

Colloidal Nanoparticles for Biomedical Applications XV

This conference has an open **call for papers**:

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Important Dates

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Abstract Due:
24 July 2019

Author Notification:
30 September 2019

Manuscript Due Date:
8 January 2020

Conference Cosponsors



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Call for Papers

Ongoing rapid progress in the synthesis of a variety of biofunctionalized colloidal nanoparticles with fascinating electronic, magnetic, and optical properties not associated with bulk materials symbolizes a fundamental breakthrough in physics and chemistry of condensed matter, which significantly extends our knowledge about the nature of materials and our abilities to manipulate their properties. Inorganic nanostructures that interface with biological systems are attracting an increasingly widespread interest in biology and medicine. Quantum dot intravascular probes can be used in a remarkable number of biomedical applications, such as highly specific markers for cellular microscopy, flow cytometry, DNA and protein chips, immunoassays for diagnostics, histology, cancer detection, in situ hybridization, PCR DNA detection, biochemical and cell-based drug screening, single molecule studies, and correlation spectroscopy. There are abundant opportunities for improved or completely novel probes and seemingly endless new applications. Also plasmonic and magnetic nanoparticles can be used for a large number of biomedical applications.

This conference will consider biomedical applications of colloidal nano- and micro-particles, as well as recent advances in new materials and methods of synthesis, coating, and bioconjugation. Its objective is to provide a widely interdisciplinary forum for practicing clinicians, biomedical scientists, development engineers, physicists, and chemists specializing in different fields to benefit from each other's expert knowledge and to create trend-setting interdisciplinary links that will accelerate progress in this field.

Previously unpublished experimental and theoretical papers are solicited on the following and related topics:

- synthesis of colloidal nanoparticles such as II-VI, I-VII, III-V, and group-IV semiconductor quantum dots; ternary compounds; core-shell nanoparticles; nano-onions; nanoshells; plasmonic nanoparticles; metal nanoparticles; magnetic nanoparticles; shape and size control; assembly of nanoparticles to bigger (micro) particles
- synthesis of colloidal microparticles such as layer-by-layer assembled capsules
- bioconjugation and biolabeling; bioconjugate chemistry; dendron ligands; thiol and oligonucleotide coatings; phospholipid micelles; biotin/avidin; sticky polymers; targeting peptides; target specificity

- measurement techniques; microscopy (AFM, SFM, STM, TEM, HRTEM, SNOM); XRD; spectroscopy (FTIR, EELS, ICP, DFS); spectroscopy of single quantum dots; multiphoton spectroscopy; frequency upconversion; magnetic sensing and imaging; plasmon spectroscopy; dynamic light scattering
- physics and characterization of colloidal nanoparticles; electronic structure, band alignment; dielectric screening; optical, electronic, and magnetic properties; excitons and biexcitons; quantum efficiency; intraband transitions; spin dynamics; blinking mechanisms, surface-enhanced Raman spectroscopy; plasmons
- theoretical and experimental studies of interactions with surrounding ambient, including dynamics and electronic structures
- numerical modeling; multiscale modeling; density functional modeling; molecular dynamics; Brownian dynamics; quantum Monte Carlo simulations
- biomolecular sensing; FRET; molecular interactions
- biocompatibility; development of non-toxic nanoparticles; intracellular behavior; long-term effects
- biological applications of colloidal nanoparticles; in vitro and in vivo imaging; biology at molecular level; receptor-ligand interactions; protein folding/unfolding; DNA conjugation, sequencing, and assembly; cell motility; gene expression mutation, etc.
- medical applications of colloidal nanoparticles; immuno-fluorescent assays; applications in neuroscience; drug delivery and screening; cancer diagnostics and therapy; screening; biomechanics; etc.

The Ocean Optics Young Investigator Awards will be given for the best contributed papers presented by a leading author who is either a graduate student or has graduated within less than five years of the paper submission date. Two prizes will be awarded. The First Prize will consist of a \$1,000 cash prize for the Young Investigator and \$2,000 Ocean Optics equipment credit for the laboratory where the work was performed. The Second Prize will consist of a \$500 cash prize for the Young Investigator and \$1,000 Ocean Optics equipment credit for the laboratory where the work was performed. To be eligible, manuscripts of self-nominating authors must be received by the due date. Nominations should be sent to osinski@chtm.unm.edu and should include a brief CV of the leading author.

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