

## CURRICULUM VITAE

Name: Alejandro Rodolfo GOÑI

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### 1 In Brief

I am an experimental physicist with broad interests and expertise in solid-state physics, optical spectroscopy (Raman scattering, photoluminescence, etc.), nano-science and technology, the physics of low-dimensional materials (superlattices, quantum wires and dots), highly correlated electron systems, and high-pressure techniques. As far as the materials are concerned, my core expertise lies in the optical, electronic and vibrational properties of semiconductors and their nanostructures. Nonetheless, I have also studied hybrid halide perovskites, high-Tc and type-II superconductors, oxides, conjugated polymers, ferrofluids, diluted magnetic semiconductors, and light-emitting proteins among others. Since my permanent appointment as ICREA Research Prof. at ICMAB-CSIC, I have secured public funding to create a facility for optical spectroscopy with micro- and nanometer-scale resolution consisting in a high-throughput, high-resolution micro-Raman spectrometer combined with a scanning near-field optical microscope (SNOM). I further set up a laboratory for high-pressure physics with international recognition, consisting in several diamond anvil cells (DACs), a specially designed He-bath cryostat for the DAC and a piston-cylinder clamp cell for electrical transport measurements under pressure. I mainly aim at using light as a probe of the physical properties of nanomaterials, searching for new behaviors or phenomena that emerge as a direct consequence of the reduced dimensionality and/or size of the system under study. Concerning research projects, I have been the PI of the ICMAB group and workpackage leader in a consortium of nine Spanish groups active from Dec. 2010 to Dec. 2016. We successfully obtained 3.9M EUR funding from the Spanish Ministry within the Consolider-Ingenio 2010 program to work on nanostructuring materials to empower

thermoelectricity. I am currently co-PI of the three-years project ISOSCELLES of the Plan Nacional I+D+I devoted to advance solar energy harvesting technology by unleashing the full potential of organic and hybrid semiconductor materials, overcoming the compromise between the optical properties and a limited charge carrier mobilities. I am leading group activities on high pressure physics as well as on fundamental properties of hybrid perovskites. I am also the PI of two research projects, a competitive European Marie-Curie Action called PLASMIONICO and PLASMOCRACO2, devoted to the development of plasmon-resonance driven hot-electron generators for improved solar energy harvesting and the reduction of CO<sub>2</sub> into chemicals of industrial interest, respectively. In addition, I am leading a national proof-of-concept project to develop a spectrum-on-demand light source. Although I am principally pursuing basic research, almost all my lines of investigation have a clear application in mind, such as to improve the performance of optoelectronic devices based on nano-materials, enhance thermoelectric properties, boost piezo-resistive coefficients, develop ultra-sensitive spectroscopic techniques, etc. My records show a total of 234 publications with about 6800/8200 citations (Web of Knowledge/Google Scholar) and 2 patents (one European). My Hirsch number is h=40/46 (WoK/GS). For a full account of my research and academic activities visit my NANOPTO and ICREA webpages, respectively: <https://nanopto.icmab.es/>  
<https://www.icrea.cat/Web/ScientificStaff/Goni-Alejandro-R-254>

I graduated in physics in 1985 from the Balseiro Institute in Bariloche, Argentina, for which I was granted one of 30 yearly fellowships, competing with students from all over the country. In 1986 I moved to Germany for my PhD at the Max-Planck Institute FKF in Stuttgart with Prof. M. Cardona, which I finished in 1989. It followed a two-years postdoc at AT&T Bell Labs in Murray Hill, USA, working with A. Pinczuk pursuing pioneer research on elementary excitations (e.g. plasmons) of 1D electron gases formed in GaAs quantum wires. After the postdoc I went back to the MPI Stuttgart for three years. In 1996 I switched to the Technical University of Berlin for an appointment as Research & Teaching Associate. I performed there my Habilitation as *Privat Dozent* in June 1998. I was awarded the Karl-Scheel Prize of the Physical Society of Berlin for my contributions to the field of high-pressure semiconductor physics in 1999. In November 2003 I joined ICREA for a permanent appointment at the Institut de Ciència de Materials de Barcelona (ICMAB-CSIC), co-founding the NANOPTO research group. Since 1996 I am directing the thesis work of many Ph.D. physics students and regularly teach physics courses at undergraduate and graduate level.

## 2 Academic Degrees

Performed my *Habilitation* at the Technical University of Berlin in June 1998 and obtained the degree of *Privat Dozent*. The habilitation thesis entitled *On the optical properties of semiconductors under pressure*, has been published as a review article in the *Semiconductors and Semimetals Series*, Vol. 54, 1998.

Obtained the degree of *Doktor der Naturwissenschaften* (Dr. rer. nat.) from the University of Stuttgart in July 1989. The thesis work was done with Prof. Cardona at the Max-Planck-Institut

für Festkörperforschung, Stuttgart, on the topic of optical properties of bulk semiconductors under high hydrostatic pressure.

Grade Point Average: 1 "sehr gut" (5-1)

Duration: 3 years.

Graduated with the degree of *Licenciado en Física* (Sc.M. in Physics) from the National University of Cuyo at the Balseiro-Institute of the National Atomic Energy Commission in December 1985. I performed an experimental thesis (three semesters) on electron distributions emitted in the interaction of ion beams with solid foils.

Grade Point Average: 8.76 (0-10)

Duration: 3 1/2 years.

Study of physics at the Institute of Mathematics, Astronomy and Physics (IMAF) of the National University of Córdoba.

Grade Point Average: 9.42 (0-10)

Duration: 2 1/2 years.

### **3 High School**

Graduated from the German School of Córdoba in 1979.

Grade Point Average: 9.83 (0-10)

Duration: 5 years.

### **4 Courses**

Two-days seminar in July 1999 on *Employee/Manager Personal Talks* within the framework of the *Employee-Development Program* of the Technische Universität Berlin.

Seminar (16 hours) on *Creation of a Technology-Based Enterprize* within the framework of the *CREIMAN Project* in May 2006 at the Universidad Autónoma de Barcelona.

Three+one days course on Leadership and Management Skills, developed and conducted by HFP Consulting in May 2024 at ICREA.

### **5 Languages**

Fluent in English, German and Spanish (mother tongue).

### **6 Fellowships (on the basis of merit)**

From July 1982 to March 1986 I held a fellowship from the National Atomic Energy Commission of the Rep. Argentina.

From April 1986 to July 1989 I held a graduate student fellowship from the Max-Planck-Gesellschaft, Germany.

## 7 Awards

Karl-Scheel Prize of the Physical Society of Berlin, awarded to Alejandro R. Goñi, Technische Universität Berlin, for his contributions to the field of high-pressure semiconductor physics, Berlin, 10th March, 1999.

EmErgEnt'23 Prize, categoria Llabor, of the Clúster de l'Energia Eficient de Catalunya (CEEC). Project *SOLS-Accelerador de Technologies Fotovoltàiques* from the Institut de Ciència de Materials de Barcelona (ICMAB-CSIC) awarded to Alejandro R. Goñi, Mariano Campoy-Quiles, Eulàlia Pujades and Miquel Casademont-Viñas, 10a Edició de La Nit de Eficiència #NITEE2023, Barcelona, 8th June, 2023.

Top 10 finalist of the 6<sup>th</sup> edition-2023 of "Premio Ideas Innovadoras, Isabel P. Trabal" Contest of the *Foundation Caja de Ingenieros*. Project *SOLS-Acelerador de Tecnologias Fotovoltaicas Emergentes* from the Institut de Ciència de Materials de Barcelona (ICMAB-CSIC) awarded to Alejandro R. Goñi, Mariano Campoy-Quiles, Eulàlia Pujades and Miquel Casademont-Viñas.

