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Paper 40
Entered: November 3, 2015

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, and
THE GILLETTE COMPANY,
Petitioner,

v.

ZOND, LLC,
Patent Owner.

Case IPR2014-01073[1]
Patent 6,805,779 B2

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

CHANG, *Administrative Patent Judge*.

FINAL WRITTEN DECISION
Inter Partes Review
35 U.S.C. § 318(a) and 37 C.F.R. § 42.73

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[1] Case IPR2014-01017 has been joined with the instant *inter partes* review.

I. INTRODUCTION

GLOBALFOUNDRIES U.S., Inc., GLOBALFOUNDRIES Dresden Module One LLC & Co. KG, GLOBALFOUNDRIES Dresden Module Two LLC & Co. KG (collectively, "the GlobalFoundries entities") filed a revised Petition requesting *inter partes* review of claims 1–4, 10–15, 17, 18, 24–27, and 29 of U.S. Patent No. 6,805,779 B2 ("the '779 patent"). Paper 4 ("Pet."). Zond, LLC ("Zond") filed a Preliminary Response. Paper 9 ("Prelim. Resp."). Upon consideration of the Petition and Preliminary Response, we instituted the instant trial on November 17, 2014, pursuant to 35 U.S.C. § 314(a). Paper 11 ("Dec."). Subsequent to institution, we granted the revised Motion for Joinder filed by The Gillette Company ("Gillette"), joining Case IPR2014-01017 with the instant trial.[2] Paper 14. Zond filed a Response (Paper 25, "PO Resp."), and GlobalFoundries filed a Reply (Paper 29, "Reply"). An oral hearing[3] was held on June 15, 2015, and a transcript of the hearing was entered into the record. Paper 39 ("Tr.").

We have jurisdiction under 35 U.S.C. § 6(c). This final Written Decision is entered pursuant to 35 U.S.C. § 318(a). For the reasons set forth below, we determine that GlobalFoundries has shown by a preponderance of the evidence that claims 1–4, 10–15, 17, 18, 24–27, and 29 of the '779 patent are unpatentable under 35 U.S.C. § 103(a).

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[2] In this Decision, we refer to the GlobalFoundries entities (the original Petitioner) and Gillette as "GlobalFoundries," for efficiency.

[3] The oral arguments for this review and the following *inter partes* reviews were consolidated: IPR2014-00828, IPR2014-00829, IPR2014-00917, and IPR2014-01076.

A. Related Matters

The parties indicate that the '779 patent was asserted in several related district court proceedings, including *Zond, LLC v. Advanced Micro Devices, Inc.*, No.1:13-cv-11577-DPW (D. Mass.), and identify other petitions for *inter partes* review that are related to this proceeding. Paper 6; Ex. 1013.

B. The '779 Patent

The '779 patent relates to a method and a system for generating a plasma with a multi-step ionization process. Ex. 1001, Abs. For instance, Figure 2 of the '779 patent, reproduced below, illustrates a cross-sectional view of a plasma generating apparatus:

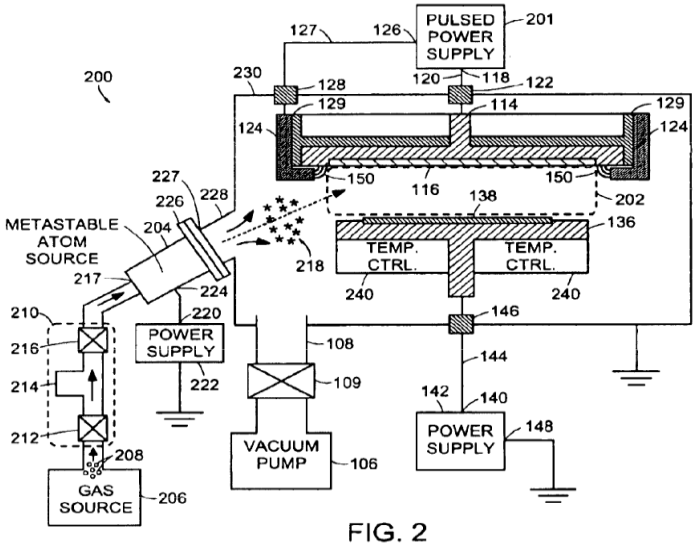

FIG. 2

In the embodiment shown in Figure 2, feed gas source 206 supplies ground state atoms 208 to metastable atom source 204 that generates metastable atoms 218 from ground state atoms 208. *Id*. at 4:26–42. Plasma 202 is generated from metastable atoms 218 in process chamber 230. *Id*. at 5:25–34.

