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BIOGRAPHY

G A Farzi is a Professor of Polymer Engineering at Faculty of Engineering in Hakim Sabzevari University, Iran, where he is teaching Polymer Engineering and Polymer Composite Materials for students in PhD and Master of Science level. He obtained his PhD from University of Lyon (INSA DE LYON), France in 2007, and then he finalized a Post-Doctoral Fellowship in University of Lyon. He moved to Iran where he becomes an Assistant Professor at University of Tehran, however soon he moved to his hometown Sabzevar and started teaching and research in closed collaboration with French universities. His area of research iInterests mainly in Synthesis of polymer via miniemulsion polymerization; encapsulation of organic and inorganic nanoparticles via miniemulsion polymerization technique; development of new technique for the synthesis of hybrid nanoparticles; property study and application of polymer hybrid nanomaterials.

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RECENT PROGRESS IN MORPHOLOGY CONTROL OF POLYMERIC HYBRID NANOPARTICLES VIA ONE POT SYNTHESIS

Typical techniques for the synthesis of polymeric hybrid core–shell nanoparticles (such as silica/polymer hybrid nanoparticles) mostly consist based on a two-step process. These processes comprise the preparation of core and shell via separate steps. The main disadvantages of such a process are time consumption, low energy efficiency and relatively non-uniform distribution of organic component, which result in low inorganic loading. However, in recent years author developed one-pot synthesis for different type of polymer hybrid nanoparticles. The main aim in one–pot process is to carry out the sol-gel reaction of inorganic precursor simultaneously with free radical polymerization of organic monomer. Indeed, in the one-pot method can be introduced as a useful novel reinforcement technique which in the both phases of hybrid particles is generated simultaneously either by forming single individual hybrid particles or beside polymer particles. Recently they have reported fabrication of tunable morphology of nano-size silica-acrylic hybrid particles. Then they have studied production of hybrid materials with well-defined morphology control. Finally, in a most recent work they are investigating potential application of hybrid nanoparticles with different morphology; all these lead to control final properties like mechanical properties via morphology control. They investigated morphology control for alumina/polacrylate hybrid nanoparticles dealing with various properties such as mechanical and optical properties. It was revealed that mechanical, antibacterial and optical properties depend strongly to the morphology of hybrid nanoparticles. They are going towards facile and rapid production of controlled morphology hybrid nanoparticles with well-known properties for a defined application.