Parte A. DATOS PERSONALES

Fecha del CVA	01/02/2022

Nombre y apellidos	Luis Álvarez de Cienfuegos Rodríguez		
Núm. identificación del investigador		Researcher ID	K-2391-2014
		Código Orcid	0000-0001-8910-4241

A.1. Situación profesional actual

Organismo	Universidad de Granada		
Dpto./Centro	Departamento de Química Orgánica / Facultad de Ciencias		
Dirección	Campus de Fuentenueva, 18071, Granada, España		
Teléfono		Correo electrónico	lac@ugr.es
Categoría profesional	Catedrático de Universidad	Fecha inicio	2021
Espec. cód. UNESCO	230600, 230400, 320800		
Palabras clave	Química Supramolecular. Materiales Orgánicos. Química Biológica. Química Organometálica. Dispositivos electrónicos moleculares.		

A.2. Formación académica *(título, institución, fecha)*

Licenciatura/Grado/Doctorado	Universidad	Año
Doctorado en Química Orgánica	Universidad de Granada	2003
Ldo. Farmacia. Esp. Biosanitaria	Universidad de Granada	1999

A.3. Indicadores generales de calidad de la producción científica *(véanse instrucciones)*

Notas: (i) fuente de datos bibliométricos: Web of Science; (ii) los datos JCR son del año de publicación del artículo (para los artículos de 2021 se usan los datos JCR de 2020).

- Número de sexenios de investigación: **4**. Fecha del último concedido: **2018**.
- Tesis doctorales dirigidas en los últimos 10 años (2010-2021): **5** (2 Premio extraordinario y 1 Tesis Europea, 1 Tesis Internacional)
- Tesis de Máster dirigidas en los últimos 10 años (2010-2020): **9**
- Número de publicaciones (2000-2021): **59**
- Citas totales: **1670** (fuente Google Scholar)
- Promedio de citas/año durante los últimos 5 años (2014-2018): **135**
- Promedio de citas por artículo: **23.40**
- Publicaciones totales en primer cuartil (Q1) 2001-2021 (datos basados en los IF de JCR 2013): **39**
- Número de publicaciones (2008-2018): **36**
- Publicaciones totales en primer cuartil (Q1) 2008-2018 (datos basados en JCR 2014): **30**

Química multidisciplinar: **20**, ChemSocRev (1), Ad. Funct. Mater. (1), AngewChem (1), JACS (2), ChemSci (2), ChemSusChem (1), ChemComm (4), ChemEurJ (3), Nanoscale (1), CrystEngComm (1), PhysChemChemPhys (1), PharmRes (1), Soft Matter (1).
Química Orgánica: **10**, OrgLett (2), AdvSynCat (1), JOC (5), EurJOrgChem (1), OrgChemFront (1).
-Índice h: **23**

Parte B. RESUMEN LIBRE DEL CURRÍCULUM

En la actualidad soy Profesor Titular del Departamento de Química Orgánica de la Universidad de Granada (UGR) (Acreditado a Catedrático por ANECA 12/2020) y dirijo el Grupo de Investigación FQM-367 "MATERIALES ORGÁNICOS FUNCIONALES". Soy Investigador principal de proyectos de investigación tanto de ciencia básica ("*HIDROGELES MAGNETICOS SUPRAMOLECULARES PARA MEDICINA REGENERATIVA*". Proyectos del MINECO, Ref.: *REF: FIS2017-85954-R*), ("HIDROGELES SUPRAMOLECULARES BASADOS EN PEQUEÑOS PÉPTIDOS PARA LA OBTENCIÓN DE NUEVOS MATERIALES HÍBRIDOS CON APLICACIONES TECNOLÓGICAS" Junta de Andalucia Project, Ref.: P18-FR-3533), como de transferencia de tecnología ("An improved formulation and delivery of biopharmaceuticals by protein crystals in gels"; financiados por la Fundación La Caixa y el Instituto Europeo de Salud).

Mis líneas de investigación se centran en el desarrollo de nuevos materiales orgánicos y en el estudio de sus posibles aplicaciones tecnológicas y biotecnológicas. Soy autor de 59 publicaciones científicas en revistas de alto índice de impacto como PNAS, Adv. Funct. Mater., Angew. Chem., J. Am. Chem. Soc., Chem. Sci., etc. He dirigido 5 Tesis Doctorales, 12 Tesis de Máster y actualmente estoy dirigiendo 4 Tesis Doctorales. He participado como colaborador en numerosos Proyectos de Investigación tanto nacionales como internacionales (23) y he sido Investigador Principal en 7 proyectos de investigación. Desde 2015 soy Editor Asociado de la revista RSC Advances de la RSC.
He realizado estancias posdoctorales en el Instituto de Tecnología de Massachusetts (MIT) (2004-06) bajo la supervisión del Prof. Alexander Klibanov; en la Universidad de Tufts (2006-2007) bajo la supervisión del Prof. Krishna Kumar y en la Universidad de Granada (2008-2011) bajo la supervisión del Prof. Juan M. Cuerva. Estas estancias me han permitido trabajar en campos muy diversos de la química orgánica ampliando mi experiencia en química de polímeros, glicoconjugados y química organometálica respectivamente.
Gran parte de mi investigación ha tenido y tiene un marcado carácter translacional, siendo autor de 4 patentes PCT. Dos de ellas fueron desarrolladas durante mi estancia posdoctoral en el MIT y una en colaboración con la empresa BIND Therapeutics Inc., especializada en el desarrollo de nanopartículas poliméricas para la administración de fármacos. Recientemente, mi grupo ha solicitado la patente PCT/EP2017/06084 basada en el desarrollo de una nueva formulación farmacéutica que permite una liberación sostenida de insulina. En 2017 fundamos la spin-off Crystalgel S.L que va a ser la encargada de explotar dicha tecnología.

Parte C. MÉRITOS MÁS RELEVANTES

C.1. Publicaciones

Notas: (i) Factores de Impacto (FI) y Posiciones de las Revistas en su Área (P. Rev.) tomados del JCR de la Web of Science; (ii) el número de citas (Nº Citas) está tomado de la Web of Science.

1. Insulin Crystals Grown in Short-Peptide Supramolecular Hydrogels Show Enhanced Thermal Stability and Slower Release Profile.
Rafael Contreras-Montoya, María Arredondo-Amador, Guillermo Escolano-Casado, Mari C. Mañas-Torres, Mercedes González, Mayte Conejero-Muriel, Vaibhav Bhatia, Juan J. Díaz-Mochón, Olga Martínez-Augustin, Fermín Sánchez de Medina, Modesto T. Lopez-Lopez, Francisco Conejero-Lara, José A. Gavira, and **Luis Álvarez de Cienfuegos**. ***ACS Appl. Mater. Interfaces*** *DOI: 10.1021/acsami.1c00639* ***Índice de impacto:*** *8.758.* ***P. Rev.:*** *33/314 (1er cuartil).* ***Corresponding author.***
2. *Catalytic and Electron Conducting Carbon Nanotube Reinforced Lysozyme Crystals.*
Rafael Contreras-Montoya, Guillermo Escolano, Subhasish Roy, Modesto T. Lopez-Lopez, Jose M. Delgado-López, Juan M. Cuerva, Juan J. Díaz-Mochón, Nurit Ashkenasy, José A. Gavira, ***Luis Álvarez de Cienfuegos. Adv. Funct. Mater. 2019,*** *29, 1807351.* ***Índice de impacto:*** *16.8.* ***P. Rev.:*** *11/170 (1er cuartil).* ***Corresponding author.***
3. Novel Oleanolic and Maslinic Acids derivatives as a promising treatment against bacterial biofilm in nosocomial infections: An in Vitro and in Vivo study. Núria Blanco-Cabra, Karina Vega-Granados, Laura Moya-Andérico, **Luis Álvarez de Cienfuegos**, Eduard Torrents. **ACS Infect. Dis., 2019**, 5, 1581−1589. ***Índice de impacto:*** 4.911. ***P. Rev.:*** 4/59 (*1er* **decil**). **Corresponding author**.
4. *Unravelling the 2D Self-Assembly of Dipeptides at Fluid Interfaces.*
Pablo Gómez-Agudo, Rafael Contreras-Montoya, ***Luis Álvarez de Cienfuegos****, Juan M. Cuerva, Manuel Cano, David Alba-Molina, María T. Martín-Romero, Luis Camacho y Juan J. Giner-Casares.* ***Soft Matter 2018,*** *14, 9343-9350.* ***Índice de impacto****: 3.709.* ***P. Rev****.: 10/78 (1er cuartil). Este articulo recibió el Inside Cover de la revista.* ***Corresponding author****.*
5. *Iron Nanoparticles-Based Supramolecular Hydrogels to Originate Anisotropic Hybrid Materials with Enhanced Mechanical Strength.*
Rafael Contreras-Montoya, Ana B. Bonhome-Espinosa, Angel Orte, Delia Miguel, Jose M. Delgado-López, Juan D. G. Duran, Juan M. Cuerva, Modesto T. Lopez-Lopez, and ***Luis Álvarez de Cienfuegos****.* ***Mater. Chem. Front., 2018,*** *2, 686-699.* Impact Factor: 6.788. J.

Rank.: 29/172 (1st quartile). Inside Cover. Number citations: 18. Position/Number of authors: 9/9. **Corresponding author**.

6. *Pyrene-Containing ortho-Oligo(phenylene)ethynylene Foldamer as Ratiometric Probe Based on Circularly Polarized Luminescence.*
Pablo Reiné, José Justicia, Sara P Morcillo, Sergio ABBATE, Belén Vaz, María Ribagorda, Ángel Orte, Luis Álvarez de Cienfuegos, Giovanna Longhi, Araceli G. Campaña, Delia Miguel, and Juan M. Cuerva. ***J. Org. Chem. 2018,*** *83, 4455-4463.* ***Índice de impacto****: 4.849.* ***P. Rev****.: 8/59 (1er cuartil).* ***Citas:*** *6.*

7. *Sulfoxide-Induced Homochiral Folding of o-OPEs by Ag I Templating: Structure and Chiroptical Properties.*
Sandra Resa, Delia Miguel, Santiago Guisán-Ceinos, Giuseppe Mazzeo, Duane Choquesillo- Lazarte, Sergio Abbate, Luis Crovetto, Diego J. Cárdenas, M. Carmen Carreño, María Ribagorda, Giovanna Longhi, Antonio J. Mota, ***Luis Álvarez de Cienfuegos*** *and Juan M. Cuerva.* ***Chem. Eur. J. 2018,*** *24, 2653-2662.* ***Índice de impacto****: 5.317.* ***P. Rev****.: 29/165 (1er cuartil).* ***Citas****: 11.* ***Corresponding author****. Recogido en Synfacts 2018; 14(05): 0478.*

8. *Stapled helical o-OPE foldamers as new Circularly Polarized Luminescence emitters based on carbophilic interactions with Ag(I)-sensitivity.*
Sara P. Morcillo, Delia Miguel, ***Luis Álvarez de Cienfuegos****, José Justicia, Sergio Abbate, Ettore Castiglioni, Christophe Bour, María Ribagorda, Diego J. Cárdenas, José Paredes, Luis Crovetto, Duane Choquesillo-Lazarte, Antonio Mota, M. Carmen Carreño, Giovanna Longhi, Juan M. Cuerva.* ***Chem. Sci. 2016****, 7, 5663–5670.* ***Índice de impacto****: 9.144.* ***P. Rev****.: 14/155 (1er cuartil).* ***Citas****: 26.*

9. *Toward Multiple Conductance Pathways with Heterocycle-Based Oligo(phenylene-ethynylene) Derivatives.*
Delia Miguel, ***Luis Álvarez de Cienfuegos****, Ana Martín-Lasanta, Sara P. Morcillo, Linda A. Zotti, Edmund Leary, Marius Burkle, Yoshihiro Asai, Rocío Jurado, Diego J. Cárdenas, Gabino Rubio-Bollinger, Nicolás Agraït, Juan M. Cuerva, and M. Teresa González.* ***J. Am. Chem. Soc. 2015****, 137, 13818-13826.* ***Índice de impacto:*** *12.103.* ***P. Rev****.: 10/157 (1er cuartil).* ***Citas****: 21.*

10. *Influence of the Chirality of Short Peptide Supramolecular Hydrogels in Protein Crystallogenesis.*
Mayte Conejero-Muriel, José A. Gavira, Estela Pineda-Molina, Adam Belsom, Mark Bradley, Mónica Moral, Juan de Dios García-López Durán, Angélica Luque González, Juan J. Díaz-Mochón, Rafael Contreras-Montoya, Ángela Martínez-Peragón, Juan M. Cuerva, and ***Luis Álvarez de Cienfuegos****.* ***Chem. Commun. 2015****, 51, 3862-3865.* ***Índice de impacto****: 6.567.* ***P. Rev****.: 20/148 (1er cuartil).* ***Citas****: 13.* ***Corresponding author****.*

C.2. Proyectos

C.2.1. Proyectos con participación como INVESTIGADOR PRINCIPAL

1. Referencia: ***P18-FR-3533***
Título: ***HIDROGELES SUPRAMOLECULARES BASADOS EN PEQUEÑOS PÉPTIDOS PARA LA OBTENCIÓN DE NUEVOS MATERIALES HÍBRIDOS CON APLICACIONES TECNOLÓGICAS.***
Entidad financiadora (convocatoria): ***Junta de Andalucia***
Nombre del investigador principal: **Luis Álvarez de Cienfuegos Rodríguez**
Entidad de afiliación: Universidad de Granada
Fecha de inicio y de finalización: 2020-2022
Cuantía de la subvención: 109.750 eur

2. Referencia: ***FIS2017-85954-R***
Título: ***HIDROGELES MAGNETICOS SUPRAMOLECULARES PARA MEDICINA REGENERATIVA.***
Entidad financiadora (convocatoria): ***MINECO***
Nombre del investigador principal: **Luis Álvarez de Cienfuegos Rodríguez**
Entidad de afiliación: Universidad de Granada
Fecha de inicio y de finalización: 2018-2020
Cuantía de la subvención: 133.000 eur

3. Referencia: ***EIT-Health-PoCPlus-2016***

Título: ***AN IMPROVE FORMULATION AND DELIVERY OF BIOPHARMACEUTICALS BY PROTEIN CRYSTALS IN GELS***
Entidad financiadora (convocatoria): ***European Institute of Technology***
Nombre del investigador principal: **Luis Álvarez de Cienfuegos Rodríguez**
Entidad de afiliación: Universidad de Granada
Fecha de inicio y de finalización: Nov.2016-Dic.2017
Cuantía de la subvención: 25.000 eur

4. Referencia: ***CaixaImpulse-2015***
Título: ***AN IMPROVE FORMULATION AND DELIVERY OF BIOPHARMACEUTICALS BY PROTEIN CRYSTALS IN GELS***
Entidad financiadora (convocatoria): ***Fundación La Caixa***
Nombre del investigador principal: **Luis Álvarez de Cienfuegos Rodríguez**
Entidad de afiliación: Universidad de Granada
Fecha de inicio y de finalización: Sep.2015-Jul.2017
Cuantía de la subvención: 58.000 eur

5. Referencia: ***CEI15-18***
Título: *CEI BIOTIC GRANADA 2015.*
Entidad financiadora (convocatoria): ***MINISTERIO DE EDUCACION, CULTURA Y DEPORTE.***
Nombre del investigador principal: **Luis Álvarez de Cienfuegos Rodríguez**
Entidad de afiliación: Universidad de Granada
Fecha de inicio y de finalización: Jul.2016-Dic.2016
Cuantía de la subvención: 25.000 eur

6. Referencia: ***FQM2012-2721***
Título: ***Geles supramoleculares para su empleo en ingeniería tisular, en medicina, en catálisis y en cristalización.***
Entidad financiadora (convocatoria): ***Proyecto de Excelencia Junta de Andalucía***-(2012)
Nombre del investigador principal: **Luis Álvarez de Cienfuegos Rodríguez**
Entidad de afiliación: Universidad de Granada
Fecha de inicio y de finalización: 2014-2018
Cuantía de la subvención: 43.125 eur

C.4. Patentes

1. Name: *Bi-Functional Polymer-Attached Inhibitors of Influenza Virus.*
Inventors/authors/obtainers: *Haldar, Jayanta;* ***Álvarez de Cienfuegos, Luis****; Klibanov, Alexander M.; Chen, Jianzhu.*
Holding institution: *Instituto Tecnológico de Massachusetts.*
Date: 2009. **Application number:** *PCT Int. Appl. (2009), WO 2009032605 (A3).*
2. Name: *Hydrophobic polymeric coatings with virucidal and bactericidal activity.*
Inventors/authors/obtainers: *Haldar, Jayanta; An, Deqiang;* ***Álvarez de Cienfuegos, Luis****; Chen, Jianzhu; Klibanov, Alexander M.*
Holding institution: *Instituto Tecnológico de Massachusetts.*
Date: 2008. **Application number:** *PCT Int. Appl. (2008), WO 2008127416 (A3).*
3 Name: *Methods for the Preparation of Targeting Agent Functionalized Diblock Copolymers for Use in Fabrication of Therapeutic Targeted Nanoparticles.*
Inventors/authors/obtainers: *Mir Mukkaram Ali,* ***Luis Álvarez de Cienfuegos****, Jeff Hrkach, Stephen E. Zale.*
Holding institution: *BIND BIOSCIENCES, INC. (MA, 02139, EEUU)*
Date: 2012. **Application number:** *US 08734846 B2*
4 Name: *Pharmaceutically active protein crystals grown in-situ within a hydrogel.*
Inventors/authors/obtainers: ***Luis Álvarez de Cienfuegos****, José A. Gavira Gallardo, Juan J. Díaz Mochón, María Teresa Conejero Muriel, Rafael Contreras Montoya.*
Holding institution: *Universidad de Granada-CSIC*
Date: 2017. **Application number:** *P201630584 y PCT/EP2017/060842*

C.5 Otros

Editor Asociado de *RSC Advances* y de *Frontiers in Chemistry.*
Premio extraordinario de Tesis Doctoral (2010).

MINISTERIO DE CIENCIA E INNOVACIÓN

Cofinanciado por la Unión Europea

AGENCIA ESTATAL DE INVESTIGACIÓN

CURRICULUM VITAE (CVA)

IMPORTANT – The Curriculum Vitae cannot exceed 4 pages. Instructions to fill this document are available in the website.

Part A. PERSONAL INFORMATION

CV date	25/01/2022

First name	Araceli		
Family name	González Campaña		
e-mail	araceligc@ugr.es	URL Web: http://nanographout.ugr.es/	
Open Researcher and Contributor ID (ORCID) (*)		0000-0001-5483-5642	

(*) Mandatory

A.1. Current position

Position	Profesor Titular de Universidad		
Initial date	13/12/2019		
Institution	Universidad de Granada		
Department/Center	Química Orgánica	Facultad de Ciencias	
Country	Spain		
Key words	Organic Synthesis, Organometallic Chemistry, Supramolecular Chemistry, Nanographenes, Polycyclic Aromatic Hydrocarbons, Chiroptical Properties		

A.2. Previous positions (research activity interruptions, art. 14.2.b))

Period	Position/Institution/Country/Interruption cause
12/11/2020 – 11/06/2021	*Interruption:* Maternity leave and temporary risk during pregnancy and breastfeeding
01/07/2016 – 24/01/2017	*Interruption*: Maternity leave and temporary risk during pregnancy and breastfeeding
01/01/2015 – 12/12/2019	"Ramón y Cajal" Researcher / Universidad de Granada
01/02/2012 – 31/12/2014	"Juan de la Cierva" Researcher / Universidad de Granada
01/10/2011 – 31/01/2012	Postdoctoral Research Fellow / University of Edinburgh (UK)
01/10/2009 – 30/09/2011	"Ramón Areces" Fellow /University of Edinburgh (UK)
01/02/2009 – 30/09/2009	Postdoctoral Researcher / Universidad Autónoma de Madrid
01/04/2006 – 31/01/2008	FPU PhD student / Universidad de Granada
01/05/2005 – 31/03/2006	PhD student (Project contract) / Universidad de Granada

A.3. Education

PhD, Licensed, Graduate	University/Country	Year
PhD in Chemistry	Universidad de Granada	2008
Degree in Chemistry	Universidad de Granada	2004

Part B. CV SUMMARY *(max. 5000 characters, including spaces)*

Dr. Araceli G. Campaña (AGC) currently is associate professor at the Departamento de Química Orgánica of the Universidad de Granada (UGR) and leads the Group *NanographOUT*. She obtained her BSc (2004) and PhD (2008, supervisor Prof. Juan M. Cuerva) from the UGR. Then, she worked at Universidad Autónoma de Madrid as Postdoctoral Researcher (2009, Group of Prof. Diego J. Cárdenas) and later on at the University of Edinburgh (UK) (2009-2012, Group of Prof. David A. Leigh). She was later appointed as "Juan de la Cierva" researcher (2012-2014) at the UGR. From 2015, she

worked as “Ramón y Cajal” researcher as Independent Group Leader before taking his current position in 2020.

Since 2015, AGC has been leading the research group *NanographOUT* at the UGR where young scientists (predoctoral and postdoctoral) have been trained and are continuing their scientific or professional careers in groups of international level. She has already supervised 6 PhD Thesis and 3 PhD Thesis are on-going (see research proposal-section 6., for details).

NanographOUT research focuses on bottom-up synthesis of distorted carbon nanostructures particularly incorporating non-hexagonal rings (7-membered or larger rings) and carbohelicenes in the structure. One of the major aims is to study the influence of such defects on the optical and chiroptical properties (ECD and Circularly Polarized Luminescence, CPL) of such curved aromatics. They are also interested in the study of the supramolecular interactions of such curved aromatics and their biomedical applications. Moreover, the research is also focused on the study of quiroptical properties in other organic structures such as foldamers or organic radicals, in interlocked species such as rotaxanes and also in metal complexes.

Several *scientific milestones* have been presented during this time placing *NanographOUT* as one of the world-class groups in the area of molecular nanographenes. Important breakthroughs include: the development of a versatile synthetic strategy to the straightforward preparation of heptagon-containing nanographenes (NGs), distorted NGs as CPL emitters, the first organic compound showing two-photon absorption (TPA) and CPL, the influence of heptagonal rings on TPA responses in NGs, new chiral moieties such as octa-[5]helicene and nona-[5]helicene, novel chiral NGs including fully π-extended helicenes, such as undecabenzo[7]helicene or large examples with multiple saddle-curvatures and helicenes. The first macrocyclic host based on saddle-shaped NGs or the influence of saddle-curvature on supramolecular assemblies have also been presented. Besides NGs, her research is also interested in molecular machines, with the first [2]rotaxane-based CPL switch which represents an important breakthrough in the field.

Those results have been adequately communicated leading to an excellent track record of publications: 27 publications in the last 5 years (since 2017), including high-impact journals in the Multidisciplinary Chemistry area like JACS (x2), ACIE (x9), Chemical Science (x2), Chem Commun (x5) or Chem Eur. J. (x2), with a total of 55 publications in JCR journals in her research career.

Her scientific accomplishments have been recognized by several Prizes: Young Investigator Prize of the Spanish Royal Chemical Society (Spain 2019) and Thieme Chemistry Journals Award (2020).

Her track record of obtained funding is excellent (> 2.5 million since 2016). She has been the recipient of an ERC Starting Grant in 2016 and several grants from Spanish Government, Junta de Andalucía and University of Granada. Currently, she participates in a MSCA Doctoral Networks DN-2021 submitted proposal.

During this time, AGC has established a network of scientific collaborations at different levels: national (Dr. Teresa González, IMDEA Nanociencia; Prof. Jose Ángel Martín Gago, ICMM-CSIC; Prof. Jaume Veciana, ICMAB-CSIC, Prof. Uwe Pischel, Universidad de Huelva) and international (Dra. Ermelinda Maçôas, University of Lisbon; Prof. Michal Juríček, University of Zurich; Prof. Tomás Solomek, University of Bern, Prof. Fabrizio Messina, University of Palermo).

AGC has participated as invited speakers in international conferences and symposiums (see below). She usually participates in dissemination activities to the general public: European Researchers’ Night, Scientist Meeting with female students, Workshop with high-school students).

