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v.

Zond LLC

IPR2014-00861

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

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(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; 304-708.07; 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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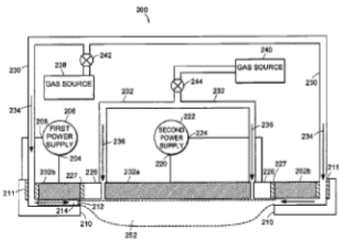
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(57) **ABSTRACT**

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,**
(45) **Date of Patent: *Oct.**

(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)

Independent Claims

Claims 18 and 35

Claim 18

“Transporting the Initial Plasma and Excited Atoms”

18. A method of generating a high-density plasma, the method comprising:

- a) generating an initial plasma and excited atoms from a volume of feed gas;
- b) transporting the initial plasma and excited atoms proximate to a cathode assembly; and
- c) super-ionizing the initial plasma proximate to the cathode assembly, thereby generating a high-density plasma.

'652 Patent, Claim 18 (Ex. 1101)

Claim 35

“Transporting the Initial Plasma and Excited Atoms”

35. A high-density plasma source comprising:

- a) means for generating an initial plasma and excited atoms from a volume of feed gas;
- b) means for transporting the initial plasma and excited atoms proximate to a cathode assembly;
- c) means for super-ionizing the initial plasma proximate to the cathode assembly, thereby generating a high-density plasma.

'652 Patent, Claim 35 (Ex. 1101)

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