

The opinion in support of the decision being entered today was not written for publication and is not binding precedent of the Board.

Paper No. 48

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES

Ex parte HIROTOSHI MAEDA, KOUICHI KUNIMUNE,
EIJI WATANABE, and KOUICHI KATOU

Appeal No. 1999-1066
Application No. 08/756,440

ON BRIEF

Before GARRIS, KRATZ, and TIMM, Administrative Patent Judges.
GARRIS, Administrative Patent Judge.

DECISION ON APPEAL

This is a decision on an appeal which involves claims 7, 9, 11-19, 21-24 and 28-32. These are all of the claims remaining in the application.

The subject matter on appeal relates to a negative photosensitive resin composition which comprises an acid generating compound for generating an acid by light irradiation

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and at least one silicon-containing polyimide precursor wherein, upon exposure of the composition to light, the acid generating compound generates acid, which causes a silane at the end of at least one polyimide precursor to undergo a siloxane condensation reaction and a subsequent intermolecular cross-linking reaction with another silane. This appealed subject matter is adequately represented by independent claim 21, a copy of which taken from the appellants' brief is attached hereto.

The references set forth below are relied upon by the examiner as evidence of obviousness:

Kunimune et al. (Kunimune '238)	4,656,238	Apr. 7, 1987
Shoji et al. (Shoji)	4,748,228	May 31, 1988
Kunimune et al. (Kunimune '806)	4,818,806	Apr. 4, 1989
Aoai et al. (Aoai)	4,904,563	Feb. 27, 1990
Katou et al. (Katou)	5,342,739	Aug. 30, 1994
	(effective filing date	Sep. 3, 1992)
Kunimune et al. (Kunimune '024)	5,442,024	Aug. 15, 1995
		(filed Apr. 26, 1994)
Hayase et al. (Hayase) (JP) ¹	4-120171	Apr. 21, 1992

All of the appealed claims are rejected under the first paragraph of 35 U.S.C. § 112 as containing subject matter which was not described in the specification in such a way as to

¹ Our understanding of this reference is gleaned from the English translation thereof which is of record. Further, our referrals in this opinion to specific portions of the Hayase reference are with respect to the translation.

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reasonably convey to one skilled in the art that the inventors, at the time the application was filed, had possession of the claimed invention.

Claims 7, 9, 11-19, 21-24 and 28 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Hayase in view of Katou, and various appealed claims are correspondingly rejected as being unpatentable over these references and further in view of the other previously mentioned references.

For a complete exposition of the opposing viewpoints expressed by the appellants and by the examiner concerning the above noted rejections, we refer to the several principal and reply briefs and to the several principal and supplemental answers of record.

OPINION

For the reasons which follow, we cannot sustain any of these rejections.

The section 112, first paragraph, rejection

According to the examiner, "[t]he addition of the phrase 'wherein, upon exposure of said composition to light, the acid generating compound generates acid, which causes a silane at the end of at least one polyimide precursor to undergo a siloxane condensation reaction and a subsequent intermolecular

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crosslinking-reaction with another silane' in claims 21-24 is not supported by the [original written description of the appellants'] specification" (supplemental examiner's answer, mailed September 10, 2002, page 5).

The test for determining compliance with the written description requirement is whether the disclosure of the application as originally filed reasonably conveys to the artisan that the inventor had possession at that time of the later claimed subject matter, rather than the presence or absence of literal support in the specification for the claim language. In re Kaslow, 707 F.2d 1366, 1375, 217 USPQ 1089, 1096 (Fed. Cir. 1983).

Our application of this test to the circumstances here under consideration leads us to agree with the appellants that the original specification disclosure (e.g., see especially the disclosure referred to by the appellants in their briefs which appears on specification pages 17-18 and 28-29) would reasonably convey to an artisan that the appellants had possession on their application filing date of the claimed subject matter in question. In her response to the appellants' argument regarding this rejection, the examiner makes the following unembellished statement: "Applicant [sic] argues that support can be found on

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page 28, line 12 through page 29, line 14 or page 17, line 19 through page 18, line 2 but the Examiner did not find [sic, find] any support for this phrase [i.e., the aforequoted claimed subject matter]" (supplemental examiner's answer, mailed September 10, 2002, page 10). This statement reflects that the examiner may believe that literal support is required for the claimed subject matter in question. As previously indicated, however, the test for written description compliance does not require literal support. In re Kaslow, 707 F.2d at 1375, 217 USPQ at 1096.

In light of the foregoing, we cannot sustain the examiner's section 112, first paragraph, rejection of all appealed claims.

The section 103 rejections

With respect to a rejection based on Hayase in view of Katou, it is the examiner's conclusion that:

it would have been obvious to one having ordinary skill in the art at the time the invention was made to add the specified aminosilicon compound (taught as formula (1) of the invention) as taught by Katou et al. in the photosensitive composite taught by Hayase et al. because Katou et al. teaches in columns 10 and 11, an aminosilane represented by Formula (IX) $\text{NH}_2\text{-R}^8\text{-SiR}^9\text{Z}$ can be introduced to the terminal polymer because this would improve adhesion to a substrate [supplemental examiner's answer, mailed September 10, 2002, page 7].

We cannot agree.

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A proper conclusion of obviousness under section 103 requires that the applied prior art provides a suggestion for modifying the prior art (i.e., in such a manner as to result in the claimed invention) as well as a reasonable expectation that the modification in question would be successful. In re O'Farrell, 853 F.2d 894, 903-04, 7 UPSQ2d 1673, 1680-81 (Fed. Cir. 1988).