Other activities include:
Referee activity (ACS, Wiley-VCH, RSC, Nature, Elsevier) and evaluation activities: i) Member of the Evaluation Commission for the Ramón y Cajal 2019 contracts (MATpanel) of the AEI (Ministerio de Ciencia, Innovación y Universidad); ii) ERC Remote Referee (ERC-2019-ADG) for the European Commission; iii) Expert assessment "Programa Estatal Proyectos de I+D de Generación de Conocimiento 2019 and I+D+i Retos Investigación 2019, and iv) Remote Referee in the IPODI International Post-Doct Initiative (Technische Universität Berlin)

Part C. RELEVANT MERITS *(sorted by typology)*

C.1. Publications *(see instructions)*

1. M. A. Medel, C. M. Cruz, D. Miguel, V. Blanco, S. P. Morcillo,* A. G. Campaña.* "Chiral distorted hexa-peri-hexabenzocoronenes bearing a nonagon-embedded carbohelicenes" *Angew. Chem. Int. Ed.* **2021**, *60*, 22051.
2. M. A. Medel, R. Tapia, V. Blanco, D. Miguel, S. P. Morcillo,* A. G. Campaña.* "Octagon-embedded carbohelicene as chiral motif for CPL emission of saddle-helix nanographenes" *Angew. Chem. Int. Ed.* **2021**, *60*, 6094. (Highlighted as Hot Paper)
3. L. Palomino-Ruiz, S. Rodríguez-González, J. G. Fallaque, I. R. Márquez, N. Agraït, C. Díaz, E. Leary, J. M. Cuerva, A. G. Campaña, F. Martín,* A. Millán,* M. T. Gonzalez.* "Single-Molecule Conductance of 1,4-Azaborine Derivatives as Models of BN-doped PAHs" *Angew. Chem. Int. Ed.* **2021**, *60*, 6609
4. V. G. Jiménez, A. H. G. David, J. M. Cuerva, V. Blanco,* A. G. Campaña.* "A Macrocycle Based on a Heptagon-Containing Hexa-peri-hexabenzocoronene" *Angew. Chem. Int. Ed.* **2020**, *59*, 15124 (Highlighted as Hot Paper)
5. S. Castro-Fernández, C. M. Cruz, I. F. A. Mariz, I. R. Márquez, V. G. Jiménez, L. Palomino-Ruiz, J. M. Cuerva, E. Maçôas,* A. G. Campaña* *Angew. Chem. Int. Ed.* **2020**, *59*, 7139 (Highlighted as Insided Back Cover and in Chemistry Views)
6. C. M. Cruz, I. R. Márquez, S. Castro-Fernández, J. M. Cuerva, E. Maçôas, A. G. Campaña*. "A Triskelion-Shaped Saddle-Helix Hybrid Nanographene" *Angew. Chem. Int. Ed.* **2019**, *58*, 8068-8072 (Highlighted as *HOT article*)
7. P. Mayorga Burrezo, V. G. Jiménez, D. Blasi, I. Ratera, A. G. Campaña,* J. Veciana. "Organic free radicals as circularly polarized luminescence emitters" *Angew. Chem. Int. Ed.* **2019**, *58*, 16282-16288
8. A. H. G. David, R. Casares, J. M. Cuerva, A. G. Campaña, V. Blanco. "A [2]Rotaxane-based circularly polarized luminescence switch" *J. Am. Chem. Soc.* **2019**, *141*, 18064-18074.
9. C. M. Cruz, S. Castro-Fernández, E. Maçôas, J. M. Cuerva, A. G. Campaña*. "Undecabenzo[7]superhelicene: a helical nanographene ribbon as CPL emitter" *Angew. Chem. Int. Ed.* **2018**, *57*, 14782-14786. (Highlighted as *VIP article*)
10. C. M. Cruz; I. R. Márquez; I. F. A. Mariz; V. Blanco; C. Sánchez-Sánchez; J. M. Sobrado; J. A. Martín-Gago; J. M. Cuerva; E. Maçôas; A. G. Campaña*. "Enantiopure distorted ribbon-shaped nanographene combining two-photon absorption-based upconversion and circularly polarized luminescence". *Chem. Sci.,* **2018**, *9*, 3917-3924. (Highlighted as *Back Cover* issue 16, 2018).

C.2. Congress

Invited Speaker:

1. "Distorted heptagon-incorporating graphene molecules" 6th EuCheMS Chemistry Congress. EuCheMS. Sevilla (Spain). 11-15/09/2016
2. Women in Science – 1st Erlangen Symposium. Erlangen, Germany. 9-11 December, 2018

3. XXXVII Reunión Bienal de Química. San Sebastián (Spain). 26-30 May, 2019
4. ICIQ Seminar Programme. Tarragona. January, 2020
5. IV Ciclo de Conferencias. Máster Química Orgánica. Universidad Complutense de Madrid. March, 2020
6. Virtual GDCh lecture, University of Ulm, Germany. January 2022.
7. SISOC XIII – 13th Spanish-Italian Sympoium on Organic Chemistry. Postponed. New dates: Sept 2022
8. ISNA-19 - Warsaw, Poland. Postponed. New dates: July 2022

C.3. Research projects

Research Projects and Grants as **PI** in the last 5 years:

1. ERC-STG-2015 - nº 677023 - NANOGRAPHOUT
   "Design, synthesis, study and applications of distorted nanographenes".
   European Research Council. Amount: 1,492,297.00 eur
   01/04/2016 – 31/03/2022

2. PGC2018-101181-B-I00 – GoPro7Nanograph
   "Exploring the properties of saddle-shaped nanographenes".
   Ministerio de Ciencia, Innovación y Universidades. Amount: 71,390 eur
   01/01/2019 – 31/12/2021

3. EQC2019-006543-P
   "System for two-photon excited circularly polarized luminescence".
   Ministerio de Ciencia, Innovación y Universidades. Amount: 412,526.24 eur
   01/01/2019 – 31/12/2021

4. CTQ2015-70283-P
   "Síntesis y estudio de nanografenos que contengan anillos de tamaño medio".
   Ministerio de Economía y Competitividad. Amount: 67,518.00 eur.
   01/01/2016 – 31/12/2018

5. UNGR15-CE-3478
   "Dotación de equipamiento al laboratorio 'Nanografenos Distorsionados' de la UGR
   Ministerio de Economía y Competitividad. Amount: 271,941.84 eur.
   01/01/2016 – 31/12/2018

6. P18-FR-2877
   "Desarrollo de dispositivos y máquinas moleculares basados en rotaxanos y nanografenos curvos"
   Junta de Andalucía. Amount: 94,800 eur.
   01/01/2016 – 30/03/2023

7. A-FQM-339-UGR18
   "Interacciones supramoleculares y receptores basados en nanografenos curvos que incluyen heptágonos"
   Programa Operativo Feder Andalucía 2014-2020. Amount: 14,900 eur.
   01/01/2020 – 31/06/2022

MINISTERIO DE CIENCIA E INNOVACIÓN

CURRICULUM VITAE (maximum 4 pages)

AGENCIA ESTATAL DE INVESTIGACIÓN

Part A. PERSONAL INFORMATION

CV date	01-2-2022

First and Family name	Juan Manuel Cuerva Carvajal	
Researcher codes	Open Researcher and Contributor ID (ORCID**)	0000-0001-6896-9617
	SCOPUS Author ID (*)	
	WoS Researcher ID (*)	C-6366-2013

(*) Optional
(**) Mandatory

A.1. Current position

Name of University/Institution	Universidad de Granada		
Department	Facultad de Ciencias. Departamento de Química Orgánica		
Address and Country	Campus Fuentenueva		
Phone number		E-mail	jmcuerva@ugr.es
Current position	Full Professor	From	January-2017
Key words	Organometallic Chemistry, natural product synthesis, radical chemistry, organic materials, fluorescent probes.		

A.2. Education

PhD, Licensed, Graduate	University	Year
Chemistry Degree, Esp. Organic Chemistry	Universidad de Granada	1992
Chemistry Degree, Esp. Technical Chemistry	Universidad de Granada	1992
PhD Organic Chemistry	Universidad Autónoma de Madrid	1997

A.3. General indicators of quality of scientific production *(2010-2020)*

- "Sexenios de investigación": **4**. Last one: 2017.
- Number of Supervised PhD Thesis (2010-2020): **11** (4 Extraordinary awards and 9 International Thesis)
- Número de publicaciones (2010-2020): **84**
- Total citation: **3371**. Average citation per year (2016-2020): **261**
- Field-Weighted Citation Impact (Scopus) (2016-2019): All areas (**1.50**), Chemistry (**1.63**)
- Publications in Q1 2010-2020 (based on JCR 2019): **66**
  Multidisciplinar Chemistry: **39**, JACS (5), AngewChem (8), Nat. Commun. (2), Adv. Func. Mat. (1), Chem. Sci. (4), ChemSusChem (1), ChemComm (7), ChemEurJ (8), Chem.Soc.Rev. (1), Nanoscale (1). *Organic Chemistry*: **12**, OBC (2), JOC (5), OL (2), AdvSynCat (1), Org. Chem.. Front. (2). *Inorganic Chemistry*: **3**, Dalton (2), Organometallics (1). *Analytical Chemistry*: **3**, Sensor and Actuators: Chemical (3). *Applied Chemistry*: **2** *Dyes and Pigments (2)*. *Molecular Biology*: **1** *Int. J. Mol. Sci. (1)*. *Material Science, multidisciplinary*: **1** *J. Mat. Chem. C: (1)*. *Crystallography*: **2** *Cryst. Grow. Design (2)*. *Multidisciplinary Sci.*: **2** *Scientific Rep. (2)*. *Microbiology*: **1**, *Frontiers in microbiology* (1)

h Index (web of Science): **34**

Part B. CV SUMMARY *(max. 3500 characters, including spaces)*

Graduated in Chemistry from the UGR (1992) in two specialties: Organic Chemistry and Technical Chemistry. Doctor from the Autonomous University of Madrid (1997) under the supervision of Prof. A. M. Echavarren. In 1998 I joined the staff of the University of Granada, currently as a University Professor. I am the author of more than 130 scientific publications in high impact factor journals such as Nat. Commun. Angew. Chem., J. Am. Chem. Soc., Chem Sci., Chem. Eur. J., Chem. Commun., Org. Lett., or J. Org. Chem. I have supervised 17 doctoral theses, 7 of them as extraordinary doctoral awards and 9 with international mention. I have participated in numerous Research Projects (35) being Principal Investigator of eight of them in recent years: three autonomous granted by the the Junta de Andalucía, three

national granted by the Ministry of Science and Innovation , an integrated Hispano-Alemana action and a Campus Project of International Excellence of the University of Granada. Recently (2014) we have also participated as a subproject in a North American NIH Project. All this research has been communicated in different national and international congresses in the form of invited lectures, oral communications and / or posters. In 2015 he was awarded the “Ignacio Ribas” Medal, from the Specialized Group on Organic Chemistry of the Royal Spanish Chemistry Society. The research career has focused on the development of synthetic methodologies, although more recently we have applied that experience in the development of new materials and/or molecular probes with potential applications in bioscience and nanoelectronics.

Part C. RELEVANT MERITS *(sorted by typology)*

C.1. Publications *(see instructions)*

1. *A Macrocycle Based on a Heptagon-Containing Hexa-peri-hexabenzocoronene*. VG Jiménez, AHG David, JM Cuerva, V. Blanco, AG Campaña. *Angew. Chem. Int. Ed.* **2020**, 59, 15124-15128

2. *Lipid analogs reveal features critical for hemolysis and diminish granadaene mediated Group B Streptococcus infection B*. Armistead, P. Herrero, M. Coleman, J. M. Cuerva (AC), L. Rajagopal (AC) *Nat Commun* **11,** 1502 (2020). Número de autores 17. Posición 16 de 17.

3. *A [2] Rotaxane-Based Circularly Polarized Luminescence Switch*. AHG David, R Casares, JM Cuerva, AG Campaña, V Blanco. *J. Am. Chem. Soc.* **2019**, *141*, 13244-13252.

4. *Chiral Molecular Ruby [Cr(dqp)2]3+ with Long-Lived Circularly Polarized Luminescence.* Juan-Ramón Jiménez, Benjamin Doistau, Carlos M Cruz, Céline Besnard, Juan M Cuerva, Araceli G Campaña, Claude Piguet. *J. Am. Chem. Soc.* **2019**, *141*, 13244-13252.

5. *A Triskelion-Shaped Saddle–Helix Hybrid Nanographene*. Carlos M. Cruz, Irene R. Márquez, Silvia Castro-Fernández, Juan M. Cuerva, Ermelinda Maçôas, Araceli G. Campaña. *Angew. Chem. Int. Ed.* **2019**, *58*, 8068-8072

6. *Undecabenzo[7]superhelicene: a helical nanographene ribbon as CPL emitter*
Carlos M. Cruz, Silvia Castro-Fernández, Ermelinda Maçôas, Juan M. Cuerva, Araceli G. Campaña. *Angew. Chem. Int. Ed.* **2018**, *57*, 14782-14786 (VIP paper)

7. *Stapled helical o-OPE foldamers as new circularly polarized luminescence emitters based on carbophilic interactions with Ag(I)-sensitivity*
Sara P. Morcillo, Delia Miguel, Luis Álvarez, Giovanna Longhi (AC), Juan M. Cuerva (AC)
Chemical Science, **2016**, *7*, 5663-5670. Número de autores 16. Posición 16 de 16.

8 *Toward multiple conductance pathways with heterocycle-based oligo(phenyleneethynylene) derivatives*
D. Miguel, L. Álvarez, A. Martín-Lasanta, J. M. Cuerva (AC), M. T. González (AC).
J. Am. Chem. Soc. **2015**, *137*, 13818–13826. Número de autores 14. Posición 13 de 14.

9. *Ti(III)-catalyzed cyclizations of ketoepoxypolyprenes: Control over the number of rings and unexpected stereoselectivities*
S. P. Morcillo, D. Miguel, S. Resa, A. Martín-Lasanta, A. Millán, D. Choquesillo-Lazarte, J. M. García-Ruiz, A. J. Mota (AC), J. Justicia (AC), J. M. Cuerva (AC).
J. Am. Chem. Soc. **2014**, *136*, 6943−6951. Número de autores 10. Posición 10 de 10.

10. *A versatile bottom-up approach to stapled π-conjugated helical scaffolds: Synthesis and chiroptical properties of cyclic o-phenylene ethynylene oligomers*
N. Fuentes, A. Martin-Lasanta, L. Álvarez de Cienfuegos, J. M. Cuerva (AC).
Angew. Chem. Int. Ed. **2012**, *51*, 13036–13040. Número de autores 13. Posición 13 de 13.

C.2. Research projects as IP (2010-2020)

1. **A-FQM-221-UGR18**
   Title: Conductividad unimolecular en PAHs dopados con nitrógeno y boro como modelos de conductividad en BN-grafenos.
   Funding agency: Proyectos de I+D+i por equipos de investigación en el marco del Programa Operativo FEDER de Andalucía 2014-2020. Modalidad Frontera
   Dates: 01/01/2020 al 31/12/2021
   Budget amount: 37150 €

2. **CTQ2017-85454-C2-1-P**
   Title: Synthesis and applications of homochiral photoactive organic systems.
   Funding agency: Ministerio de Ciencia e Innovación (2014)
   Dates: 2018-2020
   Budget amount: 121.000 €

3. **CTQ2014-53598**
   Title: Materiales Orgánicos Funcionales
   Funding agency: Ministerio de Ciencia e Innovación (2014)
   Dates: 2014-2017
   Budget amount: 141.000 €

4. **P12-FQM-790**
   Title: Disociación homolítica de enlaces O-H: aplicaciones prácticas e implicaciones en Química, Física y Bioquímica
   Funding agency: Proyecto de Excelencia Junta de Andalucía-
   Dates: 2014-2019
   Budget amount: 273.894 eur

5. **1R01AI112619-01**
   Title: Role of an ornithine rhamnolipid pigment in GBS virulence
   Funding agency: NIH (Estados Unidos)
   PI: Dr. Lakshmi Rajagopal, Seattle Children's Research Institute
   Dates: 2014-2016
   Budget amount: 54000 $
   PI of subprojetc 11074SUB

6. **CTQ2011-22455**
   Title: Reacciones mediadas por Ti (III), herramientas útiles en síntesis orgánica
   Funding agency: Ministerio de Ciencia e Innovación (2011)
   Dates: 2012-2014
   Budget amount: 104.060 eur

7. **P09-FQM-4571**
   Title: Nanodispositivos orgánicos para electrónica molecular: diseño, síntesis y evaluación
   Funding agency: Proyecto de Excelencia Junta de Andalucía-
   Dates: 2011-2014
   Budget amount: 293939.68

8. **PRI-AIBDE-2011-1122**
   Title: Study of new titanocene(III) complexes and their application to C-C bonds forming reactions and in the reduction of carbon centered radicals.

Funding agency: Ministerio de Ciencia e Innovación (2011).Acción Integrada Hispano-Alemana
Dates: 1/12/2011-30/11/2013
Budget amount: 8,000 €

C.3. Contracts, technological or transfer merits

Company: **Vadolivo S. A. (Jaen)**
Contract: Preparación de patrones deuterados como referencias en el analisis de aceite de Oliva Virgen
Dates: 2015-2016
Budget amount: 24000 Eur

C.4. Patents

Title: Procedimiento para la estimación de la concentración de fosfatos en células vivas, colorante xanténico y síntesis del mismo
Inventors/authors/obtainers: J. M. Álvarez Pez, L. Crovetto, J. M. Cuerva, M. D. Girón, J. Justicia, A. Orte, M. J. Ruedas, R. Salto, E. M. Talavera, A. Martínez-Peragón, J. M. Paredes
Holding institution: Universidad de Granada
Date: 10/2012
Application number: P201330861

C5. Awards

Ignacio Ribas Medal, Organic Chemistry Division of the RSEQ (2015).

C7. Management activities

- Member of the Organic Chemistry Comitee of RSEQ (2016-2020)

- Secretary of the Department of Organic Chemistry at the University of Granada (2012-2017).

- Head of the Department of Organic Chemistry at the University of Granada (sept. 2019-)

- Reviewer of National, Regional and International Projects (Iberoamerica, Europe and ACS).

- Reviewer of relevant journals such as JACS, ACIE, Chem. Sci, Nature Comm., ChemComm, Chemistry Eur. J., Nanoscale, OL, or JOC,.

Part A. PERSONAL INFORMATION

CV date	21/12/2021

First and Family name	Diego Jesús Cárdenas Morales		
Social Security, Passport, ID number			
Researcher codes	WoS Researcher ID *(*)*	H-4415-2013	
	SCOPUS Author ID*(*)*	7004841443	
	Open Researcher and Contributor ID (ORCID) **	0000-0002-1707-6445	

(*) At least one of these is mandatory
(**) Mandatory

A.1. Current position

Name of University/Institution	Universidad Autónoma de Madrid		
Department	Química Orgánica		
Address and Country	Av.Tomás y Valiente 7, Cantoblanco, 28049, Madrid, Spain		
Phone number	E-mail	diego.cardenas@uam.es	
Current position	Catedrático de Universidad	From	02/15/2010
Key words	Organometallic chemistry, catalysis, transition metals, organic synthesis, organometallic complexes, computational chemistry, reaction mechanisms		

A.2. Education

PhD	University	Year
Graduate in Chemistry	Universidad de Granada	1990
Doctorate in Chemistry	Universidad Autónoma de Madrid	1994

A.3. JCR articles, h Index, thesis supervised…

- Number of research activity periods (every 5 years) = 5 (last granted date: 31-12-2015)
- Number of research activity periods (every 6 years) = 4 (last granted date: 31-12-2014)
- Number of thesis supervised = 14
- Co-author of 112 JCR articles and 1 book chapter.
- Number of papers classified into the first quartile (Q1 99, Scimago)
- h Index = 40 Sum of times cited = 6341 (Scopues

Part B. CV SUMMARY *(max. 3500 characters, including spaces)*

Diego J. Cárdenas obtained his PhD at the la “Universidad Autónoma de Madrid” (UAM) in 1994. After a postdoctoral stay during 1995 and 1996 at Louis Pasteur University with Prof. Jean-Piere Sauvage, he joined the UAM as an Assistant Professor. He became Associate Professor in 2002, and Full Professor of the Department of Organic Chemistry in 2010. He has performed two more stays at the U. of Cambrige (2007) and the U. of Michigan (2012). He was worked in organometallic and in supramolecular chemistry. During the first years, he centered his studies in the organometallic chemistry of Pd, Pt and Au directed towards the development of synthetic methodology. Lastly, he focuses in the development of novel high efficient eco-friendly and economical synthetic methods based on first-row transition metal catalysts, and in the determination of the reaction mechanisms. In addition, he has also worked in proton-coupled electron transfer processes, as well as molecular electronics. He has authored over 110 papers (h=40), has supervised 14 PhD Theses and has been PI of 6 Spanish Government Projects and 2 Madrid Regional Projects, and has participated in UE COST actions, and 3 Excellence Projects of Junta de Andalucía. He occupies the Chair of the Department of Organic Chemistry of UAM since September 2015, and was the Scientific Coordinator of the Consolider-Ingenio Program between 2009 and 2011. He has received

several research awards by public and private institutions, including the Lilly Award (2007) and the Young Researchar Award of the Spanish Royal Society of Chemistry (2001) .

Part C. RELEVANT MERITS

C.1. Publications (including books)

● N. Cabrera-Lobera; M. T. Quirós; E. Buñuel; D. J. Cárdenas "*Ni-catalyzed Cyclization of Enynes and Alkynylboronates: Atom-economical Synthesis of Boryl-1,4-dienes.*" *Chem. Eur. J.* 10.1002/chem.201903405 (2019).
● N. Cabrera-Lobera; M. T. Quirós; W. W. Brennessel; M. L. Neidig; E. Buñuel; D. J. Cárdenas "*Atom-Economical Ni-Catalyzed Diborylative Cyclization of Enynes: Preparation of Unsymmetrical Diboronates*" *Org. Lett*., *21*, 6552-6556 (2019).
● N. Cabrera-Lobera; M. T. Quirós; E. Buñuel; D. J. Cárdenas J. *"Atom-economical regioselective Ni-catalyzed hydroborylative cyclization of enynes: development and mechanism" Catal. Sci. Technol.*, *9*, 1021-1029 (2019).
● E. Buñuel, D. J. Cárdenas, "*Towards Useful Boronates through Atom-Economical Catalyzed Cascade Reactions*" *Chem. Eur. J.*, *24*, 11239-11244 (2018).
● N. Cabrera-Lobera, P. Rodríguez-Salamanca, J. C. Nieto-Carmona, E. Buñuel, D. J. Cárdenas, "*Iron-Catalyzed Hydroborylative Cyclization of 1,6-Enynes*", *Chem. Eur. J*., *24*, 752 (2018).
● M. Guisán-Ceinos, V. Martín-Heras, R. Soler-Yanes, Diego J. Cárdenas, M. Tortosa *"Copper-catalysed cross-coupling of alkyl Grignard reagents and propargylic ammonium salts: stereospecific synthesis of allenes", Chem. Commun 54*, 8343. (2018).
● R. Soler-Yanes, M. Guisán-Ceinos, E. Buñuel, D. J. Cárdenas. "*Ni(I) Catalyzes the Regioselective Cross-Coupling of Alkylzinc Halides and Propargyl Bromides to Allenes*", *Chem. Eur. J.*, *23*, 1584–1590 (2017).
● E. Buñuel, D. J. Cárdenas. "*Borylative Cyclization Reactions*", Eur. J. Org. Chem. 5446–5464 (2016).
● C. Jarava-Barrera, A. Parra, A. López, F. Cruz-Acosta, D. Collado-Sanz, Diego J. Cárdenas, M. Tortosa "Copper-Catalyzed Borylative Aromatization of *p*-Quinone Methides: Enantioselective Synthesis of Dibenzylic Boronates", *ACS Catalysis*, *6*, 442-446 (2016).
● D. Miguel, S. Morcillo, A. Martín-Lasanta, N. Fuentes, L. Martínez-Fernández, I. Corral, M. J. Ruedas-Rama, D. J. Cárdenas, L. Álvarez de Cienfuegos, A. Orte, J. M. Cuerva, *"Development of a New Dual Polarity and Viscosity Probe Based on the Foldamer Concept"*, *Org. Lett., 17*, 2844-2847 (2015).
● D. Miguel, L. Álvarez de Cienfuegos, A. Martín-Lasanta, S. P. Morcillo, L. A. Zotti, E. Leary, M. Bürkle, Y. Asai, R. Jurado, D. J. Cárdenas, G. Rubio-Bollinger, N. Agrait, J. M. Cuerva, M. T. González, *"Toward Multiple Conductance Pathways with Heterocycle-Based Oligo (phenyleneethynylene) Derivatives" J. Am. Chem. Soc. 117*, 13818-13826 (2015).
● R. Muñoz–Rodríguez, E. Buñuel, N. Fuentes, G. J. A. Williams, D. J. Cárdenas "*A Heterotrimetallic Ir(III), Au(III) And Pt(II) Complex Incorporating Cyclometallating Bi- And Tridentate Ligands: Imultaneous Emission from Different Luminescent Metal Centres Leads to Broad-Band Light Emission*", *Dalton Trans*. *44*, 8394–8405 (2015).
● M. Guisán–Ceinos, F. Tato, E. Buñuel, P. Calle, D. J. Cárdenas "*Fe–Catalyzed Kumada–Type Alkyl–Alkyl Cross–Coupling. Evidence for the Intermediacy of Fe(I) Complexes*", *Chem. Sci.* 4, 1098–1104 (2013).
● Francisco Tato, Andrés García-Domínguez, Diego J. Cárdenas, *"Pd-Catalyzed Acetoxylation of Arenes by Novel Sulfinyl N-Heterocyclic Carbene Ligand Complexes" Organometallics* ,*32,* 7487-7494 (2013).
● Araceli G. Campaña, Elena Buñuel, Juan M. Cuerva, Diego J. Cárdenas, *"The role of water-based hydrogen atom wires in long range electron transfer reactions in aqueous media for the Fe(II)-Fe(III) self-exchange and related systems", Chem. Eur. J.*, *19*, 16187-16191 (2013).
● José Justicia, Tania Jiménez, Delia Miguel, Rafael Contreras-Montoya, Rachid Chahboun, Enrique Álvarez-Manzaneda, Daniel Collado-Sanz, Diego J. Cárdenas, Juan M. Cuerva, *"Titanocene(III)-Catalyzed 6-exo versus 7-endo Cyclizations of Epoxypolyprenes: Efficient*

Control and Synthesis of Versatile Terpenic Building Blocks", Chem. Eur. J., 19, 14484-14495 (2013).

