UNITED STATES PATENT AND TRADEMARK OFFICE

#### BEFORE THE PATENT TRIAL AND APPEAL BOARD

FUJITSU SEMICONDUCTOR LIMITED, FUJITSU SEMICONDUCTOR AMERICA, INC., ADVANCED MICRO DEVICES, INC., RENESAS ELECTRONICS CORPORATION, RENESAS ELECTRONICS AMERICA, INC., GLOBALFOUNDRIES U.S., INC., GLOBALFOUNDRIES DRESDEN MODULE ONE LLC & CO. KG, GLOBALFOUNDRIES DRESDEN MODULE TWO LLC & CO. KG, TOSHIBA AMERICA ELECTRONIC COMPONENTS, INC., TOSHIBA AMERICA INC., TOSHIBA AMERICA INFORMATION SYSTEMS, INC., TOSHIBA CORPORATION, and THE GILLETTE COMPANY, Petitioner,

v.

ZOND, LLC, Patent Owner

Patent 6,853,142 B2

IPR Case Nos. IPR2014-00818, 00819, 00821, 00827, 01098

#### DECLARATION OF LAWRENCE J. OVERZET PH.D. ON BEHALF OF PETITIONER

DOCKET

## **TABLE OF CONTENTS**

I.	RELEVANT LAW6		
	A.	Claim Construction	
	B.	Obviousness6	
II.	SUMMARY OF OPINIONS: CLAIMS 1-43		
III.	CLAIM CONSTRUCTION		
	A.	"weakly-ionized plasma" and "strongly-ionized plasma"10	
	B.	"means for ionizing a feed gas" (claims 40 and 41)	
	C.	"means for supplying power" (claim 40) and "means for applying an electric field" (claim 41)	
	D.	"means for diffusing"	
IV.		PONSE TO PATENT OWNER'S ARGUMENTS REGARDING THE TOUSNESS OF CLAIMS 1-4320	
	A.	General Discussion	
	1.	Power, Voltage, and Current	
	2.	. The Two Embodiments of Wang24	
		. Kudryavtsev's Strongly Ionized Plasma is Generated Without orming an Arc	
	4.	. Combining the Teachings of Wang and Kudryavtsev	
	5.	. Combining the Teachings of Wang and Lantsman	
	B.	Independent Claims 1, 10, 21, 31, 40, and 41	
	1.	. Weakly-Ionized and Strongly-Ionized Plasma in Wang	
	2.	. Wang and Lantsman Teach Feed Gas Diffusion	
		. Wang Teaches A Magnitude And A Rise-Time To Increase The Density Of The Weakly-Ionized Plasma	
	C.	Dependent Claims 3 and 12: Additional Feed Gas	
	D.	Dependent Claims 14 and 36: Selecting a pulse amplitude and/or width to increase an ionization rate of the strongly-ionized plasma42	
	E.	Dependent Claim 26: Selecting a rise time to increase an ionization rate of the weakly-ionized plasma	
	F.	Dependent Claims 15, 27, and 37-38: The strongly-ionized plasma is substantially uniform	

	At a single instance of time, Wang produces a substantially uniform asma in a limited area adjacent to the cathode	
	Over time, Wang produces a substantially uniform plasma over the tire surface of the cathode	.54
G.	Dependent Claims 13, 24, and 32: A quasi-static electric field	.55
H.	Dependent Claim 25: A pulsed electric field	.57
I.	Dependent Claims 4-5, 22-23, and 33-34: A constant power or constant voltage	.58
J.	Dependent Claims 21 and 28: A "gap" in the reactor	.63
K.	Dependent Claims 6 and 29: An "electrode" in the reactor	.66

I, Lawrence J. Overzet, declare as follows:

1. My name is Lawrence J. Overzet.

2. I received my bachelors, masters, and Ph.D. in electrical engineering, all from the University of Illinois, College of Engineering, Urbana, IL. My doctoral thesis was titled "Enhancement of the Negative Ion Flux to Surfaces from Radio Frequency Processing Discharges."

3. Since graduating in 1988, I have worked as a professor in the Department of Electrical Engineering at the University of Texas at Dallas. I have taught many courses including Introduction to Electromagnetic Fields I and II; Plasma Processing Technology; Plasma Science for Materials Processing; and Current Topics in Plasma Processing.

4. I have written over 75 articles, presented over 240 presentations at international symposia, and have 8 patents in various areas of electrical engineering, most of which being related to plasma science.

5. I am a senior member of the Institute of Electrical and Electronic Engineers (IEEE), and am a fellow of the American Vacuum Society (AVS) for my contributions toward understanding pulsed plasmas and the role of negative ions in plasma processing.

6. A copy of my resume is provided as Appendix A to this declaration.

7. I have reviewed the following publications in preparing this declaration:

- U.S. Patent No. 6,853,142 (the "142 Patent") (Ex. 1001)).
- D.V. Mozgrin, *et al*, <u>High-Current Low-Pressure Quasi-Stationary</u> <u>Discharge in a Magnetic Field: Experimental Research</u>, Plasma Physics Reports, Vol. 21, No. 5, pp. 400-409, 1995 ("Mozgrin" (Ex. 1003)).
- A. A. Kudryavtsev *et al*, <u>Ionization relaxation in a plasma produced by a</u> <u>pulsed inert-gas discharge</u>, Sov. Phys. Tech. Phys. 28(1), pp. 30-35, January 1983 ("Kudryavtsev" (Ex. 1106)).
- U.S. Pat. No. 6,413,382 ("Wang" (Ex. 1005)), including U.S. Pat. No.
  6,306,265 ("Fu" (Ex. 1117)) and U.S. Pat. No. 6,398,929 ("Chiang" (Ex. 2004)) which are both incorporated by reference by Wang.
- U.S. Pat. No. 6,190,512 ("Lantsman" (Ex. 1004)).
- D.V. Mozgrin, <u>High-Current Low-Pressure Quasi-Stationary Discharge in a</u> <u>Magnetic Field: Experimental Research</u>, Thesis at Moscow Engineering Physics Institute, 1994 ("Mozgrin Thesis" (Ex. 1118)).

8. I have read and understood each of the above publications and any other publication cited in this declaration. The disclosure of each of these publications provides sufficient information for someone to make and use the

# DOCKET A L A R M



# 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.