

UNITED STATES PATENT AND TRADEMARK OFFICE

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BEFORE THE PATENT TRIAL AND APPEAL BOARD

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TAIWAN SEMICONDUCTOR MANUFACTURING CO., LTD,  
Petitioner,

v.

GODO KAISHA IP BRIDGE 1,  
Patent Owner.

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Case IPR2017-01843<sup>1</sup>  
Patent 7,893,501

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**PATENT OWNER'S MOTION FOR  
OBSERVATIONS ON CROSS-EXAMINATION**

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<sup>1</sup> Case IPR2017-01844 has been consolidated with this proceeding. *See* Paper 10 at 3.

Godo Kaisha IP Bridge 1 (“Patent Owner”) submits this motion for observations regarding the cross-examination of Petitioner’s expert (“Shanfield”).

**I. SHANFIELD’S CHANGED TESTIMONY REGARDING CLAIM 1 REQUIRING STRESS**

**Observation #1:** In Ex. 2232 at 56:17-58:2 and 160:20-23, Shanfield testified that it *was* his opinion that *claim 1 requires* that the silicon nitride film induce stress in the substrate; at 167:14-18 *Petitioner’s counsel instructed Shanfield* that limitations in a dependent claim are not present in the independent claim; at 172:8-14 Shanfield stated that “now that I understand the legal issue, Claim 1 does *not* ... have any language in it that requires the film to have stress, as I said before;”<sup>2</sup> at 175:22-24 Shanfield testified that the instruction from counsel “*changed what I knew* about the relationship between dependent and independent claims;” and at 176:4-16 Shanfield stated that he “*mistakenly ... thought* legally there was a requirement that the ... *dependent claims read back into the independent claim the limitations in the dependent claims.*” This is relevant to Shanfield’s Reply Declaration (Exhibit 1232) at ¶20 where Shanfield testified that it was his opinion that a silicon nitride film as claimed can include multiple layers only if those layers were vertically stacked and “can apply a stress to the substrate as a whole” and Petitioner’s Reply at 8-9 that relies upon that testimony. This testimony is relevant

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<sup>2</sup> Emphasis added unless noted otherwise.

because it demonstrates that Shanfield’s opinion that multiple layers can only form a film as claimed in the ’501 patent if they “apply a stress to the substrate as a whole” was offered because he was under the mistaken belief that claim 1 requires that the film impart stress.

## II. SHANFIELD’S TESTIMONY ABOUT WHAT CONSTITUTES A FILM

**Observation #2:** In Ex. 2232 at 40:11-41:3, Shanfield testified that the ’501 patent’s gate electrode is a film (i.e., one of “*two films*”). This testimony is relevant to Ex. 2210 at 311:14-312:8 where Shanfield testified exactly the opposite stating that the ’501 patent’s gate electrode is *not a film* “[a]s simple as that.” This testimony is relevant because Shanfield offered directly contradictory testimony about the meaning of “film” as used in the ’501 patent, demonstrating that his testimony on this key issue is unreliable.

## III. SHANFIELD’S TESTIMONY ABOUT MULTIPLE LAYERS OF DIFFERENT MATERIALS FORMING A FILM

**Observation #3:** In Ex. 2232 at 7:24-8:8, Shanfield testified that his “working understanding of the term ‘film’ that [he] applied in opining on the claims” was “It’s a layer *or layers* of material.” This testimony is relevant to Exhibit 1232, ¶20 where Shanfield testified that a silicon nitride film as used in the ’501 can only include multiple layers if those layers are vertically stacked and “can apply a stress to the substrate as a whole” because, according to Shanfield, “[n]owhere does the

'501 patent state that two adjacent films ... would be considered 'layers' of a single film." This testimony is relevant because it demonstrates that Shanfield's "working understanding of the term 'film'" is far broader than the narrow interpretation (i.e., limited to layers that are *vertically* stacked and that *apply stress*) that Shanfield applied in justifying his opinion that Misra's silicon nitride layers 20 and 23 are somehow not multiple layers of a single film, and reveals that Shanfield's "analysis" for limiting the broad "working understanding of film" to vertical layers (i.e., because the '501 patent does not expressly describe adjacent layers) fails because the '501 patent's disclosure of multiple layers at 5:60-64 is, like Shanfield's broad "working understanding of film," broad and generic and also does not limit the layers to being vertically stacked the way Shanfield's Exhibit 1232, ¶20 testimony does.

**Observation #4:** The same testimony cited in Observation #3 (Ex. 2232 at 7:24-8:8, Shanfield testified that his "working understanding of the term 'film' that [he] applied in opining on the claims" was "It's a layer *or layers* of material") also is relevant to Ex. 2210 at 306:14-20 where Shanfield admitted "a silicon nitride film," as used in claim 1 may include multiple "*layers*" (plural). This testimony is relevant because it reinforces Shanfield's earlier testimony that "film" is a broad term that can include multiple layers and refutes Shanfield's Exhibit 1232, ¶20

testimony that “film” is instead a narrow term limited to layers that are vertically stacked and apply stress.

**Observation #5:** The same testimony cited in Observation #3 (Ex. 2232 at 7:24-8:8, Shanfield testified that his “working understanding of the term ‘film’ that [he] applied in opining on the claims” was “It’s a layer *or layers* of material”) also is relevant to pages 46-48 of the POR where Patent Owner pointed out that Shanfield, in his prior deposition, admitted that layers 20 and 23 in Misra are both formed through a PECVD process which is a film formation process that forms “one or *multiple layers of coverage* over a surface.” This testimony is relevant because it reinforces Shanfield’s earlier testimony that “film” is a broad term that can include multiple layers and refutes Shanfield’s Exhibit 1232, ¶20 testimony that “film” is instead a narrow term limited to layers that are vertically stacked and apply stress.

**Observation #6:** In Ex. 2232 at 26:23-27:10, Shanfield testified that if a “plasma-deposited silicon nitride is put down and then another layer of silicon nitride on top of that is put down ... that’s still a film” even if the deposited layers are “separated in time.” This testimony is relevant to (1) page 42 of the Petition where Petitioner asserts that Misra’s elements 20 and 23 are not a single film because “they are formed through different process steps” and (2) pages 46-48 of the POR where Patent Owner pointed out that Shanfield, in his prior deposition, admitted that layers 20 and 23 in Misra are both formed through the *same* PECVD process,

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