

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 SURESH LAKKAPRAGADA, KYLE A. BROWN, MATT
HANKINSON, ADY LEVY, and IBRAHIM ABDUL-HALIM

Appeal 2006-2870
Application 10/401,509
Technology Center 2800

Decided: May 15, 2007

Before KENNETH W. HAIRSTON, JOSEPH F. RUGGIERO,
and LANCE LEONARD BARRY, *Administrative Patent Judges*.

RUGGIERO, *Administrative Patent Judge*.

DECISION ON APPEAL

Appellants appeal under 35 U.S.C. § 134 from the Final Rejection of claims 29-40. We have jurisdiction under 35 U.S.C. § 6(b).

We affirm.

Appellants' invention relates to lithography process control and particularly to a method for controlling the alignment of layers in a multi-layer sample. (Specification 8:12-15).

Claim 29 is illustrative of the invention and it reads as follows:

29. A method for controlling layers alignment in a multi-layer sample, the method comprising the steps of:

- (i) providing a measurement site on said sample including two regions located one above the other in two different layers, respectively, said regions containing patterned structures of a certain known periodicity;
- (ii) illuminating said site with electromagnetic radiation and detecting a diffraction efficiency of radiation diffracted from the patterned structures indicative of a lateral shift between the patterned structures; and
- (iii) analyzing said diffraction efficiency to determine an existing lateral shift between the layers.

Claims 29-40, all of the appealed claims, stand rejected under 35 U.S.C. § 112, first paragraph, as being drawn to an inadequate disclosure.

Rather than reiterate the arguments of Appellants and the Examiner, reference is made to the Briefs and Answer for the respective details. 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 Briefs have not been considered and are deemed waived [see 37 C.F.R. § 41.37(c)(1)(vii)].

ISSUE

The sole issue to be decided on appeal is whether the Examiner erred in finding that Appellants' disclosure does not comply with the "written description" requirement of the first paragraph of 35 U.S.C. § 112.

PRINCIPLE OF LAW

"[C]ompliance with the 'written description' requirement of ' 112 is a question of fact. . . ." *Vas-Cath, Inc. v. Mahurkar*, 935 F.2d 1555, 1563, 19 USPQ2d 1111, 1116 (Fed. Cir. 1991) (citing *In re Gosteli*, 872 F.2d 1008, 1012, 10 USPQ2d 1614, 1618 (Fed. Cir. 1989); *Utter v. Hiraga*, 845 F.2d 993, 998, 6 USPQ2d 1709, 1714 (Fed. Cir. 1988)). "[T]he test for sufficiency of support . . . is whether the disclosure of the application relied upon 'reasonably conveys to the artisan that the inventor had possession at that time of the later claimed subject matter.'" *Ralston Purina Co. v. Far-Mar-Co., Inc.*, 772 F.2d 1570, 1575, 227 USPQ 177, 179 (Fed. Cir. 1985) (quoting *In re Kaslow*, 707 F.2d 1366, 1375, 217 USPQ 1089, 1096 (Fed. Cir. 1983)). "Application sufficiency under ' 112, first paragraph, must be judged as of the filing date [of the application. *Vas-Cath, Inc. v. Mahurkar*, 935 F.2d 1555, 1566, 19 USPQ2d 1111, 1119 (Fed. Cir. 1991) (citing *United States Steel Corp. v. Phillips Petroleum Co.*, 865 F.2d 1247, 1251, 9 USPQ2d 1461, 1464 (Fed. Cir. 1989)).

DISCUSSION

According to the Examiner (Answer 3), Appellants' original disclosure lacks a description of the method for controlling the alignment of layers as set forth in independent claim 29, the sole independent claim on

appeal. In particular, the Examiner contends that, although Appellants disclose that overlay is one lithography process parameter to be measured and, further, that various optical techniques are known for measuring the lithography process parameters, there is no disclosure of the detection and analysis of diffraction efficiency to determine lateral shift between device layers as claimed.

Appellants' arguments in response (Br. 7) initially direct attention to that portion of the Specification (10:18 through 11:7) which discusses various optical techniques for measuring properties of a resist, one of which optical techniques being, but not limited to, scatterometry. Appellants' arguments further make reference to the *Raymond* reference (*Handbook of Silicon Semiconductor Metrology*, page 480) which, in Appellants' view, discloses that scatterometry, when used to measure periodic features such as those in determining overlay, can be termed diffractometry or diffraction reflectometry.

