

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

INNOSCIENCE (ZHUHAI) TECHNOLOGY COMPANY, LTD.,
AND
INNOSCIENCE AMERICA, INC.
Petitioner,

v.

EFFICIENT POWER CONVERSION CORPORATION,
Patent Owner

Case IPR2023-01381
U.S. Patent No. 8,350,294

**PATENT OWNER'S OPPOSITION TO PETITIONER'S MOTION TO
COMPEL ROUTINE DISCOVERY UNDER 37 CFR § 42.51**

I. INTRODUCTION

Petitioner filed a Motion to Compel Routine Discovery (“Motion,” Paper 21), requesting that Patent Owner be ordered to produce documents containing information allegedly inconsistent with positions advanced in Patent Owner’s Response (“POR,” Paper 18) under “routine discovery” rules. 37 C.F.R. § 42.51(b)(1)(iii). Petitioner identified a number of alleged inconsistencies in its motion and during the meet and confer that preceded the motion. None of these alleged inconsistencies are in fact inconsistencies. As a result, Patent Owner is under no obligation to serve the sought-after documents. Further, having now had an opportunity to fully investigate, Patent Owner certifies that, to the best of its knowledge, Patent Owner has complied with its routine discovery obligations.

II. THE ITC RECORD DOES NOT CONTAIN INFORMATION INCONSISTENT WITH THE PATENT OWNER RESPONSE

A. Patent Owner’s Position That the Mere Presence of Hydrogen Does Not Result in the Claimed Compensated GaN Layer Is Not Inconsistent with its ITC Positions

Petitioner insists that Ex. 1031 demonstrates Patent Owner’s ITC argument that the presence of hydrogen evidences a compensated GaN layer and is inconsistent with Patent Owner’s IPR argument that the “mere presence of hydrogen does not result in a compensated GaN layer.” Motion at 7. But Petitioner does not consider the full context of Ex. 1031. For example, Ex. 1031 states that “SIMS data shows that the GaN layer is compensated; that is, the GaN

layer has elevated levels of hydrogen (H) and magnesium (Mg) as compared to the layers below the GaN layer.” Ex. 1031 at 15. Here, it is clear that, applying the logic of Ex. 1031, the mere presence of hydrogen is not enough to evidence a compensated GaN layer. Rather, according to that logic, elevated levels of hydrogen and magnesium as compared to layers below the GaN layer need to be observed.

Moreover, Ex. 1031 was an exhibit to Patent Owner’s ITC complaint, prepared before Patent Owner had the benefit of any expert or fact discovery, and before Patent Owner prepared and served its infringement contentions. Patent Owner’s persistent ITC position, as recognized by the Administrative Law Judge (“ALJ”) in his Initial Determination (“ID”) finding a violation as to the ‘294 patent,¹ was that there are several factors that help determine whether a GaN layer is a compensated GaN layer. Ex. 2022 at 42. Amongst those factors are the “electrical characteristics of the finished Innoscience devices,” including “the ability to drive the gate bias higher with minimal gate current leakage.” Ex. 2022

¹ Petitioner suggests that during the meet and confer that preceded Petitioner’s motion to compel, Patent Owner attempted to justify the alleged inconsistency by arguing that because the ALJ found the presence of hydrogen to be one of several factors in determining a “compensated GaN layer,” there was no inconsistency. Motion at 7. Petitioner mischaracterizes or misunderstands Patent Owner’s point from the meet and confer. Patent Owner was pointing out that **Patent Owner** argued that presence of hydrogen was one of several factors, and that the ALJ acknowledged that Patent Owner argument in the ID. Ex. 2022 at 42.

at 42, 46. Indeed, Patent Owner’s clear ITC position was that low gate current leakage is a key factor in determining whether a GaN layer is the claimed compensated GaN layer. Ex. 2023 at 11-12.

