

PATENT ASSIGNMENT

Electronic Version v1.1

Stylesheet Version v1.1

SUBMISSION TYPE:	NEW ASSIGNMENT												
NATURE OF CONVEYANCE:	ASSIGNMENT												
CONVEYING PARTY DATA													
<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="width: 70%;">Name</th> <th style="width: 30%;">Execution Date</th> </tr> </thead> <tbody> <tr> <td>Tolga Aytug</td> <td>02/16/2011</td> </tr> <tr> <td>David K. Christen</td> <td>02/16/2011</td> </tr> <tr> <td>Mariappan Parans Paranthaman</td> <td>02/16/2011</td> </tr> </tbody> </table>		Name	Execution Date	Tolga Aytug	02/16/2011	David K. Christen	02/16/2011	Mariappan Parans Paranthaman	02/16/2011				
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RECEIVING PARTY DATA													
<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 20%;">Name:</td> <td>UT-Battelle, LLC</td> </tr> <tr> <td>Street Address:</td> <td>One Bethel Valley Road</td> </tr> <tr> <td>Internal Address:</td> <td>4500N, MS-6258</td> </tr> <tr> <td>City:</td> <td>Oak Ridge</td> </tr> <tr> <td>State/Country:</td> <td>TENNESSEE</td> </tr> <tr> <td>Postal Code:</td> <td>37831-6258</td> </tr> </table>		Name:	UT-Battelle, LLC	Street Address:	One Bethel Valley Road	Internal Address:	4500N, MS-6258	City:	Oak Ridge	State/Country:	TENNESSEE	Postal Code:	37831-6258
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PROPERTY NUMBERS Total: 1													
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CORRESPONDENCE DATA													
<p>Fax Number: (865)574-0381</p> <p><i>Correspondence will be sent via US Mail when the fax attempt is unsuccessful.</i></p> <p>Phone: (865) 574-0393</p> <p>Email: bowmanke@oml.gov</p> <p>Correspondent Name: Edna I. Gergel</p> <p>Address Line 1: One Bethel Valley Road</p> <p>Address Line 2: 4500N, MS-6258</p> <p>Address Line 4: Oak Ridge, TENNESSEE 37831-6258</p>													
ATTORNEY DOCKET NUMBER:	2407 UTB												
NAME OF SUBMITTER:	Karen E. Bowman												
Total Attachments: 5													

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PATENT
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RECORDATION FORM COVER SHEET
PATENTS ONLY

To the Director of the U.S. Patent and Trademark Office: Please record the attached documents or the new address(es) below.

1. Name of conveying party(ies)

Tolga Aytug
David K. Christen
Mariappan Parans Paranthaman

Additional name(s) of conveying party(ies) attached? ☐ Yes ☒ No

3. Nature of conveyance/Execution Date(s):

Execution Date(s) 02/16/2011

- ☒ Assignment ☐ Merger
☐ Security Agreement ☐ Change of Name
☐ Joint Research Agreement
☐ Government Interest Assignment
☐ Executive Order 9424, Confirmatory License
☐ Other _____

2. Name and address of receiving party(ies)

Name: UT-Battelle, LLC

Internal Address: 4500N, MS-6258

Street Address: One Bethel Valley Road

City: Oak Ridge

State: TN

Country: USA Zip: 37831-6258

Additional name(s) & address(es) attached? ☐ Yes ☒ No

4. Application or patent number(s):

☐ This document is being filed together with a new application.

A. Patent Application No.(s)

B. Patent No.(s)

12/974,425

Additional numbers attached? ☐ Yes ☒ No

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

Name: Edna I. Gergel

Internal Address: UT-Battelle, LLC

Street Address: One Bethel Valley Road

4500N, MS-6258

City: Oak Ridge

State: TN Zip: 37831-6258

Phone Number: (865) 574-0393

Fax Number: (865) 574-0381

Email Address: gergelei@ornl.gov

6. Total number of applications and patents involved: 1

7. Total fee (37 CFR 1.21(h) & 3.41) \$ 40.00

- ☐ Authorized to be charged by credit card
☒ Authorized to be charged to deposit account
☐ Enclosed
☐ None required (government interest not affecting title)

8. Payment Information

a. Credit Card Last 4 Numbers _____
Expiration Date _____

b. Deposit Account Number 13-1958

Authorized User Name Karen E. Bowman

9. Signature:

/Edna I. Gergel/

Signature

02/16/2011

Date

Edna I. Gergel, Reg. No. 50819

Name of Person Signing

Total number of pages including cover sheet, attachments, and documents:

5

ASSIGNMENT

WHEREAS, we the below-named inventors whose residences and post office are as stated below, have invented certain new and useful improvements in

**HETERO-JUNCTION PHOTOVOLTAIC DEVICE AND METHOD
OF FABRICATING THE DEVICE**

(hereinafter referred to as "Subject Invention") for which are described in United States Patent Application No. 12/974,425 filed on December 21, 2010, and

WHEREAS, UT-BATTELLE, LLC, a limited liability company of the State of Tennessee, having an office at One Bethel Valley Road, P. O. Box 2008, Oak Ridge, Tennessee 37831-6258, hereinafter referred to as "ASSIGNEE," is desirous of acquiring the entire right, title and interest of the undersigned in the Subject Invention and to any Letters Patent that may be granted therefore in the United States of America and in any and all foreign countries.

