UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

MONOLITHIC POWER SYSTEMS, INC.,
Petitioner,

v.

GREENTHREAD, LLC,
Patent Owner.

IPR2024-00468
U.S. Patent No. 8,421,195

PATENT OWNER'S PRELIMINARY SUR-REPLY

The Board should reject the arguments in Petitioner's reply, because they are inconsistent with the claim language, the prosecution history, and Petitioner's own expert declaration.

A. The prosecution history supports Greenthread.

Petitioner's assertion that Greenthread admitted that any grading "aids carrier movement" fails, because it ignores other claim limitations and is inconsistent with the prosecution history. Petitioner's quotes from prosecution history all relate to the "drift layer" element of what became U.S. Patent No. 8,421,195. The "drift layer" element that issued in the '195 contains at least three separate limitations: **[1]** a "*graded concentration of dopants*," and **[2]** an "*electric* drift field" which **[3]** "*aid*[*s*] the movement of minority carriers."[1] Petitioner's argument that *any* "graded concentration of dopants" in the prior art meets the claim elements of the patents fails to give any meaning to [2] and [3] by collapsing them into [1]. A graded concentration has the "built-in" characteristic of exerting an electric force, but that does not mean *any* grading will create the required "electric" field or "aid" carrier movement.

Petitioner repeatedly quotes from Greenthread's response to a December 20,

[1] All of the Greenthread Patents include a version of [2], [3], or both to modify the "graded dopants" limitations.

2011 Office Action ("December Office Action"), but the claims under rejection in the Office Action *were missing both limitations [2] and [3]*. The December Office Action claims required that graded dopants "draw[] all minority carriers" downward, without reference to an "electric" field or "aid[ing]" carrier movement. Ex. 1002, 286. The examiner rejected those claims, because "[i]n a complex electronic device, movement of minority carriers is affected by multiple forces and fields[.] … [S]imply the presence of 'a unidirectional drift field' in itself [does not appear to] achieve 'drawing all minority carriers.'" Ex. 1002, 270 (underlining in original). In response, Greenthread struck the "drawing all" limitation and *added limitations [2] and [3]*. Ex. 1002, 286. Petitioner acts as if the amendment never occurred.

The very word "aid" in the issued claim shows that there must be *other* forces which the gradient is "aiding," as the examiner's statement confirms. The Petition fails because it does not address those forces. The "electric" field limitation likewise underscores that grading alone does not suffice. The graded dopants will influence the net electric field, but do not necessarily determine it. The Petition does not address the "electric" field limitation, except by claiming that any graded dopant concentration would satisfy it. Simply put, Petitioner wants to construe the issued claims like the *rejected* claims, without limitations [2] or [3].

Petitioner also misconstrues Greenthread's statement about the "additional parameter" in the '195 claims. Paper 15, 5. Greenthread said that the "***electric field***

is the additional parameter," not the graded dopants. The dopant gradient only meets the claim limitation in the '195 patent if it helps create such a field, which it does not necessarily do.

Finally, Greenthread did not "tell the USPTO one thing to secure a patent" and something else now, because *the USPTO never allowed the claims rejected in the December Office Action*. Paper 15, 4-5. The USPTO granted *different* claims pursuant to *the Examiner's understanding* (which was also Greenthread's) "that movement of minority carriers is affected by multiple forces and fields." Ex. 1002, 270. Even if Petitioner correctly characterized what Greenthread said during prosecution, the Office clearly rejected that reading. When the USPTO "reject[s] the Patent Owner's arguments regarding the meaning" of the claims "the public [is] on notice" about what the claims mean. *Galderma Lab'ys, L.P. v. Amneal Pharms. LLC*, 806 F. App'x 1007, 1010 (Fed. Cir. 2020).

Petitioner is the one taking inconsistent positions. Here, Petitioner deems limitations [2] and [3] satisfied anytime [1] is satisfied. But, in its district court *Markman* briefing, Petitioner seeks to give "aided" separate meaning to provide itself a non-infringement argument. Ex. 2029 (*Greenthread, LLC v. Monolithic Power Systems, Inc.*, No. 23-cv-579 (D. Del.) (Petitioner's Responsive CC Brief; served by Petitioner's lit. counsel to PO's lit. counsel per local procedures on Apr. 12, 2024)), 48-49. The Board should not countenance Petitioner's gamesmanship.

B. Dr. Campbell offers no "analysis" to support institution.

Petitioner claims that its Petition does not rest "***entirely***" on Greenthread's supposed admission that "graded" means "aided," and points to its expert declaration. But, "Dr. Campbell's [supposedly] unrebutted analysis" is nothing but a regurgitation of Petitioner's prosecution history arguments. Dr. Campbell says "[i]n my opinion, <u>*Patent Owner represented*</u> to the [USPTO] that" any "graded concentration of dopants" meets the claim limitations. Ex. 1003 ¶ 36 (emphasis added).