● Noelia Fuentes, Ana Martín-Lasanta, Luis Alvarez de Cienfuegos, Rafael Robles, Duane Choquesillo-Lazarte, Juan M. García-Ruiz, Lara Martínez-Fernández, Inés Corral, María Ribagorda, Antonio J. Mota, Diego J. Cárdenas, M. Carmen Carreño, Juan M. Cuerva, *"A Versatile Bottom-up Approach to Stapled π-Conjugated Helical Scaffolds: Synthesis and Chiroptical Properties of Cyclic o-Phenylene Ethynylene Oligomers"*
Angew. Chem. Int. Ed., *51*, 13036-13040 (2012).

● Abraham L. Moure, Ramón Gómez Arrayás, Diego J. Cárdenas, Inés Alonso, Juan C. Carretero, *"Regiocontrolled Cu^{I}-Catalyzed Borylation of Propargylic-Functionalized Internal Alkynes ", J. Am . Chem. Soc., 134*, 7219-7222 (2012).

● Diego J. Cárdenas, Juan M. Cuerva, Miriam Alías, Elena Buñuel, Araceli G. Campaña, *"Water-based Hydrogen-Atom Wires as Mediators in Long-Range Proton-Coupled Electron Transfer in Enzymes: a New Twist on Water Reactivity*", *Chem. Eur. J., 17*, 8318-8323 (2011).

● Juan Marco-Martínez, Elena Buñuel, Ruth López-Durán, Diego J. Cárdenas, *"Pd-Catalyzed Borylative Polycyclization of Enediynes to Alkylboronates"*
Chem. Eur. J., *17*, 2734-2741 (2011).

● Noelia Fuentes, Luis Álvarez de Cienfuegos, Andrés Parra, Duane Choquesillo-Lazarte, Juan M. García-Ruiz, M. Luisa Marcos, Elena Buñuel, María Ribagorda, M. Carmen Carreño, Diego J. Cárdenas, Juan M. Cuerva, *"On/off electrochemical switches based on quinone-bisketals" Chem. Commun*, *47*, 1586-1588 (2011).

● M. Paradas, A. G. Campaña, T. Jiménez, R. Robles, J. E. Oltra, E. Buñuel, J. Justicia, D. J. Cárdenas, J. M. Cuerva "*Understanding the Exceptional Hydrogen–Atom Donor Characteristics of Water in Ti(III)–Mediated Free–Radical Chemistry*". *J. Am. Chem. Soc.* 132, 12748–12756 (2010).

C.2. Research projects and grants

● "*Desarrollo y aplicaciones de reacciones catalizadas por metales de la primera serie de transición económicas y medioambientalmente benignas".* CTQ2016-79826-R
Funding entity: Ministerio de Economía y Competitividad. Programa estatal de fomento de la investigación científica y técnica de innovación 2016-2019.
Principal Investigators: Dr. D. J. Cárdenas Morales, and Dr. M. E. Buñuel Magdalena (Universidad Autónoma de Madrid)
Date: 01/01/2017 -12/31/2019 Funding: 129000 €

• *Reacciones de formación de enlaces C-C y C-B catalizadas por metales de transición de la primera serie, económicas y benignas con el medio ambiente* (EFICAT). CTQ2013-42806-R
Funding entity: Ministerio de Economía y Competitividad. Programa estatal de fomento de la investigación científica y técnica de innovación 2013-2016.
Main researchers: Dr. D. J. Cárdenas Morales, and Dr. M. E. Buñuel Magdalena (Universidad Autónoma de Madrid)
Contribution: main researcher.
Date: 01/01/2014 - 31/12/2016. Funding: 187550 €

• Nanodispositivos orgánicos para electrónica molecular: diseño, síntesis y evaluación. FQM-04571
Funding entity: Junta de Andalucía (Proyectos de Excelencia)
Main researcher: Dr. J. M. Cuerva (Universidad de Granada)
Contribution: researcher
Date: 01/01/2010 - 01/01/2014 Funding: 293000 €

• *Aplicaciones sintéticas de complejos de metales de transición con ligandos carbeno N-Heterocíclicos. Reacciones de formación de enlaces C-C, C-B y activación C-H de alcanos.* CTQ2010-15927
Funding entity: Ministerio de Ciencia e Innovación
Main researcher: Dr. D. J. Cárdenas Morales (Universidad Autónoma de Madrid)
Contribution: researcher
Date: 01/01/2011 - 31/12/2013. Funding: 180290 €

• *Desarrollo de métodos catalíticos altamente eficientes* (AVANCAT). S2009/PPQ-1634.

Funding entity: CAM (Network of several research groups)
Main researcher: Dr. M. A. Sierra (Universidad Complutense de Madrid)
Contribution: researcher.
Date: 01/01/2010 - 31/12/2013 Funding: 10035000 € (77870 € to our group)
• *El agua como fuente de hidrógeno atómico y molecular. Implicaciones en química, biología y energías alternativas.* FQM-03213.
Funding entity: Junta de Andalucía (Proyecto de Excelencia)
Main researcher: Dr. E. Oltra Ferrero (Universidad de Granada)
Contribution: researcher
Date: 01/03/2008 - 31/03/2012 Funding: 168000 €
• *Nuevas reacciones de organoboranos catalizadas por metales de transición mediante ciclación y activación de enlaces C-H alifáticos.* CTQ2007-60494/BQU.
Funding entity: Ministerio de Educación y Ciencia
Main researcher: Dr. D. J. Cárdenas Morales (Universidad Autónoma de Madrid)
Contribution: researcher
Date: 01/02/2008 - 30/11/2010 Funding: 104000 €

C.3. Contracts

Research contract with MAXAM Company (2016-17) coordinated by Prof.. Manuel Alcamí

C.4. Patents

C.5. Stays in foreign research centers.
University of Michigan, 202 (3 months) “Salvador de Madariaga” Program
University of Cambridge, 2007 (2 weeks)
University Louis Pasteur (Strasbourg, France) 1995-1996 (24 months), Spanish Government and UE postdoctoral fellow.

C.5 Supervision of researchers
Supervisor of 14 Doctorate Thesis, and many Graduate and Master Thesis

C.6. Assessment tasks
- Member of “Comisión de Evaluación de Programas de Doctorado de la AQU” (Cataluña) since June 2017.
- Member of the Evaluation Committee of “Juan de la Cierva y Ramón y Cajal”.
- Usual reviewer of ANEP Research projects.
- Member of the Scientific Committee “Contratos JAE” CSIC.

C.7. Scientific activity management
- Scientific Coordinator of Consolider Program, (MICINN, 1/3/2009 to 31/12/2011).
- Chair of the Department of Organic Chemistry, UAM since 01/09/2014.
- Treasurer of the Organic Chemistry Division of the Spanish Royal Society of Chemistry (RSEQ) since 2006.

C.8 Organization of R+D activities
- Member of the Scientific Committee of the XXV “Reunión Bienal de Química Orgánica” de la RSEQ (2014).
- Member of the Organizing Committee of the Annual Meeting of the European Chemistry Thematic Network Association (Madrid, 2014).

C.9 Communications to meetings and invited lectures
62 communications to scientific meetings
11 invited lectures in Universities (Michigan, Stockholm, 8 Spanish Universities) and pharmaceutical companies.

C.10 Awards
- Special Degree and Doctorate Awards (1990, U. of Granada, and 1994 UAM, respectively).
- Degree Award by the Academy of Sciences of Granada, 1990
- Young Researchar Award of the Spanish Royal Society of Chemistry (RSEQ) 2001.
- Lilly Research Award, 2007.

Fecha del CVA	Enero/2021

Name	Maria Ribagorda		
DNI/NIE/pasaporte		Edad	
Núm. identificación del investigador	Researcher ID	L-2883-2013/ Scopus ID 6602566796	
	Código Orcid	http://orcid.org/0000-0001-7185-4095	

A.1. Situación profesional actual

Name of Institution	Universidad Autónoma de Madrid		
Department	Facultad de Ciencias, Departamento de Química Orgánica (C-I)		
Address and Country	C/Francisco Tomás y Valiente 7, Madrid, Spain		
Phone number		email	maria.ribagorda@uam.es
Current position	Associate Professor		May 2010
Espec. cód. UNESCO	230616		
Key words	Molecular switches, Quinones, Quinols, azobenzenes, Sulfoxydes		

A.2. Formación académica *(título, institución, fecha)*

Licenciatura/Grado/Doctorado	Universidad	Año
Licenciada Ciencias Químicas	Universidad Autónoma de Madrid	1995
TESIS DE LICENCIATURA	Universidad Autónoma de Madrid	1997
DOCTORADO Ciencias Químicas	Universidad Autónoma de Madrid	2001

A.3. Indicadores generales de calidad de la producción científica

Sexenios de investigación: **3** (último concedido 2013). **Tesis doctorales** dirigidas:**8**.
JCR articles: 51. Publications (Q1): 46, H-Index: 21.
Citations: 1571. Average citations per article 34,02.

Parte B. CV SUMMARY

EDUCATION, ACADEMIC APPOINTMENTS

Associate Professor, Universidad Autónoma de Madrid (UAM), 2010-present.
Assistant Professor, UAM, 2008-2010.
Ramon y Cajal Researcher, UAM, 2003-2009
Postdoctoral Research Associate, University of Pennsylvania, USA, Advisor: Prof. G. Molander. 2002/03
Assistant Professor UAM, 2001-2002.
Teaching Assistant, UAM, 1998-2000.

GRADUATE EDUCATION:

Ph.D (Oct. 2001), UAM, Spain. Thesis Advisor-Professor. M. Carmen Carreño. (Ministerio de Educación y Cultura Fellowship) Dissertation title*: "Asymmetric synthesis of Polycyclic structures from 4-Sulfinylmethyl-p-Quinols and p-Quinamines"*
Research Assistant, Johns Hopkins University Baltimore, Maryland. Advisor: Professor Gary H. Posner, July-Sept 1998.
MS, UAM, Research Advisor: Dra. M. Carmen Carreño, Febr. 1997.
Undergraduate Education: BS, Organic Chemistry, UAM, 1990-95.
MEMBERSHIPS: Spanish Royal Society of Chemistry
FELLOWSHIPS AND CREDITACIONES:
Predoctoral fellowship FPI, MEC (1997-2000)
Mobility PhD fellowship (MEC) (1998, 3 months, Universidad Johns Hopkins Baltimore, USA, Advisor: Prof. Gary Posner)
Visiting professor Mobility fellowship "Salvador de Madariaga", Universidad de Pennsylvania, Philadelphia, Group Prof. Gary Molander. Years: 2012, 2015, 2018 (3 moths each year).
Acreditación Positiva ACAP (2005) y ANECA(2006)
Evaluación Positiva Programa I3 (2007)
PUBLICATIONS and SYMPOSIUM PRESENTATIONS: 52 publications: 1 patent, 5 books chapters and 46 journals publications (Q1) (J. *Am. Chem. Soc.; Angew. Chem. Int. Ed.; Chem. Commun.; Chem. Sci.; Nanoscale; Org. Lett.; Chem. Eur. J.; Carbon; Eur. J. Org. Chem.; Eur. J.*

Med. Chem.; Fron.Chem.). 32 National and international symposium presentations and 3 invited seminars.
OTHERS:Website: https://mribagordagroup.wordpress.com/

Parte C. MÉRITOS MÁS RELEVANTES

C.1. PUBLICATIONS (including books): (last 10 years)

■ P. Reine, A. M. Ortuño, I. Mariz, M. Ribagorda, J. M. Cuerva, A. Gonzalez Campaña, E. Maçôas, D. Miguel **2020** "*Simple perylene diimide cyclohexane derivative with combined CPL and TPA properties" Front. Chem*. **2020**, *8,* 306.

■ L. Ortiz-Rojano, J. Rojas-Martín, C. Rodriguez-Diaz, M. Carmen Carreño, M. Ribagorda (AC) **2019** "*Light-Induced Tetrazole-Quinone 1,3-Dipolar Cycloadditions" Chem. Eur. J.* **2019**, 25, 15050.

■ S. Resa, P. Reiné, L. Álvarez de Cienfuegos, S. Guisán-Ceinos, M. Ribagorda, G. Longhi, G. Mazzeo, S. Abbate, A. J. Mota, D. Miguel (AC), J. M. Cuerva (AC), **2019 "***Optically active Ag(I):o-OPE helicates using a single homochiral sulfoxide as chiral inducer*" *Org. Biomol. Chem.,* **2019**, *17*, 8425. (5/11)

▪ S. O. Badir, J. Yi, L. M. Kammer, M. Ribagorda, G. A. Molander **2019** "*Deaminative Reductive Arylation Enabled by Nickel/Photoredox Dual Catalysis*" *Org. Lett.* **2019**, *21*, 3346-3351.

▪ P. Reiné, A. M. Mortuño, S. Resa, Longhi (AC), D. Miguel (AC), J. M. Cuerva (AC), **2018 "***OFF/ON switching of circularly polarized luminescence by oxophilic interaction of homochiral sulfoxide-containing o-OPEs with metal cations*" *Chem. Commun.,* **2018**, *54*, 13985. (12/17)

▪ P. Reiné, J. Justicia, S. P. Morcillo, D. Miguel (AC), J. M. Cuerva (AC) **2018 "***Pyrene-Containing ortho-Oligo(phenylene)ethynylene Foldamer as a Ratiometric Probe Based on Circularly Polarized Luminescence". J. Org. Chem.,* **2018**, *83*, 4455-4463. (6/12)

▪ L. Ortiz-Rojano, M. Martínez-Mingo, C. García-García, M. Ribagorda (AC), M. C. Carreño (AC) **2018** "*Domino Reaction of Naphthoquinone and β-Arylpyruvic Acids: Synthesis of 3-(Naphthoquinonyl)naphthofuran-2(3*H*)-ones*". *Eur. J. Org. Chem.* **2018**, 1034–1040.

▪ S. Resa, D. Miguel, S. Guisán-Ceinos, G. Mazzeo, L. Álvarez de Cienfuegos (AC), J. M. Cuerva (AC). **2018** "*Sulfoxide-Induced Homochiral Folding of* ortho-*Phenylene Ethynylenes (*o-*OPEs) by Silver(I) Templating: Structure and Chiroptical Properties*" *Chem. Eur. J.,* **2018**, 24, 2653. (10/14)

▪ J. Rojas-Martín, M. Veguillas, M. Ribagorda (AC), M. C. Carreño (AC) **2017** "*Synthesis of Functionalized Alkyl Substituted. Benzoquinones by Rh-Catalyzed Additions of Boronic Acids*" *Organic & Biomolecular Chemistry,* **2017**, *15*, 5386-5394.

▪ C. García-García, L. Ortiz-Rojano, S. Álvarez, R. Álvarez, M. Ribagorda (AC), M. C. Carreño (AC). **2016** *"Friedel-Crafts Alkylation of Indoles with p-Quinols. The role of hydrogen bonding of water for the desymmetrization of the cyclohexadienone system". Organic Letters,* **2016**, *18*, 2224-2227.

▪ S. P. Morcillo, D. Miguel, L. Álvarez de Cienfuegos, G. Longhi (AC), J. M. Cuerva (AC) **2016** "*Stapled helical o-OPE foldamers as new circularly polarized luminescence emitters based on carbophilic interactions with Ag(I)-sensitivity*". *Chem. Sci.* **2016**, *7*, 5663-5670. (7/16)

▪ E. Deni, A. Zamarrón, P. Bonaccorsi, M. Ribagorda (AC), A. Barattucci **2016** "*Glucose-functionalized amino-OPEs as biocompatible photosensitizers in PDT*". *Eur. J. Med. Chem.* **2016**, *111*, 58.

▪ C. García-García, M. C. Redondo, M. Ribagorda (AC), M. C. Carreño (AC) **2014** "*Reactions of p-Quinols with Aldehydes and Imines: Stereoselective Access to Polyheterobicyclic and Tricyclic Systems*". *Eur. J. Org. Chem.* **2014**, 7377-7388.

▪ A. Martín-Lasanta, L. Álvarez de Cienfuegos, A. Johnson, J. M. Cuerva (AC). **2014** "*Novel ortho-OPE metallofoldamers: binding-induced folding promoted by nucleating Ag(I)–alkyne interactions". Chem. Sci.* **2014**, *5*, 4582-4591. (9/12)

▪ J. Rojas-Martín, M. Veguillas, M. Ribagorda (AC), M. C. Carreño (AC). "*Synthesis of Indole Substituted Twistenediones from a 2-Quinonyl Boronic Acid" Org. Lett.,* **2013**, *15*, 5686-5689.

▪ I. Núñez, Estíbaliz Merino, M. Lecea, S. Pieraccini, G. Piero Spada, C. Rosini, G. Mazzeo, M. Ribagorda (AC), M. C. Carreño (AC) **2013** "*Control of the Z-Helical Chirality of Enantiopure Sulfinyl Azobenzene-based Photoswitches". Chem. Eur. J.,* **2013**, *19*, 3397-3406.

▪ N. Fuentes, A. Martin-Lasanta, L. Alvarez de Cienfuegos, J. M. Cuerva (AC). **2012** "*A versatile bottom-up approach to stapled π-conjugated helical scaffolds: Synthesis and chiroptical properties of cyclic o-phenylene ethynylene oligomers" Angew. Chem. Int. Ed.* **2012**, *51*, 13036-13040. (9/13)

▪ E. Merino, M. Ribagorda (AC) Control over molecular motion using the *cis–trans* photoisomerization of the azo group. *Beilstein J. Org. Chem.* **2012,** *8,* 1071-1090.

▪ N. Fuentes, L. A. Martín-Lasanta, A. de Cienfuegos, M. Ribagorda, A. Parra, J. M. Cuerva. Organic-based molecular switches for molecular electronics. *Nanoscale,* **2011***, 3,* 4003-4014.

▪ M. Veguillas, M. Ribagorda (AC), M. C.Carreño (AC). Regioselective Alkylation of Heteroaromatic Compounds with 3-Methyl-2-Quinonyl Boronic Acids. *Org. Let.,* **2011**, *13*, 656-659.

C.2. RESEARCH PROJECTS AND GRANTS

- Photo and bioactive compounds, molecular switches and luminescent upconversion nanoparticles. Entidad financiadora: MEC, REF: CTQ2017-85454-C2-2-P. From January 2018 to October 2020. Amount: 82.280 €. IP: **M. Ribagorda**
- RED MADRILEÑA DE NANOMEDICINA EN IMAGEN MOLECULAR. Entidad financiadora: Comunidad de Madrid (B2017/BMD-3867 RENIM-CM), cofinanciado con Fondos Estructurales de la Unión Europea From January 2018 to Dec 2021. IP: Manuel Desco.
- Diseño de interruptores moleculares quirales como ligandos fotoreactivos. Entidad financiadora: UAM, Convocatoria Financiación TFM. January-July 2016 y 2017. Amount: 1200 y 600 €. IP: **M. Ribagorda**.
- Síntesis y estudio de propiedades de compuestos bio, electro y fotoactivos. Entidad financiadora: MEC, REF: CTQ2014-53894-R. From: 2015 to October 2017. Amount: 181.500 €. IP: M. C. Carreño. Nº Participants: 5
- Nuevos derivados de quinona y quinol: aplicaciones en síntesis y nuevos materiales Entidad Financiadora: MICINN, REF: CTQ2011-24783. From: 11/2011 to 10/2013. Amount: 262.570 €. IP: M. C. Carreño. Nº Participants: 12
- Aprovechamiento Térmico de la Energía Solar de Manera Gestionable, eficiente y modular en sistemas de alta concentración. Entidad: Consejería de Educación de la Comunidad Autónoma de Madrid. Programa de actividades de I+D entre grupos de investigación de la CAM. REF: S2009/ENE-1617. From: 1//01/2010 to: 31/12/ 2012. Amount: 46.270 €. IP: M. C. Carreño. Nº Participants: 6
- Síntesis y nuevas aplicaciones de sulfinil azobencenos enantiopuros y ácidos 2quinonil borónicos. Entidad Financiadora: UAM (REF: CCG08-UAM/PPQ-3980). From January 2009- December 2009. Amount: 33.000 €. IP: **María Ribagorda**. Nº Participants: 8
- Synthesis and photochromic properties of chiral aromatic azocompounds. Entidad Financiadora: MEC (Acción Integrada Hispano Italiana HI2004-0027) From March 2005-to: March-2007. Amount: 10.820 €. IP: M. Ribagorda. Nº Participants: 5
- Síntesis y nuevas aplicaciones de quinonas, quinoles, azobencenos y sulfoxidos enantiopuros. Entidad Financiadora: Ministerio de Educación y Ciencia (REF: CTQ2008-04691/BQU) From: 11/2009 to 10/2011. Amount: 187.000 €. IP: M. C. Carreño.
- Síntesis enantioselectiva de moléculas complejas: Productos naturales y compuestos con quiralidad helicoidal. Entidad Financiadora: MEC (REF: CTQ2005-02095/BQU). From: Nov 2005 to Oct. 2008. Amount: 153.000 € IP: M. C. Carreño. Nº Participants: 8

C.4. Patents

INVENTORES: R. Díaz, S. Isikli, J. Palma, M. C. Carreño, M. Ribagorda, M. A. Guillamón, S. Barradas, M. Lecea. TÍTULO: Baterías de flujo acuosas con pares redox orgánicos
REFERENCIA: P201330186(3). Patente española registrada el 13 de febrero de 2013
INSTITUCIONES PARTICIPANTES: Instituto IMDEA Energía y UAM.

C.5 SYMPOSIUM PRESENTATIONS (2020-2019

- Silvia Simón de la Fuente, Laura Ortiz Rojano, Jingke Yao, Gabriel López-Peña, Dirk H. Ortgies, Emma Martín Rodríguez, Francisco Sanz-Rodríguez, María Ribagorda. "Functionalized upconverting nanoparticles by light induced tetrazole-alkene 1,3-dipolar cycloadditions for antitumor photodynamic therapy" PARTICIPATION: **Poster**. Symposium: EFMC International Symposium on Medicinal Chemistry, Place: Virtual Event from Louvain-la-Neuve, Belgium. Date: 7-11 Sep, **2020**
- Maria Ribagorda "Preparación y Estudio de Compuestos Orgánicos Bio, Electro y Fotoactivos" PARTICIPATION **: Invited Oral communication.** Symposium: InnoUAM_QuímicaVerde: innovaciones en síntesis química, Place: Madrid, Date: Febrero **2019**
- Gabriel López-Peña, Laura Ortiz Rojano, Dirk H. Ortgies, Raúl Zazo, María Ribagorda, Francisco Sanz-Rodríguez, Emma Martín Rodríguez "Eosin Y and rare-earth-doped nanoparticles for deep-tissue photodynamic therapy" PARTICIPATION **Oral communication**. Symposium: (SBAN) 2nd Spanish conference of biomedial Applications of nanomaterials. Place: Madrid, Date: Junio **2019**
- L. Ortiz-Rojano, Jaime Rojas-Martína, Ciro Rodrígueza, M. Carmen Carreño, M. Ribagorda "Photoclick reactions between quinones and 2,5-diaryltetrazoles: Synthesis and properties of novel fluorescent heterocyclic quinones" PARTICIPATION: **Poster**. Symposium: 26th International symposium: Synthesis in Organic Chemistry . PLACE: Cambridge, England Date: Junio **2019**
- L. Ortiz-Rojano, F. Sanz-Rodríguez, M. Carmen Carreño, M. Ribagorda TÍTULO: "Visible-light Photoactivatable Indazol-4,7-diones Derivatives PARTICIPATION: **Flash Communication**. Symposium: XXXVII Reunión Bienal de la RSEQ. Place: San Sebastian, Spain, Date: Mayo 2019

C.6 Visiting Fellowships and Professorships:

■ Predoctoral fellowship: University Johns Hopkins (group: Prof. Gary H. Posner), *Baltimore. USA.* Date*: June-August 1998. Domino reactions using p-quinamines systems.*

■ Postdoctoral stay University of Pennsylvania (group Prof. Gary A. Molander, Philadelphia, USA. Date: 2002-2003*. Improvement and novel Applications of the Suzuki coupling Reaction Using Potassium Alkyltrifluoroborates. Expanding Organoboron Chemistry. Epoxidation of Potassium Organotrifluoroborates.*

■ Professorships mobility program: Ministerio de Educación y Formación Profesional. Destiny: University of Pennsylvania, Group: Prof. Gary A. Molander, Philadelphia USA. Dates: Junio-Sept **2012**, Junio-Sept **2015**, Junio-Sept **2018**.

