

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

GLOBALFOUNDRIES U.S., INC., GLOBALFOUNDRIES DRESDEN
MODULE ONE LLC & CO. KG, GLOBALFOUNDRIES DRESDEN
MODULE TWO LLC & CO. KG, and
THE GILLETTE COMPANY,
Petitioners,

v.

ZOND, LLC,
Patent Owner

IPR2014-01088¹
Patent 6,806,652 B2

PETITIONER'S REPLY TO PATENT OWNER'S RESPONSE

Claims 1-17

¹ Case IPR2014-01000 has been joined with the instant proceeding.

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 B. Mozgrin discloses process parameters that “super-ionize” the initial plasma in the same manner as taught by the ’652 Patent..... 3

 C. Patent Owner’s criticism of Dr. Kortshagen’s calculation has no effect on Mozgrin’s disclosure of “super-ionizing” the initial plasma 9

 D. Patent Owner is incorrect in concluding that Mozgrin does not control its sputtering chamber pressure 11

 E. Even if Mozgrin does not control its sputtering chamber pressure, Dr. Kortshagen’s analysis remains correct and demonstrates Mozgrin’s disclosure of “super-ionizing” its initial plasma. 13

III. CLAIMS 1-17 ARE UNPATENTABLE OVER THE CITED PRIOR ART... 16

 A. Mozgrin teaches super-ionizing an initial plasma to generate a high-density plasma as claimed by claim 1. 16

 B. A person of ordinary skill in the art would be motivated to combine Mozgrin with Vratny in order to utilize a power supply comprising an RF source that generates an alternating electric field, as claimed by claim 5. 18

 C. Claims 8-10 and 15 are unpatentable over the prior art cited in the instituted grounds. 20

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PETITIONER'S EXHIBIT LIST

June 26, 2015

Exhibit	Description
1001	U.S. Patent No. 6,806,652 ("652 Patent")
1002	Kortshagen Declaration ("Kortshagen Decl.")
1003	D.V. Mozgrin, <i>et al.</i> , <u>High-Current Low-Pressure Quasi-Stationary Discharge in a Magnetic Field: Experimental Research</u> , Plasma Physics Reports, Vol. 21, No. 5, 1995 ("Mozgrin")
1004	U.S. Pat. No. 6,413,382 ("Wang")
1005	D. W. Fahey, <i>et al.</i> , <u>High flux beam source of thermal rare-gas metastable atoms</u> , J. Phys. E; Sci. Instrum., Vol. 13, 1980 ("Fahey")
1006	A. A. Kudryavtsev and V.N. Skerbov, <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")
1007	Iwamura, U.S. Pat. No. 5,753,886 ("Iwamura")
1008	Vratny, U.S. Pat No. 3,461,054 ("Vratny")
1009	Röepcke et al., <u>Comparison of Optical Emission Spectrometric Measurements of the Concentration and Energy of Species in Low-pressure Microwave and Radiofrequency Plasma Sources</u> , J. Analytical Atomic Spectrometry, September 1993, Vol. 8, pp. 803-808 ("Röepcke")
1010	J. Hopwood and J. Asmussen, <u>Neutral gas temperatures in a multipolar electron cyclotron resonance plasma</u> , Appl. Phys. Let. 58 (22), 2473-2475 (1991) ("Hopwood")
1011	G. A. Hebner, <u>Spatially resolved, excited state densities and</u>

	<u>neutral and ion temperatures in inductively coupled argon plasmas</u> , J. Appl. Physics, 80 (5), 2624- 2636 (1996) (“Hebner”)
1012	U.S. Patent No. 7,147,759 (“759 Patent”)
1013	Lantsman, U.S. Pat. No. 6,190,512 (“Lantsman”)
1014	Clarenbach, <u>Time-dependent gas density and temperature measurements in pulsed helicon discharges in argon</u> , Plasma Sources Sci. Technol. 12 (2003) 345–357 (“Clarenbach”)
1015	Plaintiff Zond LLC's Preliminary Proposed Claim Constructions, Civil Action No. 13-cv-11634-WGY
1016	The Materials Science of Thin Films, by Ohring M., Academic Press (1992) (“Ohring”)
1017	Thin-Film Deposition: Principles & Practice by Smith, D.L., McGraw Hill (1995) (“Smith”)
1018	List of Related Litigations
1019	Affidavit of Brett C. Rismiller in Support of Petitioner's Motion for <i>Pro Hac Vice</i> Admission
1020	Supplemental Kortshagen Declaration (“Supp. Kortshagen Decl.”)
1021	Deposition Transcript of Larry D. Hartsough Ph.D. for U.S. Patent No. 6,806,652 dated May 15, 2015 (“652 Hartsough Depo. Tr.”)

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