IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

APPLICANT:	Chistyakov		
SERIAL NO.:	11/465,574	GROUP NO.:	2821
FILING DATE:	August 18, 2006	EXAMINER:	Tung X. Le
TITLE:	METHODS AND APPARATUS FOR GENERATING STRONGLY-IONIZED PLASMAS WITH IONIZATIONAL INSTABILITIES		

Commissioner for Patents
P.O. Box 1450
Alexandria, Virginia 22313-1450

AMENDMENT AND RESPONSE

Sir:

The following remarks are responsive to the Office Action mailed on December 8, 2009 in the above-identified patent application. Consideration of the following remarks, and allowance of the claims, as presented, is respectfully requested. A Petition for a three-month extension of time, up to and including June 8, 2010 is submitted herewith. Authorization to charge Attorney's charge card for the extension fee, Statutory Disclaimer fee and any other proper fees is given in the EFS-Web filing submission papers.

Amendments to the claims begin on page 2 of this paper.

Remarks begin on page 7 of this paper.

In the Claims:

Please cancel claims 48-63 and 84-86 as follows.

Claims 1-47 (cancelled)

48 Cancelled.

49 Cancelled.

50 Cancelled.

51 Cancelled.

52 Cancelled.

53 Cancelled.

54 Cancelled.

55 Cancelled.

56 Cancelled.

57 Cancelled.

58 Cancelled.

59 Cancelled.

60 Cancelled.

61 Cancelled.

62 Cancelled.

63 Cancelled.

64 (Original) A method of generating a strongly-ionized plasma, the method comprising:

a) supplying feed gas proximate to an anode and a cathode assembly; and

b) generating a voltage pulse between the anode and the cathode assembly, the voltage pulse having at least one of a controlled amplitude and a controlled rise time that increases an ionization rate so that a rapid increase in electron density and a formation of a strongly-ionized plasma occurs without forming an arc between the anode and the cathode assembly.

65 (Original) The method of claim 64 further comprising applying a magnetic field proximate to the cathode assembly.

66 (Original) The method of claim 65 further comprising moving the magnetic field.

67 (Original) The method of claim 64 further comprising generating an electron Hall current from an electric field generated by the voltage pulse and from the magnetic field, the electron Hall current raising the temperature of the electrons in the weakly-ionized plasma to a temperature that enhances the increase in electron density and the formation of the strongly-ionized plasma.

68 (Original) The method of claim 64 wherein the voltage pulse comprise a multi-stage voltage pulse.

69 (Original) The method of claim 64 further comprising applying a voltage between the anode and the cathode assembly that sustains the strongly-ionized plasma.

70 (Original) The method of claim 64 wherein a lifetime of the strongly-ionized plasma is greater than 200μsec.

71 (Original) The method of claim 64 further comprising discharging energy from an energy storage device into the plasma to enhance the rapid increase in electron density and the formation of the strongly-ionized plasma.

72 (Original) The method of claim 64 wherein an amplitude of the voltage pulse is sufficient to generate ionizational instabilities that enhance the ionization rate so as to cause a rapid increase in electron density and the formation of the strongly-ionized plasma.

73 (Original) The method of claim 64 wherein at least some of the ionizational instabilities comprise diocotron instabilities.

74 (Original) A method of generating a strongly-ionized plasma, the method comprising:

a) supplying feed gas proximate to an anode and a cathode assembly; and

b) generating a voltage pulse between the anode and the cathode assembly, the voltage pulse having at least one of a controlled amplitude and a controlled rise time that shifts an electron energy distribution in the plasma to higher energies that increase an ionization rate so as to result in a rapid increase in electron density and a formation of a strongly-ionized plasma without forming an arc between the anode and the cathode assembly.

75 (Original) The method of claim 74 further comprising applying a magnetic field proximate to the cathode assembly.

76 (Original) The method of claim 75 further comprising moving the magnetic field

77 (Original) The method of claim 75 further comprising generating an electron Hall current from an electric field generated by the voltage pulse and from the magnetic field, the electron Hall current raising the temperature of the electrons in the weakly-ionized plasma to a temperature that enhances the increase in electron density and the formation of the strongly-ionized plasma.

78 (Original) The method of claim 74 wherein the voltage pulse comprise a multi-stage voltage pulse.

79 (Original) The method of claim 74 further comprising applying a voltage between the anode and the cathode assembly that sustains the strongly-ionized plasma.

80 (Original) The method of claim 74 wherein a lifetime of the strongly-ionized plasma is greater than 200μsec.

81 (Original) The method of claim 74 further comprising discharging energy from an energy storage device into the plasma to enhance the rapid increase in electron density and the formation of the strongly-ionized plasma.

82 (Original) The method of claim 74 wherein an amplitude of the voltage pulse is sufficient to generate ionizational instabilities that enhance the ionization rate resulting in a rapid increase in electron density and the formation of the strongly-ionized plasma.

83 (Original) The method of claim 74 wherein the ionizational instabilities comprise at least some diocotron instabilities.

84 Cancelled.

85 Cancelled.

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