C.7. INSTITUTIONAL RESPONSIBILITIES

2009-2019 Member of the Security and safety program in the Department Organic Chemistry, UAM.

2009-Present: Member of the UAM Doctoral Program in Organic Chemistry with "Mención de Calidad" from MEC (Spain) and Master in Organic Chemistry.

2019-present Member of the social network program of the Department Organic Chemistry, UAM.

C.8 PHD SUPERVISED (8)

■ Nuevas aplicaciones de los sulfóxidos en síntesis orgánica: Reacciones de Diels-Alder y de adición conjugada**.** *DOCTORANDO:* Mª Jesús Sanz Cuesta, *UAM,* **2005**. *CALIFICACION: Sobresaliente Cum-Laude.* Directoras: M. C. Carreño y María Ribagorda

■Sulfinil metil *p*-quinoles y *p*-quinaminas como intermedios versatiles en síntesis orgánica.*DOCTORANDO:* Montserrat Ortega Guerra, UAM, **2008** *CALIFICACION: Sobresaliente Cum-Laude.* Directoras: M. Carmen Carreño y María Ribagorda

■ El Grupo sulfinilo como inductor de quiralidad en interruptores moleculares:Síntesis y propiedades fotocrómicas de Sulfinil azobencenos. *DOCTORANDO:* Irene Núñez González, UAM, **2012**. *CALIFICACION: Sobresaliente Cum-Laude.* Directoras: M. Carmen Carreño y María Ribagorda

■ Ácidos 2-quinonil borónicos. Síntesis y reactividad en reacciones de cicloadición [4+2] y adición conjugada. *DOCTORANDO:* Marcos Veguillas Hernando, UAM, **2013**. *CALIFICACION: Sobresaliente Cum-Laude.* Directoras: M. Carmen Carreño y María Ribagorda.

■ Extending the synthetic utility of p-Quinols: hetero Michael-type additions and Friedel-Crafts reations reactividad en reacciones de cicloadición [4+2] y adición conjugada. Reactividad de quinoles. *DOCTORANDO:* Carolina García García, UAM, **2014**. *CALIFICACION: Sobresaliente Cum-Laude.* Directoras: M. Carmen Carreño y María Ribagorda.

■ Síntesis y Reactividad de nuevos derivados de quinona *DOCTORANDO:* Jaime Rojas, UAM, **2017**. *CALIFICACION: Sobresaliente Cum-Laude.* Directoras: M. Carmen Carreño y María Ribagorda

■ New reactivity of *p*-quinols and *p*-quinones. Synthesis and properties of photoactivatable pyrazolequinones. *DOCTORANDO:* Laura Ortiz Rojano, UAM, **2019**. *CALIFICACION: Sobresaliente Cum-Laude.* Directoras: M. Carmen Carreño y María Ribagorda.

■ Síntesis y propiedades de nuevos azocompuestos como interruptores moleculares quirales y nuevos inhibidores de la fluorescencia. *DOCTORANDO:* Santiago Guisán Ceinos, UAM, **2019**. *CALIFICACION: Sobresaliente Cum-Laude.* Directoras: M. Carmen Carreño y María Ribagorda.

Dirección de proyectos de investigación para la obtención del titulo de doctor en curso.
Silvia Simón de la Fuente *Preparación de compuestos fluorescentes y funcionalización de nanopartículas para su aplicación como sensores biológicos.*

C.9 MASTER SUPERVISED (16)

Diploma de Estudios Avanzados: 1. Álvaro Somoza, Julio 2000; **2**. Carmen García Luzón, Marzo 2001. **3**. Estíbaliz Merino Marcos, Septiembre 2002. **4**. Montserrat Ortega Guerra, septiembre 2005. **5.** Irene Núñez, Septiembre 2007. **6.** Marcos Veguillas, Septiembre 2008.
Master Química Orgánica: **7.** Jaime Francisco Rojas Martín, Julio 2012. **8.** Santiago Guisán Ceinos. Septiembre 2013. **9.** Eduarado de Pedro. Julio 2015. **10.** Laura Ortiz, Julio 2015. **11**. Andrea Pereira, Julio 2016. **12**. Mario Martínez Mingo, Julio 2016. **13**. Ciro Rodríguez, Julio 2017. 14. Juan Antonio Núñez, Julio 2018.**15.** Pablo Ruedas 2019.**16**. Aimar González 2019.

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C.10 TEACHING EXPERIENCE [UAM, Facultad de Ciencias].

Periodos y categoría: 2010-presente **Profesor Titular**. 2008-2009; **Profesor contratado Doctor**, 2003-2008 **Contratado Ramón y Cajal**; 2001-2002 **Profesor Asociado**; 1999-2001 **Becario predoctoral**
Asignaturas: Grado: Química Orgánica Industrial, Seminarios: Química Orgánica (2º), Síntesis Orgánica (3º), Determinación Estructural (3º), Experimentación Avanzada (4º) Experimentación en Síntesis Orgánica (2º y 3º), Materias Primas y Procesos Industriales. Máster: Quimica Orgánica Avanzada (Master química Aplicada), Procesos Industriales orgánicos y sostenibilidad (Master Química Orgánica)

Part A. PERSONAL INFORMATION

CV date	16/12/2021

First and Family name	Enrique-José Alvarez-Manzaneda Roldán		
Social Security, Passport, ID number	----------	Age	---------
Researcher codes	WoS Researcher ID *(*)*	Q-4429-2016	
	SCOPUS Author ID*(*)*		
	Open Researcher and Contributor ID (ORCID) **	0000-0002-3659-4475	

A.1. Current position

Name of University/Institution	University of Granada			
Department	Organic Chemistry			
Address and Country	Campus Fuentenueva s.n., Granada, SPAIN			
Phone number	34 958 248089	E-mail	eamr@ugr.es	
Current position	Full Professor		From	21/08/2003
Key words	Organic Synthesis, Natural Products, Bioactive Molecules			

A.2. Education

PhD	University	Year
Chemistry graduate Extraordinary Award	Granada	1975
Sciences PhD Extraordinary Award	Granada	1982

A.3. JCR articles, h Index, thesis supervised…

I have 6 six-year research periods recognized by the CNEAI. Direction of PhD theses: 22 (2 in progress). Total appointments: 2501. Average appointments / year (2016-2021) = 157.8 (789/5). Publications: 116 (108 in ORCID). Publications in Q1: 84 (for the publications prior to 1997, the data of the journal have been taken in the JCR of 2013). H-Index = 30 (Metrics were obtained from Web of Science).

Part B. CV SUMMARY *(max. 3500 characters, including spaces)*

Degree in Chemical Sciences in June 1975, with the qualification of Outstanding and Extraordinary Prize (University of Granada). PhD thesis carried out in the carbohydrate group of the University of Granada, under the direction of Profs. Fidel J. López Aparicio and Francisco Zorrilla Benítez. Doctor in Chemical Sciences in 1982, with the qualification of Outstanding and Extraordinary Prize (University of Granada). Assistant Professor and Fellow of the Training Plan of the research staff (courses 75-76 and 76-Dec. 77) (University of Extremadura). Assistant Professor, University of Granada (1-3-78 / 31-5-85). Collaborating professor, University of Granada (1-6-86 / 20-8-87). Associate Professor of the University (21-8-87 / 20-8-03). Full Professor (21-8-03- to date). In 1985 I joined the research group "Biotechnology of fungi and development of pharmacologically active molecules" of Prof. Alejandro Fernández Barrero, staying there until 2002. Within this group I published 46 articles, directed 8 PhD theses, developed 3 patents and participated in 7 research projects, awarded in competitive competition. In 2003 I created the group "Natural Products and Applied Organic Synthesis", for which I am the responsible. From that date until today I have published 58 articles, directed 13 PhD theses, developed 12 patents, and participated in 15 research

projects, awarded in competitive competition, as principal investigator. Research lines: Synthesis of natural products with biological activity; new synthetic methodologies. I have been part of the coordination team of the Project "Management of Centers of Scientific Instrumentation", of the ALFA Program of the European Union (between February 14, 1996 and February 14, 1998). I have been Vice-Dean of the Faculty of Sciences (21-10-97 to 26-11-99) and Director of the Department of Organic Chemistry (July 2008 -July 2010). Member of the Scientific and Organizing Committee of the VI Symposium of Young Researchers (RSEQ- SIGMA ALDRICH) 20-25 November 2010, University of Granada. Since March 1992, I am a Scientific Advisor of Nuclear Magnetic Resonance at the University of Granada, a position I currently hold. In December 2021 I was awarded the 2021 Scientific Career Award in Research in Chemistry of Natural Products (Specialized Group in Chemistry of Natural Products, Royal Spanish Society of Chemistry)

Part C. RELEVANT MERITS

C.1. Publications (From 2016, and other selected from last 10 years)

- Chaboun, R.; Botubol-Ares, J.M.; Durán-Peña, M. J.; Jiménez, F.; Alvarez-Manzaneda, R.; Alvarez-Manzaneda, E. "Decojnjugative alpha-Alkylation of Cyclohexenecarboxaldehydes: An Acces to Diverse Terpenoids" *Journal of Organic Chemistry*, **2021**, *86*, 8742-8754.
- Gil, J.A.; Arias, F.; Chahboun, R.; Alvarez-Manzaneda, E., "Synthesis of Cyclosiphonodictyol A and Its Bis(sulfato)" *Journal of Organic Chemistry*, **2020**, *85*, 3799-3805.
- H. Zentar, F. Arias, A.Haidour, R. Alvarez-Manzaneda, R. Chahboun, E.Alvarez-Manzaneda, "Protecting-Group-Free Synthesis of Cassane-Type Furan Diterpenes via a Decarboxylative Dienone-Phenol Rearrangement", *Organic Letters* **2018**, *20*, 7007-7010.
- M. Ait El Had, J. J. Guardia, J. M. Ramos, M. Taourirte, R. Chahboun, E. Alvarez-Manzaneda, "Bioinspired Synthesis of Pygmaeocins and Related Rearranged Abietane Diterpenes. Synthesis of Viridoquinone" *Organic Letters*, **2018,** *20*, 5666-5670.
- S Mahdjour, J J. Guardia, F. Rodríguez-Serrano, J. M. Garrido, I. B. López-Barajas, N. Mut-Salud, R. Chahboun, E. Alvarez-Manzaneda, "Synthesis and antiproliferative activity of podocarpane and totarane derivatives", *Eur. J. Med. Chem.* **2018**, *158*, 863-873.
- P. Gutierrez, J. Altarejos, P. J. Linares, R Chahboun, E. Alvarez-Manzaneda, "Synthesis of cassane-type diterpenes from abietane compounds: the first synthesis of taepeenin F", *Org.Chem. Front.* **2018**, *5*, 2537-2541.
- Fernández, E. Boulifa, F. Jiménez, S. Mahdjour, A. I. Mansour, R. Chahboun, E. Alvarez-Manzaneda, "Enantiospecific synthesis of antifungal dasyscyphin E from cupressic acid", *Tetrahedron* **2017**, 73, 6549-6557.
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A. Haidour, J.M. Ramos, A. Akhaouzan, "First enantiospecific synthesis of marine sesquiterpene quinol akaol A", *Chemical Communications*, **2012,** *48*, 606-608.

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C.2. Research projects and grants

- B-FQM-278-UGR20. "Development of New Therapeutic Agents. Evaluatrion of its Antitumor, Antiinflammatory and Antiparasitic Activities", Consejería de Transformación Económica, Industria, Conocimiento y Universidades, Junta de Andalucía, Start date: 2022. Final date: 2023. Principal investigator: E. Alvarez-Manzaneda.
- UNGR15-CE-3100. " Update of the NMR Service of the Scientific Instrumentation Center of the University of Granada", Ministerio de Economía y Competitividad. Call: 2017. Final date: 2018. Principal investigator: E. Alvarez-Manzaneda.
- CTQ2014-56611-R. "Efficient transformations of commercial terpenes in compounds for application in cancer therapy and reprogramming of stem cells", Ministerio de Economía y Competitividad, Call: 2014. Principal investigator: E. Álvarez-Manzaneda. Start date: 2015. Final date: 2018.
- P11-CTS-7651. "Application of natural products to the design, synthesis and study of substances with potent antitumor, anti-inflammatory or antiparasitic activity" Consejeria de innovación, ciencia y empresa, Junta de Andalucía (Proyecto de Excelencia), Call: 2011. Principal investigator: E. Álvarez-Manzaneda. Start date: 2012. Final date: 2015.
- CTQ2009-09932. "Preparation of natural products of interest and search for new compounds of industrial application ", MCI-FECYT. Call: 2009. Principal investigator: E. Álvarez-Manzaneda. Start date: 01/01/2010. Final date: 31/12/2012.
- P07-FQM-03101: "New procedures for the preparation of products of industrial interest" Proyecto de Excelencia (Consejeria de innovación, ciencia y empresa, Junta de Andalucía). Call: 2008. Final date: 2012. Principal investigator: E. Alvarez-Manzaneda.
- PSE-060000-2009-003. "Valorization of National Horticultural Byproducts: Sustainable Obtaining of Natural-Origin Additives", Ministerio de Ciencia e Innovación. Call: 2009. Principal investigator:E.Alvarez-Manzaneda, Start date: 01/01/2009. Final date: 31/12/2010.
- CTQ2006-12697. "New processes for the preparation of bioactive compounds of pharmaceutical interest from natural terpenoids", MEC. Call: 2006. Principal investigator: E. Álvarez-Manzaneda, Start date: 2006. Final date: 2009.
- PPQ2002-03308.2 Synthesis of Compounds with Powerful Biological Activity from Natural Terpenoids", Ministerio de Ciencia y Tecnología, Principal investigator: E. Alvarez-Manzaneda. Start date: 01/01/2002. Final date: 31/12/2005.

C.4. Patents

- Authors: Álvarez-Manzaneda, E; Chahboun, R; Guardia, J. J. Reference: P20153158. Título: Process for the preparation of 2-alkyl-1H-indene and 2,3,4,4,4-tetrahydro-1H-fluorene derivatives from derivatives of 2- (2-alkyl-3-oxopropyl) benzaldehyde and 2- (2-formylcyclohexyl) benzaldehyde, respectively". Priority country: España . Date: August 2015.
- Authors: Aránega J., A.; Álvarez-Manzaneda, E.; Chahboun, R.; Rodriguez Serrano, F.; Prados S., J. C.; Melguizo A., C.; Tapia Martín, R.; Es-Samti, H.; Guardia, J.J.; Vázquez V., M. Isabel; Álvarez Aránega, P. J.. Reference: P201200438. Título: Anti-tumor activity of taiwaniaquinoids and related compounds. Priority country: España. Date: Abril 2012.
- Authors: Prados S., J. C.; Rodriguez Serrano, F.; Melguizo A., C..; Peran Q., M.; Aranega J., A.; Alvarez-Manzaneda, E.; Marchal C., J. A.; Chahboun, R.; Boulaiz, H. Título: "Synthesis and antitumor activity of merosesquiterpenes" Ref: ES 2355786 A1 20110331. Date: 2011.
- Authors: Aránega J., A.; Álvarez-Manzaneda, E.; Chahboun, R. Rodriguez Serrano, F.; Messouri, I.; Boulaiz, H.; Marchal C., J. A.; Melguizo A., C.; Perán Quesada, M.; Prados Salazar, J. C.. Ref.: WO 2010076358 A1 20100708.. Título: Synthetic analogs of merosesquiterpenes and compounds related with antitumor activity. Priority country: España. Date: 2010.

- Authors: Alvarez-Manzaneda, E. Chahboun, R.. Ref.: WO 2010072864 A1 20100701. Título: Procedure for the preparation of synthesis intermediates useful in the preparation of taiwaniaquinoids. Priority country: España. Date: December 2010.
- Authors: Alvarez-Manzaneda, E.; Chahboun, R.; Haidour, A. Ref.: WO2009153374 A1 20091223. Título: Procedure for the preparation of hydroxytirosol and 3-(3,4-dihydroxyphenyl) propanol from methylenedioxybenzenes. Priority country: España. Date: June 2009.
- Authors: Alvarez-Manzaneda; E.; Chahboun, R.; Messouri, I. Ref.: WO2009112622 A1 20090917. Title: Procedure for the preparation of merosesquiterpenes and related compounds from labdane diterpenes. Priority country: España. Date: April 2009.

C.5, C.6, C.7… (e. g., Institutional responsibilities, memberships of scientific societies…)

PhD Theses: Supervised Doctoral Thesis: 22 (2 more in progress)

Last graduated doctors (from 2016)

- Doctor: Soumicha Mahdjour. Título: "Transformation of *trans*-Communic Acid into Compounds with a Cassane Skeleton and Derivatives. Evaluation of the Antitumor Activity" University: Granada Faculty: Sciences, **October 2020**. Articles*: Org. Lett.* **2016**, *18*, 5964-5967; *J. Nat. Prod.* **2017**, *80*, 308-318; *Tetrahedron* **2017**, *82*, 9550-9559; *Eur.J. Med. Chem.* **2018**, *158*, 863-873; *J. Org. Chem.* **2020**, *85*, 3799-3805
- Doctor: Juan A. Gil Camarena. Título: "Synthesis of merosesquiterpenes with oxepane structure" University: Granada Faculty: Sciences, **March 2020**. Articles*: J. Org. Chem.* **2016**, *85*, 10002-10008; *J. Org. Chem.* **2020**, *85*, 3799-3805.
- Doctor: Maria Pilar Gutiérrez Adánez. Título: "Application of natural products to the design, synthesis and study of substances with a potent antitumor or antiparasitic activity". University: Granada Faculty: Sciences, **May 2018**. Articles: *Org. Biomol. Chem.* **2016**, *14*, 9836-9845. *Org.Chem. Front.* **2018**, *5*, 2537-2541.
- Doctor: Fermín Jiménez Rodriguez (He is actually I+D researcher in Abbott Laboratories S.A.) Title: "Strategy towards the synthesis of compounds with benzofluorene skeleton and new methodology for the preparation of alpha-acetoxycarbonyl derivatives", University: Granada Faculty: Sciences. **September 2017**. Articles: *Tetrahedron Letters* **2011**, *52*, 4017-4020; *Tetrahedron* .**2011**, *67*, 8910-8917; *J. Org. Chem.***2017**, *82*, 9550-9559.
- Doctor: Juan José Guardia Monteagudo (He has an indefinite contract in the biotechnology company DestiNIA Genomics S.L.as I+D researcher).Title: "Synthesis of natural products and derivatives with antiparasitic and antitumor activity from abietic acid". University: Granada Faculty: Sciences. **February 2016**. Articles: *Synthesis* **2010**, 3493-3503; *J. Org. Chem.* **2012**, *77*, 573-584; *Eur.J. Med.Chem.* **2015**, *89*, 683-690; *J. Nat. Prod.* **2017**, *80*, 308-318; *Org. Lett.* **2018**, *20*, 5666-5670; *Eur. J. Med. Chem.* **2018***, 158,* 863-873.
- Doctor: M. I. Barranco Pérez. Title: "Synthesis of bioactive compounds from labdane diterpenes". University: Granada Faculty: Sciences. **February 2016.** Articles: *Org. Lett.* **2005**, *7*, 1477-1480; *Tetrahedron Lett.* **2005**, *46*, 5321-5324; *Tetrahedron* **2007**, *63*, 11204-11212: *Eur. J. Org. Chem.* **2009**, 1139-1143.
- Membership of the American Chemical Society and of the Spanish Royal Society of Chemistry
- Fellowship of the Training Plan for Research Staff (1976-1978)
- Extraordinary Award in the Degree in Chemical Sciences (Sep 1976)
- Extraordinary Award in the Doctorate in Chemical Sciences (January 1984)
- Supervised Doctoral Thesis: 22 (2 more in progress)
- Scientific Advisor of Nuclear Magnetic Resonance of the University of Granada (13-3-92 until today)
- Vice Dean of the Faculty of Sciences (From 21-10-97 to 26-11-99)
- Director of the Department of Organic Chemistry (July 21, 2008 - July 28, 2010)
- Assistant to the coordination of the Project "Management of Centers of Scientific Instrumentation", of the ALFA Program of the European Union (it was held between February 14, 1996 and February 14, 1998.
- Member of the Scientific Committee of the VI SYMPOSIUM OF YOUNG RESEARCHERS-SIGMA ALDRICH (2009)
- 2021 Scientific Career Award in Research in Chemistry of Natural Products (Specialized Group in Chemistry of Natural Products, Royal Spanish Society of Chemistry)

Date of the CVA	21/01/2021

Section A. PERSONAL DATA

Name and Surname	Rosario María Sánchez Martín		
DNI	[redacted]	Age	[redacted]
Researcher's identification number	Researcher ID	F-3423-2010	
	Scopus Author ID		
	ORCID	0000-0001-8912-9799	

* Obligatorio

A.1. Current professional situation

Institution	Universidad de Granada		
Dpt. / Centre	Dep. Medicinal and Organic Chemistry_NANOCHEMBIO LAB / Pfizer-University of Granada-Junta de Andalucía Centre for Genomics and Oncological Research (GENYO), PTS Granada		
Address	Deparment of Medicinal and Organic Chemistry, GENYO, PTS Granada, Avd. Ilustración 114, 18016, Granada		
Phone	[redacted]	Email	rmsanchez@ugr.es
Professional category	Profesor titular de universidad	Start date	2011
Keywords			

A.2. Academic education (Degrees, institutions, dates)

Bachelor/Master/PhD	University	Year
Farmacia	Universidad de Granada	2002
Licenciado en Farmacia	Universidad de Granada	1997

A.3. General quality indicators of scientific production

a) Total cites/Citations per year (last 5 years) :443 (126,4) ; b) Publications first Quartile (Q1) /total :51/61; c) h-index 22

Section B. SUMMARY OF THE CURRICULUM

Rosario M. Sánchez Martín has developed her research career between the UK and Spain. For the past 20 years she has been working in the area of nanotechnology in biomedicine. Nowadays,she leads the research team NanoChemBio (CTS987) of the University of Granada in Spain. She is a world leader in the field of nanoparticles and their biological applications and Lecturer in the School of Pharmacy at the University of Granada. She finished her PhD at the University of Granada in 2002. She spent 9 years in the UK, firstly as postdoctoral fellow at the University of Southampton and later, in 2006, as independent researcher at the University of Edinburgh where she took an academic position at the School of Chemistry when she was awarded a prestigious Dorothy Hodgkin Fellowship from the Royal Society. In January 2011, she moved to the University of Granada where she was promoted to Permanent Lecturer in July of the same year after a competitive process. In 2011 she was awarded a Marie Curie CIG reintegration fellowship. She has established close collaborations with local and national clinicians and biomedicine experts and also has extended her international network. In October 2012, Dr. Sánchez- Martín has been granted with her own research lab in the Centre for Genomics and Oncological Research (GENYO) integrated by Pfizer - Universidad de Granada - Junta de Andalucía. Nowadays, her research activity is focussed on the development of nanotechnology-based platform for diagnosis and personalised medicine. Dr. Sánchez-Martín has authored 61 publications in top peer-reviewed journals, including Nature Chem (5-year IF = 26.76), Nature Protocols (5-year IF= 13.47), Acc Chem Res (IF= 24.37), between others, being corresponding author of 20 of them. This research was carried out in collaboration with research teams of international prestigious such as Prof. Bradley and Prof. Zamoyska from the University of Edinburgh. She has participated in more than 40 international conferences including 25 oral communications (10 talks as invited speakers). She has participated in 20

research projects being PI in 10 of them. She is coinventor of two patents and founder of a start-up company (Nanogetic S.L.). Actually, she is Chief of the Scientific Advisory board of this company. Additionally, NanoChemBio have R&D contracts with an international biotech, DestiNA Genomics Ltd., to develop novel smart chemical tools to detec nucleic acid for diagnostic applications. In the last 5 years, she has supervised 7 postdoc, 8 PhD students and 12 master students. She has experience in supervision of postdoc, PhD students (at the present she is supervising 4 PhD students, two on them cosupervised by Dr. Diaz-Mochón) and teaching duties in masters and PhD program (including and international PhD programme with the University of Catania in Italy). She also participates in the Mentoring Programme of the UGR, through which she provides professional advice and guidance in career progress and she propose specific research and skills training . She is member of the organisation committee of the scientific conferences organised at Genyo. She is member of the organising committee of the master in Translational Research of the UGR. She is member of the international PhD programme of Bioinformatics and biomedicine at the University of Catania. Member of cost actions Nano2clinic and DARTER, The European Technology Platform on Nanomedicine (ETPN) and the NanoCARE network.

