



103478443

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

1-28

1. Name of conveying party(ies):  
Anne Charlotte Antoinette DELSING  
Hubertus T. HINTZEN  
Yuan-Qiang LI

2. Name and address of receiving party(ies):  
Name: Osram Opto Semiconductors GmbH  
Internal Address:  
Street Address: Wernerwerkstr. 2  
City: Regensburg  
State/Country: Germany  
Zip: 93049

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

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

3. Nature of conveyance:  
 Assignment                       Merger  
 Security Agreement             Change of Name  
 Recordation of Documents showing ownership by  
Osram Opto Semiconductors GmbH with Document ID No.  
103445127:  
(1) Affidavit;  
(2) Decision on Renewed Petition under 37 CFR 1.47(b);  
(3) Response to Decision on Petition under 37 CFR  
1.47(b);  
(4) Response to Notification of Missing Requirements  
and Petition to Proceed under 37 under CFR 1.47(b)  
Execution Date: 06/10/2005 (Date of Decision on Renewed  
Petition)

4. Application number(s) or patent number(s):  
If this document is being filed together with a new application, the execution date of the application is:  
A. Patent Application No.(s)  
SN.: 10/496,707  
B. Patent No.(s)  
Additional numbers attached? [ ] Yes [x] No

OFFICE  
JAN 23 PM 2:40

5. Name and address of party to whom correspondence concerning document should be mailed:  
Name: Alfred W. Froebrich  
Internal Address: COHEN PONTANI LIEBERMAN & PAVANE LLP  
Street Address: 551 Fifth Avenue, 12<sup>th</sup> Floor  
City: New York State: New York Zip: 10176

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: 03-2412  
(Attach duplicate copy of this page if paying by deposit account)

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.*

01/23/2008 DEBYNE 0000001 10496707

01-11-2008 10:00:00

Alfred W. Froebrich  
Name of Person Signing  
Reg. No. 38,887

Signature

January 24, 2008  
Date

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

80

Mail documents to be recorded with required cover sheet information to:  
Mail Stop Assignment Recordation  
Director of the US Patent and Trademark Office

**IN THE UNITED STATES PATENT AND TRADEMARK OFFICE**

In re Application of

Anne Charlotte Antoinette DELSING et al.

Serial No.: 10/496,707

Filed: March 24, 2005

For: Luminescent Material, Especially for LED  
Application

Examiner: THOMPSON, Camie S.  
Group Art: 1774

I hereby certify that this correspondence is being deposited with the United States Postal Service with sufficient postage as first class mail in an envelope addressed to: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450, on

January 24, 2008

(Date of Deposit)

Alfred W. Froebrich

Name of applicant, assignee or Registered Representative

  
Signature

January 24, 2008

Date of Signature

Mail Stop Assignment  
Commissioner for Patents  
P.O. Box 1450  
Alexandria, VA 22313-1450

**AFFIDAVIT**

SIR:

This affidavit is submitted to support recordation of documents showing ownership of the subject application by Osram Opto Semiconductors GmbH.

As evidenced by the attached "Decision on Renewed Petition under 37 CFR 1.47 (b)", dated June 10, 2005, the inventors refused to sign the declaration and assignment and the application was accepted without their signatures. The attached documents include (1) Decision on Renewed Petition under 37 CFR 1.47(b); (2) Applicant's response to the Decision on Petition under 37 CFR 1.47(b); and (3) Applicant's Response to Notification of Missing Requirements and Petition to Proceed under 37 CFR 1.47(b).

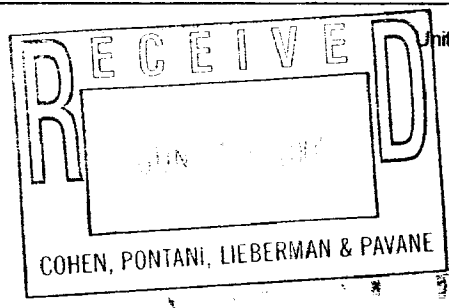
Specifically, the Declaration and Supplemental Declaration by Dr. Joachim Werner attached to documents 2 and 3 evidence that all of the joint inventors worked on this invention under the provision of a Research Agreement, and that the invention is the property of OSRAM Opto Semiconductors GmbH under article 8.1 of the Research Agreement.

I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code and that such willful false statements may jeopardize the validity of the application or any patent issued thereon.

By Alfred W. Froeblich  
Alfred W. Froeblich  
Reg. No. 38,887  
551 Fifth Avenue, Suite 1210  
New York, New York 10176  
(212) 687-2770

Date: January 24, 2008

Dated: January 24, 2008



Thomas Langer  
Cohen, Pontani, Lieberman & Pavane  
551 Fifth Avenue, Suite 1210  
New York, NY 10176

In re Application of  
DELSING, et al.  
Serial No.: 10/496,707  
PCT No.: PCT/EP03/10599  
Int. Filing Date: 23 September 2003  
Priority Date: 24 September 2002  
Atty Docket No.: 502902-179PUS  
For: LUMINESCENT MATERIAL  
ESPECIALLY FOR LED APPLICATION

DECISION ON RENEWED  
PETITION UNDER  
37 CFR 1.47(b)

This decision is in response to the renewed petition under 37 CFR 1.47(b) filed 24 March 2005 in the United States Patent and Trademark Office (USPTO).

**BACKGROUND**

On 04 February 2005, applicant was mailed a decision dismissing applicant's petition under 37 CFR 1.47(b). Applicant was afforded two months to file any request for reconsideration.

On 24 March 2005, applicant responded with the present renewed petition.

**DISCUSSION**

As detailed in the decision mailed 04 February 2005, a petition under 37 CFR 1.47(b) must be accompanied by: (1) the requisite petition fee under 37 CFR 1.17(g); (2) factual proof that the inventor refuses to execute the application or cannot be reached after diligent effort; (3) a statement of the last known address of the non-signing inventor; (4) an oath or declaration executed by the 37 CFR 1.47(b) applicant on behalf of and as an agent for the non-signing inventor; (5) proof of proprietary interest in the application; and, (6) a showing that such action is necessary to preserve the rights of the parties or to prevent irreparable damages. Applicant previously satisfied items (1)-(3), and (6).

With the filing of the present renewed petition and accompanying documents applicant has now satisfied all six items listed above and it is proper to grant applicant's renewed petition at this time.

PATENT 270800

**IN THE UNITED STATES PATENT AND TRADEMARK OFFICE**

In re Application of

Anne Charlotte Antoinette DELSING et al.

Serial No.: 10/496,707

Filed: May 25, 2004

For: Luminescent Material, Especially for LED  
Application

Mail Stop PCT  
Commissioner for Patents  
Office of PCT Legal Administration  
P.O. Box 1450  
Alexandria, VA 22313-1450

**RESPONSE TO DECISION ON PETITION  
UNDER 37 CFR 1.47(b)**

SIR:

This is in response to the DECISION dated February 4, 2005 setting a non-statutory period for response expiring April 4, 2005.

The applicant's Petition filed December 30, 2004 has been dismissed without prejudice on two grounds. Each of these is discussed below.

S:\yolanda\pto\502902-179PUS response to decision.doc

First Ground for Dismissal

Applicant provided a Declaration executed by "Thomas Langer, Attorney for Assignee." MPEP 409.03(b) states that "the attorney or agent may simply state that he or she is authorized to sign on behalf of the corporation." However, applicant's Declaration does not specifically identify the assignee. The Assignee, as stated in the Petition, is OSRAM Opto Semiconductors GmbH. Accordingly, a replacement Declaration is submitted herewith in which this deficiency has been remedied.

Second Ground for Dismissal

Dr. Werner's Declaration is allegedly silent on how he knows with certainty that all of the inventors worked on this invention for TU/e under the provisions of the Research Agreement. More information is needed which details Dr. Werner's firsthand knowledge of the activities of the inventors as to the present invention. Accordingly, a Supplemental Declaration is submitted herewith along with Exhibits 1-7 to provide the needed information.

Grant of the Petition is respectfully solicited.

Respectfully submitted,

COHEN, PONTANI, LIEBERMAN & PAVANE

By Thomas Langer  
Thomas Langer  
Reg. No. 27,264  
551 Fifth Avenue, Suite 1210  
New York, New York 10176  
(212) 687-2770

Dated: March 24, 2005

As a below named inventor, I hereby declare that:

My residence, post office address and citizenship are as stated below next to my name.

I believe I am the original, first and sole inventor (if only one name is listed below) or an original, first and joint inventor (if plural names are listed below) of the subject matter which is claimed and for which a patent is sought on the invention entitled:

**LUMINESCENT MATERIAL, ESPECIALLY FOR LED APPLICATION**

the specification of which (check only one item below)

is attached hereto

was filed as United States application

Serial No. 10/496,707

on May 25, 2004

and was amended by Preliminary Amendment filed concurrently with the application

on \_ (if applicable).

was filed as PCT international application

Number

on

and was amended under PCT Article 19

on \_ (if applicable).

I hereby state that I have reviewed and understand the contents of the above-identified specification, including the claims, as amended by any amendment specifically referred to above.

I acknowledge the duty to disclose information which is material to patentability as defined in 37 CFR 1.56, including for continuation-in-part applications, material information which became available between the filing date of the prior application and the national or PCT international filing date of the continuation-in-part application.

I hereby claim foreign priority benefits under 35 U.S.C. 119(a)-(d) or (f), or 365(b) of any foreign application(s) for patent, inventor's or plant breeder's rights certificate(s), or 365(a) of any PCT international application which designated at least one country other than the United States of America, listed below and have also identified below, by checking the box, any foreign application for patent, inventor's or plant breeder's rights certificate(s), or any PCT international application having a filing date before that of the application on which priority is claimed.

**PRIOR FOREIGN/PCT APPLICATIONS AND ANY PRIORITY CLAIMS UNDER 35 U.S.C. 119:**

Country (if PCT, indicate "PCT")	Application Number	Date of Filing (day, month, year)	Priority Claimed Under 35 U.S.C. 119	
			<input checked="" type="checkbox"/> YES	<input type="checkbox"/> NO
EP	02021172.8	24 September 2002	<input checked="" type="checkbox"/> YES	<input type="checkbox"/> NO
PCT	PCT/EP03/10599	23 September 2003	<input type="checkbox"/> YES	<input checked="" type="checkbox"/> NO
			<input type="checkbox"/> YES	<input type="checkbox"/> NO
			<input type="checkbox"/> YES	<input type="checkbox"/> NO
			<input type="checkbox"/> YES	<input type="checkbox"/> NO
			<input type="checkbox"/> YES	<input type="checkbox"/> NO
			<input type="checkbox"/> YES	<input type="checkbox"/> NO

**POWER OF ATTORNEY:** As a named inventor, I hereby appoint the following attorney(s) and/or agent(s) at *Cohen, Pontani, Lieberman & Pavane* to prosecute this application and transact all business in the Patent and Trademark Office connected therewith

**Customer number 27799**

Send correspondence to *Cohen, Pontani, Lieberman & Pavane* at the address for the following customer Number: **27799**

Direct Telephone calls to:  
(name and telephone number)  
**Thomas Langer**  
(212) 687-2770

I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under §1001 of Title 18 of the United States Code and that such willful false statements may jeopardize the validity of the application or any patent issuing thereon.

201	FULL NAME OF INVENTOR	FAMILY NAME DELSING	FIRST GIVEN NAME Anne	SECOND GIVEN NAME Charlotte Antoinette
	RESIDENCE, CITIZENSHIP	CITY Eindhoven	STATE OR FOREIGN COUNTRY Netherlands	COUNTRY OF CITIZENSHIP Netherlands
	POST OFFICE ADDRESS	POST OFFICE ADDRESS Willem de Rijkelaan 13	CITY Eindhoven	STATE & ZIP CODE/COUNTRY Netherlands, NL-5616 HZ
202	FULL NAME OF INVENTOR	FAMILY NAME HINTZEN	FIRST GIVEN NAME Hubertus	SECOND GIVEN NAME T.
	RESIDENCE, CITIZENSHIP	CITY Eindhoven	STATE OR FOREIGN COUNTRY Netherlands	COUNTRY OF CITIZENSHIP Netherlands
	POST OFFICE ADDRESS	POST OFFICE ADDRESS Kanunnikensven 23	CITY Eindhoven	STATE & ZIP CODE/COUNTRY Netherlands, NL-5646 JE
203	FULL NAME OF INVENTOR	FAMILY NAME LI	FIRST GIVEN NAME Yuan-Qiang	SECOND GIVEN NAME
	RESIDENCE, CITIZENSHIP	CITY Eindhoven	STATE OR FOREIGN COUNTRY Netherlands	COUNTRY OF CITIZENSHIP Netherlands
	POST OFFICE ADDRESS	POST OFFICE ADDRESS Anjelistraat 22	CITY Eindhoven	STATE & ZIP CODE/COUNTRY Netherlands, NL-5644 PE
204	FULL NAME OF INVENTOR	FAMILY NAME	FIRST GIVEN NAME	SECOND GIVEN NAME
	RESIDENCE, CITIZENSHIP	CITY	STATE OR FOREIGN COUNTRY	COUNTRY OF CITIZENSHIP
	POST OFFICE ADDRESS	POST OFFICE ADDRESS	CITY	STATE & ZIP CODE/COUNTRY
205	FULL NAME OF INVENTOR	FAMILY NAME	FIRST GIVEN NAME	SECOND GIVEN NAME
	RESIDENCE, CITIZENSHIP	CITY	STATE OR FOREIGN COUNTRY	COUNTRY OF CITIZENSHIP
	POST OFFICE ADDRESS	POST OFFICE ADDRESS	CITY	STATE & ZIP CODE/COUNTRY
206	FULL NAME OF INVENTOR	FAMILY NAME	FIRST GIVEN NAME	SECOND GIVEN NAME
	RESIDENCE, CITIZENSHIP	CITY	STATE OR FOREIGN COUNTRY	COUNTRY OF CITIZENSHIP
	POST OFFICE ADDRESS	POST OFFICE ADDRESS	CITY	STATE & ZIP CODE/COUNTRY



**COMBINED DECLARATION FOR PATENT APPLICATION AND POWER OF ATTORNEY**  
 (Includes Reference to PCT International Applications)

Attorney's Docket No.  
**502902-179PUS**

SIGNATURE OF INVENTOR 201  
*Thomas Langer*  
 By Thomas Langer - RN 27,264  
 Attorney for OSRAM Opto  
 Semiconductors GmbH

SIGNATURE OF INVENTOR 202  
*Thomas Langer*  
 By Thomas Langer - RN 27,264  
 Attorney for OSRAM Opto Semiconductors  
 GmbH

SIGNATURE OF INVENTOR 203  
*Thomas Langer*  
 By Thomas Langer - RN 27,264  
 Attorney for OSRAM Opto Semiconductors  
 GmbH

DATE  
*3/24/05*

DATE  
*3/24/05*

DATE  
*3/24/05*

SIGNATURE OF INVENTOR 204

SIGNATURE OF INVENTOR 205

SIGNATURE OF INVENTOR 206

DATE

DATE

DATE

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

Attorney Docket no. 502902-179PUS

PATENT

## IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application of

DELSING et al.

