

PATENT

In The United States Patent And Trademark Office

Inventor: Stephen Richard COULSON	Examiner: To Be Assigned
Serial No. 15/735,130	Group Art Unit: 1762
International Filing Date: June 8, 2016	Confirmation No. 7101
International App. No. PCT/GB2016/051688	Docket No. GBL0007/US
371(c): December 8, 2017	
For: COATINGS	

Commissioner for Patents
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/Sonja A. Talley/
SONJA A. TALLEY

Preliminary Amendment

Dear Sir or Madam:

This is a Preliminary Amendment in the above-captioned application. Kindly enter this Amendment prior to calculating the filing fee for this application.

No fee is believed to be required in connection with the filing of this Preliminary Amendment.

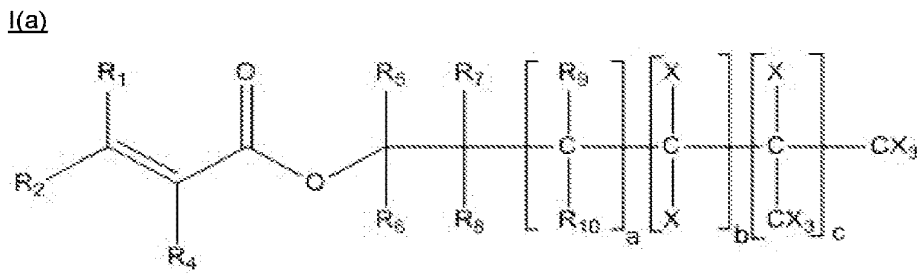
Claim Amendments

Please amend claims 1-3, 5-16, and 31-34; and cancel claims 4, 17-30, and 35-91 as follows:

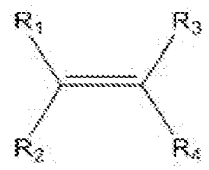
1. (Currently Amended) An electronic or electrical device or electronic or electrical component thereof comprising a protective cross-linked polymeric coating on a surface of ~~the electronic or electrical~~ said device or component ~~thereof~~;

wherein the protective cross-linked polymeric coating is obtainable by exposing ~~the electronic or electrical~~ said device or component ~~thereof~~ to a plasma comprising a monomer compound and a crosslinking reagent for a period of time sufficient to allow formation of the protective cross-linked polymeric coating on a surface thereof,

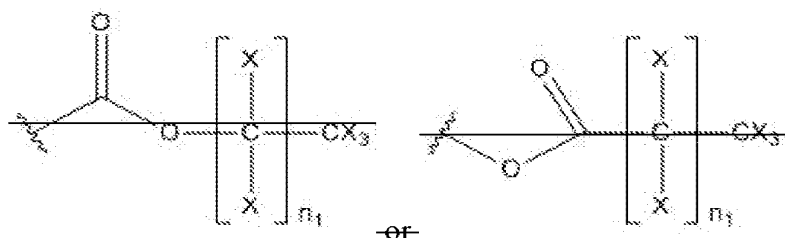
wherein the monomer compound is a compound of formula I(a):



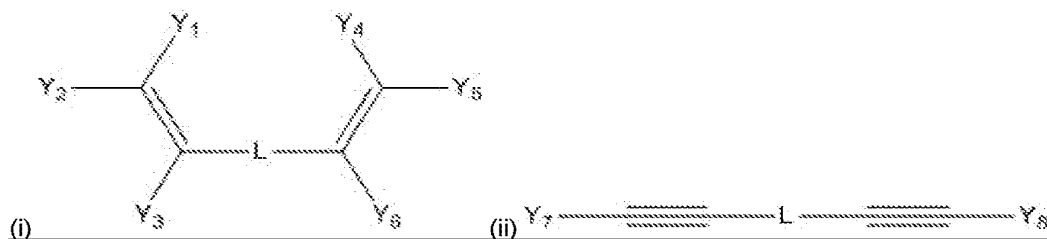
wherein each of R₁, R₂, and R₅ to R₈ is hydrogen; each of R₄, R₉ and R₁₀ is independently hydrogen or methyl; each X is independently hydrogen or halogen; a is from 0-10; b is from 3 to 7; and c is 0 or 1 ~~has the following formula:~~