Obviously, Dr. Campbell is not an expert on what "Patent Owner represented." *Id.* Dr. Campbell is purportedly an expert in semiconductors, but he offers no engineering analysis to support his conclusion. He relies entirely on what "Patent Owner represented" and block quotes from the prosecution history. *See, e.g.*, Ex. 1003 ¶¶ 36-40 (quotes from prosecution history regarding Jastrzebski reference); ¶¶ 41-47 (same regarding Kamins reference). For example, Dr. Campbell quotes Greenthread's statement that whether a dopant gradient aids carrier movement "*[d]epend[s]* on the *particular slope* of the graded concentration." EX1003 ¶ 37 (emphasis added). But, Dr. Campbell never addresses whether "the particular slope" *in Petitioner's prior art* aids carrier movement.

Attempting to fill that hole, Petitioner cites Dr. Campbell's supposed "analysis" of "principles of physics." Paper 15 at 4 (citing "EX1003 at ¶¶ 72-83").

Yet that "analysis" simply cross-references his earlier block quotes. *Id.* For example, Dr. Campbell nakedly asserts that "it was well known that having a downward dopant gradient would … aid the movement of minority carriers." EX1003 ¶¶ 73, 83. But, this statement is unexplained and not supported with a citation. Rather, Dr. Campbell again points to what "Patent Owner acknowledged in prosecution"—not engineering analysis—and vaguely references what he "described elsewhere in this declaration" regarding the "Kamins and Jastrzebski references." *Id.* Dr. Campbell's discussion of Kamins and Jastrzebski is again, however, simply block quotes from the prosecution history. *See* Ex. 1003 ¶¶ 36-40; ¶¶ 41-47 (cited *supra*).

In addition to being a mere recitation of Petitioner's legal arguments, Dr. Campbell's account of the prosecution history omits the parts that do not support his argument. For example, the examiner said that "[i]n a complex electronic device, movement of minority carriers is affected by multiple forces and fields." Ex. 1002, 270. Dr. Campbell fails to mention this statement or other "forces and fields" generally. He does <u>*not*</u> claim that such forces don't exist or even that they are irrelevant. He just doesn't mention them. Dr. Campbell's testimony is not "unrebutted" because, on the issues that matter, there is no testimony to rebut.

C. Petitioner cannot save Kawagoe and Nishizawa.

Petitioner tries to explain why Kawagoe and Nishizawa say that they

"prevent" carrier movement, by arguing that "movement is only impeded ***upwards.***" Paper 15, 5 (emphasis in original). For support, Petitioner points to Kawagoe's statement that carriers are "attracted to the substrate body," but does not explain why attraction of a carrier to the substrate means "movement is only impeded upwards." *Id.* Petitioner also cites paragraphs 33 and 34 of its expert declaration. Paragraph 33 explains a latch-up problem, not what a dopant gradient does. Paragraph 34 is a single conclusory sentence that does not say whether carrier "movement is only impeded upwards" in Kawagoe. Again, Dr. Campbell's declaration provides nothing relevant.

Even if Nishizawa and Kawagoe did not teach impeding carrier movement, it does not follow that they teach how to move carriers "from said surface layer." They do not have such a teaching, because Nishizawa confirms that neither it nor Kawagoe are concerned with carriers in the surface layer. Nishizawa says that alpha rays—the problem Kawagoe and Nishizawa were attempting to address (*see* Ex. 1003, ¶ 33)—do not generate carriers in the surface layer in relevant quantities. Carriers in the surface layer can be "disregarded." Ex. 1046 at 29. Petitioner's observation that (1) an alpha ray's creation of electrons in the surface layer and (2) the movement of carriers downward are "different concepts" is beside the point. Paper 15, 7. Petitioner does not point to anything in Kawagoe or Nishizawa discussing the

movement of carriers in the surface. There is no such teaching, because those carriers are irrelevant to the problem they were trying to solve.

Petitioner bizarrely claims that "PO assumes the 'surface layer' [in Kawagoe] is not located in the p-well 6p," but Greenthread's whole point is that the surface layer **is** in the p-well 6p. Paper 15, 6 n. 1. Petitioner's problem is that the "surface layer" **is** in 6p, while the "surface layer" 6p of Kawagoe is where carriers are **prevented** from entering. Kawagoe does not say carriers move out of 6p, much less that they move out of the surface layer of 6p. Petitioner *assumes*, without support, that Kawagoe's graded dopants would draw carriers in the surface layer downwards, but nothing in Kawagoe says that. Kawagoe simply says that carriers do not move from the substrate into 6p.

D. The Board should not consider Petitioner's Preliminary Reply.

A reply is not appropriate to address arguments "Petitioner could have reasonably foreseen" when filing its petition. *Sandoz Inc. v. Abbvie Biotechnology Ltd.*, No. IPR2018-00002, Paper 11 at 3 (PTAB Mar. 6, 2018). All of Petitioner's merits arguments in its reply brief improperly expand its petition or supplement its expert declaration with new attorney argument. The Board should not consider these new arguments.

For the foregoing reasons, institution of the Petition should be denied.

Dated: June 24, 2024

Respectfully submitted,

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CERTIFICATION OF SERVICE

The undersigned hereby certifies that a copy of this **PATENT OWNER'S PRELIMINARY SUR-REPLY** has been served on Petitioner via email on the following counsel of record for Petitioner:

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