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HEET

Commissioner for Patents: Please record the attached original document(s) or copy(ies).

1. Name of conveying party(ies):

Kethinni G. Chittibabu, Jin-An He, Lynne Ann Samuelson, Lian Li, Sukant Tripathy, Jayant Kumar and Srinivasan Balasubramanian

Additional name(s) attached? ☐ Yes ☒ No

2. Name and address of receiving party(ies):

University of Massachusetts Lowell
One University Avenue
Lowell, MA 01854-2881

USA as Represented by the Secretary of the Army
Washington, DC 20310

Additional names/addresses attached? ☐ Yes ☒ No

3. Nature of conveyance:

- ☒ Assignment
☐ Merger
☐ Security Agreement
☐ Change of Name
☐ Other:

Execution Date: 08/28/2002 (Samuelson),
08/29/2002 (Kumar), 09/06/2002 (Tripathy),
09/19/2002 (He, Li, Balasubramanian),
11/26/2002 (Chittibabu)

4. Application number(s) or patent number(s):

If this document is being filed with a new application, the execution date of the application is:

A. Patent Application No(s):

10/165,877

B. Patent No(s):

Additional numbers attached? ☐ Yes ☒ No

5. Name and address of party to whom correspondence concerning document should be mailed:

TU N. NGUYEN
Fish & Richardson P.C.
225 Franklin Street
Boston, Massachusetts 02110-2804

6. Total number of applications/patents involved:

7. Total fee (37 CFR §3.41): \$40

- ☒ Enclosed
☐ Authorized to charge Deposit Account.

8. Deposit Account No.: 06-1050

Please apply any additional charges, or any credits, to our
Deposit Account No. 06-1050.

DO NOT USE THIS SPACE

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.*

Tu N. Nguyen
Reg. No. 42,934
Name of Person Signing

Signature

December 18, 2002
Date

12/27/2002 LNUELLER 00000208 10165877

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40.00 DP

Total number of pages including coversheet, attachments and document: 9

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CERTIFICATE OF MAILING BY FIRST CLASS MAIL

I hereby certify under 37 CFR §1.8(a) that this correspondence is being deposited with the United States Postal Service as first class mail with sufficient postage on the date indicated below and is addressed to the Commissioner of Patents, Washington, D.C. 20231.

December 18, 2002
Date of Deposit

Signature

Kelly K. Hanlon
Typed Name of Person Signing Certificate

PATENT
REEL: 013602 FRAME: 0247

ASSIGNMENT

For valuable consideration, we, KETHINNI G. CHITTIBABU of 46C Hampshire Drive, Nashua, NH 03063, JIN-AN HE of 49 East Meadow Lane, Apt. 37, Lowell, MA 01854, LYNNE ANN SAMUELSON of 21 McDonough Drive, Marlboro, MA 01752, LIAN LI of 733 Wellman Avenue, N. Chelmsford, MA 01863, SUSAN TRIPATHY as legal representative of SUKANT TRIPATHY (deceased) of 8 Northbriar Road, Acton, MA 01720, JAYANT KUMAR of 53 Griffin Road, Westford, MA 01886, SRINIVASAN BALASUBRAMANIAN of 201 Main Street, Unit 14, Woburn, MA 01801, hereby assign to: University of Massachusetts Lowell, a Massachusetts corporation having a place of business at: One University Avenue, Lowell, MA 01854-2881 and its successors and assigns (collectively hereinafter called "the Assignee"), the entire right, title and interest throughout the world in the inventions and improvements which are subject of an application for United States Patent signed by us, entitled PHOTOVOLTAIC CELL, filed June 10, 2002, and assigned U.S. Serial Number 10/165,877, and we authorize and request the attorneys appointed in said application to hereafter complete this assignment by inserting above the filing date and serial number of said application when known; this assignment including said application, any and all United States and foreign patents, utility models, and design registrations granted for any of said inventions or improvements, and the right to claim priority based on the filing date of said application under the International Convention for the Protection of Industrial Property, the Patent Cooperation Treaty, the European Patent Convention, and all other treaties of like purposes; and we authorize the Assignee to apply in all countries in our name or in its own name for patents, utility models, design registrations and like rights of exclusion and for inventors' certificates for said inventions and improvements; and we agree for ourselves and our respective heirs, legal representatives and assigns, without further compensation to perform such lawful acts and to sign such further applications, assignments, Preliminary Statements and other lawful documents as the Assignee may reasonably request to effectuate fully this assignment.

IN WITNESS WHEREOF, I hereto set my hand and seal at Lowell, Massachusetts,
this 26th day of November, 2002

KETHINNI G. CHITTIBABU L.S.

