EXHIBIT D.02
U.S. Patent No. 6,853,142

References cited herein:

- U.S. Pat. No. 6,853,142 ("'142 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")
- D.V. Mozgrin, High-Current Low-Pressure Quasi-Stationary Discharge in a Magnetic Field: Experimental Research, Thesis at Moscow Engineering Physics Institute, 1994 ("Mozgrin Thesis")
- Dennis M. Manos & Daniel L. Flamm, Plasma Etching: An Introduction, Academic Press 1989 ("Manos")
- Milton Ohring, The Material Science of Thin Films, Academic Press, 1992 ("Ohring")
- Yu. P. Raizer, Gas Discharge Physics, Springer, 1991 ("Raizer")

'142 Claims 24 and 32	Mozgrin in view of Kudryavtsev and Mozgrin Thesis
[21pre.] An apparatus for generating a strongly-ionized plasma, the apparatus comprising:	The combination of Mozgrin and Kudryavstev discloses an apparatus for generating a strongly-ionized plasma. '142 Patent at claim 18 ("wherein the peak plasma density of the strongly-ionized plasma is greater than about 10^{12} cm^{-3}") Mozgrin at Fig 1 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 ystem with specifically shaped hollow electrodes.") Mozgrin at 401, right col, ¶2 ("For pre-ionization … the initial plasma density in the $10^9 – 10^{11}$ cm^{-3} range.") Mozgrin at 409, left col, ¶ 4 ("The implementation of the high-current magnetron discharge (regime 2) in sputtering … plasma density (exceeding $2x10^{13}$ cm^{-3}).") Mozgrin at 409, left col, ¶5 ("The high-current diffuse discharge (regime 3) is useful for producing large-volume

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	uniform dense plasmas $n_i \cong 1.5 \times 10^{15} cm^{-3}$…”).
[21a.] an anode;	The combination of Mozgrin and Kudryavstev discloses an anode. '142 Patent at 2:21-22 (“FIG. 1 illustrates a cross-sectional view of a known plasma generating apparatus 100…”) '142 Patent at 2:45-46 (“An anode 130 is positioned in the vacuum chamber 104 proximate to the cathode 114.”) Mozgrin at Fig. 1 Mozgrin at 401, Fig. 1 caption (“Fig. 1… (1) Cathode; (2) anode; …”)
[21b.] a cathode that is positioned adjacent to the anode and forming a gap there between;	The combination of Mozgrin and Kudryavstev discloses a cathode that is positioned adjacent to the anode and forming a gap there between. '142 Patent at 2:21-22 (“FIG. 1 illustrates a cross-sectional view of a known plasma generating apparatus 100…”) '142 Patent at 2:45-46 (“An anode 130 is positioned in the vacuum chamber 104 proximate to the cathode 114.”) Mozgrin at Fig. 1 Mozgrin at 401, Fig. 1 caption (“Fig. 1… (1) Cathode; (2) anode; …”)
[21c.] an ionization source that generates a weakly-ionized plasma proximate to the cathode, the weakly-ionized plasma reducing the probability of developing an electrical breakdown condition between the anode and the cathode; and	The combination of Mozgrin and Kudryavstev discloses an ionization source that generates a weakly-ionized plasma proximate to the cathode, the weakly-ionized plasma reducing the probability of developing an electrical breakdown condition between the anode and the cathode. '142 Patent at 5:18-19 (“The weakly-ionized plasma is also referred to as a pre-ionized plasma.”) '142 Patent at claim 17 (“wherein the peak plasma density of the ***weakly-ionized plasma is less than about*** 10^{12} cm^{-3}”) Mozgrin at Figs. 1, 2, 3, 6, 7 Mozgrin at 401, left col, ¶ 1 (“The [plasma] discharge had

