

PROCEEDINGS OF SPIE

***Plasmonics: Nanoimaging,
Nanofabrication, and
their Applications V***

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Editors

**2–6 August 2009
San Diego, California, United States**

Sponsored and Published by
SPIE

Volume 7395

Proceedings of SPIE, 0277-786X, v. 7395

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Please use the following format to cite material from this book:

Author(s), "Title of Paper," in *Plasmonics: Nanoimaging, Nanofabrication, and their Applications V*, edited by Satoshi Kawata, Vladimir M. Shalaev, Din Ping Tsai, Proceedings of SPIE Vol. 7395 (SPIE, Bellingham, WA, 2009) Article CID Number.

ISSN 0277-786X
ISBN 9780819476852

Published by

SPIE

P.O. Box 10, Bellingham, Washington 98227-0010 USA
Telephone +1 360 676 3290 (Pacific Time) · Fax +1 360 647 1445
SPIE.org

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Introduction

This proceedings contains papers presented at the 2009 SPIE Optics & Photonics conference on Plasmonics: Nanoimaging, Nanofabrication, and their Applications V held in San Diego, California, 2–6 August, 2009. This annual event was a great opportunity where specialists from diverse research areas exchanged the latest progress on plasmonics and explored the future prospect of research.

This conference was divided into 19 sessions. Eighty-two oral, plenary, and poster presentations broadened the perspective of all our attendees. In the first session, presentations were related to nanofabrication and lithography, such as nano-scale fabrication technique of three-dimensional metal structures for plasmonic metamaterials, making plasmonic structures for nano- and meta-photonics: fabrication methods and challenges, and fabrication of III-V semiconductor quantum dots.

The second and third sessions focused on plasmonic spectroscopy, including plasmonics in UV for nano-imaging and analysis, nanoscale tuneable light source, and spectroscopic TPL mapping of plasmonic systems.

The fourth and fifth sessions focused on nano-imaging, containing imaging ultrafast energy and charge flow in hybrid plasmonic materials, and plasmonic mediated optical imaging at nanoscale.

The sixth, seventh, and eighth sessions probed into nanosensing and manipulation of plasmonic effect, covering from highly sensitive molecular sensing using pyramidal plasmonic crystals, and control of absorption loss in metallic films, to enhanced rates and high directivity for single emitters with optical antennas.

The ninth, tenth, and eleventh sessions focused on plasmonics, nanoplasmonics beyond the dipolar regime: probing bright and dark plasmonic modes using optical and electron spectroscopies, plasmons in strongly coupled metallic nanostructures, unconventional plasmonic materials and emerging applications.

The twelfth, thirteenth, and fourteenth sessions dealt with the recent hot topic plasmonic metamaterials, including plasmonic metamaterials: single layer negative index materials, broadband absorbers and tunable split ring resonators, optical activity in metal and dielectric planar chiral gratings, plasmonic nanorod metamaterial with enhanced biosensing functionalities, and magnetic resonance in stratified metal-dielectric metamaterials.

The fifteenth to the nineteenth sessions were devoted to nanoplasmonic applications, where a great number of intriguing presentations on magnetically

coupled nanoscale channels in optical epsilon-near-zero (ENZ) substrates, sensoric applications based on plasmonic effects at metal nanoparticles, shaping the optical and thermal properties of plasmonic nanostructures for biological applications, plasmonic manipulation of the local density of states: optical antennas, corrals, and a plasmon mirage, and sub-wavelength plasmonic lasers were reported.

During the five conference days, we learned various perspectives ranging from fundamental to edgy research. These valuable research exchanges and discussions will certainly contribute to the future development of nanoscience. We extend our sincerest respect and gratitude to every contributor of conference 7395—it is you who set up a perfect model for the conference.

Please notice that some of the papers listed above were published elsewhere; therefore, this proceedings only includes partial contributions of the conference.

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Vladimir M. Shalaev
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