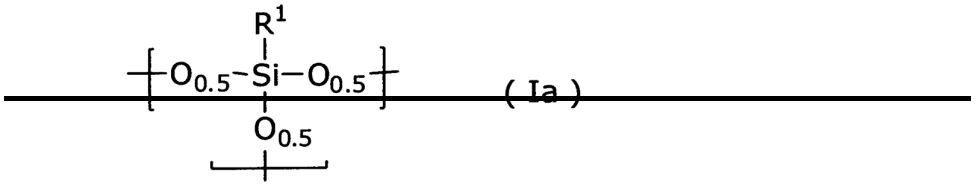
Patent Claims

1. A polysiloxane (Pa) comprising:

a repeating unit represented by the following formula (Ia):



(Ia)

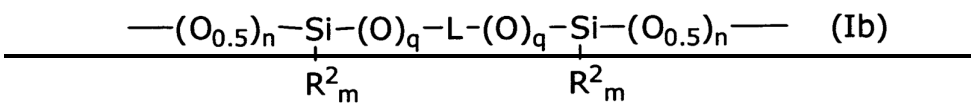
wherein,

R^1 is hydrogen, a monovalent to trivalent, linear, branched or cyclic, saturated or unsaturated C_{1-30} aliphatic hydrocarbon group, or a monovalent to trivalent, C_{6-30} aromatic hydrocarbon group,

in said aliphatic hydrocarbon group and said aromatic hydrocarbon group, one or more methylene are unsubstituted or substituted with oxy, imide or carbonyl, one or more hydrogens are unsubstituted or substituted with fluorine, hydroxy or alkoxy, and one or more carbons are unsubstituted or substituted with silicon,

when R^1 is divalent or trivalent, R^1 connects Si atoms contained in a plurality of repeating units; and

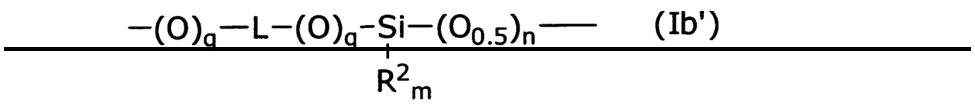
a repeating unit represented by the following formula (Ib):



(Ib)

wherein,

R^2 is each independently hydrogen, C_{1-10} alkyl, C_{6-20} aryl or C_{2-10} alkenyl, which is unsubstituted or substituted with oxygen or nitrogen, or a linking group represented by the formula (Ib'):



(Ib')

L is each independently C_{6-20} arylene, which is unsubstituted or substituted with oxygen or nitrogen,

m is each independently an integer of 0 to 2,

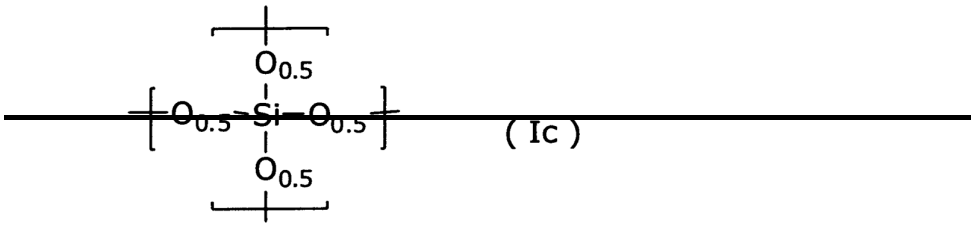
n is each independently an integer of 1 to 3,

q is each independently 0 or 1,

the total number of n, the number of $O_{0.5}$, and m, the number of R^2, bonding to one Si is 3, and

the total number of q contained in the repeating unit represented by the above formula (Ib) is 1 or more.

2. The polysiloxane (Pa) according to claim 1, further comprising a repeating unit represented by the following formula (Ic).



(Ic)

3. The polysiloxane (Pa) according to claim 1 or 2, wherein the repeating unit represented by said formula (Ib) is 0.5 to 50 mol% based on the total number of the repeating units of said polysiloxane.

4. The polysiloxane (Pa) according to any one of claims 1 to 3, wherein all q contained in the repeating unit represented by said formula (Ib) are 1.

5. The polysiloxane (Pa) according to any one of claims 1 to 4, wherein m is 2 and n is 1 in said general formula (Ib).

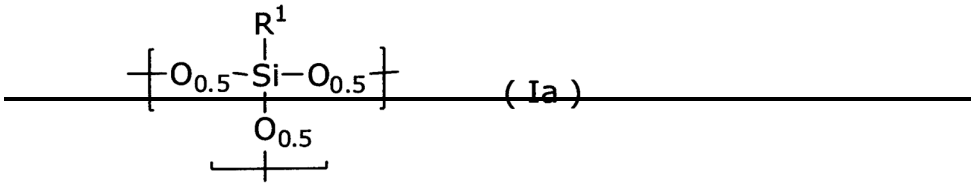
~~6. The polysiloxane (Pa) according to any one of claims 1 to 5, wherein L in said formula (Ib) is an unsubstituted C_{6-20} arylene.~~

~~7. The polysiloxane (Pa) according to any one of claims 1 to 6, having a mass average molecular weight of 500 to 25,000.~~

~~8. The polysiloxane (Pa) according to any one of claims 1 to 7, having a dissolution rate after prebaking in 2.38 mass% tetramethylammonium hydroxide aqueous solution of 50 to 20,000 Å/sec.~~

~~9. A composition comprising the polysiloxane (Pa) according to any one of claims 1 to 8 and a solvent.~~

