



(51) International Patent Classification:

C23C 24/08 (2006.01) C03C 17/34 (2006.01)
C23C 28/00 (2006.01) B32B 17/06 (2006.01)

(21) International Application Number:

PCT/US201 1/042165

(22) International Filing Date:

28 June 2011 (28.06.2011)

(25) Filing Language:

English

(26) Publication Language:

English

(30) Priority Data:

12/832,111 8 July 2010 (08.07.2010) US

(71) Applicant (for all designated States except US):
SIEMENS ENERGY, INC. [US/US]; 4400 Alafaya Trail,
Orlando, Florida 32826-2399 (US).

(72) Inventors; and

(75) Inventors/Applicants (for US only): **JONES, William F.**
[US/US]; 1203 Broadside Road, York, South Carolina
29745 (US). **HAN, Zhaohui** [GB/US]; 3838 Whitewood
Ct., Oviedo, Florida 32766 (US). **GARRETT, Randall S.**
[US/US]; 7046 Chelsea Day Lane, Tega Cay, South Caro-
lina 29708 (US).(74) Agents: **RYAN, Daniel J.**, et al; Siemens Corporation- In-
tellectual Property Dept., 170 Wood Avenue South, Iselin,
New Jersey 08830 (US).

(81) Designated States (unless otherwise indicated, for every kind of national protection available): AE, AG, AL, AM, AO, AT, AU, AZ, BA, BB, BG, BH, BR, BW, BY, BZ, CA, CH, CL, CN, CO, CR, CU, CZ, DE, DK, DM, DO, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, GT, HN, HR, HU, ID, IL, IN, IS, JP, KE, KG, KM, KN, KP, KR, KZ, LA, LC, LK, LR, LS, LT, LU, LY, MA, MD, ME, MG, MK, MN, MW, MX, MY, MZ, NA, NG, NI, NO, NZ, OM, PE, PG, PH, PL, PT, RO, RS, RU, SC, SD, SE, SG, SK, SL, SM, ST, SV, SY, TH, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, ZA, ZM, ZW.

(84) Designated States (unless otherwise indicated, for every kind of regional protection available): ARIPO (BW, GH, GM, KE, LR, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European (AL, AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HR, HU, IE, IS, IT, LT, LU, LV, MC, MK, MT, NL, NO, PL, PT, RO, RS, SE, SI, SK, SM, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

Published:

- with international search report (Art. 21(3))
- before the expiration of the time limit for amending the claims and to be republished in the event of receipt of amendments (Rule 48.2(h))

(88) Date of publication of the international search report:

9 August 2012

(54) Title: METHOD FOR APPLYING A LAYER OF MATERIAL TO THE SURFACE OF A NON-METALLIC SUBSTRATE

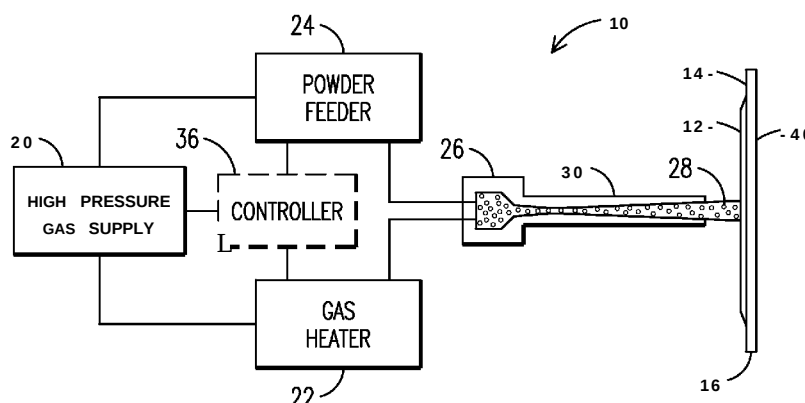


FIG. 1

(57) Abstract: A method is provided for applying a layer (112) of material to a surface of a non-metallic substrate (116) to enhance a performance characteristic. The method includes applying glass backing (114) to the non-metallic substrate (116) and cold spraying mica or boron nitride (BN) particles (128) onto a surface of the glass backing (114). A conductive tape is also provided, which is formed with the method. The conductive tape includes a first layer of an insulation material (114'), where the first layer is formed from a backing including a fiber-based or polymer backing with resilient and flexible properties for storage in a rolled form and a layer of mica particles or boron nitride particles. The conductive tape further includes a second layer (142'') positioned over the layer of particles, and formed from an electrical conductor material.



