

The opinion in support of the decision being entered today was not written for publication and is not binding precedent of the Board.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. 24

UNITED STATES PATENT AND TRADEMARK OFFICE

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BEFORE THE BOARD OF PATENT APPEALS  
AND INTERFERENCES

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Ex parte JOHANNES W. HOFSTRAAT, JAN W. VERHOEVEN, and MARIJN GOES

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Appeal No. 2004-0351  
Application No. 09/463,277

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ON BRIEF

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Before GARRIS, PAK, and POTEATE, Administrative Patent Judges.

GARRIS, Administrative Patent Judge.

DECISION ON APPEAL

This is a decision on an appeal from the final rejection of claims 1-6 which are all of the claims remaining in the application.

The subject matter on appeal relates to a non-fluorescent label which is suitable for making a charge-transfer fluorescent probe having a donor-bridge-acceptor structure. The label comprises a maleimide moiety and a donor-bridge-acceptor structure wherein the bridge is an 8-azabicyclo [3,2,1] octane

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comprising group. Further details of this appealed subject matter are set forth in representative independent claim 1 which reads as follows:

1. A non-fluorescent label which is suitable for making a charge-transfer fluorescent probe having a donor-bridge-acceptor structure, characterized in that the label comprises a maleimide moiety and a donor-bridge-acceptor structure, wherein the bridge is an 8-azabicyclo [3,2,1] octane comprising group which leads to an all-trans orbital coupling of the donor and the acceptor, and the donor-bridge-acceptor structure has a higher energy charge-transfer emissive state when [sic, than]<sup>1</sup> at least one non-emissive state of the part of the label comprising the maleimide moiety, which non-emissive state must have a higher energy than [sic, than]<sup>1</sup> the charge-transfer emissive state of the donor-bridge-acceptor structure after coupling of the maleimide moiety to a suitable system.

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

Krijnen et al. (Krijnen), "Effect of Through-Bond Interaction on Conformation and Structure of Some *N*-Arylpiperidone and *N*-Aryltropanone Derivatives," J. A. Chem. Soc., 111(12), pp. 4433-40 (1989).

Verhey et al. (Verhey), "A fluorogenic charge-transfer polarity probe for the derivatization of thiols and amines," New J. Chem., Vol. 20, pp. 809-14 (Jul. 8, 1996).

All of the claims on appeal stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Verhey in view of Krijnen.

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<sup>1</sup>These informalities have inadvertently developed due to typographical errors as revealed by a comparison of the original and amended versions of appealed claim 1.

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We refer to the brief and reply brief and to the answer for a complete discussion of the opposing viewpoints expressed by the appellants and by the examiner concerning the above noted rejection.

OPINION

For the reasons which follow, we cannot sustain this rejection.

As acknowledged by the examiner, the appellants' claimed label distinguishes over the 2(MFP) compound of Verhey (e.g., see the paragraph bridging pages 809-10) by requiring that the here claimed bridge be an 8-azabicyclo [3,2,1] octane comprising group. That is, the here claimed bridge is bicyclic whereas the corresponding bridge of the 2(MFP) compound is monocyclic. The examiner relies upon the teachings of Krijnen to supply this deficiency of Verhey.

The Krijnen reference is a scientific study of through-bond interaction on conformation and structure of certain piperidone and tropanone derivatives. As revealed in figures 2 and 3 on page 4435 of this reference, the tropanone and piperidone derivatives are bicyclic and monocyclic respectively. It is the examiner's ultimate conclusion that Krijnen would have suggested modifying Verhey's 2(MFP) compound to include a bicyclic, rather

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than monocyclic, bridge structure. This conclusion and the underlying analysis in support thereof are expressed as follows in the paragraph bridging pages 6 and 7 of the answer:

It would have been obvious to one of ordinary skill at the time of appellant's invention to modify the charge transfer label MFP of Verhey et al[.] to include a bicyclic bridge structure in place of the monocyclic bridge, as per the teaching of Krijnen et al. Verhey et al[.] teach that the desired charge transfer fluorescent properties of MFP are effected by intramolecular electron transfer from the donor to the acceptor via the bridge (p. 809, left hand column). Krijnen et al[.] teach that the bicyclic bridge forces the donor and acceptor of a charge transfer molecule into an axial conformation to yield optimal intramolecular transfer. Therefore, substitution of the bicyclic bridge of Krijnen et al[.] for the monocyclic bridge of Verhey et al[.] would have resulted in optimal intramolecular charge transfer and thus optimal fluorescence capability.

The examiner's position is not well taken for a number of reasons.

First, it is questionable whether the teachings of Krijnen would have suggested to an artisan with ordinary skill that the bicyclic bridge structure shown in figure 2 is preferred over the monocyclic bridge structure shown in figure 3 with respect to optimizing through bond interaction and thus charge transfer absorption. We recognize the examiner's point that Krijnen indicates a dynamic conformation equilibrium between equatorial and axial conformations in compound 4 of figure 3 and that little if any through bond interaction is expected to occur in an

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equatorial conformation. Nevertheless, whatever support this point may provide to the examiner's position is undermined by Krijnen's express teaching that an axial conformation is preferred (at least in the solid state) in compound 4 of figure 3. See the first full paragraph in the right hand column on page 4435 of Krijnen.

Second, even assuming the examiner's analysis of Krijnen's teachings is correct, it is unclear from this record whether these teachings would have suggested modifying the 2(MFP) compound of Verhey in the manner proposed by the examiner. This is because, as correctly indicated by the appellants, this compound of Verhey is not similar to the compounds studied by Krijnen (e.g., see Verhey's 2(MFP) compound on page 810 in comparison with Krijnen's compounds shown in Chart II on page 4434). The record before us contains no support for the proposition that the artisan would have modified the former compound as proposed by the examiner based on Krijnen's teachings regarding his dissimilar compounds.

We here emphasize that a prima facie case of obviousness under Section 103 requires a suggestion to modify in combination with a reasonable expectation that the proposed modification would be successful. See In re O'Farrell, 853 F.2d 894, 903-04,

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7 USPQ2d 1673, 1680-81 (Fed. Cir. 1988). For the reasons explained above, there is questionable support for the examiner's position that the applied prior art would have suggested the modification under review, and there appears to be no support at all for a reasonable expectation that the modification would be successful.

In light of the foregoing, it is our determination that the examiner has failed to carry his initial burden of establishing a prima facie case of obviousness with respect to the subject matter defined by appealed claims 1-6. It follows that we cannot sustain the examiner's Section 103 rejection of claims 1-6 as being unpatentable over Verhey in view of Krijnen. See In re Oetiker, 977 F.2d 1443, 1445, 24 USPQ2d 1443, 1444 (Fed. Cir. 1992).

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The decision of the examiner is reversed.

REVERSED

BRADLEY R. GARRIS	)	
Administrative Patent Judge	)	
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	)	
	)	
CHUNG K. PAK	)	BOARD OF PATENT
Administrative Patent Judge	)	APPEALS AND
	)	INTERFERENCES
	)	
	)	
LINDA R. POTEATE	)	
Administrative Patent Judge	)	

BRG/hh

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