



23 - 28 January 2010
The Moscone Center
San Francisco, California United States

Synthesis and Photonics of Nanoscale Materials VII

Conference 7586 - Proceedings of SPIE Volume 7586

Dates: Tuesday-Thursday 26 - 28 January 2010

Part of program track on

[Laser Micro-/Nanoengineering](#)

Conference Chairs

Jan J. Dubowski, Univ. de Sherbrooke (Canada); David B. Geohegan, Oak Ridge National Lab.; Frank Träger, Univ. Kassel (Germany)

Program Committee

Carmen N. Afonso, Consejo Superior de Investigaciones Científicas (Spain); J. Thomas Dickinson, Washington State Univ.; Costas P. Grigoropoulos, Univ. of California, Berkeley; Richard F. Haglund, Jr., Vanderbilt Univ.; Tony F. Heinz, Columbia Univ.; Ilko K. Ilev, U.S. Food and Drug Administration; Hiroshi Kumagai, Osaka City Univ. (Japan); Thomas K. M. Lippert, Paul Scherrer Institut (Switzerland); Vladimir M. Shalaev, Purdue Univ.; Xianfan Xu, Purdue Univ.

Tuesday 26 January

Posters-Tuesday

Date: Tuesday 26 January

Time: 6:00 PM - 7:30 PM

Conference attendees are invited to attend the LASE poster session on Tuesday evening. Come view the posters, enjoy light refreshments, ask questions, and network with colleagues in your field. Authors of poster papers will be present to answer questions concerning their papers. Attendees are required to wear their conference registration badges to the poster sessions. Poster authors, view poster presentation guidelines at <http://spie.org/x27476.xml>.

Generation of extended-area femtosecond laser induced periodic nanostructures on TiO₂ by moving samples through a line focus

Paper 7586-20

Author(s): Kiran Dasari, Susanta K. Das, Arkadi Rosenfeld, Ruediger Grunwald, Max-Born-Institut für Nichtlineare Optik und Kurzzeitspektroskopie (Germany)

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Nuclear spin polarization of 3He atoms with a frequency doubled Ti:sapphire laser toward nuclear magnetic resonance of porous media

Paper 7586-21

Author(s): Yutaka Tabata, Hiroki Yamada, Shingo Maeda, Hiroshi Morioka, Hiroshi Kumagai, Ataru Kobayashi, Osaka City Univ. (Japan)

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Visualization of nanostructure of α -Se prepared by pulsed laser photodeposition

Paper 7586-22

Author(s): Nina Mirchin, Simona A. Popesku, Igor Lapsker, Aaron Peled, Holon Institute of Technology (Israel)

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Structural properties of Si and Ge nanocrystals embedded in silica

Paper 7586-23

Author(s): Flyura Djurabekova, Marie Backman, Univ. of Helsinki (Finland); Kai Nordlund, Univ. of Helsinki (Finland) and Helsinki Institute of Physics (Finland)

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Laser interactions with vertically aligned carbon nanotube arrays

Paper 7586-24

Author(s): Christopher Rouleau, David B. Geohegan, Alex A. Puzos, Jeremy J. Jackson, Oak Ridge National Lab. (United States); Gerd Duscher, The Univ. of Tennessee (United States); Karren L. More, Oak Ridge National Lab. (United States)

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Wednesday 27 January

LASE Best Student Paper Prize

Date: Wednesday 27 January

Time: 10:20 AM - 10:30 AM

Students! Are you a primary author in the LASE conference? SPIE will present awards to the best 3 student papers on the science and application of lasers at the LASE plenary.

Cash awards of \$1500, \$1000, and \$500 are available.

Respond to the student author email survey or contact Jen Murphy [jenm@spie.org] by 2 November to participate.