Serial No.: 10/496,707

Filed: May 25, 2004

For: Luminescent Material, Especially for LED  
ApplicationCommissioner for Patents  
P.O. Box 1450  
Alexandria, VA 22313-1450SUPPLEMENTAL DECLARATION

SIR:

I, the undersigned DR. JOACHIM WERNER, hereby declare as follows:

This is to supplement my DECLARATION made in connection with the above-referenced matter and dated December 23, 2004.

In my above-mentioned DECLARATION I stated that "I know with certainty that all of the joint inventors worked on this invention for TU/e under the provisions of the Research Agreement...". This

statement was based on my firsthand knowledge of the activities of the inventors as to the present invention. That firsthand knowledge was gained as follows:

1. Several exchanges of emails between me and Dr. Hintzen (in his role as the project leader) concerning this invention. Examples of such emails are attached hereto as Exhibits 1, 2 and 3.
2. A written submission emailed by Dr. Hintzen on Sept. 2, 2002 (copy to me) concerning the invention. The submission and the email with which it was sent are attached hereto as Exhibits 4 and 5.
3. Dr. Frank Jermann is a member of the Phosphor Development Dept. at OSRAM OG (parent of OSRAM Opto S emiconductors GmbH). Dr. Hintzen reported regularly on this invention to Dr. Jermann. I spoke frequently with Dr. Jermann about work being done on this invention by the inventors. Moreover, I was regularly copied on emails between Dr. Hintzen and Dr. Jermann concerning this invention. Examples of such emails are attached hereto as Exhibits 6 and 7.

Dated: *March 24, 2005*

By *Joachim Werner*  
Dr. Joachim Werner

Jermann, Frank Dr.

---

Von: Werner, Joachim  
Gesendet: Freitag, 20. September 2002 13:36  
An: 'Hintzen, H.T.J.M.'  
Cc: Jermann, Frank Dr.; Zachau, Martin (FuE-A)  
Betreff: AW: new application on oxynitrides

Dear Bert,

I appreciate your thorough and quick studying of the drafts.  
I amended them and now I await the final comments given by Dr. Jermann upon his return  
on Tuesday.  
then I will come back to your amendments in detail.  
kind regards,  
Joachim

Mit freundlichen Grüßen/  
Best regards

Dr. Joachim Werner Phone: +49-89-6213-3209  
OSRAM GmbH Fax: +49-89-6213-2037  
Patentabteilung  
GC IP-M  
Hellabrunnerstr. 1  
D-81536 München/Germany

-----Ursprüngliche Nachricht-----

Von: Hintzen, H.T.J.M. [mailto:H.T.Hintzen@tue.nl]  
Gesendet: Mittwoch, 18. September 2002 12:39  
An: Werner, Joachim  
Cc: Jermann, Frank Dr.; Zachau, Martin (FuE-A)  
Betreff: RE: new application on oxynitrides

Dear Joachim,

Herewith I send you my comments on your two patent proposals.

With kind regards,

Bert

Ex. #1

Werner, Joachim

---

Von: Hintzen, H.T.J.M. [H.T.Hintzen@tue.nl]  
Gesendet: Montag, 2. September 2002 13:19  
An: Werner, Joachim; Hintzen, H.T.J.M.; Jermann, Frank Dr.  
Cc: Zachau, Martin (FuE-A)  
Betreff: RE: Patent applications (novel tridymite phosphors)

Dear Joachim,

Concerning your question about prior art patent found in your search (see below): our literature search at the beginning of our tridymite investigations gave similar results (many publications). For LED applications however, the excitation and emission wavelengths are not optimum, and that problem can be solved by making tridymite oxynitride phosphors. This is the way I have described it in my patent proposal I have sent you last week, but may be you have better suggestions? The purity of the starting materials (missing in the patent proposal of last week) are introduced in the patent proposal on MSi2O2N materials (sent to you today).

Please tell me in case you have additional questions,

with kind regards,

Bert

Dr. H.T. Hintzen  
Associate professor  
Laboratory of Solid State and Materials Chemistry  
Eindhoven University of Technology  
P.O. Box 513 ST0 2.26  
5600 MB Eindhoven  
The Netherlands  
Tel. +31 40 2473113/2472770  
Fax +31 40 2445619  
E-mail: h.t.hintzen@tue.nl  
<http://www.tue.nl>

> -----Original Message-----

Ex. #2

PATENT  
REEL: 020489 FRAME: 0625

> -----Ursprüngliche Nachricht-----  
> Von: Hintzen, H.T.J.M. [mailto:H.T.Hintzen@tue.nl]  
> Gesendet: Mittwoch, 25. September 2002 12:02  
> An: Werner, Joachim  
> Betreff: RE: new applications  
>  
>  
> Dear Joachim,  
>  
> Yes, indeed all three inventors are members of the laboratory of Solid  
> State  
> and Materials Chemistry. Please note that the first invention  
> (tridymite)  
> is  
> with two inventors (Hintzen, Li), whereas for the second invention  
> (MSi2O2N2) a third inventor (i.e. Delsing has been added).  
>  
> Yesterday Wolfgang Rossner visited me in Eindhoven. He told me that  
> you  
> personally know each other rather well as a consequence of family  
> relationships. Wolfgang is a nice guy, who can tell interesting  
> stories  
> about the importance of good personal relationships for succesful  
> cooperation between people.  
>  
> Kind regards,  
>  
> Bert  
>  
> Dr. H.T. Hintzen  
> Associate professor  
> Laboratory of Solid State and Materials Chemistry  
> Eindhoven University of Technology  
> P.O. Box 513 ST0 2.26  
> 5600 MB Eindhoven  
> The Netherlands  
> Tel. +31 40 2473113/2472770  
> Fax +31 40 2445619  
> E-mail: h.t.hintzen@tue.nl  
> http://www.tue.nl  
>  
>

Ex. #3

Werner, Joachim

---

Von: Hintzen, H.T.J.M. [H.T.Hintzen@tue.nl]  
Gesendet: Montag, 2. September 2002 13:02  
An: Jermann, Frank Dr.; Hintzen, H.T.J.M.  
Cc: Zachau, Martin (FuE-A); Werner, Joachim  
Betreff: concept patent proposal MSi2O2N2



Patent.msi2o  
2n2.doc

Dear Frank,

As promised, I herewith send you a concept patent proposal on Eu-doped MSi2O2N2 compounds. As you can see, a green-emitting phosphor with emission at 555 nm and excitation maximum at 440 nm is feasible. A number of items still remain unclear for this system, e.g. the exact composition, afterglow effects, origin of emission at 630 nm (which are therefore not mentioned in the patent description).

<<Patent.msi2o2n2.doc>>

Yuan Qiang Li is busy in preparing a large Ba-Si-Al-O-N batch with tridymite structure for you. After characterisation and measurement of the luminescence properties, we will send it to you.

With kind regards,

Bert

Dr. H.T. Hintzen  
Associate professor  
Laboratory of Solid State and Materials Chemistry  
Eindhoven University of Technology  
P.O. Box 513 STO 2.26  
5600 MB Eindhoven  
The Netherlands  
Tel. +31 40 2473113/2472770  
Fax +31 40 2445619  
E-mail: h.t.hintzen@tue.nl  
<http://www.tue.nl>

Ex. # 4

Patent proposal (concept)

(September 2 2002)

## Green luminescent material excitable in UV-blue region

**Inventors:** H.T. Hintzen, Y.Q. Li and A.C.A. Delsing

### **Abstract**

UV-blue excitable green luminescent material consisting of a Eu-doped oxynitride host lattice with general composition  $MSi_2O_2N_2$ , wherein M is at least one of an alkaline earth metal chosen from the group Ca, Sr, Ba.

### **Description**

#### **Technical field**

This invention relates to a luminescent material which is excitable in the UV-blue part of the spectral region, and more particularly, but not exclusively to a phosphor for light sources, especially for Light Emitting Devices (LED). The phosphor belongs to the class of rare-earth activated silicon oxynitrides.

#### **Background art**

So far white LEDs were realised by combining a blue-emitting diode with a yellow emitting phosphor. Such a combination has a poor colour rendition, which, however, can be improved significantly by using a red-green-blue system. A suitable red-emitting phosphor can be a Eu-doped silicon nitride material, like  $M_2Si_3N_8$  (M = Ca, Sr, Ba) [1]. Typically, it can be used in combination with a green-emitting phosphor, like  $SrAl_2O_4:Eu$  with the tridymite structure, whose emission maximum is around 520 nm [2]. However, the position of the excitation and emission bands is not optimum. In the literature the oxynitride compounds  $CaSi_2O_2N_2$  [3] and  $SrSi_2O_2N_2$  [4] have been reported, but so far were never used as host-lattices for doping with luminescent ions.

EX. #5



### Disclosure of the invention

It is, therefore, an object of this invention to obviate the disadvantages of the prior art by making a phosphor with the right green emission which can be efficiently excited by UV/blue radiation. This can be achieved by making a novel phosphor material by doping  $\text{MSi}_2\text{O}_2\text{N}_2$  ( $\text{M} = \text{Ca}, \text{Sr}, \text{Ba}$ ) host lattices with Eu ions. The obtained phosphors show high chemical and thermal stability. More extended fine tuning of all relevant properties can be obtained by combining several M metals (including Zn), replacement of Si by Ge and/or (SiN) by (AlO). Preferably, the metal M is Ca for a green-emitting material which can be efficiently excited with blue radiation.

### Detailed embodiments

$\text{Eu}_2\text{O}_3$  (Rhone-Poulenc, 99.99%),  $\text{MCO}_3$  ( $\text{M} = \text{Ca}, \text{Sr}, \text{Ba}$ ; Merck, > 99.0 %),  $\text{SiO}_2$  (Degussa Aerosil, OX50) and  $\text{Si}_3\text{N}_4$  (SKW Trostberg, O content 0.7 %) were used as commercially available starting materials. The raw materials were homogeneously wet-mixed in the appropriate amounts by a planetary ball mill for 4-5 hours in isopropanol. After mixing the mixture was dried in a stove and ground in an agate mortar. Subsequently, the powders were fired in molybdenum crucibles at 1300-1400 °C under a reducing nitrogen/hydrogen atmosphere in a horizontal tube furnace. After firing, the materials were characterized by powder X-ray diffraction (copper K-alpha line).

All samples show efficient luminescence under UV-blue excitation with emission maxima in the blue-green ( $\text{M} = \text{Ba}$ ), green ( $\text{M} = \text{Ca}$ ) or yellow-green ( $\text{M} = \text{Sr}$ ). Typical examples of emission and excitation spectra can be seen in Fig. 1 ( $\text{M} = \text{Ca}$ ), Fig. 2 ( $\text{M} = \text{Sr}$ ) and Fig. 3 ( $\text{M} = \text{Ba}$ ). For  $\text{CaSi}_2\text{O}_2\text{N}_2:\text{Eu}$  a green-emitting phosphor (555 nm) is obtained, which can be efficiently excited in the blue part of the spectrum (excitation maximum at about 440 nm). By varying the amount of Ba and Sr in a mixed compound, the emission can be shifted in the range 500-570 nm, while the top of the excitation band can be shifted up till 430 nm. The observed shift to higher wavelengths is ascribed to a centre of gravity of the Eu 5d band at lower energy and a stronger ligand-field splitting of the Eu 5d band, as can be expected for nitrogen containing lattices [5]. Additional manipulation can be achieved by incorporation of Zn, replacement of Si by Ge and/or (SiN) by (AlO).

Since these materials can convert UV-blue into green light due to low-energy excitation bands, they can be applied in white light sources, for example based on primarily blue-emitting LED's (typically GaN or InGaN) combined with a red-emitting phosphor (e.g. the Eu-doped nitride material of Ref. 1).

### Brief description of the drawings

- Figure 1: Emission/excitation spectra of  $\text{CaSi}_2\text{O}_2\text{N}_2:\text{Eu}$ .  
Figure 2: Emission/excitation spectra of  $\text{SrSi}_2\text{O}_2\text{N}_2:\text{Eu}$ .  
Figure 3: Emission/excitation spectra of  $\text{BaSi}_2\text{O}_2\text{N}_2:\text{Eu}$ .

## Claims

1. Green luminescent material which is excitable in the UV-blue region, characterised by a Eu-doped host lattice with general composition  $MSi_2O_2N_2$ , wherein M is at least one of an alkaline earth metal chosen from the group Ca, Sr, Ba.
2. UV-blue excitable green luminescent material according to claim 1, wherein M is Ca.
3. UV-blue excitable green luminescent material according to claim 1, wherein M is a mixture of different metals (including Zn).
4. UV-blue excitable green luminescent material according to claim 1, wherein Si is replaced fully or partially by Ge.
5. UV-blue excitable green luminescent material according to claim 1, wherein Si is replaced by Al, and to the same extent N is replaced by O.
6. Light source with a UV-blue excitable luminescent material according to one of the preceding claims.
7. Light source of claim 6 wherein the primary emitted light is blue and the UV-blue excitable green luminescent material according to claims 1-5 is combined with a red emitting phosphor in order to secondary emitting white light.

## References

1. H.T. Hintzen, G. Botty and J.W.H. van Krevel, "Red emitting luminescent material", European Patent (EP1104799).
2. Paper Poort/Blasse.
3.  $CaSi_2O_2N_2$  paper
4.  $SrSi_2O_2N_2$  paper
5. J.W.H. van Krevel, Ph.D. thesis Eindhoven University of Technology (2000); plus TU/e papers published on this subject.

