



Groupe “nanoMIR” / “nanoMIR” group
“Composants à nanostructures pour Moyen Infra-Rouge”
“Nanostructure-based devices for Mid-Infra-Red Applications”

Publication list (2024)

C-INV : Communications invitées / Invited communications (national or international)

Polarization-resolved sensing with photonic crystal multilayers and dielectric mid-infrared antennas

G. Pellegrini, E. Mogni, F. Rusconi, P. Felhen, F. Gonzalez-Posada, L. Cerutti, J. Gil-Rostra, F. Yubero, M. Celebrano, K. Schmidt, S. Fossati, M. Finazzi, T. Taliercio, J. Dostálek, P. Biagioni
Extreme Sensing and Chirality international Workshop, Cetraro, Italy, September 29 – October 3, 2024

Surface Enhanced Infrared Absorption Spectroscopy to Detect Harmful Compounds as SARIN Gas, or Vanillin

M. Najem, P. Felhen, J. Guise, F. Gonzalez-Posada-Flores, L. Cerutti, G. Thomas, D. Spitzer and T. Taliercio
Optical Sensing Congress, Toulouse, France, 15-19 July 2024

Mid-infrared dielectric antennas on epsilon-near-zero material for sensing

P. Biagioni, F. Rusconi, P. Felhen, F. Gonzalez-Posada, L. Cerutti, G. Pellegrini, M. Finazzi, T. Taliercio
The 10th International Conference on Antennas and Electromagnetic Systems, Rome, Italy, 25-28 June 2024

MBE: some challenges and evolutions (plenary)

E. Tournié
OSEPI National Workshop, May 13-17, 2024, Frejus, France

Compositional analysis of MBE-grown InAs/InAsSb T2SL for MWIR detector: towards a refined understanding of transport and optical properties.

J.P. Perez, M. Tornay, R Arinero, P Christol, G Patrairche, K Pantzas, N Péré-Laperne
Proceedings of the SPIE "Infrared Technology and Applications L, 13046, 130460H (2024),
DCS SPIE Conference, National Harbor, USA, May 2024

Direct epitaxy of lasers on Si substrates: challenges and solutions

M. Fagot, D-A Diaz-Thomas, A. Gilbert, M. Ramonda, Y. Rouillard, A.N Baranov, J.B Rodriguez, E. Tournié and L. Cerutti
OSEPI National Workshop, May 13-17, 2024, Frejus, France

Les détecteurs Infrarouges à superréseaux T2SL.

P. Christol

Workshop Détecteurs Optoélectroniques pour application scientifiques spatiales, ISAE Sup-Aéro, Toulouse, 13 juin 2024

Revisiting the epitaxy of III-Vs on group-IV substrates

A. Gilbert, G. Patriarche, C. Cornet, E. Tournié, M. Ramonda, L. Cerutti, M. Fagot and J.-B. Rodriguez
ICMBE 2024, September 8-13 2024, Matsue, Japan

Epitaxial growth of III-V semiconductors on Si substrates

A. Gilbert, K. Graser, G. Patriarche, C. Cornet, E. Tournié, M. Ramonda, A. Trampert, L. Cerutti, M. Fagot, and J.-B. Rodriguez
JNMO 2024, October 1-4 2024, Sète, France

Integration of Mid-IR Semiconductor Lasers and Si-photonics Circuits (plenary)

E. Tournié, A. Remis, M. Paparella, A. Gilbert, M. Fagot, M. Silvestre, L. Cerutti, and J.-B. Rodriguez.
29th International Semiconductor Laser Conference, September 29th – October 2nd, 2024, Orlando, FL, USA:

Mid-infrared Semiconductor Lasers Grown on group-IV Platforms

E. Tournié, A. Gilbert, M. Fagot, M. Silvestre, A. Remis, M. Paparella, L. Monge-Bartolome, K. Kinjalk, A.N. Baranov, L. Cerutti, and J.-B. Rodriguez.
International Conference on the Physics of Semiconductors 2024, July 28th – August 2nd, 2024, Ottawa, Canada.

Design, fabrication and characterization of InAs/InAsSb type-II superlattices for IR photodetectors and thermophotovoltaic cells.

