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D06M 13/00 (2006.01) **A61Q 19/00** (2006.01)
D06M 16/00 (2006.01) **F24J 2/00** (2014.01)

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(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, 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, PA, PE, PG, PH, PL, PT, QA, RO, RS, RU, RW, 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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ARIPO (BW, GH, GM, KE, LR, LS, MW, MZ, NA, RW, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian (AM, AZ, BY, KG, KZ, 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).

[Continued on next page]

(54) Title: METHOD FOR TREATMENT OF SPIDER SILK-FILAMENT FOR USE AS THREAD OR A COMPOSITION IN THE MANUFACTURE OF COSMETIC, MEDICAL, TEXTILE OR INDUSTRIAL APPLICATIONS/SUCH AS BIO-ARTIFICIAL CELL TISSUE OR ARTIFICIAL SKIN BASED ON SPIDER SILK DERIVED FROM GENETICALLY MODIFIED ORGANISMS

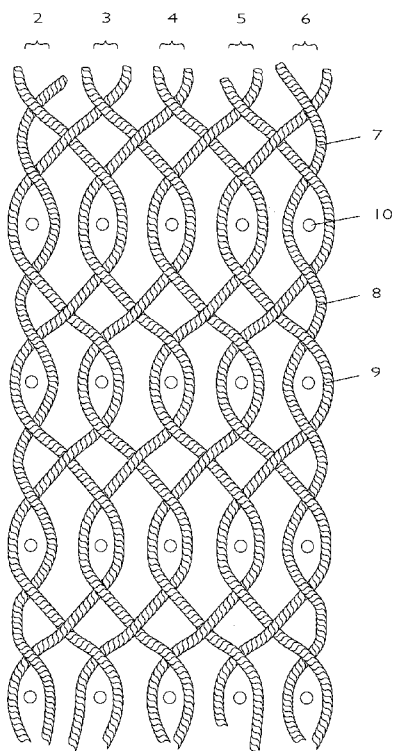


Fig. 2

(57) Abstract: A method for the treatment of spider silk filament for use as a thread or composition in the manufacture of cosmetic, medical, textile, and industrial applications, wherein the spider silk filament, derived from genetically modified organisms, is treated with at least one component selected from the group consisting of vitamins, hormones, antioxidants, chelating agents, antibiotics, preserving agents, fragrances, dyes, pigments, magnetic nanoparticles, nanocrystals, cell adhesion enhancers, thermal insulators, shrinkage agents and cosmetic, medical or dermatological active substances. Textile fabrics obtained by this method are stronger, bio-compatible, bio-degradable and have a higher thermal conductivity. Treated spider silk filament can also be applied in an oil-in-water or water-in-oil protective cream that is hypoallergenic and ensures a firmer skin.

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see Notice of 31 October 2013

INTERNATIONAL SEARCH REPORT

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| International application No PCT/NL2013/000018 |
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|---|--|-----------------------|--|--|
| A. CLASSIFICATION OF SUBJECT MATTER INV. D06M11/00 D06M13/00 D06M16/00 A61L27/60 A61Q19/00 F24J2/00 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) D06M A61L A61Q F24J D01F 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. | | |
| X | WO 2004/090205 A2 (NEXIA BIOTECH INC [CA]; ISLAM SHAFIUL [CA]; KARATZAS COSTAS N [CA]; RO) 21 October 2004 (2004-10-21) page 2, line 3 - line 26 page 6, line 8 - line 19 page 25, line 20 - line 24 page 26, line 28 - line 31 page 28, line 9 - line 25 page 29, line 27 - line 29 page 34, line 1 - line 9 claims 1,2,10,11,14,28,32-34 ----- | 1-6, 10-17 | | |
| X | WO 97/08315 A1 (BASEL RICHARD M [US]; ELION GLENN R [US]) 6 March 1997 (1997-03-06) | 1-14 | | |
| Y | page 7, line 11 - line 26 page 50, line 29 - page 51, line 31 claims 24,27 ----- -/-- | 15-17 | | |
| <input checked="" type="checkbox"/> Further documents are listed in the continuation of Box C. <input checked="" type="checkbox"/> See patent family annex. | | | | |
| * Special categories of cited documents : <table style="width: 100%; border: none;"> <tr> <td style="width: 50%; border: none; vertical-align: top;"> "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 </td> <td style="width: 50%; border: none; vertical-align: top;"> "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 </td> </tr> </table> | | | "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 |
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| Date of the actual completion of the international search | Date of mailing of the international search report | | | |
| 4 September 2013 | 03/01/2014 | | | |
| 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 Fiocco, Marco | | | |

