

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

TAIWAN SEMICONDUCTOR MANUFACTURING COMPANY, LTD.,
TSMC NORTH AMERICA CORPORATION, FUJITSU SEMICONDUCTOR
LIMITED, FUJITSU SEMICONDUCTOR AMERICA, INC., ADVANCED
MICRO DEVICES, INC., RENESAS ELECTRONICS CORPORATION,
RENEASAS 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,
Petitioners,

v.

ZOND, LLC,
Patent Owner

Case IPR2014-00805¹

Patent 7,811,421 B2

Claims 3 – 7, 18 – 20, 31, 32, 36, 40, 41, 44, and 45

PETITIONER'S REPLY TO PATENT OWNER'S RESPONSE

¹Cases IPR2014-00851, IPR2014-00990, and IPR2014-01069 have been joined with the instant proceeding.

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 B. “Creates a Weakly-Ionized Plasma” 2

 C. “Pulse” 4

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 A. Zond Improperly Confounds the Embodiments of Wang 7

 B. Wang discloses all the limitations of independent claims 1, 17, 34, 46,
 47, and 48..... 8

 1. Wang teaches a pulse for creating a weakly-ionized plasma and
 then a strongly-ionized plasma from the weakly-ionized plasma
 without arcing.8

 2. Wang teaches the generation of a voltage pulse whose
 amplitude, duration, and rise time are chosen to increase ion
 density.....14

 3. Wang discloses the limitations of all independent claims.15

 C. Zond makes no other arguments regarding claims 3 – 5, 18 – 20, 36,
 40, and 41..... 15

 D. Claims 6, 7, 31, 32, 44, and 45 are unpatentable..... 16

1. Wang in view of Lantsman teaches “a gas flow controller that controls a flow of the feed gas so that the feed gas diffuses the strongly-ionized plasma” recited in claims 6 and 31, and similarly as recited in claim 45.16

2. Wang in view of Lantsman teaches “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” recited in claim 44.19

3. Wang in view of Lantsman teaches “the gas flow controller controls the flow of the feed gas to allow additional power to be absorbed by the strongly ionized plasma, thereby generating additional thermal energy in the sputtering target” as recited in claims 7, 32.....20

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TABLE OF AUTHORITIES

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Cases

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549 Fed. Appx. 934 (Fed. Cir. 2013)14

PETITIONER'S EXHIBIT LIST

May 1, 2015

Exhibit	Description
1101	U.S. Patent No. 7,811,421 ("421 Patent")
1102	Kortshagen Declaration ("Kortshagen Decl.")
1103	D.V. Mozgrin, et al, <u>High-Current Low-Pressure Quasi-Stationary Discharge in a Magnetic Field: Experimental Research</u> , Plasma Physics Reports, Vol. 21, No. 5, 1995 ("Mozgrin")
1104	U.S. Patent No. 6,413,382 ("Wang")
1105	U.S. Patent No. 6,190,512 ("Lantsman")
1106	WO 02/103078 A1 ("Kouznetsov")
1107	U.S. Patent No. 7,147,759 (the "'759 Patent")
1108	Plasma Etching: An Introduction, by Manos and Flamm, Academic Press (1989) ("Manos")
1109	U.S. Patent No. 5,958, 155 ("Kawamata")
1110	The Materials Science of Thin Films, by Ohring M., Academic Press (1992) ("Ohring")
1111	Thin-Film Deposition: Principles & Practice by Smith, D.L., McGraw Hill (1995) ("Smith")
1112	File History for U.S. Pat. No. 7,811,421, Office Action dated April 21, 2010 ("04/21/10 Office Action")
1113	File History for U.S. Pat. No. 7,811,421, Response dated June 23, 2010 ("06/23/10 Response")
1114	File History for U.S. Pat. No. 7,811,421, Notice of Allowance dated

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