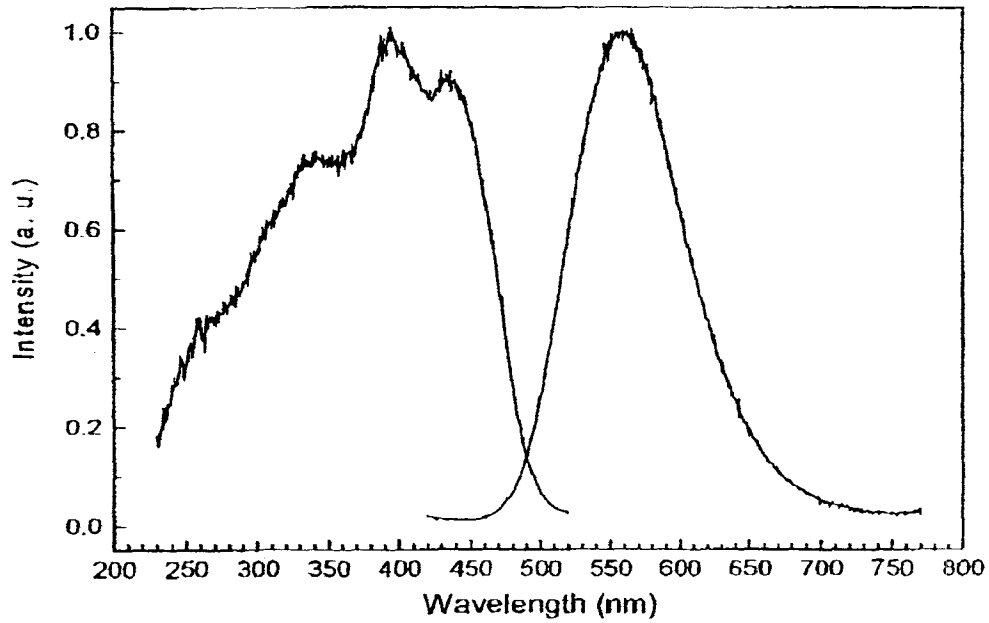


Figure 1: Emission/excitation spectra of CaSi<sub>2</sub>O<sub>2</sub>N<sub>2</sub>:Eu.

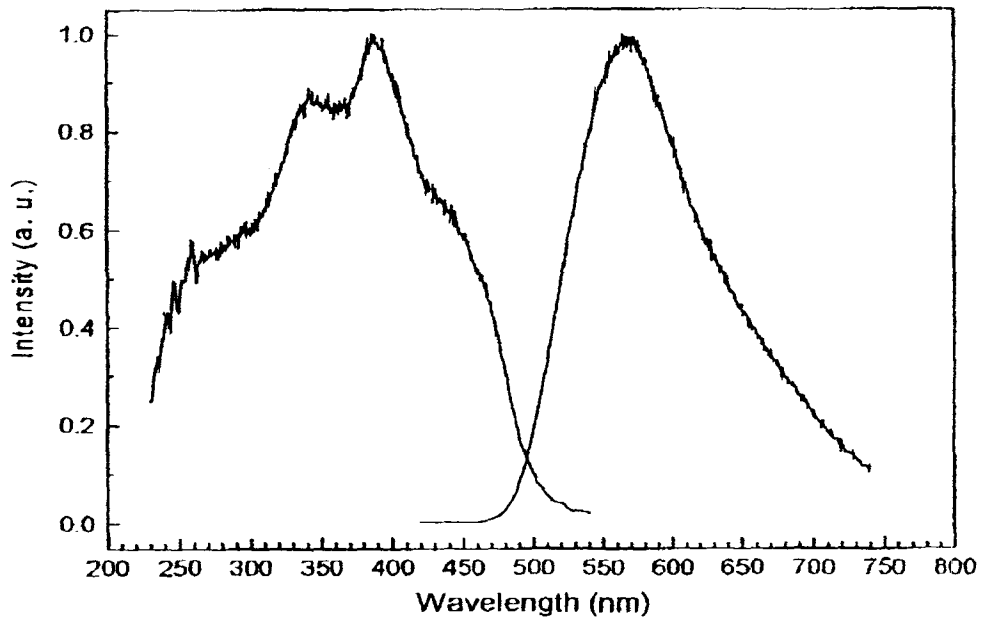
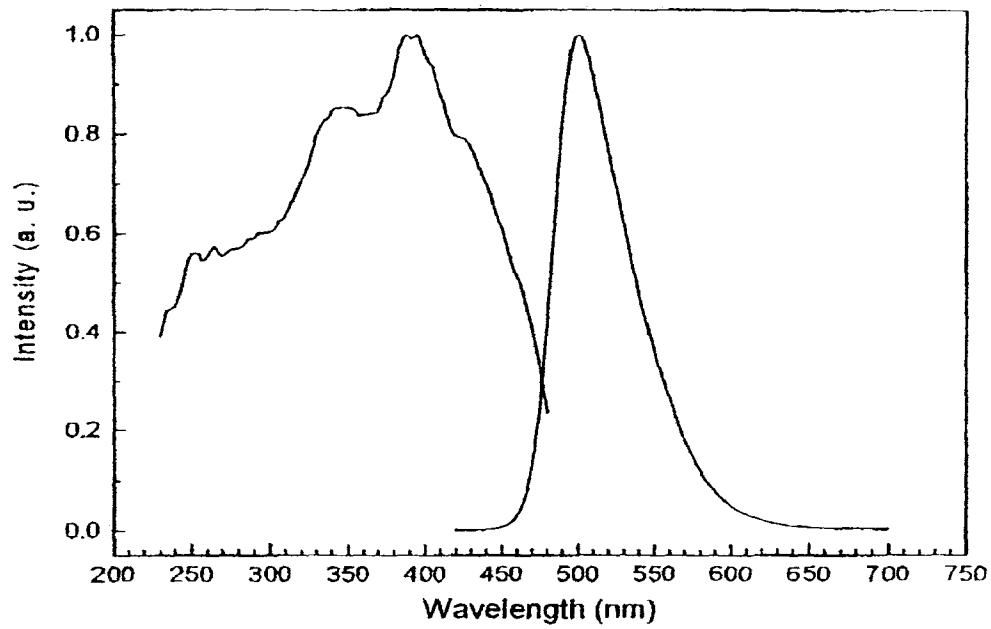


Figure 2: Emission/excitation spectra of SrSi<sub>2</sub>O<sub>2</sub>N<sub>2</sub>:Eu.



**Figure 3:** Emission/excitation spectra of BaSi<sub>2</sub>O<sub>2</sub>N<sub>2</sub>:Eu.

Werner, Joachim

Von: Jermann, Frank Dr.  
Gesendet: Montag, 7. Oktober 2002 14:23  
An: Hintzen, H.T.J.M.  
Cc: Zachau, Martin (FuE-A); Werner, Joachim  
Betreff: AW: question (samples) - OSRAM results so far

Dear Bert,

as promised, I will send you a table with compiled data on all samples we have measured. For security reasons I will send you the table by fax (on wednesday).

As you are surely very interested in the results, I will give you at least a short summary:

Tridymites:

- color point interesting for green phosphor
- without SiO2 corr: quantum efficiency (QE) very low (< 10% in most cases)
- with SiO2 corr(1/4): QE(460 nm) about 50% (good for first samples)
- but (unfortunately) reflectance R(460 nm) about 70% (very bad value!)
- oxidation stability seems to be okay (QE change <= 5%)
- best sample forwarded to OSRAM OS (LED reliability tests)
- particle size d50 > 5 microns

x=2:

- color point of all samples interesting for some applications
- significantly better with SiO2 corr.
- Ba: FWHM(Emission) = 59 nm for 400 nm and = 39 nm for 460 nm excitation! (sec. phases?)
- 460 nm exc.: QE(Ba) about 50-55% (good); QE(Sr) about 20-30%; QE(Ca) about 15-20%
- Sr clearly shows (red) secondary phase emission (not stable: SrSi5N8:Eu?)
- Ba: R(460 nm) about 30-35% (okay)
- oxidation stability of Ba compound seems to be okay (QE change <= 5%)
- best sample forwarded to OSRAM OS (LED reliability tests)

Thus: At the moment the (Ba, x=2) compound has (by far) the highest potential of all samples. The main problem with the tridymites is not the low QE (which could be surely improved), but the very low absorption at 460 nm.

We can send most of the samples back to you, if you need them. However, the best two samples were forwarded to OSRAM OS for further LED tests and therefore cannot be returned. I supposed that this would be in your interest, too.

With best regards,  
Frank

> -----Ursprüngliche Nachricht-----  
> Von: Hintzen, H.T.J.M. [mailto:H.T.Hintzen@tue.nl]  
> Gesendet: Donnerstag, 3. Oktober 2002 09:59  
> An: Jermann, Frank Dr.  
> Cc: Werner, Joachim; Zachau, Martin (FuE-A)  
> Betreff: RE: question (samples)

>  
>  
> Dear Frank,  
>  
> Can you inform us, as promised, about the results you have  
> measured for the  
> samples we sent to you?  
>

Ex. #6

> Can you send you the sample: back to us?, because for most of  
> them we have  
> only minor amounts, as I told you.  
>  
> Thanking you in advance,  
>  
> with kind regards,  
>  
> Bert  
>  
> Dr. H.T. Hintzen  
> Associate professor  
> Laboratory of Solid State and Materials Chemistry  
> Eindhoven University of Technology  
> P.O. Box 513 STO 2.26  
> 5600 MB Eindhoven  
> The Netherlands  
> Tel. +31 40 2473113/2472770  
> Fax +31 40 2445619  
> E-mail: h.t.hintzen@tue.nl  
> http://www.tue.nl  
>  
> -----Original Message-----  
> > From: Jermann, Frank Dr. {SMTP:F.Jermann@osram.de}  
> > Sent: Wednesday, September 04, 2002 2:10 PM  
> > To: Hintzen, H.T.J.M.  
> > Subject: AW: question (samples)  
> >  
> > Dear Bert,  
> >  
> > thanks for providing us with the samples. When we have  
> > characterized them,  
> > I will inform you of the results. I am really curious about it...  
> >  
> > With best regards,  
> > Frank  
> >  
> > -----Ursprüngliche Nachricht-----  
> > > Von: Hintzen, H.T.J.M. [mailto:H.T.Hintzen@tue.nl]  
> > > Gesendet: Mittwoch, 4. September 2002 10:52  
> > > An: Jermann, Frank Dr.; Hintzen, H.T.J.M.  
> > > Cc: Zachau, Martin (FuE-A); Werner, Joachim  
> > > Betreff: RE: question  
> > >  
> > > Dear Frank,  
> > >  
> > > 1-2 grams of the (preliminary) Ca and Sr samples have been  
> > > sent to you in  
> > > the meantime by DHL courier, you should receive them today.  
> > > The amount of  
> > > the Ba sample was insufficient, and a larger batch is in  
> > > preparation by Mr.  
> > > Li.  
> > >  
> > > With kind regards,  
> > >  
> > > Bert  
> > >  
> > > Dr. H.T. Hintzen  
> > > Laboratory of Solid State and Materials Chemistry  
> > > Eindhoven University of Technology  
> > > P.O. Box 513 STO 2.26  
> > > 5600 MB Eindhoven  
> > > The Netherlands  
> > > Tel. +31 40 2473113/2472770  
> > > Fax +31 40 2445619  
> > > E-mail: h.t.hintzen@tue.nl  
> > > http://www.tue.nl  
> > >

>>>> -----Original Message-----  
>>>> From: Jermann, Frank Dr. [SMTP:F.Jermann@osram.de]  
>>>> Sent: Thursday, August 29, 2002 11:25 AM  
>>>> To: Hintzen, H.T.J.M.  
>>>> Cc: Zachau, Martin (FuE-A); Werner, Joachim  
>>>> Subject: AW: question

>>>> Dear Bert,

>>>> thanks for your quick answer! The amount of material is  
>>>> unfortunately not  
>>>> sufficient. We need at least 1-2 g, better 5-6 g (standard  
>>>> powder plaque)  
>>>> for reliable characterization of efficiency and stability.  
>>>> Therefore, it  
>>>> would be probably a good idea, to let your new student  
>>>> prepare some 5 g  
>>>> batches of the most interesting materials initially!?  
>>>>  
>>>> With best regards,  
>>>> Frank

>>>> -----Ursprüngliche Nachricht-----  
>>>> Von: Hintzen, H.T.J.M. [mailto:H.T.Hintzen@tue.nl]  
>>>> Gesendet: Donnerstag, 29. August 2002 10:51  
>>>> An: Hintzen, H.T.J.M.; Jermann, Frank Dr.  
>>>> Cc: Zachau, Martin (FuE-A); Werner, Joachim  
>>>> Betreff: RE: question

>>>> Dear Frank,

>>>> In the meantime I have checked why the Ba-sample has not been  
>>>> sent to you in  
>>>> the past. According to Mr. Li, the amount of material was too  
>>>> low (ca. 0.3  
>>>> g). Please let me know whether this amount is sufficient for  
>>>> your purpose.  
>>>> If not, he will prepare a larger amount as soon as  
>>>> possible. OK?

>>>> What about the proposed program of the student starting next  
>>>> week?

>>>> Kind regards,

>>>> Bert

>>>> Dr. H.T. Hintzen  
>>>> Associate professor  
>>>> Laboratory of Solid State and Materials Chemistry  
>>>> Eindhoven University of Technology  
>>>> P.O. Box 513 STO 2.26  
>>>> 5600 MB Eindhoven  
>>>> The Netherlands  
>>>> Tel. +31 40 2473113/2472770  
>>>> Fax +31 40 2445619  
>>>> E-mail: h.t.hintzen@tue.nl  
>>>> http://www.tue.nl

>>>> -----Original Message-----

Werner, Joachim

Von: Hintzen, H.T.J.M. [H.T.Hintzen@tue.nl]  
Gesendet: Montag, 14. Oktober 2002 12:27  
An: Jermann, Frank Dr.; Hintzen, H.T.J.M.  
Cc: Zachau, Martin (FuE-A); Werner, Joachim  
Betreff: RE: question (samples)

Dear Frank,

Concerning the questions in your previous three e-mail messages:

\* Concentration quenching of the luminescence has not yet been investigated, but some increase of the Eu concentration above 10 % before concentration quenching starts seems possible to further increase the absorption.

\* With respect to absorption of SrAl<sub>2</sub>O<sub>4</sub>:Eu and BaAl<sub>2</sub>O<sub>4</sub>:Eu of course we can take the measurements at our own samples, but the question is how they relate to commercial samples.