INTERNATIONAL SEARCH REPORT

International application No
PCT/NL2013/000018

| C(Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT | | |
|--|--|-----------------------|
| Category* | Citation of document, with indication, where appropriate, of the relevant passages | Relevant to claim No. |
| X | <p>WO 2006/017701 A2 (SUNSTAR AMERICAS INC [US]; STUDNEY THOMAS [US]) 16 February 2006 (2006-02-16) paragraph [0002] - paragraph [0003] paragraph [0008] - paragraph [0012] -----</p> | 1-6,8-14 |
| X | <p>SCHELLER JUERGEN ET AL: "Production of spider silk proteins in tobacco and potato", NATURE BIOTECHNOLOGY, NATURE PUBLISHING GROUP, NEW YORK, NY, US, vol. 19, no. 6, 1 June 2001 (2001-06-01), pages 573-577, XP002189903, ISSN: 1087-0156, DOI: 10.1038/89335 abstract page 575, Conclusions -----</p> | 3-6,8-14 |
| X | <p>WO 2011/008842 A2 (TUFTS COLLEGE [US]; UNIV MASSACHUSETTS FOUNDATION INC [US]; ZHANG XIAO) 20 January 2011 (2011-01-20)</p> | 1,2 |
| Y | <p>paragraph [0007] paragraph [0048] paragraph [0052] - paragraph [0056] claims 1-7 -----</p> | 15-17 |

INTERNATIONAL SEARCH REPORT

Information on patent family members

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| International application No PCT/NL2013/000018 |
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| Patent document cited in search report | Publication date | Patent family member(s) | Publication date |
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INTERNATIONAL SEARCH REPORT

International application No.
PCT/NL2013/000018

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.:

1-17(partially)

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: 1-17(partially)

A method for treating spider silk filaments as per claim 1, wherein the treating agent is a vitamin.

2. claims: 1-17(partially)

A method for treating spider silk filaments as per claim 1, wherein the treating agent is a hormone.

3. claims: 1-17(partially)

A method for treating spider silk filaments as per claim 1, wherein the treating agent is a antioxidant.

4. claims: 1-17(partially)

A method for treating spider silk filaments as per claim 1, wherein the treating agent is a chelating agent.

5. claims: 1-17(partially)

A method for treating spider silk filaments as per claim 1, wherein the treating agent is an antibiotic.

6. claims: 1-17(partially)

A method for treating spider silk filaments as per claim 1, wherein the treating agent is a fragrance.

7. claims: 1-17(partially)

A method for treating spider silk filaments as per claim 1, wherein the treating agent is a dye or a pigment.

8. claims: 1-17(partially)

A method for treating spider silk filaments as per claim 1, wherein the treating agent is a magnetic nanoparticle.

9. claims: 1-17(partially)

A method for treating spider silk filaments as per claim 1, wherein the treating agent is a nanocrystal.

FURTHER INFORMATION CONTINUED FROM PCT/ISA/ 210

10. claims: 1-17(partially)

A method for treating spider silk filaments as per claim 1,
wherein the treating agent is a cell adhesion enhancer.

11. claims: 1-17(partially)

A method for treating spider silk filaments as per claim 1,
wherein the treating agent is a thermal insulator.

12. claims: 1-17(partially)

A method for treating spider silk filaments as per claim 1,
wherein the treating agent is a shrinkage agent.

13. claims: 1-17(partially)

A method for treating spider silk filaments as per claim 1,
wherein the treating agent is a cosmetic active substance.

14. claim: 18

A method for the manufacture of a hardenable construct.

15. claims: 19, 21

A method for dissolving spider silk protein and making a
skin-protective cream from the obtained solution.

16. claim: 20

A method for the manufacture of a non-woven construct.
