

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 IPR2023-01382
U.S. Patent No. 9,748,347

**PATENT OWNER'S SUR-REPLY TO
PETITIONER'S PRELIMINARY REPLY**

I. INTRODUCTION

Petitioner asserts that *Shenoy* and *Ahn* are analogous art because “*Shenoy* and *Ahn* are in the same field of endeavor and address the same problem as the ‘347 patent claims.” Reply at 1. Petitioner also asserts that, since Patent Owner’s Preliminary Response included only “unsupported attorney argument,” and not expert testimony, to support its assertion that *Shenoy* and *Ahn* are non-analogous art, Petitioner’s expert stands unrebutted. *Id.*

As demonstrated below, Petitioner’s assertions are wrong. Moreover, regardless of Petitioner’s analogous art challenge, *Ahn* is not properly combinable with *Saxler*, and *Shenoy* is not properly combinable with *Saxler* or *Beach*.

II. *AHN* IS NOT ANALOGOUS ART

In the Preliminary Response at page 35, Patent Owner points out that *Ahn* “relates to a thin-film transistor of a liquid crystal display and, more particularly, to a thin-film transistor having a gate including a double-layered metal structure and a method of making such a double-layered metal gate.” *Ahn* at 1:5-10. Liquid crystal displays require the formation of a pixel electrode 65, “which is electrically connected to the drain electrode 59 through the contact hole 63.” *Id.* at 7:4-6. Moreover, the gate material in *Ahn* is formed from “a double metal layer” that is covered by “a later formed gate oxide layer.” *Id.* at 3:27-29. These are not simply attorney arguments – they are facts, based on the *Ahn* patent specification.

Patent Owner notes (also on page 35 of the Preliminary Response) that claim 1 of the '347 patent relates to enhancement mode GaN transistors that are “aimed at high power/high frequency applications,” '347 patent at 1:27-29, whereas *Ahn* is directed to an entirely different technology (thin film transistors) and application (liquid crystal displays). *Ahn* at 1:5-10.

Moreover, as also stated in the Preliminary Response at page 35, *Ahn*'s gate, formed from a double metal layer, differs substantially from the gate material of the '347 patent, which is comprised of a metal gate contact and a p-type material. *Id.* at 3:44-59.

Again, these are not simply “unsupported” attorney arguments, as Petitioner alleges. They are facts, established by intrinsic evidence, i.e., evidence taken directly from the patents at issue. Intrinsic evidence is inherently *more reliable* than expert testimony.

Furthermore, as argued in the Preliminary Response at page 36, Petitioner has not established any reason – through testimony of Dr. Shealy or otherwise – as to why a POSA would apply a metal etching technique used in the formation of thin film transistors for liquid crystal displays to a gate structure comprised of a metal and p-type material in an enhancement mode GaN transistor, absent impermissible hindsight. Etching techniques vary based on the materials to be etched due to differing chemical and structural properties, such that a POSA would

not simply apply a technique for etching two metals (*Ahn*) to a structure such as recited in claim 1 of the '347 patent, comprised of a metal and a p-type material.

For all of the above reasons, *Ahn* is not analogous art, and Petitioner has not shown otherwise.

III. A PERSON SKILLED IN THE ART WOULD HAVE NO REASON OR MOTIVATION TO COMBINE SHENOY'S TEACHINGS WITH *SAXLER* OR *BEACH*

Petitioner attacks the “analogous art” label of Section V.D. on pages 27-28 of Patent Owner’s Preliminary Response, but presents no *substantive argument* as to why one skilled in the art would have considered *Shenoy* to modify the teachings of *Saxler* or *Beach*.

As explained on page 27 of the Preliminary Response, *Shenoy* involves electrochemical etching – etching with an applied voltage, an applied electric field, and an electrical current flowing. However, because *Saxler* does not describe the conductivity of its materials, a POSA would not have considered *Shenoy* to modify the teachings of *Saxler*, because *Shenoy* describes electrochemical etching, a highly specialized etching method with little relevance to the process described in *Saxler*. Indeed, electrochemical etching can only be used in conjunction with conductive materials, and therefore would not have been considered based upon the KOH etching described in *Saxler*.

Although *Shenoy* generally describes an isotropic etching process, a POSA would not have considered the materials used and the structure etched in *Shenoy* to be related to either *Saxler* or *Beach*. First, *Shenoy* does not address self-alignment or how to etch a material below a hard mask. Instead, *Shenoy* solely addresses the verticality of the photoresist during etching and its effect on the resulting EEM etching process. Second, *Shenoy* does not address materials relevant to *Saxler*, and therefore any etching process would have been significantly different from the etching process proposed by *Saxler* and not considered as a substitution. Indeed, a POSA would have recognized that an unduly significant amount of experimentation would be required to attempt *Shenoy*'s etching process in *Saxler* (with no expectation of success) and for this reason a POSA would not have sought to apply the EEM process of *Shenoy* to *Saxler*. Therefore, although *Shenoy* describes isotropic etching, its technology and the application are substantially different from *Saxler* and would not have been considered by a POSA.

IV. CONCLUSION

For the foregoing reasons and those submitted in Patent Owner's Preliminary Response, Petitioner's challenge is deficient and *inter partes* review should not be instituted.

Dated: January 30, 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 SUR-REPLY TO PETITIONER'S PRELIMINARY
REPLY** 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: January 30, 2024

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