

Phase Transition Behavior of Novel pH and Thermal-Sensitive Poly(N-isopropyl acrylamide-co-Acrylic acid)-graft-Polyaspartate coated Magnetic Nanoparticles

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A series of pH- and thermo-sensitive poly(N-isopropyl acrylamide-co-acrylic acid) were synthesized by radical polymerization and grafted on polysuccinimide backbones. The polysuccinimide derivatives synthesized were coated on iron oxide magnetic nanoparticles for potential application in drug delivery systems with hyperthermia and chemotherapy. Those activities were based on core-shell shaped nano-aggregates in association with their inherent magnetic, pH- and thermal- properties. The structure of polymer-shell was confirmed by FT-IR and <sup>1</sup>H-NMR spectroscopies and SEM. The phase transition was characterized by UV-Vis, light transmittance measurements, and the particle size and its distribution at varying pH and temperature by ELS measurement. This novel drug delivery system is very promising in multifunctional therapy.