It is our view, however, that, to whatever extent Appellants are arguing that *Raymond* supports the position that scatterometry necessarily means that diffraction efficiency is measured, we do not find such arguments to be persuasive. In the first instance, there is no evidence presented from Appellants that would support the conclusion that measuring diffraction is equivalent to measuring diffraction efficiency. Secondly, we agree with the Examiner (Answer 4) that *Raymond*, at best, merely discloses that scatterometry may be used to measure diffraction efficiency, not that scatterometry necessarily requires the measurement of diffraction efficiency, let alone that detection and analysis of diffraction efficiency is required when measuring overlay as claimed.

We further find to be without merit Appellants' arguments (Br. 9) which rely on the Hobbs reference, incorporated by reference at page 10, line 26 of the Specification, as disclosing that scatterometry may include measuring diffraction efficiency of a test structure. As pointed out by the Examiner (Answer 5), Hobbs discloses the measurement of diffraction efficiency to determine the line dimension of a wafer in a photolithography process, not to determine the overlay between two periodic structures. We further agree with the Examiner that Appellants' reliance (Specification 11:4-7) on the Xu reference (WO 99/45340) does not overcome the inadequacies of the disclosure since a description of measuring diffraction efficiency, which is essential material to Appellants' claimed invention, cannot be incorporated by reference to patents or applications published by foreign countries or a regional patent office.¹

We also find no error in the Examiner's reliance (Answer 6-7) on *In re Petering*, 301 F.2d 676, 679, 133 USPQ 275, 278 (CCPA 1962) and *In re Sivaramakrishnan*, 673 F.2d 1383, 1384, 213 USPQ 441, 442 (CCPA 1982) as support for the Examiner's position as to the inadequacy of Appellants' disclosure in providing support for the claimed measurement technique species of detecting diffraction efficiency. Appellants' arguments (Br. 11-16; Reply Br. 2-4) contend that the examples of various measurement devices and resist properties provided in the Specification constitute a

¹ We make the observation that, even if the disclosure of the Xu reference were properly incorporated into the Appellants' Specification, the deficiencies in the original disclosure would not be overcome. In our view, the disclosure of Xu is directed to, at best, the measurement of diffraction efficiency to analyze the diffraction properties of a single layer structure, not to the detection of a lateral shift among plural layers of a multi-layer structure as claimed.

definite and limited class of measurement devices and resist properties that provide support for the claimed species within the guidelines set by *Petering* and *Sivaramakrishnan* decisions. We do not agree. As pointed out by the Examiner (Answer 6), Appellants' arguments to the contrary notwithstanding, the original disclosure states that the measurement devices and resist properties are not limited to those listed as examples (Specification 10:21-22 and 16:24-29).

Lastly, to whatever extent Appellants are suggesting (Reply Br. 5) that the question of whether Appellants' disclosure renders the claimed invention obvious is an issue to be considered in this appeal, we are in total agreement with the Examiner's position as articulated at page 7 of the Answer. As summarized by the Examiner, even though various portions of Appellants' specification and the incorporated references may individually disclose various aspects of the claimed invention, there is no disclosure which supports the claimed invention as a whole. As stated by the Federal Circuit in *Lockwood v. American Airlines Inc.*, 107 F.3d 1565, 1571, 41 USPQ2d 1961, 1966 (Fed. Cir. 1997), "[e]ntitlement to a filing date does not extend to subject matter which is not disclosed, but would be obvious over what is expressly disclosed. It extends only to that which is disclosed." The Court continued by stating "[i]t is not sufficient for purposes of the written description requirement of Section 112 that the disclosure, when combined with the knowledge of the art, would lead one to speculate as to modifications that the inventor might have envisioned, but failed to disclose.

In view of the above discussion, it is our opinion that, under the factual situation presented in the present case, the statutory written description requirement has not been satisfied because Appellants were

Appeal 2006-2870
Application 10/401,509

clearly not in possession of the claimed invention at the time of filing of the application. Therefore, we sustain the Examiner's rejection of independent claim 29, as well as claims 30-40 dependent thereon, under the first paragraph of 35 U.S.C. § 112.

CONCLUSION

In summary, we have sustained the Examiner's 35 U.S.C. § 112, first paragraph, rejection of all of the claims on appeal. Therefore, the Examiner's decision rejecting claims 29-40 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

KIS

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