B. Patent Owner’s Position Regarding the Counterintuitive Cancellation of the Effects of a Doped Gate Is Not Inconsistent with its ITC Positions

Petitioner argues that Patent Owner’s expert Dr. Schubert, in a book that he wrote and that was published in 1993, stated that “neutralizing” dopants with hydrogen implantation was “widely used” and “very attractive for device application.”² Motion at 8. Yet, Petitioner posits, Patent Owner and Dr. Schubert now argue “that such process would be ‘highly counter intuitive.’” Accordingly, according to Petitioner, “[t]his is also inconsistent.” Motion at 8.

But the “counterintuitive” concept noted by Patent Owner and Dr. Schubert in the present IPR petition is much different than the concept that Dr. Schubert wrote about in his book. For example, in the POR, Patent Owner argues that “a POSA would find the doping of a gate semiconductor followed by the cancellation of the effect of the dopant to be highly counterintuitive.” POR at 44. Key to this counterintuitive-ness is that the doping and subsequent cancellation is in the gate.

² Dr. Schubert’s book was first introduced (and subsequently produced) by Petitioner in the ITC investigation during Dr. Schubert’s December 2023 deposition. Petitioner’s demand that Patent Owner produce the book in the present IPR is puzzling, given that Petitioner will have an opportunity to cross examine Dr. Schubert regarding the book, should Petitioner choose to depose him.

Conversely, Dr. Schubert's book has nothing to do with doping a gate and then subsequently cancelling the effect of the gate dopant.

In addition, Patent Owner's POR arguments specifically pertain to compensated GaN. Dr. Schubert's book, on the other hand, does not mention "GaN" or "gallium nitride" at all. Nor does it identify GaN as a III-V semiconductor to which the statements in the book would apply. It is therefore wholly inappropriate to conclude that Dr. Schubert intended statements in his book to apply to GaN technology.³

Moreover, looking at the arguments Patent Owner and Dr. Schubert actually made in the still-pending ITC investigation (as opposed to relying on a book written by Dr. Schubert that was published in 1993), Petitioner cannot deny that the ITC arguments are not inconsistent with the ones made here. For example, in Patent Owner's ITC responsive post-hearing brief, Patent Owner argued that "a POSA would find the doping of a gate semiconductor followed by the cancellation of the effects of the dopant to be highly counterintuitive." Ex. 2023 at 37. In addition, Dr. Schubert testified during the ITC hearing that:

However, the '294 invention teaches if the p-type gallium nitride is passivated it does not lose the ability to deplete the 2DEG and remove the electrons from the 2DEG. That is the key innovation that was brought about by the '294 patent. That key innovation was unknown, was nonobvious and was counterintuitive. So it is my view that no

³ Again, Petitioner will have the opportunity to cross examine Dr. Schubert on his book should they choose to depose him.

one predicted that particular characteristic of the ‘294 patent and, therefore, the very idea that we just passivate based on the prior art the gate semiconductor, not knowing the ‘294 patent is an idea that is originating in hindsight. It is not being taught by any of the prior art references and a person of skill would not have known that.

Ex. 2016, 956:22-957:9. These cites make it readily apparent that Patent Owner’s IPR positions are not inconsistent with its ITC positions.

C. Patent Owner’s Position That Only P-Type Dopants Are Passivated by Hydrogen Is Not Inconsistent with its ITC Positions

In the table Petitioner included in its motion at page 5, Petitioner indicates that Patent Owner’s POR position that “[i]t is only the p-type dopants that are passivated by hydrogen” is inconsistent with Dr. Schubert’s 1993 book, which states: “hydrogen forms complexes with donor and acceptor impurities (see Sect. 9.3.1). As a consequence, the impurities are neutralized and the free carrier concentration is reduced.” Motion at 5. Petitioner, however, takes Patent Owner’s POR position out of context and improperly extends Dr. Schubert’s 1993 book to cover subject matter not fairly taught by the book.

