

EXHIBIT B.02
U.S. Patent No. 7,604,716

References cited herein:

- U.S. Patent No. 7,604,716 (“‘716 Patent”)
- D.V. Mozgrin, *et al*, High-Current Low-Pressure Quasi-Stationary Discharge in a Magnetic Field: Experimental Research, Plasma Physics Reports, Vol. 21, No. 5, 1995 (“Mozgrin”)
- A. A. Kudryavtsev, *et al*, Ionization relaxation in a plasma produced by a pulsed inert-gas discharge, Sov. Phys. Tech. Phys. 28(1), January 1983 (“Kudryavtsev”)
- Milton Ohring, The Material Science of Thin Films, Academic Press, 1992 (“Ohring”)

Claims 14-18 and 22-32	Mozgrin in view of Kudryavtsev
<p>14. A method for generating a strongly-ionized plasma, the method comprising:</p>	<p>The combination of Mozgrin with Kudryavtsev discloses a method for generating a strongly-ionized plasma.</p> <p>‘716 Patent at claim 24 (“wherein the peak plasma density of the strongly-ionized plasma is greater than about 10^{12} cm^{-3}”)</p> <p>Mozgrin at Fig 1</p> <p>Mozgrin at 400, right col, ¶ 4 (“To study the high-current forms of the discharge, we used two types of devices: a planar magnetron and a system with specifically shaped hollow electrodes.”)</p> <p>Mozgrin at 401, right col, ¶ 2 (“For pre-ionization ... the initial plasma density in the $10^9 - 10^{11} \text{ cm}^{-3}$ range.”)</p> <p>Mozgrin at 409, left col, ¶ 4 (“The implementation of the high-current magnetron discharge (regime 2) in sputtering ... plasma density (exceeding $2 \times 10^{13} \text{ cm}^{-3}$”).</p> <p>Mozgrin at 409, left col, ¶ 5 (“The high-current diffuse discharge (regime 3) is useful for producing large-volume uniform dense plasmas $n_i \cong 1.5 \times 10^{15} \text{ cm}^{-3}$...”).</p>
<p>a. ionizing a feed gas in a chamber to form a weakly-ionized plasma that substantially eliminates the probability of developing an electrical breakdown condition in the chamber;</p>	<p>The combination of Mozgrin with Kudryavtsev discloses ionizing a feed gas in a chamber to form a weakly-ionized plasma that substantially eliminates the probability of developing an electrical breakdown condition in the chamber.</p> <p>‘716 Patent at 5:14-15 (“The weakly-ionized plasma 232 is also referred to as a pre-ionized plasma.”)</p> <p>‘716 Patent at claim 23 (“wherein the peak plasma density of the</p>

EXHIBIT B.02
U.S. Patent No. 7,604,716

Claims 14-18 and 22-32	Mozgrin in view of Kudryavtsev
and	<p>weakly-ionized plasma is less than about 10^{12} cm^{-3}")</p> <p>Mozgrin at Figs. 1, 2, 3, 6, 7</p> <p>Mozgrin at 401, left col, ¶ 1 ("The [plasma] discharge had an annular shape and was adjacent to the cathode.")</p> <p>Mozgrin at 401, left col, ¶ 4 ("[A]pplying a square voltage pulse to the discharge gap which was filled up with either neutral or pre-ionized gas.")</p> <p>Mozgrin at 402, right col, ¶ 2 ("Figure 3 shows typical voltage and current oscillograms.... Part I in the voltage oscillogram represents the voltage of the stationary discharge (pre-ionization stage).")</p> <p>Mozgrin at 401, right col, ¶ 2 ("[f]or pre-ionization, we used a stationary magnetron discharge; ... provided the initial plasma density in the $10^9 - 10^{11} \text{ cm}^{-3}$ range.")</p> <p>Mozgrin at 400, right col, ¶ 3 ("We investigated the discharge regimes in various gas mixtures at $10^{-3} - 10$ torr...")</p> <p>Mozgrin at 402, ¶ spanning left and right cols ("We studied the high-current discharge in wide ranges of discharge current...and operating pressure...using various gases (Ar, N₂, SF₆, and H₂) or their mixtures of various composition...")</p>
b. supplying an electrical pulse across the weakly-ionized plasma that excites atoms in the weakly-ionized plasma, thereby generating a strongly-ionized plasma without developing an electrical breakdown condition in the chamber.	<p>The combination of Mozgrin with Kudryavtsev discloses supplying an electrical pulse across the weakly-ionized plasma that excites atoms in the weakly-ionized plasma, thereby generating a strongly-ionized plasma without developing an electrical breakdown condition in the chamber.</p> <p>'716 Patent at claim 23 ("wherein the peak plasma density of the weakly-ionized plasma is less than about 10^{12} cm^{-3}")</p> <p>'716 Patent at claim 24 ("wherein the peak plasma density of the strongly-ionized plasma is greater than about 10^{12} cm^{-3}")</p> <p>Mozgrin at Fig. 1</p>

