

UNITED STATES PATENT AND TRADEMARK OFFICE

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BEFORE THE PATENT TRIAL AND APPEAL BOARD

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TDK CORPORATION,  
Petitioner,

v.

LAMBETH MAGNETIC STRUCTURES LLC,  
Patent Owner.

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Case IPR2016-00013  
Patent 7,128,988

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Before SALLY C. MEDLEY, BRIAN MURPHY, and  
KIMBERLY McGRAW, *Administrative Patent Judges*.

McGRAW, *Administrative Patent Judge*.

DECISION

Denying Institution of *Inter Partes* Review  
*37 C.F.R. § 42.108*

I. INTRODUCTION

Petitioner, TDK Corporation, filed a Petition requesting an *inter partes* review of claims 1–3, 6–19, 21–31, 34, 38, and 39 of U.S. Patent No. 7,128,988 B2 (Ex. 1001, “the ’988 patent”). Paper 2 (“Pet.”). Patent Owner, Lambeth Magnetic Structures, LLC filed a Preliminary Response.

Paper 6 (“Prelim. Resp.”). We have jurisdiction under 35 U.S.C. § 314(a), which provides that an *inter partes* review may not be instituted “unless . . . the information presented in the petition . . . shows that there is a reasonable likelihood that the petitioner would prevail with respect to at least 1 of the claims challenged in the petition.”

Upon consideration of the Petition and the Preliminary Response, we conclude the information presented does not show there is a reasonable likelihood that Petitioner would prevail in establishing the unpatentability of claims 1–3, 6–19, 21–31, 34, 38, and 39. Accordingly, we do not authorize an *inter partes* review.

#### *A. Related Proceedings*

According to Patent Owner, the ’988 patent is involved in the following lawsuits:

(1) *Lambeth Magnetic Structures, LLC v. Toshiba Corp.*, Civil Action No. 2:14-cv-01526-CB (W.D. Pa.) (“Pennsylvania Action”). Pet. 1; Paper 5, 2-3. On October 12, 2015, Patent Owner filed a motion seeking leave to amend its complaint to add TDK Corporation, TDK U.S.A. Corporation (“TDK USA”), TDK Corporation of America, Headway, Husko, Inc. (“Husko”), and SAE Magnetics (H.K.) Ltd. (“SAE”) as defendants in this action. Paper 5, 2-3.

(2) *Headway Technologies, Inc. v. Lambeth Magnetic Structures, LLC*, Civil Action No. 2:15-cv-07987-DSF (C.D. Cal.). *Id.*

#### *B. The ’988 Patent (Ex. 1001)*

The ’988 patent, titled “Magnetic Material Structures, Devices and Methods” is directed to improving the magnetic properties in magnetic films

and related devices by using a template to achieve a desired atomic structure for a magnetic film layer that exhibits uniaxial magnetic properties. *See* Ex. 1001, Abstract. The '988 patent explains that carefully controlling the epitaxial growth conditions of (110) crystalline textured bcc or bcc derivative ("bcc-d") thin film materials on highly oriented (111) hexagonal atomic templates results in six crystalline variants with special orientational relationships. *Id.* at 14:48–52. The selection and growth of an exchange coupled subset of these variants results in a bcc-d layer forming a symmetry broken structure. *Id.* at 14:52–55. A subset of these bcc-d symmetry broken structures exhibit uniaxial behavior. *See, e.g., id.* at 20:14–23.

### *C. Illustrative Claims*

Petitioner challenges claims 1–3, 6–19, 21–31, 34, 38, and 39. Claims 1 and 27 are independent and reproduced below:

1. A magnetic material structure comprising:
  - a substrate;
  - at least one bcc-d layer which is magnetic, forming a uniaxial symmetry broken structure; and
  - at least one layer providing a (111) textured hexagonal atomic template disposed between said substrate and said bcc-d layer.
  
27. A magnetic device having incorporated therein a magnetic material structure comprising:
  - a substrate;
  - at least one bcc-d layer which is magnetic, forming a uniaxial symmetry broken structure; and

at least one layer providing a (111) textured hexagonal atomic template disposed between said substrate and said bcc-d layer.

#### *D. Claim Construction*

Petitioner argues, and Patent Owner does not dispute, that one skilled in the art would have understood the ordinary meaning of a “symmetry broken” structure is a “structure with unequal volumes of crystallographic variants in either a three or six variant system.” Pet. 14 (citing Ex. 1006, ¶ 37); *see* Prelim. Resp. 28–32, 51–52. This construction is consistent with the Specification which states that a “symmetry broken” structure exists in the three variant system shown in FIG. 3 “[w]hen the volumes of the three variants are not equal” (Ex. 1001, 16:34–36) and in six variant systems that “do not contain an equal amount of all six of the (110) textured bcc-d variants” (*id.*, 23:37–41). Accordingly, for purposes of this decision, we construe “symmetry broken” structure as a “structure with unequal volumes of crystallographic variants in either a three or six variant system.”

#### *E. Asserted Grounds of Unpatentability*

Petitioner argues the challenged claims are unpatentable based upon the following grounds:

References	Basis	Challenged Claims
Shen <sup>1</sup> and Dill <sup>2</sup>	§ 103	1 and 27
Dill and Shen	§ 103	1, 3, 6–11, 13, 14, 17–19, 22, 24, 27–30, 34, and 38

<sup>1</sup> J. Shen *et al.*, *Structural and magnetic phase transitions of Fe on stepped Cu (111)*, 56 Phys. Rev. B 134–43 (1997) (Ex. 1011, “Shen”).

<sup>2</sup> U.S. Patent No. 6,023,395, issued Feb. 8, 2000 (Ex. 1009, “Dill”).

References	Basis	Challenged Claims
Dill, Shen, and Heim <sup>3</sup>	§ 103	12, 15, 16, 21, and 23
Dill, Shen, and Lambeth I <sup>4</sup>	§ 103	2, 25, 26, and 31
Dill, Shen, and Noguchi <sup>5</sup>	§ 103	39

Pet. 15.

## II. ANALYSIS

### *Obviousness Claims 1 and 27*

Petitioner contends that independent claims 1 and 27 are unpatentable under 35 U.S.C. § 103 over the combination of Shen and Dill. Pet. 16–25 (Ground 1: Shen in View of Dill); Pet. 25–33 (Ground 2: Dill in View of Shen). To support its contention, Petitioner provides explanations as to how the prior art allegedly meets each claim limitation of the challenged claims. *Id.* Petitioner also relies upon a Declaration of Dr. Robert Sinclair, who has been retained as an expert witness by Petitioner for the instant proceeding. Ex. 1006.

A dispositive issue is whether the Petitioner has sufficiently established the cited art teaches or suggests a magnetic bcc-d layer forming a uniaxial “*symmetry broken structure*” recited in independent claims 1 and 27.

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<sup>3</sup> U.S. Patent No. 5,465,185, issued Nov. 7, 1995 (Ex. 1012, “Heim”).

<sup>4</sup> D.N. Lambeth, et al., *Magnetic Media Performance: Control Methods for Crystalline Texture and Orientation*, 517 *Material Res. Soc’y Symp. Proc.*, 181–192 (1998) (Ex. 1013, Lambeth I).

<sup>5</sup> U.S. Patent No. 5,862,022, issued Jan. 19, 1999 (Ex. 1014, “Noguchi”).

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