

UNITED STATES PATENT AND TRADEMARK OFFICE

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BEFORE THE PATENT TRIAL AND APPEAL BOARD

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WESTERN DIGITAL TECHNOLOGIES, INC.,  
Petitioner,

v.

GODO KAISHA IP BRIDGE 1,  
Patent Owner.

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Case No. IPR2024-01447  
Patent No. 8,405,134

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**PATENT OWNER'S REQUEST FOR DIRECTOR REVIEW**

## **TABLE OF CONTENTS**

|      |                                                                                                                            |    |
|------|----------------------------------------------------------------------------------------------------------------------------|----|
| I.   | INTRODUCTION .....                                                                                                         | 1  |
| II.  | BACKGROUND .....                                                                                                           | 1  |
| III. | THE BOARD’S DECISION MUST BE REVERSED .....                                                                                | 2  |
| A.   | Ground 2: The Board Found Petitioner Failed to Establish an<br>Expectation of Success in Forming MgO(001) on CoFeB .....   | 3  |
| B.   | The Board’s Inconsistent Finding that Petitioner Established an<br>Expectation of Success in Ground 1 Is Legal Error ..... | 3  |
| 1.   | The Board’s Reliance on EX2080 Requires Reversal .....                                                                     | 5  |
| a.   | The Board Violated the APA By Crediting an Argument<br>Petitioner Unveiled at Oral Hearing .....                           | 5  |
| b.   | The Board Got It Wrong on EX2080.....                                                                                      | 6  |
| c.   | The Board Erred Procedurally and Factually .....                                                                           | 8  |
| 2.   | Finding That Parkin, 22:66-67 Teaches That Figure 11’s<br>Crystalline Interface Layer Is Optional Requires Reversal .....  | 8  |
| a.   | The Board’s Reading of Parkin’s Interface Layer Sentence<br>Is Inconsistent with Parkin and EX2080.....                    | 8  |
| b.   | Ambiguous Disclosure Cannot Prove Unpatentability .....                                                                    | 9  |
| c.   | The Board Erred in Its Inconsistent Treatment of<br>Petitioner’s Expert Testimony .....                                    | 9  |
| 3.   | The Board Relied on Its Own Rationale, Unsupported by<br>Expert Testimony, and Got It Wrong.....                           | 10 |
| 4.   | The Weight of the Evidence Is Contrary to the Board’s<br>(Mis)Interpretation of Parkin’s Single Sentence.....              | 10 |
| a.   | The Board’s Reading Contradicts Its Finding That a POSA<br>Did Not Know How to Make Such a Device.....                     | 11 |
| b.   | The Board’s Reading Is Inconsistent With Objective<br>Contemporaneous Evidence.....                                        | 11 |
| i.   | Evidence That Yuasa’s Result Was Surprising .....                                                                          | 11 |
| ii.  | The Industry Recognized This as the Work of<br>Yuasa—Not Parkin .....                                                      | 12 |

|                                                                                                                     |    |
|---------------------------------------------------------------------------------------------------------------------|----|
| iii. The Board Erred by Dismissing the Objective<br>Evidence That Refutes Its (Mis)reading of Parkin .....          | 13 |
| C. Reversal Is Required Because Petitioner Failed To Prove That a<br>POSA Knew How to Make the Claimed Device ..... | 14 |

## **TABLE OF AUTHORITIES<sup>1</sup>**

### **CASES**

|                                                                                                                             |        |
|-----------------------------------------------------------------------------------------------------------------------------|--------|
| <i>Daubert v. Merrell Dow Pharm. Inc.</i> ,<br>509 U.S. 579 (1993) .....                                                    | 12     |
| <i>Dell Inc. v. Acceleron, LLC</i> ,<br>818 F.3d 1293 (Fed. Cir. 2016) .....                                                | 6      |
| <i>In re Brunetti</i> ,<br>151 F.4th 1367 (Fed. Cir. 2025) .....                                                            | 4      |
| <i>In re Kumar</i> ,<br>418 F. 3d 1361 (Fed. Cir. 2005) .....                                                               | 14, 15 |
| <i>Interactive Commc’ns Int’l, Inc. v. Blackhawk Network Inc.</i> ,<br>IPR2024-00465, Paper 40 (Squires Oct. 9, 2025) ..... | 10     |
| <i>Raytheon Techs. Corp. v. Gen. Elec. Co.</i> ,<br>993 F.3d 1374 (Fed. Cir. 2021) .....                                    | 14, 15 |
| <i>Star Sci., Inc. v. R.J. Reynolds Tobacco Co.</i> ,<br>655 F.3d 1364 (Fed. Cir. 2011) .....                               | 11     |
| <i>Stratoflex, Inc. v. Aeroquip Corp.</i> ,<br>713 F.2d 1530 (Fed. Cir. 1983) .....                                         | 13     |
| <i>Wasica Fin. GmbH v. Cont’l Auto. Sys., Inc.</i> ,<br>853 F.3d 1272 (Fed. Cir. 2017) .....                                | 9      |
| <i>Xerox Corp. v. Bytemark, Inc.</i> ,<br>IPR2022-00624, Paper 9 (Aug. 24, 2022) (precedential) .....                       | 3      |

