EXHIBIT C.09
U.S. Patent No. 7,811,421

References cited herein:
- U.S. Pat. No. 7,811,421 ("'421 Patent")
- U.S. Pat. No. 6,413,382 ("Wang")

'421 Claims 1, 2, 8, 10-13, 16, 17, 22-25, 28-30, 33, 34, 39, 42, 43 and 46-48	**Wang**
[1pre]. A sputtering source comprising:	Wang discloses a sputtering source. Wang at Title ("pulsed sputtering with a small rotating magnetron")
[1a] a) a cathode assembly comprising a sputtering target that is positioned adjacent to an anode; and	Wang discloses a cathode assembly comprising a sputtering target that is positioned adjacent to an anode. '421 Patent at 3:39-4:2 ("FIG. 1 illustrates a cross-sectional view of a known magnetron sputtering apparatus 100 having a pulsed power source 102. … The magnetron sputtering apparatus 100 also includes a cathode assembly 114 having a target 116. … An anode 130 is positioned in the vacuum chamber 104 proximate to the cathode assembly 114.") Wang at 3:66-4:1 ("A grounded shield 24 … acts as a grounded anode for the cathode of the negatively biased target 14.")
[1b] b) a power supply that generates a voltage pulse between the anode and the cathode assembly that creates a weakly-ionized plasma and then a strongly-ionized plasma from the weakly-ionized plasma without an occurrence of arcing between the anode and the cathode assembly, an amplitude, a duration and a rise time of the voltage pulse being chosen to increase a density of ions in the strongly-ionized plasma.	Wang discloses a power supply that generates a voltage pulse between the anode and the cathode assembly that creates a weakly-ionized plasma and then a strongly-ionized plasma from the weakly-ionized plasma without an occurrence of arcing between the anode and the cathode assembly, an amplitude, a duration and a rise time of the voltage pulse being chosen to increase a density of ions in the strongly-ionized plasma Wang at Figs. 1, 6 and 7 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.")

'421 Claims 1, 2, 8, 10-13, 16, 17, 22-25, 28-30, 33, 34, 39, 42, 43 and 46-48	**Wang**
	Wang at 7:61-62 ("The pulsed DC power supply 80 produces a train of negative voltage pulses.") Wang at 3:66-4:1 ("A grounded shield 24 … acts as a grounded anode for the cathode of the negatively biased target 14.") 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 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.") Wang at 7:3-6 ("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.") Wang at 7:13-28 ("Accordingly, it is advantageous to use a target power waveform illustrated in FIG. 6… As a result, once the plasma has been ignited at the beginning of

'421 Claims 1, 2, 8, 10-13, 16, 17, 22-25, 28-30, 33, 34, 39, 42, 43 and 46-48	**Wang**
	sputtering prior to the illustrated waveform…") Wang at 7:47-49 ("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 7:28-30 ("…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 5:23-26 ("The illustrated pulse form is idealized. Its exact shape depends on the design of the pulsed DC power supply 80, and significant rise times and fall times are expected.")
2. The sputtering source of claim 1 wherein the strongly ionized plasma at least partially converts neutral sputtered atoms into positive ions in order to enhance the sputtering process with ionized physical vapor deposition.	Wang discloses the strongly ionized plasma at least partially converts neutral sputtered atoms into positive ions in order to enhance the sputtering process with ionized physical vapor deposition. Wang at 1:5-7 ("invention relates to sputtering apparatus and a method capable of producing a high fraction of ionized sputter particles.") Wang at 1:34-37("[a]s a result of the high-density plasma, a large fraction of the sputtered metal atoms passing through the argon plasma are ionized and thus can be electrically attracted to the biased wafer support.") Wang at 2:33-36 ("Particularly at the high ionization fraction, the ionized sputtered metal atoms are attracted back to the targets and sputter yet further metal atoms.")
8. The sputtering source of claim 1 further comprising a magnet that is positioned to generate a magnetic field proximate to the weakly-ionized plasma, the magnetic field substantially trapping electrons in the weakly-ionized plasma proximate to	Wang discloses a magnet that is positioned to generate a magnetic field proximate to the weakly-ionized plasma, the magnetic field substantially trapping electrons in the weakly-ionized plasma proximate to the sputtering target.