Section C. MOST RELEVANT MERITS (ordered by typology)

C.1. Publications

1 **Scientific paper**. Agustin Robles Remacho; M Angelica Luque Gonzalez; Roberto Gonzalez Casin; et al;. 2021. Development of a nanotechnology-based approach for capturing and detecting nucleic acids by using flow cytometry Talanta. 226, pp.122092.
2 **Scientific paper**. 2020. Amplification-free profiling of microRNA-122 biomarker in DILI patient serums, using the luminex MAGPIX system Talanta. 219, pp.121265.
3 **Scientific paper**. 2020. Development of Cellular Models to Study Efficiency and Safety of Gene Edition by Homologous Directed Recombination Using the CRISPR/Cas9 System.Cells. MDPI. 9, pp.1492.
4 **Scientific paper**. Maria Victoria Cano Cortés; Jose Antonio Laz Ruiz; Juan Jose Díaz Mochon; Rosario M. Sanchez Martin. 2020. Characterization and Therapeutic Effect of a pH Stimuli Responsive Polymeric Nanoformulation for Controlled Drug Release Polymers. MDPI. 12(6)-doi.org/10.3390/poly.
5 **Scientific paper**. Antonio Delgado González; Agustín Robles Remacho; Antonio Marín Romero; et al;. 2019. PCR-free and chemistry-based technology for miR-21 rapid detection directly from tumour cells.Talanta. ScienceDirect. 200, pp.51-56.
6 **Scientific paper**. Mavys Tabraue Chávez; María Angélica Luque González; Antonio Marín Romero; Rosario María Sánchez Martín; Pablo Escobedo Araque; Salvatore Pernagallo; Juan José Díaz Mochón. 2019. A colorimetric strategy based on dynamic chemistry for direct detection of Trypanosomatid species Scientific Reports. Nature Publishing Group. 9, pp.3696.
7 **Scientific paper**. María Victoria Cano Cortés; Saúl Abenhamar Navarro Marchal; María Paz Ruíz Blas; Juan José Díaz Mochón; Juan Antonio Marchal Corrales; Rosario María Sánchez Martín. 2019. A versatile theranostic nanodevice based on an orthogonal bioconjugation strategy for efficient targeted treatment and monitoring of triple negative breast cancer Nanomedicine: Nanotechnology, Biology and Medicine. Elsevier.
8 **Scientific paper**. Antonio Marín Romero; Agustín Robles Remacho; Mavys Tabraue Chavez; et al;. 2018. A PCR-free technology to detect and quantify microRNAs directly from human plasma.Analyst. Royal Society Chemistry. 143-23, pp.5676-5682.
9 **Scientific paper**. Teresa Valero; Antonio Delgado González; Juan Diego Unciti Broceta; María Victoria Cano Cortés; Ana María Pérez López; Asier Unciti Broceta; Rosario María Sánchez Martín. 2018. Drug "Clicking" on Cell-Penetrating Fluorescent Nanoparticles for In Cellulo Chemical Proteomics.Bioconjugate Chemistry. ACS Publications. 29-9, pp.3154-3160.

10 **Scientific paper**. Antonio Delgado Gonzalez; Emilio Garcia Fernandez; Teresa Valero; et al;. 2018. Metallofluorescent Nanoparticles for Multimodal Applications.ACS Omega. ACS Publications. 3-1, pp.144-153.
11 **Scientific paper**. Maria Angélica Luque González; Mavys Tabraue Chávez; Bárbara Lopez Longarela; Rosario María Sánchez Martín; Matilde Ortiz González; Miguel Soriano Rodríguez; Jose Antonio García Salcedo; Salvatore Pernagallo. 2018. Identification of Trypanosomatids by detecting Single Nucleotide Fingerprints using DNA analysis by dynamic chemistry with MALDI-ToF Talanta. Elsevier. 176, pp.299-307.
12 **Scientific paper**. Patricia Altea Manzano; Juan Diego Unciti Broceta; Victoria Cano Cortés; María Paz Ruiz Blas; Teresa Valero Griñan; Juan Jose Díaz Mochón. 2017. Tracking cell proliferation using a nanotechnology-based approach Nanomedicine. FUTURE MEDICINE LTD. 12-13, pp.1591-1605.
13 **Scientific paper**. Luciano Messina; Jose A. Gavira; Salvatore Pernagallo; et al;. 2016. Identification and characterization of a bacterial hyaluronidase and its production in recombinant form FEBS Letters. Wiley. 590-14, pp.2180-2189.
14 **Scientific paper**. Seshasailam Venkateswaran; María Angélica Luque González; Mavys Tabraue Chávez; et al;. 2016. Novel bead-based platform for direct detection of unlabelled nucleic acids through Single Nucleobase Labelling.Talanta. Elsevier. 161, pp.489-496.
15 **Review**. Antonio Delgado Gonzalez; Rosario María Sanchez Martin. 2020. Mass Cytometry Tags: Where Chemistry Meets Single-Cell Analysis Anal Chem. 93-2, pp.657-664.

C.2. Participation in R&D and Innovation projects

1 DiaRNAgnosis: A novel platform for the direct profiling of circulating cell-free ribonucleic acids in biofluids (Universidad de Granada). 01/01/2021-31/12/2024. 759.000 €.
2 Una nueva plataforma de diagnóstico de biopsia líquida: detección COMBO de proteínas y ARN en exosomas individuales Proyectos del Plan Nacional 2019. Rosario M. Sanchez Martin. (University of Granada). 01/06/2020-31/05/2023. 157.300 €.
3 Desarrollo de una plataforma nanotecnológica para reprogramación celular in situ mediante edición génica basada en ácido nucleicos peptídicos (Acrónimo: Nano-GE-PNA) Referencia del proyecto: P18-TP-4160 Junta de Andalucía. AYUDAS A LA I+D+i, EN EL ÁMBITO DEL PLAN ANDALUZ DE INVESTIGACIÓN, DESARROLLO E INNOVACIÓN (PAIDI 2020). Convocatoria 2018. Juan Jose Diaz Mochon. (University of Granada). 01/01/2020-31/12/2022. 138.575 €.
4 Desarrollo de un nanodispositivo multifuncional para generar células T Reprogramadas como inmunoterapia frente al cáncer Consejería de Economía, Conocimiento, Empresas y Universidad. Rosario María Sánchez Martín. (Universidad de Granada). 01/01/2020-31/12/2021. 15.200 €.
5 SARS-CoV -2: Testar y rastrear. Test de diagnóstico más aplicación móvil para la detección molecular del virus y la geolocalización de los casos positivos (University of Granada/Destina Genomica). 09/09/2020-08/09/2021. 95.732,3 €.
6 Nano3Devices: Nanosistema multifuncionalizado con aplicación teranóstica en cáncer Instituto de Salud Carlos III. Rosario María Sánchez Martín. (Universidad de Granada). 01/01/2019-31/12/2020. 78.650 €.
7 BiopLiqNanotof;DETECCION DE ACIDOS NUCLEICOS CIRCULANTES Y SUS MUTACIONES MEDIANTE PROTOCOLOS PCR-FREE PARA BIOPSIAS LIQUIDAS. INTEGRACION DE NANOTECNOLOGIA,QUIMICA DINAMICA Y CITOMETRIA DE MASAS- BIO2016-80519-R (Universidad de Granada). 30/12/2016-29/06/2020. 140.000 €.
8 Implementation of a novel integrated platform to monitor tumour heterogeneity as a crucial determinant for individualized diagnostic and therapeutic outcome. Juan Antonio Marchal Corrales. (Universidad de Granada/ Instituto de Salud Carlos III). 01/01/2017-31/12/2019. 493.625 €.
9 Implementation of a novel integrated platform to monitor tumour heterogeneity as a crucial determinant for individualized diagnostic and therapeutic outcome. (Universidad de Granada). 01/01/2017-31/12/2019. 493.625 €.
10 Multifunctionalized nanosystem for cancer theranostic Rosario María Sánchez Martín. (Universidad de Granada). 01/01/2017-31/12/2018. 26.000 €.

11 Reliable Novel Liquid Biopsy technology for early detection of colorectal cancer (Liqbiopsens) JL Garcia Puche. (Servicio Andaluz de Salud (FIBAO)). 01/01/2016-31/12/2018. 433.750 €.
12 Nanopartículas metalo-fluorescentes para análisis celulares por citometría de flujo con doble funcionalidad, citometría fluorescente y de masas (Universidad de Granada). 01/09/2017-01/09/2018. 10.900 €.
13 Evaluation of promiscuity of kinases inhibitors in cancer cells using a nanotechnology approach- NANOKINOME Agencia Ejecutiva de Investigación (REA) de la Comunidad Europea- FP7 Talentia Postdoc-Fp7 Marie Curie Actions - TAPOST-110. Rosario M. Sanchez Martin. (Universidad de Granada (Spain)- University of Edinburgh (UK)). 01/09/2014-31/08/2016. 157.518 €.
14 Desarrollo de un sistema de nanodiagnóstico basado en miRNAs/exosomas característicos de células madre cancerígenas con valor pronóstico y predictivo en pacientes con melanoma maligno (NanomiR MelStem) Juan Antonio Marchal Corrales. (FIBAO-Universidad de Granada). From 01/09/2015.
15 Desarrollo de una plataforma nanotecnológica para la detección de dianas farmacológicas MARIA TERESA VALERO GRIÑAN. (Universidad de Granada). From 01/05/2015.

C.3. Participation in R&D and Innovation contracts

1 PROYECTO DE INVESTIGACIÓN P18-TP-4160 JUNTA ANDALUCIA OTRI ACUERDO DE COLABORACIÓN From 01/01/2020.
2 Automatización y desarrollo de sistemas de diagnóstico molecular multiplex para detección de paneles de marcadores ARN/ADN y proteínas en las áreas de patología infecciosa y alergología Rosario M. Sanchez Martin. 01/12/2015-01/07/2018.
3 Ayudas para contratos predoctorales de Formación de Profesorado Universitario FPU 2014. Ministerio de Educación, Cultura y Deporte ROSARIO MARÍA SÁNCHEZ MARTÍN. From 15/09/2015.
4 DESARROLLO DE KITS DE DIAGNÓSTICO MOLECULAR BASADOS EN PCR MULTIPLEX PARA IDENTIFICACIÓN DE MUTACIONES PUNTUALES EN PATOLOGÍAS TUMORALES E INFECCIOSAS, APLICANDO LA TECNOLOGÍA SMART-NUCLEOBASE, SOBRE UNA PLATAFORMA DE HIBRIDACIÓN REVERSA POR FLUJO Rosario M. Sanchez Martin. 16/10/2014-16/04/2016. 62.630 €.
5 Optimización de estrategias de liberación de fármacos Rosario M. Sanchez Martin. From 31/07/2013.

C.4. Patents

1 Rosario María Sánchez Martín; Juan Antonio Marchal Corrales; Juan José Díaz Mochón; María Victoria Cano Cortés; Saúl Abenhamar Navarro Marchal; María Paz Ruiz Blas. P201830360. Nanopartículas Multifuncionales para Teragnosis Spain. 12/04/2018. Universidad de Granada.
2 Luciano Messina; Juan Diego Unciti Broceta; Rosario M. Sanchez Martin. PCT/IB2016/057824. Nanosystems for controlled transport of active molecules for diagnostic, prognostic and therapeutic purposes Italy. 29/06/2017.
3 Antonio Delgado González. P201730777. Sondas Duales para Citometría de Flujo y Citometría de Masas Spain. 07/06/2017.
4 MJ Serrano; JJ Diaz Mochon; F.G. Ortega; JA Lorente; JL Garcia Puche; MP Ruiz Blas; Rosario M. Sanchez Martin. PCT/ES2015/070681.. Method for the detection of circulating tumor cells, both circulating tumors cells of epithelial phenotype and circulating tumour cells having Epithelial-mesenchymal transition markers (EMTs), by using miRNA-21 as a biomarker Spain. 18/09/2014. Servicio Andaluz de Salud (SAS) y Universidad de Granada.

CURRICULUM VITAE

Part A. PERSONAL INFORMATION

CV date	12-03-2017

First and Family name	MARÍA ELENA BUÑUEL MAGDALENA		
ID number		Age	
Researcher numbers	Researcher ID	M-6539-2014	
	Orcid code	0000-0001-9620-8305	

A.1. Current position

Name of University/Institution	UNIVERSIDAD AUTÓNOMA DE MADRID			
Department	QUÍMICA ORGÁNICA			
Address and Country	Avda. Francisco Tomás y Valiente, 7-Fac Ciencias, módulo 01-despacho 103, Cantoblanco, 28049, Madrid, Spain			
Phone number	+34914973879	E-mail	elena.bunnuel@uam.es	
Current position	Profesor Titular		From	05-2008
UNESCO Espec.	2306.11, 2306.02, 2306.99			
Key words	Organometallic chemistry, catalysis, transition metals, organic synthesis, organometallic complexes, computational chemistry, mechanisms			

A.2. Education

Licenciado en Ciencias Químicas	Universidad de Zaragoza	1992
Grado de Licenciado	Universidad de Zaragoza	1992
Master's Degree in Teaching	Universidad de Zaragoza	1994

PhD

Doctora en Ciencias (Química)	Universidad de Zaragoza	1996

A.3. Previous activities of a professional scientific nature

Position	Institution	Dates
Introduction to Research	CSIC	01/1991-12/1991
Introduction to Research	CSIC	01/1992-12/1992
Predoctoral fellowship. Diputación General de Aragón	Universidad de Zaragoza-CSIC	11/1992-10/1996
Postdoctoral fellowship. Ministerio de Educación y Cultura.	Universidad de Oxford (UK)	01/1997-12/1997
Posdoctoral fellowship. Marie Curie Program from EEC	Universidad de Oxford (UK)	01/1998-03/1999
Profesor asociado (P6)	Universidad de Zaragoza	03/1999-07/1999
Contrato de reincorporación MEC	Universidad de Zaragoza	08/1999-09/2001
Profesor Asociado LRU	Universidad Autónoma de Madrid	10/2001-04/2004

Profesor Contratado Doctor	Universidad Autónoma de Madrid	05/2004-01/2008
Profesor Titular Interino	Universidad Autónoma de Madrid	02/2008-04/2008
Profesor Titular	Universidad Autónoma de Madrid	05/2008-

A.4. JCR articles, h Index, thesis supervised…

- Number of research activity periods (every 6 years) = 4 (last granted date: 12-31-2016)
- Number of Doctoral Thesis supervised = 8 (and 2 more under current supervision)
- Co-author of 61 JCR articles and 2 book chapters.
- h Index = 20
- Sum of times cited (WoS)= 2005
- Times cited average/year during last 5 years (excluding 2017): 172

Part B. CV SUMMARY

Dr. M. Elena Buñuel Magdalena graduated in chemistry from the University of Zaragoza and became PhD under the supervision of Prof. Carlos Cativiela Marín and Dr. M. Dolores Díaz de Villegas Soláns, in the Department of Organic Chemistry (Faculty of Sciences).
From 1997 to 1999, she stayed at the Dyson Perrins Laboratory (Department of Organic Chemistry, University of Oxford-UK) as a postdoctoral researcher with Prof. Stephen G. Davies, where she worked in asymmetric synthesis of amino acids. She later rejoined the Department of Organic Chemistry at the University of Zaragoza as a postdoctoral researcher to work in asymmetric synthesis of cyclic amino acids in the laboratory led by Prof. Carlos Cativiela Marín.
In 2002, she moved as an Assistant Professor at the Department of Organic Chemistry at the Universidad Autónoma de Madrid (UAM) to work with Prof. Antonio Echavarren Pablos in the computational study of the mechanisms of reactions catalyzed by transition metals, in particular by gold(I) complexes.
In 2004, she collaborated with Prof. Diego J. Cárdenas Morales, in the creation of the research group called "*Organometallic Chemistry Directed Towards Organic Synthesis*" in the Department of Organic Chemistry (UAM). Since then, she has carried out her research activity co-directing and supervising the work of students and other members of the group. In 2008, she got a position as an Associate Professor of this department.
Among others, this research group has succeeded at developing new synthetic methods for the synthesis of complex molecules and exploring their mechanisms. For example, a Pd-catalyzed cascade borylative cyclization of polyunsaturated substrates for the preparation of cyclic compounds containing a boronate fragment, in smooth conditions with relatively low toxicity solvents and low catalyst loadings, has been achieved. Also, new $C(sp^3)$-$C(sp^3)$ cross-coupling reactions of haloalkanes with organozinc and Grignard reagents catalyzed by Ni and Fe complexes, and their application to cascade processes for the concurrent formation of several C-C bonds, have been developed and continue presently under investigation. On the other hand, a heterotrimetallic Ir(III), Au(III) and Pt(II) complex incorporating cyclometallating ligands, where simultaneous emission from different luminescent metal centers leads to broad-band light emission, has been recently reported.
Currently Dr Buñuel is a Principal Investigator in the project “Development and applications of economically and environmentally benign first-row transition metal-catalyzed reactions" funded by the Ministerio de Economía y Competitividad of Spain. Her main research interests are the development of new methods based on organometallic chemistry of transition metals, among which are the catalytic processes aimed at creating C-B, C-N, and C-C bonds, and the computational study of the mechanisms of reactions catalyzed by transition metals (mainly Ni, Fe, Co, Cu, Pd). Other research interests include issues related to synthesis of organic

compounds and electro-photoactive and luminescent metal complexes, and studies on long range electron transfer processes.

Research Lines (brief description, by means of keywords, of the specialization and current research lines):

- Development of organic synthesis methods catalyzed by transition metal complexes.
- Synthesis and reactivity of transition metal complexes.
- Computational study of reaction mechanisms.
- Synthesis of luminescent organometallic complexes for application in OLED's
- Processes of electronic transfer coupled to proton transfer (PCET)

Part C. RELEVANT RESEARCH MERITS

C.1. Publications (journal articles)

- Natalia Cabrera-Lobera, Patricia Rodríguez-Salamanca, Juan C. Nieto-Carmona, Dr. Elena Buñuel and Prof. Diego J. Cárdenas "*Iron-Catalyzed Hydroborylative Cyclization of 1,6-Enynes*". Chem. Eu. J. Version of Record online: 23 NOV 2017 | DOI: 10.1002/chem.201704401

- R. Soler-Yanes, M. Guisán-Ceinos, E. Buñuel, D. J. Cárdenas. "*Ni(I) Catalyzes the Regioselective Cross-Coupling of Alkylzinc Halides and Propargyl Bromides to Allenes*", Chem. Eu. J., *23*, 1584–1590 (2017).

- E. Buñuel, D. J. Cárdenas. "*Borylative Cyclization Reactions*", Eu. J. Org. Chem. 5446–5464 (2016).

- R. Muñoz–Rodríguez, E. Buñuel, N. Fuentes, G. J. A. Williams, D. J. Cárdenas "*A Heterotrimetallic Ir(III), Au(III) And Pt(II) Complex Incorporating Cyclometallating Bi- And Tridentate Ligands: Imultaneous Emission from Different Luminescent Metal Centres Leads to Broad-Band Light Emission*", Dalton Trans. *44*, 8394–8405 (2015).

- R. Soler–Yanes, M. Guisán–Ceinos, E. Buñuel, D. J. Cárdenas "*Nickel–Catalyzed Kumada Coupling* of Benzyl Chlorides and Vinylogous Derivatives", Eu. J. Org. Chem. 6625–6629 (2014).

- A. Martos–Redruejo, R. López–Duran, E. Buñuel, D. J. Cárdenas "*Ligand-controlled divergent formation of alkenyl- or allylboronates catalyzed by Pd, and synthetic applications*", Chem. Commun. 50, 10094–10097 (2014).

- A. G. Campaña, E. Buñuel, J. M. Cuerva, D. J. Cárdenas "*The Role of Water–Based Hydrogen Atom Wires in Long–Range Electron–Transfer Reactions in Aqueous Media for the Fe(II)–Fe(III) Self–Exchange and Related Systems*", Chem. Eu. J. 19, 16187–16191 (2013).

- R. López–Duran, A. Martos–Redruejo, E. Buñuel, V. Pardo–Rodríguez, D. J. Cárdenas "*Preparation of Allylboronates by Pd–Catalysed Borylative Cyclisation of Dienynes*", Chem. Commun. 49, 10691–10693 (2013).

- M. Guisán–Ceinos, R. Soler–Yanes, D. Collado–Sanz, V. B Phapale, E. Buñuel, D. J. Cárdenas "*Ni–Catalyzed Cascade Cyclization–Kumada Alkyl–Alkyl Cross–Coupling*", Chem. Eu. J. 19, 8405–8410 (2013).

- M. Guisán–Ceinos, F. Tato, E. Buñuel, P. Calle, D. J. Cárdenas "*Fe–Catalyzed Kumada–Type Alkyl–Alkyl Cross–Coupling. Evidence for the Intermediacy of Fe(I) Complexes*", Chem. Sci. 4, 1098–1104 (2013).

- V. Pardo–Rodríguez, E. Buñuel, D. Collado–Sanz, D. J. Cárdenas "*Pd–Catalyzed Borylative Cyclisation of 1,7–Enynes*", Chem. Commun 48, 10517–10519 (2012).

- R. Muñoz–Rodríguez, E. Buñuel, .G. J. A. Williams, D. J. Cárdenas "*Divergent Luminescence Behaviour from Differential Interactions in Dinuclear Pt, Au, And Mixed Pt–Au Complexes Built on a Xanthene Scaffold*", Chem. Commun. 48, 5980–5982 (2012).

- Ana Martín–Lasanta, Delia Miguel, Trinidad García, Juan A. López–Villanueva, Salvador Rodríguez–Bolívar, Francisco M. Gómez–Campos, Elena Buñuel, Diego J. Cárdenas, Luis Álvarez de Cienfuegos, Juan M. Cuerva "*Influence of the Number of Anchoring Groups on the Electronic and Mechanical Properties of Benzene–, Anthracene– and Pentacene–Based Molecular Devices*", ChemPhysChem 13, 860–868 (2012).

- J. Marco–Martínez, E. Buñuel, R. López–Durán, D. J. Cárdenas "*Pd–Catalyzed Borylative Polycyclization of Enediynes to Alkylboronates*" Chem. Eu. J. 17, 2734–2741 (2011).

- D. J. Cárdenas, J. M. Cuerva, M. Alías, E. Buñuel, A. G. Campaña "*Water–Based Hydrogen–Atom Wires as Mediators in Long–Range Proton–Coupled Electron Transfer in Enzymes: a New Twist on Water Reactivity*", Chem. Eu. J. 17, 8318–8323 (2011).

- N. Fuentes, L. Álvarez de Cienfuegos, A. Parra, D. Choquesillo–Lazarte, J. M. García–Ruiz, M. L. Marcos, E. Buñuel, M. Ribagorda, M. C. Carreño, D. J. Cárdenas, J. M. Cuerva "*On/off Electrochemical switches based on quinone–bisketals*", Chem. Commun. 47, 1586–1588 (2011).

- Salvador RodrÍguez-Bolívar; Francisco M. Gómez-Campos, Luis Álvarez de Cienfuegos, Noelia Fuentes, Diego J. Cárdenas, Elena Buñuel, Juan E. Carceller, Andrés Parra, Juan M. Cuerva "*Conductance and application of organic molecule pairs as nanofuses*", Physical Review B: Condensed Matter and Materials Physics 83, 125424/1-125424/11, (2011).

- Diego J. Cárdenas, Elena Buñuel, Vilas B. Phapale, Manuel Guisán–Ceinos "*Ni–catalyzed cross–coupling of alkyl Grignard and alkylzinc reagents with organic halides*". From Pacifichem 2010, International Chemical Congress of Pacific Basin Societies, Honolulu, HI, United States, December 15–20, (2010),ORGN–917.

- M. Paradas, A. G. Campaña, T. Jiménez, R. Robles, J. E. Oltra, E. Buñuel, J. Justicia, D. J. Cárdenas, J. M. Cuerva "*Understanding the Exceptional Hydrogen–Atom Donor Characteristics of Water in Ti(III)–Mediated Free–Radical Chemistry*", J. Am. Chem. Soc. 132, 12748–12756 (2010).

- V. Pardo–Rodríguez, J. Marco–Martínez, E. Buñuel, D. J. Cárdenas "*Pd–Catalyzed Borylative Cyclization of Allenynes and Enallenes*", Org. Lett. 11, 4548–4551 (2009).

- V. B. Phapale, M. Guisán–Ceinos, E. Buñuel, D. J. Cárdenas "*Nickel–Catalyzed Cross–Coupling of Alkylzinc Halides for the Formation of C(sp^2)–C(sp^3) Bonds: Scope and Mechanism*", Chem. Eu. J. 15, 12681–12688 (2009).