### **STATUTES**

|                     |   |
|---------------------|---|
| 5 U.S.C. §554 ..... | 6 |
| 5 U.S.C. §556 ..... | 6 |

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<sup>1</sup> All emphasis is added unless otherwise specified.

## **OTHER AUTHORITIES**

Patent Trial and Appeal Board Consolidated Trial Practice Guide (Nov. 2019) .....5

## **I. INTRODUCTION**

The Board's finding that Petitioner proved some claims unpatentable requires reversal. It is based on an argument Petitioner made for the first time at oral hearing. That violates Patent Owner's due process rights and the Administrative Procedure Act ("APA"). Moreover, the Board's finding that a particular prior art reference discloses a feature of the claimed device is based on a sentence—ambiguous at best—the Board (mis)read in a manner inconsistent with a POSA's background knowledge and every other teaching in the reference. Finally, even if the ambiguous sentence can be read to disclose the claimed device feature, proving any claim obvious would have required Petitioner to show that a POSA could have made the claimed device, in the manner Petitioner alleged, with a reasonable expectation of success. The Board expressly found that Petitioner's evidence failed to establish that. Reversal is required for that additional reason.

## **II. BACKGROUND**

The challenged claims cover a magnetic tunnel junction (MTJ) device with a layer of magnesium oxide (MgO) sandwiched between two ferromagnetic electrodes. Final Written Decision ("FWD"), 4-6. For this Request, it suffices to understand that the claimed MgO layer must have a particular crystallized structure called (001) and the lower electrode must comprise a Cobalt Iron Boron (CoFeB) alloy. *Id.* The conventional way a crystalline(001) MgO layer was formed was by

“templating” the MgO layer by forming it on a crystalline(001) ferromagnetic layer (Fe or CoFe) that acted as a template and caused the MgO layer to take on the same crystalline(001) form. Paper 19 (POR), 9-10, 44-46; Paper 32 (Sur-reply), 4.

The claims cover a device made possible by the inventor’s discovery that a different manufacturing method—which deposited MgO on *non-crystalline* (i.e., amorphous) CoFeB and then annealed the device—yielded MgO(001) and crystallized CoFeB. EX1005, 8:56-9:10; POR, 63-64; Sur-reply, 30. That discovery revolutionized the industry and made MTJ’s manufacturable at scale by eliminating the need for a crystalline(001) templating layer which required formation techniques incompatible with commercial manufacture. POR, 62-65, 70-71; Sur-reply, 28-30. The inventor’s work was published in the field’s most prestigious journals, cited over 1,000 times, and received numerous industry awards. POR, 65-67; Sur-reply, 30-31. The Board’s finding—two decades later—that the claimed device was obvious requires reversal.

### **III. THE BOARD’S DECISION MUST BE REVERSED**

Petitioner’s two grounds rely on different primary references (Bowen and Nagahama) but the same secondary references (Sunai and Parkin). The Petition mapped the claimed MgO(001) layer to the MgO layers in Bowen (Ground 1) and Nagahama (Ground 2). Petition, 32-34 and 56. Bowen’s and Nagahama’s MgO(001) layers were formed by templating. Sur-reply, 1 and 4. But Grounds 1-2

“replace[d]” the layers templating the MgO(001) in Bowen and Nagahama with a *non-crystalline* CoFeB layer based on Sunai and Parkin. Petition, 35 and 57.