LASE Plenary Session

Date: **Wednesday 27 January**
Time: **10:30 AM - 12:30 PM**

Attosecond-Angstrom Science *(Plenary)*

Paper 7589-101
Author(s): Paul B. Corkum, Univ. of Ottawa (Canada) and Lab. for Attosecond Science, National Research Council Canada (Canada)

[Show Abstract](#)

Ultrafast Fiber Laser Technology: Status and Prospects *(Plenary)*

Paper 7579-102
Author(s): Andreas Tünnermann, Friedrich-Schiller-Univ. Jena (Germany) and Fraunhofer Institute for Applied Optics and Precision Engineering (Germany)

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Challenges and Prospects of Ultrafast Lasers in Ophthalmology *(Plenary)*

Paper 7589-103
Author(s): Holger Lubatschowski, Laser Zentrum Hannover e.V. (Germany)

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Thursday 28 January

Session 1: Plasmonic Nanostructures and Photonics

Date: **Thursday 28 January**
Time: **8:00 AM - 10:30 AM**

Session Chairs: **Jan J. Dubowski**, Univ. de Sherbrooke (Canada); **Xianfan Xu**, Purdue Univ.

Surface plasmon enhanced photoelectron emission from metals with nanostructured surfaces *(Invited Paper)*

Paper 7586-1
Author(s): Chunlei Guo, Univ. of Rochester (United States)

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Tip-enhanced Raman spectroscopy and related techniques in studies of biological materials *(Invited Paper)*

Paper 7586-2
Author(s): Thomas Schmid, ETH Zürich (Switzerland)

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Discovery of very narrow and intense resonances in SERS spectra of single wall carbon nanotubes

Paper 7586-3
Author(s): Alex A. Poretzky, David B. Geoghegan, Christopher Rouleau, Oak Ridge National Lab. (United States)

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Plasmonic solar cells: status and prospects *(Invited Paper)*

Paper 7586-4
Author(s): Sudha Mokkapatil, Fiona Beck, The Australian National Univ. (Australia); Albert Polman, FOM Institute for Atomic and Molecular Physics (Netherlands); Kylie Catchpole, The Australian National Univ. (Australia)

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Spectral modulation of single hybrid plasmonic nanostructures

Paper 7586-5
Author(s): Kannatassen Appavoo, Vanderbilt Univ. (United States); Danyuan Lei, Imperial College London (United Kingdom); Davon W. Ferrara, Joyeeta Nag, Vanderbilt Univ. (United States); Yannick Sonnefraud, Stefan A. Maier, Imperial College London (United Kingdom); Richard F. Haglund, Jr., Vanderbilt Univ. (United States)

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Surface plasmon effects induced by uncollimated emission of semiconductor microstructures

Paper 7586-6
Author(s): Dominic Lepage, Jan J. Dubowski, Univ. de Sherbrooke (Canada)

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Session 2: Nanocrystals and Nanoparticles I

Date: **Thursday 28 January**
Time: **11:00 AM - 12:10 PM**

Session Chairs: **Frank Träger**, Univ. Kassel (Germany); **Richard F. Haglund, Jr.**, Vanderbilt Univ.

Melting mechanisms of embedded nanocrystals *(Invited Paper)*

Paper 7586-7

Author(s): Kai Nordlund, Univ. of Helsinki (Finland) and Helsinki Institute of Physics (Finland); Jukka Pakarinen, Flyura Djurabekova, Marie Backman, Univ. of Helsinki (Finland)

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Limits on the optical response of nano-objects: from isolated to interacting and self-organized particles

Paper 7586-8

Author(s): Antonio Castelo, Consejo Superior de Investigaciones Cientificas (Spain); Carmen N. Afonso, Consejo Superior de Investigaciones Cientificas (Spain); Uma Gupta, Univ. Antwerpen (Belgium); Gustaf Van Tendeloo, Univ. of Antwerp (Belgium)

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Excimer laser interactions with single crystal ZnO: unconventional nanoparticle production

Paper 7586-9

Author(s): J. Thomas Dickinson, Enamul H. Khan, Steve C. Langford, Washington State Univ. (United States)

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Lunch/Exhibition Break 12:10 PM - 1:30 PM

Session 3: Nanocrystals and Nanoparticles II

Date: **Thursday 28 January**

Time: **1:30 PM - 4:20 PM**

Session Chairs: **J. Thomas Dickinson**, Washington State Univ.; **Thomas K. M. Lippert**, Paul Scherrer Institut (Switzerland)