State of Massachusetts :

: ss.

County of Middlesex :

Before me this 26th day of November, 2002, personally
appeared KETHINNI G. CHITTIBABU known to me to be the person whose name is
subscribed to the foregoing Assignment and acknowledged that he executed the same as his free
act and deed for the purposes therein contained.

Lila A. Lorrey
Notary Public Lila A. Lorrey
My Commission Expires: June 7, 2007.

[Notary's Seal Here]

IN WITNESS WHEREOF, I hereto set my hand and seal at _____,
this _____ day of _____, 20____

JIN-AN HE L.S.

State of _____ :

: ss.

County of _____ :

Before me this _____ day of _____, 20____, personally
appeared JIN-AN HE known to me to be the person whose name is subscribed to the foregoing
Assignment and acknowledged that he executed the same as his free act and deed for the
purposes therein contained.

Notary Public
My Commission Expires:

[Notary's Seal Here]

IN WITNESS WHEREOF, I hereto set my hand and seal at _____,
this _____ day of _____, 20_____
_____. L.S.

KETHINNI G. CHITTIBABU

State of _____ :
_____: ss.
County of _____ :

Before me this _____ day of _____, 20_____, personally
appeared KETHINNI G. CHITTIBABU known to me to be the person whose name is
subscribed to the foregoing Assignment and acknowledged that he executed the same as his free
act and deed for the purposes therein contained.

Notary Public

My Commission Expires:

[Notary's Seal Here]

IN WITNESS WHEREOF, I hereto set my hand and seal at Lowell, Massachusetts,
this 19th day of September, 2002
Jin an He L.S.

JIN-AN HE

State of Massachusetts :
_____: ss.
County of Middlesex :

Before me this 19th day of September, 2002, personally
appeared JIN-AN HE known to me to be the person whose name is subscribed to the foregoing
Assignment and acknowledged that he executed the same as his free act and deed for the
purposes therein contained.

Lila A. Lorrey
Notary Public Lila A. Lorrey
My Commission Expires: June 7, 2007.

[Notary's Seal Here]

IN WITNESS WHEREOF, I hereto set my hand and seal at _____,
this _____ day of _____, 20____

L.S.

LYNNE ANN SAMUELSON

State of _____ :

: ss.

County of _____ :

Before me this _____ day of _____, 20____, personally
appeared LYNNE ANN SAMUELSON known to me to be the person whose name is
subscribed to the foregoing Assignment and acknowledged that he executed the same as his free
act and deed for the purposes therein contained.

Notary Public

My Commission Expires:

[Notary's Seal Here]

IN WITNESS WHEREOF, I hereto set my hand and seal at Lowell, Massachusetts,
this 19th day of September, 2002

L.S.

LIAN LI

State of Massachusetts :

: ss.

County of Middlesex :

Before me this 19th day of September, 2002, personally
appeared LIAN LI known to me to be the person whose name is subscribed to the foregoing
Assignment and acknowledged that he executed the same as his free act and deed for the
purposes therein contained.

Lila A. Lorrey
Notary Public Lila A. Lorrey

My Commission Expires: June 7, 2007.

[Notary's Seal Here]

IN WITNESS WHEREOF, I hereto set my hand and seal at Acton, MA,
this 6th day of September, 2002

Susan Tripathy L.S.
SUSAN TRIPATHY, for SUKANT TRIPATHY (deceased)
State of Massachusetts :

: ss.
County of Middlesex :

Before me this 6 day of Sept, 2002, personally
appeared SUSAN TRIPATHY known to me to be the person whose name is subscribed to the
foregoing Assignment and acknowledged that he executed the same as his free act and deed for
the purposes therein contained.

SUZANNE H. TIERNEY
NOTARY PUBLIC
Commonwealth of Massachusetts
My Commission Expires Aug. 25, 2006

Suzanne H. Tierney
Notary Public Suzanne H. Tierney
My Commission Expires: 8-25-06

[Notary's Seal Here]

IN WITNESS WHEREOF, I hereto set my hand and seal at _____,
this _____ day of _____, 20____

L.S.
JAYANT KUMAR

State of _____ :
: ss.
County of _____ :

Before me this _____ day of _____, 20____, personally
appeared JAYANT KUMAR known to me to be the person whose name is subscribed to the
foregoing Assignment and acknowledged that he executed the same as his free act and deed for
the purposes therein contained.

Notary Public
My Commission Expires:

[Notary's Seal Here]

IN WITNESS WHEREOF, I hereto set my hand and seal at _____,
this _____ day of _____, 20_____
_____. L.S.

