Editorial

Hierarchical Structured Polymeric Materials in Nanotechnology

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Contemporarily, increasing functional soft materials possessing desirable hierarchical structures and engineered properties have been applied to energy and health care related field under the promotion of nanotechnology development. Providing or creating ideal advanced materials in these burgeoning fields is associated with conceivable structure and chemical composition design including nanocomposite design, multifunctional monomer synthesis and addition, surface engineering strategies, and structure and property analysis. This special issue focuses on the recent advance in polymeric soft matters with different hierarchical structures, including hydrogels, films, and their applications. Although the issue could not include all progress in the related fields, it strives to provide comprehensive and timely information for polymers-based nanotechnology with diverse applications. We hope this issue will not only present new original researches contributed by experienced scientists, but also offer the general reviews to highlight the development of this research field.

Firstly, the hierarchical structured polymeric materials in health care related field as a form of nanoparticle, film, or solution were prepared by new synthetic strategies and surface design concepts and discussed in this special issue. Z. He et al. effectively labeled K237/FA-PEG-PLGA nanoparticles with Technetium-99m (^{99m}Tc), evaluated its optimal stability in different aqueous environment, investigated performance including affinity and biodistribution through in vitro cell experiment or in vivo animal experiment, and demonstrated from their result that K237/FA-PEG-PLGA nanoparticles

have great potential as biodegradable drug carriers. H. Gao et al. reported an efficient and effective method to use phospholipid adsorption polymeric materials to determine xylazine in blood and urine samples, which could be applied by academic groups and commercial organizations. X. Yang et al. designed and synthesized photochromic hydrogel contact lens for drug delivery and investigated its properties and performance. Beside these original researches, L. Sha et al. highlighted recent researches of PLA based nanocomposites and their application in biomedical fields including bone substitute and repair, tissue engineering, and drug delivery system.

Secondly, nanocomposite materials were designed to endow materials of the special structure and functionality. For example, W. Wang et al. developed hierarchical structured polymeric nanomaterials (nanodeserts) for enhancing abiotic CO₂ fixation in the soil-groundwater system beneath deserts. K. Yang et al. prepared nanocomposites consisting of polymer matrix (PPO-g-MA or PPO/PA66) and nanofiller (organomontmorillonite) and investigated the properties including morphology, the mechanical properties, and thermal stability. X. Chen et al. prepared nanocomposite particle with cellulose core and attapulgite nanofibers shell, characterized core size and thickness of nanofibers shell, and investigated the absorbance behavior and mechanism.

In summary, we would like to thank all of the authors, reviewers, and the journal editorial staff members for their kind contributions to this special issue. We sincerely hope you enjoy reading those original research work and interesting

review papers, get inspirations, and find it beneficial to your future research and teaching activities.

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