## 8 Experience

**ICREA Research Professor** (Institució Catalana de Recerca i Estudis Avançats) at the Institut de Ciència de Materials de Barcelona (ICMAB-CSIC) since November 2003, studying physical properties of nanostructured materials like semiconductors, oxides, polymers, among others and low-dimensional systems by means of optical spectroscopy. I further run the facility for high pressure experiments and coordinate the research activities on hybrid perovskites.

From April 2019 to December 2023, **Coordinator of the strategic Research Line RL1: Sustainable Energy Conversion & Storage Systems** of the Institute of Materials Science of Barcelona (ICMAB-CSIC) as well as member of ICMAB's Scientific Executive Board.

**Direction of the thesis work** of Master and Ph.D. students (4 in Germany and 9 in Spain), officially since 1998 (after my Habilitation). Since 2007 I regularly teach every winter semester at the Univ. Autònoma de Barcelona the course on *Optical properties of nanostructured materials* within the block "Materiales a escalas nanométricas" of the Master on Materials Science (duration 15 hours including 3 hours in the lab).

**Senior Research and Teaching Associate** at the Technical University of Berlin, Germany, from February 2002 to November 2003, conducting optical spectroscopy and transport experiments on condensed matter, semiconductor-superconductor hybrids and low-dimensional systems. I supervised the Master and Ph.D. thesis work of many physics students.

From February 2000 to February 2004 **member of the Executive Board** (Ressort *Colloquia*) of the Physical Society of Berlin (PGzB).

**Research and Teaching Associate** at the Technical University of Berlin, Germany, from January 1996 to January 2002, conducting optical spectroscopy experiments on condensed matter, semiconductor-superconductor hybrids and low-dimensional systems. I supervised the Master and Ph.D. thesis work of eight physics students. From October 1997 to April 1999 I taught at the Technical University of Berlin the Solid State Physics course for undergraduates in physics

(two-semester lecture, 4 hours weekly) and from April 1998 to August 2002 I taught also at the TU Berlin the Physics Introductory Course for all engineering students (2 hours weekly, approx. 500 to 1000 students).

**Research Associate** at Max-Planck-Institut FKF, Stuttgart, Germany, from November 1992 to December 1995, conducting optical spectroscopy measurements on condensed matter under high pressure. In parallel to my research activities I guided the thesis work of two Ph.D. students at the Max-Planck Institute. I taught a graduate physics course (duration: 30 hours) on *Optical Properties of Semiconductors under Pressure* at the University of Valencia, Spain, in November 1993, and at the National University of Córdoba, Argentina, in December 1994. I also taught a physics course for undergraduates (duration: 30 hours) on *Optical Spectroscopies on Semiconductors* at the Technical University of Berlin, Germany, between April-June 1995.

**Postdoctoral Research Associate** at AT&T Bell Labs, Murray Hill, USA, from September 1990 to November 1992. I carried out optical spectroscopy measurements on low dimensional semiconductor microstructures in a magnetic field.

**Postdoctoral Research Associate** at Max-Planck-Institut FKF, Stuttgart, Germany, from August 1989 to August 1990. I pursued optical spectroscopy measurements on condensed matter under high pressure.

**Research Assistant**, Max-Planck-Institut FKF, Stuttgart, Germany, April 1986- July 1989. I carried out experimental research on the optical properties of bulk semiconductors under high hydrostatic pressure.

**Research Assistant**, Atomic Collisions Group, Balseiro Institute, Centro Atómico Bariloche, Argentina, August 1984 to March 1986, conducting measurements on secondary electron emission by the interaction of an ion beam with solid foils. Assisted in designing and constructing an electrostatic electron analyzer and target chamber.

From July 1984 to July 1985 **teacher of mathematics and geometry** in the *Campaña Nacional de Alfabetización* for the alphabetization of adults in Bariloche, Argentina.

From March 1981 to July 1982 the **person in charge of the Physical-Chemical Laboratory** of the German School (Córdoba) and teaching assistant in the physics course.

## 9 Grants and Funding

1. Support from the Max-Planck-Gesellschaft zur Förderung der Wissenschaften e.V. for a one-month stay at Valencia University, Spain, November 1993, under the project *Wissenschaftliche Zusammenarbeit mit dem Consejo Superior de Investigaciones Científicas*. Type of participation: Grant holder.
2. *Acciones Integradas Hispano-Alemanas 1995* Grant No. AI95-36 from the Kernforschungszentrum Karlsruhe/Internationale Beziehungen-koordinierten WTZ-Vorhaben (1995 - 1997). Type of participation: Principal Investigator.
3. Start-up funding (200.000,- u\$s) from *Fondo de Superconductividad* of the Fundación Balseiro, Argentina, for setting up an optical spectroscopy laboratory at the Centro Atómico

- Bariloche, Argentina (1996-1997). Type of participation: Co-Principal Investigator.
4. *Acciones Integradas Hispano-Alemanas 1999* Grant from the Deutsche Akademische Austauschdienst (DAAD) for travel expenses DM 20.000,- for 2 years (1999 - 2000). Type of participation: Principal Investigator.
  5. *PROALAR 2000* Grant for a scientific collaboration between Germany (Technische Universität Berlin) and Argentina (Centro Atómico Bariloche) from the DAAD and FONCYT. DM 40.000,- for two years (2000 - 2001) to work on light-induced effects in high-Tc superconductors. One further year extension DM 20.000,- (2002). Type of participation: Principal Investigator.
  6. Sonderforschungsbereich Sfb-296 from the Deutsche Forschungsgemeinschaft (DFG). Research grant, DM 240.000,- for 3 years (2001 - 2003). Type of participation: Co-director of subproject B10.
  7. Research grant GO 676/9-1 from the Deutsche Forschungsgemeinschaft (DFG). EUR 180.000,- for 3 years (September 2001 - June 2004). Type of participation: Principal Investigator.
  8. *Convenio 01AR0001* Grant for a scientific collaboration between Spain and Argentina from the CSIC and CONICET, project no. 2004AR0076 . EUR 6.500,- for two years (November 2003 - December 2005). Type of participation: Principal Investigator.
  9. Project *Optoelectronic properties of Si-based semiconductor nanostructures grown by Molecular-Beam Epitaxy*, funded by MATGAS-Air Products and Chemicals, Inc. Total: 58.204,80 U\$S (-19% CSIC overhead), period: February 2003 - January 2004. Type of participation: Research Team Member.
  10. Project Ref. MAT-2003-00738, *Propiedades optoelectrónicas de nanoestructuras tensadas epitaxiales de semiconductores tipo IV* (PONTES-IV), from the Dirección Gral. de Investigación - Ministerio de Ciencia y Tecnología. Total: 144.900,00 EUR for the period December 2003 - November 2006. Type of participation: Research Team Member.
  11. Project *Optoelectronic properties of Si-based semiconductor nanostructures grown by Molecular-Beam Epitaxy*, funded by MATGAS-Air Products and Chemicals, Inc. Total: 50.000,- EUR (-19% CSIC overhead), period: October 2004 - September 2005. Type of participation: Research Team Member.
  12. Project *Micro/nano-optical spectroscopy facility* within the Nanotechnology Laboratory at Matgas 2000 AIE. Total: 215.000,00 EUR for equipment to set up the lab. Type of participation: Principal Investigator.
  13. Complements for the Micro/nano-optical spectroscopy facility at Matgas 2000 AIE from the Ministry of Sciences and Education (MEC) of Spain within the program *Ayudas para Parques Científicos y Tecnológicos*. Total: 49.000,00 EUR for equipment. Type of participation: Principal Investigator.

