

Dr. Javier Martín-Sánchez

Born in Badajoz (Spain) on the 21st April 1977.

Speaks and writes Spanish (native), English (fluent), Portuguese (fluent) and German (basic).

Contact information

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<https://scholar.google.es/citations?user=9MID1GcAAAAJ&hl=en>

RESEARCH INTERESTS

Nanophotonics. Photonics. Quantum Optics. Elastic strain engineering of the physical properties of quantum confined semiconductor nanostructures including quantum dots and 2D materials. FEM simulation, design and fabrication of novel semiconductor-piezoelectric hybrid devices for full in-plane stress tensor control on nanomaterials. Nanofabrication by epitaxial growth and physical vapor deposition techniques of III-V and IV semiconductor nanostructures. Preparation and manipulation of heterostructures based on 2D materials.

ACADEMIC DEGREES

05/2009 *Doctor's Degree in Physics (CUM LAUDE), Autonomous University of Madrid UAM (Spain).*

06/2006 *Postgraduate Teacher Certification Program, Complutense University of Madrid UCM (Spain).*

03/2001 *Degree in Physics, University of Extremadura, Badajoz (Spain).*

SCIENTIFIC EXPERIENCE

09/2017 – present: *Senior Researcher (as independent researcher with a Clarín Marie Curie-COFUND grant), Quantum Nanooptics group (head: Dr. Pablo Alonso-González) - Department of Physics – University of Oviedo, Oviedo (Spain). “Quantum Optics and near field studies in strained 2D materials”.*

03/2016 – 08/2017: *Postdoctoral Researcher (as independent researcher), Nanophotonics group (head: Prof. Armando Rastelli and Assist. Prof. Rinaldo Trotta) - Institute of Semiconductor and Solid State Physics – Johannes Kepler University (JKU), Linz (Austria). “Optical properties of strained semiconductor III-V quantum dots and 2D transition-metal-dichalcogenide semiconductor materials”.*

03/2013 – 03/2016: *Postdoctoral Researcher, Nanoscale Semiconductors & Nanophotonics group (head: Prof. Armando Rastelli) - Institute of Semiconductor and Solid State Physics – Johannes Kepler University (JKU), Linz (Austria). “Strain-tunable optical properties of III-V semiconductor nanostructures embedded in nanomembranes. Design, fabrication and optical characterization of hybrid semiconductor-piezoelectric devices for full control of in-plane stress fields”.*

01/2012 – 03/2013: *Postdoctoral Researcher, LPG group (head: Prof. Rosalía Serna) - Institute of Optics “Daza de Valdés” - Spanish National Research Council (CSIC), Madrid (Spain). “Undoped and Rare-earth-doped Si/Ge quantum dots embedded in dielectric matrices for photonic applications”.*

01/2010 – 12/2011: Postdoctoral Researcher, Physics of nanocrystalline materials group (head: Prof. Maria de Jesus Matos Gomes) - Physics Centre - University of Minho, Braga (Portugal). “Si/Ge quantum dots and nanostructures in dielectric matrices for optoelectronic and non-volatile memory applications”.

06/2004 – 05/2009: Doctorate project in Semiconductor Physics, MBE group (head: Prof. Fernando Briones) - Microelectronic Institute of Madrid (IMM) - Spanish National Research Council (CSIC), Madrid (Spain). “Molecular beam epitaxy selective growth of high optical quality InAs quantum dots on patterned GaAs (001) substrates by atomic force microscopy nanolithography”.

06/2003 – 06/2004: Graduate student in Semiconductor Physics, MBE group (head: Prof. Fernando Briones) - Microelectronic Institute of Madrid (IMM) - Spanish National Research Council (CSIC), Madrid (Spain).

02/2002 – 06/2003: IT programmer, Department of software development – Spanish National Company for Uranium (ENUSA) and INSA (IBM Global Systems), Madrid (Spain). Main task was the analysis and development of banking software.

TEACHING – Students supervision (Bachelor, Mater and PhD)

- **Summer semester 2018 (University of Oviedo): Lecturer in “Experimental Physics” (Laboratorio de Física – 1º Geología) (24 hours).**
- **Summer semester 2018 (University of Oviedo): Lecturer in “Nanoscience and Nanotechnology” (5 hours).**
- **Summer semester 2018 (University of Oviedo): Lecturer in “Quantum Physics” (9 hours).**
- **Summer semester 2017 (Johannes Kepler University Linz, Austria): Lecturer in “Semiconductor Physics” (20 hours).**
- **(Co-)Supervision: 3 PhD students (1PhD in realization), 2 PhD students short stays, 3 Master students, 6 Bachelor students (4 in realization) and supervision of research activities in the lab of 5 students.**

GRANTS (competitive regime)

01/2018 – 01/2020: Clarín-Marie Curie-COFUND (Postdoctoral Incoming grant – type B for experienced senior researchers) (Spain).

01/2012 – 03/2013: JAE-DOC Postdoctoral fellowship (Spain).

01/2010 – 12/2011: FCT Postdoctoral fellowship (Portugal).

06/2004 – 05/2008: I3P national Predoctoral fellowship (Spain).

EXPERIENCE AND ACHIEVEMENTS

Processing, design and fabrication

* **Devices performance FEM simulations and realization of a novel strain-actuator capable of full control of the in-plane stress** (three components of the stress tensor) in thin films

* **Design and fabrication of new hybrid devices integrated on micro-machined piezoelectric substrates for unprecedented control on the optical properties of 2D materials and quantum dots:**

compact, bright, electrically-pumped, energy-tunable source of single photons.

* ***Design and realization of a setup for dry transfer of 2D materials for heterostructures fabrication.***

* ***Processing and encapsulation of 2D materials in dielectric-oxide nanomembranes.***

* ***Nanomembrane-based devices processing in cleanroom ambient: wet chemical etching; reactive ion etching; e-beam and optical lithography; chip bonding technologies; wire bonding.***

* ***Nanomembranes transferred on different target substrates by flip-chip bonding technique: epoxy-based soft bonding, SnAu soldering, Au thermocompression bonding.***

* ***Atomic Layer Deposition (ALD) of oxide thin films.***

* ***Molecular beam epitaxy (MBE) growth of III-V compound semiconductors including self-assembled site-controlled quantum dots on patterned substrates. Atomic layer MBE deposition (ALMBE).***

* ***Nanolithography by atomic force microscopy (AFM) local oxidation.***

* ***Ge/SiGe semiconductor nanocrystals fabrication embedded in high-k dielectric materials by pulsed laser deposition (PLD) and RF-Sputtering techniques.***

Characterization:

* ***Optical studies of quantum dots and 2D semiconductor nanostructures by micro-photoluminescence: time resolved, time correlation, polarization resolved, PL excitation (PLE). Low-temperature PL.***

* ***Optical studies of 2D materials by Scattering-type scanning near-field optical microscopy (s-SNOM).***

* ***Ellipsometry measurement and modelling of multi-layer nanostructures embedded in high-k oxide matrices.***

* ***Atomic Force Microscopy: nanolithography and morphological characterization.***

* ***Scanning electron microscopy (SEM) and electron-beam lithography.***

* ***Software development for data evaluation and experimental systems control.***

* ***Cleanroom environments.***

Responsible of cleanroom activities

* ***Main responsible for Atomic Layer Deposition system.***

* ***Main responsible for flip-chip bonder system.***

* ***Main responsible for cleanroom processes development/engineering.***

Others

* ***Expert evaluator as a member of the Spanish National Research Agency for refereeing national projects/calls.***

* ***Reviewer for peer-reviewed international journals: 2DMaterials, Nanoscale, Nanotechnology, Applied Physics Letters, Journal of Applied Physics Letters, Materials, ACS Growth&Design, Journal of Physics D: Applied Physics, Applied Surface Science, Journal of Nanoparticle Research, Electronic Materials, Photonics and Nanostructures – Fundamentals and Applications ...***

