

The opinion in support of the decision being entered today was not written for publication and is not binding precedent of the Board.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. 61

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES

Ex parte TAKAO HAYASHI, YASUNOBU ONISHI,
KAZUO SATO, KENJI CHIBA and MASATAKA MIYAMURA

Appeal No. 2000-1846
Application No. 08/709,879

HEARD: March 20, 2002

Before KIMLIN, JEFFREY T. SMITH and MOORE, Administrative Patent Judges.

KIMLIN, Administrative Patent Judge.

DECISION ON APPEAL

This is an appeal from the final rejection of claims 52-56 and 62-64. Claims 43-47 and 57-61, the other claims remaining in the present application, stand withdrawn from consideration. A copy of illustrative claim 52 is appended to this decision.

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The examiner relies upon the following references as evidence of obviousness:

Kihara et al. (Kihara)	5,332,648	Jul. 26, 1994
Murata et al. (Murata)	EP 0 558 280	Jan. 09, 1993

Appellants' claimed invention is directed to a method of enhancing the miscibility of a chemical amplification type resist film. The method entails adding either one of the claimed components (c) or a phenol, or a combination of component (c) and a phenol to a composition comprising an alkali-soluble polymer and a compound which generates an acid upon exposure to light.

Appealed claims 52-56 and 62-64 stand rejected under 35 U.S.C. § 103 as being unpatentable over Murata in view of Kihara.

Appellants submit at page 4 of the principal brief that "Claims 52-56 and 62-64, do not stand or fall together and are each to be considered separately in view of the separate arguments for patentability articulated below." However, appellants' brief merely presents a reiteration of the separately claimed features along with a conclusory remark that "[t]his aspect in the invention is neither disclosed nor suggested by any of the cited references" (page 9, of the principal brief, second,

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third and fourth paragraphs). Consequently, we find that appellants have not advanced a substantive argument regarding the patentability of any particular claim on appeal. Accordingly, we find that all of the appealed claims stand or fall together. In re Wood, 582 F.2d 638, 642, 199 USPQ 137, 140 (CCPA 1978). See also 37 CFR 1.192 c(7) and c(8) (1997).

We have thoroughly reviewed each of appellants' arguments for patentability as well as the declaration evidence relied upon in support thereof. However we are in complete agreement with the examiner that the claimed subject matter would have been obvious to one of ordinary skill in the art within the meaning of § 103 in view of the applied prior art. Accordingly, we will sustain the examiner's rejection.

There is no dispute that Murata, like appellants, discloses a chemical amplification resist comprising an alkali soluble polymer which has a protecting group that is unstable to an acid, as well as the presently claimed compound which generates an acid when upon being irradiated with light, an imidazole compound and a phenol. As appreciated by the examiner, Murata does not disclose the particular alkali soluble polymer that is recited in

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the appealed claims. However, Kihara, which also discloses a chemical amplification resist, discloses, as acknowledged in appellants' declaration of November 10, 1998, the alkali soluble polyphenol polymer recited in the appealed claims (see polymer n at column 25). Accordingly, since Murata teaches that the alkali soluble polymer of the resist "may be any resin which is soluble in an alkali developing solution" (page 3, lines 10-11), such as polyphenol polymers, we concur with the examiner that one of ordinary skill in the art would have found it obvious to employ the particular polyphenol of Kihara's chemical resist as the alkali soluble polyphenol in Murata's chemical amplification resist especially since Kihara suggests the molar resins for controlling dissolution rate. (column 10, lines 10-19).

We are not persuaded by appellants' arguments that the inventions of Murata and Kihara are from non-analogous arts. Murata and Kihara are more closely related than merely being photoresist compositions, as urged by appellants. Rather, both references are directed to the particular field of chemical amplification resist which employ, like appellants' composition, a polymer obtained by protecting an alkali-soluble group of an alkali-soluble polymer by a group which is unstable to an acid,

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and a compound which generates an acid upon being irradiated with light. We find no merit in appellants' argument that the references are non-analogous because they address different problems, i.e., Murata improves process stability and Kihara enhances alkali solubility. In our view, the collective teachings of the references would have made it obvious for one of ordinary skill in the art to use the particular alkali soluble polymer of Kihara in the resist composition of Murata in order to achieve greater alkali solubility.

