ASSIGNMENT RECORDATION COVER SHEET -PATENTS ONLY-

To:	Honorable	Commissioner	of Patents	and T	rademarks:
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	Please	record the attached	original d	locument(s) or copy thereof.
I.		of conveying party(i Wen Wu Chentao Yu		Girisi	h Dixit eth Jow
2,	Name a)	and address of receive Name: No Address: 39	ceiving party(ies): Novellus Systems, Inc. 3970 North First Street, San Jose, CA 95134		
3.		of conveyance Assignment Security Agreemen Other ion Date:			Merger Change of Name License Agreement
	a) b)	2/4/2008 2/4/2008	c) d)	2/4/20 2/12/2	
4.	Applic	ation Number(s) or P	atent Nun	nber(s): 1	2/002,780
	The titl	e of the (new) applic	ation is:		
	COMF APPLI	OSITIONALLY G	RADED 7	TITANIU	M NITRIDE FILM FOR DIFFUSION BARRIEF
5.	5. Please send all correspondence concerning this (these) documents to:				(these) documents to:
		Bey P.O Oai	ver Weav D. Box 70 kland, C. stomer N	er LLP 250 A 94612	-0250
6.	Total no	umber of applications	and pater	nts involv	ed: 1
7.	Total fe	e (37 CFR 3.41): \$4	<u>0.00</u>		
	\boxtimes	Enclosed Any additional fees a Order No. NOVLP2	ire authori (49)	ized to be	charged to Deposit Account No. 500388
8. attache	To the b	est of my knowledge a true copy of the or	and belie iginal doc	f, the fore	going information is true and correct and any
Date:	February	20, 2008		Registra Anna Ga	K. Weaver tion No. 31,314 Avrilova tion No. 58,181

Attorney Docket No. NOVLP249

700361346

PÅTĖŇT

application.

ASSIGNMENT OF PATENT APPLICATION

Whereas I, an undersigned inventor, have invented certain new and useful improvements as set forth in the patent application entitled:

COMPOSITIONALLY GRADED TITANIUM NITRIDE FILM FOR DIFFUSION BARRIER APPLICATIONS

(Atty. D	Oocket No. NOVLP249/NVLS-3371), (check one)
	for which I have executed a U.S. patent application on even date herewith. (Accompanying) which bears U.S. application No.12/002.780. (Not accompanying) which is a U.S. provisional application. (Accompanying)
acknow)	For good and valuable consideration, the receipt and sufficiency of which is hereby ledged, I, an undersigned inventor, hereby:

- 1) Sell, assign and transfer to <u>Novellus Systems</u>, <u>Inc.</u>, a California corporation having a place of business at 3970 North First Street, San Jose, <u>California 95134</u> ("ASSIGNEE"), the entire right, title and interest in any and all improvements and inventions disclosed in, applications based upon, and patents granted upon (including foreign patents and the right to claim priority), the above-referenced
- 2) Authorize and request the Commissioner of Patents to issue any and all United States Patents resulting from said application or any division, continuation, substitute, renewal, re-examination or reissue thereof to the ASSIGNEE.
- 3) Agree to execute all papers and documents and, entirely at the ASSIGNEE's expense, perform any acts which are reasonably necessary in connection with the prosecution of said application, as well as any derivative applications thereof, foreign applications based thereon, and/or the enforcement of patents resulting from such applications.
- 4) Agree that the terms, covenants and conditions of this assignment shall inure to the benefit of the ASSIGNEE, its successors, assigns and other legal representatives, and shall be binding upon the inventor, as well as the inventor's heirs, legal representatives and assigns.
- 5) Warrant and represent that I have not entered and will not enter into any assignment, contract, or understanding that conflicts with this assignment.
- 6) Authorize and request my attorney/agent to insert above the application No. in order to assist with recordal of this assignment.

Signed on the date indicated beside my signature.

