

nanoMIR

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

Publication list (2016)

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

All semiconductor plasmonics for bio-sensing

M.J. Milla, F. Barho, M. Bomers, F. González-Posada, L. Cerutti, E. Tournié and T. Taliercio
International Conference on Energy, Materials & Photonics, Troyes, France, 10-13 July 2016

Franziska B. Barho, Maria-Jose Milla Rodrigo, Fernando Gonzalez-Posada Florès, Thierry Taliercio, Optimization of plasmonic grating resonators based on highly-doped semiconductors for sensing applications using 2D finite-difference time-domain simulations, Photonic West OPTO (SPIE), San Francisco, CA , United States, 13 - 18 February 2016

María-José Milla Rodrigo, Franziska Barho, Fernando González-Posada Florès, Laurent Cerutti, Jean-Baptiste Rodriguez, Eric Tournié, Thierry Taliercio, Tuning of the localized surface plasmon wavelength in highly doped InAsSb/GaSb nanostructures, Photonic West OPTO (SPIE), San Francisco, CA , United States, 13 - 18 February 2016

P. Christol, Mid-infrared detectors for high performance imaging, Summer School "NanoTech Tera-MIR", Porquerolles, August 2016

A.N. Baranov, Antimonide lasers: from mid-IR to THz, International Winter School on Semiconductor Physics (St. Petersburg, Russia, 2016).

A.N. Baranov, New life of InAs-based quantum cascade lasers, MIOMD-XIII (Beijing, China, 2016).

R. Teissier, A. N. Baranov, et M. Bahriz, « Continuous wave operation of far infrared InAs/AlSb Quantum Cascade Lasers at room temperature », Conférence invitée présentée à IQCLSW 2016, Cambridge, Royaume Uni, 06-sept-2016.

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

Rafik Smaali, Fatima Omeis, Antoine Moreau, Thierry Taliercio and Emmanuel Centeno
A universal design to realize a tunable perfect absorber from infrared to microwaves
Scientific Reports 6, 32589 (2016)

Rafik Smaali, Thierry Taliercio and Emmanuel Centeno
Photo-generated metasurfaces for resonant and high modulation of terahertz signals
Optics Letters 41 (16), 3900 (2016)

M J Milla, F Barho, F González-Posada, L Cerutti, M Bomers, J-B Rodriguez, E Tournié and T Taliercio, Localized surface plasmon resonance frequency tuning in highly doped InAsSb/GaSb one-dimensional nanostructures, *Nanotechnology* 27, 425201 (2016).

Hongliang Ma, Qiang Liu, Zhensong Cao, Weidong Chen, Aurore Vicet, Yinbo Huang, Wenyue Zhu, Xiaoming Gao, Ruizhong Rao. Temperature dependences for N₂- and air-broadened Lorentz half-width coefficients of methane transitions around 3.38 μm . *Journal of Quantitative Spectroscopy & Radiative Transfer* 171, 50–56 (2016).

J.-B. Rodriguez, K. Madiomanana, L. Cerutti, A. Castellano, and E. Tournié. X-ray diffraction study of GaSb grown by molecular beam epitaxy on silicon substrates, *J. Cryst. Growth* 439, 33 (2016).

M. Muneeb, A. Vasiliev, A. Ruocco, A. Malik, H. Chen, M. Nedeljkovic, J.S. Penades, L. Cerutti, J.B. Rodriguez, G. Z. Mashanovich, M.K. Smit, E. Tournié and G. Roelkens, III-V-on-silicon integrated microspectrometer for the 3 μm wavelength range, *Opt. Express* 24, 9465 (2016).

E. Tournié, J.B. Rodriguez, L. Cerutti, H.Y. Liu, J. Wu, and S.M. Chen, Metamorphic III-V semiconductor lasers grown on silicon, *MRS Bulletin* 41 (3), 218 (2016): invited review paper.