* ***Co-organizer of 1 international conference.***

* *More than 50 presentations in international conferences*

* *1 invited chapter book (Springer).*

* *1 invited review paper.*

RECENT INVITED TALKS

1. **J. Martín-Sánchez**, J. Taboada-Gutiérrez, G. Piredda, J. Edlinger, R. Trotta, A. Rastelli and P. Alonso-González “Near field studies on strained 2D anisotropic materials” Sapienza University of Rome (2018), Rome (Italy).
2. **J. Martín-Sánchez**, A. Mariscal, M. DaLuca, A. Tarazaga Martín-Luengo, A. Bonanni, I. Zardo, R. Serna, R. Trotta and A. Rastelli “Dielectric Al₂O₃ encapsulation of WSe₂ monolayers by pulsed laser deposition” EMRS Spring Meeting (2017), Strasbourg (France).
3. **J. Martín-Sánchez**, A. Mariscal, G. Piredda, S. Stroj, J. Edlinger, R. Trotta and A. Rastelli “Micro-machined piezoelectric actuators for elastis strain engineering: application to 2D materials” Johannes Kepler University, Nanoforum (2016), Linz (Austria).
4. **J. Martín-Sánchez**, A. Mariscal, G. Piredda, S. Stroj, J. Edlinger, R. Trotta and A. Rastelli “Strain-tunable optical properties of WSe₂ monolayers” University of Basel, (2016), Basel (Switzerland).
5. **J. Martín-Sánchez**, A. Mariscal, G. Piredda, S. Stroj, J. Edlinger, R. Trotta and A. Rastelli “Tunable optical properties of WSe₂ monolayers” TU Vienna, workshop “graphene and beyond” (2016), Vienna (Austria).
6. **J. Martín-Sánchez**, A. Mariscal, G. Piredda, S. Stroj, J. Edlinger, R. Trotta and A. Rastelli “Encapsulation effects on the optical properties of WSe₂ monolayers” University of Extremadura, (2016), Badajoz (Spain).
7. **J. Martín-Sánchez**, R. Trotta, G. Piredda, C. Schimpf, G. Trevisi, L. Seravalli, P. Frigeri, S. Stroj, T. Lettner, M. Reindl, J.S. Wildmann, J. Edingler and A. Rastelli “Full Control of In-Plane Stress Tensor in Nanomembranes” Mauterndorf International Winterschool (2016), Mauterndorf (Austria).
8. **J. Martín-Sánchez**, A. Mariscal, R. Serna, G. Piredda, S. Stroj, J. Edingler, R. Trotta and A. Rastelli “Tunable photoluminescence of WSe₂: dielectric encapsulation and strain effects” Institute of Optics-CSIC, (2016), Madrid (Spain).

PARTICIPATION IN CURRENT RESEARCH PROJECTS/GRANTS

* *Project title: “Strain Effects on 2D Materials: Optics at the Nanoscale (Nano2DStrain)”*

Financial entity: FICYT – Marie Curie COFUND PA-18-ACB17-29

Duration: 2018 to: 2020

Grant holder (principal investigator): Javier Martín-Sánchez (University of Oviedo, Spain).

Role: principal investigator. Fabrication of novel micro-machined piezoelectric actuators for full control of the in-plane stress tensor in 2D materials. S-SNOM and quantum optics studies on strained 2D materials.

* *Project title (EU): “Nano-optics on flatland: from quantum nanotechnology to nano-bio-photonics (2DNANOOPTICA)”*

Financial entity: ERC Strating Grant 2016

Duration: 2017 to: 2021

Grant holder (principal investigator): Pablo Alonso-González (University of Oviedo, Spain).

Role: Fabrication and s-SNOM studies of 2D materials heterostructures and nanoantennas.

STAYS AT INTERNATIONALLY RECOGNIZED CENTRES / LARGE INSTALLATIONS

2018 (1 week) Nanogune (San Sebastián, Spain): “Near field studies on 2D materials by NanoFTIR”.

2015 (1 week) ESRF Synchrotron installations (Grenoble, France): “Combined XRD and PL (XEOL) measurements on hybrid semiconductor-piezoelectric devices”.

2013 (1 week) DESY Synchrotron installations (Hamburg, Germany): “XRD measurements on hybrid semiconductor-piezoelectric devices”.

2011 (2 months) Institute of Optics “Daza de Valdés” (Madrid, Spain): “Optical studies of Si/Ge nanoparticles”.

2011 (1 week) Elettra Synchrotron installations (Trieste, Italy): “Grazing Incidence Small Angle X-Ray Scattering (GISAX) and Wide Angle X-Ray Scattering (WAXS) measurements”.

2010 (1 week) Elettra Synchrotron installations (Trieste, Italy): “Grazing Incidence Small Angle X-Ray Scattering (GISAX) and Wide Angle X-Ray Scattering (WAXS) measurements”.

2009 (3 months) Postdoctoral fellow at Paul-Drude-Institut für Festkörperelektronik, Berlin (Germany): “Molecular beam epitaxy ordered GaN nanowires growth on patterned Si (100) substrates”.

2008 (1 week) Optical spectroscopy laboratory for nanoscience materials science Institute LEON, University of Valencia (ICMUV) (Valencia, Spain): “Micro-PL study of single site-controlled InAs quantum dots”.

STUDENTS SUPERVISION

PhD:

2017 – present: PhD student thesis co-supervision (M.Sc. Javier Taboada Gutiérrez), University of Oviedo, Oviedo (Spain): “Optical studies of 2D materials at the nanoscale.”

2014 – 2018: PhD student thesis co-supervision (M.Sc. Antonio Mariscal Jiménez), Institute of Optics, Madrid (Spain): “Nanoláminas de óxidos metálicos para fotónica y optoelectrónica: Funcionalización de óxidos de Eu y monocapas de WSe₂.” (CUM LAUDE, International mention)

2016: PhD student supervision – 3-months-stay (DI Antonio Mariscal), Johannes Kepler University, Linz (Austria): “Rare-earths doped transition metal dichalcogenides 2D semiconductors for telecom.”

2015-2016: PhD student supervision – 6-months-stay (DI Elisa Vitiello), Johannes Kepler University, Linz (Austria): “Optical properties of Ge nanomembranes on piezoelectric actuators.”

2010 – 2013: PhD student thesis co-supervision (DI Eliana Vieira), University of Minho, Braga (Portugal): “SiGe nanocrystals growth embedded in Al₂O₃ and SiO₂ matrices by pulsed laser deposition and RF-Sputtering for non-volatile memory devices.” (CUM LAUDE)

Master:

2017-2018: Master student co-supervision (BS Anita Gruendlinger), Johannes Kepler University, Linz (Austria): “Optoelectronics on strained 2D semiconductor heterostructures.”

2015 – 2016: Master student thesis supervision (BS Florian Aigner), Johannes Kepler University, Linz (Austria): “Optical properties of strained transition metal dichalcogenides 2D semiconductors.”

2014 – 2015: Master student thesis supervision (BS Thomas Lettner), Johannes Kepler University, Linz (Austria): “Piezoelectric actuators for full in-plane stress field control.”

Bachelor:

2018 – present: Bachelor student thesis co-supervision (Mr. Lucas Moreno Sánchez), University of Oviedo, Oviedo (Spain): “Strain-tuning of polaritons propagation in 2D materials.”

2018 – present: Bachelor student thesis co-supervision (Mr. Alba Viejo), University of Oviedo, Oviedo (Spain): “Experimental development of novel graphene-2D heterostructures.”

2018 – present: Bachelor student thesis co-supervision (Mr. Nathaniel Capote Robayna), University of Oviedo, Oviedo (Spain): “Magneto-elastic properties of thin films.”

2017 – present: Bachelor student thesis co-supervision (Ms. Nerea Bello Núñez), University of Oviedo, Oviedo (Spain): “s-SNOM characterization of hBN 2D material.”

2017 – 2018: Bachelor student thesis co-supervision (Mr. Pelayo García Acevedo), University of Oviedo, Oviedo (Spain): “Single photon emission in 2D materials.” (Matrícula de honor)

2014 – 2015: Bachelor student thesis co-supervision (Mr. Christian Schimpf), Johannes Kepler University, Linz (Austria): “Micro-machined piezoelectric actuators for full in-plane stress field control.”

ORGANIZATION OF INTERNATIONAL CONFERENCES

* **Organizer** of the “10th International Conference “Epitaxial Semiconductors on Patterned Substrates And Novel Index Surfaces (EPS-NIS) 2014” Conference. Traunkirchen (Austria).
<http://www.jku.at/conferences/content/e234150>

EVALUATOR/REFEREE ACTIVITIES

* **Expert evaluator as a member of the Spanish National Research Agency** for refereeing national projects/calls.

* **External referee for a scientist position in nanofabrication at IST in Vienna (Austria.)**

* **Reviewer for peer-reviewed international journals:** 2D Materials, Nanoscale, Nanotechnology, Applied Physics Letters, Journal of Applied Physics Letters, Materials, ACS Growth&Design, Journal of Physics D: Applied Physics, Applied Surface Science, Journal of Nanoparticle Research, Electronic Materials, Photonics and Nanostructures – Fundamentals and Applications ...

PARTICIPATION IN PAST RESEARCH PROJECTS (EU)

* **Project title (EU):** “ Entanglement distribution via Semiconductor-Piezoelectric Quantum-Dot Relays (SPQRel) ”

Financial entity: ERC Strating Grant 2015

Duration: 2016 to: 2021

Grant holder: Rinaldo Trotta (Johannes Kepler University Linz, Austria).

* **Project title (EU):** “Hybrid Artificial and Natural Atomic Systems (HANAS) ”

Financial entity: FP7-ICT-2011-9 Grant Agreement No. 601126 210.

Duration: 2013 to: 2016

Project Coordinator: Val Zwiller (Technical University Delft, The Netherlands).

* **Project title (EU):** “Project prototype promotion PRIZE (ref. 1308457): Dreidimensionaler piezoelektrischer Verspannungsaktuator (Three-dimensional piezoelectric strain actuator) ”

Financial entity: AWS Austria Wirtschaftsservice, PRIZE Programme, under Grant No. P1308457

Duration: 2014 to: 2016

Principal Investigator: Armando Rastelli (Johannes Kepler University Linz, Austria).

