IPR2014-00726 U.S. Patent No. 6,896,773

## UNITED STATES PATENT AND TRADEMARK OFFICE

### BEFORE THE PATENT TRIAL AND APPEAL BOARD

THE GILLETTE COMPANY, TAIWAN SEMICONDUCTOR MANUFACTURING COMPANY, LTD., TSMC NORTH AMERICA CORP., FUJITSU SEMICONDUCTOR LIMITED, and FUJITSU SEMICONDUCTOR AMERICA, INC.,

Petitioner

v.

ZOND, LLC Patent Owner

Case IPR2014-00726<sup>1</sup> Patent 6,896,773

# ZOND LLC'S PATENT OWNER RESPONSE

<sup>1</sup> Case IPR2014-01481 has been joined with the instant proceeding.

DOCKE

RM

Find authenticated court documents without watermarks at docketalarm.com.

### IPR2014-00726 U.S. Patent No. 6,896,773

### **TABLE OF CONTENTS**

I. INTRODUCTION				
II. TECHNOLOGY BACKGROUND				
A.	Overview Of Magnetron Sputtering Systems			
B.	The '773 patent: Dr. Chistyakov invents a new sputtering source containing a cathode containing a sputtering target, an ionization source to generate weakly ionized plasma, a power supply generating a voltage pulse having an amplitude and a rise time chosen to increase a density of ions in the strongly ionized plasma enough to generate sufficient thermal energy in the sputtering target to cause a sputtering yield to be non-linearly related to a temperature of the sputtering target			
III. SUMMARY OF THE INSTITUTED GROUNDS FOR REVIEW				
IV. CLA	IM CONSTRUCTION			
А.	The construction of "weakly ionized plasma" and "strongly ionized plasma"14			
В.	The construction of "means for ionizing a feed gas to generate a weakly- ionized plasma"			
C.	The construction of "means for increasing the density of the weakly-ionized plasma"			
V. THE PETITIONER CANNOT PREVAIL ON ANY CHALLENGED CLAIM OF THE '773 PATENT15				
Α.	The Petition failed to demonstrate that a skilled artisan would have been motivated to combine the teachings of the prior art references to achieve the claimed invention of the '773 patent with a reasonable expectation of success or that combining the teachings of the prior art would have led to predictable results			
1.	Scope and content of prior art			
	a. Lantsman20			
	b. Fortov21			
	c. Mozgrin22			
	d. Kudryavtsev			

### IPR2014-00726 U.S. Patent No. 6,896,773

2.	The Petitioner Failed To Show That It Would Have Been Obvious To Combine Mozgrin With Fortov, Lantsman, And/Or Kudryavtsev To Achieve the Claimed Invention With A Reasonable Expectation Of Success
B.	The Petition fails to demonstrate how the alleged combinations teach every element of the challenged claims
1.	The cited references do not teach "ionizing a feed gas to generate a weakly-ionized plasma proximate to a cathode assembly that comprises a sputtering target," as recited in independent claim 21, and as similarly recited in independent claim 40
2.	The cited references do not teach "applying a voltage pulse to the cathode assembly to generate a strongly-ionized plasma from the weakly ionized plasma, an amplitude and a rise time of the voltage pulse being chosen so that ions in the strongly ionized plasma generate sufficient thermal energy in the sputtering target to cause a sputtering yield to be non-linearly related to a temperature of the sputtering target, thereby increasing a deposition rate of the sputtering," as recited in independent claim 21 and as similarly recited in independent claim 40
3.	The cited references do not teach the step of "ionizing the feed gas comprises exposing the feed gas to one of a static electric field, an AC electric field, a quasi-static electric field, a pulsed electric field, UV radiation, X-ray radiation, an electron beam, and an ion beam," as recited in independent claim 28
4.	The cited references do not teach the step of "diffusing the weakly-ionized plasma with a volume of the feed gas while ionizing the volume of the feed gas to create additional weakly-ionized plasma," as recited in claim 24
5.	The cited references do not teach the step of "diffusing the strongly- ionized plasma with a volume of the feed gas while applying the voltage pulse to the cathode assembly to generate additional strongly-ionized plasma from the volume of the feed gas" as recited in claim 2546
6.	The cited references do not teach the step of "the voltage pulse applied to the cathode assembly generates excited atoms in the weakly-ionized plasma and generates secondary electrons from the sputtering target, the secondary electrons ionizing the excited atoms, thereby creating the strongly-ionized plasma," as recited in claim 23
7.	The cited references do not teach that "the ions in the strongly-ionized plasma causes at least a portion of a surface layer of the sputtering target to evaporate," as recited in claim 29

	IPR2014-00726
	U.S. Patent No. 6,896,773
VI. CONCLUSION	

### Exhibit List

Exhibit No	Description
Ex. 2004	U.S. Patent 6,398,929 to Chiang
Ex. 2005	Declaration of Dr. Hartsough, Patent Owner's expert.
Ex. 2006	Sinha, Naresh, K., Control Systems, Holt, Rinehart and Winston, 1986.
Ex. 2007	Eronini Umez-Eronini, System Dynamics and Control, Brooks Cole Publishing Co., CA, 1999, pp. 10-13.
Ex. 2008	Excerpts from Weyrick, Fundamentals of Automatic Control, McGraw-Hill Book Company, 1975.
Ex. 2009	Excerpts from Kua, Automatic Control, Prentice Hall Inc., 1987.
Ex. 2010	Transcript of deposition of Mr. DeVito, Petitioner's expert, for the '773 Patent

# DOCKET



# Explore Litigation Insights

Docket Alarm provides insights to develop a more informed litigation strategy and the peace of mind of knowing you're on top of things.

# **Real-Time Litigation Alerts**



Keep your litigation team up-to-date with **real-time** alerts and advanced team management tools built for the enterprise, all while greatly reducing PACER spend.

Our comprehensive service means we can handle Federal, State, and Administrative courts across the country.

# **Advanced Docket Research**



With over 230 million records, Docket Alarm's cloud-native docket research platform finds what other services can't. Coverage includes Federal, State, plus PTAB, TTAB, ITC and NLRB decisions, all in one place.

Identify arguments that have been successful in the past with full text, pinpoint searching. Link to case law cited within any court document via Fastcase.

# **Analytics At Your Fingertips**



Learn what happened the last time a particular judge, opposing counsel or company faced cases similar to yours.

Advanced out-of-the-box PTAB and TTAB analytics are always at your fingertips.

# API

Docket Alarm offers a powerful API (application programming interface) to developers that want to integrate case filings into their apps.

#### LAW FIRMS

Build custom dashboards for your attorneys and clients with live data direct from the court.

Automate many repetitive legal tasks like conflict checks, document management, and marketing.

### **FINANCIAL INSTITUTIONS**

Litigation and bankruptcy checks for companies and debtors.

### **E-DISCOVERY AND LEGAL VENDORS**

Sync your system to PACER to automate legal marketing.