14. Our research group at ICMAB has been recognized as *Singular Research Group* under 2005SGR01032 by the Agencia de Gestio d'Ajuts Universitaris i de Recerca of the Generalitat de Catalunya, October 2005. Type of participation: Research Team Member.
15. Project Ref. MAT-2006-02680, *Nanoestructuras epitaxiales de SiGe para nanofonónica y aplicaciones termoeléctricas* (SiGe-NANOFONO), from the Ministerio de Educación y Ciencia. Total: 126.000,00 EUR for the period December 2006 - November 2009. Type of participation: Research Team Member.
16. Funding for the organization (chairman) of the 12th International Conference on High Pressure Semiconductor Physics (HPSP12) in CosmoCaixa Museum, Barcelona, Spain, August 2006, from different Spanish sources: 5.000,- EUR from the Ministerio de Educación y Ciencia (MEC), 4.500,- EUR from CSIC, 3.000,- EUR from Fundación BBVA, 2.300,- EUR from the Generalitat Valenciana, 1.200,- EUR from Universidad de La Laguna (ULL), and 500,- EUR from M.T. Brandao S.R.L. Total: 16.500,00 EUR. Type of participation: Principal Investigator.
17. *PROALAR 2007* Grant for a scientific collaboration between Germany (Technische Universität Berlin) and Argentina (Universidad Nacional de Córdoba, FaMAF) from the DAAD and FONCYT to work on ferrofluids. Total: 10.000,- EUR for two years (2007 - 2008). Type of participation: Principal Investigator.
18. Project Ref. HA2007-0084, *Acciones Integradas Hispano-Alemanas 2007, High pressure study of the lattice and carrier dynamics in self-assembled InAs/GaAs quantum dots*. Grant from the Spanish Ministry of Science & Education for travel expenses in the framework of a collaboration between our group at ICMAB and the group of Prof. Axel Hoffmann at the TU Berlin. Total: 7.000,- for 2 years (2008 - 2009). Type of participation: Principal Investigator.
19. Funding for the organization of the ICREA Phonon Engineering Workshop 2010 in Sant Feliu de Guíxols, Barcelona, Spain, to be held from 25 to 27th May 2010, from ICREA. Total: 25.000,- EUR. Type of participation: Co-Chairman.
20. Project within the 5th GICSERV program for access to the Lithography/Microfabrication Facility of CNM, *Nanocantilevers of Si/SiGe heterostructures with enhanced piezoresistivity*, from CSIC, Spain. Total: 3.000,00 EUR for the period November - December 2009. Type of participation: Principal Investigator.
21. Project Ref. MAT-2009-09480, *Piezoresistencias extremas en estructuras de Si/Ge por modulado de tensiones: Nuevos sensores de nanovigas (PIEZOHM)*, from the Ministerio de Ciencia e Innovación (MICINN) of Spain. Total: 193.600,00 EUR for the period February 2010 - January 2013. Type of participation: Principal Investigator.
22. Our research group *Propietats Optoelectròniques i Superficials de Materials Nanoestructurats* (NANOPTO) at ICMAB-CSIC has been recognized as *Consolidated Research Group* under 2009SGR558 by the Agencia de Gestio d'Ajuts Universitaris i de Recerca of the Generalitat de Catalunya, July 2009. Type of participation: Research Team Member.

23. Project Ref. CSD2010-00044, *Tailoring electronic and phononic properties of nanomaterials: Towards improved thermoelectricity* (NanoTHERM), in the framework of the CONSOLIDER-INGENIO 2010 Program from the Ministerio de Ciencia e Innovación (MICINN) of Spain. Total: 3.900.000,00 EUR for the period January 2011 - December 2015 (plus one year extension till Dec. 2016) for a consortium of nine research groups in Spain. Type of participation: Principal Investigator of the ICMA-B-CSIC group (Group funding: 512.000,00 EUR).
24. Project Ref. MAT2012-37776, *Investigación y optimización de dispositivos fotovoltaicos orgánicos nanoestructurados mediante un método de procesamiento inspirado en el análisis combinatorial* (PHOTOCOMB), from the Ministerio de Economía y Competitividad (MINECO) of Spain. Total: 121.000,00 EUR for the period January 2013 - December 2015 plus a FPI grant to contract a PhD. student to work on the project. Type of participation: Research Team Member.
25. Project Ref. PICT-2012-2286, *Propiedades ópticas de nanoestructuras plasmónicas generadas por química coloidal, nanolitografía láser y por procesos de sinterizado a muy altas presiones: Aplicación a espectroscopías ultrasensibles*, from FONCYT of Argentina. Total: 398.840 \$AR for the period June 2013 - June 2016. Type of participation: Principal Investigator of the Spanish group.
26. Our research group *Materials Nanoestructurats per Optoelectrònica i Generació d'Energia* (NANOPTO) at ICMA-B-CSIC has been recognized as *Consolidated Research Group* under 2014SGR1637 by the Agencia de Gestio d'Ajuts Universitaris i de Recerca of the Generalitat de Catalunya, September 2014. Type of participation: Research Team Member.
27. Research project to be developed by Dr. Joffre Gutiérrez Royo, recipient of a Beatriu de Pinós 2014 (BP-DGR) grant, Ref. 2014 BP-B 00211, by the Agencia de Gestio d'Ajuts Universitaris i de Recerca of the Generalitat de Catalunya. Total: 91.022,40 EUR for the period September 2015 - August 2017. Type of participation: Principal Investigator (Responsible).
28. Project Ref. MAT2015-70850-P, *Organic/inorganic hybrid materials for photovoltaic/thermoelectric hybrid applications* (HIBRI2), from the Ministerio de Economía y Competitividad (MINECO) of Spain. Total: 149.314,00 EUR for the period January 2016 - December 2018 plus a FPI grant to contract a PhD. student to work on the project. Type of participation: Principal Investigator.
29. Personnel grant of Formación de Personal de Investigación (FPI) from the Ministerio de Economía y Competitividad (MINECO) of Spain in the framework of the *Severo Ochoa* Programme for Centres of Excellence in R&D (SEV-2015-0496) to hire a PhD student for four years (86.500,- EUR) to work on the project: *Engineering the Solar Spectrum with Photonic Architectures for Improved Solar Energy Conversion*. Type of participation: Co-Director.
30. Industrial project on technological knowledge transfer between CSIC and a private sector company, KOSTAL Eléctrica S.A. Total: 24.700,00 EUR for the period September 2015 -



October 2023. Type of participation: Principal Investigator.

