

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

TAIWAN SEMICONDUCTOR MANUFACTURING COMPANY, LTD.
and TSMC NORTH AMERICA CORPORATION,
Petitioners,

v.

ZOND, LLC,
Patent Owner.

Case IPR2014-00829
Patent 6,805,779 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

Taiwan Semiconductor Manufacturing Company, Ltd. and TSMC North America Corporation (collectively, “TSMC”) filed a Petition requesting *inter partes* review of claims 16, 28, 41, 42, 45, and 46 of U.S. Patent No. 6,805,779 B2 (“the ’779 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 TSMC’s Petition and Zond’s Preliminary Response, we conclude that the information presented in the Petition demonstrates that there is a reasonable likelihood that TSMC would prevail in challenging claim 46 as unpatentable under 35 U.S.C. 102(b), and claims 16, 28, 41, 42, and 45 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 16, 28, 41, 42, 45, and 46 of the ’779 patent.

A. Related Matters

TSMC indicates that the ’779 patent was asserted in several related district court proceedings, including *Zond, LLC v. Fujitsu Corp.*, No. 1:13-

cv-11634-WGY (D. Mass.). Pet. 1. TSMC also identifies other Petitions for *inter partes* review that are related to the instant proceeding. *Id.*

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. 1301, Abs. For instance, Figure 2 of the '779 patent, reproduced below, illustrates a cross-sectional view of a plasma generating apparatus:

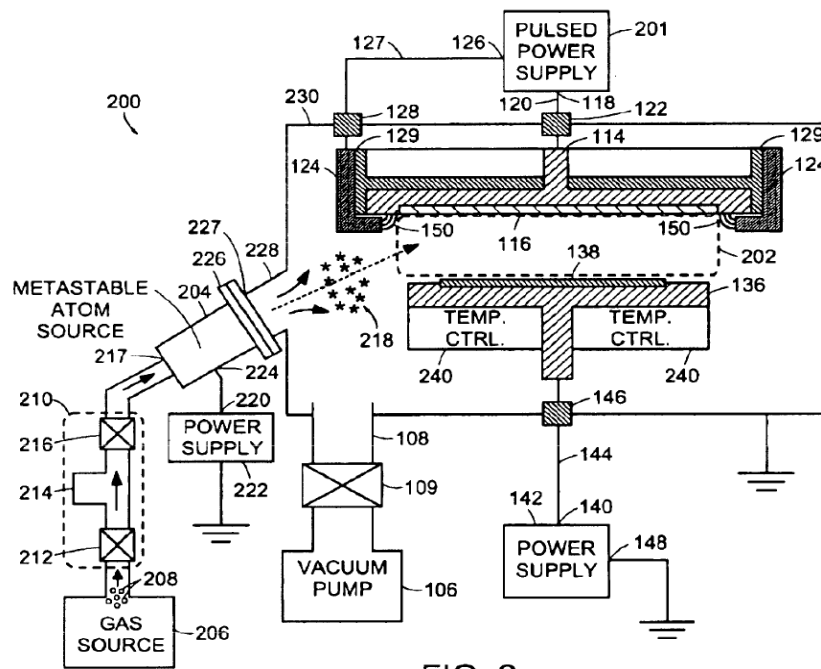
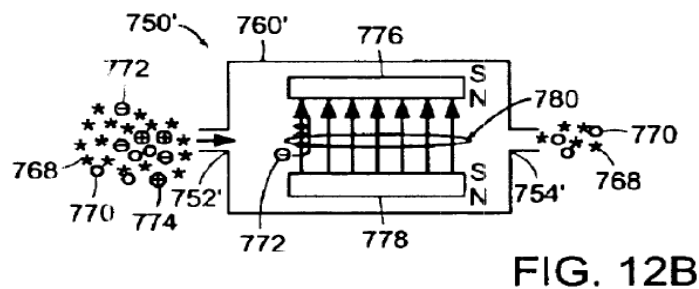


FIG. 2

In the embodiment shown in Figure 2, feed gas source 206 supplies ground state atoms 208 (e.g., ground state argon atoms) to metastable atom source 204 that generates excited or metastable atoms 218 from ground state atoms 208. *Id.* at 4:26–42. Plasma 202 is generated from the excited or 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:



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

Although claim 16 depends from independent claim 1, and claim 28 depends from claim 18, TSMC is not challenging independent claims 1 and 18 in the instant proceeding.¹ Of the challenged claims, 41, 45, and 46 are the only independent claims. Claim 42 depends from claim 41.

¹ Independent claims 1 and 18 are being challenged in *GLOBALFOUNDRIES U.S., Inc. v. Zond, LLC*, Case IPR2014-01073 (Paper 2).

Claim 46 is illustrative:

46. A method for generating a plasma with a multi-step ionization process, the method comprising:

generating a volume of metastable atoms from a volume of ground state atoms;

trapping electrons and ions in the volume of metastable atoms; and

raising an energy of the metastable atoms so that at least a portion of the volume of *metastable atoms is ionized*, thereby generating a plasma with *a multi-step ionization process*.

Id. at 26:5–14 (emphases added).

D. Prior Art Relied Upon

TSMC relies upon the following prior art references:

Pinsley	US 3,761,836	Sept. 25, 1973	(Ex. 1305)
Angelbeck	US 3,514,714	May 26, 1970	(Ex. 1306)
Iwamura	US 5,753,886	May 19, 1998	(Ex. 1307)

D.V. Mozgrin, et al., *High-Current Low-Pressure Quasi-Stationary Discharge in a Magnetic Field: Experimental Research*, 21 PLASMA PHYSICS REPORTS, NO. 5, 400–409 (1995) (Ex. 1303, “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. 1304, “Kudryavtsev”).

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