EXHIBIT A.05
U.S. Patent No. 7,147,759

References cited herein:

- U.S. Patent No. 7,147,759 ("'759 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")
- EP 1 113 088 ("Yamaguchi")

Claim 38	**Mozgrin in view of Kudryavtsev and further in view of Yamaguchi**
[20pre.] A method of generating sputtering flux, the method comprising:	The combination of Mozgrin with Kudryavtsev discloses a method of generating sputtering flux. *See* evidence cited in limitation [1pre] of claim 1. Mozgrin at 403, right col, ¶ 4 ("Regime 2 was characterized by intense cathode sputtering…").
[20a.] ionizing a feed gas to generate a weakly-ionized plasma proximate to a sputtering target;	The combination of Mozgrin with Kudryavtsev discloses ionizing a feed gas to generate a weakly-ionized plasma proximate to a sputtering target. *See* evidence cited in limitation [1c] of claim 1. '759 Patent at 6:30-32 ("The weakly-ionized plasma is also referred to as a pre-ionized plasma.") '759 Patent at claim 32 ("wherein the peak plasma density of the weakly-ionized plasma is less than about 10^{12} cm^{-3}") Mozgrin at Fig. 2 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

Claim 38	**Mozgrin in view of Kudryavtsev and further in view of Yamaguchi**
	their mixtures of various composition…”) Mozgrin at 403, right col, ¶ 4 (“Regime 2 was characterized by intense cathode sputtering…”).
[20b.] generating 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; and	The combination of Mozgrin with Kudryavtsev discloses generating 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. ‘759 Patent at 3:10-12 (“Fig. 1 shows a cross-sectional view of a known magnetron sputtering apparatus 100…”) ‘759 Patent at 4:4-10 (“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….”) Mozgrin at 401, left col, ¶ 1 (“The electrodes were immersed in a magnetic field of annular permanent magnets.”) Mozgrin at 401, right col, ¶2 (“We found out that only the regimes with magnetic field strength not lower than 400 G provided the initial plasma density in the 10^9-10^{11} cm^{-3} range.”) Mozgrin at 407, left col, ¶ 3 (“The action of the magnetic field serves only to limit the electron thermal conductivity and to provide collisions sufficient for efficient energy transfer from electrons to heavy particles.”)
[20c.] applying a voltage pulse to the weakly-ionized plasma, an amplitude and a rise time of the voltage pulse being chosen to increase an excitation rate of ground state atoms that are present in the weakly-ionized plasma to create a multi-step ionization process that generates a strongly-ionized plasma, which comprises ions that sputter target material, from the weakly-ionized	The combination of Mozgrin with Kudryavtsev discloses applying a voltage pulse to the weakly-ionized plasma, an amplitude and a rise time of the voltage pulse being chosen to increase an excitation rate of ground state atoms that are present in the weakly-ionized plasma to create a multi-step ionization process that generates a strongly-ionized plasma, which comprises ions that sputter target material, from the weakly-ionized plasma, the multi-step ionization process comprising exciting the ground state atoms to generate excited atoms, and then ionizing the excited atoms within the weakly-ionized plasma without forming an arc discharge. ‘759 Patent, claim 33 (“wherein the peak plasma density of the strongly-ionized plasma is greater than about 10^{12} cm^{-3}”) 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).”)

Claim 38	Mozgrin in view of Kudryavtsev and further in view of Yamaguchi
plasma, the multi-step ionization process comprising exciting the ground state atoms to generate excited atoms, and then ionizing the excited atoms within the weakly-ionized plasma without forming an arc discharge.	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, 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 403, right col, ¶4 ("Regime 2 was characterized by intense cathode sputtering…") 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.") 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.") 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...") Kudryavtsev at Figs. 1, 6 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 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***