Appellants rely upon the Hayashi Declaration of November 10, 1998 to support their arguments that the references are non-analogous and, therefore, not combinable. However, our review of the Declaration finds that no scientific or technical reasons are given to support a conclusion that one of ordinary skill in art, in this case, one skilled in the art of formulating chemical amplification resists, would have considered the alkali soluble polymer of Kihara's chemical amplification resist as incompatible with, or unsuitable for, the chemical amplification resist of Murata. For example, the declarant provides no explanation why the alkali soluble polymer of Kihara would not undergo the

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mechanism required in the Murata system. Also, inasmuch as the resist of Murata is superior in developability, it is not clear that Murata is not directed to enhanced solubility. The declaration offers little more than a description of the Kihara mechanism and the characterization of Murata as directed to an improvement in process stability. In fact, the resist of Murata is characterized as

superior in developability, pattern form, resolution, focused tolerance and yield of residual film fitness, has good process stability, and can be suitably used even in irradiation with, in particular, a radiation having a wavelength equal to or smaller than far ultraviolet rays, for example, an excimer laser or the like" (page 1).

Appellants also rely upon the Hayashi Declaration of March 16, 1998 which demonstrates that resist patterns using the composition of the present invention exhibit a better taper angle than patterns made from the Murata composition, and that the instant composition exhibited no film thinning, "whereas some of the resist patterns formed from the reference were observed to exhibit film thinning" (page 5 of principal brief, last paragraph). However, we must agree with the examiner's analysis that the declaration data is hardly commensurate in scope with

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the degree of protection sought by the appealed claims. In re Grasselli, 713 F.2d 731, 743, 218 USPQ 769, 778 (Fed. Cir. 1983). As pointed out by the examiner, the compositions of the declaration representative of appellants' invention are limited to a specific compound for claimed components (b), i.e., a triphenylsulfonium triflate, and a specific substituted imidazole for claimed component (c), as well as a specific phenol whereas the appealed claims broadly recite any phenol. While appellants respond to the examiner's criticism by noting that the polymer of the declaration is within the scope of claimed components (a), appellants do not address the breadth of claimed components (b), (c) and (d), other than to offer the conclusory remark that the substituted imidazole compound of the declaration is fully representative of claimed component (c) and that the specific phenol compound of the declaration is fully representative of component (d) (see page 8 of principal brief, second paragraph). Manifestly, that each of the compositional components of the declaration fall within the scope of claimed components (a), (b), (c) and (d) does not establish that the declaration results may be reasonably extrapolated to the myriad of compositions within

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the scope of the appealed claims. In re Kollman, 595 F.2d 48, 55, 201 USPQ 193, 198 (CCPA 1979). Moreover, appellants have not established that the declaration results would be considered truly unexpected by one of ordinary skill in the art, especially in light of the fact that appellants' specification acknowledges that it was known in the art that

the resolution can be increased by adding to a chemical amplification type resist composition any of aniline-type, imidazole-type, pyridine-type, and ammonia-type derivatives each of which acts as a base with respect to the acid generated upon irradiation of light (Jpn. Pat. Appln. KOKAI Publication No. 5-127369). (page 5 of specification, second paragraph).

In re Merck & Co., 800 F.2d 1091, 1099, 231 USPQ 375, 381 (Fed. Cir. 1986).

In conclusion, based on the foregoing, it is our judgment that the evidence of obviousness presented by the examiner outweighs the evidence of nonobviousness advanced by the appellants. Accordingly, the examiner's decision rejecting the appealed claims 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).

AFFIRMED

EDWARD C. KIMLIN)	
Administrative Patent Judge)	
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JEFFREY T. SMITH)	BOARD OF PATENT
Administrative Patent Judge)	APPEALS AND
)	INTERFERENCES
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JAMES T. MOORE)	
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APPENDIX A

Claim 52

52. A method of enhancing miscibility of a resist film, which comprises

1) preparing a uniform mixture, comprising:

(a) a polymer obtained by protecting an alkali-soluble group of an alkali-soluble polymer by a group which is unstable to an acid;

(b) a compound which generates an acid upon being irradiated with light; and

(c) at least one compound which is selected from the group consisting of an imidazole compound, an alanine compound, an adenine compound, an adenosine compound, and a quaternary ammonium salt compound, and which increases miscibility in the resist film; and

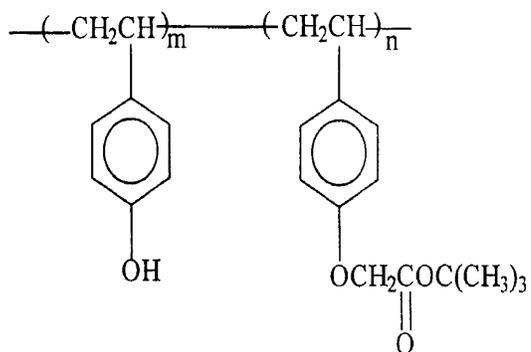
2) applying said uniform mixture on a substrate,

wherein with addition of the component (c), the miscibility of the resist film is enhanced, phase separation of the resist film is avoided when the resist film is formed, and the components have a uniform concentration distribution within the film, and

wherein said polymer (a) has repeating units of the formula:

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APPENDIX A (CONT.)



wherein m is from 0.5 to 0.85, and n is from 0.15 to 0.5, and are each molar ratios.