



SUBMIT AN ABSTRACT BY JULY 1

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ANAHEIM CONVENTION CENTER & ANAHEIM MARRIOTT
ANAHEIM, CALIFORNIA, USA
#TMSAnnualMeeting

SUBMIT AN ABSTRACT FOR THE FOLLOWING TMS2022 SYMPOSIUM:

NANOSTRUCTURED MATERIALS

Plasmonics in Nanocomposite Materials 2022

The prospect of controlling the properties of light with nanometer-scale precision has driven the field of plasmonics for over three decades. By coupling the electromagnetic field to the oscillation of surface electrons in metals, remarkable fundamental insights into the interactions between light and matter at the nanoscale have been achieved. Plasmonic nanocomposites are an emerging class of materials that integrate the most widely utilized building blocks, namely metallic nanoparticles as a plasmonic component, with an assortment of other similar/dissimilar nanostructures leading to new multifunctional systems with improved functionalities and properties that offer enormous potential for new applications. By varying material composition and their geometry, methods have been developed to control the architecture of molecules and materials on the 1 – 100 nm length scale. These developments resulted in a myriad of new state-of-the-art nanocomposite materials that have enormous potential for a wide range of new applications. These include ultrasensitive spectroscopic sensing, biological sensing, drug delivery, photothermal therapy, lithography, catalysis, optics, metamaterials, energy generation, storage, and conversion.

This symposium will cover the recent achievements in the design, fabrication, and application of plasmonic nanocomposites in different fields of science including material science, medicine, and industry, and it will cover their significant impact on global society. We expect to have sessions that focus on the design and development of nanoparticle-based materials that have applications ranging from sensing, and optics to bio-diagnostic and therapeutic implications.

Topics of interest include, but are not limited to:

- Theoretical understanding, synthesis, and optical properties of noble metal nanostructures and their application in surface chemistry
- Computational and experimental methods used to design novel nanomaterials, such as 2D semiconductors
- Theoretical and experimental methods used to design two-dimensional plasmonic composite materials for thermoplasmonics, biosensing, detection, solar cells, and energy storage

- Plasmonic properties and applications of 2D nanomaterials
- Biomedical applications of plasmonic nanomaterials in drug delivery and photothermal therapy
- Interaction of plasmonic materials with biological substrates
- Advances and developments in techniques for ultrafast detection of trace levels of chemical and biological analytes, e.g., surface plasmon resonance and near-field scanning optical microscopy
- Advances and developments of plasmonic semiconductor materials for potential use in the standard telecommunications fiber-optics windows

The scope of the focused sessions will cover plasmonic nanocomposite synthesis, characterization and use in various applications, such as:

- Fundamental properties and innovative synthetic routes of plasmonic nanocomposite materials, such as metal-polymers, metal-metal oxides, metal-graphene, metal-semiconductors, etc.
- Applications of plasmonic composite nanomaterials, such as ultrafast sensing, electronics, optics, environmental, chemical, and bio-chemical applications, etc.
- Computational and experimental methods used to augment design and evaluation of plasmonic nanocomposites

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