Here, the Hayase and Katou references do not provide either the requisite suggestion for the examiner's proposed modification or the requisite reasonable expectation of success. As correctly pointed out by the appellants, the composition of Hayase is a positive photoresist composition (e.g., see pages 12 and 16) whereas the composition of Katou (like the here claimed composition) is a negative photoresist composition. The positive versus negative characteristics of these respective compositions militate against the examiner's implicit belief that an artisan would have found a suggestion and reasonable expectation of success for combining these references in the proposed manner. Also militating against this belief is the disparate nature of the repeating units of the respective polymers disclosed in Hayase and Katou. Finally, the examiner's obviousness conclusion is significantly undermined by the fact that neither Hayase nor

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Katou contains any teaching or suggestion of the siloxane condensation reaction and subsequent intermolecular cross-linking reaction which the appellants' claimed composition is required to perform.

These circumstances persuade us that the examiner has failed to carry her burden of establishing a prima facie case of obviousness. It follows that we cannot sustain the section 103 rejection based on Hayase in view of Katou. We also cannot sustain the remaining section 103 rejections advanced by the examiner on this appeal because (as correctly argued by the appellants and not disputed by the examiner) the additional references applied therein do not supply the above discussed deficiencies of Hayase and Katou.

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The decision of the examiner is reversed.

REVERSED

Bradley R. Garris)	
Administrative Patent Judge)	
)	
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)	
Peter F. Kratz)	BOARD OF PATENT
Administrative Patent Judge)	APPEALS AND
)	INTERFERENCES
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Catherine Timm)	
Administrative Patent Judge)	

BRG:tdl

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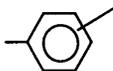
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APPENDIX

21. A negative photosensitive resin composition which comprises an acid generating compound for generating an acid by light irradiation and at least one polyimide precursor selected from the group consisting of (a) a silicon-containing polyimide precursor obtained from (1) A mols of a derivative of a tetracarboxylic dianhydride formed by reacting 1 or 2 mols of a monovalent saturated alcohol having 1 to 7 carbon atoms with 1 mol of the tetracarboxylic dianhydride, (2) B mols of a diamine and (3) C mols of an aminosilicon compound represented by the formula (1)



wherein R¹ is $-(\text{CH}_2)_s-$, $-(\text{CH}_2)_s-\text{C}_6\text{H}_4-$, $-(\text{CH}_2)_s-\text{O}-\text{C}_6\text{H}_4-$, or



; s is an integer of from 1 to 4; R² is independently an alkyl group having 1 to 6 carbon atoms, a phenyl group or a phenyl group substituted by an alkyl group having 7 to 12 carbon atoms; X is a hydrolytic alkoxy group; and k is $1 \leq k \leq 3$ in a ratio meeting the following formulae (2) and (3)

$$1 \leq \frac{C}{A-B} \leq 2.5 \quad \dots (2)$$

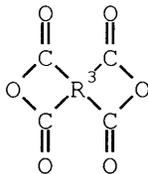
$$0.1 \leq \frac{C}{B+C} \leq 1 \quad \dots (3),$$

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(b) a silicon-containing polyamic acid ester obtained by esterifying the precursor (a) with a monovalent saturated alcohol having 1 to 7 carbon atoms, and

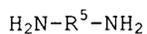
(c) a partially esterified silicon-containing polyamic acid ester obtained by partially esterifying the precursor (a) with the monovalent saturated alcohol having 1 to 7 carbon atoms,

(4) wherein the tetracarboxylic dianhydride is represented by the formula



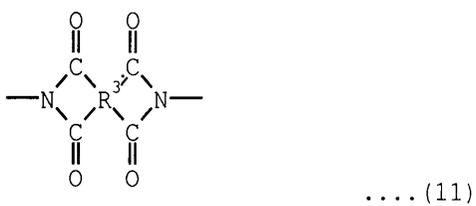
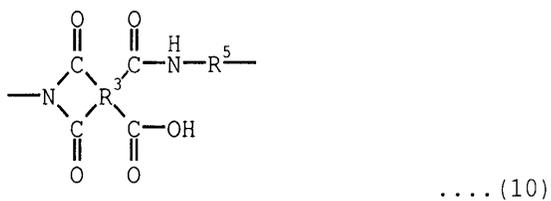
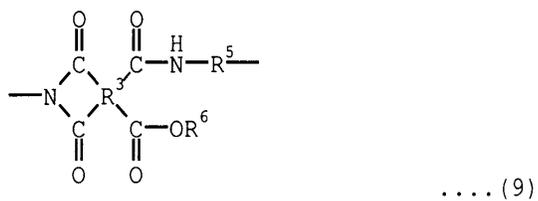
.... (4),

the diamine is represented by the formula (5)



.... (5),

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and e, f, n, m, h and i meet the equation (12)

$$0 \leq 100X \frac{m+h+2i}{2(e+f+n+m+h+i)} < 40 \quad \text{.... (12)}$$

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wherein each R^3 is independently a tetravalent carbocyclic aromatic group, a heterocyclic group, an alicyclic group or an aliphatic group;

each R^5 is independently a divalent aliphatic group having 2 or more carbon atoms, an alicyclic group, an aromatic aliphatic group, a carbocyclic aromatic group, a heterocyclic group or a polysiloxane group;

R^6 is an alkyl group having 1 to 7 carbon atoms; and wherein, upon exposure of said composition to light, the acid generating compound generates acid, which causes a silane at the end of at least one polyimide precursor to undergo a siloxane condensation reaction and a subsequent intermolecular cross-linking reaction with another silane.