** Project title (EU): “Functionalities of Bismuth-based nanostructures (BisNano)”*

Financial entity: NMP, Referencia: Grant no. 263878 (FP7-NMP-2010-EU-Mexico)

Duration: 2010 to: 2013

Principal Investigator (Scientific responsible Spain): Prof. Rosalía Serna (Instituto de Óptica – CSIC Madrid, Spain). Project Coordinator: A. Zeinert, UPJV-LPMC, France.

** Project title (EU): “Self-Assembled semiconductor Nanostructures for new Devices in photonics and Electronics (SANDiE)”*

Financial entity: European Community, VI Framework Programme, NMP4-CT-2004-500101

Duration: 2004 to: 2008

Principal Investigator: Fernando Briones/Jose María Ripalda/ Jorge M. García, European coordinator: Prof. Marius Grundmann. (University of Leipzig).

** Project title (EU): “Acción especial de ayuda complementaria al proyecto Europeo “Self-Assembled Nanostructured Materials for Electronic and Optoelectronic Applications (NANOMAT)”*

Financial entity: European Community, G5RDCT-2001-00545

Duration: 2001 to: 2004

Principal Investigator: Dr. Jorge M. García, European coordinator: Prof. Victor V. Moshchalkov (Katholieke Universiteit Leuven, Bélgica).

** Project title: “Quantum optical information technology (QOIT)”*

Financial entity: Ministerio de Educación y Ciencia, Consolider-Ingenio 2010- CSD2006-0019

Duration: 2006 to: 2011

Principal Investigator: Prof. Luisa González / Dr. Benito Alén / Dr. Jorge M. García.

PARTICIPATION IN PAST RESEARCH PROJECTS (National)

** Project title: “Arquitecturas multiescala avanzadas para emisión de luz (AMALIE)”*

Financial entity: MICINN, Plan Nacional de I+D+I (TEC2012-38901-C02-01)

: 2013 to: 2015

Principal Investigator: Prof. Rosalía Serna (Instituto de Óptica – CSIC Madrid, Spain). Mariano Perálvarez (IREC Barcelona, Spain). Project Coordinator: Prof. Rosalía Serna (Instituto de Óptica – CSIC Madrid, Spain).

** Project title: “Ensamblaje de materiales nanoestructurados para aplicaciones fotónicas (ANAMAT)”*

Financial entity: Plan Nacional de I+D+I (MAT2009-14369-C02-02)

Duration: 2010 to: 2012

Principal Investigator: Prof. Rosalía Serna (Instituto de Óptica - CSIC). Project coordinator: Rodrigo Moreno Botella (ICV, CSIC).

** Project title: “Physics and technology of Si1-xGex nanocrystals-based floating-gate flash*

memory with high-k tunneling/control dielectrics”

Financial entity: Fundação para a Ciência e a Tecnologia (FCT)

Duration: 2007 to: 2011

Principal Investigator: Prof. Maria Jesus Matos Gomes (Universidade do Minho Braga, Portugal).

* Project title: “Nanoestructuras de semiconductores compuestos y su aplicación en dispositivos optoelectrónicos y fotónicos (NANOSELF)”

Financial entity: Ministerio de Educación y Ciencia, TIC2002-04096

Duration: 2002 to: 2005

Principal Investigator: Prof. Luisa González.

* Project title: “Extensión de las longitudes de onda de aplicación de las nanoestructuras autoensambladas de In(Ga)As(Sb)/GaAs al rango de 1.3-1.5 micras (NANOALIN)”

Financial entity: Comunidad de Madrid, GR/MAT/0726/2004

Duration: 2005 to: 2006

Principal Investigator: Dr. Jose María Ripalda.

* Project title: “Nanoestructuras de semiconductores compuestos y su aplicación en dispositivos optoelectrónicos y fotónicos (NANOSELF-II)”

Financial entity: Ministerio de Educación y Ciencia, TEC-2005-05781-C03-01

Duration: 2005 to: 2008

Principal Investigator: Dr. Yolanda González.

* Project title: “Nanoestructuras de semiconductores como componentes para la información cuántica (NANOCOMIC)”

Financial entity: Comunidad de Madrid, S_0505ESP_0200

Duration: 2006 to: 2009

Principal Investigator: Prof. Luisa González.

HIGHLIGHTED PUBLICATIONS

1. Qiaoliang Bao , Pablo Alonso-González , Weiliang Ma , Shaojuan Li , Alexey Nikitin , Jian Yuan , **Javier Martín-Sánchez** , Javier Taboada-Gutiérrez , Iban Amenabar , Peining Li , Saül Vélez , Christopher Tollan , Zhigao Dai , Yupeng Zhang , Sharath Sriram , Kourosh Kalantar-zadeh , Shuit-Tong Lee “In-Plane Anisotropic and Ultra-Low Loss Polaritons in a Natural van der Waals Crystal” *Nature* 562, 557 (2018).
2. X. Yuan, F. Weyhausen-Brinkmann, **J. Martín-Sánchez**, G. Piredda, V. Krápek, Y. Huo, H. Huang, C. Schimpf, O.G. Schmidt, J. Edlinger, G. Bester, R. Trotta and A. Rastelli “Uniaxial stress flips the quantization axis of a quantum dot for integrated quantum photonics” *Nature Communications* 9, 3058 (2018).
3. D. Huber, M. Reindl, S.F. Covre da Silva, C. Schimpf, **J. Martín-Sánchez**, H. Huang, G. Piredda, J. Edlinger, A. Rastelli and R. Trotta “Strain-tunable GaAs quantum dot: an on-demand source of nearly-maximally entangled photon pairs” *Physical Review Letters* 121, 033902 (2018) (**Highlighted by the journal**).
4. **J. Martín-Sánchez** et al., R. Trotta, A. Mariscal, R. Serna, G. Piredda, S. Stroj, J. Edlinger, C. Schimpf, J. Aberl, T. Lettner, J. Wildmann, H. Huang, X. Yuan, D. Ziss, J. Stangl and A. Rastelli “Strain-tuning of the optical properties of semiconductor nanomaterials by integration onto piezoelectric actuators” *Invited Review, Special issue on Piezotronics, Semiconductor Science and Technology*, 33, 013001 (2018).

5. **J. Martín-Sánchez**, A. Mariscal, M. DaLuca, A. Tarazaga Martín-Luengo, G. Gramse, R. Serna, A. Bonanni, R. Trotta, I. Zardo and A. Rastelli “Effects of Dielectric stoichiometry on the photoluminescence properties of encapsulated WSe₂ monolayers” **Nano Research**, 11, 1399 (2018).
6. **J. Martín-Sánchez**, R. Trotta, G. Piredda, C. Schimpf, G. Trevisi, L. Seravalli, P. Frigeri, S. Stroj, T. Lettner, M. Reindl, J.S. Wildmann, J. Edlinger and A. Rastelli, “Reversible Control of In-Plane Elastic Stress Tensor in Nanomembranes” **Advanced Optical Materials**, 4(5), 682 (2016). DOI: 10.1002/adom.201500779
7. R. Trotta, **J. Martín-Sánchez**, J.S. Wildmann, G. Piredda, M. Reindl, C. Schimpf, E. Zallo, S. Stroj, J. Edlinger and A. Rastelli, “Wavelength-tunable sources of entangled photons interfaced with atomic vapours” **Nature Communications**, 7, 10375 (2016). DOI: 10.1038/ncomms10375
8. R. Trotta, **J. Martín-Sánchez**, I. Daruka, C. Ortix and A. Rastelli, “Energy-tunable sources of entangled photons: a viable concept for Solid-State-Based Quantum Relays” **Physical Review Letters**, 114, 150502 (2015). DOI: 10.1103/PhysRevLett.114.150502
9. **J. Martín-Sánchez**, G. Muñoz-Matutano, B. Alén, Y. González, P. Alonso-González, J. Canet-Ferrer, D. Fuster, J. Herranz, L. González, J. Martínez-Pastor, and F. Briones, “Single photon emission from site-controlled InAs quantum dots grown on GaAs patterned substrates” **ACS Nano** 3, 1513 (2009). DOI: 10.1021/nn9001566
10. **J. Martín-Sánchez**, P. Alonso-González, J. Herranz, Y. González and L. González, “Site-controlled lateral arrangements of InAs quantum dots grown on GaAs(001) patterned substrates by AFM local oxidation nanolithography” **Nanotechnology** 20, 125302 (2009). DOI: 10.1088/0957-4484/20/12/125302
11. **J. Martín-Sánchez**, Y. González, L. González, M. Tello, R. García, D. Granados, J.M. García, and F. Briones, “Ordered InAs quantum dots on pre-patterned GaAs(001) by local oxidation nanolithography” **Journal of Crystal Growth** 284, 313 (2005). DOI: 10.1016/j.jcrysgro.2005.06.055

CHAPTER BOOK

1. P. Alonso-González and **J. Martín-Sánchez**, Fabrication of semiconductor quantum dot molecules: droplet epitaxy and local oxidation nanolithography techniques, in “Quantum dot molecules” (chapter 1) edited by Jiang Wu and Zhiming Wang, New York (Springer), 2014. DOI: 10.1007/978-1-4614-8130-0

