2021 Conference on Lasers and Electro-Optics Europe & European Quantum Electronics Conference

Advance Programme

Virtual Meeting

CEST time zone

21 - 25 June 2021

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Sponsored by
- European Physical Society / Quantum Electronics and Optics Division
- IEEE Photonics Society
- The Optical Society

WORLD OF PHOTONICS CONGRESS

25th International Congress on Photonics in Europe

Collocated with Laser World of Photonics Industry Days

https://world-of-photonics.com/en/

Messe München International

ROOM 2

CH-6.6 WED 12:15

Integrated Multispectral Scanner for Chlorophyll Monitoring

•*P. Maidment*[1], *M.N. Malik*[2], *A. Bogoni*[2], *C. Klitis*[1], *and M. Sorel*[1,2]; [1]*James Watt School of Engineering, University of Glasgow, Glasgow, United Kingdom*; [2]*Sant'Anna School of Advanced Studies, Pisa, Italy*

Active multispectral sensors are an effective technology for biological monitoring. A triple-wavelength scanning system with compact semiconductor lasers to probe chlorophyll is demonstrated. The system architecture has been translated into a compact silicon photonic chip.

ROOM 3

CF-5.5 WED 12:15

Ultrafast, High-flux hard X-ray Source driven by a Few-cycle 5 μm OPCPA

•*L. von Grafenstein, A. Koç, C. Hauf, M. Woerner, M. Bock, E. Escoto, U. Griebner, and T. Elsaesser*; *Max Born Institute, Berlin, Germany*

A novel table-top hard X-ray source at 8 keV driven by few-cycle 5-μm laser pulses with 3.0 mJ energy provide a total number of 1.5×109 Cu-Kα photons per pulse at 1 kHz repetition rate.

ROOM 4

CM-2.6 WED 12:15

Laser nanofabrication deep inside silicon wafers

R. Asgari Sabet[1,2], *A. Ishraq*[1,2], *and* •*O. Tokel*[1,2]; [1]*Bilkent University, Department of Physics, Ankara, Turkey*; [2]*National Nanotechnology Research Center, Turkey, Ankara, Turkey*

Here, we introduce the first controlled nano-fabrication capability in the bulk of silicon wafers. We exploit smart use of structured beams and demonstrate "in-chip" nanostructuring with features lower than 250 nm.

ROOM 5

CB-4.6 WED 12:15

Linewidth Enhancement Factor of Mid-IR Quantum Cascade Lasers

•*M. Bertrand, M. Franckié, A. Forrer, F. Kapsalidis, M. Beck, and J. Faist*; *Institute for Quantum Electronics, ETH Zürich, Zürich, Switzerland*

We present measurements of the linewidth enhancement factor of Mid-IR Quantum Cascade Lasers using a coherent beatnote spectroscopy technique. We provide also theoretical predictions to explain the experimentally observed devices' behavior.

ROOM 6

EG-3.6 WED 12:15

Nano-IR study of light-matter interaction between intersubband transitions in quantum wells and patch antenna resonators by polymer expansion

•*M. Malerba*[1], *L. Baldassarre*[2], *R. Gillibert*[2], *V. Giliberti*[3], *S. Sotgiu*[2], *M. Ortolani*[2,3], *and R. Colombelli*[1]; [1]*C2N, Université de Paris Saclay, Palaiseau, France*; [2]*Dipartimento di Fisica, Università La Sapienza, Roma, Italy*; [3]*Center for Life Nanoscience, Istituto Italiano diTecnologia, Roma, Italy*

By inserting a layer of polyethylene inside a metal-heterostructure-metal optical cavity resonator and shining mid-IR light, we detect strong coupling of light/matter interactions and map EM fields from a single patch nanoantenna as polymer expansion.

ROOM 5

13:30 – 14:30

SP-2: Hot Topics: What's Next in Integrated Frequency Combs

Chair: Marco Piccardo, Harvard University, Cambridge, MA, USA

This session will showcase a 1-hour virtual panel discussion organized by OSA's Integrated Photonics Technical Group. The event will offer an overview of the many existing approaches based on active (lasers) and passive (high-Q resonators) devices, using different nonlinearities (Chi2 and Chi3) and spanning various spectral regions (from the visible to the THz). The featured presenters will discuss the physical mechanism of comb generation, device characteristics, and applications as well as highlight exciting related talks at CLEO Europe. Panelists include Miriam Vitiello, CNR; Benedikt Schwarz, TU Wien; Tobias Kippenberg, EPFL; Scott Papp, NIST; and Ingo Breunig, University of Freiburg.

