

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(2) is not binding precedent of the Board.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. 25

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES

MAILED

JAN 29 1996

PATENT OFFICE
BOARD OF PATENT APPEALS
AND INTERFERENCES

Ex parte KLAUS HABENSTEIN

Appeal No. 93-2790
Application 07/526,001¹

ON BRIEF

Before WINTERS, WILLIAM F. SMITH and GRON, Administrative Patent Judges.

GRON, Administrative Patent Judge.

DECISION ON APPEAL

This is an appeal under 35 U.S.C. § 134 taken from an examiner's final rejection of Claims 14-19 and 21-28 under 35 U.S.C. § 103. Nonelected Claims 1-13 have been withdrawn from further consideration by the examiner (Appellant's Brief, page 1 (Br.1)). Claims 14-19 and 21-23 are directed to fluorogenic

¹ Application for patent filed May 21, 1990.

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6-oxylbenzoxazol-2-yl compounds. Claims 24-28 are directed to a fluorescent measurement method for detecting a hydrolase employing the fluorogenic 6-oxylbenzoxazol-2-yl compounds of Claim 14. Representative Claims 14 and 24 appear in the attached Appendix.

Claims 14-19 and 21-28 stand rejected under 35 U.S.C. § 103 as being unpatentable over Geiger et al. (Geiger), WO 87/02667, published May 7, 1987, in view of Wolfbeis et al. (Wolfbeis), DE 3248043, published June 28, 1984. In our view, the quality of the evidence of obviousness presented in this case more closely resembles the quality of the evidence supporting the obviousness rejection made in In re Grabiak, 769 F.2d 729, 226 USPQ 870 (Fed. Cir. 1985) than the quality of the evidence supporting unpatentability presented in either In re Albrecht, 579 F.2d 92, 198 USPQ 208 (CCPA 1978) or Ex parte Engelhardt, 208 USPQ 343 (Bd. App. 1980). Accordingly, we reverse the examiner's rejection.

As was true in Grabiak, the prior art here also reasonably would not have suggested the claimed invention to persons having ordinary skill in the art. Geiger's teaching that 6-oxyl-benzothiazol-2-yl compounds will fluoresce when enzymatically hydrolyzed does not itself reasonably suggest that otherwise identical 6-oxylbenzoxazol-2-yl compounds will also fluoresce when enzymatically hydrolyzed. The added prior knowledge that oxygen, like sulfur, is a Group VI element of the Periodic Table

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of Elements would not have led persons having ordinary skill in the art reasonably to expect that large aromatic fused ring oxy heterocyclic compounds would display the same fluorogenic characteristics as their sulfo heterocyclic isosteres. Compare In re Grabiak, 769 F.2d at 732, 226 USPQ at 872:

[T]hat "simple sulfur compounds" have properties similar to simple oxygen compounds does not purport to apply to complex organic molecules.

The examiner apparently recognized the deficiencies of Geiger's solo teaching, even considering the prior knowledge in the art, for Wolfbeis' teaching was combined. However, in combining the two prior art teachings, the examiner apparently lost sight of the fact that the heterocyclic ring of the aromatic fused ring heterocyclic core of the fluorogenic compounds described by Wolfbeis is significantly different from the heterocyclic ring of the aromatic fused ring heterocyclic core of the fluorogenic compounds Geiger describes in the number of heteroatoms in the rings, the total number of atoms in the rings, and the number, kind and bonding of substituents on the rings. There is no indication in the prior art disclosures, either considered separately or together, that the common fluorogenic characteristics of the different compounds are attributable to common or similar structural characteristics. Furthermore, Wolfbeis does not even suggest that the oxygen heteroatom in the aromatic fused ring heterocyclic fluorogenic compounds he describes may be replaced by sulfur with retention of their

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fluorogenicity. With those deficiencies in mind, we hold that the prior art here applied does not establish that the invention appellant claims would have been obvious to a person having ordinary skill in the art and is therefore unpatentable under 35 U.S.C. § 103.

Gabiak adds at 732, 226 USPQ at 872 (emphasis added):

Nor do the Fancher and Albrecht cases remedy these deficiencies, for in each of those cases the sulfur/oxygen interchange was in a heterocyclic ring common to both the prior art compounds and the applicant's compounds.

Here, as was the case in Gabiak at 732, 226 USPQ at 872:

The PTO cited no pertinent reference showing or suggesting to one of ordinary skill in the art the change In the absence of such a reference, there is inadequate support for the PTO's position that the modification would prima facie have been obvious.

