AF/2503

2771-198 (PC 49000)

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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE
BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES

In re United States Patent Application of:	
Applicants:	**Bruce H. Baretz and Michael A. Tischler**
Serial No.:	**08/621,937**
Date Filed:	**March 26, 1996**
Title:	**SOLID STATE WHITE LIGHT EMITTER AND DISPLAY USING SAME**
Examiner:	**Jerome Jackson**
Art Unit:	**2503**

OIPE JC67 FEB 02 2000 PATENT & TRADEMARK OFFICE

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BRIEF ON APPEAL

This is an appeal under 35 U.S.C. § 134 from the Final Rejection dated September 2, 1999, of the claims 1-6, 8, 10-18, and 20-29 of U.S. Patent Application No. 08/621,937, which claims have been amended by an Amendment Responding to September 2, 1999 Office Action submitted under 37 C.F.R. § 1.116.

STATUS OF CLAIMS

Claims 1-6, 8, 10-18, and 20-29 are pending in the subject application; all of these claims have been finally rejected.

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A copy of the appealed claims 1-6, 8, 10-18, and 20-29 (as amended after Final Rejection) is attached in Appendix A hereof.

STATUS OF AMENDMENTS

An Amendment Responding to September 2, 1999 Office Action, was submitted after Final Rejection pursuant to 37 C.F.R. § 1.116 on December 2, 1999. No Advisory Action regarding this Amendment has been received as of the date of filing of this Appeal Brief. The claims listed in Appendix A include minor amendments made to the claims in said Amendment.

SUMMARY OF THE INVENTION

The applicants' claimed invention is a light emitting device, comprising:

at least one single-die semiconductor light-emitting diode (LED) coupleable with a power supply to emit a primary radiation which is the same for each single-die semiconductor LED present in the device, said primary radiation being a relatively shorter wavelength radiation outside the visible white light spectrum; and

a down-converting luminophoric medium arranged in receiving relationship to said primary radiation, and which in exposure to said primary radiation responsively emits radiation at a multiplicity of wavelengths and in the visible white light spectrum, with said radiation of said multiplicity of wavelengths mixing to produce a white light output.

REFERENCES

Cited in Final Rejection:

Tadatsu: Unexamined Japanese patent application disclosure No. Hei 05-152609 in the names of Tadatsu and Nakamura (hereafter "Tadatsu") discloses a blue LED with improved brightness and visibility obtained by down-converting the violet/ultraviolet output of a GaAlN LED through excitation of a single fluorescent dye or pigment embedded in the resin molding encasing the LED.

Tokailin: U.S. Patent No. 5,126,214 to Tokailin et al. (hereinafter "Tokailin") discloses the use of organic electroluminescent material with fluorescent wavelength-changing material in electroluminescent lamps.

Chao: Zhang Jin Chao, et al., "White Light Emitting Glasses", J. of Solid State Chem., No. 93, pg. 17-9 (1991) (hereinafter "Chao") discloses the doping of borates $LnMgB_5O_{10}$ (Ln = rare earth) with cerium and terbium, cerium and manganese, or cerium, terbium, and manganese. The Chao structures are glass, formed by casting molten mixed materials into a graphite mold. The glass structures are then excited by a monochromator light source and a nitrogen laser source.

Amano: H. Amano, et al., "Photoluminescence of Mg-doped p-type GaN and Electroluminescence of GaN p-n Junction LED" J. Lumion, Vol. 48/49, pp. 666-70 (1991) (hereinafter "Amano") discloses the use of sapphire as a GaN device substrate for a solid-state LED.

Geusic: U.S. Patent No. 3,593,055 to Geusic, et. al. (hereinafter "Geusic") discloses the use of an up-converting phosphor to shift the output of an infrared LED into the visible light spectrum, thus producing a red LED of increased brightness and visibility.

Applicant's prior art admissions: the applicants' alleged "admission" relates generally to knowledge imputed by the Examiner of "other soloid [sic] state sources for producing near ultraviolet photons."

ISSUES

1. Are claims 1-6, 8, 10-18, and 20-29 patentable under 35 U.S.C. § 103(a) over Tadatsu in view of Tokailin and Chao?

2. Are claims 1-6, 8, 10-18, and 20-29 patentable under 35 U.S.C. § 103(a) over Tadatsu in view of Tokailin and Chao, and further in view of applicant's prior art admissions, Amano, and Geusic?

3. Are significant secondary considerations (long felt but unsolved need, failure of others, and commercial success/scientific recognition) probative evidence of the nonobviousness of this invention?

GROUPING OF THE CLAIMS

The claims on appeal (claims 1-6, 8, 10-18, and 20-29) constitute a unitary group of claims presenting common issues in respect of their patentability. Claim 1 is representative of the group.

ARGUMENT

35 U.S.C. § 103(a)

1. The claimed invention is patentable over Tadatsu in view of Tokailin and Chao.

None of Tadatsu, Tokailin, or Chao, taken alone, contains any derivative basis for the claimed invention. The references relate to widely disparate art areas, and none contains any suggestion or motivation for combination with any other. The Examiner has failed to establish a *prima facie* case that motivation for such combination existed in the art at the time of the invention.

Tadatsu

Tadatsu discloses a blue LED with improved brightness and visibility obtained by down-converting the violet/ultraviolet output of a GaAlN LED through excitation of a single fluorescent dye or pigment embedded in the resin molding encasing the LED.

The Examiner in reference to Tadatsu has stated that "[i]t appears that the conversion emission results in emission of a plurality of wavelengths in the visible spectrum similar to applicant's claims." (Office Action of September 8, 1999, page 2, paragraph 2). The Examiner has further contended at page 3, paragraph 4, that the Tadatsu device is not monochromatic, as it emits light at a more than one wavelength. The term "monochromatic" does not necessarily mean "having one wavelength" since it can refer to "having or appearing to have only one color."[1] The Tadatsu device, while not strictly monochromatic, is *mono-color*. It is "monochromatic" in the sense that its goal and achievement is the emission of a single color of visible light – bright blue.

The Tadatsu device comprises two light sources, one primary and one secondary. A gallium nitride LED with characteristic emission peaks at 430 nm (visible, violet) and 370 nm, (invisible,

[1] AMERICAN HERITAGE DICTIONARY 882 (3rd ed. 1993).

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