

Special Issue on
Interfacing Inorganic Nanocrystals with Biological Systems

CALL FOR PAPERS

Ongoing rapid progress in the synthesis of biofunctionalized colloidal nanoparticles, with unique photo and physical properties, greatly extends our knowledge to understand their fundamental properties and our ability to interface these nanomaterials with biological systems for potential uses in a wide array of applications. Some of these properties that have generated great interests in the past decade include size- and composition-dependent fluorescent semiconductor quantum dots and plasmonic absorption of metallic nanoparticles, as well as magnetic nanoparticles. These unique features have made them greatly appealing for use as *in vivo* and *in vitro* fluorescent or magnetic probes in a variety of biomedical applications; these include chemical/biosensing, intracellular labelling, *in vivo* targeting/tracking, deep-tissue imaging, and being drug delivery vehicles.

This special issue will focus on interfacing the inorganic nanomaterials with biological systems based on their unique properties as well as recent advances in new materials and methods of synthesis, coating, and bioconjugation. We invite authors to contribute original research work as well as review articles solicited on the following and related topics.

Potential topics include but are not limited to the following:

- ▶ Synthesis of inorganic nanocrystals, such as luminescent quantum dots, metal nanocrystals, and magnetic nanoparticles, with shape, size, and composition control (e.g., nanospheres, nanorods, nanoshells and nanostars, and doped or core-shell structures) and development of nontoxic nanoparticles
- ▶ Design and synthesis of ligands for surface engineering inorganic nanoparticles; multidentate and multifunctional molecular-scale ligands and polymers; biocompatibility; long-term stability; and so forth
- ▶ Developing novel approaches for conjugation of nanoparticle with biomolecule (e.g., protein, peptide, antibody, and DNA); bioorthogonal conjugation, such as copper-free click chemistry and polyhistidine-mediated metal-affinity coordination; fast and efficient labeling
- ▶ Characterization of nanoparticles and nanoparticle-bioconjugates using comprehensive analytical techniques, including spectroscopic and bioanalytical techniques (e.g., 1D and 2D NMR, TEM, SEM, multiangle light scattering, UV-visible-IR and fluorescence spectroscopy, gel electrophoresis, GPC, and TGA)
- ▶ Biological applications of nanoparticles and nanoparticle-bioconjugates; biological sensing based on charge and energy transfer interactions; *in vivo* and *in vitro* imaging and targeting; receptor-ligand interactions; protein folding/unfolding; DNA conjugation, sequencing, and assembly; enzymatic activity detection and cell motility; drug delivery; and so forth

Authors can submit their manuscripts through the Manuscript Tracking System at <http://mts.hindawi.com/submit/journals/jnm/iinbs/>.

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First Round of Reviews

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