A/D 581-40

10/473612

Direction :	ignment Recordation Services ector of the U.S. Patent and Trademark Office b. Box 1450 xandria, VA 22313-1450	03-12-2004 102692729		U.S. DEPARTMENT OF COMMERCI Patent and Trademark Offic Attorney Docket No. <u>117387</u>	
	10.1.03	Please record the attached original	ginal document or copy	thereof.	
1.	A. Name of conveying part Hirofumi SAKAMOTO		NGK INST 2-56, SUD	address of receiving party: ULATORS, LTD. DA-CHO, MIZUHO-KU, NAGOYA-CITY, EFECTURE, 467-8530 JAPAN	
	B. Additional name(s) of co	onveying party(ies) attached? ☐ Yes ☑ No			
3.	A. Nature of conveyance:		B. Additional	name(s) & address(es) attached? ☐ Yes ☒ No	
	Assignment	☐ Merger			
1	Security Agreement	☐ Change of Name			
	Other	_			
	B. Execution Date: <u>Septen</u>	nber 16, 2003			
4.	A. If this document is being filed together with a new application, the execution date of the application is: September 16, 2003				
	B. Patent Application No.((s) 10473612	C. Patent No.	.(s)(a)	
	_	Additional numbers att	ached? Yes N	0	
5.	Name and address of party to concerning document should	whom correspondence be mailed:	6. Total number of	f applications and patents involved: 1	
	Name: James A. Oliff		7. A. Total fee ((37 CFR 3.41)\$ <u>40.00</u>	
REY	1 00000097 10473612		B. Enclosed (Check No. <u>147000</u>)	
	40.00 Address: OLIFF & BERRI P.O. Box 1 Alexandria,/	IPGE, PLC 9928		payment or charge any underpayment to number 15-0461.	
9.	Statement and signature. To the best of my knowledge the original document.	and belief, the foregoing inforn	nation is true and corre	ct and any attached copy is a true copy of	

