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CONVOCATORIA 2016

Turno de acceso general

Nombre: SANCHEZ DEL CAMPO FERRER, LUIS
Referencia: RYC-2016-20036
Área Científica: Biomedicina
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Título:

MODULACIÓN EPIGENÉTICA DE LAS CÉLULAS TUMORALES PARA SU SENSIBILIZACIÓN A LA RADIO E INMUNOTERAPIA

Resumen de la Memoria:

I am interested in studying the links between epigenetic, metabolism and cancer, trying to propose new therapeutic strategies that avoid resistance mechanisms, DNA repair and that sensitize cancer cells to established treatments like radiotherapy and immunology.
I performed my PhD in the laboratory of Prof. Jose Neptuno Rodriguez Lopez, who was the first to report that green tea catechins were able work as antifolates with antitumor properties. However this catechins present low bioavailability. My project was then, to design and synthetize different chemical derivatives to improve their bioavailability and antiproliferative activity. In collaboration with the lab of Prof. Alberto Tarraga-Tomas, I produced different catechins derivatives. One of them TMECG was very potent against different cancer cell lines but especially against melanoma cells, both in vitro and in vivo, working as a prodrug activated by tyrosinase. Next I was awarded with a Post-doctoral Fellowship from Fundacion Seneca de la Region de Murcia to move into the Lab of Prof. Colin Goding at the Ludwig Institute for Cancer Research at University of Oxford. During this postdoc I focused my research on the study of transcription factors responsible for melanoma cellular heterogeneity and potential targets for new therapies. I set up a collaboration with my previous lab and Prof. Goding□s lab that produced a publication in Cancer Cell in 2013 (First author). I stablished important collaborations with both internal and external PIs that generated two publications (PNAS 2013 and PCMR 2015) grants from the Oxford Cancer Center (Cancer Research UK) and NIH-R01 (USA). I supervised different students and co-directed a Master Thesis of a student from University of Milan (Italy) and a PhD (extraordinary PhD award) from University of Murcia (Spain). Recently I published as first author an important paper in Genes and Development 2017 about Translation reprograming in melanoma.
In 2015 I was awarded with a grant from Asociacion Espanola contra el Cancer to develop an oncology project as a PI. I moved to University of Murcia (Spain) in December 2015 to persuade my goal on finding new demethylating therapeutic approaches. In this time, I published 3 papers (Oncogene 2016, Cell Death and Disease 2016 and Toxins 2016). In 2016 I was awarded as Co-PI with a research grant from □Ministerio de Economia, Industria y Competividad□ for 3 years and with the □Carmen Lavigne Award□ from the AECC for my research project □New epigenetics therapies for increasing sensitivity of tumour cells to radiotherapy□.

Resumen del Currículum Vitae:

After receiving my bachelor in Biology in 2002 from the University of Murcia (Spain), I joined Professor Vidal-Moreno□s lab from Biochemistry and Molecular Biology Department of University of Murcia for my Master. I was funded by two research fellowships from University of Murcia (11/2002-09/2003, 10/2004-12/2004) My master project was about Acetyl and Butyryl cholinesterase activity in muscular dystrophic mice lama2dy deficient in merosin. I published 3 papers (one as first author) (J. Neurochem, 2005. Int., J. Biochem. and Cell Biology, 2006 and Neurochemistry International, 2006.) and one book chapter (Cholinesterase: Production, Uses and Health Effects. Nova publisher. Biochemistry Research Trends.)
In 2005 I started my PhD at Professor Rodriguez-Lopez□s lab in University of Murcia (Spain). I was awarded with a postgraduate fellowship from Fundacion Seneca de la Region de Murcia (Spain). During my PhD I designed, synthesised and tested the antitumoral activity of new antifolates. I demonstrated the activity of these compounds and developed new hypomethylating therapies that could be used to target the epigenetic machinery of cancer cells inducing apoptosis, avoiding metastasis and sensitizing tumour cells. All these studies resulted in 13 publications, (6 as first author) and 2 book chapters. In 2010 I was awarded with two 2 years□ postdoctoral fellowships from Fundacion Seneca de la Region de Murcia and □Ministerio□ MICINN (declined). I moved to Professor Colin Goding□s Lab at the Ludwig Institute for Cancer Research from the University of Oxford (UK). In his Lab, I worked in several projects involving melanoma metabolism, chromatin remodelling regulation and DNA damage repair increasing my knowledge of the different key molecular pathways and resistance mechanisms to chemotherapy in melanoma to design more effective therapeutic strategies. After finish my Postdoc fellowship in April 2012, I continue working in Prof. Goding¿s lab until December 2015. During this postdoctoral stage I published two papers as first author (Cancer Cell 2013 and Genes and Development 2017) and other publications (PCMR 2015), (PNAS 2013), (Oncogene 2015), (Neoplasia 2013), (Exp.Cell.Research 2012), (Chemmedchem 2011). At the moment, we are setting up all the requirements to start a multicentre Clinical trial with our demethylating combinatorial therapy.
In 2015, I was awarded with a grant from Asociacion Espanola contra el Cancer and moved back to Spain in December 2015 to University of Murcia to start an independent career. During 2016 I published 3 publications (Oncogene, Cell Death and Disease and Toxins), I was awarded as Co-PI with a 3 years□ grant form MINECO 2016, with the □Carmen Lavigne Award□ (AECC) and supervised a student for her □TFG□ (Distinction with Honour).
In summary, to date my scientific career has resulted in 26 publications; 22 original articles, 1 review and 3 book chapters. With accumulative impact factor of 131.908 (IF average 5.81) and H Index of 12. In addition, I have presented abstracts at more than 20

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conferences. I currently hold two patents. I have participated in 7 Research Projects, one of them from European Union and 3 R&D Company Projects. I also have teaching experience with lectures in Biochemistry and Biological Science degree during the courses 2007/2008, 2008/2009 y 2009/2010. I am co-director of a Master Thesis and a PhD Tesis and currently supervising a TFG student.

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Nombre: PLAZA MENACHO, IVAN
Referencia: RYC-2016-19382
Área Científica: Biomedicina
Correo Electrónico: iplaza@cnio.es

Título:

Molecular and Cellular mechanisms driven by oncogenic RET in human cancers and therapeutic intervention

Resumen de la Memoria:

The applicant is currently a postdoctoral researcher working at the Biozentrum (Structural Biology and Biophysics) where he is driving a project focused on structure-function studies of histidine kinases in bacteria (Dubey et al. Science Adv 2016, Plaza-Menacho in preparation), and at the same time continuing his structure-function studies on RET (Plaza-Menacho et al., Cell Reports 2016).

Previously Dr. Plaza-Menacho worked as a CRUK postdoctoral fellow at the Structural Biology Laboratory (London Research Institute, LRI-CRUK). At the LRI Ivan undertook and drove independently a protein crystallography and biochemical project aimed to answer some key questions about the mechanisms of RET kinase activation, cis-regulation and oncogenic deregulation, setting up new and unprecedented paradigms in the protein kinase field (Plaza-Menacho et al. Cell Reports 2016; Plaza-Menacho et al. Mol Cell 2014).

During his first postdoc position funded by an International Postdoctoral Fellowship (EX2006-1341) in the laboratory of Prof. Clare Isacke at the Institute of Cancer Research (ICR), Ivan undertook simultaneously two projects. The first extended the studies he performed during his PhD focused on the molecular aspects and structure-function analyses of oncogenic RET signaling and its therapeutic intervention with small molecule inhibitors. His work provided insights into the structural and molecular determinants for Sorafenib binding and potent inhibition of RET tyrosine kinase activity (Plaza-Menacho et al. J Biol Chem 2007b). The second project was to study the functional implications of RET in breast cancers, and the impact of RET signaling in the response to endocrine therapy (Plaza-Menacho et al. Oncogene 2010). Based on these studies Ivan successfully obtained in 2009, as a co-applicant with Prof. Clare Isacke, a 3-year AICR project grant (AICR 09-0533) to continue this research. While working at the LRI, Ivan co-supervised this project, which resulted in several publications with seniority(*) (Morandi et al. Trends Mol Med 2011 and Morandi et al. Cancer Res 2013*).

During my PhD studies I worked on the signaling properties and functional characterization of the receptor tyrosine kinase RET in the background of the cancer syndrome Multiple Endocrine Neoplasia type II (MEN2), in particular how oncogenic mutations targeting the kinase domain of RET signal preferentially via the STAT3 pathway (Plaza-Menacho et al. Cancer Res 2005, Plaza-Menacho et al. Trends Genet 2006, Plaza-Menacho et al. J Biol Chem 2007a).