M. Delmas, J.B. Rodriguez, R. Rossignol, A.S. Licht, E. Giard, I. Ribet-Mohamed, P. Christol, Identification of a limiting mechanism in GaSb-rich superlattice midwave infrared detector, *J. Appl. Phys.* 119, 174503 (2016)

F. Barho, F. Gonzalez-Posada, M.J. Milla Rodrigo, M. Bomers, L. Cerutti, and T. Taliercio. All-semiconductor plasmonic gratings for biosensing applications in the mid-infrared spectral range" *Optics Express*, Vol. 24(14), p. 16175-16190, 2016.

P. Cermak, B. Vhomet, L. Ferrières, S. Vasilchenko, D. Mondelain, S. Kassi, A. Campargue, S. Denet, V. Lecoq, M. Myara, L. Cerutti, and A. Garnache "CRDS with a VECSEL for broad-band high sensitivity spectroscopy in the 2.3 μm window" *Review of Scientific Instruments*, Vol. 87 (8), 083109, 2016.

A. N. Baranov, M. Bahriz and R. Teissier, "Room temperature continuous wave operation of InAs-based quantum cascade lasers at 15 μm ," *Optics Express* 24, 18799 (2016).

M. Vallet, Y. Claveau, B. Warot-Fonrose, C. Gatel, J. Nicolai, N. Combe, C. Magen, R. Teissier, A. N. Baranov and A. Ponchet, "Highly strained AlAs-type interfaces in InAs/AlSb heterostructures," *Applied Physics Letters* 108, 211908 (2016).

Santybayeva, Z.; Meghit, A.; Desgarceaux, R.; Teissier, R.; Pichot, F.; de Marin, C.; Charlot, B.; Pedaci, F., « Fabrication of quartz microcylinders by laser interference lithography for angular optical tweezers », *J. Micro-Nanolithogr. MEMS MOEMS*, vol. 15, n° 3, p. 034507, juill. 2016.

BRE : Brevets / Patents

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Dispositif et procédé de détection de présence de molécules déterminées, biocapteur

Thierry Taliercio, Laurent Cerutti

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

Antoine Monmayrant; Brice Adelin; Pascal Dubreuil; Aurélie Lecestre; Yves Rouillard; G Boissier; M Bahriz; Aurore Vicet; Olivier Gauthier-Lafaye
All Photonic Crystal electrically pumped CW mid-IR lasers
CLEO 2016 – 5-10 juin 2016 – San Jose

B. Adelin, A. Monmayrant, A. Lecestre, P. Dubreuil, Y. Rouillard, M. Bahriz, A. Vicet and O. Gauthier-Lafaye, 2.4 μm emitting all photonic crystal electrically pumped GaSb laser diodes for gas sensing applications (invite)
ICTON 10-14 July 2016, Trento, ITALY

Aurore Vicet, Brice Adelin, Yves Rouillard, Michael Bahriz, Antoine Monmayrant, G. Boissier, P. Dubreuil, A. Lecestre and Olivier Gauthier-Lafaye. Antimonide photonic crystals DFB lasers for sensing applications, FLAIR 2016, 12-16 September, Aix Les Bains FRANCE

J. Nghiem, E. Giard, M. Delmas, R. Rossignol, J.B. Rodriguez, P. Christol, M. Caes, M. Tauvy, H. Martijn, I. Ribet-Mohamed " *Radiometric Characterization of Type-II InAs/GaSb Superlattice Midwave IR Photodetector*" Proc. International Conference on Space Optics (ICSO 2016), 10562, 105623Y, Biarritz, October 2016

J.-B. Rodriguez, L. Cerutti, G. Patriarche, L. Largeau, K. Madiomanana, and E. Tournié, GaSb grown by molecular beam epitaxy on silicon substrates, 19th International Conference on Molecular-Beam Epitaxy (MBE2016), 4 – 9 September 2016, Montpellier (France): oral communication, J. Cryst. Growth, to be published.