Tomorrow I will have a meeting with Li to discuss details of synthesis and difference absorption/excitation.

Maybe there is another option to shift the absorption band to higher wavelengths, viz. the incorporation of small amounts of Mg in the tridymite lattice.

With respect to your proposal to visit Eindhoven in between Oct. 28 and Nov.

8: I think it is a good idea to have a more detailed look at our synthesis procedures, but at Oct. 28 I will just return from a one week absence (resulting in a pile of work on my desk), and in addition just in these two weeks I have to organize practical training of groups of third-years of students. More important is the fact that each week we have to fill in a form with specification of the hours worked at the several subjects, and from which budget these spent hours have to be paid. As the contract between Osram and TU/e has expired at the beginning of October, I can not "write" hours on this project because there is no cover of these costs any longer (actually, Mr. Li has already worked for Osram since May 2001, whereas Osram has paid for only 1 year). I am sorry, but I cannot solve this problem for you without "further" agreement between Osram and TU/e, so my proposal is to contact the responsible TU/e person about this matter (Managing Director, Drs. E. Bernard, e-mail: e.bernard@tue.nl).

Thanks in advance for your cooperation,

with kind regards,

Bert

Dr. H.T. Hintzen  
Associate professor  
Laboratory of Solid State and Materials Chemistry  
Eindhoven University of Technology  
P.O. Box 513 STO 2.26

Ex. #7



IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application of

Anne Charlotte Antoinette DELSING et al.

Serial No.: 10/496,707

Filed: May 25, 2004

For: Luminescent Material, especially for LED Application

I hereby certify that this correspondence is being deposited with the United States Postal Service with sufficient postage as first class mail in an envelope addressed to: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450, on

December 27, 2004

(Date of Deposit)

Thomas Langer

Name of applicant, assignee or Registered Representative

*Thomas Langer*  
Signature

December 27, 2004

Date of Signature

Mail Stop PCT

Commissioner for Patents

P.O. Box 1450

Alexandria, VA 22313-1450

**RESPONSE TO NOTIFICATION OF MISSING REQUIREMENTS AND PETITION TO PROCEED UNDER 37 CFR 1.47(b)**

SIR:

This is in response to a NOTIFICATION OF MISSING REQUIREMENTS dated September 8, 2004 requiring the submission of an oath or declaration of the inventor and payment of the requisite fee. A Petition for a two-month extension of time to January 8, 2005 is enclosed herewith along with the requisite fee.

The present invention names three joint inventors. All of the inventors have failed to sign a declaration of inventorship that was sent to them by registered mail, return receipt requested,

and which each of them clearly received based on the returned receipt. Therefore, filing under 37 CFR 1.47(b) has become necessary.

This submission is being made on behalf of OSRAM Opto Semiconductors GmbH, a German corporation with an address at Wernerwerkstr. 1, 93040 Regensburg, Germany (referred to hereinafter as "ASSIGNEE").

A Research Agreement between the Technische Universiteit Eindhoven ("TU/e") and the ASSIGNEE was signed by the parties in October 2001. A copy is appended hereto. Under this Research Agreement, TU/e undertook to conduct research in a specified technical area in exchange for funding provided by the ASSIGNEE. Dr. Hintzen, one of the joint inventors, was named "project leader" to lead the research (Article 3.1) which was "to be executed by employees and/or students of the TU/e ... " (Article 3.1). Ms. Delsing and Mr. Li, the other joint inventors, assisted Dr. Hintzen in making the present invention under this Research Agreement. This satisfies the requirement that applicant must make out a *prima facie* case that ASSIGNEE has a proprietary interest in this invention.

The last known address for each of the inventors is:

Anne Charlotte Antoinette Delsing: Willem de Rijkelaan 13  
NL-5616 HZ Eindhoven  
Netherlands

Dr. Hubertus T. Hintzen: Kanunnikensven 24  
NL-5646 JE Eindhoven  
Netherlands

The filing of this application is necessary in order to claim priority benefits under 35 USC 119 and 120.

The following items are enclosed herewith to provide the requisite proof that the inventors have failed to execute the application papers:

1. DECLARATION OF FACTS signed by Ms. Susanne KÄMMERLE who has first-hand knowledge of the facts recited therein.
2. Letters to each of the inventors and other pertinent papers presented as attachments to the DECLARATION OF FACTS.
3. A DECLARATION by Dr. Joachim Werner attesting to the ownership rights acquired by the ASSIGNEE in this invention based on the above-mentioned Research Agreement.

Transmitted herewith are the following:

1. Combined Declaration and Power of Attorney naming Ms. Delsing, Dr. Hintzen and Mr. Li as joint inventors and signed on behalf of the ASSIGNEE by the undersigned.
2. Payment of \$130.00 for the post-filing surcharge fee.
3. A copy of the NOTIFICATION OF MISSING REQUIREMENTS UNDER 35 U.S.C. 371.
4. Statement under 37 CFR 3.73(b).
5. Payment of \$130.00 for the petition fee required in connection with the present Petition.

Should any additional fees be required in connection with this submission, the USPTO is hereby authorized to charge same to Deposit Account No. 03-2412.

It is hereby requested in accordance with this Petition to have this application proceed under 37 CFR 1.47(b) in that the submissions made herein fulfill all applicable requirements.

Respectfully submitted,

COHEN, PONTANI, LIEBERMAN & PAVANE

By *Thomas Langer*  
Thomas Langer  
Reg. No. 27,264  
551 Fifth Avenue, Suite 1210  
New York, New York 10176  
(212) 687-2770

Dated: December 27, 2004

As a below named inventor, I hereby declare that:

My residence, post office address and citizenship are as stated below next to my name.

I believe I am the original, first and sole inventor (if only one name is listed below) or an original, first and joint inventor (if plural names are listed below) of the subject matter which is claimed and for which a patent is sought on the invention entitled:

**LUMINESCENT MATERIAL, ESPECIALLY FOR LED APPLICATION**

the specification of which (check only one item below)

is attached hereto

was filed as United States application

Serial No. 10/496,707

on May 25, 2004

and was amended by Preliminary Amendment filed concurrently with the application

on \_\_ (if applicable).

was filed as PCT international application

Number

on

and was amended under PCT Article 19

on \_\_ (if applicable).

I hereby state that I have reviewed and understand the contents of the above-identified specification, including the claims, as amended by any amendment specifically referred to above.

I acknowledge the duty to disclose information which is material to patentability as defined in 37 CFR 1.56, including for continuation-in-part applications, material information which became available between the filing date of the prior application and the national or PCT international filing date of the continuation-in-part application.

I hereby claim foreign priority benefits under 35 U.S.C. 119(a)-(d) or (f), or 365(b) of any foreign application(s) for patent, inventor's or plant breeder's rights certificate(s), or 365(a) of any PCT international application which designated at least one country other than the United States of America, listed below and have also identified below, by checking the box, any foreign application for patent, inventor's or plant breeder's rights certificate(s), or any PCT international application having a filing date before that of the application on which priority is claimed.

**PRIOR FOREIGN/PCT APPLICATIONS AND ANY PRIORITY CLAIMS UNDER 35 U.S.C. 119:**

Country (if PCT, indicate "PCT")	Application Number	Date of Filing (day, month, year)	Priority Claimed Under 35 U.S.C. 119	
EP	02021172.8	24 September 2002	<input checked="" type="checkbox"/> YES	<input type="checkbox"/> NO
PCT	PCT/EP03/10599	23 September 2003	<input type="checkbox"/> YES	<input checked="" type="checkbox"/> NO
			<input type="checkbox"/> YES	<input type="checkbox"/> NO
			<input type="checkbox"/> YES	<input type="checkbox"/> NO
			<input type="checkbox"/> YES	<input type="checkbox"/> NO
			<input type="checkbox"/> YES	<input type="checkbox"/> NO
			<input type="checkbox"/> YES	<input type="checkbox"/> NO

**POWER OF ATTORNEY:** As a named inventor, I hereby appoint the following attorney(s) and/or agent(s) at *Cohen, Pontani, Lieberman & Pavane* to prosecute this application and transact all business in the Patent and Trademark Office connected therewith

**Customer number 27799**

Send correspondence to *Cohen, Pontani, Lieberman & Pavane* at the address for the following customer Number: **27799**

Direct Telephone calls to:  
(name and telephone number)  
**Thomas Langer**  
**(212) 687-2770**

I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under §1001 of Title 18 of the United States Code and that such willful false statements may jeopardize the validity of the application or any patent issuing thereon.

201	FULL NAME OF INVENTOR	FAMILY NAME <b>DELSING</b>	FIRST GIVEN NAME <b>Anne</b>	SECOND GIVEN NAME <b>Charlotte Antoinette</b>
	RESIDENCE, CITIZENSHIP	CITY <b>Eindhoven</b>	STATE OR FOREIGN COUNTRY <b>Netherlands</b>	COUNTRY OF CITIZENSHIP <b>Netherlands</b>
	POST OFFICE ADDRESS	POST OFFICE ADDRESS <b>Willem de Rijkelaan 13</b>	CITY <b>Eindhoven</b>	STATE & ZIP CODE/COUNTRY <b>Netherlands, NL-5616 HZ</b>
202	FULL NAME OF INVENTOR	FAMILY NAME <b>HINTZEN</b>	FIRST GIVEN NAME <b>Hubertus</b>	SECOND GIVEN NAME <b>T.</b>
	RESIDENCE, CITIZENSHIP	CITY <b>Eindhoven</b>	STATE OR FOREIGN COUNTRY <b>Netherlands</b>	COUNTRY OF CITIZENSHIP <b>Netherlands</b>
	POST OFFICE ADDRESS	POST OFFICE ADDRESS <b>Kanunnikensven 23</b>	CITY <b>Eindhoven</b>	STATE & ZIP CODE/COUNTRY <b>Netherlands, NL-5646 JE</b>
203	FULL NAME OF INVENTOR	FAMILY NAME <b>LI</b>	FIRST GIVEN NAME <b>Yuan-Qiang</b>	SECOND GIVEN NAME
	RESIDENCE, CITIZENSHIP	CITY <b>Eindhoven</b>	STATE OR FOREIGN COUNTRY <b>Netherlands</b>	COUNTRY OF CITIZENSHIP <b>Netherlands</b>
	POST OFFICE ADDRESS	POST OFFICE ADDRESS <b>Anjelistraat 22</b>	CITY <b>Eindhoven</b>	STATE & ZIP CODE/COUNTRY <b>Netherlands, NL-5644 PE</b>
204	FULL NAME OF INVENTOR	FAMILY NAME	FIRST GIVEN NAME	SECOND GIVEN NAME
	RESIDENCE, CITIZENSHIP	CITY	STATE OR FOREIGN COUNTRY	COUNTRY OF CITIZENSHIP
	POST OFFICE ADDRESS	POST OFFICE ADDRESS	CITY	STATE & ZIP CODE/COUNTRY
205	FULL NAME OF INVENTOR	FAMILY NAME	FIRST GIVEN NAME	SECOND GIVEN NAME
	RESIDENCE, CITIZENSHIP	CITY	STATE OR FOREIGN COUNTRY	COUNTRY OF CITIZENSHIP
	POST OFFICE ADDRESS	POST OFFICE ADDRESS	CITY	STATE & ZIP CODE/COUNTRY
206	FULL NAME OF INVENTOR	FAMILY NAME	FIRST GIVEN NAME	SECOND GIVEN NAME
	RESIDENCE, CITIZENSHIP	CITY	STATE OR FOREIGN COUNTRY	COUNTRY OF CITIZENSHIP
	POST OFFICE ADDRESS	POST OFFICE ADDRESS	CITY	STATE & ZIP CODE/COUNTRY

**COMBINED DECLARATION FOR PATENT APPLICATION AND POWER OF ATTORNEY**  
(Includes Reference to PCT International Applications)

Attorney's Docket No.  
**502902-179PUS**

SIGNATURE OF INVENTOR 201

*Thomas Langer*  
By Thomas Langer - RN 27,264  
Attorney for Assignee

SIGNATURE OF INVENTOR 202

*Thomas Langer*  
By Thomas Langer - RN 27,264 Attorney  
for Assignee

SIGNATURE OF INVENTOR 203

*Thomas Langer*  
By Thomas Langer - RN 27,264  
Attorney for Assignee

DATE

DATE

DATE

SIGNATURE OF INVENTOR 204

SIGNATURE OF INVENTOR 205

SIGNATURE OF INVENTOR 206

DATE

DATE

DATE

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

## IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application of

Anne Charlotte Antoinette DELSING et al.

Serial No.: 10/496,707

Filed: May 25, 2004

For: Luminescent Material, Especially for LED  
Application

Commissioner for Patents  
P.O. Box 1450  
Alexandria, VA 22313-1450

DECLARATION

SIR:

I, the undersigned DR. JOACHIM WERNER, declare as follows:

I am employed by OSRAM GmbH as a patent professional in the Intellectual Property Dept. where my responsibilities include handling and/or supervising the technical, legal and administrative tasks involved with the filing of patent applications concerning OSRAM Opto Semiconductors GmbH, which is a subsidiary of OSRAM GmbH.



A Research Agreement between the Technische Universiteit Eindhoven ("TU/e") and OSRAM Opto Semiconductors GmbH was signed by the parties in October 2001. A copy is appended hereto. Under this Research Agreement, TU/e undertook to conduct research in a specified technical area in exchange for funding provided by OSRAM Opto Semiconductors GmbH. Dr. Hintzen was named "project leader" to lead the research (Article 3.1) which was "to be executed by employees and/or students of the TU/e ..." (Article 3.1). Ms. Delsing and Mr. Li assisted Dr. Hintzen in making the present invention under this Research Agreement.

According to Article 8.1 of the Research Agreement, this invention is the property of OSRAM Opto Semiconductors GmbH.

It is clear from Article 8.3 of the Research Agreement that I have been responsible for IP matters connected with this Research Agreement. Based on my activities in performing this responsibility, I know with certainty that all of the joint inventors worked on this invention for TU/e under the provisions of the Research Agreement and, therefore, ownership of this invention is controlled by the Research Agreement.

Article 8.9 of the Research Agreement obligates both parties "to grant each other all cooperation with regard to the obtaining of the rights of industrial property...". The inventors have failed to fulfill this obligation.

