

One-Step Synthetic Route for Magnetite Embedded Polythiophene/Metal Hybrid Nanoparticles

이승모, 이선종, 이정민, 김중현*
연세대학교
(jayhkim@yonsei.ac.kr*)

Multifunctional magnetite embedded polythiophene/metal hybrid nanocomposite particles were synthesized by one-step chemical oxidative polymerization in aqueous medium using polymeric stabilizer, i.e., poly(styrene sulfonate) (PSS). The metal ions were converted to metal at core part while magnetite particles embedded in the polythiophene shell part of the hybrid nanocomposite particles. These hybrid nanocomposite particles showed the multiple properties such as magnetic, optical, electrical, etc. Particle size and various properties were controlled by changing reaction condition such as concentration of stabilizer, amount of the embedded magnetite particles, and molar ratio of monomer/metal ion. Particle size and size distribution were measured by CHDF. Morphologies and inner/outer structures of the hybrid nanocomposite particles were investigated by SEM and TEM analyses. Luminescent properties and conductivities were analyzed by photoluminescence spectrophotometer and 4-point probe conductivity meter.