~~where R₁, R₂ and R₄ are each independently selected from hydrogen, optionally substituted branched or straight chain C₁-C₆ alkyl or halo alkyl or aryl optionally substituted by halo, and R₃ is selected from:~~



~~where each X is independently selected from hydrogen, a halogen, optionally substituted branched or straight chain C₁-C₆ alkyl, halo alkyl or aryl optionally substituted by halo; and n₁ is an integer from 1 to 27; and wherein the crosslinking reagent comprises two or more unsaturated bonds attached by means of one or more linker moieties and has a boiling point of less than 500 °C at standard pressure, the crosslinking reagent having one of the following structures:~~



where Y₁, Y₂, Y₃, Y₄, Y₅, Y₆, Y₇ and Y₈ are each hydrogen; and L is a linker moiety.

2.(Currently Amended) ~~An electronic or electrical~~ The device or component thereof according to claim 1, wherein the protective cross-linked polymeric coating is a physical barrier to mass and electron transport.

3.(Currently Amended) ~~An electronic or electrical~~ The device or component thereof according to claim 1 ~~or claim 2~~, wherein the protective cross-linked polymeric coating forms a liquid repellent surface defined by a static water contact angle (WCA) of at least 90°.

4. (Cancelled)

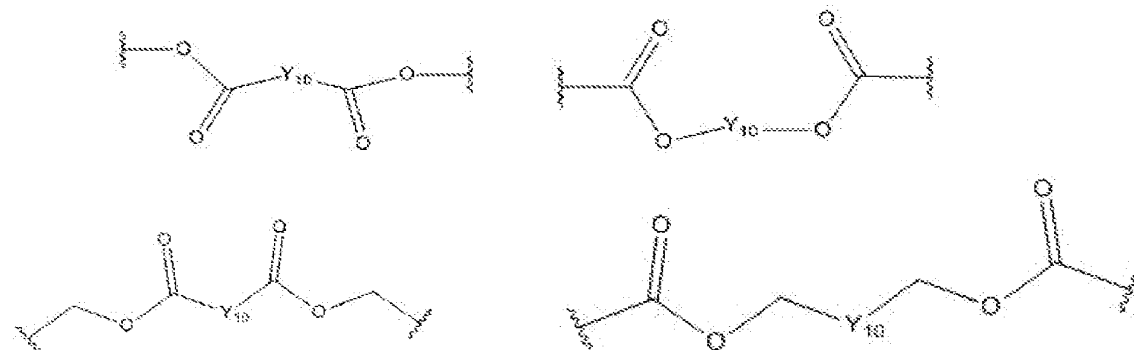
5. (Currently Amended) ~~An electronic or electrical~~ The device or component thereof according to ~~claim 4~~ claim 1, wherein for compound (i) L has the following formula:



each Y_9 is independently selected from, a bond, $-O-$, $-O-C(O)-$, $-C(O)-O-$, $-Y_{11}-O-C(O)-$, $-C(O)-O-Y_{11}-$, $-OY_{11}-$, and $-Y_{11}O-$, where Y_{11} is an optionally substituted cyclic, branched or straight chain C_1-C_8 alkylene; and

Y_{10} is selected from optionally substituted cyclic, branched or straight chain C_1-C_8 alkylene and a siloxane group.