31. Our research group *Materials Nanoestructurats per Optoelectrònica i Generació d'Energia* (NANOPTO) at ICMAB-CSIC has been recognized as *Consolidated Research Group* under 2017SGR00488 by the Agència de Gestió d'Ajuts Universitaris i de Recerca of the Generalitat de Catalunya, February 2018. Total: 40.000,- EUR. Type of participation: Research Team Member.
32. Research project *Plasmon-resonance driven thermionic emitters for improved solar energy harvesting*, to be developed by Dr. Luis. A. Pérez, recipient of Marie Skłodowska-Curie Individual Fellowship, Grant No. H2020-MSCA-IF-2018-839402 (PLASMIONICO). Total: 172.932,48 EUR for the period September 2019 - August 2021. Type of participation: Principal Investigator.
33. Project Ref. PGC2018-095411-B-I00, *Efficient harvesting of visible and infrared solar energy through rainbow architectures* (RAINBOW), from the Ministerio de Ciencia, Innovación y Universidades of Spain. Total: 169.400,00 EUR for the period January 2019 - December 2021 plus a FPI grant to contract a PhD. student to work on the project. Type of participation: Principal Investigator.
34. Severo Ochoa Centers of Excellence Award granted to the Institut de Ciència de Materials de Barcelona (ICMAB-CSIC) with Rosa Palacín as Scientific Director, Ref. CEX2019-000917-S (FUNFUTURE), by the Spanish Ministry of Science & Innovation (MICINN). Total: 4.000.000,00 EUR for the period January 2020 - December 2023 for the whole institute. Type of participation: Guarantor Investigator and Coordinator of the Research Line RL1: *Sustainable Energy Conversion & Storage Systems*.
35. Project Ref. PID2021-128924OB-I00, *Improving solar cell efficiency by spectral matching and charge mobility enhancement* (ISOSCELLES), from the Spanish Ministry of Science & Innovation (MICINN). Total: 272.250,- EUR for the period September 2022 - August 2025 plus a FPI grant to contract a PhD. student to work on the project. Type of participation: Co-Principal Investigator.
36. Personnel grant of Formación de Personal de Investigación (FPI) from the Ministerio de Ciencia e Innovación (MICINN) of Spain in the framework of the *Severo Ochoa* Programme for Centres of Excellence in R&D (CEX2019-000917-S) to hire a PhD student for four years (96.500,- EUR) to work on the project: *Efficient Light-Emitting Low-Dimensional Hybrid Perovskites Studied Using High Pressure*. Type of participation: Director.
37. Project Ref. TED2021-132807B-I00, *CO<sub>2</sub> conversion into chemicals of industrial interest by plasmon-assisted photocatalysis* (PLASMOCRACO2) from the call "Projects Oriented to the Ecological and the Digital Transition" in the framework of the "Recovery, Transformation and Resilience Plan 2021-2023" from the Spanish Ministry of Science & Innovation (MICINN). Total: 209.300,- EUR for the period December 2022 - August 2025. Type of participation: Principal Investigator.

38. Project Ref. PDC2022-134001-I00, *Spectrum-on-demand light source for photovoltaic materials characterization* (SOLS) from the call "Proof of Concept 2022" in the framework of the "State Program to Promote Research and its Transfer" from the Spanish Ministry of Science & Innovation (MICINN). Total: 149.500,- EUR for the period December 2022 - April 2025. Type of participation: Principal Investigator.
39. Our research group *Materials Nanoestructurats per Optoelectrònica i Generació d'Energia* (NANOPTO) at ICMA-B-CSIC has been recognized as *Consolidated Research Group* under 2021SGR00444 by the Agència de Gestió d'Ajuts Universitaris i de Recerca of the Generalitat de Catalunya, January 2023. Total: 60.000,- EUR. Type of participation: Research Team Member.

## 10 Professional Affiliations

Member of the Argentine Physical Society (AFA).

Member of the American Physical Society (APS).

Member of the German Physical Society (DPG).

Ex-Board Member of the Physical Society of Berlin (PGzB).

## 11 Invited Presentations

1. March Meeting of the APS, Indianapolis, USA, March 1992. *Inelastic Light Scattering by the 1D Electron Gas in GaAs Quantum Wires*.
2. NATO Advanced Research Workshop on Phonons in Nanostructures, St-Feliu de Guixols, Spain, September 1992. *Inelastic Light Scattering by Free Electrons in GaAs Quantum Wires*.
3. The 6<sup>th</sup> HPSP International Conference, Vancouver, Canada, August 1994. *Electron-Electron Interactions in 2D Electron Gases: Inelastic Light Scattering Studies at High Pressure*.
4. Physikalisches Kolloquium, Technische Universität Berlin, Germany, October 1994. *Über das eindimensionale Elektronengas in GaAs Quantendrähten*.
5. Seminar of the Solid State Physics Department, University of Aarhus, Denmark, October 1994. *Electron-electron interactions in 2D electron gases: Inelastic light scattering studies at high pressure*.
6. Seminario del Grupo de Bajas Temperaturas, Centro Atómico Bariloche, Argentina, December 1994. *Propiedades ópticas de alambres cuánticos dopados en estructuras semiconductoras de GaAs/AlGaAs*.
7. Seminar *Spezielle Probleme der Halbleiterphysik*, Universität Würzburg, Germany, July 1995. *Electron-electron interactions in 2D electron gases: Inelastic light scattering studies at high pressure*.

8. The Joint XV AIRAPT & XXXIII EHPRG International Conference, Warsaw, Poland, September 1995. *High-Pressure Study of Electron-Electron Interactions in Double-Layer 2D Electron Gases.*
9. Kolloquium der AG Thomsen, Technische Universität Berlin, Germany, April 1996. *Druck-Temperatur Phasendiagramm von  $\text{CuGeO}_3$  (mit Videodemonstration).*
10. Seminar *Moderne Probleme der Festkörperphysik*, Institut für Theoretische Physik (AG Bennemann), Freie Universität Berlin, Germany, June 1997. *Inelastische Lichtstreuung an elementaren Anregungen des 2D Elektronengases unter hohem Druck.*
11. The 10th International Conference of Superlattices, Microstructures and Microdevices (ICSMM), Lincoln, Nebraska, U.S.A., July 1997. *Lasing Properties of a Single, Highly Strained InAs Monolayer in Bulk GaAs.*
12. Seminario conjunto del Grupo de Bajas Temperaturas y de Teoría de Sólidos, Centro Atómico Bariloche, Argentina, August 1997. *La interacción electrón-electrón en gases de electrones bidimensionales: Un estudio espectroscópico a altas presiones.*
13. The 14th Latinamerican Symposium in Solid State Physics (SLAFES), Oaxaca, Mexico, January 1998. *Lasing and electronic properties of single InAs monolayers embedded in bulklike GaAs.*
14. Habilitationsvortrag (multimedia presentation with live high-pressure experiment) Technische Universität Berlin, Germany, June 1998. *Über die supraleitenden Eigenschaften von Silizium.*
15. Seminarvortrag am Paul-Drude-Institut, Berlin, Germany, October 1998. *Lasing and electronic properties of single InAs monolayers in bulklike GaAs.*
16. Seminar of the Department of Superconductivity and Magnetism, Universität Leipzig, Germany, November 1998. *Flußschlauchbewegung in Form von Filamenten und Kanälen in Pb/In-Supraleiterschichten.*
17. SCIENCE-Seminar der Universität Hamburg, Germany, December 1998. *Many-body effects in 2D electron gases: Inelastic light scattering studies at high pressure.*
18. Karl-Scheel-Prize Session of the Physical Society of Berlin, Germany, May 1999. *Druckinduzierte Übergänge in Halbleiter- und Spinleitersystemen.*
19. Physikalisches Kolloquium der Universität des Saarlandes, Saarbrücken, Germany, July 1999. *Über den Einfluß hoher Drücke auf die elektronischen Eigenschaften niederdimensionaler Halbleiterstrukturen.*
20. Vorstellungsvortrag an der Albert-Ludwigs-Universität Freiburg, Germany, July 1999. *Über den Einfluß hoher Drücke auf die elektronischen Eigenschaften niederdimensionaler Halbleiterstrukturen.*

