Prof. Juan Capmany Francoy

Formación académica

- Licenciado en C. Físicas, Universidad Autónoma de Madrid, 1986.
- Doctor en C. Físicas, Universidad Autónoma de Madrid, 1996.

Situación actual

- Catedrático de Universidad, Área de Teoría de la Señal y Comunicaciones, Universidad Miguel Hernández, 2012-presente.

Experiencia en gestión

- Director del Departamento de Ingeniería de Comunicaciones (Universidad Miguel Hernández) Julio 2019-Presente.
- Subdirector del Departamento de Ingeniería de Comunicaciones (Universidad Miguel Hernández) 2015-2018.
- Director del Departamento de Ingeniería de Comunicaciones (Universidad Miguel Hernández) 2011-2015.
- Director en Funciones del Departamento de Ingeniería de Comunicaciones (Universidad Miguel Hernández), 2011.
- Subdirector de la Escuela Politécnica Superior de Elche (Universidad Miguel Hernández), desde el 15 de diciembre de 2002 hasta febrero de 2006.
- Coordinador de la Titulación de Ingeniero Técnico de Telecomunicación, Especialidad en Sistemas de Telecomunicación, en la Escuela Politécnica Superior de Elche (Universidad Miguel Hernández), 2000-2002.
- Director en funciones de la División de Teoría de la Señal y Comunicaciones del Departamento de Física y Arquitectura de Computadores (Universidad Miguel Hernández), 1999-2001.

Experiencia profesional

- Profesor Titular de Universidad, Área de Teoría de la Señal y Comunicaciones, Universidad Miguel Hernández, Dpto. de Ingeniería de Comunicaciones, 06/06/06 a 24/05/12.
- Profesor Titular de Escuela Universitaria, Área de Teoría de la Señal y Comunicaciones, Universidad Miguel Hernández, Dpto. de Física y Arquitectura de Computadores, 17/12/02 a 06/06/06.
- Profesor Titular de Escuela Universitaria Interino, Área de Teoría de la Señal y Comunicaciones, Universidad Miguel Hernández, Dpto. de Física y Arquitectura de Computadores, 24/11/99 a 16/12/02.
- Profesor Asociado, Universidad Complutense de Madrid, Dpto. de Física de los Materiales, 16/02/99 a 23/11/99.
- Becario Postdoctoral de la Comunidad de Madrid, Universidad Autónoma de Madrid, Dpto. de Física de Materiales, 01/12/97 a 23/11/99.
- Profesor Asociado, Universidad Alfonso X El Sabio, Dpto. de Matemáticas y Física Aplicada, 01/09/98 a 12/02/99.
- Becario Postdoctoral, Universidad Autónoma de Madrid, Laboratorio de Crecimiento de Cristales, Dpto. de Física de Materiales, 16/04/97 a 31/12/97.

- Investigador Contratado, Consejo Superior de Investigaciones Científicas, Instituto de Microelectrónica de Madrid, 01/01/95 a 31/03/97.
- Titulado Superior Contratado, Centro de Investigación y Desarrollo de la Armada, Sección de Física Aplicada, Dirección General de Armamento y Material, Ministerio de Defensa, 31/07/87 a 31/12/94.
- Profesor de enseñanza media, Física del C.O.U, Colegio Virgen de Europa, Boadilla del Monte, Madrid, 10 cursos (1988-1999).

Líneas de investigación

- Conversión activa de longitud de onda de imágenes.
- Conversión no lineal de frecuencia óptica para sistemas de comunicaciones ópticas.
- Láseres de estado sólido.
- Espectroscopía láser.