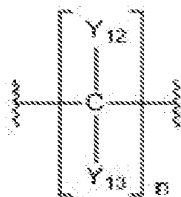
6. (Currently Amended) ~~An electronic or electrical~~ The device or component thereof according to claim 5, wherein for compound (i) L has one of the following structures:



7. (Currently Amended) ~~An electronic or electrical~~ The device or component thereof according to claim 5, wherein for compound (i) L has one of the following structures:



8. (Currently Amended) ~~An electronic or electrical~~ The device or component ~~thereof~~ according to ~~any of claims 5 to 7~~ claim 5, wherein Y_{10} has the following formula:



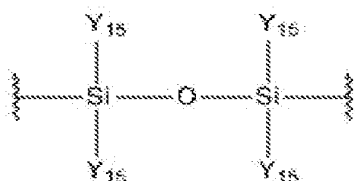
wherein each Y_{12} and Y_{13} is independently selected from H, halo, optionally substituted cyclic, branched or straight chain alkyl, or $-OY_{14}$, where Y_{14} is selected from optionally substituted branched or straight chain C_1 - C_8 alkyl or alkenyl, and n is an integer from 1 to 10.

9. (Currently Amended) ~~An electronic or electrical~~ The device or component ~~thereof~~ according to claim 8, wherein each Y_{12} is H and each Y_{13} is H.

10. (Currently Amended) ~~An electronic or electrical~~ The device or component ~~thereof~~ according to claim 8, wherein each Y_{12} is fluoro and each Y_{13} is fluoro.

11. (Currently Amended) ~~An electronic or electrical~~ The device or component ~~thereof~~ according to ~~any of claims 8 to 10~~ claim 8, wherein n is from 4 to 6.

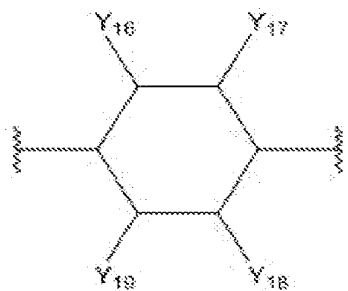
12. (Currently Amended) ~~An electronic or electrical~~ The device or component ~~thereof~~ according to ~~any of claims 5 to 7~~ claim 5, wherein Y_{10} has the following formula:



Wherein each Y_{15} is independently selected from optionally substituted branched or straight chain C_1 - C_6 alkyl.

13. (Currently Amended) ~~An electronic or electrical~~ The device or component ~~thereof~~ according to claim 12, wherein each Y₁₅ is methyl, and each Y₉ is a bond.

14. (Currently Amended) ~~An electronic or electrical~~ The device or component ~~thereof~~ according to ~~any of claims 5 to 7~~ claim 5, wherein Y₁₀ has the following formula:



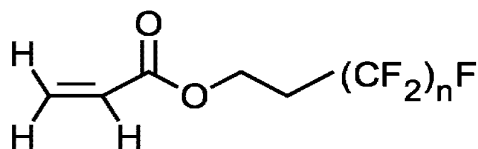
wherein Y₁₆ to Y₁₉ are each independently selected from H and optionally substituted branched or straight chain C₁-C₈ alkyl or alkenyl.

15. (Currently Amended) ~~An electronic or electrical~~ The device or component ~~thereof~~ according to claim 14, wherein Y₁₈ is H or vinylene, and Y₁₆, Y₁₇ and Y₁₉ are each H.

16. (Currently Amended) ~~An electronic or electrical~~ The device or component ~~thereof~~ according to ~~any preceding claim~~ claim 1, wherein the crosslinking reagent is selected from Divinyl Adipate (DVA), 1,4 Butanediol divinyl ether (BDVE), 1,4 Cyclohexanedimethanol divinyl ether (CDDE), 1,7 -Octadiene (17OD), 1,2,4 -Trivinylcyclohexane (TVCH), 1,3-Divinyltetramethyldisiloxane (DVTMDS), Diallyl 1,4-cyclohexanedicarboxylate (DCHD), 1,6-Divinylperfluorohexane (DVPFH), 1H,1H,6H,6H-Perfluorohexanediol diacrylate (PFHDA) and glyoxal bis (diallyl acetal) (GBDA).

