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UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

The Gillette Company, Fujitsu Semiconductor Limited, and Fujitsu Semiconductor
America, Inc.

Petitioners,

v.

Zond, Inc.

Patent Owner of U.S. Patent No. 6,896,773
Trial No. IPR2014-00726¹

PETITIONERS' DEMONSTRATIVE EXHIBITS FOR ORAL ARGUMENT

¹ Case IPR2014-01481 has been joined with the instant proceeding.

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

The '773 Patent:

The Gillette Company, Fujitsu Semiconductor Limited, and Fujitsu
Semiconductor America, Inc.

v.

Zond, LLC.

IPR2014-580 (*joined with IPR2014-1479*) and

IPR2014-726 (joined with IPR2014-1481)

Overview

- Overview of the '773 Patent
- Grounds Instituted by the Board
- Overview of Prior Art
- Issues Raised by Patent Owner
- Conclusion

The '773 Patent

(12) **United States Patent**
Chistyakov

(10) Patent No.: **US 6,896,773 B2**
(45) Date of Patent: ***May 24, 2005**

(54) **HIGH DEPOSITION RATE SPUTTERING**

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

(73) Assignee: **Zion, 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.: **10/065,739**

(22) Filed: **Nov. 14, 2002**

(65) **Prior Publication Data**

US 2004/009441 A1 May 20, 2004

(51) Int. Cl.⁷ **C23C 14/35**

(52) U.S. Cl. **204/192.12, 204/192.13, 204/298.03, 204/298.06, 204/298.07, 204/298.08, 204/298.14, 204/298.19**

(58) **Field of Search** **204/192.12, 192.13, 204/298.03, 298.06, 298.07, 298.08, 298.14, 298.19**

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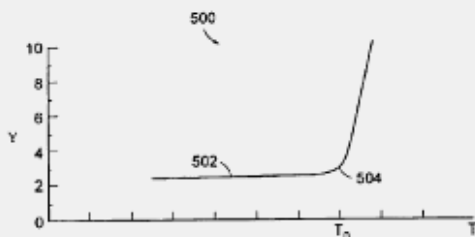
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(57) **ABSTRACT**

Methods and apparatus for high-deposition sputtering are described. A sputtering source includes an anode and a cathode assembly that is positioned adjacent to the anode. The cathode assembly includes a sputtering target. An ionization source generates a weakly-ionized plasma proximate to the anode and the cathode assembly. A power supply produces an electric field between the anode and the cathode assembly that creates a strongly-ionized plasma from the weakly-ionized plasma. The strongly-ionized plasma includes a first plurality of ions that impact the sputtering target to generate sufficient thermal energy in the sputtering target to cause a sputtering yield of the sputtering target to be non-linearly related to a temperature of the sputtering target.

40 Claims, 13 Drawing Sheets



GILLETTE 1001

(10) Patent No.: **US 6,896,773 B2**
(45) Date of Patent: ***May 24, 2005**

(54) **HIGH DEPOSITION RATE SPUTTERING**

The '773 Patent Relates to a “sputtering source”

Feed gas (256) provided between
cathode assembly (216) and
anode (238)

Pulsed power supply (234)
generates weakly-ionized
plasma (262)

Pulsed power supply (234)
applies **voltage pulse** between
cathode assembly (216) and
anode (238) generates
strongly-ionized plasma (268)

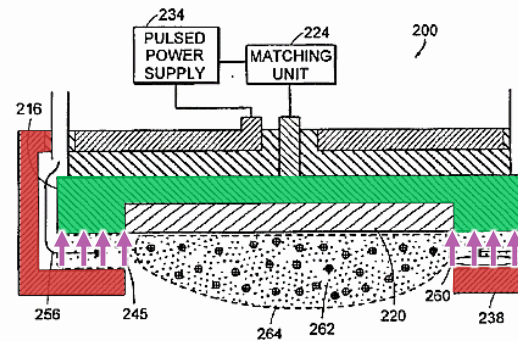


FIG. 5B

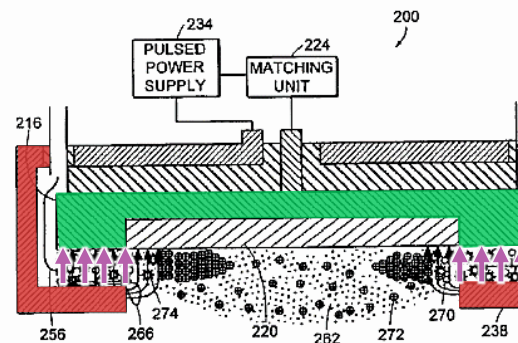


FIG. 5C

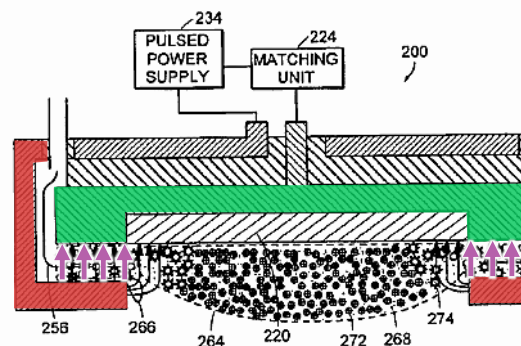


FIG. 5D

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