Dated: December 23, 2004

By Joachim Werner  
Dr. Joachim Werner

## Research Agreement

The undersigned:

The Technische Universiteit Eindhoven, Department of Chemical Engineering and Chemistry, registered in Eindhoven, Den Dolech 2, hereinafter to be referred to as "TU/e", legally represented in this matter by the managing director of the Department of Chemical Engineering and Chemistry, E. Bernard,

and

OSRAM Opto Semiconductors, registered in Wernerwerkstr. 2, D-93049 Regensburg, Germany, hereinafter to be referred to as "the Client",

**Whereas:**

- The TU/e has developed an invention named "pigment with day-light fluorescence";
- The TU/e and the Client have agreed on a transfer of this invention and thereto have entered into a purchase contract dated 1.10.1999 and the Client filed for a patent application with number PCT/EP00/12047 dated 30.11.2000 with priority of 30.1.1999;
- The TU/e wished to continue the research in the field of "activated silicone (oxy-) nitrides" being related with the abovementioned patent application;
- The TU/e therefore has composed a research plan for continuation of said research, as described in appendix 1-A;
- In accordance with his commitment letter, dated 8.11.1999, the Client intends only to invest for a part of this research, namely the first year, hereafter referred to as "first year investment", and the Client will not in any way obstruct or harm the continuation of the research in any way.

agree as follows:

Initial TU/e:



Initial Client:

Pagina 1/10

## Article 1 Definitions

The following concepts are defined as follows in this agreement:

- Research: the research as described in a research plan which is attached as appendix 1-B to this agreement.
- Results of the Research: all reports, findings, conclusions, drafts, models, prototypes, or any other material objects resulting from the Research.
- Parties: the TU/e and the Client.
- Industrial Property: industrial property shall mean inventions that are industrially applicable and may result in applications for utility patents and models and design patents.

## Article 2 Description

The TU/e undertakes to execute the Research on behalf of the Client. The Research is described in appendix 1-B to this agreement and forms part of this agreement.

## Article 3 Execution

1. The Research is to be executed by employees and/or students of the TU/e and/or third parties appointed by the TU/e with prior written permission of the Client. Of those involved, Dr. H.T.J.M. Hintzen (hereinafter to be referred to as the "project leader") is to lead the Research, and will be the informant on behalf of the TU/e. On behalf of the Client Dr. Stath, OSRAM OS IM, and Dr. Zachau, OSRAM DP-M, will be the informant.
2. The TU/e is to carry out the Research to the best of its ability.

## Article 4 Duration of research and term of the agreement

The Research is to commence on 1.10.2001 and terminate on 30.9.2002.  
This agreement comes into force upon signature by both parties. It is entered into for a limited period, namely for the duration of the Research, and consequently commences on 1.10.2001 and will terminate legally after dispatch of the final report referred to in article 6, but not later than 31.12.2002.

The terms of the Research can only be extended by separate written agreement between the Parties. Three months before the termination of the Research, at the latest, the Parties will discuss possible prolongation of this Research Agreement based on the outcomings of the Research.

## Article 5 Progress

Within 3 months after the commencement of the Research and then every 3 months regarding the progress of the Research the Client will receive a progress report. The Parties will further consult together regularly regarding these reports and regarding other subjects connected therewith of which and whenever the parties considered such to be advantageous.

Initial TU/e:

Initial Client:

Pagina 2/10

Article 6 Final report

Within 3 months of the conclusion of the Research the TU/e will make available a final report to the Client. The final report is to include a description of the course of the Research, the investigation methods and materials used and a statement and description of the results thereof.

Article 7 Confidentiality

1. Should one of the Parties desire to consider any of the information it has made available in writing as confidential this is to be indicated clearly to the other Party by providing the documents concerned with the date and the caption "confidential".
2. Should one of the Parties desire to consider any of the information it has made available verbally as confidential this is to be indicated clearly to the other Party and this information is to be made available to the other Party in writing within thirty days and providing the document with the date and the caption "confidential".
3. The Party making the matter known is to indicate on the giving of confidential information which documents are to be returned to it on termination of the agreement.
4. Each of the Parties binds itself to the following for a period terminating one year after the termination of this agreement:
  - a. not to make known to any other person any single part of the information indicated as confidential by the Party making such public and
  - b. not to make use of any information indicated as confidential by the Party making such public for any other purpose than the purposes of the Research, all unless previous written permission to the contrary has been obtained from the Party making such public.
5. The following is not to be regarded as confidential information:
  - \* information that is publicly available or becomes so without there being any violation of the stipulations of this agreement;
  - \* information which was already in the possession of the Party receiving such prior to the time that such is made public;
  - \* information which is received regularly by the Party receiving such from a third party;
  - \* information which is required to be made public by a competent court;
  - \* Results of the Research.
6. Notwithstanding the abovementioned clauses of art. 7 the Client will not make public for the course of a 4 Year research period, starting with the commencing of the Research, any and all information that can harm or obstruct the carrying out of this 4 Year research or the results that spring thereof.
7. Notwithstanding the abovementioned clauses of art. 7 the TU/e is free to use any and all information in order to carry out the 4 Year research.
8. The Parties undertake mutually to ensure the observance of the stipulations in writing by those employees brought in within the framework of the Research.


Initial TU/e:

Initial Client:

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## Article 8 Property of information

1. The results of the Research as well as patents resulting from the Research are the property of the Client, with the exception of those patents of which the Client has transferred its rights as mentioned in art. 8.4 and 8.5
2. The Client hereby grants to the TU/e the right to use all Results of the Research for education and research activities including research for third parties. Such research for third parties during the carrying out of the Research is limited to technical fields which do not cover phosphors for lighting applications. The Client to that extent hereby grants to the TU/e a royalty free, irrevocable, non-transferable and non-exclusive licence on all patents resulting from the Research. The licence implies anyhow the right for the TU/e to apply and construct the patent for research and education activities of the TU/e itself as well as research activities under the authority of third parties. In any case will the TU/e be allowed to use all Results of the Research as well as patents resulting from the Research in benefit of and in order to the carrying out of the 4 Year Research.  
Parties may enter into a separate license agreement if appropriate. All related costs will be borne by TU/e.
3. The TU/e is to make an announcement in writing without delay regarding any findings and designs arising from the execution of the Research which may result in industrial property excluding findings which have no connection with the subject of the Research. Such announcement must contain a clear statement that it deals with a question of patentability of any results of the research, it must be addressed to the Client's Intellectual Property Department to the attention of Dr. Joachim Werner and in addition is to be such that the Client is put in a position by it to request protection on its own expense.
4. Within two months after receipt of such announcement as referred to in section 3 the Client is to inform the TU/e in writing whether or not an application has been made or will be made for industrial property. In such a case the Client is to state that it will not apply for protection or, in the case of the Client not having made any statement within two months, the right of the Client to apply for protection of industrial property lapses legally and the TU/e is entitled to apply for the protection referred to in its own name and at its own expense. In such case, the Client will receive an irrevocable, non-transferable and non-exclusive licence on such patents on request. Parties will negotiate on the more detailed conditions and the amount of royalty.
5. Should the Client not wish to pursue a procedure for acquiring right to industrial property or does not wish to continue such right, he is to make mention of the same without delay to the TU/e. In such cases also the TU/e is entitled to continue the process in its own name and at its own expense. Should the Client have already incurred expense regarding the protection application the Parties are to consult on the apportionment of the costs.
6. All costs connected with the submission, acquisition and maintenance of the industrial property are to be borne by the Party in whose name the request for the industrial property is submitted.
7. The Party requesting protection of industrial property is to ensure the names of the inventors on the patent.
8. The Client agrees to carefully consider a compensation for the benefit of TU/e for each right of industrial property when granted to the client in Germany. Such a consideration will lead to a separate agreement wherein the terms of the compensation are described which depend on the granted claims.
9. The Parties are to grant each other all co-operation with regard to the obtaining of the rights of

Initial TU/e: 

Initial Client:

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industrial property referred to in the previous sections.

10. With regard to the application for patent the Parties are to keep confidential the Results of the Research as long as is necessary for the application for patent, but not longer than twelve months (12) after the statement referred to in section 3 of this article.

## Article 9 Publication

1. Without written consent of the TU/e, the Client is not allowed to publish or make public in any other form the final report, or any other reports or accounts. The copyrights on all reports and accounts referred to in this article and in article 5 and 6 remain with the TU/e.
2. In compliance with article 8.10 the TU/e is entitled to make public the Results of the Research. The copyright with regard to such disclosures rests with the TU/e. During the course of the Research the TU/e will not disclose the Results of the Research without the written permission of the Client as mentioned in article 9.3.
3. The TU/e will submit a request for such permission in writing to the Client's Intellectual Property Department to the attention of Dr. Joachim Werner. The Client will respond in writing to the request within two months. The Client will not withhold it's consent on unreasonable grounds and will found eventual refusal thoroughly. In case the Client fails to react within two months on the abovementioned request, the consent is esteemed to be given. In case the Client withholds it's consent, Parties will as soon as possible enter into consultation. In case the Parties fail to reach a mutual agreement on the publication, the publication will be postponed for a maximum of six (6) months after submitting the first request. After termination of this period the TUE is free to publish the initial text of the publication.

## Article 10 Liability

1. The TU/e is not liable towards the Client or to third parties except in cases of intentional or gross fault. In any case will the amount the TU/e will be liable for not exceed the amount owed based on article 11.
2. The TU/e gives notice to the Client in case it becomes aware of any protective rights of third parties that may hamper Client's use of the Results of the Research.

Should the Client make use of any Result arising from the Research or apply such or give third parties the opportunity to use such or have it used or apply it, the Client indemnifies the TU/e for any claims of third parties with regard to any such damage resulting from the use of the Results of the Research.

## Article 11 Payment

1. The Client is to pay to the TU/e a sum totalling DM 120 000 / € 61 540 (excluding Dutch and German value added tax according to German § 52 UStDV ("Nullregelung")) as recompense for the execution of the Research or a proportional part thereof in the case of premature termination.
2. The TU/e is to invoice a proportional amount of this sum each quarter. The Client is to settle the invoice within four weeks of the date of the invoice on account number 1582 49658 in the name of the TU/e stating "t.g.v. 373 000". The last proportional amount has to be paid after receipt of the final report.

Initial TU/e:

Initial Client:

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## Article 12 Transfer

1. This agreement, or any right or any obligations arising there from, may not be transferred, delegated or contracted out without the previous written permission of the Party not involved in such transfer. Any transfer, delegation or contracting out made without such permission is invalid. The TU/e hereby consents to any transfer by OSRAM to any of its subsidiaries or affiliates including OSRAM Sylvania Inc., USA.
2. The Party making the transfer is held to its obligations arising from Articles 7, 8 and 9 of this agreement in the case of any such transfer.

## Article 13 Amendment and Termination

1. Neither this agreement nor any stipulation thereof or of appendix 1 can be amended or terminated verbally. No amendment will be binding unless this is made in writing and signed by both Parties. After termination, including any under Article 14 below, the obligations under Articles 7; 8; 9; 10 and 11 shall remain to be in effect for a further period of 6 months.
2. The TU/e is entitled in the case of bankruptcy or the suspension of payment of the Client to terminate the agreement unilaterally without taking any period of notice into account.

## Article 14 Circumstances beyond one's control (non-accountable shortcomings)

1. As soon as one of the Parties suspects it will not be able to meet its obligations due to circumstances beyond ones control, this Party will inform the other Party of the same without delay.
2. Should the circumstances beyond its control continue for a continuous period of more than three months, the Parties are to consult regarding a fair and reasonable alternative regulation.

## Article 15 Accommodation at the TU/e

1. The Client and/or its personnel remaining on the premises of the TU/e or in the buildings of the TU/e are obliged to observe the rules which are valid at the TU/e. should such be required the Client and/or its personnel are to sign a statement to that effect.
2. The TU/e and/or its personnel remaining on the premises of the Client or in the buildings of the Client are obliged to observe the rules which are valid at the Client should such be required the TU/e and/or its personnel are to sign a statement to that effect.

## Article 16 Law applicable, competent judge

This agreement is subject to the Law of The Netherlands. Disputes with regard to this agreement which cannot be resolved by the parties are to be submitted to the competent judge in Eindhoven, Den Bosch or Den Haag.

## Article 17 Titles

The titles given in the headings of this agreement are only included for the sake of convenience and are not of influence on the effect or the working of this agreement and may not be taken into account on the interpretation thereof.

Initial TU/e:

Initial Client:

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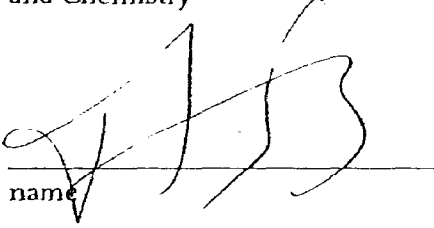
Thus drawn up in duplicate and signed:

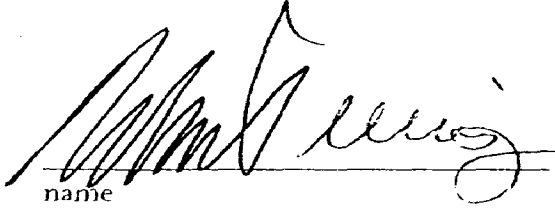
Eindhoven, Oct. 10, 2001

Regensburg, 26. 10. 01

Technische Universiteit Eindhoven  
Department of Chemical Engineering  
and Chemistry

OSRAM Opto Semiconductors

  
name

  
name

E. Bernard  
Managing Director

Dr. Müller

Wittgen

Initial TU/e:



Initial Client:

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## Appendix 1-A

Future program (extracted from an e-mail message on February 17, 1999)

Dear Dr. Kummer,

Concerning the contents of the first patent I would like to make the following comments:

1. The compounds described in our manuscript belong to the general family M-Si-N:Eu (M = alkaline earth). In this system host-lattices with five different compositions have been reported, viz.  $M_4SiN_4$ ,  $M_5Si_2N_6$ ,  $MSiN_2$ ,  $M_2Si_5N_8$  and  $MSi_7N_{10}$  (sequence of increasing Si/M ratio).
2. Only the luminescence of Eu-doped  $MgSiN_2$  has been reported, so we have to restrict the possible alkaline earth elements to M = Ca, Sr, Ba.
3. We have only investigated the luminescence of Eu in the recently discovered compounds (1995 or later), viz.  $M_5Si_2N_6$ ,  $M_2Si_5N_8$  and  $MSi_7N_{10}$ .  $Ba_5Si_2N_6$  was unstable in air, so in our manuscript only Eu-doped  $M_2Si_5N_8$  and  $MSi_7N_{10}$  have been discussed.
4. The attractiveness of Eu-doped  $M_4SiN_4$  and  $MSiN_2$  have not yet been investigated, but probably these compounds are not very stable.
5.  $MSi_7N_{10}$  has only been reported for M = Ba. It has to be checked if it also can be obtained for M = Sr or Ca.
6. Conclusion: a patent is possible for Eu-doped  $M_2Si_5N_8$  (M = Ca, Sr, Ba), whereas for  $MSi_7N_{10}$  a check is required with respect to the existence of this compound for M = Sr or Ca.

