

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. 6,806,652  
Trial No. IPR2014-01088<sup>1</sup>

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

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<sup>1</sup> Case IPR2014-01000 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 '652 Patent:**

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

v.

Zond LLC

*IPR2014-00861*

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GlobalFoundries U.S. Inc., GlobalFoundries Dresden Module One LLC & Co. K  
GlobalFoundries Dresden Module Two LLC & Co. KG, and The Gillette Company

v.

Zond LLC

*IPR2014-01088 and IPR2014-01089*

## Overview

- Overview of the '652 Patent
- Grounds Instituted
- Overview of Prior Art
- Summary of Disputes with Respect to Independent Claims
- Summary of Disputes with Respect to Dependent Claims

# The '652 Patent



**(12) United States Patent**  
Chistyakov

**(10) Patent No.: US 6,806,652 B1**  
**(45) Date of Patent: \*Oct. 19, 2004**

**(54) HIGH-DENSITY PLASMA SOURCE USING EXCITED ATOMS**

**(75) Inventor:** Roman Chistyakov, Andover, MA (US)

**(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.

This patent is subject to a terminal disclaimer.

**(21) Appl. No.:** 10/249,844

**(22) Filed:** May 12, 2003

**Related U.S. Application Data**

**(65) Continuation-in-part of application No. 10/249,595, filed on Apr. 22, 2003.**

**(51) Int. Cl.:** H01J 7/24

**(52) U.S. Cl.:** 315/111.21; 315/111.41; 156/345.44; 118/723 DC

**(58) Field of Search:** 315/111.21, 111.41, 415/111.61, 111.71, 111.81, 111.91, 704-708.07, 298.08, 298.121, 298.161, 298.2, 298.21, 298.22, 156/345.33, 345.35, 345.38, 345.39, 345.4, 345.41, 345.42, 345.43, 345.44, 345.46; 118/723 MI, 723 DC, 723 I, 723 IR

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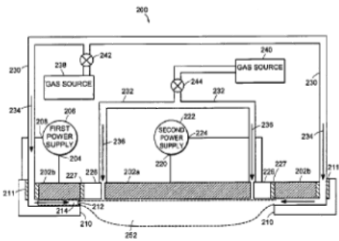
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**Assistant Examiner**—Ephrem Alema  
**(74) Attorney, Agent, or Firm**—Kart Rauschenbach; Rauschenbach Patent Law Group, LLC

**(57) ABSTRACT**

The plasma source includes a cathode assembly. An anode is positioned adjacent to the cathode assembly. An excited atom source generates an initial plasma and excited atoms from a volume of feed gas. The initial plasma and excited atoms are located proximate to the cathode assembly. A power supply generates an electric field between the cathode assembly and the anode. The electric field super-ionizes the initial plasma so as to generate a high-density plasma.

**35 Claims, 19 Drawing Sheets**



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**(10) Patent No.: US 6,806,652 B1**  
**(45) Date of Patent: \*Oct. 19, 2004**

**(54) HIGH-DENSITY PLASMA SOURCE USING EXCITED ATOMS**

US Patent 6,806,652 (Ex 1101)

# Independent Claims

## Claim 1

### Claim 1

#### *“Excited Atom Source”*

1. A high-density plasma source comprising:
  - a) a cathode assembly;
  - b) an anode that is positioned adjacent to the cathode assembly;
  - c) an excited atom source that generates an initial plasma and excited atoms from a volume of feed gas, the initial plasma and excited atoms being proximate to the cathode assembly; and
  - d) a power supply that generates an electric field between the cathode assembly and the anode, the electric field super-ionizing the initial plasma so as to generate a high-density plasma.

*'652 Patent, Claim 1 (Ex. 1101)*

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