



## Structured Light in Structured Media From Classical to Quantum Optics Incubator

29 September – 1 October 2013  
OSA Headquarters • Washington, DC, USA

HOSTED BY:  
**Richard Hammond**, *Army Research Office, USA*  
**Natalia Litchinitser**, *State University of New York at Buffalo, USA*

### AGENDA

#### 29 September 2013

##### Welcome Dinner

18:00 Welcome Dinner  
[Ezmè](#), 2016 P Street, NW, Washington, DC

#### 30 September 2013

##### Breakfast

7:30 OSA Headquarters  
2010 Massachusetts Avenue, NW

##### Opening Remarks

7:50 Elizabeth A. Rogan, Chief Executive Officer, OSA, United States  
Richard Hammond, Army Research Office, United States

##### Metasurfaces

8:05-8:30 Holographic Metasurfaces  
Federico Capasso, Harvard University, United States

8:30-8:55 Manipulating Light with Plasmonic Metasurfaces with Orientation Controlled Phase Profile  
Shuang Zhang, University of Birmingham, United Kingdom

8:55-9:20 Optic Spin Hall Effect at Metasurfaces  
Xiaobo Yin, University of California, Berkeley, United States

9:20-9:45 Metasurfaces to Control Electromagnetic Waves  
Lei Zhou, Fudan University, China

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**9:45-10:00 Coffee Break**

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## **Empowering Optical Communications**

- 10:00-10:25 Optical Communications using OAM-based Multiplexing  
Alan Willner, University of Southern California, United States
- 10:25-10:50 On Fiber Modes and Space-Division Multiplexing in Fiber-Optic Communication Systems, Rene Essiambre, Alcatel-Lucent, United States
- 10:50-11:15 Light That Twists Inside Fibers  
Siddharth Ramachandran, Boston University, United States
- 11:15-11:40 Metaoptics Transforms Laser Filamentation Studies  
Martin Richardson, University of Central Florida, United States
- 11:40-12:05 Twisting Light with Metamaterials  
Natalia Litchinitser, University of Buffalo, United States

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**12:05-13:00 Lunch Break [Provided]**

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## **From Classical to Quantum**

- 13:00-13:25 Metamaterials for Quantum Optics  
Vlad Shalaev, Purdue University, United States
- 13:25-13:50 Quantum Temporal Imaging: The Need for Advanced Dispersion Engineering  
Daniel Gauthier, Duke University, United States
- 13:50-14:15 Quantum Aspects of Transverse Degrees of Freedom of Photons: Generation, Detection and Applications  
Robert Boyd, University of Ottawa, Canada
- 14:15-14:40 Structured Metatronics for Photonic Functionality  
Nader Engheta, University of Pennsylvania, United States
- 14:40-15:05 Quantum Conductivity Theory for Nanoplasmonic Systems  
Joe Haus, University of Dayton, United States

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**15:05-15:20 Coffee Break**

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## **Structured Light and Matter**

- 15:20-15:45 Electromagnetically Induced Transparency of Structured Light  
Sonja Franke-Arnold, University of Glasgow, United Kingdom
- 15:45-16:10 Frenkel Exciton Sources for the Generation of Structured Light by Molecular Arrays  
David Andrews, University of East Anglia Norwich, United Kingdom
- 16:10-16:35 Structured Light in Photonic Graphene  
Anton Desyatnikov, Australian National University, Australia
- 16:45-17:10 Optical Vortex Generation at Small Scale  
Etienne Brasselet, Université de Bordeaux, France
- 17:10-17:35 Designing Meta-atoms for Transformation Optics  
Gabriel Molina-Terriza, Macquarie University, Australia
- 17:35-18:00 Tunable Coherent Multicolored Vector Vortex Beam Generator using a q-plate  
Yisa Rumala, Institute for Ultrafast Spectroscopy and Lasers, City College-CUNY, United States
- 18:00-18:25 Broadband Absorption Engineering of Patterned Hyperbolic Metafilms  
Qiaoqiang Gan, University of Buffalo, United States
- 19:00 Dinner  
[Sette Osteria](#), 1666 Connecticut Ave, NW, Washington, DC