ROOM 1

14:30 – 16:00

CH-7: Microscopy and Imaging Sensors

Chair: Martina Gerken, Christian-Albrechts-Universität, Kiel, Germany

CH-7.1 WED (Invited) 14:30

Photonic Antennas for Ultra-sensitive Biosensing and Bioimaging

P. Winkler[1], *M. Sanz-Paz*[1], *E. Herkert*[1], *and* •*M. Garcia-Parajo*[1,2]; [1]*ICFO-Institute of Photonic Sciences, Barcelona, Spain*; [2]*ICREA-Institució Catalana de Recerca i Estudis Avançats, Barcelona, Spain*

Photonic antennas are metallic

ROOM 2

14:30 – 16:00

CF-6: Ultrafast Mid-IR Sources

Chair: Takao Fuji, Toyota Technological Institute, Nagoya, Japan

CF-6.1 WED 14:30

Milliwatt-Level Multi-Octave Mid-Infrared Generation by a Diode-Pumped Cr:ZnS Oscillator

•*N. Nagl*[1], *V. Pervak*[1], *F. Krausz*[1,2], *and K.F. Mak*[2]; [1]*Ludwig-Maximilians-Universität München, Garching, Germany*; [2]*Max-Planck-Institut für Quantenoptik, Garching, Germany*

We report the generation of a

ROOM 3

14:30 – 16:00

CM-3: Temporal and Spatial Beam Shaping for Laser Processing I

Chair: Francois Courvoisier, University of Franche-Comté, Besançon, France

CM-3.1 WED 14:30

On-The-Fly Laser Beam Shaping With Acousto-Optofluidics

•*M. Duocastella*[1,2], *A. Zunino*[2,3], *and S. Surdo*[2]; [1]*Universitat de Barcelona, Barcelona, Spain*; [2]*Istituto Italiano di Tecnologia, Genoa, Italy*; [3]*University of Genoa, Genoa, Italy*

We present a new system for on-demand beam shaping based on

ROOM 4

14:30 – 16:00

CB-5: Mid-infrared Semiconductor Lasers

Chair: Mikhail Belkin, Walter Schottky Institute, Garching, Germany

CB-5.1 WED (Invited) 14:30

Mid-IR lasers epitaxially integrated on on-axis Silicon

•*E. Tournié, M. Rio Calvo, L. Monge Bartolome, Z. Loghmari, R. Teissier, A.N. Baranov, L. Cerutti, and J.-B. Rodriguez*; *IES, Univ. Montpellier, CNRS, Montpellier, France*

We review our recent results on GaSb-based laser diodes (LDs) and InAs/AlSb quantum-cascade lasers

ROOM 5

14:30 – 16:00

EG-4: Nonlinear and Ultrafast Nano-optics

Chair: Riccardo Sapienza, Imperial College London, United Kingdom

EG-4.1 WED 14:30

Extremely Non-adiabatic Switch-off of Deep-strong Light-Matter Coupling

•*J. Mornhinweg*[1], *M. Halbhuber*[1], *V. Zeller*[1], *C. Ciuti*[2], *D. Bougeard*[1], *R. Huber*[1], *and C. Lange*[1,3]; [1]*Department of Physics, University of Regensburg, Regensburg, Germany*; [2]*Université de Paris, Laboratoire Matériaux et Phénomènes*

ROOM 6

14:30 – 16:00

CE-7: Integrated Optoelectronic Devices

Chair: Katia Gallo, KTH – Royal Institute of Technology, Stockholm, Sweden

CE-7.1 WED 14:30

Coupling of a 2D Heterostructure to a Photonic Polymer Waveguide via Mode-center Encapsulation

•*A. Frank*[1], *J. Zhou*[2], *J.A. Grieve*[1,5], *J. Viana-Gomez*[6], *I. Verzhbitskiy*[2], *A. Ling*[1,2], *and G. Eda*[2,3,4]; [1]*Centre for Quantum Technologies, National University of Singapore, Singapore, Singapore*; [2]*Department of Physics, National University of Singapore,*