WHAT IS CLAIMED IS:

1. A polymer matrix composite, comprising:

a polymeric resin formed from a pre-mix whose viscosity is 600 cps to 1000 cps; and

a non-woven reinforcing material having a dielectric constant of from 1.5 to 4.8 and a dissipation factor at 10 GHz below 0.003;

wherein the non-woven reinforcing material is random and continuous.

2. The polymer matrix composite according to claim 1, further comprising at least one of a woven reinforcing material, a micro-sized filler, a nano-sized filler, an organic chopped fiber, an inorganic chopped fiber and a flame retardant.

3. The polymer matrix composite according to claim 2, wherein the flame retardant is a halogen-containing flame retardant.

4. The polymer matrix composite according to claim 1, wherein the non-woven reinforcing material is subjected to a surface enhancement treatment.

5. The polymer matrix composite according to claim 1, wherein the non-woven reinforcing material is polytetrafluoroethylene.

6. The polymer matrix composite according to claim 1, wherein the non-woven reinforcing material comprises a liquid crystal polymer.

7. The polymer matrix composite according to claim 1, wherein the non-woven reinforcing material is quartz.

8. The polymer matrix composite according to claim 1, wherein the non-woven reinforcing material is glass.

9. A prepreg comprising a resin portion that is partially cured and impregnated with a non-woven reinforcing material having a dielectric constant

of from 1.5 to 4.8 and a dissipation factor at 10 GHz below 0.003; wherein a viscosity of the resin portion is 600 cps to 1000 cps and the non-woven reinforcing material is random and continuous.

10. A printed circuit board, comprising:

at least two outer layers; and

a core layer sandwiched between the at least two outer layers;

wherein the core layer includes a laminate, the laminate comprising at least a reinforcement layer formed by the polymer matrix composite according to claim 1.

11. The printed circuit board according to claim 10, further comprising a bonding sheet disposed between the at least two outer layers and the core layer, wherein the bonding sheet is formed by a prepreg including a resin portion that is partially cured and impregnated with a non-woven reinforcing material having a dielectric constant of from 1.5 to 4.8 and a dissipation factor at 10 GHz below 0.003.

12. The printed circuit board according to claim 10, wherein the laminate further comprises at least a metal layer disposed on the reinforcement layer.