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

02 FC:**8021**

PATENT REEL: 015053 FRAME: 0083

(1-8) Insert (2) (3) (6) (7)					6 1 2 1	
(1-8) Newsch of laventor(s) (3) (4) (6) In consideration of the sum of one dollar (\$1.00) and other good and valuable consideration of the sum of one dollar (\$1.00) and other good and valuable consideration of the sum of one dollar (\$1.00) and other good and valuable consideration of the sum of one dollar (\$1.00) and other good and valuable consideration over to the undersigned agrees to assign, and hereby does assign, transfer and so over to the undersigned agrees to assign, and hereby does assign, transfer and so over to the undersigned agrees of the undersigned agrees to assign, and hereby does assign, transfer and so over to the undersigned agrees of the undersigned agrees to assign and legal representative the entire right; title and interest for the United States of America as defined in 32 U.S.C., \$100, in the invention, and in all applications for patent including any and all provisional, one-provisional, divisional, continuation, adsiduation, and reissue applications, and all Letters Patricus and Certamination certificates that may be granted on the invention known as a trianguage of the undersigned has (have) executed an application for patent in the United States of American even date herewish or Signing of Signing	•		(1)	ASSIGNMENT Hirofumi SAKAMOTO	- (₌	
(1) (3) (4) (5) (7) (8) (8) (7) (8)	(1.0)	T	. ,			
(4) In consideration of the sum of one dollar (\$1.00) and other good and valuable consideration protected to the undersigned, each undersigned agrees to assign, and hereby does assign, transfer and a over to control of the sum of one dollar (\$1.00) and other good and valuable consideration protected to the undersigned agrees to assign, and hereby does assign, transfer and a over to control of the undersigned agrees to assign, and hereby does assign, transfer and a control of the undersigned agrees to assign, and hereby does assign, transfer and a control of the undersigned agrees to assign, and hereby does assign, transfer and a control of the undersigned agrees to assign, and hereby does assign, transfer and a control of the undersigned assignes and the provisional, for a control of the undersigned assignment and assignment and assignment and assignment and all provisional, on a first the entire right, title and interest for the United States of America as defined in 32 U.S.C. § 100, in the invention and any actions for patient in the United States of America as a first for a control of the invention known as a first, case Number, or Foreign application Number (11) Insert Date of Signing of Application (Attorney Docket No. 117387 (Attorney Docket No. 117387 for which the undersigned agrees to execute all papers necessary in connection with any application and any continuing, divisional or necessary applications for the invention, and on patients as the Assignmen any application for continuous for the control of the divisional or continuous or division thereof, or any patient or reissue application based thereon, for the invention, and on patients as the Assignmen any application or continuous or division thereof, or any patient or reissue application with any interference which may be declared connecrning any applicati	(1-8)	Name(s)				
In consideration of the sum of one dollar (\$1.00) and other good and valuable consideration pote oach of the undersigned, each undersigned agrees to assign, and hereby does assign, transfer and sover to core to cach of the undersigned, each undersigned agrees to assign, and hereby does assign, transfer and sover to core to c		of Inventor(s)				
to each of the undersigned, each undersigned agrees to assign, and hereby does assign, transfer and so over to over the entire ringits, title and interest for the United States of America as definition, confinition, and in all applications for patent including any and all provisional, advisionals, continuation, substitute, and reissue applications, and all betters Patent, extensions, reissues and reexamination certificates that may be granted on the invention known as over the o			` '			
Assignee (18) NGK Insulators, Ltd. (10) 1			to eacl	h of the undersigned, each undersigned agrees to assign, and hereby does assign, transfer		
Insert Address of Assignee (10) 2-56, Suda-cho, Mizuho-ku, Nagoya-city, Aichi-prefecture, 467-8530 Japan (her-instruct designated as the Assignee) and Assignees here, successor, saigns and legal representative the entire right, tille and interest for the United States of America as defined in 35 U.S.C. \$100, int bi invention, and in all spellications for patient including any and all provision, non-provisional, or cissues and reexamination certificates that may be granted on the invention horavor as the street of the invention such as Title, Case Number, or Foreign Application Number (Altorney Docket No. 117387	(9)		(0)	NGK Insulators, Ltd.		
