any of these dependent claims separately from the independent claims discussed above.

We now consider the rejection of claims 10 and 11 under 35 U.S.C. § 103. In rejecting claims under 35 U.S.C. § 103, it is incumbent upon the examiner to establish a factual basis to

support the legal conclusion of obviousness. See In re Fine, 837 F.2d 1071, 1073, 5 USPQ2d 1596, 1598 (Fed. Cir. 1988). In so doing, the examiner is expected to make the factual determinations set forth in Graham v. John Deere Co., 383 U.S. 1, 17, 148 USPQ 459, 467 (1966), and to provide a reason why one having ordinary skill in the pertinent art would have been led to modify the prior art or to combine prior art references to arrive at the claimed invention. Such reason must stem from some teaching, suggestion or implication in the prior art as a whole or knowledge generally available to one having ordinary skill in the art. Uniroyal, Inc. v. Rudkin-Wiley Corp.,

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837 F.2d 1044, 1051, 5 USPQ2d 1434, 1438 (Fed. Cir.), cert. denied, 488 U.S. 825 (1988); Ashland Oil, Inc. v. Delta Resins & Refractories, Inc., 776 F.2d 281, 293, 227 USPQ 657, 664 (Fed. Cir. 1985), cert. denied, 475 U.S. 1017 (1986); ACS Hosp. Sys., Inc. v. Montefiore Hosp., 732 F.2d 1572, 1577, 221 USPQ 929, 933 (Fed. Cir. 1984).

These showings by the examiner are an essential part of complying with the burden of presenting a *prima facie* case of obviousness.

Note In re Oetiker, 977 F.2d 1443, 1445, 24 USPQ2d 1443, 1444 (Fed. Cir. 1992). If that burden is met, the burden then shifts to the applicant to overcome the *prima facie* case with argument and/or evidence. Obviousness is then determined on the basis of the evidence as a whole and the relative persuasiveness of the arguments. See Id.; In re Hedges, 783 F.2d 1038, 1039, 228 USPQ 685, 686 (Fed. Cir. 1986); In re Piasecki, 745 F.2d 1468, 1472, 223 USPQ 785, 788 (Fed. Cir. 1984); and In re Rinehart, 531 F.2d 1048, 1052, 189 USPQ 143, 147 (CCPA 1976). Only those arguments actually made by appellants have been considered in this decision. Arguments which appellants could have made but chose not to make in the brief have not been considered and are deemed to be waived [see 37 CFR § 41.37(c)(1)(vii)(2004)].

The examiner has indicated how the invention of these claims is deemed to be obvious over the teachings of Lee and Kaji [final rejection, pages 6-7]. We have

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considered the examiner's rejection, and we find that the examiner has at least established a prima facie case of obviousness. Appellants' only argument

with respect to this rejection is that claims 10 and 11 are allowable because they depend from allowable claim 1 [brief, page 7]. Since we have determined that the rejection of claim 1 was appropriate, and since appellants have not otherwise rebutted the examiner's prima facie case of obviousness, we also sustain the examiner's rejection of claims 10 and 11.

In summary, we have sustained the examiner's rejections with respect to each of the claims on appeal. Therefore, the decision of the examiner rejecting claims 1, 6, 8-11, 13, 27, 29, 38-41, 48 and 54 is affirmed.

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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)(1)(iv).

AFFIRMED

KENNETH W. HAIRSTON)
Administrative Patent Judge)
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) BOARD OF PATENT
JERRY SMITH) APPEALS
Administrative Patent Judge) AND
) INTERFERENCES
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