

ABSTRACT**A LAYERED SILICATE/POLYMER COMPOSITE AND A METHOD OF FORMING THE SAME**

The present invention relates to a method for forming a layered silicate/polymer composite, the composite comprising individual exfoliated silicate layers separated in a continuous polymer matrix, wherein the polymer is a hydrophobic polymer, the method comprising:

- exfoliating sheet silicate in water to form a silicate suspension;
- replacing the water in the silicate suspension by an organic solvent to form a silicate/organic solvent suspension;
- contacting the silicate/organic solvent suspension with a solution of a hydrophobic polymer precursor in an organic solvent to form a silicate/polymer precursor suspension;
- coating the silicate/polymer precursor suspension on a substrate;
- removing the organic solvents;
- curing the hydrophobic polymer precursor of the coating of the silicate/polymer precursor; and
- annealing the cured coating to form the layered silicate/polymer composite on the substrate.

Figure 1