**A. Ground 2: The Board Found Petitioner Failed to Establish an Expectation of Success in Forming MgO(001) on CoFeB**

The Board rejected Ground 2 because “Petitioner has failed to provide sufficient evidence and supporting argument that the MgO(001) layer of Nagahama would form with the substitution of CoFeB in the electrodes.” FWD, 49. The Board rejected Petitioner’s Reply evidence (*id.*, 50-52) and rejected as *not* credible the assertion by Petitioner’s expert that a POSA “knew how to grow MgO(001) on amorphous substrates such as CoFeB” (*id.*, 50).

**B. The Board’s Inconsistent Finding that Petitioner Established an Expectation of Success in Ground 1 Is Legal Error**

The only difference between the Petition’s grounds is that Ground 1 has a *single conclusory sentence* alleging that “if Sunai’s or Parkin’s [amorphous] CoFeB electrodes are used... [a POSA] would understand that the MgO... would still have the same (001) orientation.” Petition, 33-34. None of the *evidence* the Petition cited to purportedly support Ground 1’s conclusory assertion does so. The Petition cited only the challenged patent, the verbatim assertion from Petitioner’s expert which warrants no weight under *Xerox*, and Parkin’s disclosure of forming its MgO(001) layer by *templating* it on a crystalline(001) layer. *Id.*; POR, 22-25; EX1062 (“Parkin”), 9:58-10:2 (MgO is formed on a *crystalline*(100) layer); FWD,

21, n. 6 (MgO(001) and MgO(100) are the same). The Board did not find that any ***Petition-cited evidence*** supports Petitioner’s assertion that a POSA would have reasonably expected MgO(001) to form on amorphous CoFeB.

Petitioner submitted new evidence and argument in Reply to purportedly show that a POSA would have reasonably expected MgO(001) to form on amorphous CoFeB. Paper 25 (“Reply”), 1-9. Petitioner argued that this same evidence applied to ***both*** grounds. *Id.* Thus, the Board’s Ground 1 finding that “the evidence supports that MgO(001) can be formed on amorphous substrates, including CoFeB” (FWD, 43) is irreconcilable with its Ground 2 finding that Petitioner “***failed to provide sufficient evidence*** ... that the MgO(001) layer of Nagahama would form with the substitution of CoFeB in the electrodes” and with the Board’s refusal to “***credit***” Petitioner’s expert’s testimony that a POSA “knew how to grow MgO(001) on amorphous substrates such as CoFeB” (*id.*, 49-50).

At a minimum, the Director should remand and order the panel to reconcile its inconsistent findings. *In re Brunetti*, 151 F.4th 1367, 1378 n.14 (Fed. Cir. 2025). But reversal is the more appropriate remedy here because the evidence compels but one conclusion. The Board’s detailed fact findings for Ground 2 get it right. FWD, 47-52. Conversely, the Board’s Ground 1 finding is unsupported by the evidence and violates the APA. The Board’s Ground 1 finding that “the evidence supports that MgO(001) can be formed on... CoFeB” cites “*supra*

Section II.D.ii.2 [sic: II.D.3.ii.2].” FWD, 43. That section cites two pieces of evidence—neither of which was cited in the Petition—both relating to “Parkin’s Teachings of a MgO(001) Tunnel Barrier” (FWD, 19-29): (1) **EX2080** (FWD, 24-25) and (2) **Parkin, 22:56-67**, describing Parkin’s Figure 11 (FWD, 22).

### **1. The Board’s Reliance on EX2080 Requires Reversal**

EX2080 is an application (10/824,835) Parkin incorporates by reference to teach Parkin’s “methods” for forming its MgO layers. Parkin, 3:24-41, 17:21-25, 23:6-11. Petitioner’s expert considered EX2080 despite omitting it from his “references considered.” EX2085, 55:5-17. Even though Petitioner was aware of it, Petitioner never cited EX2080 in its Petition or Reply. After the Reply newly argued that Parkin’s Figure 11 interface layer 520 is “optional,” which allegedly means its MgO layer is formed directly on amorphous CoFeB, Patent Owner introduced EX2080 to rebut that new Reply argument. Sur-reply, 14-16.

