

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opinion in support of the decision being entered today (1) was not written for publication in a law journal and (2) is not binding precedent of the Board.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. 45

UNITED STATES PATENT AND TRADEMARK OFFICE

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BEFORE THE BOARD OF PATENT APPEALS  
AND INTERFERENCES

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Ex parte AKIRA AOYAMA

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Appeal No. 1996-0442  
Application No. 07/855,442<sup>1</sup>

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HEARD: September 16, 1999

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Before METZ, JOHN D. SMITH and LIEBERMAN, Administrative Patent Judges.

LIEBERMAN, Administrative Patent Judge.

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<sup>1</sup> Application for patent filed March 19, 1992. According to appellant, this application is a continuation of Application No. 07/619,815 filed November 29, 1990, now abandoned; which is a continuation of Application No. 07/327,438 filed March 23, 1989, now abandoned; which is a continuation of Application No. 07/052,932 filed May 22, 1987, now abandoned; which is a continuation-in-part of Application No. 06/819,659 filed January 17, 1986; now U.S. Patent No. 4,801,499 issued January 31, 1989.

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### **DECISION ON APPEAL**

This is an appeal under 35 U.S.C. § 134 from the examiner's refusal to allow claims 1 through 5 and 7 through 22 which are all of the claims remaining in the application.<sup>2</sup>

### **THE INVENTION**

Appellants' invention is directed to an optical recording medium containing a transparent support, with successive layers of a dielectric layer atop the support, an optical recording layer atop the dielectric layer, a second dielectric layer atop the optical recording layer and a second transparent support atop the second dielectric layer. An adhesive is provided between the second composite dielectric layer and the second transparent support. The dielectric layers are formed of x mol% of aluminum nitride and (100 - x) mol% of silicon nitride where x is greater than zero and less

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<sup>2</sup> The rejection of claim 22 has been withdrawn by the examiner. See Answer, page 3. Hence claim 22 is allowable and not before us for consideration.

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than or equal to 95 mol%. The refractive index of the composite dielectric layer is between 1.70 and 2.15.

### THE CLAIMS

Claims 1 and 13 are illustrative of appellants' invention and are reproduced below.<sup>3</sup>

1. An optical recording medium comprising:

a first transparent support;

a first composite dielectric layer formed on the transparent support;

an optical recording layer formed on the first composite dielectric layer;

a second composite dielectric layer formed on the optical recording layer so that the first transparent support, first composite dielectric layer, optical recording layer and second composite dielectric layer form an optical transmission substrate;

a second transparent support; and

an adhesive provided adjacent the second composite dielectric layer of the optical transmission substrate and the second transparent support to adhere the optical transmission substrate to the second transparent support;

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<sup>3</sup> Claims 1 and 13 as they appear in the Appendix to the Brief inadvertently omit the word "about" in claim 1, line 18, and claim 13, line 4 respectively. A correct copy of each claim is inserted below.

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wherein the composite dielectric layers are formed of x mol% of aluminum nitride and (100 - x) mol% of silicon nitride such that x is greater than 0 and less than or equal to about 95 mol% and the refractive index of the composite dielectric layer is between 1.70 and 2.15.

13. A composite dielectric layer for use in an optical recording medium comprising x mol% of aluminum nitride and (100 - x) mol% of silicon nitride such that x is greater than 0 and less than or equal to about 95 mol% and the refractive index of the composite dielectric layer is between about 1.70 and 2.15.

#### THE REFERENCES OF RECORD

As evidence of obviousness, the examiner relies upon the following references.

Ohta et al. (Ohta) 1983	4,390,600	Jun. 28,
Takahashi et al. (Takahashi) 9, 1986	4,610,912	Sep.
Yamada et al. (Yamada) 1987	4,680,742	Jul. 14,

#### THE REJECTIONS

Claims 1 through 5 and 7 through 21 stand rejected under 35 U.S.C. § 103 as unpatentable over Yamada in view of Takahashi and Ohta.

#### OPINION

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We have carefully considered all of the arguments advanced by appellant and the examiner and agree with appellants that the aforementioned rejection is not well founded. Accordingly, we will not sustain the rejection.

Assuming arguendo that it would have been prima facie obvious for one of ordinary skill in the art to prepare appellants' claimed subject matter, it is necessary for us to consider appellants' rebuttal evidence. Appellants urge that they have presented experimental data wherein it has been demonstrated that the claimed composite dielectric layer has unexpected benefits and hence is unobvious over the disclosure of Yamada and the closest composite dielectric layers disclosed by Yamada. See Brief, page 14. We agree. We find the evidence submitted by appellant in both the Declaration of Akira Aoyama executed December 10, 1993 and Figure 5 of the specification to be dispositive of the issues before us.

In contrast, the Answer has focused on Yamada's dielectric material which may have a refractive index as low as 2.15. It is the examiner's position that the dielectric material and its refractive index effectively anticipate appellants' claimed dielectric material. Hence appellants

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cannot establish unexpected results. See Answer, page 10. We disagree. The rejection before us is one of obviousness, not of anticipation. Hence appellants may rebut the examiner's prima facie case of obviousness by establishing the existence of unusual and unexpected properties in the range claimed. Moreover, it is well settled that appellants may produce evidence tending to show superior results because of the selection of a narrower range within a disclosed range. See In re Reven, 390 F.2d 997, 1001, 156 USPQ 679, 681 (CCPA 1968).

Referring to pages 2 and 3 of the Aoyama Declaration, we find the difference in the Kerr Rotation Angle in dielectric layers of the claimed subject matter having a refractive index of 1.70 to 2.15, as contrasted with either dielectric layers of greater or lesser refractive index, to be unusual and unexpected. We are particularly persuaded as the distinction in Kerr Rotation Angles arises from comparable but closely spaced data points at refractive indices of 2.15, 2.18 and 2.22 respectively. We find a decrease from 1.0 to 0.9 in the Kerr Rotation Angle between a refractive index of 2.15 and 2.2

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to be unusual and unexpected to a person of ordinary skill in this art.

Our position is further supported by the data presented in Figure 5. We find that the dielectric layers represented by Curves 56 and 57 having refractive indices of 2.24 and 2.31 respectively, undergo significant changes in the Kerr Rotation Angle after as little as ten hours. In contrast, we find dielectric layers having a refractive index between 1.70 and 2.15 undergo no change in the Kerr Rotation Angle even after five thousand hours have passed. Moreover, in view of the Answer's failure to challenge Declarant's conclusion that unusual and unexpected results are evidenced by the change in Kerr Rotation Angle, outside the refractive index range of 1.70 to 2.15, we are constrained to agree with and accept the conclusions reached by appellants.

For the above reasons, we conclude, evaluating the examiner's prima facie case of obviousness in view of appellants' evidence and arguments, that based on the totality of the record before us, the preponderance of evidence weighs in favor of non-obviousness within the meaning of § 103. In

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re Oetiker, 977 F.2d 1443, 1445, 24 USPQ2d 1443, 1444 (Fed.  
Cir. 1992).

#### **DECISION**

The rejection of claims 1 through 5 and 7 through 21 under 35 U.S.C. § 103 as unpatentable over Yamada in view of Takahashi and Ohta is reversed.

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The decision of the examiner is reversed.

**REVERSED**

ANDREW H. METZ	)	
Administrative Patent Judge	)	
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	)	
	)	BOARD OF PATENT
JOHN D. SMITH	)	APPEALS
Administrative Patent Judge	)	AND
	)	INTERFERENCES
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PAUL LIEBERMAN	)	
Administrative Patent Judge	)	

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