SUSAN TRIPATHY, for SUKANT TRIPATHY (deceased)

State of _____ :
_____. : ss.
County of _____ :

Before me this _____ day of _____, 20_____, personally
appeared SUSAN TRIPATHY known to me to be the person whose name is subscribed to the
foregoing Assignment and acknowledged that he executed the same as his free act and deed for
the purposes therein contained.

Notary Public

My Commission Expires:

[Notary's Seal Here]

IN WITNESS WHEREOF, I hereto set my hand and seal at Lowell, Massachusetts,
this 29th day of August, 2002
_____. L.S.

JAYANT KUMAR

State of Massachusetts :
_____. : ss.
County of Middlesex :

Before me this 29th day of August, 2002, personally
appeared JAYANT KUMAR known to me to be the person whose name is subscribed to the
foregoing Assignment and acknowledged that he executed the same as his free act and deed for
the purposes therein contained.

Lila A. Lorrey
Notary Public Lila A. Lorrey
My Commission Expires: June 7, 2007.

[Notary's Seal Here]

IN WITNESS WHEREOF, I hereto set my hand and seal at Lowell, Massachusetts,
this 19th day of September, 20 02

 L.S.

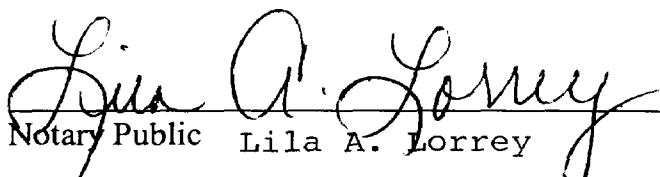
SRINIVASAN BALASUBRAMANIAN

State of Massachusetts :

: ss.

County of Middlesex :

Before me this 19th day of September, 20 02, personally
appeared SRINIVASAN BALASUBRAMANIAN known to me to be the person whose name is
subscribed to the foregoing Assignment and acknowledged that he executed the same as his free
act and deed for the purposes therein contained.


Notary Public Lila A. Lorrey
My Commission Expires: June 7, 2007.

[Notary's Seal Here]

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ASSIGNMENT OF INVENTION

For use of this form, see AR 27-60; the proponent agency is OTJAG

Title of Invention: Photovoltaic Cell

Inventor(s) Lynne Ann Samuelson

*Application Serial No.: 10/165,877

*Date Oath Executed: August 28, 2002 *Filing Date: 6/10/02

(*Data not known at execution may be added for better identification.)

I (We), the undersigned inventor(s), in consideration of the rights of the Government of the United States acquired by virtue of the circumstances under which the above-entitled invention was made, hereby:

1. Assign to the Government of the United States, as represented by the Secretary of the Army, the entire right, title and interest throughout the United States, its Territories, Possessions, and Puerto Rico, in and to the above-entitled invention and application for patent and all Letters Patent issuing thereon, and any continuation, continuation-in-part or division of said application and any reissue or extension of said Letters Patent.

2. Agree to assign to the Government upon its request, title and interest in the invention in those foreign countries in which the Government, within eight months of the filing of the United States application for patent, determines to cause an application to be filed; provided that if the Government determines not to cause an application to be filed in any particular foreign country or fails to make such a determination, within the said eight months, all right, title and interest in the invention in such foreign country shall remain in me (us), subject to a nonexclusive, irrevocable, royalty-free license to the Government in any patent which may issue on the invention in such foreign country, including the power to issue sublicenses for use in behalf of the Government and/or furtherance of the foreign policies of the Government.

3. Agree to provide any further information within my (our) knowledge and to execute any further documents necessary to the prosecution of patent applications on the invention, the prosecution and settlement of interferences and recording of title to patent applications and patents issuing thereon.

Signature of Inventor:

Lynne A. Samuelson
(First name) (Middle Initial) (Last name)

Duty Address: Natick Middlesex Massachusetts
(Locality) (County) (State)

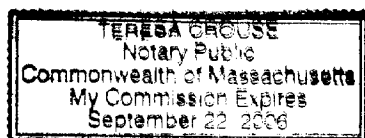
Date: Aug 28, 2002 Typed Name of Inventor: Lynne Ann Samuelson
.....

State of: Massachusetts)
County of: Middlesex) SS

On the above date Lynne Ann Samuelson known to me to be the individual described in
and who executed the foregoing instrument duly appeared before me and acknowledged to me that the same as his own free act and deed.

(SEAL)

[Signature]
(Signature of notary public)



My Commission expires on

9/22/06