

# nanoMIR

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

## Publication list (2020)

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

Mid-IR lasers sources monolithically integrated on Si substrates, E. Tournié, M. Rio Calvo, L. Monge-Bartolome, Z. Loghmari, D. A. Diaz-Thomas, G. Boissier, A. Meguekam, M. Bahriz, R. Teissier, A. N. Baranov, L. Cerutti, and J.-B. Rodriguez, SPIE Photonex & Vacuum Expo Digital Forum, Emerging Applications in Silicon Photonics, 6 – 8 October 2020, paper 11577-6.

InAs/AlSb quantum-cascade lasers monolithically integrated on silicon, N. Baranov, Z. Loghmari, M. Bahriz, A. Meguekam, L. Cerutti, J.-B. Rodriguez, M. Rio Calvo, G. Boissier, E. Tournié, R. Teissier. SPIE Photonics West, Opto-2020, “Novel In-plane Semiconductor Lasers XIX”, 3 – 6 February 2020, San Francisco (USA), paper 11301-55.

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

1. Highly doped semiconductor metamaterials for mid-infrared multispectral perfect absorption and thermal emission, Franziska B. Barho, Fernando Gonzalez-Posada Florès, Laurent Cerutti, Thierry Taliercio, Advanced Optical Materials, 1901502, 2020. <https://doi.org/10.1002/adom.201901502>
2. Microfluidic surface-enhanced infrared spectroscopy with semiconductor plasmonics for the fingerprint region, Mario Bomers, Benoît Charlot, Franziska Barho, Antoine Chanuel, Aude Mezy, Laurent Cerutti, Fernando Gonzalez-Posada and Thierry Taliercio, Reaction Chemistry & Engineering 5, 124-135, 2020. <https://doi.org/10.1039/C9RE00350A>.
3. Epsilon near-zero all-optical terahertz modulator, E. Alvear-Cabezon, T. Taliercio, S. Blin, R. Smaali, F. Gonzalez-Posada, A. Baranov, R. Teissier, and E. Centeno, Appl. Phys. Lett. **117**, 111101, 2020. <https://doi.org/10.1063/5.0012206>
4. N. MAURIN, R. ROUSSEAU, W. TRZPIL, G. AOUST, M. HAYOT, J. MERCIER, M. BAHRIZ, F. GOUZI and A. VICET First clinical evaluation of a quartz enhanced photo-acoustic CO sensor for human breath analysis. Sensors and actuators (319) 128247 (2020). <https://doi.org/10.1016/j.snb.2020.128247>
5. Optical properties and dynamics of excitons in Ga(Sb,Bi)/GaSb quantum wells: evidence for a regular alloy behavior, E. Rogowicz, W. M. Linhart, M. Syperek, J. Kopaczek, O. Delorme, L. Cerutti, E. Luna, E. Tournié, J.-B. Rodriguez, R. Kudrawiec, Semicond. Sci. Technol. **35**, 025024 (2020). <https://doi.org/10.1088/1361-6641/ab6017>.
6. Molecular-beam epitaxy of GaSb on 6°-offcut (001) Si using a GaAs nucleation layer, M. Rio Calvo, J.-B. Rodriguez, L. Cerutti, M. Ramonda, G. Patriarche, and E. Tournié, J. Cryst. Growth **529**, 125299 (2020). <https://doi.org/10.1016/j.jcrysgro.2019.125299>.