We are aware of Wolfbeis' teaching that the aromatic fused ring heterocyclic core of the fluorogenic compounds he describes may be bonded to "Phenyl oder Sulfo substituierten Benzoxazol-2-yl-, Benzthiazol-2-yl-" (Wolfbeis, page 8, lines 6-7), and a variety of other diverse radicals without affecting the fluorogenic characteristics of the compounds disclosed. Nevertheless, it would have been apparent to any person having ordinary skill in the art upon consideration of Wolfbeis' disclosure in its entirety that (1) Wolfbeis' compounds fluoresce when the phosphoric acid ester substituent on the aromatic fused ring heterocyclic core of the fluorogenic compounds described is enzymatically hydrolyzed irrespective of the chemical structure

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of the other substituents, and (2) the benzothiazol-2-yl or benzoxazol-2-yl substituents that Wolfbeis contemplates do not carry an oxyl substituent in the 6-position capable of being enzymatically hydrolyzed.

New Ground of Rejection under 37 CFR 1.196(b)

Under 37 CFR 1.196(b), we newly reject Claims 24-28 under 35 U.S.C. § 112, second paragraph. The claims are incomplete. The claimed "fluorescent measurement method for detecting a hydrolase" comprises the single step of "employing a fluorogenic compound" (Claim 24). As the Board stated in Ex parte Erlich, 3 USPQ2d 1011, 1017 (Bd. Pat. App. & Int. 1986), process claims such as these:

merely recite a use without any active, positive steps delimiting how this use is actually practiced. While we agree with appellants that the claims need not recite all of the operating details, we do find that a method claim should at least recite a positive, active step(s) so that the claim will "set out and circumscribe a particular area with a reasonable degree of precision and particularity," In re Moore, . . . 439 F.2d 1232, 169 USPQ 236 ([CCPA] 1971), and make it clear what subject matter these claims encompass, In re Hammack, . . . 427 F.2d 1378, 1382, 166 USPQ 204, 208 ([CCPA] 1970)

Any request for reconsideration or modification of this decision by the Board of Patent Appeals and Interferences based upon the same record must be filed within one month from the date of the decision (37 CFR 1.197). Should appellant[s] elect to have further prosecution before the examiner in response to the new rejection under 37 CFR 1.196(b) by way of amendment or

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showing of facts, or both, not previously of record, a shortened statutory period for making such response is hereby set to expire two months from the date of this decision.

No time period for taking any subsequent action in connection with this appeal may be extended under 37 CFR 1.136(a).

REVERSED
37 CFR 1.196(b)

Sherman D. Winters

SHERMAN D. WINTERS)
Administrative Patent Judge)

William F. Smith

WILLIAM F. SMITH)
Administrative Patent Judge)

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Teddy S. Gron

TEDDY S. GRON)
Administrative Patent Judge)

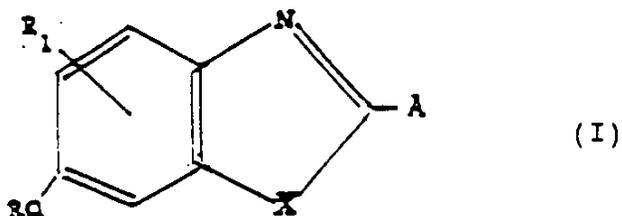
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APPENDIX

14. A fluorogenic compound of the formula (I)



in which

X is O;

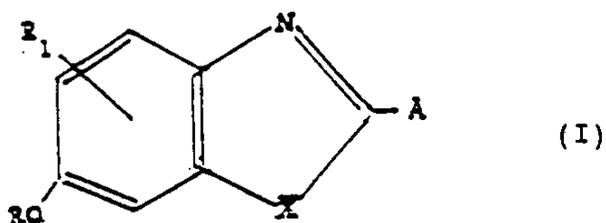
R is a radical which can be split off by enzymatically catalyzed hydrolysis;

R₁ is H, C₁- to C₄-alkyl or phenyl, which can be substituted by 1 to 3 -CH₃; and

A is an aromatic, heteroaromatic, substituted and optionally benzo-fused 6- or 5-membered ring, or an electron-withdrawing group;

said fluorogenic compound being fluorescent after R is split off by enzymatically catalyzed hydrolysis.

24. A fluorescent measurement method for detecting a hydrolase, comprising employing a fluorogenic compound of the formula (I)



in which

X is O;

R is a radical which can be split off by enzymatically catalyzed hydrolysis;

R₁ is H, C₁- to C₄-alkyl or phenyl, which can be substituted by 1 to 3 -CH₃; and

A is an aromatic, heteroaromatic, substituted and optionally benzo-fused 6- or 5-membered ring, or an electron-withdrawing group;

said fluorogenic compound being fluorescent after R is split off by enzymatically catalyzed hydrolysis.