

Conducting Core-Shell Poly(Styrene/Pyrrrole) Latex Particles Prepared by Fe^{3+} - Catalyzed Oxidative Polymerization during Emulsifier-Free Emulsion Polymerization

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It was demonstrated that core-shell poly(styrene/pyrrrole) latex particles were successfully prepared by oxidative polymerization with emulsifier-free emulsion polymerization. The size of core-shell poly(styrene/pyrrrole) latex particles could be controlled according to the concentration of NaSS. The core-shell structure and size of the resulting latex particles according to concentration of NaSS were proved by SEM and TEM analysis. Surface charge of the latex particles was changed according to the concentration of NaSS and measured by Zeta-potential analysis. The resulting latex particles showed high conductivity after doping and drying. This new strategy is universal for the synthesis of many other conjugated materials or composite particles with controlled morphology. These morphology controlled conjugated polymer composite particles (i.e., core-shell particles) may have potential practical applications in various electrical devices and sensors.