As reflected from his CV, the applicant has extensive experience working with RET from a multidisciplinary angle, combining structural biology, biochemistry with cellular and signaling studies and has published some key papers on RET signaling in cancer and therapeutic intervention. Furthermore, the consistent production of quality high-impact factor studies with clear signs of seniority, in addition to its ability to compete and secure external funding, is a clear indication of the high quality of his future work. All in all applicant has shown he is ready to undertake the next step towards becoming an independent principal investigator, showing clear evidence of being on the right path to become an international leader in his scientific field and build a world-class laboratory fully committed to research excelence

Resumen del Currículum Vitae:

Education:

. Lcdo. Ciencias del Mar, Universidad de Cadiz (12/2000)
. PhD Faculty of Medical Sciences, University of Groningen (15/05/2006)

Positions:

. Postdoctoral Researcher Biozentrum, University of Basel (04/2015-date)
. Postdoctoral Fellow London Research Institute, CRUK (08/2009-12/2014)
. Postdoctoral Fellow Institute of Cancer Research (06/2006-07/2009)

Research areas:

. Oncogene signalling/mechanism of action
. Structure-function analysis of protein kinases
. Protein-protein interactions and phospho-proteomics

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. Mechanism-of-action and resistance to protein kinase inhibitors

Relevant publications:

Plaza-Menacho, I*, et al. RET functions as a dual-specificity kinase that requires allosteric inputs from juxtamembrane elements. Cell Reports 2016

Plaza-Menacho, I*, et al. Oncogenic RET kinase domain mutants perturb the autophosphorylation trajectory by enhancing substrate presentation in trans. Mol Cell 2014

Plaza-Menacho, I*, et al. FAK binds RET kinase via its FERM domain priming a direct and reciprocal RET-FAK transactivation mechanism. J. Biol. Chem. 2016

Plaza-Menacho, I, et al. Targeting the receptor tyrosine kinase RET sensitizes breast cancer cells to tamoxifen treatment and reveals a role for RET in endocrine resistance. Oncogene 2010

Plaza-Menacho, I and Burzynski, G, et al. The RET receptor: genetics, signaling and therapeutics in human neural crest disorders. Trends in Genetics 2006,

Plaza-Menacho, I, et al. RET-FMTC mutants Y791F and S891A activate a Src/JAK/STAT3 pathway independent of GDNF. Cancer Res. 2005
* senior author

Funding:

Functional analyses of RET in neuralcrestopathies (02/2002-01/2006)
Ubbo-Emmius and GUIDE, University of Groningen

El oncogene RET: Análisis de los mecanismos estructurales, bioquímicos y celulares asociados a los distintos fenotipos del cáncer sindrómico MEN2 (06/2006-05/2008)
International Postdoctoral Fellowship Ministerio de Educación y Ciencia Espana (EXT2006-1341)

Functional crosstalk between ER-RET and implications in endocrine therapy response (01/2010-12/2012)
Association of International Cancer Research (AICR) (09-0533)

Molecular bases of RET kinase activation and oncogenic deregulation (08/2009-12/2014)
Cancer Research UK (CRUK) postdoctoral fellowship

Supervision:

Master Thesis: c-di-GMP mediated regulation of the bifunctional histidine kinase ShkA
Francesca Mangia (2016) University of Milano Bicoca and Biozentrum University of Basel

PhD Thesis: Growth Factor Receptor Signaling in Breast Cancer: RET and MCFSR as potential therapeutic targets
Andrea Morandi (2009) University of Florence and Institute of Cancer Research

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Nombre: VALLVERDU QUERALT, ANNA
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Área Científica: Ciencia y Tecnología de los Alimentos
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Título:

Effect of i-ndustrial and home processing on the q-uality and functional-ity of bioactive comp-ounds in food: metabolomic approaches

Resumen de la Memoria:

The candidate is currently a postdoctoral researcher at the INRA in France, where she is participating in several EU-funded research projects, mainly dealing with Food Innovation and Quality issues. During her career, she has carried out several projects with different aims, albeit always within the research area of food science. Her multidisciplinary background is important for international projects and forming her own research group in the future. Her main research lines are described below:

1. Bioactive compounds in foods

Bioactive compounds have recently attracted considerable interest in the field of Food Science and Technology. Accordingly, the main research line of the applicant is the study of new bioactive compounds such as polyphenols in a wide range of foods (tomatoes, cocoa, wine, nuts, spices etc.), as well as the effect of different technological processes on the preservation and quality of these phytochemicals. The development of new foods enriched with bioactive compounds with functional properties is a major aim of this research line.

2. Emerging technologies to preserve the quality of food

Several studies have demonstrated the ability of high intensity pulsed electric fields (PEF) to obtain shelf-stable liquid foods with high nutritional value. The applicant has studied the application of this technique in a wide range of foods. PEF efficiently destroy microorganisms in foods without greatly affecting their nutritional and sensory properties. This research line contributes to creating opportunities for a sustainable and competitive agri-food industry through innovation in food processing (Safe & Healthy Diet), one of the key areas supported by Horizon 2020.

3. Petroleomics approaches to discovering new compounds in wine

The candidate has also studied a large number of reaction products that occur in red wine. Such reactions are responsible for the colour changes taking place during wine ageing. A large diversity of pigments, including brown oxidation products, as well as pigments derived from the red grape anthocyanin pigments, has been characterized in wines. Moreover, the recent discovery of even more complex molecules suggests that wine polyphenols arise from multiple combinations of successive reactions, including some that remain to be elucidated. The applicant has applied petroleomic-derived data interpretation strategies to identify new previously unreported compounds in wines.

4. Metabolomic approaches to discovering specific biomarkers of food consumption

The candidate has also focused her activity on the research of biomarkers of consumption in nutritional and epidemiological studies. In this area, her main research line is the evaluation of bioactive compounds bioavailability in humans, the characterization of their metabolism in the gastrointestinal tract and the identification of their metabolites in body fluids. Metabolomic approaches based on high-resolution mass spectrometry allow the discovery of specific biomarkers of food consumption to be used during controlled feeding trials. This research is of notable relevance as it has implications for exploiting potential beneficial roles of phytochemicals for health, thus contributing to the delivery of strategic solutions for healthy and safe foods and diets for all (Safe & Healthy Diet), one of the key areas supported by Horizon 2020.

Resumen del Currículum Vitae:

She graduated with a Bachelor's Degree in Chemistry from the Rovira i Virgili University in 2008, receiving an Outstanding Bachelor's Degree Award. In 2008, she was awarded an FPU grant to carry out a PhD in the Natural Antioxidant Group of the University of Barcelona (UB). During her PhD, she developed new methods using high-resolution mass spectrometry (HRMS) to analyze foods enriched with bioactive compounds with functional properties. During her PhD, she carried out a research stage for 7 months with Dr. Martin-Belloso (Spain) to apply emerging methodologies to preserve the quality of food. She completed her PhD in 2012 with summa cum laude honors, receiving an Outstanding Dissertation Award.

Subsequently, she undertook a post-doctoral research stage for 5 months with Dr. Bendini (Italy) to develop an analytical approach adapted for the study of volatile compounds and sensory analysis of food. Then, she obtained a 7-month postdoctoral position in the UB to work in metabolomic approaches to discovering new biomarkers of food consumption. In 2014, she was awarded 3 postdoctoral grants: a Pegasus-short Marie Curie for studying the mechanisms of carotenoid conversions during processing in KULeuven (Belgium); a post-doctoral grant to join the Clinic Hospital of Barcelona to study the link between cardiovascular diseases and polyphenols; and a Martin Escudero grant at the INRA (France). Her decision to take up the latest 24-month stay abroad (2015-2016) was based on the extensive

experience of the INRA research center in the study of innovative methods to analyze polyphenols in different matrices. Moreover, during her first year at INRA (2014), she was awarded a 'José Castillejo' fellowship for junior doctors. During her post-doctoral stage in INRA, she performed a secondment in the University of Leiden to expand her expertise on complex metabolomic approaches based on HRMS and nuclear magnetic resonance.

In addition, she has been actively involved in teaching activities, including lecturing in the Food Science and Technology degree in the UB and several lectures on HRMS in Supagro (France).

Regarding the research activity, she is co-author of 51 peer-reviewed articles in SCI journals (h index=15); she has been the first author in 29 papers, second author in 9 papers and a corresponding author in 6. A high ratio of SCI articles, 85% was published in top-ranked journals from the first quartile of the scientific areas of Food Science, Analytical Chemistry, Metabolism and Nutrition. Additionally, 2 articles are currently under review. She has co-authored 1 book chapter and presented 49 communications in national/international conferences (3 invited oral communications, 11 oral presentations and 35 posters). Moreover, she has participated in a total of 27 research projects (7 EU-funded or International), being principal investigator in 4. She supervised a doctoral thesis, the scientific work of 2 foreign Ph.D. students during her stay at INRA-Montpellier and conducted the hands-on training of 5 master students at the UB. She has acted as a reviewer for 11 SCI journals, is a member of the Editorial Board of Journal of Analytical Methods in Chemistry and was the lead editor of a Special Issue for Oxidative Medicine and Cellular Longevity. She participated in the organizing committee of the 8th International Workshop on Anthocyanins (2015).

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Nombre: PEDDIS , DAVIDE
Referencia: RYC-2016-21140
Área Científica: Ciencia y Tecnología de Materiales
Correo Electrónico: dpeddis@hotmail.com

Título:

Design of Multifucntional Magnetic nano-architectures

Resumen de la Memoria:

The research activity of Davide Peddis has been developed in the framework of Solid State Physical-Chemistry and Condensed Matter Physics, studying the relationship between physical properties, crystalline structures and morphological features of nanostructured magnetic materials. Particular attention has been devoted to the investigation of fundamental properties of magnetic nanoparticles (static and dynamical properties) with particular interest in materials for applications in biomedicine (MRI, drug delivery, hyperthermia), catalysis, and energy field (permanent magnets, hydrogen production). Specific research topics are briefly outlined in the following:

Design of magnetic nano-hetero-structures
An important part of DP□s research activity is focused on the design by chemical methods of magnetic nano□hetero-structures of metals (Fe, Co), metal alloys (FePt, CoFe) and metal oxides (Fe2O3, CoFe2O4, NiO, LaCaMnO4; BaFeO3). The preparation of nanostructures (e.g. particles embedded in a matrix, core shell particles) has been also carefully investigated in order to control the magnetic properties (e.g. interparticle interaction, magnetic anisotropy) and to design new multifunctional nanomaterials. In addition, magnetic nanoparticles have been used as building blocks to prepare 2-D and 3-D magnetic superstructures, opening the possibility to prepare a new generation of tailored materials with completely new physical properties.