21. 2nd TMR workshop on *Quantum Transport in the Frequency and Time Domains*, Genova, Italy, October 1999. *Inelastic light scattering on a two-dimensional electron gas with variable density.*
22. The 15th Latinamerican Symposium in Solid State Physics (SLAFES), Cartagena, Colombia, November 1999. *Eddy-current vortex damping in superconductor-semiconductor hybrid systems.*
23. Seminario del Grupo de Bajas Temperaturas, Centro Atómico Bariloche, Argentina, August 2000. *Dinámica de vórtices en híbridos super-semiconductores.*
24. Coloquios sobre Física del Sólido, Instituto Balseiro, Bariloche, Argentina, August 2000. *Efectos de muchos cuerpos en gases bidimensionales de electrones de densidad variable.*
25. Seminarios sobre Temas Actuales de la Física, FAMAF, Universidad Nacional de Córdoba, Argentina, August 2000. *Disipación por generación de corrientes de Foucault en híbridos super-semiconductores.*
26. Coloquios en Física de la Materia Condensada, UBA, Buenos Aires, Argentina, August 2000. *Efectos de muchos cuerpos en gases bidimensionales de electrones de densidad variable.*
27. Elektrotechnisches Kolloquium der Universität des Saarlandes, Saarbrücken, Germany, December 2000. *Über stimulierte Emission und optische Eigenschaften von Halbleiter-Nanostrukturen.*
28. Coloquios sobre Física del Sólido, Instituto Balseiro, Bariloche, Argentina, February 2001. *El rol de la interacción electrón-fonón en la renormalización de transiciones ópticas en una monocapa de InAs en bulk GaAs.*
29. Seminarios sobre Temas Actuales de la Física, FAMAF, Universidad Nacional de Córdoba, Argentina, February 2001. *Propiedades electrónicas de puntos cuánticos auto-organizados de InAs/InGaAs en altos campos magnéticos.*
30. Kolloquium der Abteilung Keimer, MPI für Festkörperforschung, Stuttgart, Germany, April 2001. *Many-body effects in 2D electron gases of variable density studied by optical spectroscopy.*
31. Coloquio de Física del Instituto de Ciencias de Materiales, Universidad de Valencia, Spain, October 2001. *Inestabilidad del gas bidimensional de electrones y otros efectos de muchos cuerpos relacionados con la interacción de intercambio.*
32. Seminarios de Física del Estado Sólido, Universidad Autónoma de Madrid, Spain, October 2001. *Inestabilidad del gas bidimensional de electrones y otros efectos de muchos cuerpos relacionados con la interacción de intercambio.*
33. Coloquios sobre Física del Sólido, Instituto Balseiro, Bariloche, Argentina, November 2001. *El rol de la interacción de intercambio en el comportamiento de gases bidimensionales de electrones a altas densidades.*

34. Seminarios sobre Temas Actuales de la Física, FAMAF, Universidad Nacional de Córdoba, Argentina, November 2001. *El rol de la interacción de intercambio en el comportamiento de gases bidimensionales de electrones a altas densidades.*
35. Department of Physics, Texas Tech University, Lubbock, Texas, USA, May 2002. *High-pressure effects on the electronic and optical properties of low-dimensional semiconductor structures.*
36. Instituto de Ciencias de Materiales de Barcelona (ICMAB), Barcelona, Spain, June 2002. *Lasing and optical properties of low-dimensional semiconductor nanostructures.*
37. 87<sup>th</sup> meeting of the Argentine Physical Society (AFA2002), Huerta Grande, Córdoba, Argentina, September 2002. *Espectroscopía Raman en ferrofluidos.*
38. Coloquios sobre Física del Sólido, Instituto Balseiro, Bariloche, Argentina, October 2002. *Espectroscopía Raman en ferrofluidos.*
39. Coloquio General de Física del Instituto Balseiro, Bariloche, Argentina, February 2003. *Sobre ferromagnetismo en gases bidimensionales de electrones.*
40. The 2<sup>nd</sup> Euroconference on Quantum Optoelectronics for Nanotechnology (EQUONT-2), Toledo, Spain, June 2003. *On the electronic structure of quantum dots in external magnetic and stress fields.*
41. Conferència a Càrrec, ICMAB, Barcelona, Spain, May 2004. *Does the 2D electron gas become ferromagnetic?*
42. Seminario General del ICMM, Madrid, Spain, June 2004. *Does the two-dimensional electron gas become ferromagnetic?*
43. Coloquio General de Física del Instituto Balseiro, Bariloche, Argentina, November 2004. *Recombination dynamics in self-assembled InP/GaP quantum dots under high hydrostatic pressure.*
44. 17th ICREA Colloquium, Barcelona, Spain, October 2005. *Squeezing Light from Ge/Si Quantum Dots: A Challenge of Semiconductor Nanotechnology.*
45. Jornadas de Física Bariloche 2005 - Conmemorando los 50 años del Instituto Balseiro, Bariloche, Argentina, December 2005. *Squeezing Light from Ge/Si Quantum Dots: A Challenge of Semiconductor Nanotechnology.*
46. 3<sup>rd</sup> International Workshop on Multifunctional Materials, Bariloche, Argentina, March 2006. *Carbon-induced Ge/Si Quantum Dots for Strain-Engineered Semiconductor Microdevices.*
47. Jornadas de Ciencia y Sociedad a los 50 Años de Fa.M.A.F., Córdoba, Argentina, December 2006. *Opto-electrónica a base de silicio/germanio? Un sueño convertido en desafío nanotecnológico.*

48. Jornada de Microscòpies de Proximitat ICMAB-CSIC, Barcelona, Spain, April 2007. *Principios generales y aplicaciones de la microscopía óptica de campo cercano (SNOM)*.
49. Invited address at the Slovak Academy of Sciences, Bratislava, Slovakia, July 2007. *Probing the strain status of self-assembled quantum dots using high pressure*.
50. Sólidos 2007, (PLENARY), Huerta Grande, Córdoba, Argentina, November 2007. *Sensing strain at the nanoscale with optical phonons: SiGe alloys & quantum dots*.
51. The 13<sup>th</sup> Int. Conf. on High Pressure Semiconductor Physics (HPSP13), Fortaleza, Brazil, July 2008. *Phonon Pressure Coefficient as Nanoscale Probe of Strain in SiGe Alloys & Quantum Dots*.
52. Seminarios sobre Temas Actuales de la Física, FaMAF, Universidad Nacional de Córdoba, Argentina, August 2008. *Sensing Light at the Nanoscale: Scanning Near-Field Optical Microscopy (SNOM)*.
53. II Barcelona Workshop on Optical Characterization of Materials, Barcelona, Spain, October 2008. *SNOM: Applications for the Characterization of Nanocavities and Nanostructures*.
54. Seminarios sobre Temas Actuales de la Física, FaMAF, Universidad Nacional de Córdoba, Argentina, March 2010. *Ferrofluids in Action: Dynamics of Magnetic-Field Induced Structure Formation*.
55. The 14<sup>th</sup> Int. Conf. on High Pressure Semiconductor Physics (HPSP14), Changchun, China, August 2010. *Reduction of the Transverse Effective Charge of Optical Phonons in ZnO under High Pressure*.
56. ICMAB Periodical Seminars, Institut de Ciencia de Materials de Barcelona (ICMAB-CSIC), Spain, November 2010. *Ferrofluids in Motion: Dynamics of Magnetic-Field Induced Structure Formation*.
57. V Encuentro de Altas Presiones, La Laguna, Tenerife, Spain, June 2011. *Sensing Strain at the Nanoscale with Optical Phonons: Application to SiGe Alloys & Ge Quantum Dots*.
58. 2<sup>nd</sup> EULASUR Summerschool, La Plata, Argentina, September 2011. *Scanning Near-Field Microscopy: Fundamentals & Applications*.
59. V Meeting of Consolider NanoTHERM, San Sebastián, Spain, October 2012. *High Thermoelectric Performance of P3HT/Carbon Nanotube Composites*.
60. ICMAB Scientific Workshop on *Optical Characterization*, Bellaterra, Spain, November 2012. *Optical Spectroscopy under High Hydrostatic Pressure*.
61. 3<sup>rd</sup> RBNI-Technion / CIC-Nanogune / BNC-B Symposium, Bellaterra, Spain, November 2012. *Using High Pressure to Settle the Quantum Confinement Model of Visible Emission from Si/SiO<sub>x</sub> Nanocrystals*.

