

Enhancement of Dispersion Stability of Carbon Black by Surface Modification with Polymers

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Carbon black has been widely used as electrical conductive or UV stabilizing agent in plastic, pigment in ink formulations and filler to reinforce polymer in various industries. Its industrial usage and applicability are mainly dependent on the surface properties and size of carbon black particle. This study investigates the effect of surface modifications of carbon black with polymers such as polymerized surfactants and hyperbranched polymers on the dispersion stability of carbon black. Surface elemental analysis, functional group analysis, particle size and distribution, zeta-potential and dispersion stability of carbon black samples before and after surface modifications are measured and compared to each other. The relationship between the electrochemical surface properties and aggregation behavior is discussed in term of the electrical repulsive interaction of the carbon black particles.