

ABSTRACT

A range of uniformly sized, colloidal dispersed minute sized poly (styrene-co-butyl acrylate) latexes have been coated with ultra thin layers of polypyrrole transforming it into core-shell morphology. Incorporation of expanded graphite (EG) lead to its enhancement of thermal and electrical conductivity properties making it a SBA/PPy-EG latex nano composites. The colloidal dispersion of poly (styrene co butyl acrylate) is synthesized by mini-emulsion polymerization technique. The SBA core particles were used as template for the polymerization of pyrrole with incorporation of expanded graphite. The Expanded graphite containing core-shell nano composites were characterized by UV-visible spectroscopy, FTIR, TGA, SEM, EDX, TEM, C-V and I-V analysis. From TEM and SEM analysis it reveals that composites particles were spherical in nature which is coated with polypyrrole and expanded graphite results core-shell morphology. It shows far better result in terms of thermal conductivity compared to bare SBA/PPy core-shell nanocomposites latexes. The electrical conductivity of the final composites increases with the increase amount of expanded graphite content in the shell phase. At the same time increase in butyl acrylate content increase conductivity slightly.