

Exhibit 3

03/16/02
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Docket No.: M-12245 US

J1017 U.S. PTO
10/101863
03/16/02

March 16, 2002

Box Patent Application
Commissioner For Patents
Washington, D. C. 20231

Enclosed herewith for filing is a patent application, as follows:

Inventor(s): Zhang, Hongmei; Narasimhan, Mukundan; Mullapudi, Ravi; and Demaray, Richard E.

Title: **Biased Pulse DC Reactive Sputtering of Oxide Films**

- X Return Receipt Postcard
- X This Transmittal Letter (in duplicate)
- 2 page(s) Declaration For Patent Application and Power of Attorney (unsigned)
- 34 page(s) Specification (not including claims)
- 4 page(s) Claims
- 1 page Abstract
- 27 Sheet(s) of Drawings

Applicant(s) assert(s) entitlement to small entity status for the attached patent application

CLAIMS AS FILED (fees computed under 37 CFR §1.9(f))

For	Number Filed		Number Extra		Rate		Basic Fee
Total Claims	39	-20 =	9	x	\$ 9.00 =	\$	<u>370.00</u> 81.00
Independent Claims	5	-3 =	2	x	\$42.00 =	\$	84.00
<input type="checkbox"/> Fee of _____ for the first filing of one or more multiple dependent claims per application						\$	
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Please make the following charges to Deposit Account 19-2386:

- Total fee for filing the patent application in the amount of \$ 525.00
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Respectfully submitted,

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PATENT
Customer No. 22,852
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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application of:)	
)	
ZHANG, Hongmei et al.)	Group Art Unit: 2823
)	
Application No.: 10/101,863)	Examiner: ESTRADA, Michelle
)	
Filed: March 16, 2002)	
)	
For: BIASED PULSE DC REACTIVE)	Confirmation No.: 6938
SPUTTERING OF OXIDE FILMS)	

MAIL STOP AMENDMENT
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Sir:

AMENDMENT AND RESPONSE TO OFFICE ACTION

In reply to the Office Action mailed March 22, 2006, Applicants propose that this application be amended as follows:

Amendments to the Claims are reflected in the listing of claims in this paper beginning on page 2.

Remarks/Arguments follow the amendment sections of this paper beginning on page 6.

Attachment to this amendment include Declaration of R. E. Demaray under 37 C.F.R. §1.132.

AMENDMENTS TO THE CLAIMS:

This listing of claims will replace all prior versions and listings of claims in the application:

1. (Cancelled)
2. (Previously presented): The method of Claim 21, further including holding the temperature of the substrate substantially constant.
3. (Previously presented): The method of Claim 21, wherein applying pulsed DC power through the filter includes supplying up to about 10 kW of power at a frequency of between about 40 kHz and about 350 kHz and a reverse time pulse between about 1.3 and 5 μ s.
4. (Previously presented): The method of Claim 21, wherein adjusting an RF bias power to the substrate includes supplying up to 1000 W of RF power to the substrate.
5. (Canceled).
6. (Previously presented): The method of claim 4, wherein the RF bias power is zero.
7. (Previously presented): The method of Claim 21, wherein the film is an upper cladding layer of a waveguide structure and the RF bias power is optimized to provide planarization.
8. (Previously presented): The method of Claim 21, wherein a process gas of the process gas flow includes a mixture of Oxygen and Argon.
9. (Previously presented): The method of Claim 8, wherein the mixture is adjusted to adjust the index of refraction of the film.
10. (Previously presented): The method of Claim 8, wherein the mixture further includes nitrogen.
11. (Previously presented): The method of Claim 21, wherein applying pulsed DC power to the target includes adjusting pulsed DC power to a target which has an area larger than that of the substrate.

12. (Previously presented): The method of Claim 21, further including uniformly sweeping the target with a magnetic field.

13. (Previously Presented): The method of Claim 12, wherein uniformly sweeping the target with a magnetic field includes sweeping a magnet in one direction across the target where the magnet extends beyond the target in the opposite direction.

14. (Previously Presented): A method of depositing a film on a substrate, comprising:
providing pulsed DC power through a filter to a target;
providing RF bias power to a substrate positioned opposite the target; and
providing process gas between the target and the substrate, and
depositing a film on the backside of the target,
wherein the filter protects a pulsed DC power supply from the bias power, and
wherein a plasma is created between the target and the substrate.

15.-20. (Cancelled).

21. (Currently amended): A method of depositing a film on a substrate, comprising:
conditioning a target;
preparing the substrate;
adjusting an RF bias power to the substrate;
setting a process gas flow; and
applying pulsed DC power to the target through a filter to create a plasma and deposit the film,

wherein conditioning the target includes sputtering with the target in a metallic mode to remove the surface of the target and sputtering with the target in poisonous mode to prepare the surface, and

wherein the filter is a band rejection filter at a frequency of the bias power.

22. (Previously Presented): The method of Claim 21, wherein setting the process gas flow includes adjusting constituents in order to adjust the index of refraction of the film.

23. (Previously Presented): The method of Claim 21, wherein applying pulsed DC power

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