LIST OF PUBLICATIONS (PEER-REVIEWED)

1. Qiaoliang Bao , Pablo Alonso-González , Weiliang Ma , Shaojuan Li , Alexey Nikitin , Jian Yuan , **Javier Martín-Sánchez** , Javier Taboada-Gutiérrez , Iban Amenabar , Peining Li , Saül Vélez , Christopher Tollan , Zhigao Dai , Yupeng Zhang , Sharath Sriram , Kouros Kalandar-zadeh , Shuit-Tong Lee “In-Plane Anisotropic and Ultra-Low Loss Polaritons in a Natural van der Waals Crystal” **Nature** 562, 557 (2018).
2. D. Huber, M. Reindl, S.F. Covre da Silva, C. Schimpf, **J. Martín-Sánchez**, H. Huang, G. Piredda, J. Edlinger, A. Rastelli and R. Trotta “Strain-tunable GaAs quantum dot: an on-demand source of nearly-maximally entangled photon pairs” **Physical Review Letters** 121, 033902 (2018) (**Highlighted by the journal**). DOI: 10.1103/PhysRevLett.121.033902

3. X. Yuan, F. Weyhausen-Brinkmann, **J. Martín-Sánchez**, G. Piredda, V. Krápek, Y. Huo, H. Huang, C. Schimpf, O.G. Schmidt, J. Edlinger, G. Bester, R. Trotta and A. Rastelli “Uniaxial stress flips the quantization axis of a quantum dot for integrated quantum photonics” *Nature Communications* 9, 3058 (2018). DOI: 10.1038/s41467-018-05499-5
4. **J. Martín-Sánchez et al.**, R. Trotta, A. Mariscal, R. Serna, G. Piredda, S. Stroj, J. Edlinger, C. Schimpf, J. Aberl, T. Lettner, J. Wildmann, H. Huang, X. Yuan, D. Ziss, J. Stangl and A. Rastelli “Strain-tuning of the optical properties of semiconductor nanomaterials by integration onto piezoelectric actuators” *Invited Review*, Special issue on Piezotronics, *Semiconductor Science and Technology*, 33, 013001 (2018). DOI: 10.1088/1361-6641/aa9b53
5. **J. Martín-Sánchez**, A. Mariscal, M. DaLuca, A. Tarazaga Martín-Luengo, G. Gramse, R. Serna, A. Bonanni, R. Trotta, I. Zardo and A. Rastelli “Effects of Dielectric stoichiometry on the photoluminescence properties of encapsulated WSe₂ monolayers” *Nano Research*, 11, 1399 (2018). DOI: 10.1007/s12274-017-1755-4
6. Dorian Ziss, **Javier Martín-Sánchez**, Thomas Lettner, Alma Halilovic, Giovanna Trevisi, Rinaldo Trotta, Armando Rastelli, Julian Stangl “Comparison of different bonding techniques for efficient strain transfer using piezoelectric actuators” *Journal of Applied Physics*, 121, 135303 (2017). DOI: 10.1063/1.4979859
7. J. Aberl, P. Klenovsky, Johannes S. Wildmann, **J. Martín-Sánchez**, T. Fromherz, E. Zallo, J. Humlíček, A. Rastelli, and R. Trotta, “Inversion of the built-in exciton dipole moment in In(Ga)As quantum dots via nonlinear piezoelectric effect” *Physical Review B*, 96, 045414 (2017). DOI: 10.1103/PhysRevB.96.045414
8. E. M. F. Vieira , J. Toudert , A. G. Rolo , A. Parisini , J. P. Leitão , M R Correia , N. Franco , E. Alves , A. Chahboun , **J. Martín-Sánchez (corresponding author)**, R. Serna and M. J. M. Gomes, “SiGe layer thickness effect on structure, photoluminescence and ellipsometry studies of well-organized SiGe/SiO₂ multilayers” *Nanotechnology*, 28, 345701 (2017). DOI: 10.1088/1361-6528/aa7a50
9. O. Marquardt, T. Krause, V. Kaganer, **J. Martín-Sánchez**, M. Hanke and O. Brandt, “Influence of strain relaxation in axial In_xGa(1-x)N/GaN nanowire heterostructures on their electronic properties” *Nanotechnology*, 28, 215204 (2017). DOI: 10.1088/1361-6528/aa6b73
10. H. Huang, R. Trotta, Y. Huo, T. Lettner, **J. Martín-Sánchez**, D. Huber, J.S. Wildmann, M. Reindl, J. Zhang, E. Zallo, O. Schmidt and A. Rastelli, “Electrically-Pumped Wavelength-Tunable GaAs Quantum Dots Interfaced with Rubidium Atoms” *ACS Photonics*, 4, 868 (2017). DOI: 10.1021/acsphotonics.6b00935
11. **J. Martín-Sánchez**, R. Trotta, G. Piredda, C. Schimpf, G. Trevisi, L. Seravalli, P. Frigeri, S. Stroj, T. Lettner, M. Reindl, J.S. Wildmann, J. Edlinger and A. Rastelli, “Reversible Control of In-Plane Elastic Stress Tensor in Nanomembranes” *Advanced Optical Materials*, 4(5), 682 (2016). DOI: 10.1002/adom.201500779
12. R. Trotta, **J. Martín-Sánchez**, J.S. Wildmann, G. Piredda, M. Reindl, C. Schimpf, E. Zallo, S. Stroj, J. Edlinger and A. Rastelli, “Wavelength-tunable sources of entangled photons interfaced with atomic vapours” *Nature Communications*, 7, 10375 (2016). DOI: 10.1038/ncomms10375
13. Johannes S. Wildmann, R. Trotta, **J. Martín-Sánchez**, E. Zallo, Mark O’ Steen, Oliver G. Schmidt and A. Rastelli, “Atomic clouds as Spectrally-Selective and Tunable Delay Lines for Single Photons from Quantum Dots” *Physical Review B*, 92, 235306 (2015). DOI: 10.1103/PhysRevB.92.235306
14. R. Trotta, **J. Martín-Sánchez**, I. Daruka, C. Ortix and A. Rastelli, “Energy-tunable sources of entangled photons: a viable concept for Solid-State-Based Quantum Relays” *Physical Review Letters*, 114, 150502 (2015). DOI: 10.1103/PhysRevLett.114.150502

15. **J. Martín-Sánchez**, R. Serna, J. Toudert, B. Alén and C. Ballesteros, "Size-controlled Ge nanostructures for enhanced Er^{3+} light emission" *Optics Letters*, 39, 4691-4694 (2014). DOI: 10.1364/OL.39.004691
16. N.P. Barradas, E. Alves, E.M.F. Vieira, A. Parisini, O. Conde, **J. Martín-Sánchez**, A.G. Rolo, A. Chahboun and M.J.M. Gomes, "IBA study of SiGe/SiO₂ nanostructured multilayers" *Nucl. Instrum. Meth. B* 331, 89-92 (2014) DOI: 10.1016/j.nimb.2013.11.025
17. **J. Martín-Sánchez**, A. Chahboun, S.R.C. Pinto, A.G. Rolo, L. Marques, R. Serna, E.M.F. Vieira, M.M.D. Ramos, M.J.M. Gomes "A shadowed off-axis production of Ge nanoparticles in Ar gas atmosphere by pulsed laser deposition" *Applied Physics A*, 110, 585 (2013). DOI: 10.1016/j.apsusc.2013.04.170
18. E.M.F. Vieira, **J. Martín-Sánchez**, M.A. Roldan, M. Varela, M. Buljan, S. Bernstorff, N.P. Barradas, N. Franco, M.R. Correia, A.G. Rolo, S.J. Pennycook, S.I. Molina, E. Alves, A. Chahboun and M.J.M. Gomes, "Influence of RF-sputtering power on formation of vertically stacked $\text{Si}_{1-x}\text{Ge}_x$ nanocrystals between ultra-thin amorphous Al_2O_3 layers: structural and photoluminescence properties" *Journal of Physics D: Applied Physics* 46, 385301 (2013). DOI: 10.1088/0022-3727/46/38/385301
19. **J. Martín-Sánchez**, I. Capan, A. Chahboun, S.R.C. Pinto, A.G. Rolo, L. Marques, E.M.F. Vieira, M.M.D. Ramos and M.J.M. Gomes, "Shadowed off-axis production of Ge nanoparticles in Ar gas atmosphere by pulsed laser deposition: morphological, structural and charge trapping properties" *Applied Surface Science* 280, 632 (2013). DOI: 10.1016/j.apsusc.2013.04.170
20. E.M.F. Vieira, E. Díaz, J. Grisola, A. Parisini, **J. Martín-Sánchez**, S. Levichev, A.G. Rolo, A. Chahboun and M.J.M. Gomes, "Charge trapping properties and retention time from amorphous SiGe/SiO₂ nanolayers" *Journal of Physics D: Applied Physics* 46, 095306 (2013). DOI: 10.1088/0022-3727/46/9/095306
21. S.A.A. Rodrigues, J.P.B. Silva, A. Khodorov, **J. Martín-Sánchez**, M. Pereira and M.J.M. Gomes, "Improvement of the fatigue and the ferroelectric properties of PZT films through a LSCO seed layer" *Materials Science and Engineering B* 178, 1224 (2013). DOI: 10.1088/0022-3727/46/38/385301
22. **J. Martín-Sánchez**, J. Toudert, A. de Andrés, J. García-López and R. Serna, "Optical studies on amorphous Ge nanostructures embedded between Al_2O_3 thin layers produced by pulsed laser deposition" *Thin Solid Films* 541, 92 (2013). DOI: 10.1016/j.tsf.2012.12.098
23. S.R.C. Pinto, M. Buljan, L. Marques, **J. Martín-Sánchez**, O. Conde, A. Chahboun, A.R. Ramos, N.P. Barradas, E. Alves, J. Grenzer, A. Mücklich, M.M.D. Ramos and M.J.M. Gomes, "Influence of annealing conditions on formation of regular lattices of voids and Ge quantum dots in amorphous alumina matrix" *Nanotechnology* 23, 405605 (2012). DOI: 10.1088/0957-4484/23/40/405605
24. **J. Martín-Sánchez**, A. Chahboun, M.J.M. Gomes, A.G. Rolo, B. Pivac and I. Capan, "Carrier storage in Ge nanoparticles produced by pulsed laser deposition" *Physica Status Solidi – Rapid Research Letters* 6, 223 (2012). DOI: 10.1002/pssr.201206104
25. **J. Martín-Sánchez**, L. Marques, E.M.F. Vieira, Q.T. Doan, A. Marchand, A. El Hdiy, A.G. Rolo, S.R.C. Pinto, M.M.D. Ramos, A. Chahboun and M.J.M. Gomes, "Ge nanocrystals with highly uniform size distribution deposited on alumina at room temperature by pulsed laser deposition: structural, morphological, and charge trapping properties" *Journal of Nanoparticle Research* 14, 843 (2012). DOI: 10.1007/s11051-012-0843-3
26. J.B.P. Silva, K.C. Sekhar, A. Almeida, J.A. Moreira, **J. Martín-Sánchez**, M. Pereira, A. Khodorov and M.J.M. Gomes, "Effect of Pt bottom electrode texture selection on the tetragonality and physical properties of $\text{Ba}_{0.8}\text{Sr}_{0.2}\text{TiO}_3$ thin films produced by pulsed laser deposition" *Journal of Applied Physics* 112, 044105 (2012). DOI: 10.1063/1.4748288

