EXHIBIT B.10
U.S. Patent No. 7,604,716

References cited herein:

- U.S. Patent No. 7,604,716 ("'716 Patent")
- U.S. Pat. No. 6,413,382 ("Wang")
- 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, *et al*, High-Current Low-Pressure Quasi-Stationary Discharge in a Magnetic Field: Experimental Research, Plasma Physics Reports, Vol. 21, No. 5, 1995 ("Mozgrin")

Claims 22-24	Wang in view of Kudryavtsev and Mozgrin
14. A method for generating a strongly-ionized plasma, the method comprising:	The combination of Wang and Kudryavtsev discloses a method for generating a strongly-ionized plasma. Wang at 7:19-25 ("Preferably, the peak power P_P is at least 10 times the background power P_B, more preferably at least 100 times, and most preferably 1000 times to achieve the greatest effect of the invention. A background power P_B of 1kW will typically be sufficient to support a plasma with the torpedo magnetron and a 200 mm wafer although with little if any actual sputter deposition.") Wang at 7:28-30 (" the application of the high peak power P_P instead quickly causes the already existing plasma to spread and increases the density of the plasma") (emphasis added). Wang at 7:31-39 ("In one mode of operating the reactor, during the background period, little or no target sputtering is expected. The SIP reactor is advantageous for a low-power, low-pressure background period since the small rotating SIP magnetron can maintain a plasma at lower power and lower pressure than can a larger stationary magnetron. However, it is possible to combine highly ionized sputtering during the pulses with significant neutral sputtering during the background period.")
a. ionizing a feed gas in a chamber to form a weakly-ionized plasma that substantially eliminates the probability of developing an electrical breakdown	The combination of Wang and 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. Wang at Fig. 7 Wang at 4:5-6 ("A sputter working gas such as argon is supplied from a gas source 32….")

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EXHIBIT B.10
U.S. Patent No. 7,604,716

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condition in the chamber; and	Wang at 4:20-21 ("… a reactive gas, for example nitrogen is supplied to the processing space 22.…") Wang at 7:17-31 ("The background power level P_B is chosen to exceed the minimum power necessary to support a plasma... [T]he application of the high peak power P_P quickly causes the already existing plasma to spread and increases the density of the plasma.") Wang at 7:19-25 ("Preferably, the peak power P_P is at least 10 times the background power P_B … and most preferably 1000 times to achieve the greatest effect of the invention. A background power P_B of 1 kW [causes] little if any actual sputter deposition." Wang at 4:23-31 (Ex. 1005) ("…thus creating a region 42 of a high-density plasma (HDP)…") Wang at 7:3-49 ("Plasma ignition, particularly in plasma sputter reactors, has a tendency to generate particles during the initial arcing, which may dislodge large particles from the target or chamber… The initial plasma ignition needs be performed only once and at much lower power levels so that particulates produced by arcing are much reduced.") Wang at 7:25-28 ("As a result, once the plasma has been ignited at the beginning of sputtering prior to the illustrated waveform, no more plasma ignition occurs."). Wang at 7:58-61 ("… DC power supply 100 is connected to the target 14 … and supplies an essentially constant negative voltage to the target 14 corresponding to the background power P_B.") Wang at 7:22-23 ("A background power P_B of 1 kW will typically be sufficient to support a plasma…")
b. supplying an electrical pulse across the weakly-ionized plasma that excites atoms in the weakly-ionized plasma, thereby generating a strongly-ionized	The combination of Wang and 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. Wang at Fig. 7

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EXHIBIT B.10
U.S. Patent No. 7,604,716

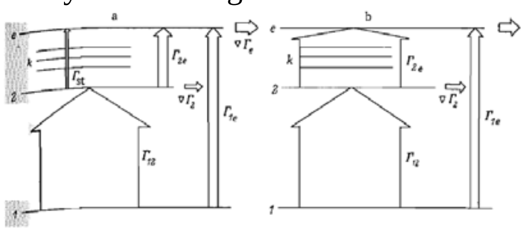
Claims 22-24	Wang in view of Kudryavtsev and Mozgrin
plasma without developing an electrical breakdown condition in the chamber.	Wang at 7:61-62 (“The pulsed DC power supply 80 produces a train of negative voltage pulses.”) Wang at 7:19-25 (“Preferably, the peak power level P_P is at least 10 times the background power level P_B, … most preferably 1000 times to achieve the greatest effects of the invention. A background power P_B of 1 kW will typically be sufficient…”) Wang at 7:28-30 (“… the application of the high peak power P_P instead quickly causes the already existing plasma to spread and increases the density of the plasma.”). Wang at 7:36-39 (“However, it is possible to combine highly ionized sputtering during the pulses with significant neutral sputtering during the background period.”) Wang at 5:23-27 (“[The pulse’s] exact shape depends on the design of the pulsed DC power supply 80, and significant rise times and fall times are expected.”) Wang at 7:3-49 (“Plasma ignition, particularly in plasma sputter reactors, has a tendency to generate particles during the initial arcing, which may dislodge large particles from the target or chamber… The initial plasma ignition needs be performed only once and at much lower power levels so that particulates produced by arcing are much reduced.”). 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.”) Kudryavtsev at Fig. 1  FIG. 1. Diagram showing the relative sizes of the electron fluxes in terms of the atomic energy levels for the slow (a) and fast (b) stages. The width of the arrows indicates the magnitude of the electron flux. The horizontal arrows give the diffusion fluxes of electrons and excited atoms reaching the walls of the discharge tube. Kudryavtsev at Fig. 6