#### **a. The Board Violated the APA By Crediting an Argument Petitioner Unveiled at Oral Hearing**

*At oral hearing*, Petitioner for the *first time* argued that two portions of EX2080 allegedly teach forming MgO(001) on amorphous CoFeB. Paper 52, 21:13-23:17. That is improper. Trial Practice Guide, 85-86 (at oral hearing a party “may only present arguments relied upon in the papers previously submitted”). Patent Owner objected. Paper 52, 46:1-46; 91:1-6 (“counsel... objected to us discussing or citing passages from” EX2080). The Board ignored that objection

then “*agree[d] with Petitioner* that this disclosure [EX2080, 22:23-4, 47:13-17] provides support for the alternate formation of MgO(001) on amorphous CoFeB that does not include forming it by templating on a crystalline ferromagnetic layer with (100) orientation.” FWD, 24-25 (citing “Tr. 21:13-23:17,” i.e., Paper 52).

Crediting an argument Petitioner made for the first time at oral hearing, without granting Patent Owner an opportunity to *offer rebuttal evidence including expert testimony*, violated Patent Owner’s due process rights and the APA. *Dell v. Acceleron*, 818 F.3d 1293, 1301-1302 (Fed. Cir. 2016) (vacating FWD because the Board “denied [patent owner] its procedural rights by relying in its decision on a factual assertion introduced into the proceeding only at oral argument, after [patent owner] could meaningfully respond” given that “oral argument presented no opportunity for [patent owner] to supply evidence, whether expert or lay or documentary evidence.”); 5 U.S.C. §§554(b) (the Office must “timely inform” patent owner of “the matters of fact and law asserted”), 556(c)-(d) (the Office must allow a party “to submit *rebuttal evidence*... as may be required for a full and true disclosure of the facts.”). That is reason enough why the Director should reverse.

**b. The Board Got It Wrong on EX2080**

Petitioner’s expert admitted that whether MgO would form as crystalline(001) on amorphous CoFeB is “very complicated.” EX2085, 178:5-179:6. The Board had no business accepting *naked attorney argument*

unsupported by expert testimony in this “very complicated” technical area. *See also* Paper 30 (denying Patent Owner’s request for a sur-reply expert declaration).

The Board’s finding is inconsistent with Parkin’s own characterization of EX2080’s methods as forming the MgO layer on a crystalline(100) layer. Parkin, 3:24-41. The Board misunderstood EX2080’s disclosure (22:23-23:4) that MTJ “devices” can be formed without crystalline “*substrates*” as describing forming MgO(001) on amorphous CoFeB. FWD, 24. “Substrate” 111 is what the entire MTJ device is formed on. EX2080, Fig. 2B (annotated below), 32:6-10 (“device [] includes a **substrate 111**”). Parkin and EX2080 both say that when the MTJ *device* is formed on amorphous **substrate 111**, the **MgO(001) layer** is formed by templating on a **crystalline(001) layer 119**. EX1062, 13:3-15, 13:22-25 (amorphous substrate 111), Fig. 2B; EX2080, 35:10-17 (“By preparing *a (100) oriented bcc template layer of Fe*, the *MgO deposited on top of this layer also grows (100) oriented.*”); FWD, 21, n. 6 (MgO(100) and (001) are the same).

EX2080, Fig. 2B

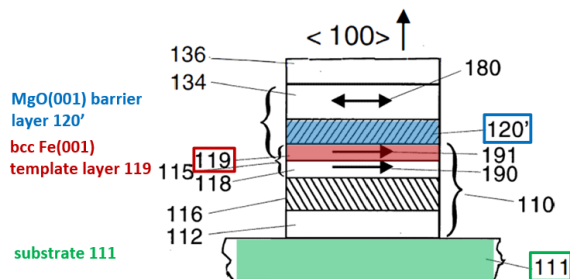


FIG. 2B

EX1062, Fig. 2B

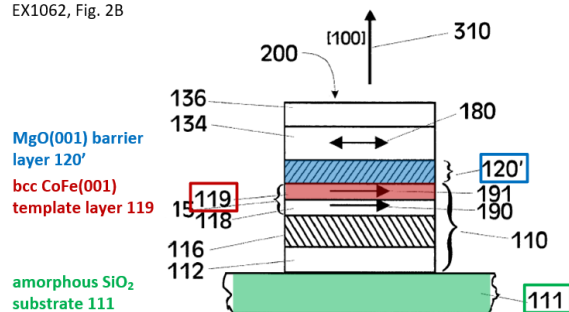


FIG. 2B

The Board also misread EX2080, 47:13-17’s statement that “the structure

prior to annealing may not be substantially (100) oriented” as saying the MgO layer is formed on amorphous CoFeB. FWD, 24. The preceding disclosure says **MgO layer 120’** is formed on **layer 119** (EX2080, 47:7-15), which is a crystalline Fe(001) layer that acts as a *template* for **MgO(001) layer 120’** (*id.*, 35:10-17).