27. E.M.F. Vieira, **J. Martín-Sánchez**, A.G. Rolo, A. Parisini, M. Buljan, I. Capan, E. Alves, N.P. Barradas, O. Conde, S. Levichev, S. Bernstorff, A. Chahboun and M.J.M. Gomes “Structural and electrical studies of ultrathin layers with $\text{Si}_{0.7}\text{Ge}_{0.3}$ nanocrystals confined in a SiGe/SiO_2 superlattice” *Journal of Applied Physics* 111, 104323 (2012). DOI: 10.1063/1.4722278
28. J.P.B. Silva, K.C. Sekhar, S.A.S. Rodrigues, A. Khodorov, **J. Martín-Sánchez**, M. Pereira, M.J.M. Gomes, “Ferroelectric switching behaviour of pulsed laser deposited $\text{Ba}_{0.8}\text{Sr}_{0.2}\text{TiO}_3$ thin films” *Current Applied Physics* 12, 1144 (2012). DOI: 10.1016/j.cap.2012.02.036
29. Sandra D.F.C. Moreira, Carlos J.R. Silva, Luis A.S.A. Prado, Manuel F.M. Costa, Victor I. Boev, **J. Martín-Sánchez**, M.J.M. Gomes, “Development of new high transparent hybrid organic-inorganic monoliths with surface engraved diffraction pattern” *Journal of Polymer Science Part B: Polymer Physics* 50, 492 (2012). DOI: 10.1002/polb.23028
30. J.B.P. Silva, S.A.S. Rodrigues, A. Khodorov, **J. Martín-Sánchez**, M. Pereira, E. Alves, M.J.M. Gomes and Ph. Colomban “Structural and electrical properties of nanostructured $\text{Ba}_{0.8}\text{Sr}_{0.2}\text{TiO}_3$ films deposited by Pulsed Laser Deposition” *Journal of Nano Research* 18, 299 (2012). DOI: 10.4028/www.scientific.net/JnanoR.18-19.299
31. M. Buljan, S.R.C. Pinto, A.G. Rolo, **J. Martín-Sánchez**, M.J.M. Gomes, J. Grenzer, A. Mücklich, S. Bernstorff and V. Holý, “Self-assembling of Ge quantum dots in an alumina matrix” *Physical Review B* 82, 235407 (2010). **Selected for Virtual Journal of Nanoscience & Technology** (December 2010). DOI: 10.1103/PhysRevB.82.235407
32. P. Alonso-González, L. González, **J. Martín-Sánchez**, Y. González, D. Fuster, D.L. Sales, D. Hernández-Maldonado, M. Herrera and S.I. Molina, “Growth of low-density vertical quantum dot molecules with control in energy emission” *Nanoscale Res. Lett.* 5, 1913 (2010). DOI: 10.1007/s11671-010-9771-2
33. A.G. Taboada, A.M. Sánchez, A.M. Beltrán, M. Bozkurt, D. Alonso-Álvarez, B. Alén, A. Rivera, J.M. Ripalda, J.M. Llorens, **J. Martín-Sánchez**, Y. González, J.M. Ulloa, J.M. García, S.I. Molina and P.M. Koenraad, “Structural and optical changes induced by incorporation of antimony into $\text{InAs/GaAs}(001)$ quantum dots” *Physical Review B* 82, 235316 (2010). DOI: 10.1103/PhysRevB.82.235316
34. **J. Martín-Sánchez**, G. Muñoz-Matutano, B. Alén, Y. González, P. Alonso-González, J. Canet-Ferrer, D. Fuster, J. Herranz, L. González, J. Martínez-Pastor, and F. Briones, “Single photon emission from site-controlled InAs quantum dots grown on $\text{GaAs}(001)$ patterned substrates” *ACS Nano* 3, 1513 (2009). DOI: 10.1021/nn9001566
35. **J. Martín-Sánchez**, P. Alonso-González, J. Herranz, Y. González and L. González, “Site-controlled lateral arrangements of InAs quantum dots grown on $\text{GaAs}(001)$ patterned substrates by AFM local oxidation nanolithography” *Nanotechnology* 20, 125302 (2009). DOI: 10.1088/0957-4484/20/12/125302
36. P. Alonso-González, L. González, D. Fuster, **J. Martín-Sánchez**, and Y. González, “Surface localization of buried III-V semiconductor nanostructures” *Nanoscale Res. Lett.* 4, 873 (2009). DOI: 10.1007/s11671-009-9329-3
37. P. Alonso-González, **J. Martín-Sánchez**, Y. González, B. Alén, D. Fuster, and L. González, “Formation of lateral low density $\text{In}(\text{Ga})\text{As}$ quantum dots pairs in GaAs nanoholes” *ACS Crystal Growth & Design* 9, 2525 (2009). DOI: 10.1021/cg900065v
38. **J. Martín-Sánchez**, Y. González, P. Alonso-González, and L. González, “Improvement of InAs quantum dots optical properties in close proximity to $\text{GaAs}(001)$ substrate surface” *Journal of Crystal growth* 310, 4676 (2008). DOI: 10.1016/j.jcrysgro.2008.08.041
39. P. Alonso-González, D. Fuster, L. González, **J. Martín-Sánchez**, and Y. González, “Low density InAs quantum dots with control in energy emission and top surface location” *Applied Physics Letters* 93, 183106 (2008). DOI: 10.1063/1.3021070

40. P. Alonso-González, L. González, Y. González, D. Fuster, I. Fernández-Martínez, **J. Martín-Sánchez**, and L. Abelmann, "New process for high optical quality InAs quantum dots grown on patterned GaAs(001) substrates" *Nanotechnology* 18, 355302 (2007). DOI: 10.1088/0957-4484/18/35/355302
41. P. Alonso-González, M.S. Martín-González, **J. Martín-Sánchez**, Y. González and L. González, "Ordered InAs QD using pre-patterned substrates by monolithically integrated porous alumina" *Journal of Crystal Growth* 294, 168 (2006). DOI: 10.1016/j.jcrysgro.2006.06.012
42. **J. Martín-Sánchez**, Y. González, L. González, M. Tello, R. García, D. Granados, J.M. García, and F. Briones, "Ordered InAs quantum dots on pre-patterned GaAs(001) by local oxidation nanolithography" *Journal of Crystal Growth* 284, 313 (2005). DOI: 10.1016/j.jcrysgro.2005.06.055