Claim 38	**Mozgrin in view of Kudryavtsev and further in view of Yamaguchi**
	***during the initial stage*.”)** Because Mozgrin applies voltage pulses that “suddenly generate an electric field,” one of ordinary skill reading Mozgrin would have been motivated to consider Kudryavtsev to better understand the effects of applying Mozgrin’s pulse. If one of ordinary skill building a system according to Mozgrin did not experience Kudryavtsev’s “explosive increase” in plasma density, it would have been obvious to adjust the operating parameters, e.g., increase the pulse length and/or pressure, so as to trigger Kudryavtsev’s fast stage of ionization. One of ordinary skill would have been motivated to use Kudryavtsev’s fast stage of ionization in Mozgrin so as to increase plasma density and thereby increase the sputtering rate. Further, use of Kudryavtsev’s fast stage in Mozgrin 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. Finally, because Mozgrin’s pulse, or the pulse used in the combination of Mozgrin and Kudryavtsev, produced Kudryavtsev’s fast stage of ionization, the rise time and amplitude of the pulse result in increasing the ionization rate of excited atoms and creation of a multi-step ionization process.
38. The method of claim 20 wherein the ionizing the feed gas comprises exposing the feed gas to an electrode that is adapted to emit electrons.	The combination of Mozgrin with Kudryavtsev and Yamaguchi discloses the ionizing the feed gas comprises exposing the feed gas to an electrode that is adapted to emit electrons. *See* claim evidence cited in claim 20. ‘759 Patent at 19:7-8 (“The heated electrode 452″ emits electrons in the area 245″.”). ‘759 Patent at 19:65-67 (“In yet another embodiment, the electrode 452" is heated to emit electrons proximate to the cathode assembly 216 of FIG. 11.”). Mozgrin at 409, left col, ¶ 4 (“The implementation of the high-current magnetron discharge (regime 2) in sputtering or layer deposition technologies provides an enhancement in the flux of deposited materials and plasma density…”). Mozgrin at 409, left col, ¶ 4 (“it can enhance the … homogeneity of deposited layers …e.g. by choosing the exposure time that is less than either the time characteristic for heat transfer in a treated material…this makes it possible to dictate the thermal regime for treated material surfaces including non-heat-resistant ones.”).

Claim 38	Mozgrin in view of Kudryavtsev and further in view of Yamaguchi
	Using a heating element to emit electrons and ionize a feed gas was well known to one of ordinary skill in the art in the field of sputtering. Such use merely constitutes combining well-known prior art elements according to known methods to yield predictable results. Yamaguchi at ¶ [0026] ("introducing … a sputtering discharge gas, such as a rare gas…at the center of an ionizing space."). Yamaguchi at ¶ [0027] (emphasis added) ("The ionizing mechanism 6, which is of a hot cathode type using Penning ionization, ionizes sputtering ions by hitting thermoelectrons, emitted from a hot electrode against ... sputtering discharge gas particles…"). It would have been obvious for one of ordinary skill to combine Mozgrin with Yamaguchi. Mozgrin teaches region 2 is useful for sputtering. Mozgrin at 409, left col, ¶ 3 ("The implementation of the high-current magnetron discharge (regime 2) in sputtering or layer deposition technologies provides an enhancement in the flux of deposited materials and plasma density…"). Specifically, Mozgrin teaches that "it can enhance the … homogeneity of deposited layers …e.g. by choosing the exposure time that is less than either the time characteristic for heat transfer in a treated material…this makes it possible to dictate the thermal regime for treated material surfaces including non-heat-resistant ones." Mozgrin at 409, left col, ¶ 4. Yamaguchi's objects of the invention are similarly to provide uniform coverage and prevent substrate heating. Yamaguchi at ¶¶ [0012]-[0013]. ("It is an object of the present invention … to form a film at a high bottom coverage ratio…"; "It is another object of the present invention to provide a film forming method…and apparatus which can prevent substrate temperature from increasing."). Also, a combination of Yamaguchi's electron emitting electrode with Mozgrin would be a combination of known elements in which each element performed as expected.