O. Delorme, L. Cerutti, E. Tournié and J.-B. Rodriguez, Molecular Beam Epitaxy and characterization of high Bi content GaSbBi alloys, 19th International Conference on Molecular-Beam Epitaxy (MBE2016), 4 – 9 September 2016, Montpellier (France): oral communication, J. Cryst. Growth, to be published.

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S. Roux, L. Cerutti, E. Tournié, M. Garcia, B. Gérard, G. Patriarche and A. Grisard, First orientation-patterned GaSb ridge waveguides fabrication and preliminary characterization for frequency conversion in the mid-infrared, SPIE Photonics Europe, Symposium Non Linear Optics and its Applications, 4 – 7 April 2016, Brussels (Belgium), poster, Proc. SPIE 9894, Nonlinear Optics and its Applications IV, 989415 (April 27, 2016); doi:10.1117/12.2225441

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.

M. Delmas, J. B. Rodriguez, P. Christol, D. Huffaker "*Infrared photodetectors based on type-II InAs/GaSb superlattice material system*" UK Semiconductors 2016 conference, Sheffield, July 2016

Maria Jose Milla Rodrigo, Thierry Taliercio, Laurent Cerutti, Fernando Gonzalez-Posada Florès, Franziska Barho, Jean-Baptiste Rodriguez, Eric Tournié, Jean-Jacques Greffet, Brewster mode: optical monitoring of the semiconductor doping level, Photonic West OPTO (SPIE), San Francisco, CA , United States, 13 - 18 February 2016

A. Castellano, L. Cerutti, G. Narcy, J.B. Rodriguez, A. Garreau, F. Lelarge, and E. Tournié, GaSb lasers grown on Silicon substrate emitting in the telecom wavelength range, 19th International Conference on Molecular-Beam Epitaxy (MBE2016), 4 – 9 September 2016, Montpellier (France).

L. Cerutti, S. Roux, G. Patriarche, M. Garcia, B. Gérard, A. Grisard, and E. Tournié, MBE growth of periodically-oriented GaSb on GaAs templates for frequency conversion in the mid-infrared wavelength range, 19th International Conference on Molecular-Beam Epitaxy (MBE2016), 4 – 9 September 2016, Montpellier (France).

M. Niehle, J.B. Rodriguez, L. Cerutti, K. Madiomanana, E. Tournié, A. Trampert, On the origin of threading dislocations during III-Sb epitaxy on Si(001), 19th International Conference on Molecular-Beam Epitaxy (MBE2016), 4 – 9 September 2016, Montpellier (France).

A. Castellano, L. Cerutti, G. Narcy, J.B. Rodriguez, A. Garreau, F. Lelarge, and E. Tournié, GaSb lasers grown on Silicon substrate emitting in the telecom wavelength range, 43rd Int. Symp. on Compound Semiconductors (ISCS 2016), CSWeek 2016, 26 – 30 June 2016, Toyama (Japan).

A. Vasiliev, M. Muneeb, A. Ruocco, A. Malik , H. Chen , M. Nedeljkovic, J.S. Penades, L. Cerutti, J.B. Rodriguez, G. Z. Mashanovich , M.K. Smit , E. Tournié and G. Roelkens, 3.8 μm Heterogeneously Integrated III-V on Silicon Micro-Spectrometer, 18th European Conference on Integrated Optics, 18 – 20 May 2016, Warsaw (Poland).

A. Castellano, L. Cerutti, G. Narcy, J. B. Rodriguez, F. Lelarge and E. Tournié " GaSb lasers grown on Silicon substrate for telecom application" Oral: 19th Conference on Molecular Beam epitaxy (MBE2014), Paper Th-C10, Montpellier, France, 4-9 September 2016

M. Nielhe, J.B. Rodriguez, L. Cerutti, K. Madiomanana, E. Tournié and A. Trampert "On the origin of threading dislocations during III-Sb epitaxy on Si(001)" Oral: 19th Conference on Molecular Beam epitaxy (MBE2014), paper Fr-C2, Montpellier, France, 4-9 September 2016