Revised 01/02, Assign US Notary

CALIFORNIA ALL-PURPOSE ACKNOWLEDGMENT

State of California)
County of Santa Clara	}
On FERRIARY 4. 2008 hefore me	AN K. EDGERS, NOTARY PUBLIC. Here insert Name and Title of the Officer
One Scioic Me,	Here Insert Name and Trils of the Officer
personally appeared	Name(s) of Signer(s)
	Name(s) or Signer(e)
	who proved to me on the basis of satisfactory evidence to be the person(s) whose name(s) is/are subscribed to the within instrument and acknowledged to me that he/ehe/they executed the same in his/her/their authorized capacity(ees), and that by his/her/their signature(s) on the instrument the person(s), or the entity upon behalf of which the person(s) acted, executed the instrument.
JAN K. ROGERS Commission # 1598855 Notary Public - California \$ Santa Clara County My Comm. Expires Aug 1, 2009	I certify under PENALTY OF PERJURY under the laws of the State of California that the foregoing paragraph is true and correct.
Jacobia a dia dia d	WITNESS my hand and official seal.
Place Notary Seal Above	Signature Signature Motary Public
	PTIONAL ————————————————————————————————————
Though the Information below is not required by law	v, it may prove valuable to persons relying on the document d reattachment of this form to another document,
Description of Attached Document	reauachment of this form to another document,
	NT OF PATENT APPLICATION
	VI OF PATENT TIPLICATION
Document Date:	Number of Pages: TWO
Signer(s) Other Than Named Above:	
Capacity(ies) Claimed by Signer(s)	
Signer's Name: <u>G/R/SH D/X/T</u> Individual	Signer's Name:
☐ Corporate Officer — Title(s):	Corporate Officer — Title(s):
☐ Partner — ☐ Limited ☐ General RIGHT THUMBER OF SIGNER	
☐ Trustee Top of thumber	
☐ Guardian or Conservator	☐ Guardian or Conservator
□ Other:	□ Other:
Signer Is Representing:	Signer Is Sepresenting:

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-PURPOSE ACKNOWLEDGMENT State of California RUNDY 4, 2008 before me, JAN K. ROGERS, NOTHRY FUBLIC personally appeared WEN Will AND who proved to me on the basis of satisfactory evidence to be the person(s) whose name(s) ie/are subscribed to the within instrument and acknowledged to me that he/she/they executed the same in his/her/their authorized capacity(ies), and that by higher/their signature(s) on the instrument the person(s), or the entity upon behalf of which the person(s) acted, executed the instrument. I certify under PENALTY OF PERJURY under the laws JAN K. ROGERS Commission # 1598855 of the State of California that the foregoing paragraph is Notary Public - California true and correct. Santa Clara County My Comm. Expires Aug 1, 2009 WITNESS my hand and official seal. Place Notary Seal Above **OPTIONAL** Though the information below is not required by law, it may prove valuable to persons relying on the document and could prevent fraudulent removal and reattachment of this form to another document. **Description of Attached Document** Title or Type of Document: NONE Document Date: Number of Pages: Signer(s) Other Than Named Above: Capacity(ies) Claimed by Signer(s)

Signer's Name: WEW WU Signer's Name: LHENTAD YUL ☑ Individual Individual ☐ Corporate Officer — Title(s): □ Corporate Officer — Title(s): _ ☐ Partner — ☐ Limited ☐ General ☐ Partner — ☐ Limited ☐ General ☐ Attorney in Fact. ☐ Attorney in Fact Top of thumb here □ Trustee ☐ Trustee Guardian or Conservator ☐ Guardian or Conservator □ Other:

Signer Is Representing:



□ Other:

Signer Is Representing:_

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	0/3	200 DO	2 21 20B of
1. Inventor Signature:	Wen Wu	Date	3m.31,2009 gK
State of California)		3/4/2008
County of Savan Ca	<u> </u>	\$8. 	vear 2008 before me
me (or proved to me on the b to the within instrument, a authorized capacity(ies), and behalf of which the person ac WITNESS my hand a	, Notary Public, possis of satisfactory end acknowledged to that by bis/her signat that executed the institute of the inst	ersonally appeared We vidence) to be the person o me that he/she exc ture on the instrument t	on Wu, personally known to on whose name is subscribed ecuted the same in his/her
Notary Signature	<u> </u>		(SEAL)
2. Inventor Signature:	Chentao Xa	Date:	2-4-2008
State of California)		٨. ،
County of		\$8.	SEE AMACHED
On this da		the	year 2008, before me, tao Yu, personally known to
me (or proved to me on the batto the within instrument, are authorized capacity(ies), and the behalf of which the person act WITNESS my hand are	asis of satisfactory event acknowledged acknowledged acknowledged acknowledged the instant the instant acknowledged acknowledged acknowledgedgedgedgedgedgedgedgedgedgedgedgedge	ridence) to be the person me that he/she exeure on the instrument the	n whose name is subscribed
Notary Signature			(SEAL)
3. Inventor Signature:	<u>irish Dix</u> Girish Dixit		214103
State of California)		year 2008, before me,
County of)	SS.	Ne MA
On this day		, inthe	year 2008, before me.
to me (or proved to me on subscribed to the within inst his/her authorized capacity(ie entity upon behalf of which the WITNESS my hand an	the basis of satisfactument, and acknowns, and that by his/fice person acted, executed.	rsonally appeared Gin story evidence) to be deaged to me that he er signature on the ing	sh Dixit, personally known the person whose name is /she executed the same in
Notary Signature	<u> </u>	<u> </u>	(SEAL)

Revised 01/02, Assign US Notary

☐ Guardian or Conservator

Signer Is Representing

☐ Other:__

CALIFORNIA ALL-PURPOSE AC	CKNOWLEDGMENT
State of California	
	ļ
County of SANTA CLARA	
On Express 12, 2006 before me,	land Il Prome Alaman Demois
Date Date	Here Insert Name and Title of the Officer
personally appeared KENNETH V	Name(\$) of Signaris)
	wane(s) of oldinatis)
	who proved to me on the basis of satisfactory evidence to be the person(s) whose name(s) is/ere subscribed to the within instrument and acknowledged to me that he/she/they executed the same in his/her/their authorized capacity(ies), and that by his/her/their signature(s) on the instrument the person(s), or the entity upon behalf of which the person(s) acted, executed the instrument.
JAN K. ROGERS Commission # 1598855 Notary Public - California & Santa Clara County My Comm. Expires Aug 1, 2009	I certify under PENALTY OF PERJURY under the laws of the State of California that the foregoing paragraph is true and correct.
	WITNESS my hand and official seal.
	Signature fluid. Regess
Place Notary Seal Above	Signature of Motary Public
	TIONAL ————————————————————————————————————
and could prevent fraudulent removal and	, it may prove valuable to persons relying on the document I reattachment of this form to another document.
Description of Attached Document	
Title or Type of Document:	ENT OF PARENT APPLICATION
Document Date:	Number of Pages:
Signer(s) Other Than Named Above:	Nomber of Pages:
Signor(o) Other High Named Appye.	
Capacity(ies) Claimed by Signer(s)	
Signer's Name: ** Signer's Nam	Signer's Name:
☐ Corporate Officer — Title(s):	☐ Corporate Officer — Title(s):
☐ Partner — ☐ Limited ☐ General	NT □ Partner ─ □ Limited □ General
☐ Attorney in Fact ☐ OF SIGNER ☐ Trustee ☐ Trustee ☐ Top of thumb he	Attorney in Fact OF SIGNER Top of thumb hera

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☐ Guardian of Conservator

Signer is Representing:,

☐ Other:∠

4. Inventor Signature: Dat	te: <u>Z//2/08</u>
State of California)	SERTIACHED
County of Savet On this day of in the	SERTI
Notary Public, personally appeared Ke to me (or proved to me on the basis of satisfactory evidence) to b subscribed to the within instrument, and acknowledged to me that	e the person whose name is
his/her authorized capacity(ies), and that by his/her signature on the entity upon behalf of which the person acted, executed the instrument. WITNESS my hand and official seal.	instrument the person, or the
Notary Signature	(SEAL)

Revised 01/02, Assign US Notary

PATENT REEL: 020551 FRAME: 0649

RECORDED: 02/21/2008