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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opinion in support of the decision being entered today (1) was not written for publication in a law journal and (2) is not binding precedent of the Board.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. 22

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES

Ex parte MASAHIKO KITAGAWA and
YOSHITAKA TOMOMURA

Appeal No. 94-1894
Application 07/737,706[1]

ON BRIEF

Before HAIRSTON, KRASS, and FLEMING, Administrative Patent Judges.

FLEMING, Administrative Patent Judge.

DECISION ON APPEAL

This is a decision on appeal from the final rejection of claims 1, 5, 6, 8 and 9.

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[1] Application for patent filed July 30, 1991. According to applicant, the application is a division of Application 07/402,691, filed September 1, 1989, Patent No. 5,113,233.

The invention is directed to a compound semiconductor luminescent device. Appellants disclose in Figure 4 a semiconductor substrate 41 with conductive layers 42 and 44 formed thereon. A current injection layer 45 is formed on the conductive layer 44 and a luminescent layer 46 is formed on the current injection layer 45.

The independent claim 1 is reproduced as follows:

> 1. A compound semiconductor luminescent device, comprising:
>
> a semiconductor substrate;
>
> a multi-layered structure epitaxially grown on said substrate, said multi-layered structure comprising at least one conductive later formed on said substrate;
>
> a current injection layer formed on said conductive layer;
>
> a luminescent layer formed on said current injection layer;
>
> a negative metal electrode disposed on a back face of said substrate or on an upper face of said conductive layer;
>
> a positive metal electrode disposed on an upper face of said multi-layered structure; and
>
> a protective layer capable of transmitting light generated in the luminescent layer, which is disposed on said multi-layered structure so as to cover part of said positive metal electrode, wherein said semiconductor substrate, conductive layer and luminescent layer are made of at least one kind of II-VI group compound semiconductor.

The Examiner relies on the following references:

Tiku et al. (Tiku)	4,482,841	Nov. 13, 1984

Yoneda (Kokai Patent)	59-172279	Sep. 28, 1984
Mitsuyu et al. (Mitsuyu) (Kokai Patent)	63-1081	Jan. 6, 1988
Katsui (Kokai Patent)	1-157576	June 20, 1989
Kawauchi et al. (Kawauchi) (Kokai Patent)	63-213377	March 2, 1987

Claims 1 and 8 stand rejected as being unpatentable under 35 U.S.C. § 103 over Mitsuyu in view of Tiku and Yoneda. Claims 5, 6 and 9 stand rejected as being unpatentable under 35 U.S.C. § 103 over Mitsuyu in view of Tiku, Katsui and Yoneda or Kawauchi.

Rather than reiterate the arguments of Appellants and the Examiner, reference is made to the briefs and answer for the respective details thereof.

OPINION

We will not sustain the rejections of claims 1, 5, 6, 8 and 9 under 35 U.S.C. § 103.

The Examiner has failed to set forth a prima facie case. It is the burden of the Examiner to establish why one having ordinary skill in the art would have been led to the claimed invention by the reasonable teachings or suggestions found in the prior art, or by a reasonable inference to the artisan contained in such teachings or suggestions. See In re Sernaker, 702 F.2d 989, 995, 217 USPQ 1, 6 (Fed. Cir. 1983).

In regard to the rejection of claims 1 and 8 as being unpatentable under 35 U.S.C. § 103 over Mitsuyu in view of Tiku

and Yoneda, Appellants argue that the references do not teach a "current injection layer" and "a protective layer capable of transmitting light generated in the luminescent layer, which is disposed ... so as to cover part of said positive metal electrode" as recited in claims 1 and 8. The Examiner admits on page 3 of the answer that Mitsuyu does not teach the protective layer. The Examiner argues on page 4 of the answer that Tiku teaches a protective layer completely covering the electrode. The Examiner concludes that it would have been obvious to one of ordinary skill in the art to leave part of the electrode uncovered to provide contact thereto.

However, the Examiner's argument does not answer the question of whether it would have been obvious to modify Mitsuyu to provide these limitations. In this regard, the Federal Circuit stated that "[t]he mere fact that the prior art may be modified in the manner suggested by the Examiner does not make the modification obvious unless the prior art suggested the desirability of the modification." *In re Fritch*, 972 F.2d 1260, 1266, 23 USPQ2d 1780, 1783-84, (Fed. Cir. 1992), *citing In re Gordon*, 733 F.2d 900, 902, 221 USPQ 1125, 1127 (Fed. Cir. 1984).

In addition, the Examiner admits on page 3 of the answer that Mitsuyu does not teach that the semiconductor substrate, the conductive layer and luminescent layer are all made of one kind of II-VI group compound semiconductor. The

Examiner argues on pages 3 and 4 of the answer that Yoneda teaches light-emitting elements formed with ZnS substrates and "one of ordinary skill in the art would recognize the advantages of forming II-VI layers on a II-VI substrate rather than on a III-V substrate, e.g. better lattice match, less imperfections, etc."

However, the Examiner's argument does not answer the question of whether it would have been obvious to modify Mitsuyu to provide these limitations. Mitsuyu teaches a light-emitting diode having a GaAs substrate which is a member of the II-V group compound semiconductor, a contact layer composed of n-type ZnSe, a light-emitting layer composed of n-type ZnSe and an insulation layer composed of insulating ZnSe. Mitsuyu expressly teaches on page 5 of the translation that the reason for using GaAs for the substrate is due to the lattice constant being more or less identical to ZnSe and being able to epitaxially grow a favorable ZnSe monocrystalline layer.

On the other hand, Yoneda teaches a ZnS light-emitting element characterized by a metal layer deposited on a surface of a single ZnS single crystal substrate. The Examiner argues that "one of ordinary skill in the art would recognize the advantages of forming II-VI layers on a II-VI substrate rather than on a III-V substrate". However, the Examiner ignores the express teachings of Mitsuyu to use GaAs for the substrate.

Thus, the Examiner's arguments amount to nothing more than hindsight gleaned from Appellants' recognition of a particular problem. Since there is no evidence in the record that the prior art suggested the desirability of such a modification, we will not sustain the Examiner's rejection of claims 1 and 8.

The remaining claims on appeal also contain the above limitations, the substrate being made of II-VI group compound semiconductor discussed in regard to claims 1 and 8. The Examiner relies on Mitsuyu and Yoneda to meet this limitation as in the rejection of claims 1 and 8. Thus, we will not sustain the rejection as to these remaining claims as well.

We have not sustained the rejection of claims 1, 5, 6, 8 and 9 under 35 U.S.C. 103. Accordingly, the Examiner's decision is reversed.

REVERSED

KENNETH W. HAIRSTON)
Administrative Patent Judge)
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ERROL A. KRASS) BOARD OF PATENT
Administrative Patent Judge) APPEALS AND
) INTERFERENCES
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MICHAEL R. FLEMING)
Administrative Patent Judge)

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Irell and Manella
545 Middlefield Rd.
Suite 200
Menlo Park, CA 94025-3471