**c. The Board Erred Procedurally and Factually**

The Board erred by finding that Petitioner carried its burden based on evidence (EX2080) not cited in the *Petition or Reply*, by adopting an argument Petitioner unveiled at oral hearing in violation of the APA, and misreading a “very complicated” disclosure uninformed by expert testimony. *Supra* §§III.B.1.a-b.

**2. Finding That Parkin, 22:66-67 Teaches That Figure 11’s Crystalline Interface Layer Is Optional Requires Reversal**

The Board’s finding that Parkin allegedly teaches MgO(001) formed on amorphous CoFeB relies on this sentence about Parkin’s Figure 11 device: “[a]n interface layer 520 of a crystalline *CoFe* alloy may also be used.” Parkin, 22:66-67; FWD, 19-29. The Board said the “fair reading” of this “plain language” is that “may... be used” means “may also *not* be used,” so Figure 11’s crystalline(001) interface layer 520 is “optional.” FWD, 22-23. That finding must be reversed.

**a. The Board’s Reading of Parkin’s Interface Layer Sentence Is Inconsistent with Parkin and EX2080**

Parkin Figure 11’s MgO layer is formed using the “methods” in EX2080-81. Parkin, 23:6-11. Parkin says these methods use a crystalline(001) templating layer. *id.*, 3:24-41. EX2080 never says the interface layer can be eliminated and

EX2080 describes no **method** that omits it. *Supra* §III.B.1.b. Instead, consistent with Patent Owner’s explanation that “may” refers to the particular **CoFe material** as optional rather than the entire interface layer 520 (Parkin, 22:66-67), EX2080 says the interface layer may be “**Fe**”—a different material than CoFe. EX2080, 35:10-17. The Board’s reading is inconsistent with EX2080 and the rest of Parkin.

**b. Ambiguous Disclosure Cannot Prove Unpatentability**

Petitioner’s expert conceded a POSA could have reasonably read Parkin as stating that interface layer 520 could be crystalline CoFe or a different crystalline material (like crystalline Fe as described in EX2080). FWD, 22; EX2085, 52:3-13, 52:22-53:14. That should have ended the matter. “[I]t has long been understood that ambiguous references do not, as a matter of law, anticipate a claim.” *Wasica Fin. GmbH v. Cont’l Auto. Sys., Inc.*, 853 F.3d 1272, 1284 (Fed. Cir. 2017).

**c. The Board Erred in Its Inconsistent Treatment of Petitioner’s Expert Testimony**

The Board credited Petitioner’s expert’s assertion that Parkin says Figure 11’s interface layer 520 is optional. FWD, 23 (citing EX2085, 52:13-18). Whether Parkin’s Figure 11 would still have its ***crystalline***(001) MgO layer if templating layer 520 were eliminated is a question for a crystal growth expert. But Petitioner’s expert admitted: “I’m no expert. I’m no crystal grower.” EX2018, 77:9-78:3. Indeed, the ***Board rejected as not credible*** extensive testimony from Petitioner’s expert purporting to show that a POSA would have reasonably expected MgO(001)

to form on amorphous CoFeB. *Supra* §III.A; FWD, 50 (“we cannot credit” the assertion that a POSA “knew how to grow MgO(001) on amorphous surfaces such as CoFeB”). Crediting Bokor’s testimony that Parkin discloses forming MgO(001) on amorphous CoFeB despite rejecting as **not** credible his testimony that a POSA even knew how make such a device was error. *Interactive Commc’ns v. Blackhawk Network*, IPR2024-00465, Paper 40, 3 (Squires Oct. 9, 2025).

### **3. The Board Relied on Its Own Rationale, Unsupported by Expert Testimony, and Got It Wrong**

The Board said its reading of Parkin’s interface layer sentence is consistent with Parkin’s alleged disclosure that Figure 11’s “**entire** electrode” may be “amorphous.” FWD, 23 (citing Parkin, 22:57-62). That finding is inconsistent with the testimony of Petitioner’s expert who said his **only** support in Parkin (or any prior art) for forming MgO directly on amorphous CoFeB was the single sentence allegedly saying interface layer 520 is optional. EX2085, 114:17-23, 117:15-120:4. The Board’s finding is also wrong. Parkin, 22:57-62 never says Figure 11’s “**entire** electrode” is amorphous. It describes materials for the amorphous part of the electrode then describes the crystalline interface layer 520 portion of the electrode.