A ichi—prefecture, 467-8530 Japan (hereinafter designated as the Assignee shes; soucessors, assigns and legal representative the entire right, title and interest for the United States of America as defined in 35 U.S.C. \$100, in the invention, and in all applications for patent including any and all provisional, non-provisional, divisional, continuation, substitute, and reissue application(s), and all Letters Patent, extensions, reissues and reexamination certificates that may be granted on the invention known as reissues and reexamination certificates that may be granted on the invention known as finite (attempt and the provisional of the invention known as the invention known as the invention such as Title, Case Number, or Foreign Application Number [12] Insert Date of Signing of Application (12) on September 16, 2003 [13] Atternative (13) U.S. application Serial Number Identification for filed applications (13) U.S. application Serial Number Identification for filed applications (13) U.S. application Serial Number Identifications and patents as the Assignee may deem necessary. [13] Each undersigned agrees to execute all papers necessary in connection with any application and any continuing, divisional or reissue applications and patents as the Assignee may deem necessary. [2] Each undersigned agrees to execute all papers necessary in connection with any interference which may be declared concerning any application or continuation or division thereof, or any patent or reissue application based thereon, for the invention, and on syntamical services and patents as the Assignee may deem necessary. [2] Each undersigned agrees to execute all papers and documents and perform any act which may be necessary in connection with call miss or provisions of the international Convention of Industrial Property or smilar agreements. [3] Each undersigned agrees to execute all papers and documents and perform any act which may be necessary in connection with call miss or provisions of the international Convention of Indus	(10)	Insert Address of	` '			
Identification such as Title, Case Number, or Foreign Application Number (Attorney Docket No. 117387			Aichi-prefecture, 467-8530 Japan (hereinafter designated as the Assignee) and Assignee's heirs, successors, assigns and legal representatives, the entire right, title and interest for the United States of America as defined in 35 U.S.C. §100, in the invention, and in all applications for patent including any and all provisional, non-provisional, divisional, continuation, substitute, and reissue application(s), and all Letters Patent, extensions,			
Such as Title, Case Number, or Poreign Application Number (Attorney Docket No. 117387 for which the undersigned has (have) executed an application for patent in the United States of American on even date herewith or (12) Insert Date of Signing of (12) on Application (13) Alternative Identification for filed applications (14) U.S. application Serial Number Identification for filed applications (15) Each undersigned agrees to execute all papers necessary in connection with any application and any continuing, divisional or recissue applications for the invention, and any patent(s) issuing thereon, and also to execute separate assignments in connection with such applications and patents as the Assignee may deem necessary. (2) Each undersigned agrees to execute all papers necessary in connection with any interference which may be declared concerning any application or continuation or division thereof, or any patent or reissue application based thereon, for the invention, and to cooperate with a Assignee in every way possible in obtaining evidence and going forward with such interference. (3) Each undersigned agrees to execute all papers and documents and perform any act which may be necessary in connection with claims or provisions of the International Convention for Protection of Industrial Property or similar agreements. (4) Each undersigned agrees to execute all papers and documents and perform any act which may be necessary in connection with claims or provisions of the International Convention for Protection of Industrial Property or similar agreements. (4) Each undersigned agrees to execute all papers and documents and perform any act which may be necessary in connection with claims or provisions of the International Convention for Protection of Industrial Property or similar agreements. (5) Each undersigned agrees to perform all affirmative acts which may be necessary to confirm by reissue or reexamination a grant of a valid United States patent to the Assignee. (5) Each undersigned authorizes and	(11)		(11)	(11) HONEYCOMB STRUCTURE		
for which the undersigned has (have) executed an application for patent in the United States of American even date herewith or on even date here in the United States of Application on Greissue application for filed applications filed of the undersigned agrees to execute all papers necessary in connection with any application and any continuing, divisional or reissue applications for the invention, and any patent(s) issuing thereon, and also to execute separate assignments in connection with such applications for the invention, and any patent or reissue application based thereon, for the invention, and to cooperate with exassignee in every way possible in obtaining evidence and going forward with such interference. 3) Each undersigned agrees to execute all papers and documents and perform any act which may be necessary in connection with exastignee in every way possible in obtaining evidence and going forward with such interference. 4) Each undersigned agrees to execute all papers and documents and perform any act which may be necessary in connection with claims or provisions of the International Convention for Protection of Industrial Property or similar agreements. 4) Each undersigned agrees to perform all affirmative acts which may be necessary to obtain, maintain or confirm by reissue or reexamination a grant of a valid United States patent to the Assignee. 5) Each undersigned authorizes and requests the Director of Patents to issue any and all Letters Patents of the United States resultiform said application(s) to the said Assignee, as Assignee of the entire interest, and covenants that he has full right to convey the entire interest a						