J.P. Perez, B. Roux, M. Tornay, P. Christol, R. Vaillon

International Conference on Material Physics and Fluids (ICMPF-2024), Oran, Nov 2024

Mid-IR lasers on group-IV substrates

M. Paparella, A. Remis, A. Gilbert, K. Kumar, D. A. Díaz Thomas, M. Fagot L. Monge-Bartolome, M. Rio Calvo, G. Boissier, M. Grande, L. O'Faolain, A. N. Baranov, L. Cerutti, J.-B. Rodriguez, and E. Tournié.
SPIE Photonics West, Opto Symposium, 27 January - 1 February 2024, San Francisco (USA), paper 12895-54.

Single mode distributed feedback Interband cascade lasers grown on Si substrate.

Daniel Andres Diaz Thomas, Maeva Fagot, Gad Ndemengoye-Kombila, Audrey Gilbert, DibaAyache, Yves Rouillard, Aurore Vicet, Jean-Baptiste Rodriguez, Alexei Baranov, Eric Tournié, Laurent Cerutti.
SPIE Photonics West, Opto Symposium, 27 January - 1 February 2024, San Francisco (USA), paper 12905-53.

Antimonide-based compound semiconductors and optoelectronic devices

E. Tournié

UST Global Mentoring Conference, South Korea (on line), 15 July 2024.

Photoacoustic sensing based on resonant mechanical transducers: application to diagnosis in breath Seoudi T, Ayache D, Benabbad O, Charenzol J, Pages F, Rosenkantz E, Molinari N, Bahriz M, Gouzi F, Vicet A., ICPPP, 7-12 July 2024 Coimbra

IR laser spectroscopy from fundamentals to medical applications, Vicet Aurore, Seoudi T., Ayache D., Charenzol J., Pages F., Rosenkantz E., Bahriz M., Gouzi F., MNE 2024, Invited Short Course, 16-20 sept Montpellier.

ACL : Articles dans des revues internationales avec comité de lecture référencées par ISI web / Peer reviewed publications referenced by ISIweb

1. Emmanuel Chereau, Gabin Grégoire, Geoffrey Avit, Thierry Taliercio, Philipp Staudinger, Heinz Schmid, Catherine Bougerol, Agnès Trassoudaine, Evelyne Gil, Ray R. LaPierre, Yamina André, "Long indium-rich InGaAsnanowires by SAG-HVPE". Nanotechnology 35, 195601 (2024) <https://doi.org/10.1088/1361-6528/ad263a>
2. C. Gureghian, J.-B. Rodriguez, C. Dupuis, N. Bardou, L. Ferlazzo, I. Ribet, F. Gonzalez-Posada, T. Taliercio, G. Vincent, "Performance of long-wave infrared band of microstructured heavily doped InAsSb on type II superlattice layer part 1: the photonic study". Optic Express 32, 13438, (2024), <https://doi.org/10.1364/OE.516043>
3. Michele Paparella, Andres Remis, Marco Grande, Thierry Taliercio, Laurent Cerutti, Jean-Baptiste Rodriguez, and Eric Tournié, Improved light transmission for III-V lasers monolithically integrated on Si platforms, Optics Express, 32 (22) pp 38994-39004 (2024). <https://doi.org/10.1364/OE.537703>
4. A. Gilbert, K. Graser, M. Ramonda, A. Trampert, J.-B. Rodriguez, E. Tournié, Reduction of the threading dislocation density in GaSb layers grown on Si(001) by molecular beam epitaxy, Advanced Physics Research, 2024, 2400126, <https://doi.org/10.1002/apxr.202400126>.
5. A. Gilbert, M. Ramonda, G. Patriarche, E. Tournié and J.-B. Rodriguez, "Toward thin GaSb Buffer Layers Grown on On-Axis (001) Silicon by Molecular Beam Epitaxy", Advanced Physics Research, 2024, 2400090, <https://doi.org/10.1002/apxr.202400090>
6. Maeva Fagot, Daniel A. Díaz-Thomas, Audrey Gilbert, Gad Kombila, Michel Ramonda, Yves Rouillard, Alexei N. Baranov, Jean-Baptiste Rodriguez, Eric Tournié, and Laurent Cerutti. Interband cascade lasers grown simultaneously on GaSb, GaAs and Si substrates. Optics Express 32(7), 11057 – 11064 (2024). <https://doi.org/10.1364/OE.514069>.
7. C. Bataillon, M. Tornay, M. Bouschet, J. P. Perez, A. Michez, O. Saint-Pé, O. Gilard, P. Christol « Electrical Characterization of Type II Superlattice Midwave Infrared Photodetectors under protons at cryogenic temperature” IEEE Transactions on Nuclear Sciences 71, 1747-1752 (2024), <https://doi.org/10.1109/TNS.2024.3406904>
8. Main performance metrics of thermophotovoltaic devices: analyzing the state of the art. Basile Roux, Christophe Lucchesi, Jean-Philippe Perez, Pierre-Olivier Chapuis, Rodolphe Vaillon. Journal of Photonics for Energy, 2024, 14 (04), pp.042403. <https://doi.org/10.1117/1.jpe.14.042403>
9. Long wavelength distributed feedback tapered quantum cascade lasers. Davide Pinto, Daniel Andres Díaz Thomas, Zeineb Lohmari, Kumar Kinjalk , Roland Teissier, et al. Optics Express, 2024, 32 (15), pp.26925. <https://doi.org/10.1364/oe.521039>
10. Highly selective and sensitive detection of volatile organic compounds using long wavelength InAs-based quantum cascade lasers through quartz-enhanced photoacoustic spectroscopy. Kumar Kinjalk, Francesco Paciolla, Bo Sun, Andrea Zifarelli, Giansergio Menduni, et al. Applied Physics Reviews, 2024, 11 (2), <https://doi.org/10.1063/5.0189501>
11. Intensity noise and modulation dynamics of an epitaxial mid-infrared interband cascade laser on silicon. H. Kim, P. Didier, S. Zaminga, D. Díaz-Thomas, A. Baranov, et al. APL Photonics, 2024, 9 (10), pp.106103-1:106103-9. <https://doi.org/10.1063/5.0214252>