### **4. The Weight of the Evidence Is Contrary to the Board’s (Mis)Interpretation of Parkin’s Single Sentence**

The Board parsed Parkin’s words out of context. It found that “may be used” means the opposite—i.e., may **not** be used—and determined that “may” did not

refer to the material used in interface layer 520 (e.g., CoFe or Fe) despite Petitioner’s expert saying a POSA might reasonably have read it that way (EX2085, 52:3-20, 53:3-14). FWD, 22-23.<sup>2</sup> The Board’s linguistic analysis ignored a POSA’s below-discussed background knowledge. That was legal error. *E.g.*, *Star Sci. v. R.J. Reynolds Tobacco*, 655 F.3d 1364, 1374–1375 (Fed. Cir. 2011) (the “fact-finder must... determine what the prior art teaches” “[t]hrough the lens of one of ordinary skill in the art”).

**a. The Board’s Reading Contradicts Its Finding That a POSA Did Not Know How to Make Such a Device**

The Board’s finding that no evidence showed that a POSA knew how to grow MgO(001) on amorphous CoFeB (FWD, 48-50) should have informed its “reading” of Parkin’s interface layer sentence. A POSA would not have read this ambiguous (at best) sentence to describe a device no POSA knew how to make.

**b. The Board’s Reading Is Inconsistent With Objective Contemporaneous Evidence**

**i. Evidence That Yuasa’s Result Was Surprising**

The discovery that depositing MgO on amorphous CoFeB and annealing the device yielded MgO(001) and crystallized CoFeB surprised the industry. POR, 60-71; Sur-reply, 28-31. Applied Physics Letters published an article from the

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<sup>2</sup> The Board also denied a sur-reply declaration from *Patent Owner’s expert* to refute the Reply’s new argument that Figure 11’s layer 520 is optional. Paper 30, 4.

inventor (EX2006 (“APL”)) characterizing that discovery as surprising. It is undisputed that APL is a prestigious peer-reviewed journal and this article was cited over **1,000** times without anyone challenging that its results were surprising. Sur-reply, 24. Other publications referred to the APL article and its surprising results. FWD, 28 (citing EX2005, EX2020, EX2022-23). The Board said none of this was “independent corroboration” that Yuasa’s results were surprising. FWD, 28. That is error. The editors of APL, the peer-reviewers of the article, and other publications all endorsed Yuasa’s results as surprising. *Daubert v. Merrell Dow Pharm.*, 509 U.S. 579, 593-594 (1993) (peer review enhances reliability). That evidence corroborates Yuasa’s surprising results. So too do the ***industry praise and industry awards/prizes*** the Board acknowledged the inventor received. FWD, 33-36 (citing extensive evidence); POR, 61-67 (same); Sur-reply, 28-30.

**ii. The Industry Recognized This as the Work of Yuasa—Not Parkin**

The inventor (Dr. Yuasa) and Dr. Parkin were both luminaries in the MTJ device field. Publications acknowledged Parkin’s work but attributed to the inventor Yuasa the discovery that depositing MgO on amorphous CoFeB and annealing the device yielded MgO(001) and crystallized CoFeB. POR, 60-71; Sur-reply, 16, 28-31; FWD, 25. The Board acknowledged this but said there was a “discrepancy between the industry recognition of [Yuasa’s] APL paper for its disclosure of a MgO(001) layer grown on amorphous CoFeB... and the apparent

lack of public recognition for the Parkin prior art patent, which discloses the same or very similar benefits.” FWD, 36. The finding that Parkin discloses the same benefits as Yuasa’s APL paper is plainly wrong. APL explains templating had limited “practical use” (EX2006, 1), APL teaches a *different method* of forming MgO(001) (*id.*, 1-2), and APL explains that the invention’s “paramount importance” was achieving an MTJ device with desirable characteristics (“huge TMR”) that was capable of “practical use” because it could be commercially manufactured (*id.*, 3). Parkin discloses no method of forming an MTJ device without templating and does not explain the “benefits” that provided. Petitioner never even alleged otherwise. If Dr. Parkin had made this discovery, he would have disclosed his new manufacturing method and would have *claimed* it. He did neither. There is no “discrepancy” in the objective evidence. FWD, 36.