62. 1<sup>st</sup> UFMA International Meeting on Characterization and Modeling of Materials, São Luis, Brazil, June 2013. *Using Raman Scattering for Sensing Strain at the Nanoscale: Application to SiGe Alloys and Ge Quantum Dots.*
63. FOTON-INSA Séminaire, Rennes, France, August 2013. *Using High Pressure to Unravel the Mechanism of Visible Emission in Amorphous Si Nanoparticles Embedded in a SiO<sub>x</sub> Matrix.*
64. Seminario de Física de FaMAF, Córdoba, Argentina, March 2014. *Using High Pressure to Unravel the Mechanism of Visible Emission in Amorphous Si/SiO<sub>x</sub> Nanoparticles.*
65. 2<sup>nd</sup> Imperial College London-ICMAB Workshop on Organic Photovoltaics, Barcelona, Spain, June 2014. *Effects of High Pressure on Electronic & Optical Properties of Conjugated Polymers.*
66. The 16<sup>th</sup> Int. Conf. on High Pressure Semiconductor Physics (HPSP16), Mexico D.F., Mexico, August 2014. *Using High Pressure to Unravel the Nature of Optical Transitions in (In,Ga)As/GaP Quantum Dots.*
67. EUPHONON Workshop on Phonons & Fluctuations, Le Mans, France, September 2014. *Tailoring Thermal Conductivity in Multilayered Ge/Si Nanostructures.*
68. CECAM Workshop Advanced Thermoelectrics at Nanoscale: from Materials to Devices, Paris, France, July 2015. *Polymer/Carbon Nanotube Composites with Positive-to-Negative Tunable Seebeck Coefficient.*
69. Recordant Manuel Cardona, Barcelona, Spain, July 2016. *A personal view to the figure of Manuel Cardona from a few disperse, little stories.*
70. International Workshop *What is bright with light?* (Bright2016), S.C. de Bariloche, Argentina, December 2016. *The Role of Dynamic Disorder in the Vibrational Spectra of Hybrid Methylammonium Lead Halide Perovskites.*
71. ICMAB Periodical Lecture, Barcelona, Spain, January 2017. *What is Dynamic Disorder and how manifests itself in Hybrid Halide Perovskites?.*
72. International Conference and Expo on Condensed Matter Physics, Valencia, Spain, September 2017. *On the effect of high pressure on transverse effective charges of optical phonons in group-III nitrides and ZnO.*
73. Research Workshop Fundamental Processes in Thin Film Solar Cells (EMTECH2017-Seville), Seville, Spain, October 2017. *Dynamic disorder and the vibrational spectra of hybrid halide perovskites.*
74. Current trends in Optical and X-Ray metrologies of key enabling nanomaterials/devices for the Ubiquitous Society, renewable energy and health (OptoX NANO), Okayama, Japan, November 2017. *Using pressure to unravel the nature of optical transitions in quantum dots.*

75. E-MRS Spring Meeting 2018, Symposium BB: Current trends in Optical and X-Ray metrologies of advanced materials for nanoscale devices V, Strasbourg, France, June 2018. *Using High Pressure to Unravel the Nature of Optical Transitions in Low-Dimensional Semiconductor Nanostructures.*
76. International Conference on Functional Nanomaterials and Nanodevices 2018, Vienna, Austria, September 2018. *Using Pressure and Temperature to Unravel the Structural-Optical/Vibrational-Properties Relationship in Hybrid Perovskites.*
77. Research Network Perovskites for solar energy conversion and optoelectronics (PER-OVSKITAS18), Torremolinos, Spain, October 2018. *Optical Spectroscopy under High Hydrostatic Pressure.*
78. Multifunctional Optical Materials Group Seminar, Seville, Spain, January 2019. *Using Pressure and Temperature to Unravel the Structural-Optical/Vibrational-Properties Relationship in Hybrid Perovskites.*
79. Research Network Perovskites for solar energy conversion and optoelectronics, Castelló, Spain, May 2019. *Combining Temperature and Pressure-Dependent PL Measurements to Benchmark Electron-Phonon Interaction Effects in Hybrid Perovskites.*
80. NanoGe Fall Meeting, Berlin, Germany, November 2019. *Equal Footing of Thermal Expansion and Electron-Phonon Interaction in the Temperature Dependence of Lead Halide Perovskite Band Gaps.*
81. SPIE Optics & Photonics 2020, Organic & Hybrid Photovoltaics Symposium (OHPV21), San Diego, USA (Digital Forum), August, 2020. *Understanding the Temperature Dependence of Hybrid Perovskite Band Gaps in Terms of Thermal Expansion and Electron-Phonon Interaction.*
82. Joint Int. Conf. of the European & Spanish Condensed Matter Divisions (CMD2020GEFES), Symposium on Strain in Metal-Halide Perovskites and Other Emerging Nanomaterials, Madrid, Spain, September 2020 (online). *Using pressure to Study the Impact of the Electron-Phonon Interaction on the Band Structure of Bulk and Nano-Crystalline Hybrid Perovskites.*
83. Online Meeting on Perovskites for Light Emission (PERLIGHEM), Spain, October 2020. *Shallow-Defect Photophysics of Methylammonium/Formamidinium Lead Iodide Perovskite Mixed Crystals at Low Temperatures.*
84. Int. Conf. on Electron-Phonon Coupling and Thermoelectric Efficiency (LIVE/ONLINE CONGRESS), San Sebastián, Spain, November 2020. *Understanding the Temperature Dependence of Hybrid Perovskite Band Gaps in Terms of Thermal Expansion and Electron-Phonon Interaction.*
85. XVI Jornada de Recerca del Departament de Física, Universitat Polytècnica de Catalunya (UPC), Barcelona, Spain, January 2021. *High-Pressure as a Tool for Disentangling Electron-Phonon Coupling and Thermal Expansion. Effects in the Band-Gap Renormalization of Hybrid Perovskites.*



86. IX Workshop on Novel Methods for Electronic Structure Calculations (VIRTUAL), La Plata, Argentina, November 2021. *Understanding the Temperature & Pressure Dependence of Hybrid Perovskite Band Gaps.*
87. 10th Asian Conf. on High Pressure Research (ACHPR10) combined with 19th Int. Conf. on High Pressure Semiconductor Physics (HPSP19) & 3rd Int. Workshop on High Pressure Study on Superconductors (WHS3), (KEYNOTE-VIRTUAL), Korea, November 2021. *Using Pressure to Assess the Impact of Electron-Phonon Interaction on the Band Gap of Bulk and Nanocrystalline Hybrid Perovskites.*
88. 2nd Global Summit & Expo on Lasers, Optics and Photonics (GSELOP2022), Edinburgh, UK, August 2022. *Plasmonic inverted-pyramid arrays for harvesting infrared sunlight.*
89. 2nd Int. Meet & Expo on Semiconductors, Optoelectronics & Nanostructures (SEMICONMEET2022), Barcelona, September 2022. *Plasmonic inverted-pyramid arrays for harvesting infrared sunlight.*
90. 2nd Annual Conference on Global Nanotechnology (NanoSeries2023), Madrid, Spain, June, 2023. *Hot-Electron Sunlight Harvesters Based on Plasmonic Inverted-Pyramid Arrays.*
91. 3rd Edition of Unite Scientific Chemistry Conference (USCC2023), VIRTUAL, Rome, Italy, June, 2023. *The Ferroelectric-Ferroelastic Debate of Metal Halide Perovskites.*
92. 2023 Nanotechnology Materials and Devices Conference (IEEE-NMDC23), Paestum (Salerno), Italy, October, 2023. *Hot-Electron Generators Based on Plasmonic Inverted-Pyramid Arrays for Solar-Energy Harvesting.*
93. 3rd Annual Conference on Global Nanotechnology (NanoSeries2024), Lisbon, Portugal, June, 2024. *Understanding the temperature renormalization of the fundamental gap in mixed-halide  $\text{CsPb}(\text{Br}, \text{Cl})_3$  nanocrystals.*
94. Symposium at Multifunctional Optical Materials Group of ICMS-CSIC, Seville, Spain, July 2024. *Halide Ionic Radius Matters: Reversal of the Gap Temperature Dependence of  $\text{CsPb}(\text{Br}, \text{Cl})_3$  Nanocrystals due to Anomalous Electron-Phonon Coupling.*
95. 109<sup>th</sup> Annual Meeting of the Argentine Physical Society (AFA2024), (PLENARY), San Luis, Argentina, September 2024. *From the Metal Halide Perovskite Playground: The Physics of the Temperature Dependence of the Fundamental Gap.*
96. Int. Conf. "At the Frontiers of Condensed Matter" (FCM2024), Buenos Aires, Argentina, December 2024. *The Ferroelectric-Ferroelastic Debate of Metal Halide Perovskites.*
97. Annual Int. Conf. on Optics, Photonics and Lasers (AICOPL2025), (KEYNOTE), Rome, Italy, March 2025. *RAINBOW Organic Solar Cells: Implementing Spectral Splitting in Lateral Multi-Junction Architectures.*