For example, the “p-type dopants that are passivated by hydrogen” from Patent Owner’s POR position are not discussed in a vacuum. They are discussed in relation to the claims of the ‘294 patent, specifically claims 2 and 3. POR at 53. The p-type dopants of those claims are located in the claimed compensated **GaN** layer. But Dr. Schubert’s book, as noted above, does not mention “GaN” or “gallium nitride” at all. Nor does it identify GaN as a III-V semiconductor to

which the statements in the book would apply. It is therefore wholly inappropriate to conclude that Dr. Schubert intended statements in his book to apply to GaN technology. Without much more, Dr. Schubert's book statements cannot reasonably be found to be inconsistent with Patent Owner's POR arguments.⁴

Separately, Patent Owner's POR arguments are indisputably consistent with its ITC arguments. The language quoted by Petitioner in its table on page 5 of its motion to compel is a quote from Dr. Schubert's ITC hearing testimony. Ex. 2016, 955:5-12. In fact, Dr. Schubert's full answer from which the quote was extracted further emphasizes that the argument is specific to GaN. Specifically, before saying that "[i]t is only the p-type dopants that are passivated by hydrogen," Dr. Schubert testified that "[n]-type dopants in gallium nitride are not passivated by hydrogen." *Id.* This testimony makes it crystal clear that Dr. Schubert was discussing dopants in gallium nitride (GaN), as opposed to III-V semiconductors in general.

⁴ If Petitioner's cross examination of Dr. Schubert reveals that his book is inconsistent with Patent Owner's POR arguments, Patent Owner will gladly serve the book, even though Petitioner already has the book and has included it as an exhibit to the motion to compel.

D. Patent Owner's Position That Region 15b in Uemoto Cannot Correspond to the Claimed Compensated GaN Layer Is Not Inconsistent with its ITC Positions

Petitioner also argues that Dr. Schubert admitted at the ITC hearing that in the Uemoto reference, “layer 15b ... meets the claim term ‘compensated gallium nitride.’”⁵ Motion at 8. And that testimony, according to Petitioner, is inconsistent with Patent Owner's POR argument that region 15b cannot correspond to the claimed compensated GaN layer. *Id.* But the Dr. Schubert “sound bite” highlighted by Petitioner is out of context. The full answer from which Petitioner cherry-picked this “sound bite” is entirely consistent with Patent Owner's POR arguments.

Dr. Schubert's full answer reads “[s]o layer 15b is gallium nitride, contains magnesium and hydrogen, is passivated, and is non-conductive. So in that sense, it meets the claim term ‘compensated gallium nitride.’ But its location is in the wrong place. Layer 15b is in the wrong place. It should be in a different place if it would serve as the compensated gallium nitride layer that is claimed in the ‘294 patent.” Ex. 2017, 1034:4-11. Here, it is clear that Dr. Schubert's opinion is that region 15b does not correspond to the claimed compensated GaN layer. Indeed, Dr. Schubert testified at length that region 15b cannot be the claimed compensated

⁵ This testimony has already been produced by Patent Owner as part of Ex. 2017.

GaN. Ex. 2016, 961:22-965:19. Patent Owner made similar arguments in ITC briefing. Ex. 2023 at 38-42.

E. Patent Owner Certifies Compliance with 37 CFR § 42.51(b)(1)(iii)

Petitioner argues that Patent Owner should certify that it has complied with its discovery obligations. Motion at 9. In support, Petitioner indicates that Patent Owner has yet to confirm that it has even investigated the potential inconsistent information. Now that Patent Owner has had a chance to investigate, Patent Owner certifies that, to the best of its knowledge, Patent Owner has complied with its routine discovery obligations under 37 C.F.R. § 42.51(b)(1)(iii).

III. CONCLUSION

For the foregoing reasons, Patent Owner respectfully requests that Petitioner's motion to compel be denied.

Dated: August 16, 2024

Respectfully submitted,

/s/ Walter D. Davis, Jr.

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CERTIFICATE OF SERVICE

The undersigned certifies that a true and correct copy of the foregoing
**PATENT OWNER'S OPPOSITION TO PETITIONER'S MOTION TO
COMPEL ROUTINE DISCOVERY UNDER 37 CFR § 42.51** is being served
on counsel of record by filing this document through the Patent Review Processing
System, with a copy served via electronic mail to the following email address, as
authorized in the Petition:

Innoscence-EPC-IPRs@finnegan.com

Dated: August 16, 2024

Respectfully submitted,

/s/ Walter D. Davis, Jr.

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