OPTICS & PHOTONICS International Congress

# OPIC 2024

Pacifico Yokohama
Yokohama, Japan
**22–26 April 2024**

# Optical Manipulation and Structured Materials Conference

(OMC24)

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Conventional optical tweezers based on optical radiation forces (scattering, absorption and gradient forces) produced by a tightly focused laser beam have been primarily applied to particles with a dimension range from hundreds of nanometers to tens of micrometers. However, they do not always enable us to efficiently trap and manipulate particles at the nanoscale. New technology that significantly reinforces optical radiation at the nanoscale has been strongly desired.

Sub-wavelength structured materials, including metamaterials, metasurfaces, and photonic crystals, provides new research opportunities for optical manipulation and structured optical field generation beyond the capabilities of bulk-optics approaches. Furthermore, interaction between structured optical fields and matters on the sub-wavelength scale will produce new physical effects, such as spin-orbital momentum coupling.

The OMC 2024 also welcomes fundamental researches, advanced technologies and innovative applications enabled by structured materials. The OMC 2024 event is organized and sponsored by the SPIE in cooperation with several academic societies and associations. OMC 2024 will include the latest research and new technologies for optical radiation forces in the field of optical trappings and manipulations, as well as related topics. In particular, the conference welcomes research on structured optical fields, plasmon-resonant fields, metamaterials, and other topics related to optical manipulation. This conference will also provide opportunities for scientific and professional networking, and scientific inspiration to the attendees. All abstracts will be peer-reviewed by the program committee.

- structured optical fields, including beam shaping, polarization control, pulse shaping, frequency extension, and ultrafast laser technologies
- optical trapping and manipulation, including optical tweezer, holographic optical manipulation, plasmon trapping, multi-photon trapping, and atom trapping and cooling
- fundamental researches and advanced technologies enabled by structured materials, such as metamaterials, metasurfaces, and photonic crystals
- advanced devices and instruments, including spatial light modulator, adaptive optics, and near-field optical devices
- applications including structured material processing, single molecule trapping, biophotonics, metamaterials, quantum communications, and selective control of chemical reaction
- novel approaches, including novel interaction between optical fields and materials on nanoscale, novel regimes of spin-orbit interaction, and quantum control of molecular dynamics.

Submit your abstract today
**https://opicon.jp/conferences/OMC**

**Submission Deadline: 18 December 2023**