Resumen de la actividad científica

- Número de artículos totales publicados o en prensa: 65 (JCR). Otras con ISBN y revisión por pares: 10.
- Contribuciones a congresos: 70 internacionales, 40 nacionales.
- Número de sexenios: 5 (último tramo concedido: 2014-2019) + 1 de transferencia.
- Patentes-Registros solicitadas/Concedidas: 2/2.
- Índice h: 24 (JCR). Más de 1.500 citas totales en revistas JCR a artículos publicados en revistas JCR.
- 4 Tesis doctorales dirigidas.
- 15 Proyectos de Investigación financiados como investigador responsable, incluyen ámbito regional, Plan Nacional y UE. Otros 11 como miembro del equipo investigador.
- 3 Capítulos de libro de difusión internacional.
- Contratos de investigación con empresas u organismos:13.

Estancias de investigación

- Center for Research and Education in Optics and Lasers (CREOL), University of Central Florida, Orlando, Florida, EEUU, 1999.
- Optisches Institut, Technische Universität Berlin, Berlín, Alemania, 1999.
- Center for Research and Education in Optics and Lasers (CREOL), University of Central Florida, Orlando, Florida, EEUU, 1999.
- Imperial College of Science, Technology and Medicine, University of London, Londres, Reino Unido, 1998.
- Laboratoire de Physico-Chimie des Matériaux Luminiscentes, Unversité Claude Bernard, Lyon, Francia, 1993.

Resumen de la actividad docente

- 6 Quinquenios docentes reconocidos.
- Docencia en las universidades Autónoma de Madrid, Complutense de Madrid, Miguel Hernández de Elche, Alfonso X El Sabio, ICAI (Universidad Pontificia de Comillas).
- Más de 300 créditos impartidos en titulaciones universitarias oficiales.

Otros

- Evaluador de proyectos para AEI (Agencia Estatal de Investigación), ANEP (Agencia Nacional de Evaluación y Prospectiva), ACSUCYL (Agencia para la Calidad del Sistema Universitario de Castilla-León), y AQU-CATALUNYA (Agència per a la Qualitat del Sistema Universitari de Catalunya).
- Fundador de la EBT SEETHROUGH S.L (Spin-off UMH).
- Revisor de artículos científicos para 12 revistas JCR (incluye Nature Communications).
- Senior Member del IEEE (Institute of Electrical and Electronics Engineers).
- Senior Member de la OSA (Optical Society of America).

Fecha del CVA	18/09/2025

Parte A. DATOS PERSONALES

Nombre	Arturo		
Apellidos	Gil Aparicio		
Sexo	Hombre	Fecha de Nacimiento	
DNI/NIE/Pasaporte			
URL Web	http://arvc.umh.es/personal/arturo/index.php?type=per&dest=inicio&idp=arturo		
Dirección Email	arturo.gil@umh.es		
Open Researcher and Contributor ID (ORCID)	0000-0001-7811-8955		

A.1. Situación profesional actual

Puesto	CATEDRÁTICO DE UNIVERSIDAD		
Fecha inicio	2024		
Organismo / Institución	Universidad Miguel Hernández de Elche		
Departamento / Centro	Departamento de Ingeniería de Sistemas y Automática / Escuela Politécnica Superior de Elche		
País		Teléfono	
Palabras clave	Robótica; Robots autónomos; Arquitecturas de control de robots; Robots cooperativos		

A.2. Situación profesional anterior (incluye interrupciones en la carrera investigadora - indicar meses totales, según texto convocatoria-)

Periodo	Puesto / Institución / País
2023 - 2023	Director del Departamento de Ingeniería de Sistemas y Automática / Universidad Miguel Hernández de Elche
2019 - 2023	Secretario de Departamento de Ingeniería de Sistemas y Automática / Universidad Miguel Hernández de Elche
2015 - 2019	Vicerrector Adjunto de Infraestructuras / Universidad Miguel Hernández de Elche
2010 - 2017	Profesor Contratado Doctor / Universidad Miguel Hernández de Elche
2013 - 2014	Subdirector de Departamento / Universidad Miguel Hernández de Elche
2012 - 2013	Secretario de Departamento / Universidad Miguel Hernández de Elche
2005 - 2009	Profesor Colaborador / Universidad Miguel Hernández de Elche
2003 - 2005	Profesor Colaborador Interino / Universidad Miguel Hernández de Elche

A.3. Formación académica

Grado/Master/Tesis	Universidad / País	Año
Doctor en "Tecnologías Industriales"	Universidad Miguel Hernández de Elche	2008
Ingeniero Industrial	Universidad Miguel Hernández de Elche / España	2002

Parte B. RESUMEN DEL CV

El resumen del curriculum se estructura en 3 grandes bloques: DOCENCIA, INVESTIGACIÓN y GESTIÓN.