## 12 Dissemination

- Talk for a broad audience (ca. 300 high-school students), including projection of a video and realization of a life experiment, in the framework of *Dia de la ciència a les escoles 2015 - La ciència en primera persona*, Institut Miquel Biada, Mataró, Spain, 18th November 2015, organized by Fundació Catalana per a la Recerca i la Innovació (FCRI).

*'Apretando' materiales para sonsacarles información: Física a muy altas presiones.*

- Talk for a broad audience (ca. 100 high-school students), including projection of a video and realization of a life experiment, in the framework of *Dia de la ciència a les escoles 2016 - La ciència en primera persona*, Instituto Maremar, Masnou, Spain, 15th November 2017, organized by Fundació Catalana per a la Recerca i la Innovació (FCRI).

*La magia de la termoelectricidad: materiales que transforman calor en electricidad.*

## 13 Ph.D. Thesis Directed

1. Paula Giudici, *On the spin instability and magnetic phases of the two-dimensional electron gas*, directors: A.R. Goñi, C. Thomsen, Inst. für Festkörperphysik, TUB - Technische Universität Berlin, 28/09/2004, 1 (sehr gut) mit Auszeichnung.
2. Sabine Bahrs, *Persistent photo-induced effects in high-temperature superconducting  $R\text{Ba}_2\text{Cu}_3\text{O}_{7-\delta}$* , directors: A.R. Goñi, C. Thomsen, Inst. für Festkörperphysik, TUB - Technische Universität Berlin, 25/11/2005, 1 (sehr gut) mit Auszeichnung.
3. Christian Kristukat, *High-pressure study of the electronic structure of self-assembled  $\text{InAs}/\text{GaAs}$  and  $\text{InP}/\text{GaP}$  quantum dots*, directors: A.R. Goñi, C. Thomsen, Inst. für Festkörperphysik, TUB - Technische Universität Berlin, 10/02/2006, 1 (sehr gut) mit Auszeichnung.
4. Juan Sebastián Reparaz, *Optical Properties of Low-Dimensional Semiconductor Nanostructures under High Pressure*, directors: A.R. Goñi, M.I. Alonso, Dept. of Physics, UAB - Universitat Autònoma de Barcelona, 18/11/2008, Excelente "cum laude".
5. Paul D. Lacharmoise, *Optical techniques with high spatial resolution and sensitivity for nanostructure characterization*, directors: A.R. Goñi, M.I. Alonso, Dept. of Physics, UAB - Universitat Autònoma de Barcelona, 05/05/2009, Excelente "cum laude".
6. Dirk Heinrich, *Strukturbildung in Ferrofluiden unter Einfluss magnetischer Felder*, directors: A.R. Goñi, C. Thomsen, Inst. für Festkörperphysik, TUB - Technische Universität Berlin, 02/09/2010, 1 (sehr gut).
7. Ioana Carmen Marcus, *Growth, optical and structural investigation of  $\text{SiGe}$  nanostructures*, directors: M.I. Alonso, A.R. Goñi, Dept. of Physics, UAB - Universitat Autònoma de Barcelona, 20/04/2012, Apta.

8. Lucas Romano Muniz, *Propiedades Ópticas de Semiconductores bajo Altas Presiones Hidrostáticas*, directors: A.R. Goñi, M.I. Alonso, Dept. of Physics, UAB - Universitat Autònoma de Barcelona, 28/09/2012, Apto.
9. Malte Schmidt, *Understanding the optical and electronic properties of organic semiconductors using high pressure*, directors: M. Campoy-Quiles, A.R. Goñi, M.I. Alonso, Dept. of Physics, UAB - Universitat Autònoma de Barcelona, 21/06/2013, Apto.
10. Alessandro Bernardi, *Growth and optical characterization of strain-engineered semiconductor nanostructures*, directors: M.I. Alonso, A.R. Goñi, Dept. of Physics, UAB - Universitat Autònoma de Barcelona, 05/02/2016, Excelente "cum laude".
11. Adrián Francisco-López, *Understanding the temperature and pressure dependence of the optoelectronic and structural properties of  $FA_xMA_{1-x}PbI_3$  perovskite solid solutions*, directors: A.R. Goñi, M. Campoy-Quiles, M.I. Alonso, Dept. of Physics, UAB - Universitat Autònoma de Barcelona, 14/04/2020, Excelente "cum laude".
12. Jinhui Hu, *Plasmon-induced photocurrent generation in metal-semiconductor devices with nanofabricated inverted pyramid arrays*, directors: A.R. Goñi, M.I. Alonso, Dept. of Physics, UAB - Universitat Autònoma de Barcelona, 02/11/2022, Excelente.
13. Kai Xu, *Contactless frequency-domain thermoreflectance (FDTR) approaches to study thermal anisotropic materials*, directors: J.S. Reparaz, A.R. Goñi, M.I. Alonso, Dept. of Physics, UAB - Universitat Autònoma de Barcelona, 31/10/2023, Excelente "Cum Laude".
14. Miquel Casademont-Viñas, *Towards organic multi-junction RAINBOW solar cells*, directors: M. Campoy-Quiles, A.R. Goñi, Dept. of Physics, UAB - Universitat Autònoma de Barcelona, 24/10/2024, Excelente "Cum Laude".

## 14 Chairman

1. *12<sup>th</sup> Int. Conf. on High Pressure Semiconductor Physics (HPSP12)*, CosmoCaixa Museum, Barcelona, Spain, July 31 - August 3, 2006, co-chairmen: A.R. Goñi & A. Cantarero.
2. *Joint 18<sup>th</sup> Int. Conf. on High Pressure Semiconductor Physics (HPSP18) and 2<sup>nd</sup> Workshop on High-pressure Study of Superconductors (WHS2)*, CosmoCaixa Museum, Barcelona, Spain, July 23 - 27, 2018, co-chairmen: A.R. Goñi & F. Rodríguez.
3. *Severo Ochoa Summer School on Materials for Energy (MATENER2018)*, ICMAB-CSIC, Bellaterra, Spain, September 17 - 20, 2018, organization coordinator: A.R. Goñi.