Synthesis and characterization of ZnO nanocrystals by nanoparticle-assisted pulsed laser deposition

Paper 7586-10

Author(s): Daisuke Nakamura, Takafumi Matsumoto, Akio Kumeda, Kazuyuki Toya, Kota Okazaki, Mitsuhiro Higashihata, Kyushu Univ. (Japan); Bingqiang Cao, Univ. of Jinan (China); Tatsuo Okada, Kyushu Univ. (Japan)

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Particle ejection in pulsed laser ablation: dependence on material and laser parameters

Paper 7586-11

Author(s): Thomas K. M. Lippert, Sebastian Heiroth, Paul Scherrer Institut (Switzerland); Joachim Koch, Detlef Günther, ETH Zurich (Switzerland); Alexander Wokaun, Paul Scherrer Institut (Switzerland)

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Nanophotonic fabrication in sub-nm scale *(Invited Paper)*

Paper 7586-12

Author(s): Takashi Yatsui, Motoichi Ohtsu, The Univ. of Tokyo (Japan)

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Altering the synthesis of carbon nanohorns for new hybrid nanostructures

Paper 7586-13

Author(s): David B. Geohegan, Alex A. Puzos, Christopher Rouleau, Mina Yoon, Norbert Thonard, Oak Ridge National Lab. (United States); Gerd Duscher, The Univ. of Tennessee (United States); Karren L. More, Oak Ridge National Lab. (United States)

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Three-dimensional gold-helix photonic metamaterials made via two-photon direct laser writing *(Invited Paper)*

Paper 7586-14

Author(s): Justyna K. Gansel, Michael Thiel, Michael Rill, Manuel Decker, Univ. Karlsruhe (Germany); Klaus Bade, Volker Saile, Forschungszentrum Karlsruhe GmbH (Germany); Georg von Freymann, Stefan Linden, Martin Wegener, Univ. Karlsruhe (Germany)

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Synthesis and optical characterization of rare-earth (RE) doped yttrium Oxide (Y₂O₃) nanoparticles

Paper 7586-15

Author(s): Sreeranjini Chandrasekharan, Francis L. Deepak, John B. Gruber, Miguel J. Yacamán, Dhiraj K. Sardar, The Univ. of Texas at San Antonio (United States)

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Session 4: Nanostructured Surfaces and Thin Films

Date: **Thursday 28 January**

Time: **4:20 PM - 6:00 PM**

Session Chairs: **David B. Geohegan**, Oak Ridge National Lab.; **Carmen N. Afonso**, Consejo Superior de Investigaciones Cientificas (Spain)

Nanostructured polymers by a compact laser plasma EUV source *(Invited Paper)*

Paper 7586-16

Author(s): Henryk Fiedorowicz, Andrzej S. Bartnik, Military Univ. of Technology (Poland)

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Long-time feedback in self-organized nanostructures formation upon multipulse femtosecond laser ablation
(Invited Paper)

Paper 7586-17

Author(s): Juergen Reif, Olga Varlamova, Brandenburgische Technische Univ. Cottbus (Germany) and Cottbus Joint Lab. (Germany); Mourad Bounhalli, Brandenburgische Technische Univ. Cottbus (Germany) and Univ. Jean Monnet Saint-Etienne (France); Tzanimir Arguirov, Cottbus Joint Lab. (Germany) and IHP GmbH (Germany); Martin Schade, Hartmut Leipner, Martin-Luther-Univ. Halle-Wittenberg (Germany)

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Local near field assisted parallel nanostructuring of fused silica

Paper 7586-18

Author(s): Frank Hubenthal, Rodica Morarescu, Lars Englert, Lars Haag, Thomas Baumert, Frank Träger, Univ. Kassel (Germany)

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Fabrication of Al₂O₃/TiO₂ multilayer mirrors for 'water-window' attosecond pulses

Paper 7586-19

Author(s): Yuji Tanaka, Masaki Murata, Hiroshi Kumagai, Ataru Kobayashi, Osaka City Univ. (Japan); Tsutomu Shinagawa, Osaka Municipal Technical Research Institute (Japan)

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