



VCSEL DAY 2024

September 12-13, 2024, Toulouse, France

Workshop Program

Location : Amphitheater A002, Toulouse INP - ENSEEIHT

2, rue Charles Camichel, Toulouse, France

(GPS coordinates: 43.6026, 1.4551),

located in the city center near metro station " François-Verdier " métro line B.

Important information : For security reasons, your ID will be asked at the entrance hall of the INP - ENSEEIHT site.

Date : Thursday, September 12th,

Time : 9:30 – 17:10

9:30 – 9:50 **Welcome and Introduction**

9:50 – 10:30 **Session : Integrated systems, coupling and datacom applications [1]**

9:50 – 10:10 Multiple Wavelengths High Speed VCSEL for Datacom Applications

Bedouin Sassiya
Ulm University, Germany

10:10 – 10:30 Impact of four-wave mixing in multimode VCSELs on noise performance: an experimental and numerical study

Cristina Rimoldi
Politecnico di Torino, Italy

10:30 – 11:00 **Coffee/tea break (Room A003)**

11:00 – 12:00 **Session : Integrated systems, coupling and datacom applications [2]**

11:00 – 11:20 Enhancing VCSEL Beam Efficiency with a Standalone Tapered Structure for Improved Optical Coupling

Ronghua Zhou
ESYCOM, ICON Photonics, France

11:20 – 11:40 NIR photopolymerization for VCSEL-to-fiber single mode connection

Nessim Jebali
LAAS-CNRS, France

11:40 – 12:00 Meta Optical Element enabling VCSEL module integration and new optical features

Ludovic Marigo
NIL Technology, Switzerland

12:00 – 12:20 **Posters short presentation (2 min each)**

Combining in-situ measurements in molecular beam epitaxy : Study of $\text{Al}_x\text{Ga}_{1-x}\text{As}$ properties at growth temperature

Pierre Gadras
LAAS-CNRS, France

Critical aspects of VCSELs fabrication

Karolina Olucha
Lukasiewicz Research Network, Poland

Thermal management of VCSEL-GaAs for high-power single-mode emission

Abdelmounaim Harouri
C2N, CNRS, Univ. Paris Saclay, France

795nm Single-Mode VCSEL with Grating Relief Structure

Julian Lindner
Trumpf Photonics Components, Germany

Development of coupon fabrication for effective Micro Transfer Printing of VCSEL structure

Wioleta Slaba
Lukasiewicz Research Network, Poland

Fabrication and Characterization of 940 nm VCSELs on Ge and GaAs Substrates

Karim Ben-Saddik
LAAS-CNRS, France

Multiple Doppler velocimetry using laser feedback interferometry with a VCSEL

Alexis Loupias
LAAS-CNRS, France

Analyzing Sidebands in Multimode VCSELs Through Near-Field Lensed Fiber Scanning

Marco Novarese
Politecnico di Torino, Italy

Computational inspection of VCSEL oxidation exploiting a spectrally-shaped illuminator

Antoine Rouxel
LAAS-CNRS, France

12:20 – 13:20 **Lunch break (Room A003)**

13:20 – 14:20 **Poster session (Room A003)**

14:20 – 15:20 **Session : Devices modelling**

14:20 – 14:40 Modelling of transverse coupled cavity VCSELs

Martino D'Alessandro
Politecnico di Torino, Italy

14:40 – 15:00 Electro-Opto-Thermal modeling of AlGaAs Buried TJ-VCSELs

Alberto Gullino
Politecnico di Torino, Italy

15:00 – 15:20 On-wafer measurements to calibrate active VCSEL simulations

James Meiklejohn
Cardiff University, United Kingdom

15:20 – 15:50 **Coffee/tea break (Room A003)**

15:50 – 17:10 **Session : Characterizations, modal and polarization control**

15:50 – 16:10 Robustness assessment of grating-based circularly-polarized VCSELs

Valerio Torrelli
Politecnico di Torino, Italy

16:10 – 16:30 Emission spectra of VCSELs with noncircular optical apertures

Magdalena Marciniak
Lodz University of Technology, Poland

16:30 – 16:50 Locking the VCSEL polarization in the horizontal and diagonal polarization basis

Michael Zimmer
University of Stuttgart, Germany

16:50 – 17:10 Micro-photoluminescence and micro-electroluminescence from VCSELs and VCSEL structures

Michal Wasiak
Lodz University of Technology, Poland

20:00 **Social Dinner**

Restaurant Les Beaux-Arts, 1 Quai de la Daurade, 31000 Toulouse

Date :Friday, September 13th

Time : 9:30 – 12:20

9:30 – 10:30 **Session : Fabrication & Technology [1]**

9:30 – 9:50 In-situ and ex-situ optical metrology – an enabler for high-quality GaAs-based VCSEL structures

Johannes K. Zettler
LayTec AG, Germany

9:50 – 10:10 940nm VCSEL epi-structure grown on germanium (Ge) substrates

Włodzimierz Strupinski
VIGO Photonics SA, Poland

10:10 – 10:30 Epicentre : A RIBER/LAAS-CNRS joint lab for optimization and automation of MBE process

Alexandre Arnoult
LAAS-CNRS, France

10:30 – 11:00 **Coffee/tea break (Room A003)**

11:00 – 12:00 **Session : Fabrication & Technology [2]**

11:00 – 11:20 GaSb Long-Wavelength VCSEL with Low Loss Buried Tunnel Junction

Andrea Simaz
Walter Schottky Institute, Germany

11:40 – 12:00 High-temperature performance of high-speed 940nm VCSELs for optical communication

Marcin Gebski
Lodz University of Technology, Poland

12:00 – 13:00 **Lunch break (Room A003)**

13:00 – 16:00 **Labs tour (2 options):**

1. Optical Sensors and smart Integrated Systems @ ENSEEIHT
 2. Micro and Nanotechnologies Platform @ LAAS
- (Travel by public transport to LAAS : 25-30 min)