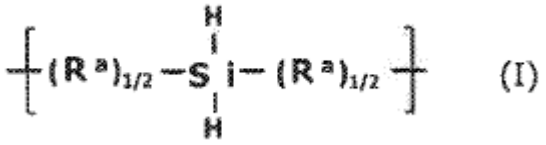
CLAIMS

1. A silicon carbonaceous film forming composition comprising a polycarbosilane and a solvent, wherein the ratio of the integrated intensity at 3.92 to 4.20 ppm to the integrated intensity at 3.60 to 5.50 ppm in the ^{1}H-NMR spectrum of said polycarbosilane is 27 to 50%.

2. The composition according to claim 1, wherein for said polycarbosilane, the ratio of the integrated intensity at -25 to -5 ppm to the integrated intensity at -40 to 20 ppm in the ^{29}Si-NMR spectrum is 38 to 50%, and the ratio of the integrated intensity at -24 to -5 ppm to the integrated intensity at -40 to 20 ppm in the DEPT^{29}Si-NMR spectrum is 70 to 92%.

3. The composition according to claim 1, wherein said polycarbosilane comprises the following repeating unit (I):



(I)

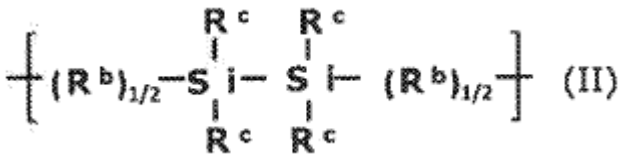
wherein R^a is substituted or unsubstituted, methylene or methine.

4. The composition according to claim 3, wherein said R^a is methylene or methine, which is substituted by F.

5. The composition according to claim 3, wherein said R^a is unsubstituted methylene.

6. The composition according to claim 3, wherein the ratio of the number of the Si atoms contained in the repeating unit (I) to the number of all of the Si atoms contained in said polycarbosilane is 0.1 to 20%.

7. The composition according to claim 3, wherein said polycarbosilane further comprises the following repeating unit (II):



(II)

wherein

R^b is substituted or unsubstituted, methylene or methine, and

R^c is each independently hydrogen, substituted or unsubstituted C_1-C_6 alkyl, substituted or unsubstituted C_1-C_6 alkenyl, or substituted or unsubstituted C_6-C_{10} aryl.

8. The composition according to claim 7, wherein said R^b is methylene or methine, which is substituted by F.

9. The composition according to claim 7, wherein said R^b is unsubstituted methylene and said R^c is unsubstituted methyl.

10. The composition according to claim 7, wherein the ratio of the number of the Si atoms contained in the repeating unit (II) to the number of all of the Si atoms contained in said polycarbosilane is 30 to 50%.

11. The composition according to claim 1, wherein the mass average molecular weight of said polycarbosilane is 1,000 to 4,500.

12. The composition according to claim 1, wherein the ratio of the integrated intensity of the peak at 1080 to 1145cm^{-1} to the integrated intensity of the peak at 936 to 1077cm^{-1} in the infrared absorption spectrum of said polycarbosilane is 0.6% or less.

13. A method for producing a silicon carbonaceous film, comprising applying the composition according to claim 1 on a substrate and curing it by heating.

14. The method for producing a silicon carbonaceous film according to claim 13, wherein said heating is performed at 200 to 650°C.

15. A method for producing an electronic device, comprising the method for producing a silicon carbonaceous film according to claim 13.

16. A method for producing polycarbosilane, comprising a step of heat-treating polydimethylsilane under the condition of 0.15 to 0.9 MPa and at 700°C or more.

17. The method according to claim 16, wherein the ratio of the integrated intensity at 3.92 to 4.20 ppm to the integrated intensity at 3.60 to 5.50 ppm in the ^{1}H-NMR spectrum of said polycarbosilane is 27 to 50%.