EXHIBIT B.09
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")
- U.S. Pat. No. 6,190,512 ("Lantsman")
- Milton Ohring, The Material Science of Thin Films, Academic Press, 1992 ("Ohring")
- Donald L. Smith, Thin-Film Deposition: Principles & Practice, McGraw Hill, 1995 ("Smith")

Claims 19 and 20	Wang in view of Kudryavtsev and Lantsman
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	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.

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eliminates the probability of developing an electrical breakdown condition in the chamber; and	Wang at Fig. 7 Wang at 4:5-6 ("A sputter working gas such as argon is supplied from a gas source 32….") 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	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

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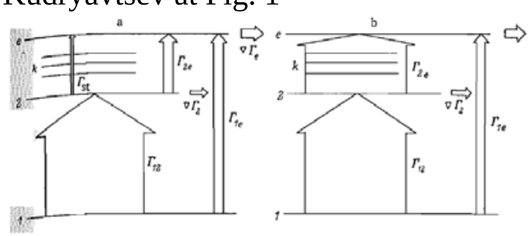
atoms in the weakly-ionized plasma, thereby generating a strongly-ionized plasma without developing an electrical breakdown condition in the chamber.	chamber. Wang at Fig. 7 Wang at 7:61-62 (“The pulsed DC power supply 80 produces a train of negative voltage pulses.”) Wang at 7:19-25 (“Preferably, the 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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	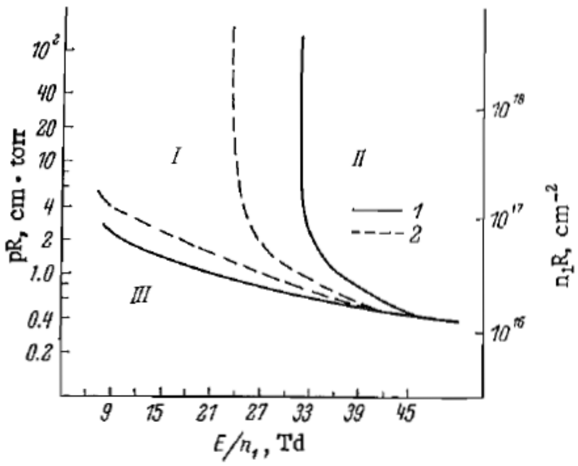 FIG. 6. The behavior of n_e in the bulk of an argon discharge. 1) n_{e0}/n_1 = 10^{-8}; 2) 10^{-7}. Stepwise ionization predominates in region I, direct ionization processes predominate in region II, and n_e does not increase in region III. Kudryavtsev at 31, right col, ¶ 7 ("The behavior of the increase 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.
19. The method of claim 14 further comprising supplying feed gas to the	The combination of Wang with Kudryavtsev and Lantsman discloses supplying feed gas to the strongly-ionized plasma to transport the strongly-ionized plasma by a rapid volume exchange.

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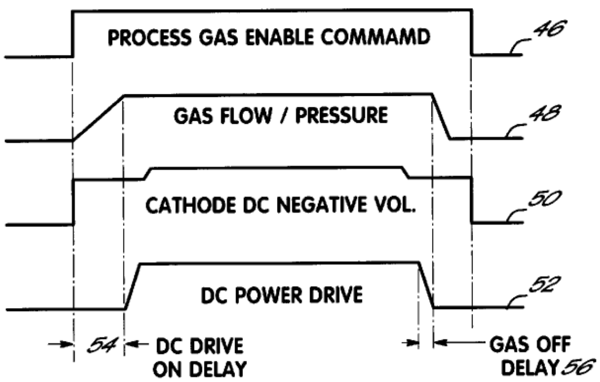
strongly-ionized plasma to transport the strongly-ionized plasma by a rapid volume exchange.	*See* evidence cited in claim 14 '716 Patent at 2:19-30 [*Discussed in connection with a prior art system*] ("FIG. 1 illustrates a cross-sectional view of a known plasma generating apparatus 100…. The vacuum pump 106 is adapted to evacuate the vacuum chamber 104…. A feed gas from a feed gas source 109, such as an argon gas source, is introduced into the vacuum chamber 104 through a gas inlet 110. The gas flow is controlled by a valve 112.") (emphasis added). '716 Patent at Fig. 1. Lantsman at Fig. 6  FIG. 6 Lantsman at 3:9-13 ("[A]t the beginning of processing, this switch is closed and gas is introduced into the chamber. When the plasma process is completed, the gas flow is stopped….") Lantsman at 4:36-38 ("To end processing, primary supply 10 is disabled, reducing the plasma current and deposition on the wafer. Then, gas flow is terminated….") Lantsman at 5:39-42 ("Sometime thereafter, gas flow is initiated and the gas flow and pressure (trace 48) begin to ramp upwards toward normal processing levels.") Lantsman at 5:42-45 Lantsman at 2:48-51 ("This secondary power supply 'pre-ignites' the plasma so that when the primary power supply is applied, the system smoothly transitions to final plasma development and deposition.") It would have been obvious to one of ordinary skill to continue to apply

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