

**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.

# 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.