As co-inventors you can mention G. Botty, J. van Krevel, R. Metselaar and F. DiSalvo. Please let me know if these are too many persons and if some OSRAM coworker has to be mentioned as co-inventor.

Concerning the financial compensation for this first patent I promised to give you information about the costs we have made:

Position	Name	Time spent	Costs
Graduate student	G. Botty	9 months	Fl. ---
Ph.D. student	J. van Krevel	3 months	Fl. 33.000,-
Staff member	H. Hintzen	1 month	Fl. 20.000,-
		Material costs	Fl. 5.000,-
		Total costs	Fl. 58.000,-

In view of the intended future cooperation, in our opinion a fair compensation is about Fl. 35.000-40.000,-.

For next patents the following materials are of much interest:

1. Ce-doped Ln-Si-N (Ln = rare-earth), e.g.  $Ln_2Si_3N_6$ ,  $Ln_3Si_6N_{11}$ ,  $LnSi_3N_5$ .
2. Eu- and/or Ce doped M-Ln-Si-N (M = alkaline-earth, Ln = rare-earth), e.g.  $M LnSi_4N_7$  and  $M_2Ln_7Si_{11}N_{23}$ .
3. Eu-doped M-Si-O-N (M = alkaline-earth).
4. Ce-doped Ln-Si-O-N (Ln = rare-earth).

Initial TU/e:



Initial Client:

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PATENT

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5. Eu- and/or Ce doped M-Ln-Si-O-N (M = alkaline-earth, Ln = rare-earth).
6. Substitution of (SiN) by (AlO) for the above mentioned systems in order to obtain M-Si-Al-O-N, Ln-Si-Al-O-N and M-Ln-Si-Al-O-N systems (M = alkaline-earth, Ln = rare-earth).

Further cooperation can be implemented in various ways. As a starting point I propose to make a detailed program for you, including time planning and costs.

I am looking forward to hearing from you soon,

with kind regards,

Bert Hintzen

Dr. H.T. Hintzen  
Associate professor  
Laboratory of Solid State and Materials Chemistry  
Eindhoven University of Technology  
P.O. Box 513 STO 2.26  
5600 MB Eindhoven  
The Netherlands  
Tel. +31 40 2473113/2472770  
Fax +31 40 2445619  
E-mail: h.t.j.m.hintzen@tue.nl

Initial TU/e:



Initial Client:

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## Appendix 1-B

First year program Osram/TU/e (September 25, 2001)

Preparation, characterisation and luminescence properties of Eu-doped M-Si-Al-O-N (M = alkaline earth) compounds with the stuffed tridymite structure

Explorative part (feasibility check)

- Check existence  $MA_{2-x}Si_xO_{4-x}N_x$  (M = Ca, Sr, Ba) with stuffed tridymite structure (XRD, phase formation and lattice parameters)
- Determination maximum amount of replacement of  $(AlO)^+$  by  $(SiN)^+$  in  $MA_2O_4$  (XRD, lattice parameters)
- Measurement reflection, excitation and emission spectra of Eu-doped (10%) compounds

Dedicated part (more detailed study)

- Luminescence properties
  - Influence of Eu concentration
  - Influence of N incorporation
  - Influence of lattice distortion and M
- Structural information
  - Site occupancies O/N and Si/Al (neutron diffraction)
  - Network formation  $SiO_{4-x}N_x$  and  $AlO_{4-y}N_y$  tetrahedra (Si and Al SS NMR)
  - Local M coordination (ab initio calculations)

Possible extensions

- Doping with other rare-earth ions
- Replacement of  $(MO)$  (M = alkaline-earth) by  $(LnN)$  (Ln = rare-earth) resulting in  $LnAl_{2-x}Si_xO_{3-x}N_{1+x}$
- Induction of special effects (e.g. afterglow)

Initial TU/e:

Initial Client:

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**PATENT**  
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Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it displays a valid OMB control number.

**STATEMENT UNDER 37 CFR 3.73(b)**Applicant/Patent Owner: Anne Charlotte Antoinette Delsing et al.Application No./Patent No.: 10/496,707 Filed/Issue Date: May 25, 2004Entitled: Luminescent Material, Especially for LED ApplicationOSRAM Opto Semiconductors GmbH, a Corporation of Germany  
(Name of Assignee) (Type of Assignee, e.g., corporation, partnership, university, government agency, etc.)

states that it is:

1.  the assignee of the entire right, title, and interest; or
2.  an assignee of less than the entire right, title and interest.  
The extent (by percentage) of its ownership interest is \_\_\_\_\_ %

in the patent application/patent identified above by virtue of either:

A  See attached Research Agreement and DECLARATION by Dr. Joachim Werner

OR

B.  A chain of title from the inventor(s), of the patent application/patent identified above, to the current assignee as shown below:

1. From: \_\_\_\_\_ To: \_\_\_\_\_  
The document was recorded in the United States Patent and Trademark Office at  
Reel \_\_\_\_\_, Frame \_\_\_\_\_, or for which a copy thereof is attached.

2. From: \_\_\_\_\_ To: \_\_\_\_\_  
The document was recorded in the United States Patent and Trademark Office at  
Reel \_\_\_\_\_, Frame \_\_\_\_\_, or for which a copy thereof is attached.

3. From: \_\_\_\_\_ To: \_\_\_\_\_  
The document was recorded in the United States Patent and Trademark Office at  
Reel \_\_\_\_\_, Frame \_\_\_\_\_, or for which a copy thereof is attached.

 Additional documents in the chain of title are listed on a supplemental sheet. Copies of assignments or other documents in the chain of title are attached.

[NOTE: A separate copy (i.e., a true copy of the original assignment document(s)) must be submitted to Assignment Division in accordance with 37 CFR Part 3, if the assignment is to be recorded in the records of the USPTO. See MPEP 302.08]

The undersigned (whose title is supplied below) is authorized to act on behalf of the assignee.

Thomas Langer  
SignatureDecember 27, 2004  
DateThomas Langer (Reg. No. 27,264)(212) 687-2770

Printed or Typed Name

Telephone Number

Attorney for OSRAM Opto Semiconductors GmbH  
Title

This collection of information is required by 37 CFR 3.73(b). The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.11 and 1.14. This collection is estimated to take 12 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.

If you need assistance in completing the form, call 1-800-PTO-9199 and select option 2.

**IN THE UNITED STATES PATENT AND TRADEMARK OFFICE**

In re Application of

Anne Charlotte Antoinette DELSING et al.

Serial No.: 10/496,707

Filed: May 25, 2004

For: Luminescent Material, Especially for LED  
Application

Commissioner for Patents  
P.O. Box 1450  
Alexandria, VA 22313-1450

**DECLARATION OF FACTS**

SIR:

I, the undersigned Susanne Kämmerle, declare as follows:

I manage patent-related administrative matters for the Intellectual Property Dept. of OSRAM GmbH, and am assisted in my tasks by Ms. Nicole Kuhmann. My responsibilities include handling patent applications filed on behalf of OSRAM Opto Semiconductors GmbH, which is a subsidiary of OSRAM GmbH.

In order to complete the filing requirements for the above-referenced application, I determined that the invention has the following persons listed as joint inventors:

Anne Charlotte Antoinette DELSING  
Dr. Hubertus T. HINTZEN  
Yuan-Qiang LI

I obtained the latest known address of each inventor from the records of OSRAM GmbH, and then proceeded to take the following steps for each inventor.

Dr. Hintzen

On April 26, 2004 Ms. Kuhmann sent (at my request) a cover letter to Dr. Hintzen enclosing the specification, claims, drawings, abstract, Combined Declaration and Power of Attorney, and Assignment for the present application. In the cover letter, Dr. Hintzen was requested to sign the documents and return them to our office. Attached hereto are copies of:

1. The letter from Ms. Kuhmann to Dr. Hintzen dated Apr. 26, 2004 and an Information Sheet that was enclosed with it. His response was requested "soonest". The papers are in German because we know Dr. Hintzen to be a speaker of German.

2. An English translation of the letter and Information Sheet.

Since no response was received from Dr. Hintzen, another letter and set of enclosures were mailed to him. Attached hereto are copies of:

3. A letter (in English) from me to Dr. Hintzen dated Oct. 22, 2004 requesting his response by Nov. 29, 2004.

4. A postal delivery confirmation certificate (in German) identifying the intended recipient as Dr. Hintzen with his address in The Netherlands, indicating that the package was sent out on Oct. 28, 2004, indicating that a person named "J Baker" signed for the envelope at the specified address on Nov. 3 (no year), and indicating that this certificate was returned to OSRAM GmbH by the Post Office and stamped by our mail room on Nov. 8, 2004.

5. An English translation of the postal delivery confirmation certificate.

6. A copy of the envelope addressed to Dr. Hintzen in which the papers were mailed to him.

7. A copy of the self-addressed, stamped envelope included with the papers: sent to Dr. Hintzen. Note that the postage is Dutch, not German, because Dr. Hintzen resides in The Netherlands and would have mailed the envelope from there. I asked a colleague at a Dutch subsidiary of OSRAM GmbH to prepare this envelope and send it to me.

When no response was received from Dr. Hintzen by Nov. 29th, I sent him an email on Dec. 7, 2004. A printout of the email and a Delivery Status Notification are enclosed herewith.

Ms. Delsing

On June 30, 2004 Ms. Kuhmann sent (at my request) a cover letter to Ms. Delsing enclosing the specification, claims, drawings, abstract, Combined Declaration and Power of Attorney, and Assignment for the present application. In the cover letter, Ms. Delsing was requested to sign the documents and return them to our office. Attached hereto are copies of:

1. The letter from Ms. Kuhmann to Ms. Delsing dated June 30, 2004 and an Information Sheet that was enclosed with it. Her response was requested "soonest". The papers are in German because we know Ms. Delsing to be a speaker of German.

2. An English translation of the letter and Information Sheet.

Since no response was received from Ms. Delsing, another letter and set of enclosures were mailed to her. Attached hereto are copies of:

3. A letter (in English) from me to Ms. Delsing dated Oct. 22, 2004 requesting her response by Nov. 29, 2004.

4. A postal delivery confirmation certificate (in German) identifying the intended recipient as Ms. Delsing with her address in The Netherlands, indicating that the package was sent out on



Oct. 28, 2004, indicating that a person (name illegible) signed for the envelope at the specified address on Nov. 3, 2004, and indicating that this certificate was returned to OSRAM GmbH by the Post Office and stamped by our mail room on Nov. 8, 2004.

5. An English translation of the postal delivery confirmation certificate.

6. A copy of the envelope addressed to Ms. Delsing in which the papers were mailed to her.

7. A copy of the self-addressed, stamped envelope included with the papers sent to Ms. Delsing. Note that the postage is Dutch, not German, because Ms. Delsing resides in the Netherlands and would have mailed the envelope from there. I asked a colleague at the above-mentioned Dutch subsidiary of OSRAM GmbH to prepare this envelope and send it to me.

#### Mr. Li

On June 30, 2004 Ms. Kuhmann sent (at my request) a cover letter to Mr. Li enclosing the specification, claims, drawings, abstract, Combined Declaration and Power of Attorney, and Assignment for the present application. In the cover letter, Mr. Li was requested to sign the documents and return them to our office. Attached hereto are copies of:

1. The letter from Ms. Kuhmann to Mr. Li dated June 30, 2004 and an Information Sheet that was enclosed with it. His response was requested "soonest". The papers are in German because we know Mr. Li to be a speaker of German.

2. An English translation of the letter and Information Sheet.

Since no response was received from Mr. Li, another letter and set of enclosures were mailed to him. Attached hereto are copies of:

3. A letter (in English) from me to Mr. Li dated Oct. 22, 2004 requesting his response by Nov. 29, 2004.

4. A postal delivery confirmation certificate (in German) identifying the intended recipient as Mr. Li with his address in The Netherlands, indicating that the package was sent out on Oct. 28, 2004, indicating that Mr. Li signed for the envelope at the specified address on Nov. 3, 2004, and indicating that this certificate was returned to OSRAM GmbH by the Post Office and stamped by our mail room on Nov. 8, 2004.

5. An English translation of the postal delivery confirmation certificate.


6. A copy of the envelope addressed to Mr. Li in which the papers were mailed to him.

7. A copy of the self-addressed, stamped envelope included with the papers sent to Mr. Li.

Note that the postage is Dutch, not German, because Mr. Li resides in the Netherlands and would have mailed the envelope from there. I asked a colleague at the above-mentioned Dutch subsidiary of OSRAM GmbH to prepare this envelope and send it to me.

To date we have received no reply from any of the joint inventors.

Dated: December 23, 2004

By   
Susanne Kämmerle

Rücksendung bis spätestens: **Dringend!!!**

Ms. Anne Charlotte Antoinette Delsing

Willem de Rijkelaan 13

NL-5616 HZ Eindhoven

NETHERLANDS

Name Nicole Kuhmann  
Abteilung OSRAM GC IP-M  
Standort Osram  
Telefon +49 89 6213 4188  
Fax +49 89 6213 2037  
E-Mail n.kuhmann@osram.de

Ihre Zeichen  
Unser Zeichen 2002P15736WOUS  
WER / KUN  
Datum 30.Jun.2004

**Auslandsanmeldung basierend auf der DE Patentanmeldung  
02021172.8 vom 24.09.2002 mit dem Titel: Luminescent material, especially for LED  
application**

**Beteiligte Erfinder: Anne Charlotte Antoinette Delsing, Yuan-Qiang Li, Dr. Hubertus T.  
Hintzen**

Sehr geehrte Frau Delsing,

für Patentanmeldungen im Ausland werden die in der Anlage beigefügten Unterlagen benötigt.