PRESENTATIONS IN INTERNATIONAL CONFERENCES

1. A. Mariscal, **J. Martín-Sánchez**, A. Tarazaga Martín-Luengo, A. Bonanni, S. Bräuer, R. Trotta, A. Rastelli and R. Serna "Defect-induced tuning of the photoluminescence emission in WSe2 monolayers by energetic species bombardment" *EMRS Spring Meeting (2018) (oral)*.
2. S.T. Moroni, G. Juska, S. Varo, T.H. Chung, A. Gocalinska, R. Trotta, **J. Martín-Sánchez**, H. Huang, A. Rastelli and E. Pelucchi "A unique tunable, scalable and easily integrable source of quantum light based on pyramidal quantum dots" *ICPS Conference (2018)*.
3. A. Mariscal, A. Tarazaga Martín-Luengo, A. Quesada, A. Bonanni, J.F. Fernández, **J. Martín-Sánchez** and R. Serna "Enabling exciton tuning in nanostructured EuOx films by plasma-based synthesis in vacuum" *MRS Fall Meeting 2017, Boston (USA) (oral)*.
4. I. Prieto, R. Kozak, O. Skibitzki, **J. Martín-Sánchez**, T. Fromherz, M.D. Rossell, E. Gini, G. Capellini, A. Rastelli, R. Erni, T. Schroeder and H. Känel "Site controlled InAs/GaAs nanostructures on Si nano-tips" *OSA advanced photonic congress, New Orleans (USA) (oral)*.
5. H. Huang, R. Trotta, Y. Huo, T. Lettner, J.S. Wildmann, **J. Martín-Sánchez**, D. Huber, M. Reindl, J. Zhang, E. Zallo, O.G. Schmidt and A. Rastelli "Electrical-driven-GaAs/AlGaAs-QD-device with electroluminescence energy tunable around 87Rb D2 line" *The 1st International Semiconductor Conference for Global Challenges (ISCGC 2017), Nanjing (China) (oral)*.
6. G. Piredda, S. Stroj, **J. Martín-Sánchez**, R. Trotta and A. Rastelli "PMN-PT piezoelectric actuators with ultrashort pulses" *Lasers in Manufacturing (LiM 2017), Munich (Germany)*.
7. **J. Martín-Sánchez**, A. Mariscal, M. DaLuca, A. Tarazaga Martín-Luengo, A. Bonanni, I. Zardo, R. Serna, R. Trotta and A. Rastelli "Dielectric Al2O3 encapsulation of WSe2 monolayers by pulsed laser deposition" (**Invited Talk**) *EMRS Spring Meeting (2017), Strasbourg (France) (oral)*.
8. J. Aberl, P. Klenovsky, J.S. Wildmann, **J. Martín-Sánchez**, T. Fromherz, E. Zallo, J. Humlicek, A. Rastelli and R. Trotta "Inversion of permanent exciton dipole moment in selfassembled In(Ga)As quantum dots by nonlinear piezoelectricity" *DPG Spring Meeting Dresden 2017, Dresden (Germany) (oral)*.
9. O. Marquardt, T. Krause, V. Kaganer, **J. Martín-Sánchez**, M. Hanke and O. Brandt "Influence of strain relaxation in axial InxGa1-xN/GaN nanowire heterostructures on their built-in electrostatic potentials and electronic properties" *Compound Semiconductor Week (CSW) 2017, Berlin (Germany) (oral)*.
10. S.T. Moroni, G. Juska, T.H. Chung, **J. Martín-Sánchez**, R. Trotta, A. Rastelli, A. Gocalinska and E. Pelucchi "Scalable semiconductor sources of entanglement: site-controlled, wavelength-tunable, entangled-photon emitting pyramidal quantum dots" *Compound Semiconductor Week (CSW) 2017, Berlin (Germany) (oral)*.
11. **J. Martín-Sánchez**, R. Trotta, A. Mariscal, G. Piredda, T. Lettner, C. Schimpf, S. Stroj, J. Edlinger and A. Rastelli "Full Control of In-Plane Stress Tensor in Nanomembranes for Elastic Strain Engineering" *NanoFIS 2016, Graz (Austria) (oral)*.
12. R. Trotta, **J. Martín-Sánchez** and A. Rastelli "Mechanical Control of Excitonic States in Quantum Dots" *DPG Spring Meeting Regensburg 2016, Regensburg (Germany) (oral)*.

13. R. Trotta, **J. Martín-Sánchez**, J.W. Wildmann and A. Rastelli “Scalable Entanglement Resources: Interfacing Artificial and Natural Atoms Via Entangled Photons” QD2016, Jeju (Korea) (oral).
14. **J. Martín-Sánchez**, F. Aigner, A. Mariscal, G. Piredda, S. Stroj, J. Edlinger, R. Trotta and A. Rastelli “Strain tunable optical properties of WSe2 monolayers” EMRS Spring Meeting 2016, Lille (France) (poster).
15. J.S. Wildmann, R. Trotta, **J. Martín-Sánchez**, E. Zallo, M. O’Steen, O.G. Schmidt and A. Rastelli “Wavelength-dependent tunable delay for single photons from Quantum dots” Mauterndorf International Winterschool 2016, Mauterndorf (Austria) (poster).
16. D. Ziss, **J. Martín-Sánchez**, R. Trotta, A. Rastelli, J. Edlinger, G. Trevisi and J. Stangl “Comparing x-ray diffraction and photoluminescence measurements on strained GaAs membranes: a new approach to calibrate deformation potentials” Mauterndorf International Winterschool 2016, Mauterndorf (Austria) (poster).
17. **J. Martín-Sánchez**, R. Trotta, G. Piredda, C. Schimpf, G. Trevisi, L. Seravalli, P. Frigeri, S. Stroj, T. Lettner, M. Reindl, J.S. Wildmann, J. Edingler and A. Rastelli “Full Control of In-Plane Stress Tensor in Nanomembranes” Mauterndorf International Winterschool 2016, Mauterndorf (Austria) (invited talk).
18. J. Toudert, **J. Martín-Sánchez** and R. Serna “Building multiscale optical metamaterials from non-conventional active and switchable nanoscale elements” META 2015, New York (USA) (invited talk).
19. **J. Martín-Sánchez**, Rinaldo Trotta, Giovanni Piredda, Sandra Stroj, Johannes Edingler, Thomas Lettner, Istvan Daruka, Giovanna Trevisi, Luca Seravalli, Paola Frigeri and Armando Rastelli “Micromachined piezo-actuator for full control of in-plane stress in thin films” NanoFIS 2014, Graz (Austria) (best poster award).
20. R. Grifone, D. Kriegner, **J. Martín-Sánchez**, R. Trotta, A. Rastelli, J. Stangl and T. Schüllli “Focused X-ray Diffraction measurements combined with X-ray Emission Optical Light Spectroscopy on membrane structures” 18th International Winterschool Mauterndorf Castle 2014, Mauterndorf (Austria) (poster).
21. R. Grifone, D. Kriegner, **J. Martín-Sánchez**, R. Trotta, A. Rastelli, J. Stangl and T. Schüllli “Focused X-ray Diffraction measurements combined X-ray Emission Optical Light Spectroscopy on membrane structures” E-MRS Spring meeting 2014, Lille (France) (poster).
22. **J. Martín-Sánchez**, J. Toudert and R. Serna, “Enhanced 1.54 μm -Er³⁺ photoluminescence through contact coupling with Ge nanostructures” OPG 2013, Linz (Austria) (poster).
23. J. Toudert, J.A. Mendez, J.I. Larruquert, **J. Martín-Sánchez** and R. Serna “Optical response from the vacuum UV to the near IR of nano-engineered a-Si single layers embedded in a-Al₂O₃” MRS 2012, Boston (USA) (poster).
24. **J. Martín-Sánchez**, J. Toudert and R. Serna “Sensitization of Er ions through contact coupling by Ge nanostructures produced by pulsed laser deposition” MRS 2012, Boston (USA) (oral).
25. J. Toudert, J.A. Mendez, J.I. Larruquert, **J. Martín-Sánchez** and R. Serna “Optical response from the vacuum UV to the near IR of nano-engineered a-Si single layers embedded in a-Al₂O₃” MRS 2012, Boston (USA) (poster).
26. E.M.F. Vieira, E. Díaz, J. Grisola, S. Levichev, **J. Martín-Sánchez**, A.G. Rolo, A. Chahboun and M.J.M. Gomes “Memory characteristics of layered SiGe nanoparticles embedded in SiO₂” E-MRS Fall Meeting 2012, Warsaw (Poland) (poster).
27. **J. Martín-Sánchez**, M. Buljan, A.G. Rolo, E. Alves, O. Conde, S. Bernstorff, A. Chahboun, R. Serna and M.J.M. Gomes “Structural and optical properties of ordered self-assembled Ge quantum dots lattices embedded in amorphous Al₂O₃ matrix” E-MRS Fall Meeting 2012, Warsaw (Poland) (oral).
28. E.M.F. Vieira, **J. Martín-Sánchez**, M. Buljan, S. Bernstorff, M.A. Roldan, A.G. Rolo, A. Chahboun, S.I. Molina, M. Varela, S.J. Pennycook and M.J.M. Gomes “Evidence of self-ordering SiGe nanoparticles in Al₂O₃ multilayer structure ” E-MRS Spring Meeting 2012, Strasbourg (France) (oral).
29. **J. Martín-Sánchez**, J. Toudert and R. Serna “Optical response of Ge nanostructured layers for light emission” E-MRS Spring Meeting 2012, Strasbourg (France) (oral).
30. **J. Martín-Sánchez**, J. Toudert and R. Serna “Optical response of Ge nanostructures produced by pulsed laser deposition” E-MRS Spring Meeting 2012, Strasbourg (France) (oral).
31. E.M.F. Vieira, S.R.C. Pinto, **J. Martín-Sánchez**, S. Levichev, M. Buljan, S. Bernstorff, M. Roldan, S.I. Molina, I. Capan, A.G. Rolo, O. Conde, A. Chahboun, E. Alves, N.P. Barradas and

