

Form PTO-1595 (Rev. 03-09)
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ARL 04-05

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)

Dongming Zhu
Robert A. Miller

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

2. Name and address of receiving party(ies)

Name: The United States of America as represented by the

Internal Address: Secretary of the Army

Street Address: _____

City: Washington

State: DC

Country: USA Zip: 20310

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

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

Execution Date(s) 8/28/06

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

4. Application or patent number(s):

This document is being filed together with a new application.

A. Patent Application No.(s)

11/510,574

B. Patent No.(s)

Additional numbers attached? Yes No

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

Name: U.S. Army Research Laboratory

Internal Address: Attn: AMSRD-ARL-O-CC-IP/Guy M. Miller

Street Address: 2800 Powder Mill Road

City: Adelphi

State: Maryland Zip: 20783

Phone Number: 301-394-3791

Fax Number: 301-394-3972

Email Address: guy.m.miller@arl.army.mil

6. Total number of applications and patents involved: 1

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

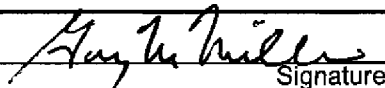
- Authorized to be charged to deposit account
- Enclosed
- None required (government interest not affecting title)

8. Payment Information

Deposit Account Number 19-2201

Authorized User Name Guy M. Miller

9. Signature:


Signature

7-8-09
Date

Guy M. Miller, Reg. No. 32,333
Name of Person Signing

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

3

Documents to be recorded (including cover sheet) should be faxed to (571) 273-0140, or mailed to:
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CH \$40.00 192201 11510574

ASSIGNMENT OF INVENTION

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

Title of Invention: Low Conductivity and High Toughness Tetragonal Phase Structured Ceramic Thermal Barrier

Inventor(s) Dongming Zhu and Robert A. Miller Coatings

*Application Serial No.: 11/510,574 ARL 04-05

*Date Oath Executed: 8/28/06 *Filing Date: 8/28/06

(*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: [Signature] [Signature]
(First name) (Middle Initial) (Last name)

Duty Address: 21000 Brookpark Road, Cuyahoga Ohio
(Locality) (County) (State)

Date: August 28, 2006 Typed Name of Inventor: Dongming Zhu

State of: OHIO)
County of: CUYAHOGA) SS

On the above date Dongming Zhu 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.



CHRISTINE WALTERS
Notary Public, State of Ohio
My Commission Expires
December 7, 2009
Recorded in Cuyahoga Count

[Signature]
(Signature of notary public)

My Commission expires on Dec 7, 2009

SUPPLEMENTAL SIGNATURE SHEET

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

Use this form with DA Forms 2873-R and 2874-R when additional signature blocks are needed.

1. ASSIGNOR(S) OR LICENSOR(S) NAME(S)

Dongming Zhu and Robert A. Miller

2. APPLICATION SERIAL NUMBER

11/510,574

ARL 04-05

3. FILING DATE 8/28/06

4. TITLE OF INVENTION

Low Conductivity and High Toughness Tetragonal Phase Structured Ceramic Thermal Barrier Coatings

SIGNATURE OF INVENTOR: Robert Miller
(First name) (Middle initial) (Last name)

DUTY ADDRESS: 21000 Brookpark Rd Cleveland OH 44135

DATE SIGNED: Aug 28, 2006 INVENTOR'S TYPED NAME: Robert A. Miller

STATE OF OHIO)
COUNTY OF CUYAHOGA) SS.

On the above date executed the foregoing instrument duly appeared before me and acknowledged to me that he executed the same as his own free act and deed.

Robert A. Miller

known to me to be the individual described in and who



CHRISTINE WALTERS
Notary Public, State of Ohio
My Commission Expires
December 7, 2009

Christine Walters
(Signature of notary public)

Recorded in Cuyahoga Count.

My Commission expires on 12/7/09

SIGNATURE OF INVENTOR: _____
(First name) (Middle initial) (Last name)

DUTY ADDRESS: _____

DATE SIGNED: _____ INVENTOR'S TYPED NAME: _____

STATE OF _____)
COUNTY OF _____) SS.

On the above date executed the foregoing instrument duly appeared before me and acknowledged to me that he executed the same as his own free act and deed.

known to me to be the individual described in and who

(SEAL)

(Signature of notary public)

My Commission expires on _____