List of Tables

Table 2.1 Properties of PAN- and Rayon-based carbon fabric

Table 2.2 Designation of borosiloxane oligomers synthesized from boric acid and different alkoxysilanes in diglyme at 150-160°C

Table 2.3 Designation of borosiloxane oligomers synthesized from boric acid and mixtures of alkoxysilanes (Solvent: Diglyme, Temp.: 150-160°C, Catalyst: HCl and Reaction time: 3 h)

Table 2.4 Designation of borosiloxane oligomers synthesized from boric acid and GPTMOS (Reaction time: 3 h)

Table 2.5 Designation of epoxy and vinyl functionalized borosiloxane oligomers synthesized from boric acid and mixtures of GPTMOS and VTEOS (Reaction time: 3 h)*

Table 2.6 Designation of borosiloxane oligomers synthesized from boric acid and PTMOS/PTEOS by solventless process (Mole ratio of boric acid: alkoxy silane is 1:2)

Table 2.7 Designation of borosiloxane oligomers synthesized from boric acid and different alkoxysilanes by the solventless process without using catalyst (Reaction time: 3 h)

Table 2.8 Designation of polysilahydrocarbons synthesized from diorganodi-chlorosilanes and styrene (Solvent: Toluene, Temperature: 110°C, Reaction time: 7 h)

Table 2.9 Designation of polycarbosilanes obtained from polysilahydrocarbons

Table 3.1.1. IR assignments for borosiloxane oligomers, BSiPh-1 and BSiPh-2

Table 3.1.2. Comparison of thermal properties of borosiloxane oligomers from boric acid and PTMOS/PTEOS

Table 3.1.3. Effect of variation of mole ratio of boric acid to PTEOS on molecular weight of borosiloxane oligomers

Table 3.1.4. Comparison of thermal properties of borosiloxane oligomers

Table 3.1.5. IR spectral data of borosiloxane oligomer from boric acid and VTEOS (BSiVi-1)
Table 3.1.6. IR spectral data of borosiloxane oligomers from mixtures of VTEOS and PTEOS

Table 3.1.7. Pyrolysis GC data of BSiPhVi-4, BSiPhVi-5 and BSiPhVi-6

Table 3.1.8. Comparison of pyrolysis GC and $^1$H-NMR data for borosiloxane oligomers from PTMOS and VTEOS

Table 3.2.1. Effect of monomer feed ratio on yield and nature of oligomer

Table 3.2.2. $^1$H- and $^{13}$C-NMR spectral assignments of BSiEp oligomer

Table 3.2.3. $^1$H- and $^{13}$C-NMR spectral assignments of BSiEpVi-2 oligomer

Table 3.3.1. Mechanical properties of unmodified and borosiloxane oligomer modified polyimide films

Table 3.4.1. Cubic $\beta$-SiC XRD characteristics

Table 3.4.2. IR spectral assignments of the heat-treated borosiloxane oligomer, BSiT-2

Table 3.4.3. Hexagonal BN XRD characteristics

Table 3.4.4. Cubic $\beta$-SiC XRD Characteristics

Table 3.5.1. Mechanical properties of CMCs prepared using different precursor composition with rayon C-fabric

Table 3.5.2. Mechanical properties of CMCs prepared using different precursor composition with PAN-fabric

Table 3.6.1. Composition and GPC data of the PDMSS copolymers

Table 3.6.2. Composition and GPC data of the PMPSS copolymers

Table 3.6.3. Comparison of thermal properties and ceramic residue for PDMSS copolymers

Table 3.6.4. Comparison of thermal properties and ceramic residue of PMPSS copolymers

Table 3.6.5. Order and correlation coefficient of PDMSS system

Table 3.6.6. Order and correlation coefficient of PMPSS system

Table 3.6.7. Kinetic parameters for the thermal degradation of PDMSS copolymers

Table 3.6.8. Kinetic parameters for the thermal degradation of PMPSS copolymers

Table 3.6.9. Composition of PMVSS copolymers obtained from pyrolysis GC
Table 3.6.10. Comparison of thermal properties of PMVSS (insoluble fraction) and PMVS (homopolymer) and ceramic residue obtained at 900°C

Table 3.6.11. Order and correlation coefficient of PMVSS copolymers

Table 3.6.12. Kinetic parameters for the thermal degradation of PMVS and copolymers

Table 3.6.13. Comparison of thermal properties of PSH-I and PSH-II and the polycarboasilanes derived from them

Table 3.6.14. Order and correlation coefficient for PSH-I and PSH-II and the polycarboasilanes derived from them

Table 3.6.15. Kinetic parameters obtained from various kinetic analysis for PSH-I system

Table 3.6.16. Kinetic parameters obtained from various kinetic analysis for PSH-II system

Table 3.7.1. Phosphorus/silicon content of the polymers