# 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 6,805,779 B2

IPR Case Nos. IPR2014-00828, 00829, 00917, 01073, 01076

SUPPLEMENTAL DECLARATION OF UWE KORTSHAGEN PH.D. ON BEHALF OF PETITIONER

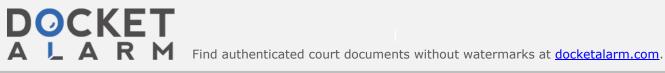


## **TABLE OF CONTENTS**

I.	BAC	KGROUND	3
II.	REL	EVANT LAW	5
III.	SUM	IMARY OF OPINIONS: CLAIMS 1-46	5
IV.	CLAIM CONSTRUCTION		
	A.	"excited atoms"	7
	B.	"metastable atoms"	7
	C.	"multi-step ionization process"	7
	D.	Means-Plus-Function Claim Elements	8
V.	OBV	PONSE TO PATENT OWNER'S ARGUMENTS REGARDING TH TIOUSNESS OF CLAIMS 1, 4-11, 13-16, 18-25, 27, 28, 30, 32-35, 3 4, AND 45, AND ANTICIPATION OF CLAIMS 43 AND 46	7-
	A.	General Discussion	9
	1.	Iwamura Generates Excited and Metastable Atoms	9
	2.	Pinsley's and Angelbeck's Magnetic Fields' Substantially Traps Electrons	18
	3.	Applying the Magnetic Field Teachings of Pinsley and Angelbeck t Iwamura	
	B.	Independent Claims 1, 18, 30, 40, and 41	39
	1.	Iwamura Generates Excited and Metastable Atoms	39
	2.	Iwamura's Preexcitation Unit and Plasma Generation Unit are coup to the plasma chamber	
	3.	Iwamura with Pinsley and Angelbeck Teach Generating a Magnetic Field to Substantially Trap Electrons Proximate to Ground State Atoms	
	4.	Iwamura Generates a Plasma With a Multi-Step Ionization Process	.48
	C.	Independent Claim 43 and Dependent Claims 8 and 23: Pressure Differential Increasing Excitation Rate and Density of Excited Ator	ms 52
	D.	Independent Claim 44 and Dependent Claims 9 and 21: Inductively	y
	E.	Independent Claims 45-46 and Dependent Claims 16, 28, 38, and 4. Electron/Ion Absorber Trapping Electrons and Ions	



F.	Dependent Claims 4 and 32: Generating Metastable Atoms62
G.	Dependent Claims 5 and 19: First and Second Electrodes Generating a Discharge
Н.	Dependent Claims 6, 22, and 33: Magnetic Field Increasing Excitation Rate and Density of Excited Atoms
I.	Dependent Claims 7, 20, 34, and 39: Electron Beam Exciting Ground State Atoms
J.	Dependent Claims 10, 11, 24, and 25: Atom Source Positioned Inside/Outside the Plasma Chamber
K.	Dependent Claims 13-15, 27, 35, and 37: Ionizing Excited and Metastable Atoms



I, Uwe Kortshagen, declare as follows:

#### I. BACKGROUND

- 1. My name is Uwe Kortshagen.
- 2. My background is detailed in my declarations submitted with the original Petition for *Inter Partes* Review Case Nos. IPR2014-00828, 00829, 00917, 01073, and 01076.
- 3. I have reviewed the following publications in preparing this declaration:
  - U.S. Patent No. 6,805,779 (the "'779Patent") (Exs. 1001, 1101, 1201, 1301, 1401)).
  - A. A. Kudryavtsev *et al*, <u>Ionization relaxation in a plasma produced by a pulsed inert-gas discharge</u>, Sov. Phys. Tech. Phys. 28(1), pp. 30-35, January 1983 ("Kudryavtsev" (Exs. 1004, 1104, 1204, 1304, 1404)).
  - U.S. Patent No. 3,761,836 ("Pinsley" (Exs. 1005, 1105, 1205, 1305, 1405)).
  - U.S. Patent No. 3,514,714 ("Angelbeck" (Exs. 1006, 1106, 1206, 1306, 1406)).
  - U.S. Patent No. 5,753,886 ("Iwamura" (Exs. 1007, 1107, 1207, 1307, 1407)).
  - EP 0146509 ("Gruber" (Ex. 1413)).
  - WO 83/01349 ("Wells" (Exs. 1214, 1414)).



- R. F. Post, Proc. of Second U.N. Int'l. Conf. on the Peaceful Uses of Atonic
   Energy, Vol. 32 at p. 245 (Geneva, 1958) ("Post" (Exs. 1016, 1116, 1222, 1316, 1418)).
- 4. Also, I have reviewed papers in the *Inter Partes* Review Case Nos. IPR2014-00828, 00829, 00917, 01073, and 01076, including the Petitions and my accompanying Declarations. Further, I have reviewed the Board's Institution Decisions, Patent Owner's Responses, the accompanying Declaration of Larry D. Hartsough, Ph.D in support of Patent Owner's Responses, and the deposition testimony of Dr. Hartsough given on April 7, 2015 in connection with Case Nos. IPR2014-00828 (Ex. 1223), 00829 (Ex. 1317), 00917 (Ex. 1419), 01073 (Ex. 1017), and 01076 (Ex. 1117).
- 5. I have read and understood each of the above publications and any other publication cited in this declaration. As I stated previously, the disclosure of each of these publications provides sufficient information for someone to make and use the plasma generation and sputtering processes that are described in the above publications.
- 6. I have considered certain issues from the perspective of a person of ordinary skill in the art as described below at the time the '779 Patent application was filed. In my opinion, a person of ordinary skill in the art for the '779 Patent would have found the '779 Patent invalid.



# 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.