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EXHIBIT B.10
U.S. Patent No. 7,604,716

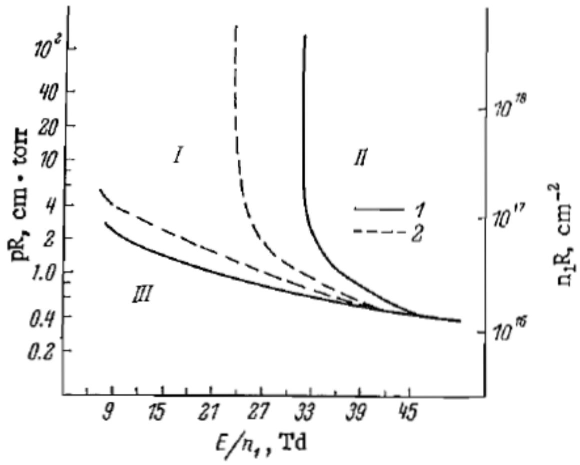
Claims 22-24	Wang in view of Kudryavtsev and Mozgrin
	 FIG. 6. The behavior of n_e in the bulk of an argon discharge. 1) $n_{e0}/n_1 = 10^{-8}$; 2) 10^{-7}. Stepwise ionization predominates in region I, direct ionization processes predominate in region II, and n_e does not increase in region III. Kudryavtsev 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 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 Abstract ("[I]n 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.") One of ordinary skill would have been motivated to use Kudryavtsev's fast stage of ionization in Wang so as to increase plasma density and thereby increase the sputtering rate. Further, use of Kudryavtsev's fast stage in Wang would have been a combination of old elements that in which each element performed as expected to yield predictable results of increasing plasma density and multi-step ionization.
22. The method of claim 14 wherein the electrical pulse comprises a rise time that is between about	The combination of Wang, Kudryavtsev and Mozgrin discloses the electrical pulse comprises a rise time that is between about 0.1 microsecond and 10 seconds. *See* evidence cited in claim 14.

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EXHIBIT B.10
U.S. Patent No. 7,604,716

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0.1 microsecond and 10 seconds.	Mozgrin at 401, right col, ¶ 1 ("…the supply unit was made providing square voltage and current pulses with [rise] times (leading edge) of 5 – 60 µs..."). Mozgrin's rise time would have been an obvious choice to use in Wang. Both Mozgrin and Wang teach generation of a high density plasma to improve sputtering conditions. For example, Mozgrin's "main purpose … was to study experimentally high-power noncontracted quasi-stationary discharge … [that] can be useful in generating large-volume dense plasmas and intense flows of charged particles." Mozgrin at 400, right col, ¶ 3. Large plasma densities are beneficial because "the discharge expands over a considerably larger area of the cathode surface … ." Mozgrin at 403, left col, last ¶. Similarly, Wang explains that the plasma it generates with the peak power level, P_P, "increases the sputtering rate..." Wang at 4:29-31. Moreover, in order to achieve these high plasma densities, both Mozgrin and Wang teach generation of an initial plasma prior to application of the high-power pulse to avoid arcing. *See* Mozgrin at 406, right col, ¶ 3 ("pre-ionization was not necessary; however, in this case, the probability of discharge transferring to arc mode increased."); Wang at 7:47-49 ("The initial plasma ignition needs to be performed only once and at much lower power levels so that particulates produced by arcing are much reduced."). Kudryavtsev similar pre-ionized Kudryavtsev's plasma before applying a voltage pulse and states that "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." Kudryavtsev at 34, right col, ¶ 4. Because Wang and Mozgrin applies voltage pulses that "suddenly generate an electric field," one of ordinary skill reading Wang would have been motivated to consider Kudryavtsev to further appreciate the effects of applying Wang's pulse.
23. The method of claim 14 wherein a peak plasma density of the weakly-ionized plasma is less than about 10^{12} cm^{-3}.	The combination of Wang, Kudryavtsev and Mozgrin discloses a peak plasma density of the weakly-ionized plasma is less than about 10^{12} cm^{-3}. *See* evidence cited in claim 14. Wang at Fig. 6 Wang at 7:17-31 ("The background power level P_B is chosen to exceed the minimum power necessary to support a plasma... [T]he application of the high peak power P_P quickly causes the already existing plasma to

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