Clustering of Iron Oxide Nanocrystals in Conjugated Polymer Nanoparticles for Enhanced, Simultaneous Photothermal, Photoacoustic and Magnetic Effects

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Nanotechnology and materials had been admitted as a promise potential in various applications. especially as multifunctional applications in one-step process for bio-medical theragnosis. On these days, conjugated polymer has been strongly investigated about photo-electro conductivity while iron nanoparticles have been exploited as magnetically promising imaging agents. In here, we mainly focus the using of these two materials as hybrid nanoparticles (HNs) with multi-applications by absorbing NIR light. Our water-dispersed HNs were assembled successfully by forming the phase-separated thin film of a conjugated polymer, phospholipids and iron oxide nanocrystals, followed by shattering with water penetration into the polar region of the phase-separated film under ultrasonication.[1] The MRI and Photoacoustic – photothermal properties of HNs were significantly improved at an optimal mixing ratio, presenting simultaneous multifunctionalities