M.Milla-Rodrigo, F. Barho, F. Gonzalez-Posada, L. Cerutti, E. Tournié and T. Taliercio "Highly doped InAsSb nanoribbon on GaSb for plasmonics applications" Oral: 13th Infrared Optoelectronics: Materials and devices (MIOMD-XI), Beijing, China, 18-22 September 2016

O. Delorme, L. Cerutti, E. Tournié and J.B. Rodriguez "Molecular Beam Epitaxy and characterization of high Bi content GaSbBi alloys " Oral: 13th Infrared Optoelectronics: Materials and devices (MIOMD-XI), Beijing, China, 18-22 September 2016

F. Bahro, F. Gonzalez-Posada, M.J. Milla Rodrigo, M. Bomers, L. Cerutti, E. Tournié, and T. Taliercio "Highly doped InAsSb plasmonic arrays for mid-infrared biosensing" Oral: IEEE Nanotechnology Materials and Devices Conferences (NDMC) 2016, Paper, M2-4 T7 Toulouse, France, 9-12 October 2016.

F. Omeis, F. Gonzalez-Posada, L. Cerutti, R. Smaali, E. Centeno, T. Taliercio "THz absorbers with Sb-III highly doped semiconductors based in plasmonic nano-resonators" Oral: IEEE Nanotechnology Materials and Devices Conferences (NDMC) 2016, Paper M2-4 T7, Toulouse, France, 9-12 October 2016.

[M.Milla-Rodrigo, F. Barho, F. Gonzalez-Posada, L. Cerutti, E. Tournié and T. Taliercio "Surface-enhanced infrared absorption using highly doped InAsSb/GaSb Nanostructures" Oral: 2016 MRS (Material Research Society) Fall Meeting , Paper NM1.7.02, Boston, USA, November 27 – December 02 2016

R. Teissier, M. Bahriz, et A. N. Baranov, « Far infrared InAs/AlSb Quantum Cascade Lasers », présenté à 25th anniversary of Inorganic Semiconductor Group, University of Sheffield, Sheffield, Royaume Uni, 19-mars-2016.

Aurore Vicet, Brice Adelin, Yves Rouillard, Michael Bahriz, Antoine Monmayrant, G. Boissier P. Dubreuil, A. Lecestre and Olivier Gauthier-Lafaye. Antimonide photonic crystals DFB lasers for sensing applications, FLAIR 2016, 12-16 september, Aix Les Bains France

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

G. Boissier, L. Cerutti, J.B. Rodriguez, E. Tournié, Fine tuning of n- and p-type doping of GaSb epitaxial layers, 19th International Conference on Molecular-Beam Epitaxy (MBE2016), 4 – 9 September 2016, Montpellier (France).

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M. Bomers, A Mezy, L. Cerutti, F. González-Posada, F. Barho, M.J.Milla, E. Tournié, and T. Taliercio, Surface modification of III-V-semiconductors devices (GaSb, InAsSb:Si) by phosphonates, 19th International Conference on Molecular-Beam Epitaxy (MBE2016), 4 – 9 September 2016, Montpellier (France).

S. Soresi, G. Hamon, A. Larrue, B. Simozrag, E. Tournié, J. Decobert, Cellule solaire InP réalisée par MOVPE, 14th Journées Nationales Micro-Nano-Opto-électronique (JNMO), 29 May – 1 Jun 2016, Les Issambres (F).

J. Tournet, Y. Rouillard, E. Tournié, Growth and characterization of AlInAsSb layers lattice-matched to GaSb, 14th Journées Nationales Micro-Nano-Opto-électronique (JNMO), 29 May – 1 Jun 2016, Les Issambres (F).

M. Delmas, J. B. Rodriguez, P. Christol, D. Huffaker, Infrared photodetectors based on type-II InAs/GaSb superlattice material system, UK Semiconductors 2016 conference, Sheffield, July 2016