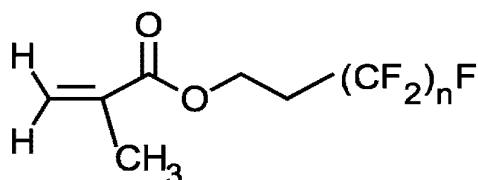
17-30. (Cancelled)

31. (Currently Amended) ~~An electronic or electrical~~ The device or component ~~thereof~~ according to ~~any of claims 24 to 30~~ claim 1, wherein the compound of formula I(a) has the following formula:



where n is from 2 to 10.

32. (Currently Amended) ~~An electronic or electrical~~ The device or component ~~thereof~~ according to ~~any of claims 24 to 30~~ claim 1, wherein the compound of formula I(a) has the following formula:



where n is from 2 to 10.

33. (Currently Amended) ~~An electronic or electrical~~ The device or component ~~thereof~~ according to claim 31, wherein the compound of formula I(a) is selected from 1H,1H,2H,2H-perfluorohexyl acrylate (PFAC4), 1H,1H,2H,2H-perfluorooctyl acrylate (PFAC6), 1H,1H,2H,2H-perfluorodecyl acrylate (PFAC8) and 1H,1H,2H,2H-perfluorododecyl acrylate (PFAC10).

34. (Currently Amended) ~~An electronic or electrical~~ The device or component ~~thereof~~ according to claim 32, wherein the compound of formula I(a) is selected from 1H,1H,2H,2H-pefluorohexyl

methacrylate (PFMAC4), 1H,1H,2H,2H-perfluorooctyl methacrylate (PFMAC6) and 1H,1H,2H,2H-perfluorodecyl methacrylate (PFMAC8).

35-91. (Cancelled)

Remarks

Applicant respectfully requests that the preliminary amendment be entered prior to examination of the above-identified patent application.

Claims 1-91 are pending in the above-identified patent application. With this Preliminary Amendment, claims 1-3, 5-16, and 31-34 are amended, and claims 4, 17-30, and 35-91 are canceled. Upon entry of the current amendment, claims 1-3, 5-16, and 31-34 are pending, which include 19 total claims and 1 independent claim.

Claims Pending Upon National Stage Entry

Applicant notes that the PCT Publication of PCT application PCT/GB2016/051688 published with 34 pages of text, which included 83 claims. The “Claims Worksheet (PTO-2022)” on PAIR identifies 83 claims as well. But, Applicant points out that the PCT Publication of PCT application PCT/GB2016/051688 erroneously left out page 35, which was originally filed with PCT application PCT/GB2016/051688 and included claims 84-91. A copy of PCT application PCT/GB2016/051688 as filed was downloaded from <http://www.wipo.int/patentscope/en/> and is submitted herewith as an attachment, which shows page 35 and claims 84-91. Applicant’s undersigned representative, Mr. Paul J. Parins, contacted the IB on June 15, 2018, and the IB concurred with respect to page 35 as explained above. The IB indicated that PCT application PCT/GB2016/051688 would be re-published in July, 2018 with page 35 and provided to the USPTO as a Designated Office.

Accordingly, the present Preliminary Amendment references claims 84-91 as canceled.

Support for Claim Amendments

Applicant submits that the claim amendments are fully supported by the application as originally filed and do not present new matter.

Support for the amendment to claim 1 can be found at, e. g., page 5, lines 23-27 and page 11, lines 6-11. Claim 1 is also amended for clarification purposes.

Claims 2-3, 5-16, and 31-34 are amended to conform to the amendment of claim 1, from which they depend.

Claims 3, 8, 11, 12, 14, 16, 31, and 32 are amended to remove multiple dependencies.

Approval of the application and allowance of the claims are earnestly solicited. In the event that a phone conference between the Examiner and the Applicant's undersigned representative would help resolve any issues in the application, the Examiner is invited to contact said attorney at (651) 275-9831.

Respectfully Submitted,

Date: June 15, 2018

By: /Paul J. Parins/

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