- J. Marco–Martínez, E. Buñuel, R. Muñoz–Rodríguez, D. J. Cárdenas *"Pd–Catalyzed Borylative Polycyclization of Enediynes to Allylboronates"*, Org. Lett. 10, 3619–3621 (2008).

- V. B. Phapale, E. Buñuel, M. García–Iglesias, D. J. Cárdenas "*Ni–Catalyzed Cascade Formation of C(sp3)–C(sp3) Bonds by Cyclization and Cross–Coupling of Iodoalkanes with Alkylzinc Halide"*, Angew. Chem. Int. Ed. 46, 8790–8795 (2007).

- J. Marco–Martínez, V. López–Carrillo, E. Buñuel, R. Simancas, D. J. Cárdena "*Pd–Catalyzed Borylative Cyclization of 1,6–Enynes"*. J. Am. Chem. Soc. 129, 1874–1875 (2007).

- V. B. Phapale, E. Buñuel, M. García–Iglesias, D. J. Cárdenas "*Ni–Catalyzed Cascade Formation of C(sp^3)–C(sp^3) Bonds by Cyclization and Cross–Coupling of Iodoalkanes with Alkylzinc Halide*". Angew. Chem. Int. Ed. 46, 8790–8795 (2007).

- J. Marco–Martínez, V. López–Carrillo, E. Buñuel, R. Simancas, D. J. Cárdena "*Pd– Catalyzed Borylative Cyclization of 1,6–Enynes*". J. Am. Chem. Soc. 129, 1874–1875 (2007).

- N. Cabello, E. Jiménez–Núñez, E. Buñuel, D. J. Cárdenas, A. M. Echavarren **"***On the mechanism of the puzzling "endocyclic" skeletal rearrangement of 1,6–enynes*" . Eur. J. Org. Chem. 4217–4223 (2007).

- A. G. Campaña, R. E. Estévez, N. Fuentes, R. Robles, J. M. Cuerva, E. Buñuel, D. J. Cárdenas, J. E. Oltra "*Unprecedented Hydrogen Transfer from Water to Alkenes and Alkynes Mediated by Ti^{III} and Late Transition Metals*". Org Lett. 9, 2195–2198 (2007).

- A. M. Gil, E. Buñuel, C. Cativiela. "*A New Approach to Enantiopure β–endo–Substituted Azabicyclic Proline Analogues by Base Induced Epimerization of a Formyl Derivative*" .Arkivoc (iv) 157–169 (2007).

- J. M. Cuerva, A. G. Campaña, J. Justicia, A. Rosales, J. L. Oller–López, R. Robles, D. J. Cárdenas, E. Buñuel and J. E. Oltra "*Water: The Ideal Hydrogen–Atom Source in Free–Radical Chemistry Mediated by Ti^{III} and Other Single–Electron–Transfer Metals?*" Angew. Chem. Int. Ed, 45, 5522–5526 (2006).

- M. García Iglesias, E. Buñuel, D. J. Cárdenas ""*Cationic (η^1–allyl)–Palladium Complexes as Feasible Intermediates in Catalyzed Reactions*" Organometallics 25, 3620–3627 (2006).

- C. Nieto–Oberhuber, S. López, M. P. Muñoz, E. Jiménez–Núñez, E. Buñuel, D. J. Cárdenas, C. Nevado, and A. M. Echavarren "*Gold(I)–Catalyzed Intramolecular Cyclopropanation of Dienynes*" Chem. Eur. J. 12, 1694–1702 (2006)

- E. Buñuel, J. Marco–Martínez, S. Díaz–Tendero, F. Martín, M. Alcamí, D. J. Cárdenas "*Computational Studies on the Cyclization of Polycyclic Aromatic Hydrocarbons in the Synthesis of Curved Aromatic Derivatives*" Chem. Phys. Chem. 7, 475–481 (2006)

- C. Nieto–Oberhuber, S. López, M. P. Muñoz, D. J. Cárdenas, E. Buñuel, C. Nevado, and A. M. Echavarren "*Divergent Mechanisms for the Skeletal Rearrangement and [2+2] Cycloaddition of Enynes Catalyzed by Gold*" Angew. Chem. Int. Ed. 44, 6146–6148 (2005).

- J. Justicia, J. L. Oller–López, A. G. Campaña, J. E. Oltra, J. M. Cuerva, E. Buñuel, D. J. Cárdenas "*7–endo Radical Cyclizations Catalyzed by Titanocene(III). Straightforward Synthesis of Terpenoids with Seven–Membered Carbocycles*" J. Am. Chem. Soc. 127, 14911–14921 (2005).

- A. M. Gil, P. López, E. Buñuel, C. Cativiela "*Application of a New Methodology for the Synthesis and Resolution of a β–(Thien–2–yl) Proline with the 7–Azanorbornane Skeleton*" Arkivoc, 9, 90–103 (2005).

- A. M. Gil, E. Buñuel, A. I. Jiménez, C. Cativiela "*Conformational preferences of bicyclic proline analogues with induced chirality at the N atom*" Peptides 2004. Proceedings of the Third International and Twenty–Eighth European Peptide Symposium, M. Flegel, M. Fridkin, C. Gilon, J. Slaninova, eds, Kenes International: Tel Aviv, 2005, pp. 222–223.

- A. M. Gil, E. Orús, V. López–Carrillo, E. Buñuel, C. Cativiela "*New enantiopure 7–azanorbornane β–substituted prolines by SN2 displacements at the C_α of the side chain*" Tetrahedron: Asymmetry 16, 3115–3123 (2005).

- J. Justicia, A. Rosales, E. Buñuel, J. L. Oller–López, M. Valdivia, A. Haïdour, J. E. Oltra, A. F. Barrero, D. J. Cárdenas, J. M. Cuerva. "*Titanocene–Catalyzed Cascade Cyclization of Epoxypolyprenes. Straightforward Synthesis of Terpenoids via Free–Radical Chemistry*" Chem. Eur. J. 10, 1778–1788 (2004).

- C. Nieto–Oberhuber, M. P. Muñoz, E. Buñuel, C. Nevado, D. J. Cárdenas, and A. M. Echavarren "*Cationic Gold(I) Complexes: Highly Alkynophylic Catalysts for the Exo– and Endo–Cyclization of Enynes*" Angew. Chem. Int. Ed. 43, 2402–2406 (2004).

- A. M. Gil, E. Buñuel, P. López, C. Cativiela "*Synthesis of enantiopure 7–azanorbornane proline–α–amino acid chimeras by highly efficient HPLC resolution of a phenylalanine analogue*" Tetrahedron:Asymmetry 15, 811–819 (2004).

- B. Martín–Matute, E. Buñuel, M. Méndez, C. Nieto–Oberhuber, D. J. Cárdenas, A. M. Echavarren "*Allyl Stannanes as Electrophiles or Nucleophiles in the Palladium–CatalyzedReactions with Alkynes*" J. Organom. Chem. 687, 410–419 (2003).

- E. Buñuel, S. D. Bull, S. G. Davies, A. C. Garner, E. D. Savory, A. D. Smith, R. J. Vickers, D. J. Watkin "*Asymmetric synthesis of substituted 1–aminocyclopropane–1–carboxylic acids via diketopiperazine methodology*" Org. Biomol. Chem. 1, 2531–2542 (2003).

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- A. M. Gil, E. Buñuel, M. D. Díaz–de–Villegas, C. Cativiela "*Olefination of methyl (1S,2R,4R)–N–benzoyl–2–formyl–7–azabicyclo[2.2.1]–heptane–1–carboxylate, a synthetic approach to new conformationally constrained prolines*" Tetrahedron: Asymmetry 14, 1479–1488 (2003).

- E. Buñuel, A. M. Gil, M. D. Díaz–de–Villegas, C. Cativiela "*Synthesis of constrained prolines by Diels–Alder reaction using a chiral unsaturated oxazolone derived from (R)–glyceraldehyde as starting material*" Tetrahedron 57, 6417–6427 (2001).

- E. Buñuel, C. Cativiela, M. D. Díaz–de–Villegas, J. A. Gálvez "*Two new conformationally restricted 4,5–dihydroxynorvaline analogues with a norbornane skeleton*" Acta Cryst. C56, 587–591 (2000).

- M. Alías, E. Buñuel, C. Cativiela, M. D. Díaz–de–Villegas, J. A. Gálvez *"(1R,2R,3S,4S,5S,6S–exo–2–Cyano–exo–3–[(S)–1,2–dibenzyloxyethyl]–exo–5–iodobicyclo–[2.2.1]heptane–endo–2,6–carbolactone*" Acta Cryst. C55, 1009–1012 (1999).

- E. Buñuel, C. Cativiela, M. D. Díaz de Villegas, J. A. Gálvez "*Crystal structure of (1S,2S,3R,4R)–3–[(S)–2,2–dimethyl–1,3–dioxolan–4–yl}bicyclo[2.2.1]–hept–5–en–2–spiro–{4'[2'–phenyl–5'(4'H)–oxazolone]},$C_{20}H_{21}NO_4$*" Z. fur Kristallogr. 213, 645–646 (1998).

- E. Buñuel, C. Cativiela, M. D. Díaz de Villegas, J. A. Gálvez "*A conformationally restricted aspartic acid analogue with a norbornane skeleton. II*" Acta Cryst. C53, 626–628 (1997).

- E. Buñuel, C. Cativiela, M. D. Díaz de Villegas, J. A. Gálvez "*A conformationally restricted aspartic acid analogue*" Acta Cryst. C52, 1252–1254 (1996).

● E. Buñuel, C. Cativiela, M. D. Díaz de Villegas, J. A. Gálvez "*A lactone derived from an amino acid with a cyclohexyl skeleton: (1S,6R,9S)–6–benzamido–9–hydroxymethyl–8–oxabicyclo–[4.3.0]non–3–en–7–one*" Acta Cryst. C52, 1456–1458 (1996).

● E. Buñuel, C. Cativiela, M. D. Díaz de Villegas, J. A. Gálvez *"(Z)– 4–[(S)–2,2–Dimethyl–1,3–dioxolan–4–ylmethylen]–2–phenyl–oxazol5(4H)–one*" Acta Cryst. C52, 1810–1813 (1996).

● E. Buñuel, C. Cativiela, M. D. Díaz de Villegas "*Diastereoselective synthesis of (1S,2S,3R,4R) and (1R,2S,3R,4S)–bicyclo[2.2.1]hept–2–amino–2,3–dicarboxylic acids: New conformationally constrined (S)–aspartic acid analogues*" Tetrahedron: Asymmetry, 7, 1521–1528 (1996).

● E. Buñuel, C. Cativiela, M. D. Díaz de Villegas, J. A. Gálvez "*A new conformationally restricted aspartic acid analogue with a bicyclo[2.2.2]octane skeleton*" Acta Cryst. C52, 2292–2294 (1996).

● E. Buñuel, C. Cativiela, M. D. Díaz de Villegas "*Z–2–Phenyl–4–[(S)–2,2–dimethyl–1,3–dioxolan–4–ylmethylen]–5(4H)–oxazolone as the dienophile in asymmetric Diels–Alder reactions II*" Tetrahedron: Asymmetry, 7, 1431–1436 (1996).

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● E. Buñuel, C. Cativiela, M. D. Díaz de Villegas "*Asymmetric Diels–Alder reaction of a chiral azlactone*" Tetrahedron: Asymmetry, 5, 157–160 (1994).

● E. Buñuel, C. Cativiela, M. D. Díaz de Villegas "*Study of the asymmetric Diels–Alder reaction of a chiral azlactone*" Tetrahedron: Asymmetry, 5, 759–766 (1994).

● E. Buñuel, C. Cativiela, M. D. Díaz de Villegas "*N*–[Bis(methylthio)]methylene–didehydroalanine methyl ester a new and excellent dienophile for the synthesis of 2–aminonorbornene–2–carboxylic acid" Tetrahedron, 49, 7287–7294 (1993).

● E. Buñuel, C. Cativiela, M. D. Díaz de Villegas, A. I. Jiménez "*New efficient synthesis of 1–aminocyclopropanecarboxylic acid*" Synlett, 579–581 (1992).

C.2. Book chapters

● A. M. Gil, E. Buñuel, C. Cativiela. "*An extremely versatile methodology for the synthesis of enantiopure β–substituted proline analogues with the 7–azanorbornane skeleton*" "*Targets in Heterocyclic Systems. Chemistry and Properties*", Volume 8, 56–86, O. A. Attanasi, D. Spinelli, eds. Royal Society of Chemistry: Cambridge, 2005.

● E. Buñuel, A. I. Jiménez, M. D. Díaz de Villegas, C. Cativiela, "*A chiral oxazolone derived from D–glyceraldehyde as an intermediate in the synthesis of enantiomerically pure cyclic amino acids*" "*Targets in Heterocyclic Systems. Chemistry and Properties*" Volume 5, 79–111, O. A. Attanasi, D. Spinelli, eds. Royal Society of Chemistry: Cambridge, 2001.

C.3. Invited Talks

● Seminar from Departamento de Química-Cinvestav. “Ciclación borilativa de compuestos poliinsaturados catalizada por Pd”. México DF, México, 14/10/2015.

● Instituto de Química de la Universidad Nacional Autónoma de México. “Ciclación borilativa de compuestos poliinsaturados catalizada por Pd”. México DF, México, 13/10/2015.

C.4. Scientific meeting contributions

● Natalia Cabrera-Lobera, Elena Buñuel, Diego J. Cárdenas
“Iron-catalysed kumada type alkyl-alkyl cross-coupling reaction using NHC ligands”
Type of participation: Poster and short communication
XXVI Reunión Bienal de Química Orgánica
Huelva (Spain) 2016

● Gema Caballero-Santiago, Natalia Cabrera-Lobera, Elena Buñuel, Diego J. Cárdenas.
“Iron-catalyzed coupling reaction of allyl ethers and Grignard reagents”
Type of participation: Poster (aceptada)
XXVI Reunión Bienal de Química Orgánica
Huelva (Spain) 2016

● Elena Buñuel, Ruth López-Durán, Alicia Martos-Redruejo, Virtudes Pardo-Rodríguez, Juan Marco-Martínez, Diego J. Cárdenas
Pd-Catalyzed cascade borylative cyclization reactions of polyunsaturated compounds
Type of participation: Poster
International Chemical Congress of Pacific Basin Societies (Pacifichem 2015)
Honolulu (USA) 2015

● Irene Ortín, Natalia Cabrera, Gema Caballero, Elena Buñuel, Diego J. Cárdenas
“Fe-catalysed Kumada-type alkyl-alkyl and cascade cyclization-Kumada alkyl-alkyl cross-coupling using NHC ligands”
Type of participation: Poster
International Chemical Congress of Pacific Basin Societies (Pacifichem 2015)
Honolulu (USA) 2015

● Rita Soler-Yanes, Iván Arribas, Francisco Tato, Manuel Guisán-Ceinos, Elena Buñuel, Diego J. Cárdenas
“*Ni-catalyzed cross-coupling reaction of propargylic bromides with alkyl zinc halides: synthesis of trisubstituted allenes*”
Type of participation: Poster
Organometallic Chemistry Directed Towards Organic Synthesis (OMCOS 18)
Sitges (Spain) 2015.

● Irene Ortín, Natalia Cabrera, Elena Buñuel and Diego J. Cárdenas Morales.
“*Development of Fe-catalysed Kumada type alkyl-alkyl cross-coupling using NHC ligands*”
Type of participation: Poster
Organometallic Chemistry Directed Towards Organic Synthesis (OMCOS 18)
Sitges (Spain) 2015.

● Rita Soler-Yanes, Manuel Guisán-Ceinos, Elena Buñuel, Diego J. Cárdenas
“*Acoplamientos cruzados de tipo Kumada de cloruros bencílicos y derivados vinílogos catalizados por Ni*”
Type of participation: Poster
XI Simposio de Investigadores Jóvenes RSEQ-Sigma Aldrich.

Bilbao (Spain) 2014.

- Alicia Martos-Redruejo, Ruth López-Durán, Elena Buñuel, Diego J. Cárdenas
"*Pd-Catalyzed Ligand-Controlled Divergent Formation of Alkenyl- or Allylboronates*"
Type of participation: short communication
XXXV Reunión bienal de Química Orgánica
Alicante (Spain) 2014

- Daniel Collado-Sanz, Manuel Guisán-Ceinos, Rita Soler-Yanes, V. B. Phapale, Elena Buñuel, Diego j. Cárdenas
"*Estudio mecanístico de reacciones cascada de ciclación-acoplamiento cruzado de tipo Kumada catalizadas por Níquel*"
Type of participation: Poster
XXXIV Reunión bienal de la RSEQ
Santander (Spain) 2013

- Ruth López-Durán, Virtudes Pardo-Rodríguez, Elena Buñuel, Diego J. Cárdenas
"*Reacciones de ciclación borilativa de compuestos poliinsaturados catalizadas por paladio*"
Type of participation: short communication (Ruth López-Durán)
IX simposio de Investigadores Jóvenes RSEQ-Sigma Aldrich
Zaragoza (Spain) 2012

- Manuel Guisán–Ceinos, Francisco Tato, Elena Buñuel, Paloma Calle, Diego J. Cárdenas
"*Reacciones de acoplamiento cruzado de tipo Kumada-Corriu para la formación de enlaces Csp^3-Csp^3 catalizadas por Fe*"
Type of participation: Poster
X simposio de Investigadores Jóvenes RSEQ-Sigma Aldrich
Zaragoza (Spain) 2012

- Manuel Guisán–Ceinos, Rita Soler–Yanes, Daniel Collado–Sanz, Elena Buñuel, Diego J. Cárdenas
"*Reacciones de acoplamiento cruzado catalizadas por Ni entre haluros de alquilmagnesio y haloalcanos*"
Type of participation: Poster
IX simposio de Investigadores Jóvenes RSEQ-Sigma Aldrich
Zaragoza (Spain) 2012

- L. Álvarez de Cienfuegos, S. Rodríguez-Bolívar, F. M. Gómez Campos, T. García, J. A. López-Villanueva, J. E. Carceller, A. Martín-Lasanta, J. M. Cuerva, E. Buñuel, D. J. Cárdenas
"*Electronic properties of nanosize GNRs: the role of the anchoring groups*"
Type of participation: Poster
14th International Workshop on Computational Electronics (IWCE)
Publication: "*Proc. of IWCE*", (2010), 275–278
Pisa (Italy) 2010

- Diego J. Cárdenas, Elena Buñuel, Vilas B. Phapale, Manuel Guisán-Ceinos
"Ni-catalyzed cross-coupling of alkyl Grignard and alkylzinc reagents with organic halides"
Type of participation: short communication
The 2010 International Chemical Congress of Pacific Basin Societies (Pacifichem)
Hawaii (USA) 2010

- Rebeca Muñoz-Rodríguez, G. Williams, Elena Buñuel, Diego J. Cárdenas
"Light-Emitting Tridentate Cyclometalated Platinum(II) and Au(III) Complexes: Study of intramolecular excimer interaction"
Type of participation: Poster
The 2010 International Chemical Congress of Pacific Basin Societies (Pacifichem)"

Hawaii (USA) 2010

- Virtudes Pardo-Rodríguez, Ruth López-Durán, Elena Buñuel, Diego J. Cárdenas
"*Metal transition catalyzed borylative cyclization reactions of polyunsaturated compounds*"
Type of participation: Poster
The 2010 International Chemical Congress of Pacific Basin Societies (Pacifichem)"
Hawaii (USA) 2010

- Virtudes Pardo-Rodríguez, Elena Buñuel, Diego J. Cárdenas,
"*Reacciones de ciclación borilativa de compuestos poliinsaturados catalizadas por metales de transición*"
Type of participation: Poster
VII simposio de Investigadores Jóvenes RSEQ-Sigma Aldrich
Valencia (Spain) 2010

- Rebeca Muñoz-Rodríguez, G. Williams, Elena Buñuel, Diego J. Cárdenas
"*Complejos ciclometalados de Pt(II) y Au(III) emisores de luz: estudio de la interacción excímero intramolecular*"
Type of participation: short communication
VII simposio de Investigadores Jóvenes RSEQ-Sigma Aldrich
Valencia (Spain) 2010

- Ana Martín-Lasanta, Luis Álvarez de Cienfuegos, Juan M. Cuerva, Diego J. Cárdenas, Elena Buñuel, Salvador Rodríguez-Bolívar, Francisco M. Gómez-Campos, Juan A. López-Villanueva, Juan E. Carceller.
"*Influence of the anchoring groups on anthracene-based molecular devices*"
Type of participation: Poster
IWMM International workshop of molecular material
Publication: Proceedings of IWMM
Sanxenxo (Spain) 2010

- Vilas B. Phapale, Manuel Guisán-Ceinos, Elena Buñuel, Diego J. Cárdenas
"*Ni-Catalyzed cross-coupling of alkyl Grignard and alkylzinc reagents with organic halides*"
Type of participation: Poster
15th IUPAC Internacional Symposium on Organometallic Chemistry Directed Towards Organic Synthesis
Glasgow (U.K) 2009

- Virtudes Pardo-Rodríguez, Juan Marco-Martínez, Elena Buñuel, Diego J. Cárdenas,
"*Pd-Catalyzed Borylative Cyclization of Allenynes and Enallenes*"
Type of participation: Poster
15th IUPAC Internacional Symposium on Organometallic Chemistry Directed Towards Organic Synthesis
Glasgow (U.K) 2009

- Juan Marco-Martínez, Elena Buñuel, Diego J. Cárdenas,
"*Pd-Catalyzed Borylative Polycyclization of Enediynes*"
Type of participation: Poster
15th IUPAC Internacional Symposium on Organometallic Chemistry Directed Towards Organic Synthesis
Glasgow (U.K) 2009

- Noelia Fuentes, Andrés Parra, Enrique Oltra, Juan M. Cuerva, S. Rodríguez-Bolívar, F. M. Gómez-Campos, J. A. López-Villanueva, J. E. Carceller, Elena Buñuel and Diego J. Cárdenas
"*Computational study of a nanofuse based on organic molecules*"
Type of participation: Poster

International workshop in computational electronics (IWCE)
Publication: "*Proc. of IWCE*", (2009), 1 - 4.
Beijing, China 2009

- Diego J. Cárdenas, Juan Marco-Martínez, Virtudes Pardo-Rodríguez, Elena Buñuel, Rebeca Muñoz-Rodríguez
"*Synthesis of boronates by Pd-catalyzed borylative cyclization of polyunsaturated compounds*"
Type of participation: Poster
11th Belgian Organic Synthesis Symposium
Gante (Belgium) 2008

- Juan Marco-Martínez, Elena Buñuel, Diego J. Cárdenas
"*Síntesis de alilboronatos por policiclación-boración de endiinos catalizada por Pd*"
Type of participation: short communication
XXII Reunión Bienal de Química Orgánica de la RSEQ
Tarragona (Spain) 2008

- Vilas B. Phapale, Elena Buñuel, Diego J. Cárdenas
"*An efficient Ni-Catalysed Cross-Coupling Reactions of Aryl halides with Alkylzinc Bromides*"
Type of participation: short communication
XXII Reunión Bienal de Química Orgánica de la RSEQ
Tarragona (Spain) 2008

- Virtudes Pardo-Rodríguez, Juan Marco-Martínez, Elena Buñuel, Diego J. Cárdenas
"*Ciclación borilativa de aleninos y enalenos catalizada por Pd*"
Type of participation: short communication
XXII Reunión Bienal de Química Orgánica de la RSEQ
Tarragona (Spain) 2008

- Rebeca Muñoz-Rodríguez, Ruth López-Durán, Elena Buñuel, Diego J. Cárdenas
"*Nuevos complejos organometálicos de Pt(II) para la construcción de dispositivos electroluminiscentes*"
Type of participation: short communication
XXII Reunión Bienal de Química Orgánica de la RSEQ
Tarragona (Spain) 2008

- Vilas B. Phapale, Miguel García-Iglesias, Elena Buñuel, Diego J. Cárdenas
"*Reacciones de formación de enlaces $C(sp^3)$-$C(sp^3)$ mediante ciclación y acoplamiento de yodoalcanos con haluros de alquilzinc catalizadas por Ni*"
Type of participation: invited talk (D. J. Cárdenas)
XXXI Reunión Bienal de la RSEQ
Toledo (Spain) 2007

- V. B. Phapale. M. García-Iglesias, E. Buñuel, D. J. Cárdenas
"*Nickel-Catalyzed Tandem Cyclization and Cross-Coupling of Alkene containing Iodoalkanes with Organozinc Reagents*"
Type of participation: Poster
14th IUPAC Internacional Symposium on Organometallic Chemistry Directed Towards Organic Synthesis
Nara (Japan) 2007

- J. Marco-Martínez, V. López-Carrillo, E. Buñuel, D. J. Cárdenas
"*Pd-Catalyzed Borylative Cyclization of 1,6-Enynes*"
Type of participation: Poster
14th IUPAC Internacional Symposium on Organometallic Chemistry Directed Towards Organic Synthesis

Nara (Japan) 2007

- Verónica López-Carrillo, Juan Marco-Martínez, Raquel Simancas, Elena Buñuel, Ana B. Muñoz, Diego J. Cárdenas

"*Síntesis de alquilboronatos por ciclación-boración de eninos catalizada por Pd*"
Type of participation: short communication
XXI Reunión Bienal de Química Orgánica
Valladolid (Spain) 2006.