7. Mid-infrared laser diodes epitaxially grown on on-axis (001) silicon, M. Rio Calvo, L. Monge Bartolomé, M. Bahriz, G. Boissier, L. Cerutti, J.-B. Rodriguez, and E. Tournié, *Optica* **7**(4), 263 – 266 (2020). <https://doi.org/10.1364/OPTICA.388383>.
8. Morphological control of InN nanorods by SAG-HVPE, Mohammed Zeghouane, Geoffrey Avit, Yamina André, Thierry Taliercio, Pierre Ferret, Evelyne Gil, Dominique Castellucci, Pierre Disseix, Joel Leymarie, Eric Tournié, Agnès Trassoudaine, *Cryst. Growth & Design* **20**, 2232 – 2239 (2020), <https://doi.org/10.1021/acs.cgd.9b01346>.
9. InAs-based quantum cascade lasers grown on on-axis (001) silicon substrate (Editor's pick). Z. Loghmari, J.B. Rodriguez, A.N. Baranov, M. Rio-Calvo, L. Cerutti, A. Meguekam, M. Bahriz, R. Teissier, E. Tournié. *APL Phot.* **5**, 041302 (2020). <https://doi.org/10.1063/5.0002376>.
10. Etched-cavity GaSb laser diodes on a MOVPE GaSb-on-Si template, L. Monge-Bartolomé, T. Cerba, D.A. Diaz-Thomas, M. Bahriz, M. Rio Calvo, G. Boissier, T. Baron, J.-B. Rodriguez, L. Cerutti, E. Tournié, *Optics Express* **28** (14) 20785 (2020). <https://doi.org/https://doi.org/10.1364/OE.397164>. **Editors' pick.**
11. Zinc-Blende group III-V/group IV epitaxy: importance of the miscut, C. Cornet, S. Charbonnier, I. Lucci, L. Chen, A. Létoublon, A. Alvarez, K. Tavernier, T. Rohel, R. Bernard, J.-B. Rodriguez, L. Cerutti, E. Tournié, Y. Léger, M. Bahri, G. Patriarche, L. Largeau, A. Ponchet, P. Turban and N. Bertru, *Phys. Rev. Mat.* **4**, 053401 (2020). <https://doi.org/10.1103/PhysRevMaterials.4.053401>.
12. 3.3  $\mu\text{m}$  interband-cascade resonant-cavity light emitting diode with narrow spectral emission linewidth, D.A Díaz-Thomas, O. Stepanenko, M. Bahriz, S. Calvez, T. Batte, C. Paranthoen, G. Patriarche, E. Tournié, A. N. Baranov, G. Almuneau, C. Levallois and L. Cerutti, *Semicond. Sci. & Technol.* **35**, 125029 (2020). <https://doi.org/10.1088/1361-6641/abbebc>
13. Interband mid-infrared lasers, L. Cerutti, A. Vicet and E. Tournié, In: *Mid-Infrared optoelectronics: Materials, Devices, Applications*, edited by E. Tournié and L. Cerutti, (Elsevier, Woodhead Publishing, Duxford, UK, 2020), pp. 91 - 130. <https://doi.org/10.1016/B978-0-08-102709-7.00003-6>
14. Structural, Optical and Electrical Characterizations of Midwave Infrared Ga-Free Type-II InAs/InAsSb Superlattice Barrier Photodetector, U. Zavala-Moran, M. Bouschet, J.P. Perez, R. Alchaar, S. Bernhardt, I. Ribet-Mohamed, F. De Anda-Salazar, P. Christol, *Photonics* **7**, 76 (2020). <https://doi.org/10.5220/0009004900450051>.
15. Performance analysis of an InAs/GaSb superlattice barrier photodetector covering the full LWIR spectral domain, R Alchaar, JB Rodriguez, L Höglund, S Naureen, E Costard, P Christol, *Opto-Electronics Review*, **28**, 164-170 (2020). <https://doi.org/10.24425/opelre.2020.134425>
16. Study of resonant transport in InAs-based quantum hot electron transistors, H. Nguyen Van, A. Baranov, R. Teissier, M. Zakoune, *AIP Advances*, 2020, 10 (7), pp.075027. <https://doi.org/10.1063/5.0011780>.
17. Sub-ppb detection of benzene using cantilever-enhanced photoacoustic spectroscopy with a long-wavelength infrared quantum cascade laser, Juho Karhu, Hadrien Philip, Alexei Baranov, Roland Teissier, Tuomas Hieta, *Optics Letters*, 2020, 45 (21), pp.5962. <https://doi.org/10.1364/OL.405402>.
18. State-of-the-Art Laser Gas Sensing Technologies, Yufei Ma, Aurore Vicet, Karol Krzempek, *Applied Sciences*, 2020, 10 (2), pp.433. <https://doi.org/10.3390/app10020433>.

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

*Antimonide-based Superlattice Infrared Barrier Photodetectors (Oral)*, U. Zavala-Moran, R. Alchaar, J.P. Perez, J.B. Rodriguez, M. Bouschet, V.H. Compean, F. de Anda, P. Christol  
PHOTOPTICS International Conference, La Valette, Malta, February 2020  
Proceedings of the 8th International Conference on Photonics, Optics and Laser Technology (PHOTOPTICS 2020), pages 45–51; doi 10.5220/0009004900450051.

*Infrared unipolar X<sub>Bn</sub> and X<sub>Bp</sub> superlattice photodetectors (Oral)*. U. Zavala-Moran, R. Alchaar, J.P. Perez, J.B. Rodriguez, M. Bouschet, V. H. Compean, F. de Anda, P. Christol  
Proceedings of the 9<sup>th</sup> International Symposium on Optronics in Defence & Security (OPTRO 2020), Paris, February 2020

*InAs/InAsSb T2SL band parameters determination via magnetoabsorption and k.p modeling (Oral)*. F. Carosella, A. Philippe, G. Krizman, L.A. De Vaulchier, J.B. Rodriguez, J.P. Perez, P. Christol, G. Bastard, Y. Guldner and R. Ferreira  
SPIE Photonics West 2020, San Francisco February 2020  
Proceedings of the SPIE "Physics and Simulation of Optoelectronic Devices" XXVIII **11274**, 1127408 (2020)

*VLWIR InAs/GaSb superlattice infrared focal plane arrays for space applications (Oral)*  
L. Höglund\*, S. Naureen, R. Ivanov, M. Delmas, , S. Almqvist, S. Becanovic, D. Rihtnesberg, W. Diel, J.B. Rodriguez, R. Alchaar, P. Christol, A. Rouvié, J. Brocal, O. Saint-Pé, E. Costard  
Digital Forum, DCS SPIE Conference, Anaheim, California, April 2020

## Books

Y. Ma, A. Vicet and K. Krezmpek editors, State of the art Laser Gas sensing Technologies, Applied Sciences ISSN 2076-3417, ISBN 978-3-03928-399-6 , MDPI, 2020

"Mid-Infrared optoelectronics: Materials, Devices, Applications." Edited by E. Tournié and L. Cerutti. (Elsevier, Woodhead Publishing, Duxford, UK, 2020). ISBN: 978-0-08-102709-7 and 978-0-08-102738-7.  
<https://doi.org/10.1016/C2017-0-03995-2>

Interband mid-infrared lasers, L. Cerutti, A. Vicet and E. Tournié, In: Mid-Infrared optoelectronics: Materials, Devices, Applications, edited by E. Tournié and L. Cerutti. (Elsevier, Woodhead Publishing, Duxford, UK, 2020), pp. 91 - 130.  
<https://doi.org/10.1016/B978-0-08-102709-7.00003-6>