Magnetic Properties of nanostructured materials.
This line of DP□s research activity is mainly devoted to the study of fundamental static and dynamic properties of nanostructured materials at different measuring time scale (e.g. AC/DC magnetometry Mössbauer spectroscopy, Neutron Diffraction, Muon Spectroscopy). Great attention has been devoted to the influence of magnetic interactions on equilibrium and out-of-equilibrium dynamic of magnetization in nano-hetero-structure materials (particles embedded in magnetic and non magnetic matrix; core shell systems). Magnetic transitions in several nanostructured systems (e.g. hematite, spinel oxides, manganites, dilute magnetic semiconductors) have been investigated, in order to highlight the effect of nanostructuration on the magnetic properties.

Magnetic Structure and Surface/Interface Magnetism at the nanoscale
Among the relevant features of the size reduction of magnetic particles, the presence of a non-collinear spin structure (spin-canting) deserves a special attention, as it determines relevant modifications in the magnetic properties. Hence, DP□s research activity is also focused on the study of the influence of spin canting and, more generally, of surface magnetism on the magnetic properties of the materials. A deep study on the correlation on a ferrite with spinel structure by Mössbauer spectroscopy under intense magnetic field and Neutron Powder Diffraction, allowed us to define a clear correlation between spin canting and cationic distribution. In the last years DP focused his attention on interface exchange coupling between Ferro(ferri)magnetic [F/FI] and antiferromagnetic (AFM) materials (i.e. exchange bias, EB) (thin films, ferromagnetic particles embedded in antiferromagnetic matrix, core shell particles) as an additional tool to modify magnetic anisotropy of nanostructured materials.

Resumen del Currículum Vitae:

Davide Peddis graduated magna cum laude in Physical chemistry (2003) and obtained his PhD in Physical Chemistry (2007) at the University of Cagliari. In the years 2007-2012 he worked as Research fellow at University of Cagliari and ISM □ CNR. In the following a brief summary of hys CV
Education
PhD, In Physical chemistry, University of Cagliari, 2007
Master Degree in Physical Chemistry, University of Cagliari, 2003

Pubblications and citational profile
70 papers on ISI journals in the period 2006-2017 (30 as first and/or last and/or corresponding author) , 3 book chapter as main author.
Citational profile (updated to 21/01/2017)
Google Scholar (number of citation 1278; h- index : 18)
Scopus (number of citation 1030; h- index : 18)
ISI web (number of citation 100; h- index : 17)
Scientific Communication (Talks, seminaries, lectures)

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Co author of aver 100 scientific communication (33 oral communication personally given)
34 Invited talks personally given (12 invited talk to National and International Conferences, 20 invited talks in International Institution, 4 invited lecture to International School)
Partecipation of Projects
)2017-202 FET_Proactiv Projects Role: Coordinator of the Italian Unit (Unit Budget 720 Keuro)
Bil. Agr. Italy/Argentina Role: Team Member (Ref. C. Sangregorio)
) 2013-2015 Bil. Agr. Italy/Argentina Role: Team Member (Ref. E. Agostinelli)
) 2012-2015 FIRB (NANOREST) Project of the Italian Research and Education Ministry. Role: Member Team (Ref. Sara Laureti)
) 2012-2015 EU- Marie Curie IRSES Project (NANOMAG): Role: Member Team (Ref. G. Papavasiliou)
)2010-2012 Regional project (Regione Autonoma della Sardegna, L.R. 7 /2007) SuperNano; Role: Coordinator and principal Investigator (Ref.: D. Peddis)
)2008-2011 EU- ICT-STREP Project (TERAMAGSTOR) Role: Member Team (Ref. D. Niarchos)
)2005-2008 EU-NMP-STREP (NANOSPIN) Role: Member Team (Ref. C. Binns)
Significant International experience
2105 Senior Scientist at Vinca Institute, Belgrade, Serbia [2 years]
2013 Visiting Researcher Centro Atomico, San carlos de Bariloche, Argentina [One Moth]
2013 Visiting Researcher at University of Delaware [3 Month]
2011 Extended guest lecturer at Uppsala University (Sweden) [1 Month]
2010 Invited professor at University of Le Mans (France) [1 Month]
Scientific Evaluation activity
Referee for various scientific international journals: JACS, MRS, Chemistry of Materials (ACS), ACS Nano, JMMM, JPC, JCP, Nanotech., PRB, JAP, APL, JPCM, JPAD.
Independent Evaluator for Research Project at·NCSTE, Kazakistan and SIIN EU network
Independent Evaluator for Mobility Reserch Project at QN research Infrastructure, EU-Network
Teaching Activity
Invited Lecture at Italian School on Magnetic Materials for Energy applications, Parma
)Extended guest lecturer at gradSAM21- Uppsala University
)short Course for PhD and Master students at University of Cagliari
)Invited professor in « Laboratoire de Physique de l'Etat Condensé », Le Mans, France
)Lecturer in regular course of General chemistry for engineers, University of Cagliari
DP co-supervised 2master students, 1 PhD student, 3 Post-docs and 3 Reserchetr in formation. He was appointed in the PhD committee of A. Zhemani (Uppsala University).DP is now supervising three post-docs and 1 PhD student

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Nombre: SESSOLO , MICHELE
Referencia: RYC-2016-21316
Área Científica: Ciencia y Tecnología de Materiales
Correo Electrónico: michele.sessolo@uv.es

Título:

Organic and hybrid electronics

Resumen de la Memoria:

My research career has been centered on the application of electroactive materials, especially conducting and semiconducting polymers, in a variety of novel devices, such as light-emitting diodes, solar cells, transistors and, more generally, to sensors. More recently, I started working on the properties and processing of hybrid perovskites, with the natural applications being photovoltaics and electroluminescence. The focus was and is on the implementation of unconventional strategies to achieve the device performances required for real applications.

Initiation to the research took place during my degree in Chemistry at the University of Padova (Italy, 2005), where I started a 1-year project on the sol-gel deposition of metal oxides thin films doped with lanthanides for signal generation in telecommunications. After graduation I moved to the Institute for Molecular Science (ICMol) at the University of Valencia (Spain), where in 2006 I started my PhD under the supervision of Dr. Henk J. Bolink. The main topic of the thesis has been the development of Hybrid organic-inorganic Light-Emitting Diodes (HyLEDs), a novel class of inverted devices that brings together the efficiency of polymer OLEDs with the air-stability granted by the use of MOx as charge injection layers. Other topics I worked on are organic photovoltaics and light-emitting electrochemical cells. In the 2011 FP7-PEOPLE call, I was awarded with a Marie Curie Intra-European Fellowships for Career Development (IEF) to join the Department of Bioelectronics lead by Prof. George G. Malliaras at the Center of Microelectronics in Provence (CMP, France). My research was aimed to employ polymer devices as sensing elements in direct contact with the nervous system for neuroscience applications. Since the late 2013 I work as researcher at ICMol in Valencia, where I am supported by a Juan de la Cierva-Incorporación Fellowship (I was ranked 1st in Mater. Sci. and Technology) in the group of Dr. H. J. Bolink. The research line I am working on can be divided into 4 main topics: i) Flexible solution-processed OLEDs; ii) High efficiency vacuum-deposited perovskite solar cells; iii) Engineering material properties of hybrid perovskites; iv) Organic bioelectronics.

I have been visiting graduate student at the Energy Research Centre of the Netherlands (The Netherlands, 2006) and at Cornell University (USA, 2008). Later I have been an invited researcher at the Intelligent Polymer Research Institute (IPRI, Australia, 2012), at the University of Tokyo (Japan, 2013), and at the University of Basel (Switzerland, 2015).

Resumen del Currículum Vitae:

I am a senior researcher at the Instituto de Ciencia Molecular (ICMol) of the University of Valencia, where I lead the research line on sensors and bioelectronics. My research career has been centered on the application of electroactive materials, especially conducting and semiconducting polymers, in a variety of novel devices, such as light-emitting diodes, solar cells and transistors. Recently, I started working on the properties and processing of hybrid perovskites, with the natural applications being electroluminescence and photovoltaics. The focus is on the implementation of unconventional strategies to achieve the device performances required for real applications. My research lead to 57 publications (with 6 additional submitted) in high impact journals (Science Advances, Nature Communications, Energy and Environmental Science, Advanced Materials, JACS and PNAS, among others) and 2 patents. I am first author of 21 publications and corresponding author of 9 (+2 submitted). My work has been cited over 1700 times (Scopus), resulting in an h index of 21. I also contributed as first author to 2 reviews, 2 book chapters, and to 2 perspective articles published in Science and Nature Materials. My work has been presented in top international conferences (more than 60 presentations, 7 invited talks and seminars) such as the annual Material Research Society (MRS) meetings, the SPIE Photonics conference and the Plastic Electronics Conference and Exhibit. I have participated in 14 national and international projects, being the PI in 1 competitive national project, the 1st edition of the BBVA Foundation Grants for Researchers and Cultural Creators (56 selected candidates over 1664 applicants), and in 1 industrial research project (with Novaled GmbH, Germany). I supervised 2 undergraduate student, 2 Master thesis and 1 PhD thesis. I am currently supervising 1 Master student and 3 PhD candidates.