DOCENCIA

El solicitante consigna una actividad docente de 22 años a TC muy intensa desde los inicios de su carrera hasta la actualidad, asumiendo continuamente un alto grado de responsabilidad y liderazgo en las asignaturas en las que ha desarrollado su actividad. Ha impartido más de 3200 horas de docencia univ. reglada en materias del Área de Ing. de Sist. y Automática. En relación con la calidad docente, el peticionario ha recibido puntuaciones muy altas en las encuestas de estudiantes. Además, ha obtenido resultados positivos en el programa DOCENTIA (verificado por ANECA): 2017 (excelente), 2021 (excelente y "Premio al talento docente"), 2023 (excelente). Ha participado en proyectos de innovación docente de manera continuada (3 proyectos como IP). Ha publicado, también 3 artículos docentes en revistas con índice de impacto JCR-SCI y contribuciones en congresos docentes. El solicitante es coautor de 7 libros docentes completos (en la editorial UMH y en Amazon).

INVESTIGACIÓN

A) Dirección y participación en proyectos de investigación de convocatorias competitivas nacionales y autonómicas. Desde el inicio de su carrera académica e investigadora en 2003, el solicitante ha participado, de manera continuada, en un gran número de proyectos I+D +i de convocatorias competitivas nacionales y autonómicas. La participación del solicitante ha sido muy activa en todos ellos, realizando aportaciones significativas, con numerosas publicaciones en revistas con índice de impacto según JCR-SCI. En concreto, el solicitante ha participado en el equipo investigador de 5 proyectos nacionales competitivos. b) En el equipo investigador de 8 proyectos competitivos de convocatorias autonómicas (Generalitat Valenciana). Ha sido investigador principal de proyectos competitivos: a) IP de 2 proyectos del Plan Nacional (DPI2013-41557-P, TED2021-130901B-I00). b) IP de un proyecto europeo (Grant Agreement no. 779790, duración: 8 meses). c) 1 Proyecto Autonómico AVI/2023.

B) Publicación de artículos científicos en revistas de muy especial relevancia. Se aportan un total de 35 publicaciones en revistas relevantes incluidas en JCR-SCI (12 Q1, 10 Q2). Además, sobresalen 3 publicaciones en el primer decil: a) "An experimental evaluation of Siamese Neural Networks [...]" (2024). b) "Efficient probability-oriented [...]". Eng. Applications of Artificial Intelligence (2022). c) "A modified stochastic gradient descent [...]". Information Sciences (2014). También, las publicaciones siguientes, se han realizado en revistas especialmente prestigiosas. Algunas de estas publicaciones han recibido, un buen número de citas: a) "A Comparison of Path Planning Strategies [...]". Autonomous Robots (Q2, 2012). Citas: 131 (JCR), 264 (G. Scholar). b) "Information-based view initialization [...]". Robotics and Autonomous Systems (Q2, 2015). c) "A comparative evaluation of interest point detectors [...]". Machine Vision and Applications Journal (Q2, 2010). Citas: 112 (JCR), 258 (G. Scholar). d) "Multi-Robot Visual SLAM using [...]". Robotics and Autonomous Systems (Q2, 2010). Citas: 75 (JCR), 160 (G. Scholar).