- A. M. Gil, E. Orús, E. Buñuel, C. Cativiela

"*Síntesis de nuevas quimeras prolina-α-aminoácido enantiopuras con esqueleto de 7-azanorbornano mediante reacciones de tipo S_N2*"
Type of participation: short communication
XIII Jornadas hispano-francesas de Química Orgánica
France 2004.

- A. M. Gil, E. Buñuel, A. I. Jiménez, C. Cativiela

"*Conformational preferences of bicyclic proline analogues with induced chirality at the N atom*"
Type of participation: Poster
3rd International and 28th European Peptide Symposium
Publication: In Peptides 2004. Proceedings of the Third International and Twenty-Eighth European Peptide Symposium; M. Flegel, M. Fridkin, C. Gilon, J. Slaninova, eds; Kenes International: Tel Aviv, 2005; pp. 222-223.
Praga (Czech Republic) 2004

- A. M. Gil, E. Buñuel, A. I. Jiménez, C. Cativiela

"*Preferencias conformacionales de análogos bicíclicos de prolina con quiralidad inducida en el átomo de N*"
Type of participation: Poster
1ª Jornada de Jóvenes Investigadores en Química de Aragón
Zaragoza (Spain) 2004

- C. Nieto-Oberhuber, B. Martín-Matute, E. Buñuel, D. J. Cárdenas, M. Méndez, A. M. Echavarren

"*Allylstannanes as Electrophiles or Nucleophiles in the Pd-Catalyzed Reactions with Alkynes*"
Type of participation: Poster
XXIX Bienal de Física y Química
Madrid (Spain) 2003

- Justicia, J.; Rosales, A.; Buñuel, E. Oller-López, J. L.; Valdivia, M.; Haïdour, A.; Oltra, J. E.; Barrero, A. F.; cárdenas, D. J.; Cuerva, J. M.

"*Ciclaciones radicalarias de epóxidos de poliprenos naturales mediadas por Cp_2TiCl y su aplicación a la síntesis de terpenos*"
Type of participation: Poster
XXIX Bienal de Física y Química
Madrid (Spain) 2003

- Luis Velilla, Sergio Díaz-Tendero, Manuel Alcamí, Fernando Martín, Elena Buñuel, Diego J. Cárdenas y Antonio M. Echavarren

"*Hacia una síntesis racional de Fullerenos: mecanismos de deshidrogenación del $C_{24}H_{14}$ y del $C_{26}H_{14}$*"
Type of participation: Poster
29ème Congrès des **CHI**mistes **T**héoriciens d'**E**xpression **L**atine (CHITEL2003)
Marrakech (Morocco) 2003

- A. M. Gil, E. Buñuel, C. Cativiela

"*Síntesis asimétrica de prolinas conformacionalmente restringidas utilizando una oxazolona quiral derivada de (R)-gliceraldehido*"
Type of participation: short communication
XII Jornadas hispano-francesas de Química Orgánica
Peñíscola (Spain) 2002

● E. Buñuel, C. Cativiela, M. D. Díaz de Villegas, A. I. Jiménez, M. P. López
"*Síntesis estereoselectiva de aminoácidos cicloalifáticos utilizando una oxazolona quiral derivada del D-gliceraldehido como producto de partida*"
Type of participation: Poster.
X Congreso de la Sociedad Española de Química Terapeútica
Oviedo 1997

● E. Buñuel, C. Cativiela, M. D. Díaz de Villegas, A. I. Jiménez.
"*New α,β-didehydroamino acid derivates as precursors in the synthesis of ciclopropylamino acids*"
Type of participation: Poster
Eighth European Symposium on Organic Chemistry
Sitges (Spain) 1993

● E. Buñuel, C. Cativiela, M. D. Díaz de Villegas, A. I. Jiménez.
"*Az-lactona derivada del D-gliceraldehído: excelente precursor quiral en la síntesis asimétrica de aminoácidos cíclicos*"
Type of participation: short communication.
Jornadas hispano-francesas de Química Orgánica
Elizondo (Spain) 1994

C.5. Research projects and grants

● "*Desarrollo y aplicaciones de reacciones catalizadas por metales de la primera serie de transición económicas y medioambientalmente benignas".* CTQ2016-79826-R
Funding entity: Ministerio de Economía y Competitividad. Programa estatal de fomento de la investigación científica y técnica de innovación 2016-2019.
Principal Investigators: Dr. D. J. Cárdenas Morales, and Dr. M. E. Buñuel Magdalena (Universidad Autónoma de Madrid)
Date: 01/01/2017 -12/31/2019 Funding: 155000 €

● "*Reacciones de formación de enlaces C-C y C-B catalizadas por metales de transición de la primera serie, económicas y benignas con el medio ambiente"* (EFICAT). CTQ2013-42806-R
Funding entity: Ministerio de Economía y Competitividad. Programa estatal de fomento de la investigación científica y técnica de innovación 2013-2016.
Principal Investigators: Dr. D. J. Cárdenas Morales, and Dr. M. E. Buñuel Magdalena (Universidad Autónoma de Madrid)
Date: 01/01/2014 - 12/31/2016. Funding: 187550 €

● "*Nanodispositivos orgánicos para electrónica molecular: diseño, síntesis y evaluación". FQM-04571*
Funding entity: Junta de Andalucía (Proyectos de Excelencia)
Principal Investigator: Dr. J. M. Cuerva (Universidad de Granada)
Contribution: researcher
Date: 01/01/2010 - 01/01/2014 Funding: 293000 €

● "*Aplicaciones sintéticas de complejos de metales de transición con ligandos carbeno N-Heterocíclicos. Reacciones de formación de enlaces C-C, C-B y activación C-H de alcanos".* CTQ2010-15927
Funding entity: Ministerio de Ciencia e Innovación

Principal Investigator: Dr. D. J. Cárdenas Morales (Universidad Autónoma de Madrid)
Contribution: researcher
Date: 01/01/2011 - 12/31/2013. Funding: 180290 €

- "*Desarrollo de métodos catalíticos altamente eficientes"* (AVANCAT). S2009/PPQ-1634.
Funding entity: CAM
Principal Investigator: Dr. M. A. Sierra (Universidad Complutense de Madrid)
Contribution: researcher.
Date: 01/01/2010 - 12/31/2013 Funding: 10035000 € (77870 € to our group)

- "*El agua como fuente de hidrógeno atómico y molecular. Implicaciones en química, biología y energías alternativas".* FQM-03213.
Funding entity: Junta de Andalucía (Proyecto de Excelencia)
Principal Investigator: Dr. E. Oltra Ferrero (Universidad de Granada)
Contribution: researcher
Date: 03/01/2008 - 03/31/2012 Funding: 168000 €

- "*Nuevas reacciones de organoboranos catalizadas por metales de transición mediante ciclación y activación de enlaces C-H alifáticos".* CTQ2007-60494/BQU.
Funding entity: Ministerio de Educación y Ciencia
Principal Investigator: Dr. D. J. Cárdenas Morales (Universidad Autónoma de Madrid)
Contribution: researcher
Date: 02/01/2008 - 11/30/2010 Funding: 104000 €

- "*Desarrollo de dispositivos electroluminiscentes de bajo coste basados en complejos de Cu(I)"*.
CCG07-UAM-PPQ-1695
Funding entity: CAM-UAM
Principal Investigator: M. E. Buñuel Magdalena (Universidad Autónoma de Madrid)
Contribution: researcher
Date: 01/01/2008 - 12/31/2008 Funding: 23000 €

- "*Diseño, síntesis y evaluación de nuevos dispositivos en electrónica molecular basados en el carbono"*. FQM-1726
Funding entity: Proyecto de Excelencia de la Junta de Andalucía
Principal Investigator: Dr. Juan Manuel Cuerva Carvajal (Universidad de Granada)
Contribution: researcher
Date: 2007- 2009 Funding: 168000 €

- "*Nuevo mecanismo de transferencia formal de electrones por intercambio de átomos de H mediado por agua"*. Programa EXPLORA-INGENIO CTQ2006-26281-E/BQU
Funding entity: Ministerio de Educación y Ciencia
Principal Investigator: Diego J. Cárdenas Morales (Universidad Autónoma de Madrid)
Date: : 01/01/2007-12/31/2007 Funding: 35500 €

- "*Síntesis de complejos organometálicos electro-fosforescentes emisores de luz blanca"*.
CCG06-UAM/PPQ-0132
Funding entity: CAM-UAM
Principal Investigator: Diego J. Cárdenas Morales (Universidad Autónoma de Madrid)
Contribution: researcher
Date: : 01/01/2007-12/31/2007 Funding: 16000 €

- "*Nuevas reacciones organometálicas de organoboranos y organoestannanos. Aplicaciones sintéticas"*. CTQ2004-02040/BQU
Funding entity: Ministerio de Educación y Ciencia
Principal Investigator: Diego J. Cárdenas Morales (Universidad Autónoma de Madrid)

Contribution: researcher
Date: : 01/01/2005 – 12/31/2007 Funding: 62200 €

- "Modelización de mecanismos de formación y estabilización de nuevos materiales: derivados de fullerenos y nanotubos con defectos*"*. GR/MAT/0083/2004
Funding entity: Comunidad Autónoma de Madrid
Principal Investigator: Manuel Alcamí Pertejo (Universidad Autónoma de Madrid)
Contribution: researcher
Date: 01/01/2004 - 12/31/2004

- "Fragmentos de fullerenos: síntesis de procesos de ciclación*"*. 07N/0047/2002
Funding entity: Comunidad Autónoma de Madrid
Principal Investigator: Antonio M. Echavarren Pablos (Universidad Autónoma de Madrid)
Contribution: researcher
Date: : 01/01/2003- 12/31/2004

- "Analgésicos no opioides potentes análogos de epibatidina*"*. FEDER, 2FD97-153007N/0047/2002
Funding entity: EEC
Principal Investigator: Alberto Avenoza Aznar (Universidad de la Rioja)
Contribution: researcher
Date: : 01/01/2000- 12/31/2001: Funding:

- "Síntesis asimétrica de aminoácidos no-proteinogénicos y su incorporación en pequeños péptidos*"*. P22/98
Funding entity: D.G.E.S
Principal Investigator: Alberto Avenoza Aznar (Universidad de la Rioja)
Contribution: researcher
Date: 10/01/1998 - 09/30/2001

- "Síntesis asimétrica de aminoácidos no-proteinogénicos y su incorporación en pequeños péptidos*"*. PB97-0998
Funding entity: DGA
Principal Investigator: Carlos Cativiela Marín (Universidad de Zaragoza)
Contribution: researcher
Date: 1999 - 2001

- "*Asymmetric synthesis of α-amino acids"*.
Funding entity: EPSRC
Principal Investigator: Stephen G. Davies (University of Oxford)
Contribution: researcher
Date: 10/01/96- 09/30/98

- "*Asymmetric synthesis of α-amino acids"*.
Funding entity: EPSRC
Principal Investigator: Stephen G. Davies (University of Oxford)
Contribution: researcher
Date: 09/01/94 - 08/31/97

- "*Síntesis asimétrica de α-aminoácidos-α,α-disustituidos"*. PB94-0578
Funding entity: D.G.I.C.Y.T.
Principal Investigator: Carlos Cativiela Marín (Universidad de Zaragoza)
Contribution: researcher
Date: 07/01/1995 - 07/01/1998

- "*Síntesis de nuevos derivados quirales de dideshidroaminoácidos y estudio de su reactividad aplicada a la síntesis asimétrica de α-aminoácidos"*. PB91-0696
Funding entity: D.G.I.C.Y.T.
Principal Investigator: Carlos Cativiela Marín (Universidad de Zaragoza)

Contribution: researcher
Date: 06/22/1992 - 06/22/1995

C.6. Participation in Research Contracts

"*Contrato de cesión de material con potencial actividad biológica para su posterior análisis entre la universidad de Zaragoza y laboratorios del Dr. Esteve, S.A*".
Funding entity: Laboratorios del Dr. Esteve, S.A.
Participating entities: Laboratorios del Dr. Esteve, S.A. y Universidad de Zaragoza
Date: 2005-2007. Principal Investigator: Dr. Carlos Cativiela Marín

C. 7. Membership and activities in professional associations

Member of the Real Sociedad Española de Química from May 2003.

C.8. Awards

- Extraordinary Degree Award from Universidad de Zaragoza. 1991/92.
- Excellence Research Work Award from Universidad de Granada for, 20-04-2010. 2009 Edition.

C.9. Grants and fellowships

- Introduction to Research from Departamento de Post-Grado y Especialización CSIC. Instituto de Ciencia de Materiales de Aragón e Instituto de Ciencia de Materiales de Barcelona (01-01-19991/12-31-1992).

- Predoctoral fellowship. Diputación General de Aragón. Universidad de Zaragoza (1992-96).

- Postdoctoral fellowship. Ministerio de Educación y Cultura. Programa de Formación de Personal Investigador en el Extranjero, subprograma de becas general en el extranjero. Oxford University (1997-1998).

- Posdoctoral fellowship. Marie Curie Program from EEC. University of Oxford (1998-99).

Part D. COURSES TAUGHT AND OTHER SERVICES PROVIDED TO STUDENTS AND THE HOME INSTITUTION

D.1. Courses taught

- Undergraduate studies

From incorporation to the home institution several subjects have been taught. Among the most relevant courses are:
"*Organic Chemistry*" 2nd level, "*Advanced Organic Chemistry*" 3rd level, "*Science of Materials*" 4th level, Chemistry Degree; "*Chemistry*" 1st level, Biology Degree; "*Organic Chemistry*" 1st level, Biochemistry Degree.

- Postgraduate studies

Master Degree: Máster en Química Orgánica, Facultad de Ciencias-Universidad Autónoma de Madrid. Subjects:

"*Catalytic Processes in Organic Chemistry*", 2015-16 and 2016-17.
"*Synthetic applications of organometallic compounds*", 2009-10 and 2010-11.

D.2. Supervised Doctoral Thesis

Number of thesis supervised: a total of 8 PhD, 7 of them at the home institution, and 2 more Doctoral Thesis under current supervision.

- "*Reacciones de acoplamiento de electrófilos C(sp^3) con haluros de alquilmagnesio y alquilzinc catalizadas por Ni*" Rita Soler Yanes. Universidad Autónoma de Madrid. Facultad de Ciencias. December 2015.

- "*Síntesis de alil- y alquenilboronatos por reacciones de carboboración catalizada por Pd*" Ruth López Durán. Universidad Autónoma de Madrid. Facultad de Ciencias. January 2015.

- "*Acoplamientos arilo-alquilo y alquilo-alquilo catalizados por Ni y Fe*"
Manuel Guisán Ceinos. Universidad Autónoma de Madrid. Facultad de Ciencias. June, 2013.

- "*Síntesis y propiedades ópticas de complejos de Pt, Au, Ir y Cu*" Rebeca Muñoz Rodríguez. Universidad Autónoma de Madrid. Facultad de Ciencias. December, 2012. .

- "*Síntesis de alquil y alilboronatos por ciclación borilativa de compuestos poliinsaturados catalizada por Pd y Pt*" Virtudes Pardo Rodríguez. Universidad Autónoma de Madrid. Facultad de Ciencias. October, 2012.

- "*Pd-Catalyzed Borylative Cyclization Reactions of Polyunsaturated Compounds. Synthesis of Alkyl- and Allylboronates*" Juan Marco Martínez. Universidad Autónoma de Madrid. Facultad de Ciencias. March, 2010.

- "*Novel Ni-Catalyzed Cross-Coupling and Cascade Cyclization and Coupling Reactions for the Formation of C-C Alkyl Bonds*" Vilas B. Phapale. Universidad Autónoma de Madrid. Facultad de Ciencias. December, 2009.

- "*Síntesis de prolinas β-sustituidas con esqueleto de 7-azanorbornano en forma Enantiopura*"
Ana M. Gil Ferrás. Universidad de Zaragoza. Facultad de Ciencias. April, 2005.

D.3. Master and Grade Thesis supervised

- Master Thesis
"Reacciones catalizadas por Fe para la formación de enlaces C-C y C-B". Juan Carlos Nieto Carmona, Máster en Química Orgánica. UAM, F. de Ciencias, 2016-17.

- Master Tutorials
Máster Interuniversitario en Química Orgánica. UAM, F. de Ciencias.
  - Rita Soler Yanes, 2010-12.
  - Ruth López Durán, 2008-10.

- Grade Thesis
Degree on Chemistry. UAM, F. de Ciencias.
- "Reacciones de ciclación-acoplamiento catalizadas por Fe" Juan Carlos Nieto Carmona, 2015-16.
- "Ciclación borilativa de compuestos poliinsaturados catalizada por níquel" Raúl San Román Gallego Casilda, 2016-17.

● Diploma de Estudios Avanzados

-“Síntesis y caracterización fotofísica de complejos de Pt(II) ciclometalados con ligando C^N^N”. R. Muñoz Rodríguez. UAM, F. de Ciencias, 2009.

-“Ciclación borilativa de eninos y enalenos catalizada por paladio”. V. Pardo Rodríguez. UAM, F. de Ciencias, 2009.

-“Complejos catiónicos de alilpaladio como posibles intermedios en reacciones catalíticas”. M. García Iglesias. UAM, F. de Ciencias, 2007.

-“Ciclación borilativa de 1,6-eninos catalizada por Paladio”. J. Marco Martínez. UAM, F. de Ciencias, 2007.

-“Ni-Catalyzed Cascade Formation of C(sp^3)-C(sp^3) Bonds by Cyclization and Cross-Coupling of Iodoalkanes with Alkylzinc Halides”. V. B. Phapale. UAM, F. de Ciencias, 2007.

D.4. Participation in teaching projects

“*Química para Biología en OCW-UAM”*. ISBN-10: 84-695-7101; ISBN-13: 978-84-695-7101-9. Project: “Creación de cursos de grado en Open Course Ware (OCW) y Moodle” Ref: C-L2/8. Program: Desarrollo de las Enseñanzas UAM 2010. Funding entity: Universidad Autónoma de Madrid, 2010.

Part E. COMMUNITY SERVICES

● Academic Secretary of the Departamento de Química Orgánica (Fac. Ciencias-Universidad Autónoma de Madrid). From 09-02-2014 to the present.

● Coordination on the subject “*Catalytic Processes in Organic Chemistry*" Máster en Química Orgánica, Facultad de Ciencias-Universidad Autónoma de Madrid, 2015/16 and 2016/17.

Fecha del CVA	11/02/2022

Parte A. DATOS PERSONALES

Nombre y apellidos	Antonio Martínez Rodríguez		
Núm. identificación del investigador		Researcher ID	H-6710-2014
		Código Orcid	0000-0001-8880-211X

A.1. Situación profesional actual

Organismo	Universidad de Granada		
Dpto./Centro	Dpto. Química Orgánica / Facultad de Ciencias		
Dirección	Facultad de Ciencias. Fuentenueva, s/n, 18071		
Categoría profesional	Catedrático de Universidad	Fecha inicio	27/12/2018
Espec. cód. UNESCO	2306.07; 2306.15; 2306.16; 2306.18; 2306.90; 2306.91; 2306.92		
Palabras clave	Terpenos; reactividad; bioactividad; mecanismo; elucidación		

A.2. Formación académica *(título, institución, fecha)*

Licenciatura/Grado/Doctorado	Universidad	Año
Lcdo. en Ciencias Químicas	Universidad de Granada	1981
Doctor en Ciencias Químicas	Universidad de Granada	1986

A.3. Indicadores generales de calidad de la producción científica

Sexenios de investigación acreditados: 4
Fecha del último sexenio: 31/12/2015
Número de Tesis Doctorales Dirigidas: 4
Citas Totales: 890; Promedio Citas/año: 56 (últimos 5 años)
Publicaciones: 70; Primer Cuartil: 46
Índice h: 19
Otros:
- Tramos docentes: 6
- Tramos Autonómicos: 5
- 60 Asistencias a Congresos nacionales e internacionales tipo poster o comunicación oral

Parte B. RESUMEN LIBRE DEL CURRÍCULUM *(máximo 3500 caracteres, incluyendo espacios en blanco)*

El Prof. Dr. ANTONIO MARTÍNEZ RODRÍGUEZ, es Doctor en Ciencias Químicas por la Universidad de Granada desde 1986 cuando leyó su Tesis Doctoral en el Grupo de Investigación “Biotecnología y Química de Productos Naturales” (grupo FQM-139 del PAIDI de la Junta de Andalucía) dirigido por el Profesor Dr. Andrés García-Granados López de Hierro, en el campo de los Productos Naturales con la que obtuvo la calificación de “Sobresaliente Cum Laude”, y le concedieron el Premio Extraordinario de Doctorado. Desde el año 1983 está vinculado al Departamento de Química Orgánica de la Universidad de Granada. En 1989 obtuvo la Plaza de Profesor Titular de Universidad, y desde entonces viene ejerciendo de Profesor-Investigador. Ha desarrollado su investigación en el área de los Productos Naturales tomando como materias primas la flora de la región andaluza y los residuos de molturación de la aceituna. Su trabajo experimental ha incidido fundamentalmente en varias líneas de investigación como son: estudio fitoquímico de diversas especies de Sideritis, estudios de biotransformación de compuestos terpénicos aislados de plantas andaluzas, síntesis biomiméticas de sesquiterpenos y estudio estructural y de reactividad de triterpenos pentacíclicos naturales y sus derivados. Como consecuencia de esta dilatada trayectoria docente e investigadora el Dr. MARTÍNEZ tiene acreditados 4 tramos de investigación, 6 tramos docentes y 5 tramos autonómicos, y ha intervenido de forma continuada desde el año 1983, como investigador en un total de 15 Proyectos de Investigación I+D. Ha publicado un total de 70 publicaciones en revistas internacionales de medio y alto índice de impacto, ha presentado 60 comunicaciones a distintos Congresos nacionales e internacionales, ha participado en 14 Patentes titularizadas por la Universidad de Granada, ha dirigido 4 Tesis Doctorales, 11 Tesinas de Licenciatura, 2 trabajos Fin de Master y 9

trabajos Fin de Grado. En lo que respecta a la actividad docente, el Dr. MARTÍNEZ ha impartido docencia universitaria en enseñanzas universitarias regladas de forma continua desde el año 1983 con dedicación completa en una gran variedad de asignaturas de primer y segundo ciclo en titulaciones diversas como: Licenciado en Ciencias Químicas, Grado en Química. También ha participado en programas de doctorado y másteres como: Doctorado en Química, Doctorado en Biotecnología y Máster Universitario en Química.

Parte C. MÉRITOS MÁS RELEVANTES *(ordenados por tipología)*

C.1. Publicaciones

1.- Jannus, J., Medina-O´Donnell, M., Neubrand, V.E., Marín, M., Saez-Lara, M.J., Sepulveda, M.R., Rufino-Palomares, E.R., Martínez, A., Lupiañez, J.A., Parra, A., Rivas, f., Reyes-Zurita, F.J., 2021. Efficient in vitro and in vivo anti-inflammatory activity of a diamine-pegylated oleanolic acid derivative. International Journal of Molecular Sciences, 22, 8158-8180.
DOI: org/10.3390/ijms22158158
2.- Vega-Granados, K., Medina-O´Donnell, M., Rivas, F., Reyes-Zurita, F.J.,Martínez, A., Alvarez de Cienfuegos, L., Lupiañez, J. A., Parra, A. 2021. synthesis and biological activity of triterpene−coumarin conjugates. Journal of Natural Products, 84, 1587-1597
DOI: org/10.1021/acs.jnatprod.1c00128
3.- Medina-O´Donnell, M., Rivas, F., Reyes-Zurita, F.J., Cano-Muñoz, M., Martínez, A., Lupiañez, J. A., Parra, 2019, Oleanolic acid derivatives as potential inhibitors of hiv-1 protease. Journal of Natural Products, 82, 2886-2896. DOI: .org/10.1016/j.saa.2019.02.014
4.- Molina-Bolivar, J.A., Galisteo-González, F., Carnero Ruiz, C., Medina-O´Donnell, M., Martínez, A., Parra, A., 2019. Maslinic acid conjugate with 7-amino-4-methylcoumarin as probe to monitor the temperature dependent conformational changes of human serum albumin by fret. Spectrochimica Acta part A: Molecular and Biomolecular Spectroscopy, 214, 161-169. DOI: org/10.1016/j.saa.2019.02.014.
5.- Medina-O´Donnell, M., Rivas, F., Reyes-Zurita, F.J.,Martínez, A., Lupiañez, J. A., Parra, A. 2018, Diamine and pegylated-diamine conjugates of triterpenic acids as potential anticancer agents. European Journal Of Medicinal Chemistry, 148, 325-336
DOI: org/10.1016/j.ejmech.2018.02.044
6- Fernández-Pastor, I., Martínez-García, M., Medina-O´Donnell, M, Rivas, F., Martínez, A., Pérez-Victoria, J.M., Parra, A., 2018. semisynthesis of ω-hydroxyalkylcarbonate derivatives of hydroxytyrosol as antitrypanosome agents, Journal of Natural Products, 81, 2075-2082. DOI: 10.1021/acs.jnatprod.8b00431.
7.- Medina-O´Donnell, M., Rivas, F., Reyes-Zurita, F.J.,Martínez, A., Galisteo-González, F., Lupiañez, J. A., Parra, A. 2017. Synthesis and in vitro antiproliferative evaluation of pegylated triterpene acids. European Journal Of Medicinal Chemistry, 120, 25-40
doi.org/10.1016/j.fitote.2017.05.006
8.- Fernández-Pastor, I, Fernández-Hernández, A., Pérez Criado, S., Rivas, F., Martínez, A., García-Granados, A., Parra, A. 2017. Microwave-assisted extraction vs. soxhlet extraction to determine triterpene acids in olive skins. Journal of Separation Science, 40 (5), 1209-1217
DOI: 10.1002/jssc.201601130
9.-. Rivas, F.; Medina-O'Donnell, M.; Reyes-Zurita, F.J.; Martinez, A.; Martin-Fonseca, S.; Garcia-Granados, A.; Ferrer-Martín, R. M.; Lupiañez, J.A.; Parra; 2016. Semi-synthesis and antiproliferative evaluation of PEGylated pentacyclic triterpenes. European Journal Of Medicinal Chemistry. 118: 64-78. DOI: org/10.1016/j.ejmech.2016.04.016.
10. Basso, A. V.; Nicotra, V. E.; Parra, A.; Martinez, A.; Fernández-Vivas, A.. 2016. Biotransformation of Salpichrolides A, C, and G by Three Filamentous Fungi. Journal of Natural Products. 79: 1658-1667. DOI: 10.1021/acs.jnatprod.6b00310.