Wir bitten Sie, die Formulare zu unterschreiben und alle Unterlagen schnellstmöglich per Post an  
uns zurückzusenden.

Nähere Hinweise zu den Formvorschriften entnehmen Sie bitte dem beigefügten Informationsblatt.

Bei Fragen zum technischen Inhalt der Anmeldung wenden Sie sich bitte an den  
zuständigen Patent Professional:

Dr. Joachim Werner, Telefon: +49 89 6213 3209 e-mail: [J.Werner@osram.de](mailto:J.Werner@osram.de).

Vielen Dank für Ihre Bemühungen.

Mit freundlichem Gruß

#### Anlagen

- Kopie der WO-Schrift
- Declaration US / Assignment US

Briefadresse:  
OSRAM GmbH  
D-81536 München

Paketadresse:  
OSRAM GmbH  
Hellabrunner Straße 1  
D-81543 München

OSRAM-Gesellschaft  
mit beschränkter Haftung  
München  
Vorsitzender des  
Aufsichtsrates:

Geschäftsführung:  
Wolf-Dieter Bopst,  
Vorsitzender  
Thomas Seeberg  
Jörg Schaefer

Registergericht:  
München HRB 4151

**PATENT**

**REEL: 020489 FRAME: 0663**

TO:

Ms. Anne Charlotte Antoinette Delsing  
Willem de Rijkelaan 13  
NL-5616 HZ Eindhoven

NETHERLANDS

FROM:

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Department OSRAM GC IP-M  
Osram  
Phone +49 89 6213 4188  
Fax +49 89 6213 2037  
E-Mail [n.kuhmann@osram.de](mailto:n.kuhmann@osram.de)

Your letter  
Our Ref. 2002P15736WOUS  
WER/KUN  
Date 30.Jun.2004

New application for a patent based on the German application 02021172.8 dated 24.09.2002 and Entitled: Luminescent material, especially for LED application  
Co-Inventors: Anne Charlotte Antoinette Delsing, Yuan-Qiang Li, Dr. Hubertus T. Hintzen.

Dear Mrs. Delsing,

The enclosed documents are needed for new applications outside Germany.

Would you please sign these documents and return them to us soonest by post.

For further details regarding the enclosures, please see the attached information sheet.

Should you have questions regarding the technical content of the application, please contact the responsible professional:

Dr. Joachim Werner, Phone: +49 89 6213 3209 E-Mail: [J.Werner@osram.de](mailto:J.Werner@osram.de)

Thank you for your assistance.

Yours sincerely,

Enclosures

[X] Copy of WO-Document  
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# OSRAM



Ms.  
Anne Charlotte Antoinette DELSING

Willem de Rijkelaan 13

NL-5616 HZ Eindhoven

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Fax +49 89 6213 2037  
E-Mail S.Kaemmerle@osram.de

Ihre Zeichen  
Unser Zeichen 2002P15736WOUS  
WER / KMM  
Datum 22.Oct.2004

### Patent Application in USA

Serial No. 10/496,707, filed on May 25, 2004

(Nat. phase in USA, based on the International Patent Application PCT/EP03/10599)

**Titel: Luminescent material, especially for LED application**

#### Inventors:

Anne Charlotte Antoinette Delsing

Dr. Hubertus T. Hintzen

Yuan-Qiang Li

**Our Reference: 2002P15736WOUS**

Dear Ms Delsing,

A patent application was filed in the USA on the above-referenced invention. You are named as one of the inventors. Enclosed please find the following:

1. specification describing the invention
2. set of claims
3. drawings
4. abstract
5. Combined Declaration of Inventorship and Power of Attorney, and
6. Assignment

Please review these papers and, if you find them to be acceptable, please date and sign the Combined Declaration of Inventorship and Power of Attorney document, and also the Assignment document.

**Please communicate with us by November 29, 2004 either with comments or by returning the signed documents to us.**

Thank you in advance for your prompt and complete cooperation.

Best regards

OSRAM Gesellschaft mit beschränkter Haftung



Susanne Kämmerle

Enclosures: documents as mentioned above  
self addressed envelope

IDNR:4624 / V: 03-1.00 / B:Val

Briefadresse:  
OSRAM GmbH  
D-81536 München

Paketadresse:  
OSRAM GmbH  
Hellabrunner Straße 1

OSRAM-Gesellschaft  
mit beschränkter Haftung  
München

Geschäftsführung:  
Wolf-Dieter Bopst,  
Vorsitzender

Registergericht:  
München HRB 4151

**PATENT**

**REEL: 020489 FRAME: 0667**

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GC IP-M

D-81536 München  
*Germany*

0204-ONL-09/02

Rücksendung bis spätestens: **Dringend!!!**

Mr. Yuan-Qiang Li  
Anjelistraat 22  
NL-5644 PE Eindhoven

NETHERLANDS

Name Nicole Kuhmann  
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Fax +49 89 6213 2037  
E-Mail n.kuhmann@osram.de

Ihre Zeichen  
Unser Zeichen 2002P15736WOUS  
WER / KUN  
Datum 30.Jun.2004

**Auslandsanmeldung basierend auf der DE Patentanmeldung  
02021172.8 vom 24.09.2002 mit dem Titel: Luminescent material, especially for LED  
application  
Beteiligte Erfinder: Anne Charlotte Antoinette Delsing, Yuan-Qiang Li, Dr. Hubertus T.  
Hintzen**

Sehr geehrter Herr Li,

für Patentanmeldungen im Ausland werden die in der Anlage beigefügten Unterlagen benötigt.

Wir bitten Sie, die Formulare zu unterschreiben und alle Unterlagen schnellstmöglich per Post an uns zurückzusenden.

Nähere Hinweise zu den Formvorschriften entnehmen Sie bitte dem beigefügten Informationsblatt.

Bei Fragen zum technischen Inhalt der Anmeldung wenden Sie sich bitte an den zuständigen Patent Professional

Dr. Joachim Werner, Telefon: +49 89 6213 3209 e-mail: [J.Werner@osram.de](mailto:J.Werner@osram.de).

Vielen Dank für Ihre Bemühungen.

Mit freundlichem Gruß

#### Anlagen

- Kopie der WO-Schrift
- Declaration US / Assignment US

Briefadresse:  
OSRAM GmbH  
D-81536 München

Paketadresse:  
OSRAM GmbH  
Hellabrunner Straße 1  
D-81543 München

OSRAM-Gesellschaft  
mit beschränkter Haftung  
München  
Vorsitzender des  
Aufsichtsrates:  
Jörg Schaefer

Geschäftsführung:  
Wolf-Dieter Bopst,  
Vorsitzender  
Thomas Seeberg  
Jörg Schaefer

Registergericht:  
München HRB 4151

**PATENT**

**REEL: 020489 FRAME: 0672**

TO: FROM:

Mr. Yuan-Qiang Li  
Anjelistraat 22  
NL-5644 PE Eindhoven

Name Nicole Kuhmann  
Department OSRAM GC IP-M  
Osram  
Phone +49 89 6213 4188  
Fax +49 89 6213 2037  
E-Mail [n.kuhmann@osram.de](mailto:n.kuhmann@osram.de)

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Your letter  
Our Ref. 2002P15736WOUS  
WER/KUN  
Date 30.Jun.2004

New application for a patent based on the German application 02021172.8 dated 24.09.2002 and Entitled: Luminescent material, especially for LED application  
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Yours sincerely,

Enclosures

Copy of WO-Document  
 Declaration US/Assignment US

## INFORMATIONEN-BLATT

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**Information Sheet****Corrections:**

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# OSRAM



Mr. Yuan-Qiang Li  
Anjelierstraat 22  
NL-5644 PE Eindhoven

Name Susanne Kaemmerle  
Abteilung OSRAM GC IP-M  
Standort Osram  
Telefon +49 89 6213 3281  
Fax +49 89 6213 2037  
E-Mail S.Kaemmerle@osram.de

NETHERLANDS

Ihre Zeichen  
Unser Zeichen 2002P15736WOUS  
WER / KMM  
Datum 22.Oct.2004

### Patent Application in USA

Serial No. 10/496,707, filed on May 25, 2004

(Nat. phase in USA, based on the International Patent Application PCT/EP03/10599)

**Titel: Luminescent material, especially for LED application**

#### Inventors:

Anne Charlotte Antoinette Delsing  
Dr. Hubertus T. Hintzen  
Yuan-Qiang Li

**Our Reference: 2002P15736WOUS**

Dear Mr. Li,

A patent application was filed in the USA on the above-referenced invention. You are named as one of the inventors. Enclosed please find the following:

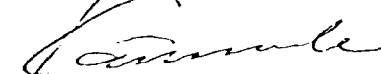
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**Please communicate with us by November 29, 2004 either with comments or by returning the signed documents to us.**

Thank you in advance for your prompt and complete cooperation.

Best regards  
OSRAM Gesellschaft mit beschränkter Haftung

  
Susanne Kämmerle

Enclosures: documents as mentioned above  
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D-81536 München

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Hellabrunner Straße 1

OSRAM-Gesellschaft  
mit beschränkter Haftung  
München

Geschäftsführung:  
Wolf-Dieter Bopst,  
Vorsitzender

Registergericht:  
München HRB 4151

**PATENT**

**REEL: 020489 FRAME: 0676**

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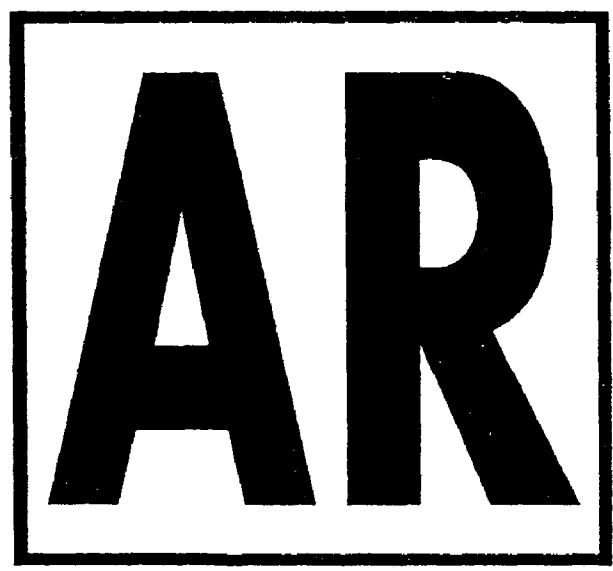
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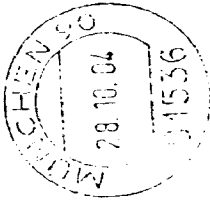
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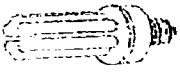
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*Germany*

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Rücksendung bis spätestens: 17.05.2004

Dr. Hubertus T. Hintzen  
Kanunnikensven 24  
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Telefon +49 89 6213 4188  
Fax +49 89 6213 2037  
E-Mail n.kuhmann@osram.de

NETHERLANDS

Ihre Zeichen  
Unser Zeichen 2002P15736WOUS  
WER / KUN  
Datum 26.Apr.2004

**Auslandsanmeldung basierend auf der DE Patentanmeldung  
02021172.8 vom 24.09.2002 mit dem Titel: Luminescent material, especially for LED  
application**

Beteiligte Erfinder:

Anne Charlotte Antoinette Delsing	
Dr. Hubertus T. Hintzen	
Yuan-Qiang Li	

Sehr geehrter Herr Dr. Hintzen,

für Patentanmeldungen im Ausland werden die in der Anlage beigefügten Unterlagen benötigt.

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Bei Fragen zum technischen Inhalt der Anmeldung wenden Sie sich bitte an den zuständigen Patent Professional Dr. Joachim Werner,  
Telefon: +49 89 6213 3209 e-mail: J.Werner@osram.de.

Vielen Dank für Ihre Bemühungen.

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| <input type="checkbox"/> CA-Assignment                             | <input type="checkbox"/> ZA-Assignment            |
| <input type="checkbox"/> TW-Oath & Assignment                      | <input type="checkbox"/> frankierter Rückumschlag |
| <input type="checkbox"/> ID-Assignment                             | <input type="checkbox"/>                          |

Kuhmann

IDNR:4624 / V: 03-1.00 / B:Val

Briefadresse:  
OSRAM GmbH  
D-81536 München

Paketadresse:  
OSRAM GmbH  
Hellabrunner Straße 1  
D-81543 München

OSRAM-Gesellschaft  
mit beschränkter Haftung  
München  
Vorsitzender des  
Aufsichtsrates:

Geschäftsführung:  
Wolf-Dieter Bopst,  
Vorsitzender  
Thomas Seeberg  
i.S.v. Schaefer

Registergericht:  
München HRB 4151

**PATENT**

**REEL: 020489 FRAME: 0681**

TO: FROM:

Dr. Hubertus T. Hintzen  
Kanunnikensven 24

NL-5646 JE Eindhoven

NETHERLANDS

Name Nicole Kuhmann  
Department OSRAM GC IP-M  
Osram  
Phone +49 89 6213 4188  
Fax +49 89 6213 2037  
E-Mail [n.kuhmann@osram.de](mailto:n.kuhmann@osram.de)

Your letter  
Our Ref. 2002P15736WOUS  
WER/KUN  
Date 26 Apr. 2004

New application for a patent based on the German application 02021172.8 dated 24.09.2002 and Entitled: Luminescent material, especially for LED application  
Co-Inventors: Anne Charlotte Antoinette Delsing, Dr. Hubertus T. Hintzen, Yuan-Qiang Li

Dear Dr. Hintzen,

The enclosed documents are needed for new applications outside Germany.

Would you please sign these documents and return them to us soonest by (Air-) Mail

For further details regarding the enclosures, please see the attached information sheet.

Should you have questions regarding the technical content of the application, please contact the responsible professional:

Dr. Joachim Werner, Phone: +49 89 6213 3209 E-Mail: [J.Werner@osram.de](mailto:J.Werner@osram.de)

Thank you for your assistance.