NOW, THEREFORE, in accordance with the terms of our employment agreement with ASSIGNEE and for good and valuable consideration, the receipt of which is hereby acknowledged, we hereby assign to ASSIGNEE our entire right, title and interest in the Subject Invention to all rights of priority thereto pursuant to the International Convention for the Protection of Industrial Property, and in any Letters Patent on the Subject Invention that may be granted in the United States of America and in any and all foreign countries, including any and all Letters Patent that are divisions, reissues, continuations, substitutions or extensions of any Letters Patent or applications therefore on the Subject Invention.

We hereby authorize and request the Commissioner of the United States Patent and Trademark Office and the officials of any and all foreign countries to issue any and all of said Letters Patent, when granted, to the ASSIGNEE.

Further, we hereby agree to communicate to said ASSIGNEE or its representatives any facts known to us respecting said Subject Invention, to testify in any legal proceedings, sign all lawful papers, execute all divisional, continuation, substitution, renewal and reissue applications, to execute all necessary assignment papers to cause any and all of said Letters Patent to be issued to said ASSIGNEE, and to make all rightful oaths and generally do everything possible to aid said ASSIGNEE and its representatives to obtain and enforce proper protection for said Subject Invention in the United States of America and in any and all foreign countries.

We further agree that the terms, covenants and conditions of this assignment shall inure to the benefit of ASSIGNEE, its successors, assigns, and legal representatives, and shall be binding on us, our heirs, legal representatives, and assigns.

Full name of inventor: Tolga Aytug

Signature: Tolga Aytug

Date: 2/16/2011

Residence: 2204 East Windbrook Road, Knoxville, Tennessee 37923

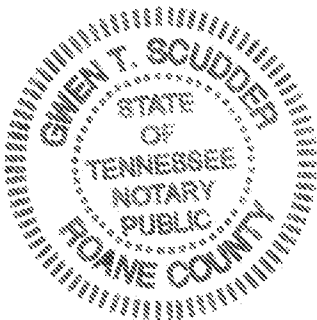
Post Office Address: 2204 East Windbrook Road, Knoxville, Tennessee 37923

State of Tennessee)

County of Roane)

On this 16 day of February, 2011, before me, a Notary Public in and for the County and State aforesaid, appeared **TOLGA AYTUG** to me personally known to be the same person whose name is subscribed to the foregoing instrument, and acknowledged that he executed said instrument as his free and voluntary act and for the uses and purposes therein expressed.

WITNESS my hand and seal the day and year last above given.



Gwen T. Scudder
Notary Public

SEAL

My Commission Expires:

My Commission Expires Thursday August 14, 2012.

Full name of inventor: David K. Christen

Signature: David K. Christen Date: 2/16/2011

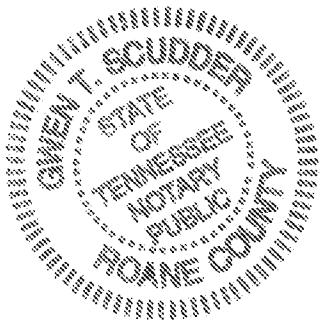
Residence: 103 Artesia Drive, Oak Ridge, Tennessee 37830

Post Office Address: 103 Artesia Drive, Oak Ridge, Tennessee 37830

State of Tennessee)
County of Roane)

On this 16 day of February, 2011, before me, a Notary Public in and for the County and State aforesaid, appeared **DAVID K. CHRISTEN** to me personally known to be the same person whose name is subscribed to the foregoing instrument, and acknowledged that he executed said instrument as his free and voluntary act and for the uses and purposes therein expressed.

WITNESS my hand and seal the day and year last above given.



SEAL

Gwen T. Scudder
Notary Public

My Commission Expires:

My Commission Expires Thursday, August 14, 2012.

Full name of inventor: Mariappan Parans Paranthaman

Signature: M. Paranthaman Date: 2/16/2011

Residence: 654 Spring Branch Lane, Knoxville, Tennessee 37934

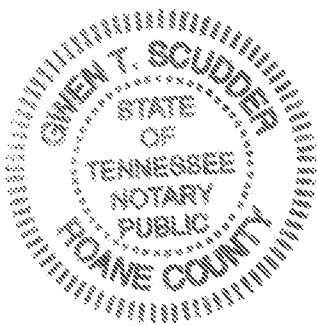
Post Office Address: 654 Spring Branch Lane, Knoxville, Tennessee 37934

State of Tennessee)

County of Roane)

On this 16 day of February, 2011, before me, a Notary Public in and for the County and State aforesaid, appeared **MARIAPPAN PARANS PARANTHAMAN** to me personally known to be the same person whose name is subscribed to the foregoing instrument, and acknowledged that he executed said instrument as his free and voluntary act and for the uses and purposes therein expressed.

WITNESS my hand and seal the day and year last above given.



Owen T. Scudder
Notary Public

SEAL

My Commission Expires:

My Commission Expires Thursday, August 14, 2012.