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Nombre: ALONSO MORAL, JOSE MARIA
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Área Científica: Ciencias de la Computación y Tecnología Informática
Correo Electrónico: josemaria.alonso.moral@usc.es

Título:

Explaining Fuzzy Systems: Making Understandable Intelligent Systems to Humans

Resumen de la Memoria:

Regarding my research career, I have 14 years of experience in research and teaching activity, in theoretical and practical projects in connection between academy and industry. I got my MS (2003) and PhD (2007) degrees in Telecommunication Engineering, both from UPM, Spain, with "Sobresaliente Cum Laude" and "Doctor Europeus" mention. I held a FPI-UPM grant from 2003 to 2007. In this period, I visited the following R&D Centres: Cemagref, an agricultural and environmental engineering R&D center (France) (4 months); and European Centre for Soft Computing (ECSC, Spain) (8 months). ECSC was an international R&D centre recognized with the 2012 outstanding organization award by the IEEE Computational Intelligence Society (IEEE-CIS). From Nov 2007 to Jan 2012, I was a postdoc researcher in ECSC. In Jun 2010, I was a visiting researcher in the University of Bari (Italy). From Feb 2012 to Oct 2012, I got a "Juan de la Cierva" postdoc grant (JCI-2011-09839) in the University of Alcala. From Nov 2012 to May 2016, I was an Associate Researcher in ECSC. In this period, I was a visiting researcher at the University of Granada. Since Jun 2016, I am a postdoc researcher at the Research Centre in Information Technologies (CITIUS) of the University of Santiago de Compostela. In Aug 2016, I was appointed as Honorary Research Fellow by the University of Aberdeen (Scotland, UK), where I was a visitor researcher for 3 months. Regarding R&D projects, I have taken part in 3 international R&D consortia (4.5M eur) funded by the EU Commission, 5 national projects (380k eur) funded by the Spanish Government, 1 CENIT transfer project (13.9M eur) funded by CDTI, 1 regional project and 7 contracts (264k eur) with companies (being principal researcher in 3 of them). I am also co-author of patent P201030182 with priority country Spain since 2012.

Regarding my research line, the focus is on the design and application of soft computing methods for solving real-world problems. Namely, building interpretable fuzzy systems (IFS) ready to deal with the uncertainty inherent to most problems but also ready to make easier the interaction between machines and humans. My work has been always guided by applications (in robotics, medicine, agriculture, marketing, etc.) where the interaction with humans is highly appreciated. I have supervised 3 PhD students and 3 master students in this topic. The goal of my PhD goal was combining expert and induced knowledge in order to build fuzzy systems with a good interpretability-accuracy trade-off. I developed the HILK methodology for designing IFS. I also implemented HILK in the new software GUAJE for generating understandable and accurate fuzzy systems. Afterwards, I was invited to edit a special issue on IFS for the journal Information Science (Q1, ISI-JCR). Then, I was invited to give a tutorial on IFS in the IEEE Conference on Fuzzy Systems (CORE:A, SCIE:2). Later, I designed the fingrams methodology for making easier the understandability analysis of fuzzy systems. It was implemented in GUAJE but also integrated with machine learning tools such as KEEL and KNIME. Now, I am working on the use of IFS for big data analysis in combination with natural language generation techniques. Moreover, inspired on the last DARPA challenge on Explainable Artificial Intelligence, I am designing intelligent systems endowed with explanation capability.

Resumen del Currículum Vitae:

Regarding my research CV, I worked for about 8 years in the European Centre for Soft Computing (ECSC): (1) from Nov 2007 to Jan 2012 as a Postdoc Researcher; and (2) from Nov 2012 to May 2016 as an Associate Researcher; where I lead a research team made up of about 5 researchers. ECSC was an international R&D center recognized with the 2012 outstanding organization award by the IEEE Computational Intelligence Society (IEEE-CIS). In addition, I have been visitor researcher in foreign R&D centres and universities: 4 months in Cemagref-Montpellier (France), 1 month in the University of Bari (Italy), and 3 months in the University of Aberdeen (Scotland, UK) where I was appointed as honorary research fellow. In addition, I have been in 4 Spanish universities. I was granted FPI-UPM from 2003 to 2007. Later, I got a postdoc grant (JCI-2011-09839) in the University of Alcala. In addition, I was a visitor researcher at the Computer Science Department of the University of Granada. Since June 2016, I am a postdoc researcher at the Intelligent Systems Unit of the Research Centre in Information Technologies (CiTIUS) of the University of Santiago de Compostela.

Regarding R&D projects, I have taken part in 3 international R&D consortia (above 4.5M eur) funded by the EU Commission, 5 national projects (above 380k eur) funded by the Spanish Government, 1 CENIT transfer project (above 13.9M eur) funded by CDTI, 1 regional project and 7 contracts (above 264k eur) with companies (being principal researcher in 3 of them). I am also the co-author of patent P201030182 with priority country Spain since 2012 and I have 2 software registries.

In what refers to management and representations in international bodies and scientific associations, I am a member of the Executive Board of the European Society for Fuzzy Logic and Technology (EUSFLAT) since 2013; and the EUSFLAT Secretary since 2015. I am Vice-Chair of the IEEE Task Force on Fuzzy Systems Software of the Fuzzy Systems Technical Committee in the IEEE-CIS since 2011; and I was Chair of the IEEE Task Force on Software Tools and Data Repository of the Standards Committee of IEEE-CIS in 2012. In 2013, I was member

of the initial IEEE-CIS 1855 Working Group for developing a new IEEE standard for Fuzzy Markup Language; the first IEEE-CIS standard approved in 2016.

Regarding dissemination of my scientific activity, I have published 90 contributions, with 839 citations, h-index=16, i10-index=25 (GoogleScholar, 23 Jan 2017): 21 papers in ISI-JCR (12 in Q1); 10 book chapters and 54 conference contributions (18 CORE:A/B). I have edited 6 International Journal Special Issues (5 in ISI-JCR, 4 of them in Q1). I am an Associate Editor of the IEEE Computational Intelligence Magazine (Q1, ISI-JCR), from Jan 2016 to Dec 2017. I was Handling Editor of the Soft Computing journal (Q2, ISI-JCR) in 2013. I was the Editor of the IFSA-EUSFLAT2015 Conference (CORE:B, SCIE:3) Proceedings where I was Local Arrangement Chair. In addition, I have been member of the organizing committee of 5 conferences, member of the program committee of 11 conferences, and organizer of 20 events (Special Sessions, Mini-tracks, Panels, Tutorials, etc.) in conferences. Moreover, I am General Chair for INLG2017 Conference (CORE:B, SCIE:3) and SFLA2017 Summer School.

Finally, I have supervised 3 PhD students, 3 master students, and 3 internships.

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Turno de acceso general

Nombre: SCHAAL , EDOUARD
Referencia: RYC-2016-19454
Área Científica: Economía
Correo Electrónico: eschaal@crei.cat

Título:

The role of beliefs and the coordination of expectations on aggregate economic activity

Resumen de la Memoria:

Dr Schaal studies the impact of beliefs and the coordination of expectations on aggregate economic activity. His work has been accepted in top economic journals. He has studied in particular the role of economic uncertainty in shaping aggregate labor market and investment dynamics, as well as dynamic models of coordination failures for business cycles. In addition to this topic, Dr Schaal has recently been interested in economic geography, in particular in understanding the role and design of infrastructure in spatial economic models. His main contributions include:

1. ?Uncertainty and Unemployment? (2015), conditionally accepted in Econometrica

In this paper, Schaal builds a general search model of the labor market and quantitatively investigates the contribution of firm-level uncertainty to explain US unemployment over the period 1970-2009.

2. ?Uncertainty Traps? with P. Fajgelbaum and M. Taschereau-Dumouchel (2016), accepted in the QJE

This paper proposes a theory that explains why uncertainty fluctuates endogenously in a countercyclical fashion and how it can lead to economic paralysis.

3. ?Coordinating Business Cycles? with M.Taschereau-Dumouchel (2015)

The authors propose a quantitative model of coordination failures for the business cycle built on a standard real business cycle model with two additional ingredients: i) an aggregate demand externality, which arises because of monopolistic competition, ii) nonconvexities in production at the firm-level, modelled as a discrete capacity utilization choice.

4. ?Aggregate Demand and the Dynamics of Unemployment? with M. Taschereau-Dumouchel (2016)

Schaal and Taschereau-Dumouchel introduce an aggregate demand externality into the Mortensen-Pissarides model of equilibrium unemployment. Because firms care about the demand for their products, an increase in unemployment lowers the incentives to post vacancies which further increases unemployment. This positive feedback creates a coordination problem among firms and leads to multiple equilibria.

5. ?Optimal Transport Networks in Spatial Equilibrium? with P. Fajgelbaum (2016)

In this project, a framework to study optimal transport networks in standard general equilibrium trade and economic geography models is developped. To understand the role of transport infrastructure on trade costs, Schaal and Fajgelbaum embed an optimal transport problem into a general neoclassical environment.

Resumen del Currículum Vitae:

Edouard Schaal earned a PhD in Economics from Princeton University in 2011. In 2011-2012, he spent a year as a Junior Scholar at the Research Division of the Federal Reserve Bank of Minneapolis. He was an Assistant Professor of Economics at New York University (NYU) from 2012 to 2016. Since September 2016, he has been a researcher at the Centre de Recerca en Economia Internacional (CREI) and an assistant professor at Universitat Pompeu Fabra and the Barcelona Graduate School of Economics. He has also been a CEPR research affiliate since 2016.

