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[Continued on next page]

(54) Title: CONTROLLING THE UNIFORMITY OF PECVD DEPOSITION ON MEDICAL SYRINGES, CARTRIDGES, AND THE LIKE

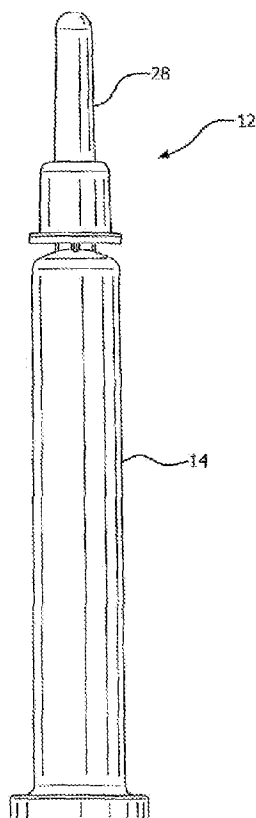


FIG. 1

(57) Abstract: A method and apparatus for plasma modifying a workpiece such as a medical barrel, medical barrel, vial, or blood tube is described. Plasma is provided within the lumen of the workpiece. The plasma is provided under conditions effective for plasma modification of a surface of the workpiece. A magnetic field is provided in at least a portion of the lumen. The magnetic field has an orientation and field strength effective to improve the uniformity of plasma modification of the generally cylindrical interior surface 16 of the generally cylindrical interior surface 16.





(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, BN, 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, IR, IS, JP, KE, KG, 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, PA, PE, PG, PH, PL, PT, QA, RO, RS, RU, RW, SA, 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.

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INTERNATIONAL SEARCH REPORT

International application No
PCT/US2013/071752

A. CLASSIFICATION OF SUBJECT MATTER
INV. C23C16/04 C23C16/40 A61M5/178
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

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

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US 2011/252899 A1 (FELTS JOHN T [US] ET AL) 20 October 2011 (2011-10-20)	1,2,11, 18-27
Y	paragraphs [0188], [0201], [0302], [0496], [0680], [0700], [0726], [0727]; example 0	3-10, 12-17
Y	US 5 514 276 A (BABCOCK WALTER C [US] ET AL) 7 May 1996 (1996-05-07) column 5, line 2 - column 6, line 9; figure 3; example 2	3-5,7,17



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

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"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

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"&" document member of the same patent family

Date of the actual completion of the international search

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27/11/2014

Name and mailing address of the ISA/

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Ekhult, Hans

INTERNATIONAL SEARCH REPORT

International application No

PCT/US2013/071752

C(Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	HOPWOOD J ED - CRC PRESS: "Plasma-assisted deposition", 17 August 1997 (1997-08-17), HANDBOOK OF NANOPHASE MATERIALS,, PAGE(S) 184 - 196, XP008107730, ISBN: 978-0-8247-9469-9 page 158, line 12 - page 160, column 4; figures 5a-c -----	6,8,9, 12,13,16
Y	JP 2004 043789 A (MITSUBISHI HEAVY IND LTD) 12 February 2004 (2004-02-12) paragraph [0100] - paragraph [0103]; figures 7, 10 -----	10,12-14
Y	CA 2 268 719 C (BECTON DICKINSON CO [US]) 28 August 2001 (2001-08-28) page 5, line 1 - line 25 -----	15
A	US 5 904 952 A (LOPATA EUGENE S [US] ET AL) 18 May 1999 (1999-05-18) the whole document -----	1-27

INTERNATIONAL SEARCH REPORT

International application No.
PCT/US2013/071752

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.:

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.

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, 2, 24, 25, 27(completely); 11, 18-23, 26(partially)

Magnetically enhanced method of making a medical barrel, products and apparatuses.

2. claims: 3-10, 12-17(completely); 11, 18-23, 26(partially)

Method of making a medical barrel enhanced by specific magnetic arrangements.

INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No

PCT/US2013/071752

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US 2011252899	A1	20-10-2011	DK 2251453 T3 07-07-2014
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