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23701	7590	04/21/2010	EXAMINER	
RAUSCHENBACH PATENT LAW GROUP, LLP P.O. BOX 387 BEDFORD, MA 01730			MCDONALD, RODNEY GLENN	
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**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

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## DETAILED ACTION

### ***Continued Examination Under 37 CFR 1.114***

A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on April 14, 2010 has been entered.

### ***Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Claims 31-46, 64-71 and 73-75 are rejected under 35 U.S.C. 102(e) as being anticipated by Kouznetsov (WO 02/103078 A1).

Regarding claim 31, Kouznetsov teach a sputtering source comprising a cathode assembly comprising a sputtering target that is positioned adjacent to an anode; and 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

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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. (See Abstract; Page 9 lines 18-33; Page 11 lines 27-30; Page 12 lines 3-7; Page 13 lines 23-29; Page 15 lines 2-13; Page 21 lines 25-27; Page 22 lines 11-17; Figs. 8b; Fig. 10)

Regarding claim 32, Kouznetsov teach that 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. (Page 18 lines 16-20)

Regarding claims 33, 34, Kouznetsov teach inherently based on the voltage pulse an increase in the density of ions which inherently generates sufficient thermal energy to cause a sputtering yield to be related to a temperature of the target.

Regarding claim 35, Kouznetsov teach the thermal energy generated in the sputtering target does not increase an average temperature of the sputtering target due to cooling. (See Fig. 12a)

Regarding claim 36, Kouznetsov teach a gas inlet to control the flow of the feed gas so that the feed gas diffuses the strongly ionized plasma. (Page 23 lines 10-11)

Regarding claim 37, Kouznetsov teach a gas inlet to control the flow of feed gas to allow additional power to be absorbed by the strongly ionized plasma, thereby generating additional thermal energy in the sputtering target. (Page 23 lines 10-11)

Regarding claim 38, Kouznetsov teach 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.

(Page 11 lines 27-30)

Regarding claim 39, Kouznetsov teach the voltage pulse generated between the anode and the cathode assembly excites atoms in the weakly ionized plasma and generates secondary electrons from the cathode assembly, the secondary electrons ionizing a portion of the excited atoms, thereby creating the strongly ionized plasma. (Page 15 lines 2-13)

Regarding claim 40, Kouznetsov teach the power supply generates a constant power. (Page 5 lines 23-25)

Regarding claim 41, Kouznetsov teach the power supply generates a constant voltage. (Page 5 lines 23-25)

Regarding claim 42, Kouznetsov teach a rise time. (See Figs. 9, 10)

Regarding claim 43, Kouznetsov teach a distance between the anode and the cathode for generating the plasma. (See Fig. 12a)

Regarding claim 44, Kouznetsov teach the rise time to be approximately within Applicant's range. (Page 23 lines 12-17)

Regarding claim 45, Kouznetsov teach the amplitude of the voltage pulse in the range of .4 to 4 kV. (Page 23 lines 13-14)

Regarding claim 46, Kouznetsov teach the pulse width of the voltage pulse in the range of approximately 0.1 microsecond to 100 seconds. (Page 23 lines 12-17)

Regarding claim 64, Kouznetsov teach a method for high deposition rate sputtering, the method comprising generating a voltage pulse between the anode and the cathode assembly comprising a sputtering target, the voltage pulse creating a weakly ionized plasma and then a strongly ionized plasma from the weakly ionized



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