Electrons and ions are formed in metastable atom source 204 along with excited or metastable atoms 218. *Id*. at 8:20–23. In another embodiment, the ions and electrons are separated from excited or metastable atoms 218 and trapped in an electron/ion absorber before excited or metastable atoms 218 are injected into plasma chamber 230. *Id*. at 8:23–26, 18:62–67, Fig. 10. Figure 12B of the '779 patent illustrates the electron/ion absorber and is reproduced below:

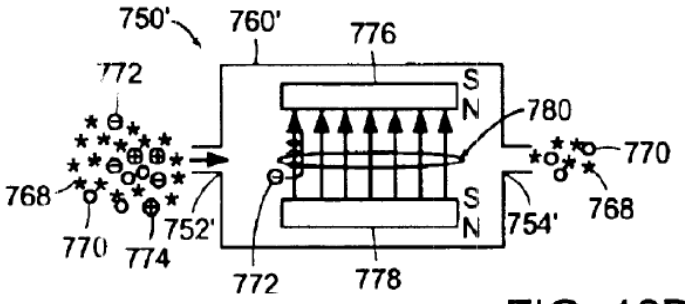

FIG. 12B

As shown in Figure 12B, electron/ion absorber 750′ includes magnets 776 and 778 that generate magnetic field 780, trapping electrons 772 and ions 774 in chamber 760′. *Id*. at 20:9–13. Excited or metastable atoms 768 and ground state atoms 770 then flow through output 754′. *Id*. at 20:19–21.

C. Illustrative Claim

Claims 1 and 18 are the only independent claims that are involved in this proceeding. Claims 2–4, 10–15, and 17 depend, directly or indirectly, from claim 1. Claims 24–27 and 29 each depend directly from claim 18.

Claim 1 is illustrative:

> 1. A plasma generator that generates a plasma with a multi-step ionization process, the plasma generator comprising:

> a feed gas source comprising ground state atoms;
>
> an excited atom source that receives ground state atoms from the feed gas source, the excited atom source comprising a magnet that generates *a magnetic field for substantially trapping electrons proximate to the ground state atoms*, the excited atom source generating excited atoms from the ground state atoms;
>
> a plasma chamber that is coupled to the excited atom source, the plasma chamber confining a volume of excited atoms generated by the excited atom source; and
>
> an energy source that is coupled to the volume of excited atoms confined by the plasma chamber, the energy source raising an energy of excited atoms in the volume of excited atoms so that at least a portion of *the excited atoms in the volume of excited atoms is ionized*, thereby *generating a plasma with a multi-step ionization process*.

Ex. 1001, 21:10–30 (emphases added).

D. Prior Art Relied Upon

GlobalFoundries relies upon the following prior art references:

Pinsley	US 3,761,836	Sept. 25, 1973	(Ex. 1005)
Angelbeck	US 3,514,714	May 26, 1970	(Ex. 1006)
Iwamura	US 5,753,886	May 19, 1998	(Ex. 1007)

D.V. Mozgrin, et al., *High-Current Low-Pressure Quasi-Stationary Discharge in a Magnetic Field: Experimental Research*, 21 PLASMA PHYSICS REPORTS, NO. 5, 400–09 (1995) (Ex. 1003, "Mozgrin").

A. A. Kudryavtsev and V.N. Skrebov, *Ionization Relaxation in a Plasma Produced by a Pulsed Inert-Gas Discharge*, 28(1) SOV. PHYS. TECH. PHYS. 30–35 (1983) (Ex. 1004, "Kudryavtsev").

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