

P.27 Pickering emulsion polymerized core-shell structured smart composite particles and their suspension rheology under electric and magnetic fields

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Pickering emulsion, stabilized by solid particles instead of conventional emulsifiers, is an eco-friendly and facile way to prepare diverse functional organic-inorganic hybrid composites. Various solid particles such as exfoliated clay (including montmorillonite, laponite, etc.), [1, 2] silica nanoparticles, [3] and graphene oxide [4] have been reported as novel solid stabilizers in Pickering emulsions to fabricate hybrid particles for various potential applications. Recently, we have been working on core-shell structured magnetic polymers (polystyrene, poly(methyl methacrylate)/inorganic particles fabricated by Pickering emulsion polymerization using nano-sized Fe_2O_3 particles as a solid stabilizer, in addition to various inorganic particles such as clay and silica for electrorheological (ER) materials. [5-7] Figure 1 presents the SEM (a) and (TEM) images of the synthesized PS/ Fe_2O_3 particles. [7] These core-shell structured composite particles are applied as smart materials for either ER or magnetorheological (MR) fluids, [8, 9] in which the ER/MR fluids are intelligent suspensions whose rheological properties can be well controlled with the external electric/magnetic stimulus. Their smart characteristics and rheological behaviors along with their Pickering emulsified fabrication will be covered.

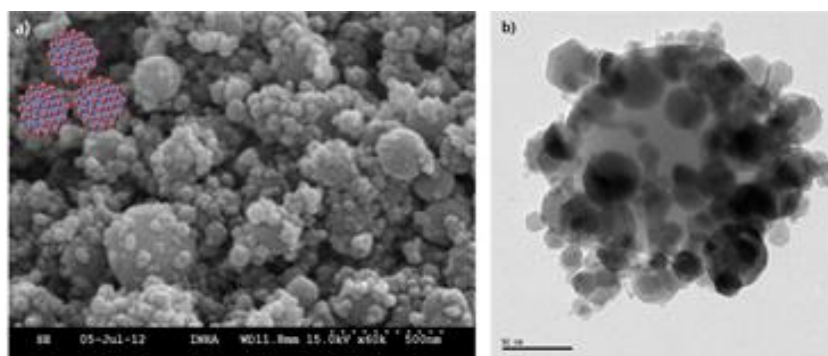


Figure 1 SEM (a) and TEM (b) images of PS/ Fe_2O_3 particles by Pickering emulsion.

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