**iii. The Board Erred by Dismissing the Objective Evidence That Refutes Its (Mis)reading of Parkin**

The Board was required to evaluate the *objective* evidence “*before*” reaching a conclusion on whether Petitioner carried its burden to prove obviousness *twenty years later*. *Stratoflex v. Aeroquip*, 713 F.2d 1530, 1538-1539 (Fed. Cir. 1983). Rather than properly apply the law by considering the objective evidence to inform how a POSA would have interpreted Parkin’s ambiguous (at best) interface layer sentence, the Board exalted its linguistic analysis over the objective evidence and then used its linguistic analysis to justify discarding the

objective evidence. FWD, 34-36 (dismissing the objective evidence because the Board concluded Parkin “taught the formation of a MgO(001) layer grown on the amorphous CoFeB” so this was not “novel”). That was legal error.

**C. Reversal Is Required Because Petitioner Failed To Prove That a POSA Knew How to Make the Claimed Device**

Even if Parkin is considered to disclose a modified version of Figure 11’s *device* in which the MgO(001) layer sits directly on CoFeB (it does not), that is insufficient to demonstrate any claim obvious. To prove obviousness, Petitioner needed to submit evidence establishing that *a POSA knew to how make the claimed device with a reasonable expectation of success*. *In re Kumar*, 418 F.3d 1361, 1369 (Fed. Cir. 2005) (“To render a later invention unpatentable for obviousness, the prior art must enable a [POSA] to *make* and use the later invention.”) (internal cit. omitted); *Raytheon v. Gen. Elec.*, 993 F.3d 1374, 1377 (Fed. Cir. 2021) (reversing the Board’s obviousness finding “[b]ecause the relied-upon prior art fails to enable a skilled artisan to *make* and use the claimed invention”); *id.*, 1381 (endorsing the Sixth Circuit’s explanation that “*if neither item any of prior art, nor the background knowledge of [a POSA] would enable one to arrive at an invention, that invention would not be obvious*”).

Petitioner alleged a POSA would have reasonably expected success in meeting the claims by forming MgO(001) directly on amorphous CoFeB. Reply, 5-9. But Petitioner submitted *no evidence of a known method* of doing so. The

Board *rejected all Petitioner's evidence* and found *not* credible Petitioner's expert's assertion that a POSA "knew how to grow MgO(001) on amorphous substrates such as CoFeB." FWD, 49-52. That should end the matter.

The Board's finding that Petitioner met its burden for Ground 1 must be reversed because it is not supported by any argument the Board could properly consider. The FWD says: "[a]s discussed *supra* Section II.D.ii.2, *Parkin* includes a *method* for accomplishing the formation of MgO(001) on amorphous substrates." FWD, 43-44. The *only* finding in "Section II.D.[3].ii.2" (*id.*, 19-29) of an alleged "*method*" of forming MgO(001) on CoFeB is the Board's "agree[ment]" with the argument Petitioner improperly advanced at oral hearing about EX2080. FWD, 23-25; *supra* §III.B.1. That finding must be reversed. In addition to being plainly wrong and inconsistent with everything *Parkin* and EX2080 say about how the MgO(001) layer is formed (*supra* §III.B.1.b), that finding improperly adopted an argument Petitioner unveiled at oral hearing in violation of the Board's practice, due process, and the APA (*supra* §III.B.1.a).

The Board expressly found that the evidence and argument submitted in *Petitioner's trial papers* failed to prove that a POSA knew how to make the claimed device with an expectation of success. FWD, 49-52. That is fatal to Ground 1. *Kumar*, 418 F. 3d at 1369; *Raytheon*, 993 F.3d at 1377. The Board's finding that Petitioner carried its burden for Ground 1 must be reversed.

Respectfully submitted,

Date: April 24, 2026

By: / Richard Giunta/

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WOLF, GREENFIELD & SACKS, P.C.

**CERTIFICATE OF SERVICE UNDER 37 C.F.R. § 42.6 (e)(4)**

I certify that on April 24, 2026, a copy of the foregoing document, including any exhibits filed therewith, is being served via electronic mail, as previously consented to by Petitioner, upon the following:

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Date: April 24, 2026

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