Yours sincerely,

Enclosures

[X] Copy of WO-Document  
[X] Declaration US/Assignment US

## INFORMATIONEN-BLATT

### Korrekturen:

Sollten Korrekturen in der Schreibweise des Namens bzw. in der Adresse nötig sein, bitte informieren Sie uns damit wir aktualisierte Formulare erstellen

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### Informationen zu den beigefügten Unterlagen:

<input type="checkbox"/>	<b>PCT-Anmeldung (internationale Anmeldung)</b>  Bitte den Anmeldeantrag an den gekennzeichneten Stellen mit ausgeschriebenem Vor- und Zunamen (ohne Titel) unterzeichnen, <u>keine Datumsangabe</u> .
<input checked="" type="checkbox"/>	<b>Nationale Anmeldung US / CA</b>  <b><u>US-Declaration:</u></b> Bitte Unterschrift an der gekennzeichneten Stelle mit ausgeschriebenem Vor- und Zunamen (ohne Titel); <u>Angabe des Datums</u> .  <b><u>US-Assignment / CA-Assignment:</u></b> Bitte Unterschrift an der gekennzeichneten Stelle mit ausgeschriebenem Vor- und Zunamen (ohne Titel); <u>Angabe des Datums</u> .  Jede Erfinderunterschrift ist durch <i>einen bzw. zwei</i> volljährige <u>Zeugen</u> an den vorgesehenen Stellen durch Unterschrift (Vor- und Zuname) zu bestätigen. (Erfinder können sich auch gegenseitig bezeugen.)
<input type="checkbox"/>	<b>Nationale Anmeldung TW</b>  <b><u>Oath and Assignment:</u></b> Bitte Unterschrift an der gekennzeichneten Stelle mit ausgeschriebenem Vor- und Zunamen (ohne Titel); <u>keine Datumsangabe</u> .
<input type="checkbox"/>	<b>Alle weiteren Assignments</b>  Bitte Unterschrift an der gekennzeichneten Stelle mit ausgeschriebenem Vor- und Zunamen (ohne Titel); <u>Angabe des Datums</u> .
<input type="checkbox"/>	<b>Sonstiges</b>

## Information Sheet

### Corrections:

Should corrections be necessary to correct the spelling of a name and/or address please inform us so that we can prepare up-to-date forms

Or:

Correct in writing using block letters and initial that correction in the margin of the page.  
(Please do not use corrective tape or the like.)

### Information to the attachments:

<input type="checkbox"/>	<b>PCT Application (International Application)</b> Please sign the request at the marked sections with your full first- and last name (no titles), <u>no dating</u>
<input checked="" type="checkbox"/>	<b>National Application US/CA</b> <b>US declaration</b> Please sign at the marked sections with your full first- and last name (no titles), <u>indicate date</u>  <b>US assignment / CA assignment</b> Please sign at the marked sections with your full first- and last name (no titles), <u>indicate date</u>  Each signature by an inventor must be witnessed by one or two <u>witnesses</u> of legal age in the sections provided therefore by signing (first and last name), (Inventors may be witnesses to each other.)
<input type="checkbox"/>	<b>National application TW</b> <b>Oath and Assignment:</b> Please sign at the marked sections with your full first- and last name (no titles), <u>no dating</u>
<input type="checkbox"/>	<b>All other assignments</b> Please sign at the marked sections with your full first- and last name (no titles), <u>indicate date.</u>
<input type="checkbox"/>	<b>Other</b>

Q:\Tom\information sheet.doc



# OSRAM



Mr.  
Dr. Hubertus T. HINTZEN

Kanunnikensven 24

NL-5646 JE Eindhoven

NETHERLANDS

Name Susanne Kaemmerle  
Abteilung OSRAM GC IP-M  
Standort Osram  
Telefon +49 89 6213 3281  
Fax +49 89 6213 2037  
E-Mail S.Kaemmerle@osram.de

Ihre Zeichen  
Unser Zeichen 2002P15736WOUS  
WER / KMM  
Datum 22.Oct.2004

### Patent Application in USA

Serial No. 10/496,707, filed on May 25, 2004

(Nat. phase in USA, based on the International Patent Application PCT/EP03/10599)

Titel: Luminescent material, especially for LED application

#### Inventors:

Anne Charlotte Antoinette Delsing  
Dr. Hubertus T. Hintzen  
Yuan-Qiang Li

Our Reference: 2002P15736WOUS

Dear Mr. Dr. Hintzen,

A patent application was filed in the USA on the above-referenced invention. You are named as one of the inventors. Enclosed please find the following:

1. specification describing the invention
2. set of claims
3. drawings
4. abstract
5. Combined Declaration of Inventorship and Power of Attorney, and
6. Assignment

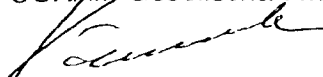
Please review these papers and, if you find them to be acceptable, please date and sign the Combined Declaration of Inventorship and Power of Attorney document, and also the Assignment document.

Please communicate with us by November 29, 2004 either with comments or by returning the signed documents to us.

Thank you in advance for your prompt and complete cooperation.

Best regards

OSRAM Gesellschaft mit beschränkter Haftung



Susanne Kämmerle

Enclosures: documents as mentioned above  
self addressed envelope

IDNR:4624 / V: 03-1.00 / B:Val

Briefadresse:  
OSRAM GmbH  
D-81536 München

Paketadresse:  
OSRAM GmbH  
Hellabrunner Straße 1  
D-81536 München

OSRAM-Gesellschaft  
mit beschränkter Haftung  
München  
Vorsitzender des

Geschäftsführung:  
Wolf-Dieter Bopst,  
Vorsitzender  
Thomas Seebach

Registergericht:  
München HRB 4151

**PATENT**

**REEL: 020489 FRAME: 0685**

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- GC IP-M -
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Germany
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3.97

915-005-000



PATENT

REEL: 020489 FRAME: 0686

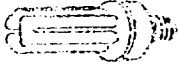




OSRAM  
Gesellschaft mit beschränkter Haftung  
Industrial Property Department  
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Mr.  
Hubertus T. HINTZEN  
Kanunnikensven 24  
NL-5646 JE Eindhoven  
NETHERLANDS

Deutsche Post

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Rückantwort

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Intellectual Property Department  
GC IP-M

D-81536 München  
*Germany*

0204-0NL-09/02

# Kaemmerle, Susanne

---

Von: Postmaster  
Gesendet: Dienstag, 7. Dezember 2004 13:47  
An: Kaemmerle, Susanne  
Betreff: Delivery Status Notification (Relay)

Anlagen: ATT106179.txt; WG: Formalities for filing patent applications in USA



ATT106179.txt  
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**Kaemmerle, Susanne**

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Von: Kaemmerle, Susanne  
Gesendet: Dienstag, 7. Dezember 2004 13:46  
An: 'h.t.hintzen@tue.nl'  
Betreff: WG: Formalities for filing patent applications in USA  
  
Wichtigkeit: Hoch

2002P15736WOUS  
2002P15735WOUS

Dear Dr. Hintzen,

On October 22, 2004, I have sent you some forms (assignment and declaration/power of attorney) for to date and to sign them. I have also attached a self adressed and post paid envelope for to send back the forms to Osram Germany and to avoid further costs for you.

In the meantime I have received the advice for delivery which shows that the envelopes have been delivered by hand against acknowledgement. I kindly ask you: did you ever sign and return the forms to us? We never have received the documents. May be they have got lost in the postal network.

If not, please let me have your comments why not.  
I hope we can find a way to come to a positive solution in this administration matter.

Mit freundlichen Grüßen  
Best regards

Susanne KAEMMERLE  
GC IP-M  
Intellectual property department - Administration

-----  
**OSRAM GmbH**

-----  
**Patent-Treuhand-Gesellschaft  
für elektrische Glühlampen mbH**

-----  
**Mail-adress:**

Osram GmbH  
GC IP-M  
Hellabrunner Str. 1  
81543 München  
Germany

Tel: 0049 (0)89/6213-3281  
Fax: 0049 (0)89/6213-2037  
<mailto:s.kaemmerle@osram.de>

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application of

Anne Charlotte Antoinette DELSING et al.

Serial No.: 10/496,707

Filed: March 24, 2005

For: Luminescent Material, Especially for LED Application

Examiner: THOMPSON, Camie S.  
Group Art: 1774

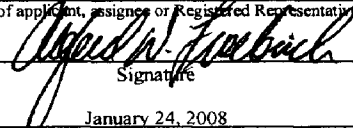
I hereby certify that this correspondence is being deposited with the United States Postal Service with sufficient postage as first class mail in an envelope addressed to: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450, on

January 24, 2008

(Date of Deposit)

Alfred W. Froebrich

Name of applicant, assignee or Registered Representative



Signature

January 24, 2008

Date of Signature

Mail Stop Assignment  
Commissioner for Patents  
P.O. Box 1450  
Alexandria, VA 22313-1450

AFFIDAVIT

SIR:

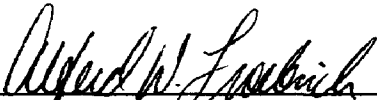
This affidavit is submitted to support recordation of documents showing ownership of the subject application by Osram Opto Semiconductors GmbH.

As evidenced by the attached "Decision on Renewed Petition under 37 CFR 1.47 (b)", dated June 10, 2005, the inventors refused to sign the declaration and assignment and the application was accepted without their signatures. The attached documents include (1) Decision on Renewed Petition under 37 CFR 1.47(b); (2) Applicant's response to the Decision on Petition under 37 CFR 1.47(b); and (3) Applicant's Response to Notification of Missing Requirements and Petition to Proceed under 37 CFR 1.47(b).



Specifically, the Declaration and Supplemental Declaration by Dr. Joachim Werner attached to documents 2 and 3 evidence that all of the joint inventors worked on this invention under the provision of a Research Agreement, and that the invention is the property of OSRAM Opto Semiconductors GmbH under article 8.1 of the Research Agreement.

I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code and that such willful false statements may jeopardize the validity of the application or any patent issued thereon.

By   
Alfred W. Froeblich  
Reg. No. 38,887  
551 Fifth Avenue, Suite 1210  
New York, New York 10176  
(212) 687-2770

Date: January 24, 2008

Dated: January 24, 2008



UNITED STATES PATENT AND TRADEMARK OFFICE

502902-179plus

UNDER SECRETARY OF COMMERCE FOR INTELLECTUAL PROPERTY AND  
DIRECTOR OF THE UNITED STATES PATENT AND TRADEMARK OFFICE

SEPTEMBER 19, 2007

PTAS



\*103445127A\*

ALFRED W. FROEBRICH  
COHEN PONTANI LIEBERMAN & PAVANE LLP  
551 FIFTH AVENUE, 12TH FLOOR  
NEW YORK, NY 10176

UNITED STATES PATENT AND TRADEMARK OFFICE  
NOTICE OF NON-RECORDATION OF DOCUMENT

DOCUMENT ID NO.: 103445127

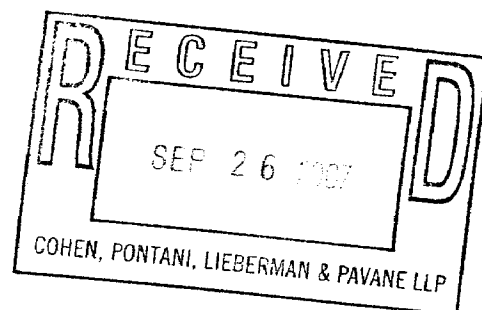
THE ENCLOSED DOCUMENT HAS BEEN EXAMINED AND FOUND NON-RECORDABLE BY THE ASSIGNMENT DIVISION OF THE U.S. PATENT AND TRADEMARK OFFICE. THE REASON(S) FOR NON-RECORDATION ARE STATED BELOW. DOCUMENTS BEING RESUBMITTED FOR RECORDATION MUST BE ACCOMPANIED BY A NEW COVER SHEET REFLECTING THE CORRECT INFORMATION TO BE RECORDED AND THE DOCUMENT ID NUMBER REFERENCED ABOVE.

THE ORIGINAL DATE OF FILING OF THIS ASSIGNMENT DOCUMENT WILL BE MAINTAINED IF RESUBMITTED WITH THE APPROPRIATE CORRECTION(S) WITHIN 30 DAYS FROM THE DATE OF THIS NOTICE AS OUTLINED UNDER 37 CFR 3.51. THE RESUBMITTED DOCUMENT MUST INCLUDE A STAMP WITH THE OFFICIAL DATE OF RECEIPT UNDER 37 CFR 3. APPLICANTS MAY USE THE CERTIFIED PROCEDURES UNDER 37 CFR 1.8 OR 1.10 FOR RESUBMISSION OF THE RETURNED PAPERS, IF THEY DESIRE TO HAVE THE BENEFIT OF THE DATE OF DEPOSIT IN THE UNITED STATES POSTAL SERVICE.

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IF YOU HAVE ANY QUESTIONS REGARDING THIS NOTICE,  
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571-272-3350.

1. THE COVER SHEET SUBMITTED FOR RECORDING IS NOT ACCEPTABLE. TO RECORD A DOCUMENT IN THE ASSIGNMENT DIVISION, A DOCUMENT MUST ACCOMPANY THE COVER SHEET.

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(Rev. 6-93)  
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HEET

U.S. DEPARTMENT OF COMMERCE  
Patent and Trademark Office  
Attorney Docket 502902-179PUS

103445127

To the Honorable Commissione

attached original documents or copy thereof.

1. Name of conveying party(ies):

Anne Charlotte Antoinette DELSING  
Hubertus T. HINTZEN  
Yuan-Qiang LI

9-13-07

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

Name: Osram Opto Semiconductors GmbH

Internal Address:

Street Address: Wernerwerkstr. 2

City: Regensburg

State/Country: Germany

Zip: 93049

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

3. Nature of conveyance:

- Assignment  Merger
- Security Agreement  Change of Name

Documents showing ownership by Osram Opto Semiconductors GmbH:  
 2 (X) Decision on Renewed Petition under 37 CFR 1.47(b);  
 3 (2) Response to Decision on Petition under 37 CFR 1.47(b);  
 4 (3) Response to Notification of Missing Requirements and Petition to Proceed under 37 under CFR 1.47(b)

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

Execution Date: 06/10/2005 (Date of Decision)

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

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

A. Patent Application No.(s)  
SN.: 10/496,707

B. Patent No.(s)

Additional numbers attached?  Yes  No

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

Name: Alfred W. Froebrich  
 Internal Address: COHEN PONTANI LIEBERMAN & PAVANE LLP  
 Street Address: 551 Fifth Avenue, 12<sup>th</sup> Floor  
 City: New York State: New York Zip: 10176

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

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(Attach duplicate copy of this page if paying by deposit account)

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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.

Alfred W. Froebrich  
 Name of Person Signing  
 Reg. No. 38,887

Signature

September 10, 2007  
Date

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