ACLN : Articles dans des revues avec comité de lecture non répertoriées par l'AERES ou dans des bases de données internationales / Peer-reviewed publications which are not referenced by AERES or international data-bases.

ASCLN : Articles sans comité de lecture / Publications without peer-reviewing

BRE : Brevets / Patents

C-ACTI : Communications avec actes dans un congrès international / Communications with proceedings at international conferences.

Cd(Zn)O nanostructures for SEIRA sensing in the Mid-IR

P. Ibanez-Romero, E. Martinez Castellano, J. Yeste, F. Gonzalez-Posada, T. Taliercio, V. Munoz-Sanjose, M. Montes Bajo, A. Hierro

14th International Conference on Metamaterials, Photonic Crystals and Plasmonics, Toyama, Japan, 16-19 July 2024

C-ACTN : Communications avec actes dans un congrès national / Communications with proceedings at national conferences.

C-COM : Communications orales sans actes dans un congrès international ou national / Oral communications without proceedings at international or national conferences.

P. Fehlen, M. Najem, J. Guise, F. Carcenac, G. Thomas, L. Cerutti, J.-B. Rodriguez, E. Centeno, D. Spitzer, T. Taliercio, F. Gonzalez-Posada Flores, "Gas sensing with surface enhanced IR absorption spectroscopy based on the plasmonics of metals and III-V semiconductors"

50th International Micro and Nano Engineering Conference, Montpellier, France, 16-19 September 2024

P. Loren, E. Sakat, J.-P. Hugonin, L. Cerutti, F. Gonzalez-Posada, A. Moreau, T. Taliercio, "Heavily doped semiconductor: the material to observe non-local effects"

Plasmonica, July 10-12 2024, Messina, Italia.