for which the undersigned has (have) executed an application for patent in the United States of American on even date herewith or (12) Insert Date of Signing of Application (13) Alternative Identification for filed applications filed October 1, 2003 (14) Cotober 1, 2003 (15) Each undersigned agrees to execute all papers necessary in connection with any application and any continuing, divisional or reissue applications for the invention, and any patentics) issuing thereon, and also to execute separate assignments in connection with such applications and patents as the Assignee may deem necessary. (2) Each undersigned agrees to execute all papers necessary in connection with any interference which may be declared concerning any application or continuation or division thereof, or any patent or reissue application based thereon, for the invention, and to cooperate with existing in every way possible in obtaining evidence and going forward with such interference. (a) Each undersigned agrees to execute all papers and documents and perform any act which may be necessary in connection with axisms or provisions of the International Convention for Protection of Industrial Property or similar agreements. (4) Each undersigned agrees to perform all affirmative acts which may be necessary to obtain, maintain or confirm by reissue or reexamination a grant of a valid United States patent to the Assignee. (5) Each undersigned authorizes and requests the Director of Patents to issue any and all Letters Patents of the United States resultifrom said application(s) to the said Assignee, as Assignee of the entire interest, and covenants that he has full right to convey the entire interest, and covenants that he has full right to convey the entire interest, and covenants that he has full right to convey the entire interest, and covenants that he has full right to convey the entire interest, and covenants that he has full right to convey the entire interest and application(s) to the said Assignee, as Assignee of the entire int			(Attor	ney Docket No. 117387)	
Signing of Application (13) Alternative (13) U.S. application Serial Number				ich the undersigned has (have) executed an application for patent in the United States of		
Identifications for filed applications filed October 1, 2003 1) Each undersigned agrees to execute all papers necessary in connection with any application and any continuing, divisional or reissue applications for the invention, and any patent(s) issuing thereon, and also to execute separate assignments in connection with such applications and patents as the Assignee may deem necessary. 2) Each undersigned agrees to execute all papers necessary in connection with any interference which may be declared concerning any application or continuation or division thereof, or any patent or reissue application based thereon, for the invention, and to cooperate with easignee in every way possible in obtaining evidence and going forward with such interference. 3) Each undersigned agrees to execute all papers and documents and perform any act which may be necessary in connection with claims or provisions of the International Convention for Protection of Industrial Property or similar agreements. 4) Each undersigned agrees to perform all affirmative acts which may be necessary to obtain, maintain or confirm by reissue or reexamination a grant of a valid United States patent to the Assignee. 5) Each undersigned authorizes and requests the Director of Patents to issue any and all Letters Patents of the United States resultiform said application(s) to the said Assignee, as Assignee of the entire interest, and covenants that he has full right to convey the entire interherin assigned, and that he has not executed, and will not execute, any agreements in conflict herewith, and agrees that this assignment is binding on him and his heirs, successory, assigns and legal representatives. 6) Each undersigned hereby grants the firm of OLIFF & BERRIDGE, PLC the power to insert on this assignment any further identification that may be necessary or desirable in order to comply with the rules of the United States Patent and Trademark Office for recordation of this document. Inventor Signature Inventor Signature Inventor Signature I	(12)	Signing of	(12)	on September 16, 2003		
1) Each undersigned agrees to execute all papers necessary in connection with any application and any continuing, divisional or reissue applications for the invention, and any patent(s) issuing thereon, and also to execute separate assignments in connection with such applications and patents as the Assignee may deem necessary. 2) Each undersigned agrees to execute all papers necessary in connection with any interference which may be declared concerning any application or continuation or division thereof, or any patent or reissue application based thereon, for the invention, and to cooperate with exasting the energy may possible in obtaining evidence and going forward with such interference. 3) Each undersigned agrees to execute all papers and documents and perform any act which may be necessary in connection with claims or provisions of the International Convention for Protection of Industrial Property or similar agreements. 4) Each undersigned agrees to perform all affirmative acts which may be necessary to obtain, maintain or confirm by reissue or reexamination a grant of a valid United States patent to the Assignee. 5) Each undersigned authorizes and requests the Director of Patents to issue any and all Letters Patents of the United States resultiform said application(s) to the said Assignee, as Assignee of the entire interest, and covenants that he has full right to convey the entire interherein assigned, and that he has not executed, and will not execute, any agreements in conflict herewith, and agrees that this assignment is binding on him and his heirs, successors, assigns and legal representatives. 6) Each undersigned hereby grants the firm of OLIFF & BERRIDGE, PLC the power to insert on this assignment any further identification that may be necessary or desirable in order to comply with the rules of the United States Patent and Trademark Office for recordation of this document. In witness whereof, executed by the undersigned on the date(s) opposite the undersigned name(s). Date Inventor Signatur	(13)	Alternative	(13)	U.S. application Serial Number		