C.2. Proyectos

1.-Título del proyecto: Aprovechamiento de residuos de la industria oleica para la obtención de compuestos bioactivos
Referencia: B1-FQM-217-UGR18
Entidad financiadora:. Junta de Andalucia. Proyectos de I+D+I FEDER Andalucía 2014-2020
Duración, 2020-2021 Cuantía de la subvención: 6.300 €
Investigador responsable: Francisco Rivas Sánchez
Número de investigadores participantes: 4
2.-Título del proyecto: Incremento de la Biodisponibilidad y la Actividad Biológica de Ácido Maslínico e Hidroxitirosol, dos Compuestos Procedentes de los Residuos de Molturación de la Aceituna, por Acilación y Pegilación mediante Técnicas de Síntesis Orgánica en Fase Sólida.
Referencia:P11-FQM07372.
Entidad financiadora: Junta de Andalucia
Duración: 2013- 2017.
Cuantía de la subvención: 176.228 €
Investigador Principal: Andrés Parra Sánchez
Número de investigadores participantes: 8
3.-Título del proyecto: Semisíntesis en Fase Sólida y por Vía Microbiológica de Derivados de Ácidos Triterpénicos Naturales como Agentes Anti-HIV, y Reguladores de la Apoptosis y de la Proliferación Celular. Estudio SAR.
Referencia: CTQ2009-13898.
Entidad financiadora: Ministerio de Ciencia e Innovación
Duración: 2010-2013.
Cuantía de la subvención: 133.100 €
Investigador Principal: Andrés García-Granados López De Hierro
Función: Investigador
Número de investigadores participantes: 6
4.-Título del proyecto: Cálculo Molecular de la Interacción de Ácido Maslínico con Serín Proteasas y BCL-2/BAX como Moléculas Reguladoras de Apoptosis: Diseño, Semisíntesis de Derivados y su Evaluación Biológica.
Referencia: CTQ2006-15649-C02-01.
Entidad financiadora: D.G.I. – S.D.P.I
Duración: 2006-2009.
Cuantía de la subvención: 145.200 €
Investigador Principal: Andrés García-Granados López De Hierro
Función: Investigador
Número de investigadores participantes: 9
5.-Título del Proyecto de Excelencia: Diseño, Síntesis y Evaluación de Inhibidores de Serín Proteasas a partir de Ácido Maslínico y sus Derivados.
Referencia: P05-FQ-1228.
Entidad financiadora: Junta de Andalucia
Duración: 2006- 2009
Cuantía de la subvención: 115.000 €
Investigador Principal: Andrés García-Granados López De Hierro
Función: Investigador
Número de investigadores participantes: 9
6. Título del Proyecto: Estudio Fitoquímico de Sideritis Marroquíes y Biotransformación de los Terpenos Aislados.
Referencia: AM25/04
Entidad financiadora: Junta de Andalucia.
Duración: 2005-2006.
Cuantía de la subvención: 24.000 €
Investigador Principal: Antonio Martínez Rodríguez
Número de investigadores participantes: 6

C.3. Contratos

C.4. Patentes

1. Título: Stevioside extraction and purification from Stevia by using calcium bicarbonate
Inventores: Garcia-Granados Lopez de Hierro, A.; Rosua Campos, J. L.; Martinez Rodriguez, A.; Serrano Bernardo, F.
Referencia: WO2012089861
Fecha de aplicación: 07/2011

2. Título: Use of Maslinic Acid in Treatment of Inflammatory and Neurogenic Pain
Inventores: Nieto Lopez, F.R.; Baeyens Cabrera, J.M.; Garcia-Granados Lopez de Hierro, A.; Entrena Fernandez, J.M.; Cobos del Moral, E.J.; Martinez Rodriguez, A.; Parra Sanchez, A.; Rivas Sanchez, F.
Referencia: WO2011015692
Fecha de aplicación: 02/2011

3. Título: Method for Preparation of Products having High Triterpene Content
Inventores: Garcia-Granados Lopez de Hierro, A.; Parra Sanchez, A.; Martinez Rodriguez, A.; Rivas Sanchez, F.
Referencia: WO 2010086480
Fecha de aplicación: 01/2010

4. Título: Uso del ácido maslínico para el tratamiento de patologías y sus síntomas mediante la inhibición de cox-2
Inventores: Prados Osuna, J.; Garcia-Granados Lopez de Hierro, A.; Parra Sanchez, A.; Martinez Rodriguez, A.
Referencia: WO 2009121992
Fecha de aplicación: 03/2009.

5. Título: Use of Maslinic Acid as Inhibitor of Serine Proteases for Treatment of Diseases Caused by Cryptosporidium Parasites
Inventores: Garcia-Granados Lopez de Hierro, A.; Parra Sanchez, A., Martínez Rodriguez, A., Rivas Sanchez, F., Osuna, A., Mascaró, C., Rodríguez, N., Kalifa, L.
Referencia: ES 2131467
Fecha de aplicación: 05/1997

6. Título: Aplicación de ent-11β,16-dihidroxi-18-nor-4α-carboximetil óxido de manoilo como inhibidor de la adenilatociclasa.
Inventores: Garcia-Granados Lopez de Hierro, A.; Martínez Rodriguez, A., Arias Peñalver, J.M. y Flavia, M
Referencia: ES 2065843
Fecha de aplicación: 03/1993

7. Título: Aplicación de ent-3β,6β,12β-trihidroxi-13-epi-óxido de manoilo como activador de la adenilatociclasa.
Inventores:Garcia-Granados Lopez de Hierro,A.; Martínez Rodriguez, A., Rivas,F.,y Flavia, M
Referencia: ES 2065842
Fecha de aplicación: 03/1993

MINISTERIO DE CIENCIA E INNOVACIÓN

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CURRICULUM VITAE (CVA)

Part A. PERSONAL INFORMATION

CV date	25-04-2022

First name	José		
Family name	Berná Cánovas		
E-mail	ppberna@um.es	URL Web: https://gosumu.wixsite.com/socumu-lab	
Open Researcher and Contributor ID (ORCID)	0000-0001-7775-3703		

A.1. Current position

Position	Associate Professor
Initial date	01-12-13
Institution	*University of Murcia*
Department/Centre	*Department of Organic Chemistry / Faculty of Chemsitry*
Country	Spain
Keywords	*self-assembly, asymmetric synthesis, macrobicycles, catalysis, rotaxanes, hydrogen bond, template synthesis, molecular recognitio photochemistry, molecular machines, nanotechnology.*

A.2. Previous positions (research activity interruptions)

Period	Position/Institution/Country/Cause of the interruption
01/12/08-30/11/13	Ramon y Cajal Researcher/University of Murcia/Spain
15/03/07-30/11/08	Research Associate/University of Murcia/Spain
01/04/04-13/03/07	Post-doctoral Researcher/University of Edinburgh/United Kingdom
21/11/03-20/02/04	Research Associate/University of Murcia/Spain
05/05/03-17/07/03	Researcher/Rovial Química S.L.(Murcia)/Spain
15/05/98-31/12/02	PhD Student/University of Murcia/Spain

A.3. Education

PhD, Graduate Degree	University/Country	Year
PhD in Chemistry	University of Murcia/Spain	2003
MSc (Chemical Science)	University of Murcia/Spain	1998
BSc (Chemical Science)	University of Murcia/Spain	1997

Part B. CV SUMMARY *(max. 5000 characters, including spaces)*

José Berná (JB) obtained his degree in Chemical Sciences from the University of Murcia (1997). His research career started the same year in the Synthetic Organic Chemistry Group obtaining his PhD degree in 2003, with the support of an FPU Fellowship from the Spanish Ministry of Education and Science (MEC). From the research work carried out during his Thesis it is worth mentioning the publication of eight research articles in prestigious peer-reviewed journals and three chapters in the encyclopedia Science of Synthesis (Thieme) dedicated to organophosphorus compounds. During this period, he completed a couple of stays in the Chemistry Dept. of the Kings College London in London (UK, 1999) and the Uppsala University (Sweden, 2000). The scientific knowledge, experimental techniques and attitudes acquired in his predoctoral stage allowed him to join, as a postdoctoral researcher (MEC postdoctoral fellowship, 2004-2007), to the research group of Prof. David A. Leigh (Descartes Prize for European Research and Feynman Prize for Nanotechnology) at the U. of Edinburgh (UK). His research activity led to eight articles highlighting a work published in the journal Nature Materials on the study of macroscopic transport using synthetic molecular machines. His work on this subject has allowed him to be actively involved in all aspects related to the synthesis, characterization and photochemical behavior of these systems and to collaborate with specialist groups in other fields such as materials science. After his postdoctoral stage in the United Kingdom, he worked on the (supra)molecular assembly of organophosphorous compounds. Within the Ramón y Cajal Research Program (2008-2013) and, now as Associated Professor, he works with mechanically interlocked molecules including some collaborations with national and international groups. During this period, JB has contributed with more than 30 articles related to research on

mechanically interlocked molecules thanks to the financial support of two regional and four national projects partially related to the current application. This funding has allowed the permanent establishment of this line of research in the Synthetic Organic Chemistry research group at the University of Murcia. He is co-author of 92 publications including reviews (5), conference proceedings (12) and book chapters (4) and 71 research articles in highly-reputed international journals. His work has been the subject of 110 communications presented in national (26) and international (82) congresses, several of them oral (19) including invited lectures (10). Several publications have been highlighted or selected in specialized journals (15), digital media (6), in national and international press (6), main covers (3) and in a comprehensive workbook on the mechanical bond. He has participated in 14 R&D projects financed by public entities (2 international, 7 national and 5 regional), seven of them as principal researcher. JB is a regular reviewer of research articles in international journals by Wiley, RSC, ACS, Springer, Taylor & Francis, MDPI and Bentham Sc. (see Publons). He has also participated as expert evaluator of research proposals for different funding agencies at national (ANEP, now AEI) and international (United Kingdom, France, Netherlands, Estonia, Austria) levels. JB has been included in 18 Teaching Plans of the Dept. of Organic Chemistry of the Univ. Murcia. Supervision activity of Postdoctoral fellows (2), PhD Students (4; 2 Doctoral Thesis completed including 1 Extraordinary Doctoral Award), MSc Students (8) and Final-year degree students (20). Dr. Berna is also involved in management activities both at Univ. Murcia (current Head of the Department of Organic Chemistry) and at the Spanish Royal Chemical Society (Region of Murcia). Researcher ID: C-9334-2011; SCOPUS ID: 8941943300; *ResearchGate profile*; *Google Scholar profile*

Part C. RELEVANT MERITS

C.1. Publications

Angew. Chem. Int. Ed. (**7**), Chem. Commun. (**6**), Chem. Sci. (**5**), J. Am. Chem. Soc. (**4**), Tetrahedron Lett. (**4**); Eur. J. Org. Chem. (**3**), IUBMB Life (**3**), J. Mol. Catal. B Enzym. (**3**), Org. Lett. (**3**), Tetrahedron (**3**); Bioorg. Med. Chem. (**2**), Chem. Eur. J. (**2**), Int. J. Biological Macromolecules (**2**), J. Org. Chem. (**2**), Org. Biomol. Chem. (**2**), Org. Chem. Front. (**2**), PloS One (**2**), React. Kinet. Mech. Cat. (**2**), Antiviral Res. (**1**), ACS Catal. (**1**), An. Quim. (**1**), Biochem. Biophys. Res. Commun. (**1**), Biochim. Biophys. Acta - Proteins Proteomics (**1**), Biosci. Biotechnol. Biochem. (**1**), Chem (**1**), ChemPhysChem (**1**), Cryst. Growth Des. (**1**), J. Agric. Food Chem. (**1**), J. Chem. Phys. (**1**), J. Dermatol. Sci. (**1**), J. Electron Spectrosc. Relat Phenom (**1**); Molecules (**1**), Pure Appl. Chem. (**1**), Nat Mater (**1**), New J. Chem. (**1**), Phys. Mag (**1**), Synlett (**1**).

C.1.1 Saura-Sanmartin, A.; Martinez-Cuezva, A.; Marin-Luna, M.; Bautista, D.; M. Alajarin, J. Berna. Effective Encapsulation of C60 by Metal–Organic Frameworks with Polyamide Macrocyclic Linkers. *Angew. Chem. Int. Ed.* **2021**, *60*, 10814–10819. In this article, we report the preparation of robust copper(II)- and zinc(II)-based metal–organic frameworks using benzylic amide macrocycles as linkers. Their use as host materials for the selective recognition of fullerenes was also evaluated.

C.1.2 A. Saura-Sanmartin, A. Martinez-Cuezva, M. Marin-Luna, D. Bautista, M. R. B. Marzari, M. A. P. Martins, M. Alajarin, J. Berna. Copper-Linked Rotaxanes for the Building of Photoresponsive Metal Organic Frameworks with Controlled Cargo Delivery, *J. Am. Chem. Soc.,* **2020**, *142*, 13442-13449. In this paper we describe the preparation of a photoresponsive metal–organic framework by using an [2]rotaxane as linker and copper(II) ions as metal nodes. SCXRD analysis disclosed the formation of stacked 2D rhombohedral grids forming channels decorated with the interlocked alkenyl threads. By VT SS-NMR, we demonstrated that the geometry of the olefinic axis determined the obtention of materials with different local dynamics. Furthermore, the usefulness of these mechanized materials as molecular dosing containers was shown.

C.1.3 C. Lopez-Leonardo, A. Martinez-Cuezva, D. Bautista, M. Alajarin, J. Berna. Homo and heteroassembly of amide-based [2]rotaxanes using α,α′-dimethyl-*p*-xylylenediamines, *Chem. Comm.,* **2019**, *55*, 6787-6790. In this publication, the formation of [2]rotaxanes via a fumaramide-templated clipping reaction using α,α′-dimethyl-p-xylylenediamines is described. This process selectively provides two out of seven potential interlocked isomers due to a noticeable effect of the methyl groups on the in/out disposition of the amide carbonyl groups.

C.1.4 S. Amirjalayer, A. Martinez-Cuezva, J. Berna, S. Woutersen, W. J. Buma. Photo-induced Pedalo-type Motion in an Azodicarboxamide-based Molecular Switch, *Angew. Chem. Int. Ed.* **2018**, 57, 1792-1796. In this article describe a switch that has azodicarboxamide as its photo-triggerable element. Time-resolved UV-pump/IR probe spectroscopy in combination with quantum-chemical calculations shows that the azodicarboxamide functionality undergoes a photoinduced pedalo-type motion.

C.1.5 A. Martínez-Cuezva, A. Saura-Sanmartin, T. Nicolas-García, C. Navarro, R.-A. Orenes, M. Alajarín, J. Berná. Photoswitchable interlocked thiodiglycolamide as a cocatalyst of a chalcogeno-Baylis–Hillman reaction, *Chem. Sci.* **2017**, *8*, 3775-3780. By this research it was found that thiodiglycolamides are effective templates for the formation of new [2]rotaxanes in which the sulfur atom is sterically shielded by the macrocycle. Mechanically interlocked switches with thiodiglycolamide and fumaramide stations were constructed and used as photoreactive catalysts in diastereoselective chalcogen-Baylis-Hillman processes.

C.1.6 A. Martínez-Cuezva, C. López-Leonardo, D. Bautista, M. Alajarín, J. Berná. Stereocontrolled Synthesis of *β*-Lactams within [2]Rotaxanes: Showcasing the Chemical Consequences of the Mechanical Bond, *J. Am. Chem. Soc.* **2016**, *138*, 8726-8729. The activating role of the tetraamide-type macrocycle in the diastereoselective transformation of N-benzylfumaramide thread into beta-lactams, by means of rare 4-exo-trig processes, within the corresponding [2]rotaxanes, is described and rationalized.

C.1.7 A. Martínez-Cuezva, A. Pastor; G. Cioncolini, R. A. Orenes, M. Alajarin, M. D. Symes, J. Berná. Versatile control of the submolecular motion of di(acylamino)pyridine-based [2]rotaxanes, *Chem. Sci.* **2015**, *6*, 3087-3094. This publication describes the synthesis of a molecular shuttle based on di(acylamine)pyridines. The movement of the ring along the axis can be controlled by several reversible processes: molecular recognition, oxidation/reduction and changes in pH.

C1.8 A. Martínez-Cuezva, J. Berná, R.-A. Orenes, A. Pastor, M. Alajarín. Small-molecule recognition for controlling molecular motion in hydrogen-bond-assembled rotaxanes, *Angew. Chem. Int. Ed.* **2014**, *53*, 6762–6767. The use of 2,6-diacylaminopyrines as templates for the formation of hydrogen-bonded [2]rotaxanes is described. A system capable of switching the dynamics of translational ring motion by competitive molecular recognition with different molecules (barbital, hexylthymine,...) in mechanically interlocked shuttles having two 2,6-diacylaminopyridine units is presented.

C1.9 J. Berná, M. Alajarín, C. Marín-Rodríguez, C. Franco-Pujante. Redox divergent conversion of a [2]rotaxane into two distinct degenerate partners with different shuttling dynamics, *Chem. Sci.* **2012**, *3*, 2314-2320. Translational ring motion was studied in a [2] rotaxane with a benzyl amide macrocycle and two azo and hydrazodicarboxamide fragments as binding sites. By means of a controllable switching it is possible to take this system to three states that differ in the ring shuttling rate: a) the fastest when the oxidation level is the lowest in the system; b) moderate when the oxidation level is the highest in the system; and c) virtually null when the system is in an intermediate oxidation state.

C1.10 J. Berná, M. Alajarin, R.-A. Orenes. Azodicarboxamides as template binding motifs for the building of hydrogen-bonded molecular shuttles, *J. Am. Chem. Soc.* **2010**, *132*, 10741–10747. In this work we show that azodicarboxamides are able to act as templates for the assembly of [2]-rotaxanes. The chemical reduction of the azo group reduces the affinity of the binding site for the ring. This key element has allowed the preparation of shuttles that operate through a reversible azo/hydrazo exchange. These shuttles are capable of operating in two ways: i) in an intermittent mode and ii) in a continuous mode through esterification in which the shuttle acts as an organocatalyst.

C.2. Congresses *[Oral Presentation (OP), Invited Lecture (IL), Poster (P)]*

C.2.1 OP. Macroscopic Motion from a Molecular Machine. J. Berná, E. M. Pérez, D. A. Leigh, S. Mendoza, M. Lubomska, P. Rudolf. 229th ACS National Meeting, San Diego,CA(USA), 13/3/2005.

C.2.2 OP. Intercambio de Componentes Tripodales. J. Berná, M. Alajarín, C. López-Leonardo, J. W. Steed. V Simposio de Investigadores Jóvenes. Real Sociedad Española de Química - Sigma Aldrich. Santiago de Compostela. 09-12/11/2008.
C.2.3 IL. Azo and hydrazo compounds: new templates for the preparation of [2]rotaxanes and molecular shuttles. J. Berná, C. Franco, M. Alajarín. V REQOMED. Cadiz. 08/06/11–11/06/11
C.2.4 OP. Novel Molecular Recognition-Based Method for Taming the Molecular Motion in Hydrogen-Bonded Rotaxanes. J. Berná, A. M. Cuezva, R.-A. Orenes, A. Pastor, M. Alajarín. XXV Reunión Bienal de Química Orgánica. Alicante. 4-6/6/2014
C.2.5 IL. Novel templates for the building of amide-based molecular shuttles. J. Berná, M. Alajarín. WS on Molecular Rotors, Motors, and Switches. Telluride, CO (USA), 30/6-4/7/2014.
C.2.6 P. Photoinduced Delivery in Mechanized Silica with Hydrogen-Bonded [2]Rotaxane Gated Mesopores. J. Berná, S. Valero-Moya, A. Martínez-Cuezva, M. Alajarín. ICREA Conference on Functional Nanocontainers. Tarragona. 17-20/10/2016.
C.2.7 OP. Formation of β-lactams with two stereocenters by intramolecular cyclization of fumaramide [2]rotaxanes. J. Berná, A. Martínez-Cuezva, M. Alajarín. VI Brazil-Spain WS on Organic Chemistry. Oviedo. 1-3/10/2018.
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C.2.10 IL. Consequences of the Mechanical Bond of Amide-based Rotaxanes in Organocatalysis. J. Berná. XIV International WS on Sensors and Molecular Recognition. Valencia. 07-08/07/2021.
C.3. Research projects *(PI: principal investigator; R: researcher)*
C.3.1 PID2020-113686GB-I00; *Avances en el estudio del enlace mecánico para la preparación de materiales funcionales entrelazados y reticulares.* MICINN2020, J. Berná / A. Martínez-Cuezva (UMU); 01/09/2021 - 31/08/2024 (169.400 €); PI.
C.3.2 20811/PI/18; *Compuestos Entrelazados para el Ensamblaje de Sistemas Funcionales.* F. Séneca-CARM, J. Berná (UMU); 01/04/2019 - 30/09/2022 (135.700 €); PI.
C.3.3 CTQ2017-87231-P; *Reactividad y Conmutación de Moléculas Mecanizadas*; MICINN2017, J. Berná / A. Pastor (UMU); 01/01/18-31/12/20 (89.540 €); PI.
C.3.4 CTQ2014-56887-P; *Funcionalidad y Síntesis de Moléculas Enlazadas Mecánicamente*; MINECO2014, J. Berná / A. Pastor (UMU); 01/01/15- 31/12/17 (94.380 €); PI.
C.3.5 19240/PI/14; *Cicloadiciones de Ceteniminas Catalizadas por Metales de Transición y Reacciones de Ceteniminas con Carbenos Nucleofílicos y Bencino. Conmutación y Organización Tridimensional de Moléculas Entrelazadas.* F. Séneca-CARM, J. Berná (UMU); 01/07/15-30/06/18 (62.260 €); PI.
C.3.6 CTQ2009-12216; *Diseño y síntesis de nuevas lanzaderas moleculares basadas en amidas enlazadas mediante puentes de hidrogeno*; MICINN2009, J. Berná (UMU); 01/01/10-31/12/10 (10.890€); PI.
C.3.7 08661/PI/08; *Reagrupamientos [1,n]-H en heterocumulenos y preparación de nuevos [2]-rotaxanos y lanzaderas moleculares*; F. Séneca-CARM, M. Alajarín (UMU); 01/01/09-31/12/13 (76.174€); R.
C.3.8 RYC-2008-02647; *Control del movimiento submolecular en máquinas moleculares sintéticas,* MICINN2008, J. Berná (UMU); 01/12/08-30/11/13 (192.480€); PI.
C.4. Technology/Knowledge transfer *(PI: principal investigator; R: researcher)*
C.4.1 ACEDESA; Investigación y desarrollo de sustancias aromáticas; 1998; M. Alajarín (PI).
C.4.2 VILLAPHARMA; Síntesis de Núcleos Heterocíclicos; 2003/04; M. Alajarín (PI).
C.4.3 BRENNTAG QUÍMICA, S.A.U. Análisis y caracterización de compuestos orgánicos; 2019/20; J. Berna (PI).