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U.S. DEPARTMENT OF COMMERCE

U.S. Patent and Trademark Office

To the Honorable Commissioner of Patents and Trademarks: Please record the attached original documents or copy thereof.

1. Name of conveying party(ies):
Hua-Yu Liu
Additional name(s) of conveying party(ies) attached?
 Yes No

07/27/01

2. Name and address of receiving party(ies):
Name: **Numerical Technologies Inc.**
Street Address: **70 W. Plumeria Drive**
City/State/Zip: **San Jose, CA 95134**
Additional name(s) & address(es) attached?
 Yes No



3. Nature of conveyance:
 Assignment Merger
 Security Agreement Change of Name
 Other

Execution Date: 07/26/2001

4. Application number(s) or patent number(s): *09/917581*
If this document is being filed together with a new application, the execution date of the application is: 07/27/2001

A. Patent Application No.(s):

B. Patent No.(s):

Additional numbers attached? Yes No

5. Name and address of party to whom correspondence concerning document should be mailed:
Name:
Jeanette S. Harms
Bever, Hoffman & Harms, LLP
2099 Gateway Place, Suite 320
San Jose, CA 95110-1017

6. Total number of applications and patents involved: [1]

7. Total fee (37 CFR 3.41) \$40.00
 Enclosed
 Authorized to be charged to deposit account

8. Deposit account number: 50-0574
(Attorney Docket No.: NTI-017)

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9. Statement and signature.
To the best of my knowledge and belief, the foregoing information is true and correct and any attached copy is a true copy of the original document.

Jeanette S. Harms
Name of Person Signing

Signature

07/27/2001
Date

Total number of pages including cover sheet, attachments, and document: [2]

08/02/2001 EHAILE: 00000063 09917581
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PATENT
REEL: 012034 FRAME: 0770

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ASSIGNMENT OF APPLICATION

Docket Number NTI-017

Whereas, the undersigned:

1. LIU, Hua-Yu
3434 Waverly Str
Palo Alto CA 94306

hereinafter termed "Inventors", have invented certain new and useful improvements in

Method and Apparatus for Allowing Phase Conflicts in Phase Shifting Mask and Chromeless Phase Edges

- for which an application for United States Patent was filed on _____, Application No. _____
- for which an application for a United States Patent was executed on EVEN DATE HEREWITH, and

WHEREAS, Numerical Technologies, Inc., a corporation of the State of Delaware, having a place of business at 70 W. Plumeria Dr, San Jose, California, (hereinafter termed "Assignee"), is desirous of acquiring the entire right, title and interest in and to said application and the invention disclosed therein, and in and to all embodiments of the invention, heretofore conceived, made or discovered jointly or severally by said Inventors (all collectively hereinafter termed "said invention"), and in and to any and all patents, inventor's certificates and other forms of protection (hereinafter termed "patents") thereon granted in the United States and foreign countries.

NOW, THEREFORE, in consideration of the sum of One Dollar (\$1.00) and other good and valuable consideration acknowledged by said Inventors to have been received in full from said Assignee:

1. Said Inventors do hereby sell, assign, transfer and convey unto said Assignee the entire right, title and interest (a) in and to said application and said invention; (b) in and to all rights to apply for foreign patents on said invention pursuant to the International Convention for the Protection of Industrial Property or otherwise; (c) in and to any and all applications filed and any and all patents granted on said invention in the United States or any foreign country, including each and every application filed and each and every patent granted on any application which is a divisional, substitution, continuation, or continuation-in-part of any of said applications; and (d) in and to each and every reissue or extensions of any of said patents.

2. Said Inventors hereby jointly and severally covenant and agree to cooperate with said Assignee to enable said Assignee to enjoy to the fullest extent the right, title and interest herein conveyed in the United States and foreign countries. Such cooperation by said Inventors shall include prompt production of pertinent facts and documents, giving of testimony, execution of petitions, oaths, specifications, declarations or other papers, and other assistance all to the extent deemed necessary or desirable by said Assignee (a) for perfecting in said Assignee the right, title and interest herein conveyed; (b) for prosecuting any of said applications; (c) for filing and prosecuting substitute, divisional, continuing or additional applications covering said invention; (d) for filing and prosecuting applications for reissuance of any said patents; (e) for interference or other priority proceedings involving said invention; and (f) for legal proceedings involving said invention and any applications therefor and any patents granted thereon, including without limitation reissues and reexaminations, opposition proceedings, cancellation proceedings, priority contests, public use proceedings, infringement actions and court actions; provided, however, that the expense incurred by said Inventors in providing such cooperation shall be paid for by said Assignee.

3. The terms and covenants of this assignment shall inure to the benefit of said Assignee, its successors, assigns and other legal representatives, and shall be binding upon said Inventors, their respective heirs, legal representatives and assigns.

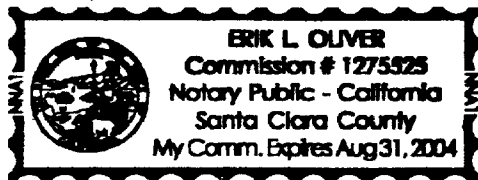
4. Said Inventors hereby jointly and severally warrant and represent that they have not entered and will not enter into any assignment, contract, or understanding in conflict herewith.

IN WITNESS WHEREOF, said Inventors have executed and delivered this instrument to said Assignee as of the dates written below:

Date: 7/26/01
Hua Yu Liu
Hua-Yu LIU

State of California
County of Santa Clara

On 26 Jul 2001, before me, Erik L. Oliver Notary Public, personally appeared Hua-Yu LIU, personally known to me or proved to me on the basis of satisfactory evidence to be the person(s) whose name is 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.



WITNESS my hand and official seal.

Erik L. Oliver

Place Notary Seal Above