

UNITED STATES PATENT AND TRADEMARK OFFICE

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**BEFORE THE PATENT TRIAL AND APPEAL BOARD**

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

v.

Zond, LLC.  
Patent Owner of U.S. Patent No. 6,805,779  
Trial No. IPR2014-01073<sup>1</sup>

**PETITIONER'S DEMONSTRATIVE EXHIBITS FOR ORAL ARGUMENT**

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<sup>1</sup> Case IPR2014-01017 has been joined with the instant proceeding.

**UNITED STATES PATENT AND TRADEMARK OFFICE**  
**BEFORE THE PATENT TRIAL AND APPEAL BOARD**

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**The '779 Patent:**

GlobalFoundries U.S. Inc., GlobalFoundries Dresden Module One LLC & Co. K  
GlobalFoundries Dresden Module Two LLC & Co. KG, The Gillette Company, Fu  
Semiconductor Limited, Fujitsu Semiconductor America, Inc., Advanced Micro Device  
Renesas Electronics Corporation, Renesas Electronics America, Inc., Toshiba America E  
Components, Inc., Toshiba America Inc., Toshiba America Information Systems, Inc.  
Toshiba Corporation

v. Zond, LLC

*IPR2014-00828, IPR2014-00829, and IPR2014-00917*

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GlobalFoundries U.S. Inc., GlobalFoundries Dresden Module One LLC & Co.  
GlobalFoundries Dresden Module Two LLC & Co. KG, and The Gillette Comp  
v. Zond, LLC

*IPR2014-01073 and IPR2014-01076*

## Overview

- Overview of '779 Patent
- Grounds Instituted
- Overview of Prior Art
- Summary of Disputes and Responses Related to Independent
- Summary of Disputes and Responses Related to Dependent

# The '779 Patent



(12) **United States Patent**  
Chistyakov

(10) **Patent No.:** US 6,805,779 B2  
(45) **Date of Patent:** Oct. 19, 2004

(75) **PLASMA GENERATION USING MULTI-STEP IONIZATION**  
Inventor: Roman Chistyakov, Andover, MA (US)

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(73) Assignee: Zond, Inc., Mansfield, MA (US)  
(\*) Notice: Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 0 days.

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(21) Appl. No.: 10/249,202  
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(65) **Prior Publication Data**  
US 2004/0182702 A1 Sep. 23, 2004

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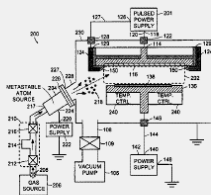
(51) Int. Cl. C23C 14/00; C23C 16/00; H01F 7/24  
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(58) Field of Search 315/111.81; 111.91; 298.38; 298.36; 118/723 VE; 723 R; 723 EB; 723 E; 250/28; 283; 377; 423; 435; 489

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**Primary Examiner**—Tuyet T. Vo  
(74) **Attorney, Agent, or Firm**—Kurt Rauschenbach; Rauschenbach Patent Law Group, LLC

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(57) **ABSTRACT**  
The present invention relates to a plasma generator that generates a plasma with a multi-step ionization process. The plasma generator includes an excited atom source that generates excited atoms from ground state atoms supplied by a feed gas source. A plasma chamber confines a volume of excited atoms generated by the excited atom source. An energy source is coupled to the volume of excited atoms confined by the plasma chamber. The energy source raises 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.

46 Claims, 13 Drawing Sheets



(10) **Patent No.:** US 6,805,779 B2  
(45) **Date of Patent:** Oct. 19, 2004

(54) **PLASMA GENERATION USING MULTI-STEP IONIZATION**



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