Dr Schaal has held various visiting positions at Yale University (Autumn 2013), the Paris School of Economics (Summer 2014) and the Toulouse School of Economics (Summer 2015).

At NYU, Edouard Schaal has taught various graduate and undergraduate courses in Macroeconomics including graduate-level courses on search theory and heterogeneous agents. He has been involved in the supervision of several PhD theses at NYU including Christopher

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Huckfeldt (now at Cornell University), Jianhuan Xu (Singapore Management University), Jan Möller (Bank of England) and is still currently advising Pau Roldan (currently 4th year PhD student). At CREI, he regularly attends the Macroeconomics Breakfast where PhD students present their work and participates in the supervision of various PhD theses (J. Chan, F. Daniele, C. Hedtrich, F. Queiros, M. Santamaria).

Dr Schaal has been invited to present his research at department seminars in numerous places including Harvard University, MIT, University of Chicago, Princeton University and Stanford University. He regularly participates in the main international conferences in Economics such as the NBER, Econometric Society, AEA, EEA and the Society for Economic Dynamics (SED). He was a member of the Program Committee of the SED between 2013 to 2015 and organized various sessions for those meetings. He co-organized the NYU Search and Matching Workshop from 2013 to 2016. He also organized the NYU Macroeconomics Seminar in 2014-2015.

Dr Schaal has participated in the evaluation of research projects for the European Research Council and has been called to evaluate research proposals for the Swiss National Science Foundation. He is a referee for many economic journals including Econometrica, the American Economic Review, the Journal of Political Economy, the Quarterly Journal of Economics and the Review of Economic Studies.

Edouard Schaal was awarded the Marshall Blume Prize in Financial Research (honorable mention) from the Rodney L. White Center for Financial Research in 2015 for his paper Coordinating Business Cycles joint with Mathieu Taschereau-Dumouchel (Wharton). He was also awarded a Barcelona GSE Seed Grant in 2016 for his project Optimal Transport Networks in Spatial Equilibrium joint with Pablo Fajgelbaum (UCLA).

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Nombre: PEREZ CEREZALES, SERAFIN
Referencia: RYC-2016-20147
Área Científica: Ganadería y Pesca
Correo Electrónico: s.perez.cerezales@gmail.com

Título:

Sperm selection for ARTs

Resumen de la Memoria:

I have focused my career in the study of diverse aspects of the sperm biology, the sperm interaction with the female genital tract and the sperm contribution to embryo development. Moreover, I have successfully applied the acquired knowledge for improving various procedures used in artificial reproductive techniques. During my PhD at the University of León (Spain, 2006□2010), I demonstrated for first time in fish, how cryopreservation affects the integrity of the spermatozoa genome in specific regions and how this damage affects the embryo development. As a direct consequence, I successfully improved the cryopreservation protocol of spermatozoa from various fish species of commercial interest. During my first postdoctoral stay at the Weizmann Institute of Science (Israel, 2011□2014), I achieved a major scientific contribution by discovering the intracellular signaling pathways involved in sperm thermotaxis, showing that opsins are thermosensors allowing mammalian spermatozoa to orientate in a temperature gradient. These results have been published in □Scientific Reports□, positioned in Q1 (according to its current impact factor) in the area of multidisciplinary sciences. Since May 2015, I continue my research at the □National Institute for Agricultural and Food Research and Technology□ (INIA, Spain). During this period I have developed my own research line studying mammalian sperm guidance and its application for artificial reproductive techniques (ARTs). I have successfully separated subpopulations of mouse spermatozoa of high quality that significantly increased the outcome of the □intracytoplasmic sperm injection□ (ICSI) in terms of embryo development and implantation. I am currently using this technology for improving ARTs in farm animals. The continuation of this research line is very promising since for first time we are able to separate and study the subpopulation of spermatozoa from one ejaculate that are □fertilizers□. In this last year I have published 7 scientific works in international peer-review journals and 3 book chapters.

During my career I have published 30 scientific works in international peer-review journals and I have participated in 10 national and 4 international projects (1 as PI) funded through competitive calls. The quality of my achievements has allowed me to apply to the ERC starting grant 2017 (currently under-evaluation). In the Ramón y Cajal call 2015 I was rated the fifth in the area of □livestock and fisheries□ being positioned as the first reserve.

Resumen del Currículum Vitae:

I did my PhD (2006□2010) in the University of León, granted by this institution, under the supervision of Prof. Herraez in the field of reproduction of aquaculture. I accomplished relevant discoveries regarding DNA damage provoked in the sperm by storage methods. I demonstrated the effects of cryopreservation on the integrity of the sperm genome and the consequences on the offspring. For first time I showed that specific genes and regions (telomeres) of the sperm DNA are affected by cryopreservation, leading to lethal effects and to the deregulation of the expression of several genes during embryo development in fish. These results demonstrate the importance of developing of new cryopreservation protocols protecting the DNA of the spermatozoa, as well as show the importance of evaluating DNA damage prior to its use in clinics or in livestock breeding. This period was very fruitful regarding scientific production and I published 16 scientific works in international peer review□journals.

Following my PhD I got granted to carry out my postdoctoral stay (2011□2014) at the Weizmann Institute of Science in Israel in Professor Eisenbach□s group. During this period I achieved my major scientific contribution by discovering the intracellular signaling pathway involved in mammalian sperm thermotaxis. I discovered that opsins, and specifically rhodopsin, are thermosensors allowing human and mouse spermatozoa to actively respond in a gradient of temperature and swim toward it. This discovery is not only important for a better understanding of the sperm physiology, also show for first time the involvement of a G-protein coupled receptor family in thermosensing, suggesting that opsins are bi-functional sensors for visual and thermal perception. This work has been published in Scientific Reports, Q1 in the area of multidisciplinary sciences (current impact factor:5.2). It is worthy to mention that because of its relevant position in the area of multidisciplinary sciences this publication has allowed me to apply to the " ERC Starting grant program 2016". From this postdoctoral period I achieved 5 publications in high impact international peer-review journals and 1 book chapter.

From 2015 I have a postdoctoral contract from the Ministry of Economy and Competitiveness of Spain that will end in April 2017. I develop my research in the INIA in the laboratory of Prof. Gutiérrez Adán. During this period I have integrated in the host laboratory and developed my research line studying sperm guidance and its application for artificial reproductive techniques. As result I have published 7 scientific papers, 3 book chapters and two patents are under evaluation.

In addition to the scientific production detailed above I have presented my results in international conferences (23 contributions, three invited talks) and I have participated giving seminars in different courses and grades in Spain and Israel. In addition, I have supervised 3 master students and the degree final project of 2 students. My CV has been significantly reinforced respect to the Ramón y Cajal call 2015 in which I was rated as the fifth in the area of "livestock and fisheries" being the first reserve of the list (7 new SCI papers, 5 new contributions to international conferences, one travel grant, participation in 4 more R&D projects, and significant contributions in teaching

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activities).

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Nombre: BRETEAUX , SEBASTIEN
Referencia: RYC-2016-20932
Área Científica: Matemáticas
Correo Electrónico: sebastien.breteaux@gmx.fr

Título:

PDEs and MATHEMATICAL PHYSICS

Resumen de la Memoria:

My area of research concerns many-body problems in Quantum Mechanics. I am particularly interested in the mathematical justification of effective equations describing these systems at the macroscopic scale. My works thus rigorously link many-body quantum systems and effective equations that can be studied via numerical methods.

This raises different mathematical problems:
1) Find the relevant effective equation associated with the many-body system. It is often a non-linear partial differential equation.
2) Understand the effective equation: functional framework for the existence and uniqueness of a solution, structure of the solution, preservation laws, etc.
3) Prove convergence results of the effective model with respect to the initial quantum model, in some scaling limit.

During my PhD, I worked on cases where the effective equation was already well-known: the linear Boltzmann equation and the nonlinear Schrödinger equation. I thus studied the problem of convergence, and I developed an approach inspired from Quantum Field Theory to derive kinetic equations from many-body quantum dynamics. At this occasion, I strongly used the theory of Pseudo-Differential Calculus and Semi-Classical Measures in relation with Quantum Field Theory.
At the end of my PhD I had the occasion to go for three months to the University of Mainz, Germany, to work with a leading expert in Functional Analysis and Quantum Chemistry, Volker Bach (President of the German Mathematical Association).

After my PhD, Volker Bach offered me in 2011 a post-doctoral fellowship at the Technical University of Braunschweig. There I got acquainted with methods from quantum chemistry and studied their domain of validity and limitations with mathematical rigor.
I also broadened my mathematical expertise further, by considering new variational problems arising from Quantum Field Theory.
I finally started a successful collaboration with other leading researchers from different countries, like Jürg Fröhlich (ETH Zürich) and Michael Sigal (University of Toronto). This work paves the way to an improved description of a Bose-Einstein condensate, a problem that we have already partially understood by finding and studying a new effective equation that of course differs from the usual Gross-Pitaevskii theory.

In 2014, I obtained a postdoctoral fellowship at BCAM, Bilbao, in the group of Jean-Bernard Bru. This has been a very good opportunity for me: I can at the same time strengthen my previous collaborations, and start new ones, for instance with Jean-Bernard Bru and Walter de Siquiera Pedra (University of Sao Paulo, Brazil). This allows me to extend my knowledge on algebraic methods of Quantum Mechanics.

Since May 2015, I am a Marie Curie-Sklodowska postdoctoral fellow at the Basque Center for Applied Mathematics, in Bilbao.