WO 2012/006082 A3

INTERNATIONAL SEARCH REPORT

International application No
PCT/US2011/042165

A. CLASSIFICATION OF SUBJECT MATTER

INV. C23C24/08 C23C28/00 C03C17/34 B32B17/06
ADD.

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

C23C C03C B32B

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

EPO-Internal , WPI Data

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	US 2008/286459 AI (CHEUNG KIN-LEUNG [CA]) 20 November 2008 (2008-11-20) paragraph [0026] ; c l a i m s 1, 7 -----	1
X	US 2007/089899 AI (ROBERTS JONATHAN W [US] ET AL) 26 April 2007 (2007-04-26)	13-16
A	c l a i m s 1-3 , 13 , 14 -----	1



Further documents are listed in the continuation of Box C.



See patent family annex.

* Special categories of cited documents :

"A" document defining the general state of the art which is not considered to be of particular relevance

"E" earlier application or patent but published on or after the international filing date

"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)

"O" document referring to an oral disclosure, use, exhibition or other means

"P" document published prior to the international filing date but later than the priority date claimed

"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art

"&" document member of the same patent family

Date of the actual completion of the international search

7 February 2012

Date of mailing of the international search report

27/06/2012

Name and mailing address of the ISA/

European Patent Office, P.B. 5818 Patentlaan 2
NL - 2280 HV Rijswijk
Tel. (+31-70) 340-2040,
Fax: (+31-70) 340-3016

Authorized officer

Chalaftris, Georgios

INTERNATIONAL SEARCH REPORT

International application No.
PCT/US2011/042165

Box No. II Observations where certain claims were found unsearchable (Continuation of item 2 of first sheet)

This international search report has not been established in respect of certain claims under Article 17(2)(a) for the following reasons:

1. ☐ Claims Nos.:
because they relate to subject matter not required to be searched by this Authority, namely:

2. ☐ Claims Nos.:
because they relate to parts of the international application that do not comply with the prescribed requirements to such an extent that no meaningful international search can be carried out, specifically:

3. ☐ Claims Nos.:
because they are dependent claims and are not drafted in accordance with the second and third sentences of Rule 6.4(a).

Box No. III Observations where unity of invention is lacking (Continuation of item 3 of first sheet)

This International Searching Authority found multiple inventions in this international application, as follows:

see additional sheet

1. ☐ As all required additional search fees were timely paid by the applicant, this international search report covers all searchable claims.

2. ☐ As all searchable claims could be searched without effort justifying an additional fees, this Authority did not invite payment of additional fees.

3. ☐ As only some of the required additional search fees were timely paid by the applicant, this international search report covers only those claims for which fees were paid, specifically claims Nos.:

4. ☒ No required additional search fees were timely paid by the applicant. Consequently, this international search report is restricted to the invention first mentioned in the claims; it is covered by claims Nos.:

I-8(completely) ; 13-16(partial ly)

Remark on Protest

- ☐ The additional search fees were accompanied by the applicant's protest and, where applicable, the payment of a protest fee.
- ☐ The additional search fees were accompanied by the applicant's protest but the applicable protest fee was not paid within the time limit specified in the invitation.
- ☒ No protest accompanied the payment of additional search fees.

INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No

PCT/US2011/042165

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
US 2008286459	A1	20-11-2008	CA 2630372 A1 17-11-2008
		US 2008286459 A1	20-11-2008

US 2007089899	A1	26-04-2007	NONE

FURTHER INFORMATION CONTINUED FROM PCT/ISA/ 210

This International Searching Authority found multiple (groups of) inventions in this international application, as follows:

1. claims: 1-8(completely) ; 13-16(partially)

Method of cold spraying mica particles on a non-metallic substrate and tape produced thereof

2. claims: 9-12 (completely) ; 13-16(partially)

Method of cold spraying boron nitride particles on a non-metallic substrate and tape produced thereof
