

SPECIAL SECTION GUEST EDITORIAL

Nanophotonics for Diagnostics, Protection, and Treatment of Cancer and Inflammatory Diseases

This special section is focused on state-of-the-art research in the field of nanobiophotonics with particular emphasis on the diagnosis and treatment of cancer and inflammatory diseases, as well as on skin protection and cosmetics. The use of photonic nanotechnologies in medicine and cosmetology is a rapidly emerging and potentially powerful approach for disease protection, detection, and treatment. This special section seeks to advance scholarly research that spans from fundamental nanoscale interactions between light, cells, tissues, foreign molecules, and particles, to strategies and opportunities for preclinical and clinical studies. General topics include optical, photothermal, photochemical, biochemical, and immunological phenomena, as well as cellular diagnostics and treatment in living organisms.

Specific topics are related to:

- Plasmon-resonance, functionalization, and targeting strategies;
- Nanomaterials and particle design;
- Absorbing, scattering, fluorescent, photothermal, photodynamic, and photocatalytic properties;
- Pulsed and cw laser and x-ray radiation interactions with nanoparticles and cells/tissues;
- Nanophotothermolysis;
- Biosensors and macromolecular/nanoparticle delivery;
- Quantum dots, carbon nanotubes, silica/gold nanoshells, liposomes, colloidal silicon, and TiO₂ nanoparticles.

The unique advantages of combining nanoparticle with optical diagnostic technologies such as *in vivo* cytometry, time-

resolved Raman, confocal laser scanning microscopy, fluorescence *in situ* hybridization technology, fluorescence-resonance-energy-transfer-based total internal reflection and evanescent wave nanoscopy, and scanning transmission x-ray microscopy are highlighted.

We thank all the authors for their contribution to the special section. As we look forward, we believe that nanobiophotonics is a novel and promising approach that should be of great importance for future developments in the fields of tissue and cell imaging, spectroscopy, phototherapy, and laser surgery.

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