EXHIBIT B.02
U.S. Patent No. 7,604,716

Claims 14-18 and 22-32

Mozgrin in view of Kudryavtsev

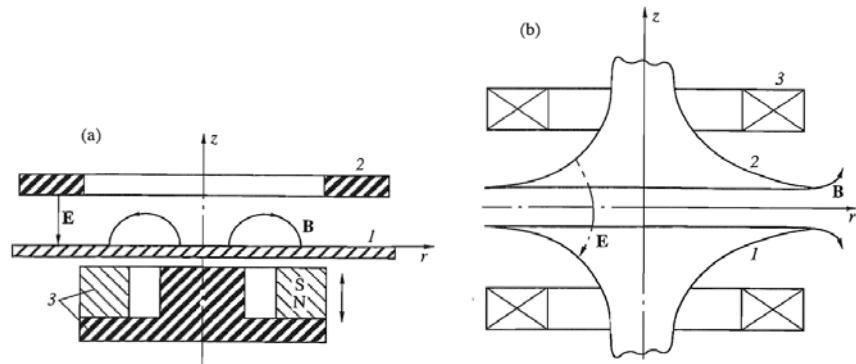


Fig. 1. Discharge device configurations: (a) planar magnetron; (b) shaped-electrode configuration. (1) Cathode; (2) anode; (3) magnetic system.

Mozgrin at Fig. 2

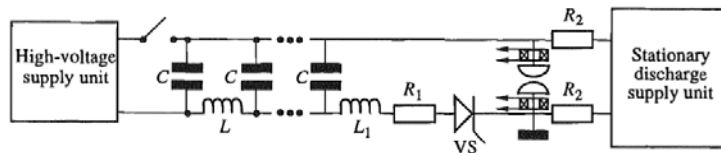


Fig. 2. Discharge supply unit.

Mozgrin at Fig. 3

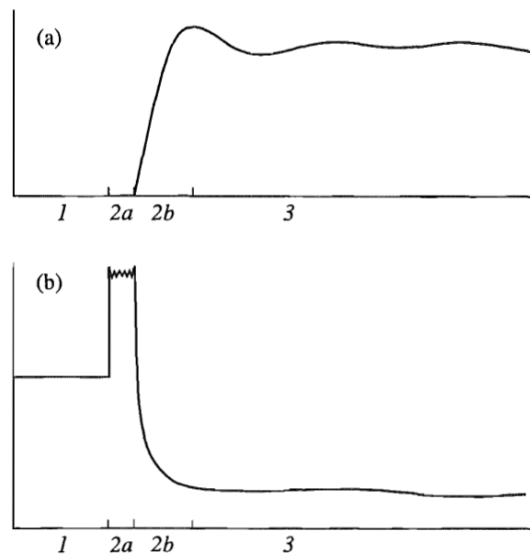
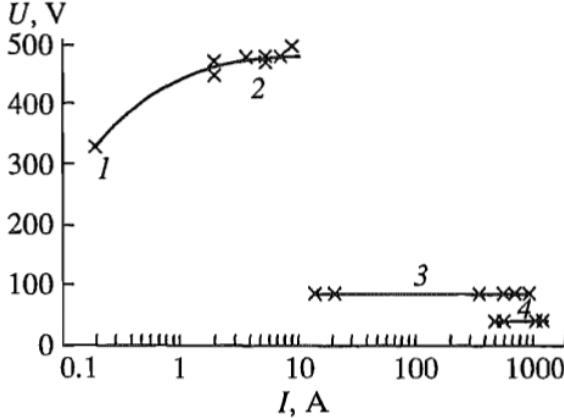
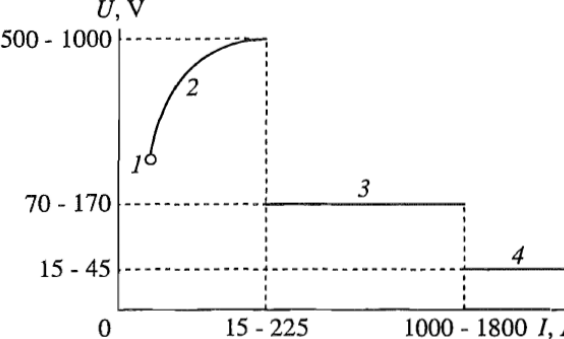