- M.J.M. Gomes “SiGe and Ge nanocrystals embedded in dielectrics for carriers retention application” E-MRS Spring Meeting 2012, Strasbourg (France) (poster).
32. **J. Martín-Sánchez**, A. Chahboun, M.J.M. Gomes, A.G. Rolo, B. Pivac and I. Capan “Carrier storage in Ge nanocrystals produced by pulsed laser deposition” E-MRS Spring Meeting 2012, Strasbourg (France) (poster).
 33. **J. Martín-Sánchez**, L. Marques, S.R.C. Pinto, E.M.F. Vieira, A.G. Rolo, A. Chahboun, M.M.D. Ramos, R. Serna, J. Toudert and M.J.M. Gomes “Ge nanoparticles produced by Pulsed Laser Deposition: morphological, structural and optical properties” Conference on Laser Ablation 2011 (COLA2011), Playa del Carmen (Mexico) (poster).
 34. E.M.F. Vieira, **J. Martín-Sánchez**, S. Levichev, A.G. Rolo, M. Buljan, A. Chahboun and M.J.M. Gomes “SiGe nanocrystals based flash memory” First Euro-Mediterranean Conference on Materials and Renewable Energies 2011 (EMCMRE-1), Marrakech (Morocco) (oral).
 35. S. Levichev, E.M.F. Vieira, **J. Martín-Sánchez**, O. Karkazi, A. Chahboun, M. Buljan, S. Bernstorff and M.J.M. Gomes “Correlation between structural and electrical properties of MOS structures based on Ge nanocrystals embedded in SiO₂ grown by RF-magnetron sputtering” E-MRS Spring Meeting 2011, Nice (France) (poster).
 36. E.M.F. Vieira, **J. Martín-Sánchez**, A.G. Rolo, S. Levichev, A. Chahboun, M. Buljan, E. Alves, N.P. Barradas, S. Bernstorff, O. Conde and M.J.M. Gomes “Structural characterization of crystalline SiGe layers grown by RF-Sputtering” E-MRS Spring Meeting 2011, Nice (France) (poster).
 37. M. Buljan, S.R.C. Pinto, A.G. Rolo, **J. Martín-Sánchez**, J. Grenzer, A. Müecklich, S. Bernstorff and M.J.M. Gomes “Self-assembly of Ge quantum dots and voids in an alumina film” E-MRS Spring Meeting 2011, Nice (France) (poster).
 38. **J. Martín-Sánchez**, A.J. Martins, L. Marques, E.M.F. Vieira, A.G. Rolo, M.M.D. Ramos and M.J.M. Gomes “Ge nanoparticles production by Pulsed Laser Deposition at room temperature” E-MRS Fall Meeting 2010, Warsaw (Poland) (poster).
 39. **J. Martín-Sánchez**, A.J. Martins, L. Marques, E.M.F. Vieira, A.G. Rolo, M.M.D. Ramos and M.J.M. Gomes “Morphological and structural characterization of Ge nanoparticles produced by Pulsed Laser Deposition” Trends in Nanotechnology 2010 (TNT2010), Braga (Portugal) (poster).
 40. J.P.B. Silva, S.A.S. Rodrigues, A. Khodorov, **J. Martín-Sánchez**, M. Pereira, E. Alves, M.J.M. Gomes and Ph. Colomban “Structural and electrical properties of nanostructured Ba_{0.8}Sr_{0.2}TiO₃ films deposited by pulsed laser deposition” MPA2010, Braga (Portugal) (poster).
 41. S.A.S. Rodrigues, J.P.B. Silva, A. Khodorov, **J. Martín-Sánchez**, M. Pereira and M.J.M. Gomes “Effect of LSCO Seed Layer on the Electrical and Structural Properties of PZT films deposited by Pulsed Laser Ablation” MPA2010, Braga (Portugal) (poster).
 42. **J. Martín-Sánchez**, A.J. Martins, L. Marques, E.M.F. Vieira, A.G. Rolo, M.M.D. Ramos and M.J.M. Gomes “Morphological and structural characterization of Ge nanoparticles produced by Pulsed Laser Deposition” Trends in Nanotechnology 2010 (TNT2010), INL Braga (Portugal) (poster).
 43. **J. Martín-Sánchez**, A.J. Martins, L. Marques, E.M.F. Vieira, A.G. Rolo, M.M.D. Ramos and M.J.M. Gomes “Ge nanoparticles production by Pulsed Laser Deposition at room temperature” E-MRS 2010 Fall Meeting, Warsaw (Poland) (poster).
 44. J.M. Llorens, A.G. Taboada, J.M. Ripalda, D. Alonso-Álvarez, B. Alén, **J. Martín-Sánchez**, J.M. García, Y. González, L. González, A.M. Sánchez, A.M. Beltrán, and S.I. Molina “Theoretical modelling of quaternary GaInAsSb/GaAs self-assembled quantum dots” QD2010 2010, Nottingham (UK) (poster).
 45. I. Prieto, J. Herranz, Y. González, P.A. Postigo, B. Alén, L. González, **J. Martín-Sánchez**, L.J. Martínez, M. Kaldirim, D. Fuster, J. Canet-Ferrer, G. Muñoz-Matutano, and J. Martínez-Pastor “Different strategies towards the deterministic coupling of a single QD to a Photonic Cavity Mode” CEN2010 2010, Segovia (Spain) (poster).
 46. P. Alonso-González, **J. Martín-Sánchez**, Y. González, L. González, D. Fuster, D.L. Sales, D. Hernández-Maldonado, M. Herrera and S.I. Molina “Growth of low density vertical quantum dot molecules with control in energy emission” 8th International workshop on epitaxial Semiconductors on Patterned Substrates and Novel Index Surfaces 2010, Como (Italy) (oral).
 47. A.G. Taboada, J.M. Ripalda, D. Alonso-Álvarez, B. Alén, A. Rivera, J.M. Llorens, **J. Martín-Sánchez**, J.M. García, Y. González, L. González, A.M. Sánchez, A.M. Beltrán, D.L. Sales, T. Ben, P.L. Galindo, S.I. Molina, R. Kudrawiec, M. Syperek, J. Misiewicz, M. Bozkurt, J.M. Ulloa and P.M. Koenraad “InGaAsSb quantum dots” SPIE Photonics West; Quantum Dots and Nanostructures: Synthesis, characterization and modeling 2010, San Francisco (USA) (invited talk).