C) Dirección de tesis doctorales y trabajos avanzados. Se han dirigido 4 Tesis Doctorales. TESIS 1 (2013): "Autonomous exploration [...]". M. Juliá. Dir.: A. Gil y O. Reinoso. Cal.: Apto cum laude (máx. calificación). Menciones: Doctorado Europeo. Escrita en Inglés. Pub.: 3Q1, Q2, Q4. TESIS 2 (2016): "View-based SLAM [...]". Doct.: D. Valiente. Dir.: A. Gil, Ó. Reinoso. Cal.: Sobresaliente cum laude. Menciones: Premio Ext. de Doctorado y Doctorado Int. Escrita en Inglés. Pub: 1Q1, 3Q2, 1Q3. TESIS 3 (2017): "Predicción de la severidad [...]". Doct.: D. Úbeda. Dir.: A. Gil, A. Pérez. Cal.: Sobresaliente cum laude. TESIS 4 (2018): "Kinematic analysis [...]". Doct.: A. Peidró. Dir.: A. Gil, Ó. Reinoso. Cal.: Sobresaliente cum laude. Menciones: Doctorado Int. y Premio Ext. de Doctorado. Escrita en Inglés. Pub.: 2Q1+Q2+2Q3+Q4. Finalmente, el peticionario ha dirigido más de 60 PFC, TFM y TFG y ha recibido un premio (tutoría de un trabajo de TFM en el XIX Certamen Universitario Arquímedes 2021, Ministerio de Universidades).

D) Actividades de investigación y transferencia a empresas: en los proyectos IXION1.13CC y IXION2.13CC se realizaron tareas de investigación en el área de los robots móviles y UAVs. También son relevantes los contratos ABIONICA1.20T y ABIONICA1.21T, con actividades de

investigación en la localización visual de UAVs y soluciones en la detección de otros UAV. Durante 2020 y 2021 se realizó una estancia de personal doctor en la empresa Next Electric Motors S.L, realizándose trabajos que están siendo explotados por la empresa en la actualidad.

GESTIÓN

El solicitante se ha implicado en tareas de gestión: Vicerrector Adjunto de Infraestructuras (4 años). Secretario de Departamento (5 años). Director de Departamento (1 año).

Parte C. LISTADO DE APORTACIONES MÁS RELEVANTES

C.1. Publicaciones más importantes en libros y revistas con "peer review" y conferencias

AC: Autor de correspondencia; (nº x / nº y): posición firma solicitante / total autores. Si aplica, indique el número de citaciones

1 **Artículo científico**. Juan José; Vicente; (3/5) Arturo; Óscar; Luis. 2024. An experimental evaluation of Siamese Neural Networks for robot localization using omnidirectional imaging in indoor environments. Artificial Intelligence Review. Springer. 57-198. ISSN 1573-7462. https://doi.org/10.1007/s10462-024-10840-0

2 **Artículo científico**. D. Valiente; (2/5) A. Gil; L. Payá; J.M. Sebastian; O. Reinoso. 2017. Robust Visual Localization with Dynamic Uncertainty Management in Omnidirectional SLAM. Applied Sciences. MDPI. 7-12, pp.1-26. ISSN 2076-3417. https://doi.org/10.3390/app7121294

3 **Artículo científico**. A. Martínez; A. Santo; M. Ballesta; (4/5) A. Gil; L. Payá. 2025. A Method for the Calibration of a LiDAR and Fisheye Camera System. Applied Sciences. MDPI. ISSN 2076-3417. https://doi.org/10.3390/app15042044

4 **Artículo científico**. A. Santo; E. Heredia-Aguado; C. Viegas; D. Valiente; (5/5) A. Gil. 2025. Ground Segmentation for LiDAR Point Clouds in Structured and Unstructured Environments Using a Hybrid Neural–Geometric Approach. Technologies. MDPI. ISSN 2227-7080. https://doi.org/10.3390/technologies13040162

5 **Artículo científico**. A. Gil; A. Santamaría; M. Alfaro; C. Antón; B. Sánchez-Quiñones; (6/8) N. Ibarra; O. Reinoso; L. Payá. 2025. Machine Learning-Based Predictive Model for Risk Stratification of Multiple Myeloma from Monoclonal Gammopathy of Undetermined Significance. Electronics. MDPI. ISSN 2079-9292. https://doi.org/10.3390/electronics14153014