Resumen del Currículum Vitae:

Sébastien Breteaux (Chartres, France, 1982),
PhD in Mathematics and Applications (2011).
Currently a Marie Curie-Sklodowska fellow at BCAM, Bilbao, Spain.

PREVIOUS POSITIONS

2014 - 2015 Post-doctoral fellow, BCAM.
2011 - 2014 Post-doctoral fellow, TU Braunschweig, Germany.
2010 - 2011 Temporary position of research and teaching,
Ecole Normale Supérieure de Cachan Bretagne, France.
2007 - 2011 PhD research grant and teaching grant,
University of Rennes 1 and ENS Cachan Bretagne.

EDUCATION

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2006 - 2007 Master of mathematics in Erasums at Scuola Normale Superiore di Pisa, Italy.
2005 - 2006 Preparation of competitive exam to become a high school teacher.
2003 - 2005 Bachelor and 1st year of Master at University of Rennes 1 both:
in Mathematics and
in Physics.

RESEARCH

I am a mathematician working on the asymptotic analysis of many-body quantum models. Such systems are notoriously difficult to study via mathematically rigorous methods. More precisely, I am working on the derivation of effective equations describing the dynamics of such quantum dynamical system.
My mathematical works are interdisciplinary and thus involve several fields of mathematics such as:
- partial differential equations,
- functional analysis,
- microlocal analysis, pseudo-differential calculus,
- the mathematical framework of quantum mechanics and quantum field theory.

RESEARCH STAYS

- I have done three pre-doctoral research stays at École Polytechnique, Palaiseau; International Center for Theoretical Physics in Italy; and University of Mainz in Germany.
- I have done post-doctoral research stays at ETH Zürich (twice), University of Lorraine, LMU Münich, T. University Braunschweig.

PUBLICATIONS

I have 8 publications (5 publications in the first quartile, one being in the first decile) and 2 prepublications, submitted.

INTERNATIONAL EXPERIENCE

- I spent more than 6 years outside of France,
- I did research in 4 countries: Italy, France, Germany, Spain,
- I can speak 4 languages: French, English, German, Spanish,
- I presented my works in 7 countries,
- I worked with 13 coauthors of 6 nationalities.

TEACHING EXPERIENCE

- at the university: I taught at every level from 1st year to PhD student, in 3 languages (French, German, and English),
- preparation of candidates to the french "Agrégation" (competitive exam for high school teachers),
- french qualification for Maître de conférence position (Assistant professor).

DISSEMINATION

- scientific audience: 5 invited talks and 3 contributed talks at international conferences, 23 talks at seminars,
- general audience:
  - popularization in primary school, high school, and science festival,
  - talk at a course on management of international projects in research and development.

FUNDING

- Marie Curie-Sklodowska grant from the European Union: 158 000€,
- Mobility grant of the Université Européenne de Bretagne: 3 000€,

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- Partial Funding of an international workshop from the International Association of Mathematical Physics: 1 500€,
- Member of the grant MTM2014-53850 of Bru and Perez Moreno, 7 researchers: 72 000€.

MANAGMENT

- coorganization of an international workshop in Bilbao in 2016 (42 participants),
- member of the council of the Mathematical Research Institute of Rennes (3 years).
- currently coorganizing two workshops, one in Bilbao and one in Paris 13 university.

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Nombre: SAORIN GOMEZ, EUGENIA
Referencia: RYC-2016-19847
Área Científica: Matemáticas
Correo Electrónico: eugenia.saorin@ovgu.de

Título:

Análisis Convexo Geométrico

Resumen de la Memoria:

The candidate initiated her research in the framework of Brunn-Minkowski Theory, with the study of the roots of Steiner polynomials (completely original new research line at that time), which turned out into two papers in this line, that have been cited in one of the most important books in Convexity, P. Gruber: Convex and Discrete Geometry (2007). During her Ph.D. studies she started a systematic study of the (relative) inner parallel bodies and their quermassintegrals, focussing on an open question of Bol (1943). This study culminated with the solution to the original problem obtained in a work which has appeared in Trans. Amer. Math. Soc. and which has been cited in the 2nd edition of the most relevant book in Convexity, R. Schneider: Convex Bodies:The Brunn-Minkowski Theory (2013). Along this line of research, a conjecture by Matheron was addressed, to which a negative answer is given in a work published in Adv. Geom. (2010). An analytical or variational point of view of quermassintegrals was also investigated during the Ph.D., as the work from 2010 in the J. Convex Anal. shows. Three further works within the Ph.D. period appeared in Israel J. Math (2010), Forum Math. (2010) and Banach Center Publ. (2009) being a total of 7 publications.

After the Ph.D., the candidate started new fruitful research topics and continued working on topics related to her dissertation. As new research lines stand out the study of mixed volumes from a functional point of view, as the work in J. Geom. Anal. (2014) shows. This work has been also cited in the book by Schneider. This line of research has been continued originating a new work on the monotonicity of integral functional (accepted for publication in Canad. J. Math.). The combination of inner parallel bodies techniques with polytopes has given rise to the work in Monatsh. Math. (2014). In the work J. Math. Anal. Appl., (2014), the (so far unknown) equality cases of old and recent improvements of the Brunn-Minkowski inequalities are characterized and two conjectures on this line are proven to be false. As a functional generalization of the latter, Refinements of the Prékopa-Leindler inequality are proven in Canad. J. Math. (2016). The work in Commun. Contemp. Math. (2015) studies difference bodies in complex vector spaces through harmonic analysis. This mathematical multidisciplinarity has originated several questions, which are actual research work lines. She has initiated a long term project aiming to classify operators via inequalities, specially, valuations. An accepted paper in Forum Math. (2016) and a submitted one have already come out of this project.

About the topics related to the content of the dissertation, Commun. Contemp. Math. (2012) is to be underlined where several questions on the structure of the roots of Steiner polynomials are answered. In the work published in 2012 in Monatsh. Math. sharp inequalities involving mixed volumes are proven, using techniques close to the ones in the Ph.D improving substantially the classical inequalities in this context.

In the paper published in RACSAM (2016) the completely new concept p-difference is introduced und investigated. This counterpart of Minkowski difference allows to carry out the study of natural extensions and improvements of (deep) results of the classical theory and has originated a subsequent work AADM (2016) and a preprint.

Resumen del Currículum Vitae:

E. Saorín G. obtained her Ph. D. from the Univ. of Murcia in October 2008, through a FPU grant (2005). The Ph.D. supervisors were Prof. M. A. Hernández Cifre and Prof. B. Cascales Salinas. During the Ph.D. period, 4 long term stays in european universities were carried out: Poznan, Warsaw, Freiburg and Florence, within both, FPU and an EU-Network from Marie Curie Actions. Most of these stays have originated fruitful scientific collaborations, as the detailed publication list shows. After the Ph. D., she obtained a fellowship from the DAAD (see CV for details) for research in the project "Investigation of functionals satisfying a Brunn-Minkowski inequality" with Prof. D. Hug at Karlsruhe Universität. Later, she obtained a position of Wiss. Mitarbeiterin (equivalent to assistant professor with Ph. D.) in the research group "Convex and Discrete Geometry" of Prof. M. Henk at the Otto-von-Guericke Universität Magdeburg, where the candidate belongs. She got and rejected a Juan de la Cierva fellowship (already employed by the Magdeburg university). During the years (except for two maternity breaks) in the group of Prof. Henk, E.S.G. has iniciated several new collaborations and research lines and further worked in topics related to her Ph. D. The potential of the candidate is reflected, on the one hand, on the high quality peer reviewed journals, such as Trans. Amer. Math. Soc., J. Geom. Anal. or Commun. Contemp. Math., where her research works have been accepted; on the other hand, the candidate has contributed by invitation to important international conferences (Oberwolfach, B.I.R.S in Banff , C.R.M. in Montreal, I.A.S. in Princeton or the traditional Workshop on Convex Geometry. Analytic Aspects in Cortona/Rome. Her most recent collaboration with J. Abardia and A. Colesanti is to be highlighted, as it has initiated a novel line of research with unexpected and very welcomed in the community results. She collaborates in several I+D+i projects, in Germany, as well as in Spain focussed both on Geometry issues (04540/GERM/06) as well as on Analysis (MTM2011-25377). The candidate organized, in September 3013, together with Prof. A. Colesanti (U. Florence) and Prof. F. Schuster (U. Vienna) the international conference Convex Geometry in the CIEM. Together with J. Abardia (and

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D. Alonso) she organized sessions of convex and integral geometry in the biannual conferences of the RSME in 2015 (resp. RSME2017). She is one of the organizers of a conference on convex, discrete and integral Geometry in the Banach Center (Poland) in 2017 (see cv for details). This enlightens her scientific organization skills. The latter shows also the productive numerous international scientific connections of the candidate. Besides, on-going international projects with further researchers (Florence, Frankfurt, Karlsruhe, Murcia, Seville, Warsaw) should be added. On 28th of January 2016 the doctoral thesis of which she is co-supervisor (together with Prof. Hernández Cifre) was defended. The wide teaching experience is enclosed in the detailed C.V. where the language versatility of the candidate (teaching has been carried out in German and English, and in Spanish) should be enhanced. She supervised one Bachelor thesis and has 2 ongoing ones. In 2011 she received the German Science award Karin-Witte Preis. She will soon habilitate (german professor acreditation).