1) Each undersigned agrees to execute all papers necessary in connection with any application and any continuing, divisional or reissue applications for the invention, and any patent(s) issuing thereon, and also to execute separate assignments in connection with such applications and patents as the Assignee may deem necessary. 2) Each undersigned agrees to execute all papers necessary in connection with any interference which may be declared concerning any application or continuation or division thereof, or any patent or reissue application based thereon, for the invention, and to cooperate with the Assignee in every way possible in obtaining evidence and going forward with such interference. 3) Each undersigned agrees to execute all papers and documents and perform any act which may be necessary in connection with claims or provisions of the International Convention for Protection of Industrial Property or similar agreements. 4) Each undersigned agrees to perform all affirmative acts which may be necessary to obtain, maintain or confirm by reissue or reexamination a grant of a valid United States patent to the Assignee. 5) Each undersigned authorizes and requests the Director of Patents to issue any and all Letters Patents of the United States resultiform said application(s) to the said Assignee, as Assignee of the entire interest, and covenants that he has full right to convey the entire interest assigned, and that he has not executed, and will not execute, any agreements in conflict herewith, and agrees that this assignment is binding on him and his heirs, successors, assigns and legal representatives. 6) Each undersigned hereby grants the firm of OLIFF & BERRIDGE, PLC the power to insert on this assignment any further identification that may be necessary or desirable in order to comply with the rules of the United States Patent and Trademark Office for recordation of this document. In witness whereof, executed by the undersigned on the date(s) opposite the undersigned name(s). Date Inventor Signature		Identification for	filed			
Date September 16, 2003 Inventor Signature Hirofum: Selection (SEAL) Date Inventor Signature (SEAL) Date (SEAL)	applicate any app the Assi claims of reexami from sai herein a binding	applications for the invention tions and patents as the Assig 2) Each undersigned agrees dication or continuation or dignee in every way possible if 3) Each undersigned agrees or provisions of the Internatio 4) Each undersigned agrees nation a grant of a valid Unit 5) Each undersigned author id application(s) to the said Assigned, and that he has not e on him and his heirs, success 6) Each undersigned hereby eation that may be necessary or	, and any nee may to execu no obtaining to execu nal Conv to perfor ed States rizes and executed, sors, assigner, grants the	repatent(s) issuing thereon, and also to execute separate assignments in connection with sideem necessary. Ite all papers necessary in connection with any interference which may be declared conceivered, or any patent or reissue application based thereon, for the invention, and to cooperate evidence and going forward with such interference. Ite all papers and documents and perform any act which may be necessary in connection wention for Protection of Industrial Property or similar agreements. It all affirmative acts which may be necessary to obtain, maintain or confirm by reissue patent to the Assignee. It requests the Director of Patents to issue any and all Letters Patents of the United States reas Assignee of the entire interest, and covenants that he has full right to convey the entire and will not execute, any agreements in conflict herewith, and agrees that this assignment and legal representatives. The firm of OLIFF & BERRIDGE, PLC the power to insert on this assignment any further	erning ate with with or esulting e interest nt is	
Date Inventor Signature (SEAL)		In witness whereof, execut	ed by the			
Date Inventor Signature (SEAL) Date (SEAL)	Date	September 16,	2003	3 Inventor Signature Hirofumi Sakamoto (S	EAL)	
Date Inventor Signature (SEAL) Date Inventor Signature (SEAL) Date Inventor Signature (SEAL) Date Inventor Signature (SEAL)	Date			Inventor Signature(S	EAL)	
Date Inventor Signature (SEAL) Date Inventor Signature (SEAL) Date Inventor Signature (SEAL)	Date			Inventor Signature(S	EAL)	
Date Inventor Signature (SEAL) Date Inventor Signature (SEAL)	Date .			Inventor Signature(SI	EAL)	
Date Inventor Signature (SEAL)	Date			Inventor Signature(S	EAL)	
	Date .			Inventor Signature(SI	EAL)	
Date Inventor Signature (SEAL)	Date _			Inventor Signature(SI	EAL)	
	Date _			Inventor Signature(SI	EAL)	

This assignment should preferably be signed before: (a) a Notary Public if within the U.S.A. (b) a U.S. Consul if outside the U.S.A. If neither, then it should be signed before at least two witnesses who also sign here:

Date

Witness

PATENT REEL: 015053 FRAME: 0084

Date