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the sputtering target.	*See* evidence cited in claim 1 '421 Patent at 3:39-63 (FIG. 1 illustrates a cross-sectional view of a known magnetron sputtering apparatus 100 having a pulsed power source 102….The magnet 126 shown in FIG. 1…) '421 Patent at 4:31-34 [describing the prior art Fig. 1] ("The electrons, which cause ionization, are generally confined by the magnetic fields produced by the magnet 126. The magnetic confinement is strongest in a confinement region 142….") Wang at 4:23-27 ("[a] small rotatable magnetron 40 is disposed in the back of the target 14 to create a magnetic field near the face of the target 14 which traps electrons from the plasma to increase the electron density.") Wang at Fig. 1
10. The sputtering source of claim 1 wherein the power supply generates a constant power.	Wang discloses the power supply generates a constant power. *See* evidence cited in claim 1 Wang at Figs. 1, 6, and 7
11. The sputtering source of claim 1 wherein the power supply generates a constant voltage.	Wang discloses the power supply generates a constant voltage. *See* evidence cited in claim 1 Wang at 7:61-62 ("pulsed DC power supply 80 produces a train of negative voltage pulses.")
12. The sputtering source of claim 1 wherein a rise time of the voltage pulse is chosen to increase an ionization rate of the strongly-ionized plasma.	Wang discloses a rise time of the voltage pulse is chosen to increase an ionization rate of the strongly-ionized plasma. *See* evidence cited in claim 1
13. The sputtering source of claim 1 wherein a distance between the anode and	Wang discloses a distance between the anode and the cathode assembly is chosen to increase an

'421 Claims 1, 2, 8, 10-13, 16, 17, 22-25, 28-30, 33, 34, 39, 42, 43 and 46-48	**Wang**
the cathode assembly is chosen to increase an ionization rate of strongly-ionized plasma.	ionization rate of strongly-ionized plasma. *See* evidence cited in claim 1
16. The sputtering source of claim 1 wherein a pulse width of the voltage pulse is in the range of approximately 0.1 µsec to 100 sec.	Wang discloses a pulse width of the voltage pulse is in the range of approximately 0.1 µsec to 100 sec. *See* evidence cited in claim 1 Wang at 5:43-49 ("The choice of pulse widths τ_w is dictated by considerations of both power supply design, radio interference, and sputtering process conditions. Typically, it should be at least 50 µs in this embodiment. Its upper limit is dictated mostly by the pulse repetition period τ_p, but it is anticipated that for most applications it will be less than 1 ms, and typically less than 200 µs is for achieving the greatest effect.")
[17pre]. A sputtering source comprising:	Wang discloses a sputtering source. *See* evidence cited in claim 1 preamble
[17a] a) a cathode assembly comprising a sputtering target that is positioned adjacent to an anode;	Wang discloses a cathode assembly comprising a sputtering target that is positioned adjacent to an anode. *See* evidence cited in claim [1a]
[17b] b) a power supply that generates a voltage pulse between the anode and the cathode assembly that creates a weakly-ionized plasma and then a strongly-ionized plasma from the weakly-ionized plasma without an occurrence of arcing between the anode and the cathode assembly, an amplitude and a rise time of the voltage pulse being chosen to increase a density of ions in the strongly-ionized plasma; and	Wang discloses a power supply that generates a voltage pulse between the anode and the cathode assembly that creates a weakly-ionized plasma and then a strongly-ionized plasma from the weakly-ionized plasma without an occurrence of arcing between the anode and the cathode assembly, an amplitude and a rise time of the voltage pulse being chosen to increase a density of ions in the strongly-ionized plasma. *See* evidence cited in claim [1b]
[17c] c) a substrate support that is positioned adjacent to the sputtering	Wang discloses a substrate support that is positioned adjacent to the sputtering target.

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