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Nombre: MARTINEZ GOMEZ, DAVID
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Área Científica: Medicina Clínica y Epidemiología
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Título:

Physical activity epidemiology and aging

Resumen de la Memoria:

My beginnings in the Physical Activity Epidemiology research area were during the predoctoral period where I joined the Spanish National Research Council (CSIC) in the Nutrition and Metabolism Department (Institute of Food Science, Technology and Nutrition-ICTAN). I was a researcher in several National and European cross-sectional population-based (AVENA, AFINOS, and HELENA studies), longitudinal (UP&DOWN study) and clinical trial (EVASYON study) studies in adolescents. Also, I also co-developed specific guidelines for promoting physical activity during physical education and school settings in the PERSEO programme (Pilot Programme in Schools for Health, Physical Exercise and against Obesity, Ministries of Health and Education) including around 14,000 children aged 6-10-year from six autonomous communities. I also learnt more on Physical Activity Epidemiology during my brief stays in other research groups with Dr. Gregory J Welk at Iowa State University (USA), Dr. Michael Sjostrom in the Karolinska Institutet (Sweden) and Dr. Joey C Eisenmann at Michigan State University (USA). As a postdoctoral researcher, I joined the Department of Preventive Medicine and Public Health at the University Autonomous of Madrid with the epidemiologist Dr. Fernando Rodriguez-Artalejo. In this period, I focused my research interests to Physical Activity Epidemiology and Aging since increased life expectancy is reflected in a progressive and rapid aging of the world population and it is necessary to promote an active aging. With my mentor we worked in two representative cohorts of Spanish older adults (ENRICA and 60+cohort update). In this postdoctoral period, I visited the WHO Center for Epidemiological Research (Brazil) with Dr. Pedro C Hallal, the Research Center in Physical Activity, Health and Leisure (Portugal) with Dr. Jorge Mota and the Geriatric Epidemiology Unit in the Piero Palagi Hospital (Italy) with Drs Stefania Bandinelli & Luigi Ferrucci. The applicant currently combines teaching and postdoctoral research in Physical Activity Epidemiology and Aging as a principal investigator in three studies: the IMPACT65+, FRAILTY-Spain/Chile and IDaging studies.

Resumen del Currículum Vitae:

The applicant graduated in Physical Education (2004) and Sports Sciences (2006). The applicant joined the Spanish National Research Council (Institute of Food Science, Technology and Nutrition ICTAN-CSIC) during his predoctoral period to investigate the benefits of a physically active and less sedentary lifestyle on health in young people. In 2011 completed the PhD thesis in Sport Sciences at the University Autonomous of Madrid. After the PhD, MSc specialization in Epidemiology was obtained in 2012. A postdoc training in the study of physical activity and aging was done in the Department of Preventive Medicine and Public Health (University Autonomous of Madrid) being mentored by Dr. Fernando Rodriguez-Artalejo. The candidate has had national major research grants from the Spanish research career during his undergraduate (Collaboration-MEC fellowship), predoctoral (4-year University Staff Training FPU-MEC grant) and postdoctoral (Juan de la Cierva-MICINN contract) periods, among others. Predoctoral and postdoctoral stays at Iowa State University (USA, 2008), Karolinska Institutet (Sweden, 2009), Michigan State University (USA, 2010), WHO Center for Epidemiological Research (Brazil, 2013), Research Center in Physical Activity, Health and Leisure (Portugal, 2014) and the Geriatric Epidemiology Unit in the Piero Palagi Hospital (Italy, 2016). The applicant has actively participated as researcher (e.g. AVENA, EVASYON, AFINOS, HELENA, UNKIDs, ENRICA, 1993 Pelotas Birth Cohort and InCHIANTI studies) and scientific project manager (UP&DOWN study) in National, European and International projects. The candidate has published 4 books, 4 chapters of books, and a total of 115 scientific JCR articles being first, second or last author in 75% of them. More than 60% of the published articles are high impact factor journals (25th) in the ranking of journals in its area (>40% in 10th journals), and highly cited (e.g. three papers with more than 100 citations; h-index=22 and 1594 citations according to Web of Science). The applicant has participated as speaker and presenting findings in numerous national and international scientific events. He has also got relevant academic awards (e.g. Extraordinary Doctorate Award, 2011), and both collective (e.g. EU Communication Star 2011 and NAOS Strategy Award for the Best Applied Research) and individual (e.g. National Award for the Best Young Researcher in Sport Sciences, 2014) scientific awards. He has also been external project reviewer of the Pan American Health Organization (2011), and the Scottish Executive Health Department (2013). The candidate is also reviewer of scientific journals, and member of the Editorial Committees of three JCR journals, and the recently launched Global Observatory for Physical Activity. Currently, his research is focused on determining the levels of objectively-measured physical activity and sedentary time in cohorts of older adults and its impact on key health outcomes in this life period such as frailty, disability, cognitive decline, and survival, being the principal investigator in three research projects (IMPACT65+, FRAILTY-Spain&Chile and IDaging studies).

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Turno de acceso general

Nombre: IGLESIAS ALONSO, MANUEL
Referencia: RYC-2016-20864
Área Científica: Química
Correo Electrónico: miglesia@unizar.es

Título:

Desarrollo de catalizadores homogéneos y soportados basados en ligandos NHC

Resumen de la Memoria:

El candidato obtuvo su licenciatura, Tesis de Licenciatura y Diploma de Estudios Avanzados en la Universidad de Vigo. Para realizar sus estudios le fue concedida una beca EPSRC del gobierno Británico, realizando su tesis doctoral de manera íntegra en el grupo del Prof. Kingsley J. Cavell en la Universidad de Cardiff, donde trabajó en la química de ligandos NHC y en su aplicación en reacciones de hidrogenación y transferencia de hidrógeno. Con el objetivo de ampliar su conocimiento sobre la química de ligandos tipo carbeno su primera estancia post-doctoral la realizó en el grupo del Prof. Martin Albrecht en la Universidad de Friburgo (Suiza), donde su investigación se centró en (i) ligandos NHC mesoionicos y (ii) materiales híbridos Pd-NHC / polioxometalatos y sus aplicaciones como catalizadores en reacciones de acoplamiento cruzado y deshalogenación. A continuación se trasladó al UCD (University College Dublin, Irlanda), donde estudió la reactividad y aplicaciones catalíticas de carbenos N-heterocíclicos remotos (rNHC).

En octubre de 2011 el candidato se unió al grupo liderado por el Prof. Luis A. Oro en la Universidad de Zaragoza. Al comienzo de su estancia el candidato trabajó en la heterogeneización de catalizadores homogéneos como parte del proyecto de investigación CONSOLIDER MULTICAT, coordinado por el Prof. Avelino Corma. En 2012 obtuvo un contrato Juan de la Cierva y le fue concedido un proyecto para jóvenes investigadores del MINECO, junto con Dr F. J. Fernández Alvarez y Dr P. J. Sanz Miguel (PI), momento en el que empezó a desarrollar una línea de investigación propia que le ha llevado a publicar 17 artículos como autor de correspondencia. Su investigación actualmente se centra en el uso en catálisis homogénea de arquitecturas moleculares basadas en compuestos mesoiónicos, olefinas N-heterocíclicas (NHOs) o carbenos N-heterocíclicos (NHCs). Como fin último se pretende desarrollar catalizadores de manera racional, apoyándose en estudios mecanísticos, para la obtención de productos de valor añadido mediante procesos químicos sostenibles. Este trabajo de investigación ha sido recientemente premiado por la "Real Academia de las Ciencias de Zaragoza" (Premio de Investigación 2015). Además, en el marco de un acuerdo de colaboración con la empresa Ariño Duglass (Cátedra Ariño Duglass), el candidato está actualmente supervisando una tesis doctoral financiada por el programa de doctorado industrial de la Universidad de Zaragoza que se centra en el estudio y desarrollo de vidrios funcionalizados con materiales fotocatalíticos que permitan la eliminación de contaminantes atmosféricos.

Durante su trayectoria investigadora el candidato ha participado habitualmente en tareas docentes y de supervisión de estudiantes, habiendo dirigido 4 trabajos fin de máster, 3 trabajos académicamente dirigidos, 1 trabajo fin de grado y una tesis doctoral. A esto hay que añadir sus tareas como instructor de laboratorio durante su etapa pre-doctoral en la Universidad de Cardiff y su labor docente en la Universidad de Zaragoza, donde ha impartido las asignaturas de "Experimentación química", "Introducción al laboratorio químico", "Química inorgánica II" y "Fundamentos y aplicaciones de RMN en Química" desde el año 2011. En la actualidad el candidato posee las acreditaciones ANECA a "Profesor Contratado Doctor" y "Profesor de Universidad Privada".

Resumen del Currículum Vitae:

EDUCACIÓN
- Licenciatura en Química. Universidad de Vigo, 2003.
- DEA: Universidad de Vigo, 2003-2005.
- Doctorado: Cardiff University, Reino Unido, 2005-2008.

EXPERIENCIA POSTDOCTORAL
- Universität Freiburg (agosto 2008 - septiembre 2009)
- University College Dublin (septiembre 2009 - septiembre 2010)
- Universidad de Zaragoza desde octubre de 2010 (Contratado Juan de la Cierva durante el período 01/01/2012-31/12/2014)

INDIDADORES DE CALIDAD
- Índice H: 14.
- 39 publicaciones totales (17 como autor de correspondencia).
- 550 Citas recibidas en los últimos 5 años sin contar el presente (2012-2016).
- 2 capítulos de libro.
- 1 Tesis Doctoral dirigida, 3 Trabajos Fin de Máster, 3 Trabajos Académicamente Dirigidos y 1 Trabajo Fin de Grado.
- Premio de investigación 2015 de la Real Academia de las Ciencias de Zaragoza.
- Acreditado por ANECA como "Profesor Contratado Doctor" y "Profesor de Universidad Privada".