'142 Claims 24 and 32	Mozgrin in view of Kudryavtsev and Mozgrin Thesis
	an annular shape and was adjacent to the cathode.") 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.") 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).") Mozgrin at 401, right col, ¶2 ("[f]or pre-ionization, we used a stationary magnetron discharge; … provided the initial plasma density in the $10^9 – 10^{11}$ cm^{-3} range.") Mozgrin at 400, right col, ¶ 3 ("We investigated the discharge regimes in ***various gas mixtures*** at 10^{-3} – 10 torr…") 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, N_2, SF_6, and H_2)*** or their mixtures of various composition…") Mozgrin at 406, right col, ¶3 ("pre-ionization was not necessary; however, in this case, the probability of discharge transferring to arc mode increased.") 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.") _Background:_ Manos at 231 ("We shall … [include] information on unipolar arcs. These are a problem…") Manos at 237 ("When such an arc occurs, the metal object is melted at the arc spot. The metal is explosively released…. How does one prevent such an arc? There are several methods…")
[21d.] a power supply that produces an	The combination of Mozgrin and Kudryavstev discloses a

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electric field across the gap, the electric field generating excited atoms in the weakly-ionized plasma and generating secondary electrons from the cathode, the secondary electrons ionizing the excited atoms, thereby creating the strongly-ionized plasma.	power supply that produces an electric field across the gap, the electric field generating excited atoms in the weakly-ionized plasma and generating secondary electrons from the cathode, the secondary electrons ionizing the excited atoms, thereby creating the strongly-ionized plasma**.** '142 Patent at 1:41-43 ("Magnetron sputtering systems use magnetic fields that are shaped to trap and to concentrate secondary electrons, which are produced by ion bombardment of the target surface.") '142 Patent at 1:37-40 ("The plasma is replenished by electron-ion pairs formed by the collision of neutral molecules with secondary electrons generated at the target surface.") Mozgrin at Figs. 1, 2, 3 Mozgrin at 402, right col, ¶ 2 ("Part 1 in the voltage oscillogram represents the voltage of the stationary discharge (pre-ionization stage).") 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…") Mozgrin at 401, ¶ spanning left and right cols ("[d]esigning 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.") Mozgrin 403, right col, ¶4 ("Regime 2 was characterized by intense cathode sputtering due to both high energy and density of ion flow.") Kudryavtsev at Figs. 1, 6 Kudryavtsev at 34, right col, ¶ 4 ("[s]ince 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.")

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	Kudryavtsev at 31, right col, ¶ 6 ("For nearly stationary n_2 [excited atom density] values … there is an explosive increase in n_e [plasma density]. The subsequent increase in n_e then reaches its maximum value, equal to the rate of excitation [equation omitted], which is several orders of magnitude greater than the ionization rate during the initial stage.") Kudryavtsev at 31, right col, ¶ 7 ("The behavior of the increase in n_e with time thus enables us to arbitrarily divide the ionization process into two stages, which we will call the slow and fast growth stages. Fig. 1 illustrates the relationships between the main electron currents in terms of the atomic energy levels during the slow and fast stages.") Kudryavtsev at Abstract ("in a pulsed inert-gas discharge plasma at moderate pressures… [i]t is shown that the electron density increases explosively in time due to accumulation of atoms in the lowest excited states.") Kudryavtsev at Equation 1 Kudryavtsev at 30, right col, last ¶ ("n_2, and n_e are the atomic densities in the … first excited states and the electron density, respectively … β_{2e} [is] the rate coefficient[]….") *See* evidence recited in [1pre] of claim 1. It would have been obvious to one of ordinary skill to combine Mozgrin with Kudryavtsev. Mozgrin itself cites Kudryavtsev. Moreover, Mozgrin explicitly notes that it was designed in accordance with Kudryavtsev. 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]."). Further, Kudryavtsev states, "[s]ince 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." Kudryavtsev at 34, right col, ¶ 4. Because Mozgrin applies voltage pulses that "suddenly generate an electric field," one of ordinary skill reading Mozgrin would have been motivated to consider

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