48. A.G. Taboada, J.M. Ripalda, D. Alonso-Álvarez, B. Alén, A. Rivera, **J. Martín-Sánchez**, J.M. García, Y. González, L. González, J.M. García, A.M. Sánchez, A.M. Beltrán, S.I. Molina, M. Bozkurtz, J.M. Ulloa, P.M. Koenraad, R. Kudrawiec, M. Syperek and J. Misiewicz “Towards an understanding of the electronic structure of InAsSb/GaAs quantum dots” *Second International Workshop on Epitaxial Growth and Fundamental Properties of Semiconductor Nanostructures: SemiconNano 2009, Anan Tokushima (Japan)* (poster).
49. A.G. Taboada, J.M. Ripalda, D. Alonso-Álvarez, B. Alén, **J. Martín-Sánchez**, J.M. García, Y. González, L. González, A.M. Sánchez, A.M. Beltrán, D.L. Sales, T. Ben, P.L. Galindo, S.I. Molina, R. Kudrawiec, M. Syperek, J. Misiewicz, M. Bozkurt, J.M. Ulloa and P.M. Koenraad “Effects of Sb exposure before, during and after InAs quantum dot nucleation” *Second International Workshop on Epitaxial Growth and Fundamental Properties of Semiconductor Nanostructures: SemiconNano 2009, Anan Tokushima (Japan)* (invited talk).
50. **J. Martín-Sánchez**, G. Muñoz-Matutano, B. Alén, Y. González, P. Alonso-González, J. Canet-Ferrer, D. Fuster, J. Herranz, L. González, J. Martínez-Pastor, and F. Briones “Site control of high optical quality InAs quantum dots on GaAs(001) substrates patterned by local oxidation atomic force microscopy nanolithography” *2nd Spanish Workshop on Nanolithography 2008, Barcelona (Spain)* (poster).
51. P. Alonso-González, L. González, D. Fuster, **J. Martín-Sánchez**, Y. González, and F. Briones “Surface localization of III-V semiconductor buried nanostructures” *MBE 2008, Vancouver (Canada)* (poster).
52. A.G. Taboada, J.M. Ripalda, D. Alonso-Álvarez, B. Alén, **J. Martín-Sánchez**, Y. González, F. Briones, and J.M. García “Effects of Sb exposure on InAs quantum dots” *ICPS 2008, Rio de Janeiro (Brazil)* (poster).
53. **J. Martín-Sánchez**, G. Muñoz-Matutano, B. Alén, Y. González, P. Alonso-González, J. Canet-Ferrer, D. Fuster, J. Herranz, L. González, J. Martínez-Pastor, and F. Briones “Growth of site-controlled InAs quantum dots on prepatterned GaAs(001) substrates by AFM local oxidation” *TNT 2008, Oviedo (Spain)* (poster) (**best poster award**).
54. J. Herranz, **J. Martín-Sánchez**, Y. González, P. Alonso-González, B. Alén, D. Fuster, L. González, F. Briones, G. Muñoz-Matutano, J. Canet-Ferrer, and J. Martínez-Pastor “Dependence of InAs growth selectivity on GaAs(001) patterned substrates on As₄ pressure and surface reconstruction” *EUROMBE 2008, Zakopane (Poland)* (poster).
55. P. Alonso-González, **J. Martín-Sánchez**, Y. González, B. Alén, D. Fuster, and L. González “Formation of laterally coupled In(Ga)As quantum dot pairs on GaAs nanoholes obtained by droplet epitaxy” *EUROMBE 2008, Zakopane (Poland)* (poster).
56. **J. Martín-Sánchez**, G. Muñoz-Matutano, B. Alén, Y. González, P. Alonso-González, J. Canet-Ferrer, D. Fuster, J. Herranz, L. González, J. Martínez-Pastor, and F. Briones “Site control of InAs quantum dots on GaAs(001) substrates patterned by local oxidation atomic force microscopy nanolithography” *Fuerzas y Túnel 2008, Segovia (Spain)* (oral).
57. **J. Martín-Sánchez**, P. Alonso-González, Y. González, and L. González “Influence of GaAs(001) surface quality on morphological and optical InAs quantum dots properties” *EUROMBE 2007, Granada (Spain)* (poster).
58. **J. Martín-Sánchez**, P. Alonso-González, M.S. Martín-González, M. Tello, R. García, Y. González, and L. González “Ordered InAs quantum dots on prepatterned GaAs(001) substrates” *IV Reunión Nacional de Física del Estado Sólido 2006, Alicante (Spain)* (poster).
59. **J. Martín-Sánchez**, Y. González, L. González, M. Tello, R. García, D. Granados, J.M. García, and F. Briones “Position control of InAs quantum dots on patterned GaAs substrates” *KFKI Summer School “Thin films as seen by local probes” 2004, Budapest (Hungary)* (oral).
60. **J. Martín-Sánchez**, Y. González, L. González, M. Tello, R. García, D. Granados, J.M. García, and F. Briones “Ordered InAs quantum dots grown on nanopatterned GaAs(001) substrates obtained by local oxidation nanolithography” *E-MRS Spring Meeting 2004, Strasbourg (France)* (oral).

DIVULGATIVE PUBLICATIONS / PRESS RELEASES

1. *Laser-machined actuator strains QDs to emit tunable entangled photons*, in “*Laser Focus World*” edited by John Wallace, *Laser Focus World*, Vol. 52, issue 4, 2016.

<http://www.laserfocusworld.com/articles/print/volume-52/issue-04/world-news/quantum-entanglement-laser-machined-actuator-strains-qds-to-emit-tunable-entangled-photons.html>

2. “Researchers discover directional and long-lived nanolight in a 2-D material”
<https://phys.org/news/2018-10-long-lived-nanolight-d-material.html>
<http://www.madrimasd.org/notiweb/noticias/nanoluz-que-surca-un-material-bidimensional>

INVITED SEMINARS

1. **J. Martín-Sánchez**, J. Taboada-Gutiérrez, G. Piredda, J. Edlinger, R. Trotta, A. Rastelli and P. Alonso-González “Near field studies on strained 2D anisotropic materials” Sapienza University of Rome (2018), Rome (Italy).
2. **J. Martín-Sánchez**, A. Mariscal, G. Piredda, S. Stroj, J. Edlinger, R. Trotta and A. Rastelli “Encapsulation effects on the optical properties of WSe₂ monolayers” University of Extremadura, (2016), Badajoz (Spain).
3. **J. Martín-Sánchez**, A. Mariscal, G. Piredda, S. Stroj, J. Edlinger, R. Trotta and A. Rastelli “Micro-machined piezoelectric actuators for elastic strain engineering: application to 2D materials” Johannes Kepler University, Nanoforum (2016), Linz (Austria).
4. **J. Martín-Sánchez**, A. Mariscal, G. Piredda, S. Stroj, J. Edlinger, R. Trotta and A. Rastelli “Strain-tunable optical properties of WSe₂ monolayers” University of Basel, (2016), Basel (Switzerland).
5. **J. Martín-Sánchez**, A. Mariscal, G. Piredda, S. Stroj, J. Edlinger, R. Trotta and A. Rastelli “Tunable optical properties of WSe₂ monolayers” TU Vienna, workshop “graphene and beyond” (2016), Vienna (Austria).
6. **J. Martín-Sánchez**, L. Marques, A.G. Rolo, Q.T. Doan, A. Marchand, A. El Hdiy, I. Capan, M.M.D. Ramos, A. Chahboun and M.J.M. Gomes “Ge nanoparticles production in Ar gas atmosphere by pulsed laser deposition for memory applications” Instituto de Óptica “Daza de Valdés” (IO-CSIC) (2012), Madrid (Spain).
7. **J. Martín-Sánchez**, L. Marques, A.G. Rolo, Q.T. Doan, A. Marchand, A. El Hdiy, I. Capan, M.M.D. Ramos, A. Chahboun and M.J.M. Gomes “Highly uniform Ge nanoparticles size distribution produced by pulsed laser deposition: morphological, structural and electrical properties” Instituto de Microelectrónica de Madrid (IMM-CSIC) (2011), Madrid (Spain).
8. **J. Martín-Sánchez**, G. Muñoz-Matutano, B. Alén, Y. González, P. Alonso-González, J. Canet-Ferrer, D. Fuster, J. Herranz, L. González, J. Martínez-Pastor, and F. Briones “High optical quality InAs quantum dots on GaAs (001) patterned substrates” University of Minho (2010), Braga (Portugal).
9. **J. Martín-Sánchez**, G. Muñoz-Matutano, B. Alén, Y. González, P. Alonso-González, J. Canet-Ferrer, D. Fuster, J. Herranz, L. González, J. Martínez-Pastor, and F. Briones “Site control of InAs/GaAs(001) QDs for single photon emitter devices” Philips Research Laboratories (2009), Eindhoven (The Netherlands).
10. **J. Martín-Sánchez**, G. Muñoz-Matutano, B. Alén, Y. González, P. Alonso-González, J. Canet-Ferrer, D. Fuster, J. Herranz, L. González, J. Martínez-Pastor, and F. Briones “Site control of high optical quality InAs/GaAs(001) quantum dots by means of AFM local oxidation nanolithography: application to novel quantum devices” Paul-Drude-Institut für Festkörperelektronik (2009), Berlin (Germany).
11. **J. Martín-Sánchez**, G. Muñoz-Matutano, B. Alén, Y. González, P. Alonso-González, J. Canet-Ferrer, D. Fuster, J. Herranz, L. González, J. Martínez-Pastor, and F. Briones “Growth of high optical quality site-controlled InAs quantum dots on patterned GaAs (001) substrates by means of

atomic force microscopy nanolithography” Autonomous University of Madrid UAM (2008), Madrid (Spain).

NATIONAL/INTERNATIONAL COLLABORATIONS

- Prof. Armando Rastelli, JKU Linz, Linz (Austria).*
- Prof. Julian Stangl, JKU Linz, Linz (Austria).*
- Dr. Julien Claudon, CEA, Grenoble (France).*
- Prof. Giovanni Isella, L-NESS Politecnico di Milano, Como (Italy).*
- Dr. Giovanna Trevisi, IMEM-CNR, Palermo (Italy).*
- Prof. Rosalía Serna, IO-CSIC, Madrid (Spain).*
- Prof. Luisa González IMM-CNM CSIC (Spain).*
- Dr. Andrés Castellanos-Gómez IMDEA (Spain).*
- Dr. Pablo Alonso-González Univ. Oviedo/Nanogune (Spain).*
- Dr. Esther Rebollar Inst. Rocasolano CSIC (Spain).*
- Dr. Ramón Peláez IO-CSIC (Spain).*
- Prof. Ilaria Zardo Univ. Basel, Basel (Switzerland).*
- Prof. Antonio Polimeni University of Rome (“La Sapienza”), Rome (Italy).*
- Dr. Rinaldo Trotta University of Rome (“La Sapienza”), Rome (Italy).*

HOBBIES

- *Technology and Science, mountain biking, trekking and cultural/adventure travels.*