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PRESENTACIONES ORALES DESTACADAS
- Real Academia de las Ciencias de Zaragoza. Zaragoza, España, Noviembre 2015.
- ICOMC XXV. Lisboa, Portugal, Septiembre 2012.
- CICLO DE CONFERENCIAS ISQCH, Zaragoza, España, Octubre 2010.
- COST meeting. Turku, Finlandia, Junio 2009.
- University of Wales Postgraduate Conference. Cardiff, UK. Noviembre 2006.

PROYECTOS COMO MIEMBRO DEL EQUIPO INVESTIGADOR
- NOVEL RHODIUM AND IRIDIUM COMPLEXES FOR HOMOGENEOUS CATALYTIC PROCESSES (01/09/2013-01/09/2016); Cantidad: 367.674; Organización: King Fahd University of Petroleum & Minerals.
- CATALISIS BIO-INSPIRADA BASADA EN FRAGMENTOS DE M-DNA Y COMPLEJOS SOPORTADOS DE M-NHC (01/01/2012-31/12/2014); Cantidad: 146.410; Organización: MINECO.
- ESTUDIO Y DESARROLLO DE VIDRIOS FOTOCATALÍTICOS PARA LA ELIMINACIÓN DE CONTAMINANTES (09/09/2017-08/09/2020); Cantidad: 71.000; Organización: Universidad de Zaragoza-Ariño Duglass.

TAREAS DE EVALUACIÓN
- Evaluador de proyectos para la Fundación Ibercaja.
- Referee para revistas científicas internacionales: ChemCatChem (Ed. Wiley), Advanced Synthesis and Catalysis (Ed. Wiley) y Arabian Journal of Chemistry (Ed. Elsevier).
- Miembro del tribunal de las Tesis Doctorales de Susana Luaces Orobitg (Universidad de Zaragoza, 2015) y Beatriz Calvo Calvo (Universidad de Zaragoza, 2013).

COLABORACIONES EN CURSO
- Dr. Jörg Wagler, Intermetallic Interactions (Universität Freiberg).
- Dr. Victor Polo, Cálculos DFT (Universidad de Zaragoza).
- Dr. Pablo J. Sanz Miguel, Cristalografía y Química Supramolecular (Universidad de Zaragoza).
- Dr. Adrien Normand, Catálisis con complejos de Ti, V o Zr (University of Burgundy).
- Dr. José Manuel Marco, Química de Superficies (R & D Manager at Ariño Duglass).

PUBLICACIONES DESTACADAS
- A. Iturmendi, M. Iglesias*, J. Munárriz, V. Polo, J. J. Pérez-Torrente, L. A. Oro*, Chem. Commun., 2017, 53, 404.
- M. Iglesias*, A. Iturmendi, P. J. Sanz Miguel, V. Polo, J.J. Pérez-Torrente, L. A. Oro*, Chem. Commun. 2015, 51, 12431.
- A. Cebollada, A. Vellé, M. Iglesias, L. B. Fullmer, S. Goberna-Ferrón, M. Nyman*, P. J. Sanz Miguel*, Angew. Chem. Int. Ed. 2015, 54, 12762.
- L. Rubio-Pérez, M. Iglesias*, J. Munárriz, V. Polo, P. J. Sanz Miguel, J. J. Pérez-Torrente, L. A. Oro*, Chem. Commun., 2015, 51, 9860.
- R. Lalrempuia, M. Iglesias, V. Polo, P. J. Sanz Miguel, F. J. Fernández-Alvarez*, J. J. Pérez-Torrente, L. A. Oro*, Angew. Chem. Int. Ed. 2012, 51, 12824.

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CONVOCATORIA 2016

Turno de acceso general

Nombre: OTERO DE LA ROZA, ALBERTO
Referencia: RYC-2016-20301
Área Científica: Química
Correo Electrónico: alberto@fluor.quimica.uniovi.es

Título:

Modeling of non-covalent interactions in density-functional theory

Resumen de la Memoria:

My research is in the field of theoretical and computational chemistry. The primary focus at the moment, and for the past five years, has been the development and application of computational techniques for the accurate modeling of non-covalent interactions in the context of density-functional theory (DFT). In addition, I also study chemical bonding, matter under pressure, and other theory developments in the context of density functional theory (DFT). My work has three levels:

1. Theoretical development, in particular, development of quantum-mechanical methods in DFT for the accurate calculation of intermolecular interactions. Past work on this topic includes the extension of the exchange-hole dipole moment (XDM) model to hybrid and range-separated hybrid functionals and the calculation of dispersion coefficients to any order. A direct result of this work has been the advancement of our understanding of non-covalent interactions, and the availability of more accurate and more efficient methods to model intermolecular interactions computationally, a current hot topic in the field of DFT. These new methods have the potential to greatly impact other fields, such as supramolecular chemistry, materials chemistry, or nanotechnology.

2. Implementation of new methods and software development. I am the main developer or co-author of multiple programs for quantum chemistry, available to the community under a GPL license (http://github.com/aoterodelaroza) in addition to having contributed to mainstream code (Quantum ESPRESSO, nwchem, psi4, Gaussian). The list of codes includes critic2 (chemical bonding), gibbs2 (thermodynamics of solids) and postg and nciplot (non-covalent interactions), among many others. Their corresponding articles sum more than 400 citations, evidencing their usefulness to the scientific community and the ever-increasing number of users.

3. Application of the new techniques and software to tackle current research problems, either on my own or in collaboration with researchers in other fields. Examples include the first principles prediction of the viability of a preferential crystallization strategy for chiral resolution (Prof. Jason Hein and Prof. Erin Johnson), the analysis of the stability and vibrational spectroscopy of clathrate hydrates (Prof. Olga Prieto-Ballesteros), surface adsorption studies (Erin Johnson), tribology and design of new high-temperature lubricants (Prof. Ashlie Martini), crystal engineering (Prof. E. Tiekink), the study of electrides, developing an understanding of aurophilic and halogen bonding interactions, organic electronics (Prof. Christine Isborn), and many others.

Together, my past research has resulted in 60 articles, 2 book chapters, 1 edited book, and a total of 1291 citations so far (h-index = 21), with 391 citations last year alone. I am the first author in 10 of my 11 most cited articles, among these one "editor's choice" and two most-read articles in the journal. In addition, I have given 24 talks in international conferences (9 invited).

Plans for future research include continuing the implementation of XDM to study the dynamical properties of clathrate hydrates (of interest to the environmental and space agencies and to the oil industry), the development of a protocol for crystal structure prediction (very important to pharmaceutical companies).

Resumen del Currículum Vitae:

I have more than 10 years of research experience in the field of computational and theoretical chemistry. My research career started in 2006 with an FPU fellowship (2007-2011), which allowed me to obtain a Ph.D. at the University of Oviedo (2011). In my early years I obtained several noteworthy awards (first place national chemistry olympiad (2001), bronze medal international chemistry olympiad (2001). Premio fin de carrera "Química del Nalón" (2006). Mención de honor, premios nacionales fin de carrera (2006), with average 3.7/4.0. Premio extraordinario de licenciatura (2007). Premio extraordinario de doctorado (2011)). The remaining five years of my career have been spent in the US (University of California, Merced, 2011-2013) and Canada (research associate at the National Insitute for Nanotechnology (NRC), 2014-2016; visiting professor at the University of British Columbia, 2016-).

My research focuses on computational quantum chemistry - the development, implementation, and application of methods in the context of density functional theory (DFT). Other fields I touch are chemical bonding, matter at high pressure, chemical thermodynamics, and nanotechnology. I have 60 articles in peer reviewed journals (+1 submitted, average of 7.5 articles per year), of which 41 are in the first quartile, and 31 as corresponding author, 2 book chapters and 1 edited book. Another book on non-covalent interactions with contributions from research leaders is scheduled for publication in 2017, which will possibly become a reference in the field. One of my articles was "editor's choice" and two were the most read in the journal for a given three-month period. My h-index is 21 (average

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increase of 2.6 per year), with 1291 citations, 391 of which were last year alone. In addition, I am first author in 10 out of the 11 most cited papers in my CV. I have given 24 oral presentations in international scientific conferences, 9 of which were invited. I have participated in 4 projects funded by the Spanish government, as well as in other projects funded by Canadian and US private corporations (AITF and Quantiam Technologies; this last one is still ongoing). I have an extensive network of collaborators that reap the benefits of the new methods I create in their own research, and I am also reviewer for multiple journals in the field.

My teaching experience includes two courses taught at the University of Oviedo: Química Física II (8 hours, 2008) and chemical kinetics (52 hours, 2009). I have also mentored multiples students both at the undergraduate and graduate level, some of which have already graduated or achieved a doctoral degree. In addition, I am co-author of numerous online resources for students, including the University of Oviedo OpenCourseWare (OCW) for Química Física II (ocw.uniovi.es/course/view.php?id=97), one article in an educational journal, and a tutorials wiki (schooner.chem.dal.ca). Finally, I am author or co-author of multiple (10+) quantum-chemical software codes, all of which are freely distributed through my github repository (http://github.com/aoterodelaroza). These programs are actively maintained and I give support to an ever-growing community of users (several of these codes have 100+ citations each). In addition, I have made important contribution to mainstream software packages (nwchem, Quantum ESPRESSO, psi4, and Gaussian).