Strain-relieving mechanism in III-V semiconductors epitaxially grown on Silicon : misfit dislocation networks

A. Gilbert, K. Graser, A. Trampert, M. Ramonda, E. Tournié, J.-B. Rodriguez
OSEPI National Workshop, May 13-17 2024, Frejus, France

Electron Channeling Contrast Imaging for epi-layer structural defect characterization

A. Gilbert, A. Meguekam, E. Tournié and J.-B. Rodriguez
OSEPI National Workshop, May 13-17 2024, Frejus, France

New InGaAsSb Based T2SL for MWIR Detection

T. Sabardeil, E. Izquierdo, G. Grégoire, B. Simozrag, V. Trinité, C. Cervera, J.-B. Rodriguez, E. Tournié, A. Evirgen
QSIP 2024, August 12-16 2024, Santa Barbara, USA

Reduction of threading dislocation density in GaSb layers grown on Si(001) by molecular beam epitaxy: misfit dislocation networks

A. Gilbert, K. Graser, M. Ramonda, A. Trampert, E. Tournié, J.-B. Rodriguez
ICMBE 2024, September 8-13 2024, Matsue, Japan

Interband Cascade Lasers on Mismatched Substrates Emitting Above 4 μm

M. Fagot, D. A. Diaz-Thomas, A. Gilbert, G. Kombila, M. Ramonda, Y. Rouillard, A. Baranov, J.-B. Rodriguez, E. Tournié, L. Cerutti
ICMBE 2024, September 8-13 2024, Matsue, Japan

New InGaAsSb Based T2SL for MWIR Detection

T. Sabardeil, E. Izquierdo, G. Grégoire, B. Simozrag, V. Trinité, C. Cervera, J.-B. Rodriguez, E. Tournié, A. Evirgen
ICMBE 2024, September 8-13 2024, Matsue, Japan

Exhaled breath analysis by quartz enhanced photoacoustic spectroscopy: A clinical study, T. Seoudi, D. Ayache, O. Benabbad, F. Pages, J. Charenso, N. Molinari, M. Bahriz, F. Gouzi A. Vicet, FLAIR 2024 Sept 2024 Assisi

Highly sensitive silicon based micro-electromechanical resonator for photoacoustic gas sensing, J. Charenso, F. Pagès, T. Seoudi, D. Ayache, J. Goutorbe, L. Laporte, E. Rosenkrantz, A. Vicet and M. Bahriz, MNE 2024, 16-20 September 2024 Montpellier

Design strategies for very low bandgap InAs/InAsSb thermophotovoltaic cells

B. Roux, J.P. Perez, F. Martinez, S. Parola, L. Del Campo, L. Cosson, O. Rozenbaum, P. Christol, R. Vaillon
15th World Conf. on Thermophotovoltaic Generation of Electricity (TPV-15), Madrid, Oct. 2024.

Redefining the Band Edge Profiles of InAs/InAsSb Type-II Superlattices Through Atomically-Resolved Measurements

M. Tornay, K. Pantzas, G. Patriarcho, N. Péré-Laperne, J. P. Perez, P. Christol
QSIP 2024 conference, Santa-Barbara (USA), August 2024

Temperature study of electro-optical performance of Ga-free T2SL X_{Bn} midwave infrared photodetectors and focal plane array

A. Ramiandrasoa, M. Tornay, B. Simozrag, M. Garcia, J. L. Reverchon, J. P. Perez, P. Christol, N. Péré-Laperne, I. Ribet

QSIP 2024 conference, Santa-Barbara (USA), august 2024

Structural characterization of InAs/InAsSb type-II superlattice to determine real band edge potential profile.

M. Tornay, J. P. Perez, K. Pantzas, G. Patriarche, N. Péré-Laperne, P. Christol
EXMATEC/WOCSDICE 2024 Conference, Heraklion (Grèce), Mai 2024

C-AFF : Communications par affiche dans un congrès international ou national / Poster at international or national conferences.

Ga-Free T2SL Infrared Detector Under Proton Irradiations: Identification of Dark Current Regimes

H. Mezouar*, A. Michez, C. Bataillon, M. Tornay, P. Christol
RADECS 2024, Canary island, september 2024

Multisubband Plasmons in a single InAs/GaSb quantum well studied by ellipsometry and attenuated total reflectance spectroscopy

S. Hajji, J. Pasek, L. Cerutti, F. Gonzalez-Posada, T. Taliercio
OPTIQUE Normandie, Rouen, France, 01-05 July 2024

Direct Growth of GaSb on Ge, Ge-on-Si and SiGe-on-Si Platforms for Integrated Mid Infra-Red Photonics

M. Silvestre, J.-B. Rodriguez, S. Calcaterra, G. Isella, E. Tournié
ICMBE 2024, September 8-13 2024, Matsue, Japan

Books