***The following people will have posters on display throughout the day:***

- *Andrei Afanasev, George Washington University*
- *Guarav Jayaswal, University of Padova*
- *Eric Johnson, Clemson University*
- *Zhaxylyk Kudyshev, University of Buffalo, The State University of New York*
- *Yongmin Liu, Northeastern University*
- *Tania Moein, University of Buffalo, The State University of New York*

## **1 October 2013**

### **Breakfast**

7:30 am      OSA Headquarters  
                 2010 Massachusetts Avenue, NW

### **Fundamentals of Structured Light and Matter**

- 8:00-8:25      Engineered Density of Photonic States: What Can it Do?  
                 Mikhail Noginov, Norfolk State University, United States
- 8:25-8:50      Inverse Methods and Managing Electromagnetic Waves using Metamaterials  
                 Michael Fiddy, University North Carolina, United States
- 8:50-9:15      Structured Darkness  
                 Grover Swartzlander, Rochester Institute of Technology, United States
- 9:15-9:40      Extraordinary Momentum and Spin in Evanescent Waves  
                 Konstantin Bliokh, Institute of Radio Astronomy, Ukraine
- 9:40-10:05     Optical Nonlocalities and Additional Waves in Uniaxial Metamaterials  
                 Viktor Podolskiy, University of Massachusetts, Lowell, United States

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### **10:05 -10:20    Coffee Break**

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### **Structured Light in Action**

- 10:20-10:45    Using Random Optical Patterns to Recover Full Resolution 3D Images  
                 Miles Padgett, University of Glasgow, United Kingdom
- 10:45-11:10    Structured Light Beams for Nano and Microscale Manipulation  
                 Halina Rubinsztein-Dunlop, University of Queensland, Australia
- 11:10-11:35    Laser Processing with Ultra-Short Vortex Pulses  
                 Wieslaw Krolikowski, Australian National University, Australia
- 11:35-12:00    Angular Momentum of Light Forces Materials to Become Chiral Nano-Structures  
                 Takashige Omatsu, Chiba University, Japan
- 12:00-12:25    Harnessing Light for Sensing and Guiding at Mesoscales  
                 Aristide Dogariu, University of Central Florida, United States

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**12:25-13:25 Lunch [Provided]**

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## **Linear and Nonlinear Nanostructures**

- 13:25-13:50 Electrically Controlled Nonlinear Phenomena in Optical Metamaterials  
Wenshan Cai, Georgia Institute of Technology, United States
- 13:50-14:15 Harmonic Resonance Cones in Hyperbolic Metamaterials  
Domenico de Ceglia, National Research Council, United States
- 14:15-14:40 Nonlinear Optical Interactions in Plasma Resonant Materials  
Maria Antonetta Vincenti, National Research Council, United States
- 14:40-15:05 Backward Waves in Metamaterials  
Ildar Gabitov, University of Arizona, United States
- 15:05-15:30 Towards Fabrication of Right-Sized Nanostructured Metamaterials  
Alexander Cartwright, University at Buffalo, SUNY, United States
- 15:30-15:55 Plasmon Drag Effect in Metal Films and Nanostructures  
Natalia Noginova, Norfolk State University, United States

## **Closing Remarks**

15:55-16:00 Rich Hammond, United States Army Research Laboratory, United States

***The following people will have posters on display throughout the day.***

- *Garreth Ruane, Rochester Institute of Technology*
- *Mikhail Shalaev, University at Buffalo, The State University of New York*
- *Jingbo Sun, University at Buffalo, The State University of New York*
- *Xi Wang, University of Buffalo, The State University of New York*
- *Jinwei Zeng, University at Buffalo, The State University of New York*