

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

GLOBALFOUNDRIES U.S., INC., GLOBALFOUNDRIES DRESDEN
MODULE ONE LLC & CO. KG, and GLOBALFOUNDRIES DRESDEN
MODULE TWO LLC & CO. KG,
Petitioners,

v.

ZOND, LLC,
Patent Owner.

Case IPR2014-01086
Patent 7,147,759 B2

Before KEVIN F. TURNER, DEBRA K. STEPHENS, JONI Y. CHANG,
SUSAN L.C. MITCHELL, and JENNIFER M. MEYER,
Administrative Patent Judges.

CHANG, *Administrative Patent Judge.*

DECISION
Institution of *Inter Partes* Review
37 C.F.R. § 42.108

I. INTRODUCTION

GLOBALFOUNDRIES U.S., Inc., GLOBALFOUNDRIES Dresden Module One LLC & Co. KG, and GLOBALFOUNDRIES Dresden Module Two LLC & Co. KG (collectively, “GlobalFoundries”) filed a Petition requesting an *inter partes* review of claims 1, 4, 10–12, 17, 18, and 44 of U.S. Patent No. 7,147,759 B2 (Ex. 1001, “the ’759 patent”). Paper 2 (“Pet.”). Zond, LLC (“Zond”), filed a Preliminary Response. Paper 8 (“Prelim. Resp.”).

We have jurisdiction under 35 U.S.C. § 314. The standard for instituting an *inter partes* review is set forth in 35 U.S.C. § 314(a), which provides:

THRESHOLD.—The Director may not authorize an *inter partes* review to be instituted unless the Director determines that the information presented in the petition filed under section 311 and any response filed under section 313 shows that there is a reasonable likelihood that the petitioner would prevail with respect to at least 1 of the claims challenged in the petition.

Upon consideration of the Petition and Preliminary Response, we conclude that the information presented in the Petition demonstrates that there is a reasonable likelihood that GlobalFoundries would prevail in challenging claims 1, 4, 10–12, 17, 18, and 44 as unpatentable under 35 U.S.C. § 103(a). Pursuant to 35 U.S.C. § 314, we hereby authorize an *inter partes* review to be instituted as to claims 1, 4, 10–12, 17, 18, and 44 of the ’759 patent.

A. Related District Court Proceedings

The parties indicate that the '759 patent was asserted in *Zond, LLC v. Advanced Micro Devices, Inc.*, No.1:13-cv-11577-DPW (D. Mass.). Paper 5; Ex. 1034. They also identify other proceedings in which Zond asserted the '759 patent. *Id.*

B. Related Inter Partes Reviews

Intel Corporation (“Intel”) filed a Petition to institute an *inter partes* review in *Intel Corp. v. Zond, LLC.*, Case IPR2014-00443, challenging the same claims based on the same grounds of unpatentability as those in the instant proceeding. *Compare* IPR2014-00443, Paper 5 (“’443 Pet.”), 2–60, with Pet. 2–60. On August 27, 2014, we instituted an *inter partes* review of claims 1, 4, 10–12, 17, 18, and 44 of the '759 patent in IPR2014-00443. The trial, however, was terminated in light of the Written Settlement Agreement, made in connection with the termination of the proceeding in accordance with 35 U.S.C. § 317(b) and 37 C.F.R. § 42.74(b), between Intel and Zond. IPR2014-00443, Papers 17, 18, Ex. 1035. In view of the termination of Intel Proceeding, the Motion for Joinder filed by GlobalFoundries, seeking to join the instant proceeding with IPR2014-00443, is dismissed as moot in a separate decision.

The Gillette Company (“Gillette”) also filed a Petition for an *inter partes* review in *The Gillette Co. v. Zond, LLC*, Case IPR2014-00981, challenging the same claims based on the same grounds of unpatentability as those in IPR2014-00443 and in the instant proceeding.

C. The '759 patent

The '759 patent relates to a high-power pulsed magnetron sputtering apparatus. Ex. 1001, Abs. At the time of the invention, sputtering was a well-known technique for depositing films on semiconductor substrates. *Id.* at 1:6–13. The '759 patent indicates that prior art magnetron sputtering systems deposit films having low uniformity and poor target utilization (the target material erodes in a non-uniform manner). *Id.* at 1:55–62. To address these problems, the '759 patent discloses that increasing the power applied between the target and anode can increase the amount of ionized gas and, therefore, increase the target utilization. *Id.* at 2:60–62. However, increasing the power also “increases the probability of establishing an undesirable electrical discharge (an electrical arc) in the process chamber.” *Id.* at 2:63–67.

According to the '759 patent, forming a weakly-ionized plasma substantially eliminates the probability of establishing a breakdown condition in the chamber when high-power pulses are applied between the cathode and anode. *Id.* at 7:17–21. Once the weakly-ionized plasma is formed, high-power pulses are applied between the cathode and anode to generate a strongly-ionized plasma from the weakly-ionized plasma. *Id.* at 7:27–30, 7:65–66.

D. Illustrative Claim

Of the challenged claims, claim 1 is the only independent claim. Claims 4, 10, 11, 12, 17, 18, and 44 depend, directly or indirectly, from claim 1. Claim 1, reproduced below, is illustrative:

1. A magnetically enhanced sputtering source comprising:
 - a) an anode;
 - b) a cathode assembly that is positioned adjacent to the anode, the cathode assembly including a sputtering target;
 - c) an ionization source that generates a weakly-ionized plasma proximate to the anode and the cathode assembly;
 - d) a magnet that is positioned to generate a magnetic field proximate to the weakly-ionized plasma, the magnetic field substantially trapping electrons in the weakly-ionized plasma proximate to the sputtering target; and
 - e) a *power supply generating a voltage pulse* that produces an electric field between the cathode assembly and the anode, the power supply being configured to generate the voltage pulse with an amplitude and a rise time that *increases an excitation rate of ground state atoms* that are present in the weakly-ionized plasma to create a multi-step ionization process that generates a strongly-ionized plasma, which comprises ions that sputter target material, from the weakly-ionized plasma, *the multi-step ionization process comprising exciting the ground state atoms to generate excited atoms, and then ionizing the excited atoms within the weakly-ionized plasma without forming an arc discharge.*

Ex. 1001, 21:22–48 (emphases added).

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