## 15 Editor

1. Section Editor of the online peer-reviewed international scientific journal *Papers in Physics*.

2. *Proceedings of the 7<sup>th</sup> Int. Conf. on High Pressure Semiconductor Physics* (HPSP7), Schwäbisch Gmünd, Germany, July 1996, edited by K. Syassen, R.A. Stradling, and A.R. Goñi (Akademie, Berlin, 1996). Published in *phys. stat. sol. (b)* **198**, Number 1 (1996).
3. *Proceedings of the 11<sup>th</sup> Int. Conf. on High Pressure Semiconductor Physics* (HPSP11), Berkeley, USA, August 2004, edited by U. Venkateswaran and A.R. Goñi (Wiley, Berlin, 2004). Published in *phys. stat. sol. (b)* **241**, Number 14 (2004).
4. *Proceedings of the 15<sup>th</sup> Int. Conf. on High Pressure Semiconductor Physics* (HPSP15), Montpellier, France, July 2012, edited by A.R. Goñi, P.Y. Yu, and A. San Miguel (Wiley, Berlin, 2012). Published in *phys. stat. sol. (b)* **250**, Number 4 (2013).
5. *Proceedings of the Joint 17<sup>th</sup> Int. Conf. on High Pressure Semiconductor Physics* (HPSP17) and Workshop on High-pressure Study on Superconducting (WHS), Tokyo, Japan, August 2016, edited by A.R. Goñi and K. Matsuishi. Published in *Jap. J. Appl. Phys. Conf. Proc.* **6**, 011101-011107 (2017).
6. *Proceedings of the Joint 18<sup>th</sup> Int. Conf. on High Pressure Semiconductor Physics* (HPSP18) and 2<sup>nd</sup> Workshop on High-pressure Study of Superconductors (WHS2), Barcelona, Spain, July 2018, edited by A.R. Goñi, A. Cantarero and J.S. Reparaz. Published as *Focus Series* in *Pap. Phys.* **11**, 110001-110006 (2019).

## 16 Patents

1. Ref. ES1641.1145 registered 2015-11-24 in Spain: *A process of obtainment of an n-type organic semiconductor by irradiating a p-type organic semiconductor with UV-VIS radiation*, M. Campoy-Quiles, A.R. Goñi, B. Dörling, C. Müller, and J. Ryan, granted to CSIC.  
International application according to Patent Cooperation Treaty, Ref. PCT/EP2016/078459, presented on 2016-11-22 at European Patent Office, The Hague: *A process of obtainment of an n-type or a p-type organic semiconductor by UV-VIS irradiation*, on behalf of CSIC. European extension of PCT agreement, Ref. EP16805994.7 filed on 2018-05-18 at European Patent Office, The Hague.
2. Ref. ES1641.1760 registered 2022-05-23 in Spain: *Spectral shaper illumination device*, M. Campoy-Quiles, A.R. Goñi, M. Gibert-Roca, M. Casademont-Viñas, granted to CSIC. Technology State-of-the-Art Report (2022-12-20): Claims novel & inventive. ES2956835 B2 issued 03/05/2024.

## 17 Publications

A total of 234 publications in international peer-reviewed journals and proceedings, including 3 book chapters and a dissemination paper, altogether with more than 8200 citations (last update: 02/10/2024). To date, my Hirsch number is h=46 (Google Scholar) or h=40 (Web of Knowledge). For a full citation report see <http://scholar.google.de/citations?user=WaFhKNYAAAAJ>

and, alternatively, authors=(goni ar\* not goni art\* not goni are\* not goni ara\* not goni arr\* or goi ar\* or goni alej\*) in the Web of Knowledge.

### Review Articles

1. *Optical Fermi Edge Singularities of the One-Dimensional Electron Gas in Semiconductor Quantum Wires*. J.M. Calleja, J.S. Weiner, A.R. Goñi, and A. Pinczuk; in *Optics of Semiconductor Nanostructures*, edited by F. Henneberger, S. Schmitt-Rink, and E.O. Göbel (Akademie, Berlin, 1993), p. 335.
2. *Optical Properties of Semiconductors under Pressure*. A.R. Goñi and K. Syassen, in *High Pressure in Semiconductor Physics I*, edited by T. Suski and W. Paul, *Semiconductors and Semimetals Series*, Vol. 54 (Academic, San Diego, 1998), p. 247-425. [https://doi.org/10.1016/S0080-8784\(08\)60232-X](https://doi.org/10.1016/S0080-8784(08)60232-X)

### Dissemination "Broad Audience" Articles

1. *A Personal View to the Figure of Manuel Cardona from a Few Disperse, Little Stories*. Alejandro R. Goñi, in *Manuel Cardona: Memories and Reminiscences*, edited by K. Ensslin and L. Viña (Springer, Cham, 2016), p. 45-48. <https://doi.org/10.1007/978-3-319-20343-0>
2. *Using Plasmons to Harness Infrared Solar Light*. Luis A. Pérez, Jinhui Hu, M. Isabel Alonso, and Alejandro R. Goñi; *Proj. Repos. J.* **10**, 118-121 (2021).

### Publications in Conference Proceedings

1. *Effect of Pressure on the Thermally and Optically Activated Electrical Conductivity in AlGaAs:Si*. T. Suski, A. R. Goñi, K. Syassen, and V. Mosser; *Proc. of the IV International Conference on High Pressure in Semiconductor Physics*, Porto Carras, Greece, August 1990, edited by D.S. Kyriakos and O.E. Valassiades, pp. 225.
2. *Resonance Raman and Optical Absorption Study of a GaInAs/AlInAs MQW-System under Pressure*. C. Abraham, A.R. Goñi, D.S. Jiang, K. Syassen, Y. Zhang, and K. Ploog; *Proc. of the IV International Conference on High Pressure in Semiconductor Physics*, Porto Carras, Greece, August 1990, edited by D.S. Kyriakos and O.E. Valassiades, pp.96.
3. *Optical Singularities in GaAs/AlGaAs Multiple Quantum Wires*(extended abstract). J.M. Calleja, A.R. Goñi, B.S. Dennis, J.S. Weiner, A. Pinczuk, S. Schmitt-Rink, L.N. Pfeiffer, K.W. West, J.F. Müller, and A.E. Ruckenstein; *Proc. of the Quantum Electronics and Laser Sciences Conference*, Baltimore, Maryland, May 1991.
4. *Low-Dimensional Electronic Systems. New Concepts*. L.N. Pfeiffer, H.L. Stormer, R.C. Ashoori, A.R. Goñi, A. Pinczuk, K.W. Baldwin, and K.W. West; *Proc. of the 7<sup>th</sup> International Winterschool on Low-Dimensional Electronic Systems*, Mauterndorf, Austria, February 1992, edited by G. Bauer, F. Kuchar and H. Heinrich (Springer, Berlin, 1992), *Ser. Solid-State Sci.* **111**, p. 143.

5. *Quantum Wires and other Novel Structures by MBE Overgrowth on the Cleaved Edges of Multilayer Substrates.* L.N. Pfeiffer, H.L. Stormer, A.R. Goñi, A. Pinczuk, K.W. Baldwin, and K.W. West; Proc. of the SPIE **1676**, 83 (1992).
6. *Inelastic Light Scattering by Free Electrons in GaAs Quantum Wires.* A.R. Goñi, A. Pinczuk, J.S. Weiner, J.M. Calleja, B.S. Dennis, L.N. Pfeiffer, and K.W. West; in *Phonons in Semiconductor Nanostructures*, edited by J.P. Leburton, J. Pascual and C.M. Sotomayor-Torres, NATO ASI Series, Series E: Appl. Sci.-Vol. 236 (Kluwer, Dordrecht, 1993), p. 287.
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