

UNITED STATES PATENT AND TRADEMARK OFFICE

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BEFORE THE PATENT TRIAL AND APPEAL BOARD

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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

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IPR2014-01089<sup>1</sup>  
Patent 6,806,652 B2

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**PETITIONER'S REPLY TO PATENT OWNER'S RESPONSE**

**Claim 35**

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<sup>1</sup> Case IPR2014-01004 has been joined with the instant proceeding.

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    A. Fahey generates an initial plasma and excited atoms from a volume of feed gas in the same manner as disclosed by the ’652 Patent ..... 1

    B. Mozgrin explicitly teaches that the ionization fraction of its high-density plasma exceeds the 75% required by the ’652 Patent..... 4

    C. Mozgrin discloses process parameters that “super-ionize” the initial plasma in the same manner as taught by the ’652 Patent..... 6

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III. CLAIM 35 IS UNPATENTABLE OVER THE CITED PRIOR ART..... 17

    A. Fahey discloses means for generating an initial plasma and excited atoms from volume of feed gas as claimed by claim 35. .... 18

    B. Fahey with Mozgrin and Kudryavtsev discloses means for transporting the initial plasma and excited atoms proximate to a cathode assembly as claimed by claim 35..... 19

C. Mozgrin discloses means for super-ionizing an initial plasma to generate a high-density plasma as claimed by claim 35. .... 20

D. Iwamura further suggests the combination of Mozgrin and Kudryavtsev with Fahey in order to (1) create an initial plasma, then (2) super-ionize the initial plasma to create a high-density plasma, as claimed by claim 35. .... 22

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**PETITIONER'S EXHIBIT LIST**

June 26, 2015

<b>Exhibit</b>	<b>Description</b>
1201	U.S. Patent No. 6,806,652 ("652 Patent")
1202	Kortshagen Declaration ("Kortshagen Decl.")
1203	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")
1204	U.S. Patent No. 6,413,382 ("Wang")
1205	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")
1206	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")
1207	U.S. Patent No. 7,147,759 ("Chistyakov")
1208	U.S. Patent No. 5,753,886 ("Iwamura")
1209	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")
1210	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")
1211	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”)
1212	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”)
1213	Plaintiff Zond LLC's Preliminary Proposed Claim Constructions, Civil Action No. 13-cv-11634-WGY
1214	List of Related Litigations
1215	Affidavit of Brett C. Rismiller in Support of Petitioner's Motion for <i>Pro Hac Vice</i> Admission
1216	Supplemental Kortshagen Declaration (“Supp. Kortshagen Decl.”)
1217	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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