6 **Artículo científico**. D. Valiente; E. Heredia-Aguado; J.J. Cabrera; L.M. Jiménez; (5/5) A. Gil. 2025. Static Early Fusion Techniques for Visible and Thermal Images to Enhance Convolutional Neural Network Detection: A Performance Analysis. Remote Sensing. ISSN 2072-4292. https://doi.org/10.3390/rs17061060

7 **Artículo científico**. Adrián Peidró Vidal; Luis Payá Castelló; Mónica Ballesta Galdeano; Arturo Gil Aparicio; Óscar Reinoso García. 2024. Identificación y control de robots paralelos en el espacio de estados con un laboratorio remoto. Revista Iberoamericana de Automática e Informatica Industrial. CEA. 21, pp.180-191. ISSN 1697-7912. https://doi.org/10.4995/riai.2024.20065

8 **Artículo científico**. A. Peidró; A. García-Martínez; J. M. Marín; L. Payá; (5/6) A. Gil; O. Reinoso. 2022. Design of a mobile binary parallel robot that exploits nonsingular transitions. Mechanism and Machine Theory. Elsevier. 171, pp.1-24. ISSN 0094-114X. https://doi.org/10.1016/j.mechmachtheory.2022.104733

9 **Artículo científico**. M. Flores; D. Valiente; (3/5) A. Gil; O. Reinoso; L. Payá. 2022. Efficient probability-oriented feature matching using wide field-of-view imaging. Engineering Applications of Artificial Intelligence. Elsevier. 107, pp.1-18. ISSN 0952-1976. https://doi.org/10.1016/j.engappai.2021.104539

10 **Artículo científico**. (1/2) A. Gil (AC); J. Valls-Miró. 2021. An Efficient Stochastic Constrained Path Planner for Redundant Manipulators. Applied Sciences. MDPI. 11-22, pp.1-15. ISSN 2076-3417. https://doi.org/10.3390/app112210636

11 **Artículo científico**. A. Peidró; O. Reinoso; (3/5) A. Gil; J.M. Marín; L. Payá. 2018. A method based on the vanishing of self-motion manifolds to determine the collision-free workspace of redundant robots. Mechanism and Machine Theory. Ed. Elsevier. 128, pp.84-109. ISSN 0094-114X. https://doi.org/10.1016/j.mechmachtheory.2018.05.013

12 **Artículo científico**. L. Payá; (2/3) A. Gil; O. Reinoso. 2017. A State-of-the-Art Review on mappping and localization of mobile robots using omnidirectional vision sensors. Journal of Sensors. pp.1-20. ISSN 1687-7268. https://doi.org/10.1155/2017/3497650

13 **Artículo científico**. A. Peidró; A. Gil; (3/5) O. Reinoso; J.M. Marín; L. Payá. 2017. An improved Monte Carlo method based on Gaussian growth to calculate the workspace of robots. Engineering Applications of Artificial Intelligence. Elsevier. 64, pp.197-207. ISSN 0952-1976. https://doi.org/10.1016/j.engappai.2017.06.009

14 **Artículo científico**. D. Valiente; (2/5) A. Gil; O. Reinoso; M. Juliá; M. Holloway. 2017. Improved Omnidirectional Odometry for a View-Based Mapping Approach. Sensors. MDPI. 17, pp.1-26. ISSN 1424-8220. https://doi.org/10.3390/s17020325

15 **Artículo científico**. A. Peidró; (2/5) A. Gil; J.M. Marín; L. Payá; O. Reinoso. 2017. On the Stability of the Quadruple Solutions of the Forward Kinematic Problem in Analytic Parallel Robots. Journal of Intelligent Robotic Systems. Springer. pp.381-396. ISSN 1573-0409. https://doi.org/10.1007/s10846-016-0453-x

C.3. Proyectos o líneas de investigación

1 **Proyecto**. Aprendizaje profundo para navegación autónoma, interpretación del entorno e interacción social con robots móviles: Aplicación a tareas de seguridad y vigilancia. (Universidad Miguel Hernández de Elche). 01/09/2025-31/08/2029. 600.000 €.

