

Novel In-Plane Semiconductor Lasers XVI

Monday - Thursday 30 January - 2 February 2017

Conference Sessions At A Glance

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OPTO Plenary Session

- 1: Materials
- 2: Nitrides
- 3: Mode Locking
- 4: On Silicon
- 5: On Silicon and Novel Cavity
- 6: Mid-IR Lasers: High-power, High-efficiency
- 7: Lasers for Sensing
- 8: Mid-IR QCLs: Combs and Spectroscopy
- 9: THz QCLs
- 10: IR and THz Sources: New Designs I

Poster Session

- 11: High Power and Brightness
- 12: IR and THz Sources: New Designs II
- 13: Mid-IR QCLs and ICLs

Important Dates

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Abstract Due:
18 July 2016

Author Notification:
26 September 2016

Manuscript Due Date:
5 January 2017

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MONDAY 30 JANUARY

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OPTO Plenary Session

Monday 30 January 2017

8:00 AM - 10:05 AM

Location: Room 3009 (West Level 3)

8:00 am: Welcome and Opening Remarks

Shibin Jiang, AdValue Photonics, Inc. (United States); Jean Emmanuel Broquin IMEP-LAHC (France)

8:00 to 8:05 am

Presentation of 2017 SPIE Technology Achievement Award

Presented by SPIE President to:


Edward Delp III, Purdue Univ. (United States)

Non-reciprocal photonic gauge potential and non-equilibrium thermal metaphotonics for the control of light and heat (Plenary Presentation)

Paper 10112-201

Time: 8:05 AM - 8:45 AM

Author(s): Shanhu Fan, Edward L. Ginzton Lab., Stanford Univ. (United States)

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Session 12: IR and THz Sources: New Designs II

Thursday 2 February 2017

10:40 AM - 12:20 PM

Location: Room 310 (South Esplanade)

Session Chair: [Benjamin S. Williams](#), Univ. of California, Los Angeles (United States)

Single-photon superradiance and collective Lamb shift in a semiconductor quantum device *(Invited Paper)*

Paper 10123-52

Time: 10:40 AM - 11:10 AM

Author(s): Carlo Sirtori, Univ. Paris 7-Denis Diderot (France)

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Resonant tunneling diodes based on ZnO for quantum cascade structures

Paper 10123-51

Time: 11:10 AM - 11:30 AM

Author(s): Borislav Hinkov, Benedikt Schwarz, Andreas Harrer, Daniela Ristanic, Werner Schrenk, Technische Univ. Wien (Austria); Maxime Hugues, Jean-Michel Chauveau, Ctr. de Recherche sur l'Hétéro-Epitaxie et ses Applications (France); Gottfried Strasser, Technische Univ. Wien (Austria)

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Terahertz (THz, $\lambda \sim 30\mu\text{m} - 300\mu\text{m}$) quantum cascade lasers (QCLs) are promising devices for applications like trace-gas spectroscopy or security-screening. A crucial step is their room-temperature operation ($kT = 26\text{meV}$), for which larger LO-phonon materials like ZnO ($E_{\text{LO}} = 72\text{meV}$) are beneficial compared to the commonly used GaAs (36meV). We present CH4- (reactive-ion) etched ZnO-based resonant tunneling diodes with different barrier-well-configurations. We extract contact resistances and electron mobilities of $8e-5 \text{ } \Omega\text{cm}^2$ for un-annealed Ti/Au contacts and above $130\text{cm}^2/\text{Vs}$, respectively, both in good agreement with literature. Realizing resonant electron tunneling in ZnO is one crucial building block for a QCL.
