

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opinion in support of the decision being entered today (1) was not written for publication in a law journal and (2) is not binding precedent of the Board.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. 18

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES

Ex parte ALEXANDER S. GYBIN and
LAWRENCE C. VAN ISEGHEM

Appeal No. 95-4723
Application No. 08/028,420¹

ON BRIEF

Before GARRIS, WARREN, and SPIEGEL, *Administrative Patent Judges*.
SPIEGEL, *Administrative Patent Judge*.

DECISION ON APPEAL

This is a decision on appeal under 35 U.S.C. § 134 from the examiner's final rejection of claims 23 through 38, which are all of the claims pending in this application.

We REVERSE.

¹ Application for patent filed March 09, 1993.

Appellants' invention relates to a method of preparing photosensitive polymers comprising a polymeric backbone and a quaternary heterocyclic pendant group. The pendant group may be prepared by a condensation step, i.e., reacting an aldehyde substituted aromatic compound with an alkyl substituted nitrogen-containing heterocyclic compound to form a first reaction product having ethylenic unsaturation and a quaternary or quaternizable nitrogen atom, followed by quaternization step, i.e., reacting the first reaction product with a substituted or unsubstituted alkyl, aralkyl, or hetero reactive compound having one or more terminal groups selected from the group consisting of halogen, ether and aldehyde to form a second reaction product having a quaternary nitrogen atom (claim 23). Alternatively, the quaternization and condensation steps may be reversed in preparing the pendant group, i.e., a substituted or unsubstituted alkyl, aralkyl, or hetero reactive compound having one or more terminal groups selected from the group consisting of halogen, ether, and aldehyde is reacted with an alkyl substituted nitrogen-containing heterocyclic compound to form a first reaction product having a quaternary nitrogen atom, followed by reacting the first reaction product with an aldehyde substituted aromatic compound to form a second reaction product having ethylenic unsaturation and a quaternary nitrogen atom (claim 31). In either case, about 0.1 to 20 mol % of the second reaction product or pendant group is then grafted onto the polymeric backbone through the residue of the reactive compound used in the quaternization step. (See specification, pages 10-11 and 17-18.) Claim 23 is illustrative and reads as follows:

23. A method for preparing photosensitive polymers comprising the steps of:
(a) reacting an aldehyde substituted aromatic compound and an alkyl substituted nitrogen-containing heterocyclic compound in the presence of a catalyst to form a first reaction product having ethylenic unsaturation and a quaternary or quaternizable nitrogen atom;

(b) reacting the first reaction product with a substituted or unsubstituted alkyl, aralkyl, or hetero reactive compound having one or more terminal groups selected from the group consisting of halogen, ether and aldehyde to form a second reaction product having a quaternary nitrogen atom;

(c) grafting onto a polymeric backbone, resulting from the polymerization of substituted vinyl monomers, olefins or acetylenes, about 0.1 to 20 mol-% (based on the available reactive sites on the polymeric backbone) of the second reaction product through the residue of the reactive compound of step (b) to form a photopolymer.

The prior art reference of record relied upon by the examiner in rejecting the appealed claims is:

Ichimura et al. (Ichimura), "Preparation and Characteristics of Photocrosslinkable Poly(vinyl Alcohol)," *Journal of Polymer Science: Polymer Chemistry Edition*, Vol. 20, pages 1419-1432 (1982).

All of the claims on appeal stand rejected under 35 U.S.C. § 103 as being unpatentable over Ichimura. According to the examiner, "it would have been obvious to one of ordinary skill to make but a modest adaptation of the reference process, such as choice of the compound containing a terminal group, and thereby obtain the claimed invention" (answer, page 5).

On consideration of the record, including: (1) the instant specification, including all the claims on appeal, (2) appellants' brief (paper no. 11, filed July 18, 1994), (3) the examiner's answer (paper no. 12, mailed August 2, 1994), and (4) the above-cited prior art, we reverse the prior art rejection.

Appellants state claims 23 through 38 stand or fall together (brief, page 3).² We therefore limit our discussion to claim 23. 37 C.F.R. § 192(c)(5)(1994).

OPINION

To establish a *prima facie* case of obviousness, three basic criteria must be met. First, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teachings. Second, there must be a reasonable expectation of success. Finally, the prior art reference (or references when combined) must teach or suggest all the claim limitations. The teaching or suggestion to make the claimed combination and the reasonable expectation of success must both be found in the prior art, and not based on applicant's disclosure. *In re Vaeck*, 947 F.2d 488, 493, 20 USPQ2d 1438, 1442 (Fed. Cir. 1991).

Here, claim 23, step (c) requires grafting the pendant group, i.e., the second reaction product formed in steps (a) and (b), onto a polymeric backbone “through the residue of the reactive compound of step (b).” The examiner has not pointed out, and we do not find, where Ichimura discloses or suggests this limitation of grafting the second reaction product onto a polymeric backbone “through the residue of the reactive compound of step b.” Accordingly, we conclude that the examiner has not established a *prima facie* case of obviousness.

²Appellants erroneously referred to claims 22-38 in their statement of issues and grouping of claims (brief, page 2), as noted by the examiner (answer, page 2).

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The rejection is reversed.

OTHER MATTERS

Appellants should consider whether the phrase “or quaternizable” should be deleted from claim 31, line 12 since claim 31, step (a) requires the presence of a “quaternary” nitrogen atom.

CONCLUSION

The examiner’s decision to reject claims 23 through 38 under 35 U.S.C. § 103 as being unpatentable over Ichimura is reversed.

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