~~10. The composition according to claim 9, further comprising a polysiloxane (Pb) which comprises the repeating unit represented by the following formula (Ia) and does not comprise the repeating unit represented by the following formula (Ib):~~



~~(Ia)~~

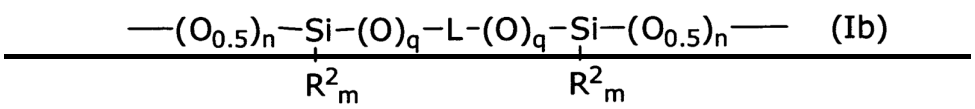
~~wherein,~~

~~R^1 is hydrogen, a monovalent to trivalent, linear, branched or cyclic, saturated or unsaturated C_{1-30} aliphatic hydrocarbon group, or a monovalent to trivalent, C_{6-30} aromatic hydrocarbon group,~~

~~in said aliphatic hydrocarbon group and said aromatic hydrocarbon group, one or more methylene are unsubstituted or substituted with oxy, imide or carbonyl, one or more hydrogens are unsubstituted or substituted with fluorine, hydroxy or alkoxy, and one or more carbons are unsubstituted or substituted with silicon,~~

~~when R^1 is divalent or trivalent, R^1 connects Si atoms~~

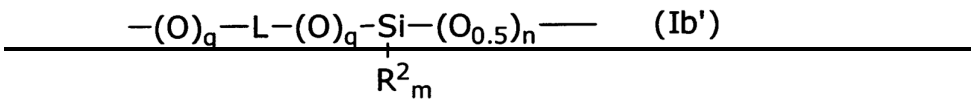
contained in a plurality of repeating units;



(Ib)

wherein,

R^2 is each independently hydrogen, C_{1-10} alkyl, C_{6-20} aryl or C_{2-10} alkenyl, which is unsubstituted or substituted with oxygen or nitrogen, or a linking group represented by the formula (Ib'):



(Ib')

L is each independently C_{6-20} arylene, which is unsubstituted or substituted with oxygen or nitrogen,

m is each independently an integer of 0 to 2,

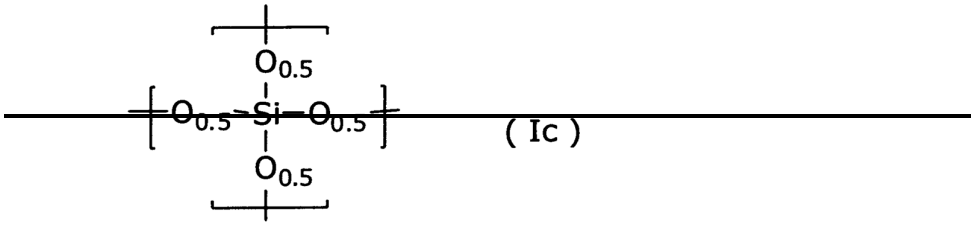
n is each independently an integer of 1 to 3,

q is each independently 0 or 1,

the total number of n, the number of $O_{0.5}$, and m, the number of R^2, bonding to one Si is 3, and

the total number of q contained in the repeating unit represented by the above formula (Ib) is 1 or more.

11. The composition according to claim 10, wherein said polysiloxane (Pb) further comprises a repeating unit represented by the following formula (Ic).



(Ic)

12. The composition according to any one of claims 9 to 11, further comprising a silanol condensation catalyst.

~~13. The composition according to any one of claims 9 to 12, further comprising a diazonaphthoquinone derivative.~~

~~14. A method for producing a cured film manufactured by applying the composition according to any one of claims 9 to 13 on a substrate and heating it.~~

~~15. The method for manufacturing a cured film according to claim 14, wherein the heating is performed at 450°C or more.~~

~~16. A cured film manufactured by the method according to claim 14 or 15, wherein the transmittance of the cured film for the light having wavelength of 400 nm is 90% or more.~~

1~~7~~. An electronic device comprising the cured film manufactured by ~~the method according to claim 14 or 15.~~ applying a composition comprising polysiloxane (Pa) and a solvent, wherein the polysiloxane (Pa) comprising:

a repeating unit represented by the following formula (Ia):



wherein,

R1 is hydrogen, a monovalent to trivalent, linear, branched or cyclic, saturated or unsaturated C1-30 aliphatic hydrocarbon group, or a monovalent to trivalent, C6-30 aromatic hydrocarbon group,

in said aliphatic hydrocarbon group and said aromatic hydrocarbon group, one or more methylene are unsubstituted or substituted with oxy, imide or carbonyl, one or more hydrogens are unsubstituted or substituted with fluorine, hydroxy or alkoxy, and one or more carbons are unsubstituted or substituted with silicon,

when R1 is divalent or trivalent, R1 connects Si atoms contained in a plurality of repeating units; and

a repeating unit represented by the following formula

(Ib):

wherein,

R2 is each independently hydrogen, C1-10 alkyl, C6-20 aryl or C2-10 alkenyl, which is unsubstituted or substituted with oxygen or nitrogen, or a linking group represented by the formula (Ib'):

L is each independently C6-20 arylene, which is unsubstituted or substituted with oxygen or nitrogen,

m is each independently an integer of 0 to 2,

n is each independently an integer of 1 to 3,

q is each independently 0 or 1,

the total number of n, the number of O0.5, and m, the number of R2, bonding to one Si is 3, and

the total number of q contained in the repeating unit represented by the above formula (Ib) is 1 or more,

on a substrate and heating it.