Fig. 3. Oscillograms of (a) current and (b) voltage of the quasi-stationary discharge (50 μ s per div., 180 A per div., 180 V per div.).

EXHIBIT B.02
U.S. Patent No. 7,604,716

Claims 14-18 and 22-32	Mozgrin in view of Kudryavtsev
	<p>Mozgrin at 402, right col, ¶ 2 (“Part 1 in the voltage oscillogram represents the voltage of the stationary discharge (pre-ionization stage).”)</p> <p>Mozgrin at 401, right col, ¶2 (“For pre-ionization ... the initial plasma density in the $10^9 - 10^{11} \text{ cm}^{-3}$ range.”)</p> <p>Mozgrin at 401, right col, ¶ 1 (“Thus, the supply unit was made providing square voltage and current pulses with [rise] times (leading edge) of 5 – 60 μs...”).</p> <p>Mozgrin 403, right col, ¶4 (“Regime 2 was characterized by intense cathode sputtering...”) (emphasis added).</p> <p>Mozgrin at 409, left col, ¶ 4 (“The implementation of the high-current magnetron discharge (regime 2) in sputtering ... plasma density (exceeding $2 \times 10^{13} \text{ cm}^{-3}$).”).</p> <p>Mozgrin at 409, left col, ¶5 (“The high-current diffuse discharge (regime 3) is useful for producing large-volume uniform dense plasmas $n_i \cong 1.5 \times 10^{15} \text{ cm}^{-3}$...”)</p> <p>Mozgrin at 400, left col, ¶ 3 (“Some experiments on magnetron systems of various geometry showed that discharge regimes which do not transit to arcs can be obtained even at high currents.”)</p> <p>Mozgrin at 400, right col, ¶ 1 (“A further increase in the discharge currents caused the discharges to transit to the arc regimes...”).</p> <p>Mozgrin at 404, left col, ¶ 3 (“The parameters of the shaped-electrode discharge...transit to arc regime 4, could be well determined... The point of the planar-magnetron discharge transit to the arc regime was determined by discharge voltage and structure changes...”).</p> <p>Mozgrin at 404, left col, ¶ 4 (“If the current was raised above 1.8 kA or the pulse duration was increase to 2 – 10 ms, an instability development and discharge contraction was observed.”).</p> <p>Mozgrin at Fig. 4</p>

EXHIBIT B.02
U.S. Patent No. 7,604,716

Claims 14-18 and 22-32	Mozgrin in view of Kudryavtsev
	 <p>Fig. 4. Current-voltage characteristic of the quasi-stationary discharge with shaped electrodes in argon, $p = 0.1$ torr; $B = 0.4$ kG.</p> <p>Mozgrin at Fig. 7</p>  <p>Fig. 7. Generalized ampere-voltaic characteristic CVC of quasi-stationary discharge.</p> <p>Mozgrin at 401, ¶ spanning left and right columns (“Designing the [pulsed supply] unit, we took into account the dependences which had been obtained in [Kudryavtsev] of ionization relaxation on pre-ionization parameters, pressure, and pulse voltage amplitude.”)</p> <p>Kudryavtsev at 34, right col, ¶ 4 (“Since the effects studied in this work are characteristic of ionization whenever a field is suddenly applied to a weakly ionized gas, they must be allowed for when studying emission mechanisms in pulsed gas lasers, gas breakdown, laser sparks, etc.”)</p> <p>Kudryavtsev at Fig. 1</p>

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.