2 **Proyecto**. Robótica móvil para la vigilancia automática de recintos e identificación de situaciones de riesgo en condiciones desafiantes mediante técnicas de aprendizaje profundo. Payá Castelló 1. (Universidad Miguel Hernández de Elche). 01/09/2024-31/12/2027. 202.375 €.

3 **Proyecto**. Desarrollo de un sistema inteligente de vigilancia y seguridad de infraestructuras basado en robots móviles. Agencia Valenciana de la Innovación (AVI). Arturo Gil Aparicio. (Universidad Miguel Hernández de Elche). 01/01/2023-01/09/2025. 200,04 €.

4 **Proyecto**. PROMETEO/2021/075, Hacia una mayor integración de robots inteligentes en la sociedad: navegar, reconocer y manipular. Subvenciones del Programa Prometeo para grupos de investigación de excelencia (Resolución de 20 de noviembre de 2020). Óscar Reinoso García. (Universidad Miguel Hernández de Elche). 01/01/2021-31/12/2024. 588.353 €. Miembro de equipo.

5 **Proyecto**. TED2021-130901B-I00, Desarrollo de tecnologías móviles inteligentes para tareas de seguridad y vigilancia de entornos de interior y exterior. Proyectos estratégicos orientados a la transición ecológica y a la transición digital TED2021 - AEI/MCI. Arturo Gil Aparicio. (Universidad Miguel Hernández de Elche). 01/12/2022-30/11/2024. 110.630 €. Investigador principal.

6 **Proyecto**. PID2020-116418RB-I00, Robots híbridos y reconstrucción multisensorial para aplicaciones en estructuras reticulares. Proyectos I+D+I 2020 - Modalidades "Retos Investigación" y "Generación de Conocimiento" PID2020 - AEI/MCI. Óscar Reinoso García. (Universidad Miguel Hernández de Elche). 01/09/2021-31/08/2024. 140.965 €. Miembro de equipo.

7 **Proyecto**. Construcción y validación técnica de un robot caminante-trepador para combatir fuegos forestales. Adrián Peidró Vidal. (Universidad Miguel Hernández de Elche). 24/03/2023-31/12/2023. 10.000 €.

MINISTERIO
DE CIENCIA, INNOVACIÓN
Y UNIVERSIDADES

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.

CV date	July 4th 2025

Part A. PERSONAL INFORMATION

First name	Basilio Javier		
Family name	García Carretero		
Gender	Male	Birth date	
Social Security, Passport, ID number			
e-mail	basilio.javier.garcia@uam.es	URL Web	www.uam.es
Open Research and Contributor ID (ORCID)(*)			

A.1. Current position

Position	Full Professor (Catedrático)		
Initial date	06/08/2019		
Institution	Universidad Autónoma de Madrid		
Department/Center	Física Aplicada/ Facultad de Ciencias		
Country	Spain	Teleph. number	
Key words	Electronics, Semiconductors, Epitaxial growth, nanowires, Solar photovoltaic energy		

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

Period	**Position/Institution/Country/Interruption cause**
01/01/1983-30/09/1983	Research assistant U.A.M./Spain
01/05/1984-31/09/1987	Assistant professor U.A.M./Spain
01/10/1987-31/09/1992	Assistant professor (LRU) U.A.M./Spain
01/02/1990-31/07/1990	Postdoc Columbia Univ./N.Y.-USA
01/10/1992-31/12/1992	Associate Professor U.A.M./Spain
01/09/1992-31/10/1993	Postdoc L.A.A.S.-C.N.R.S./France
01/01/1993-11/07/1996	Associate Professor (Prof. Titular interino) U.A.M./Spain
12/07/1996-05/09/2019	Associate Professor (Prof. Titular) U.A.M./Spain
01/02/2018-31/07/2018	Fulbright Visiting Scholar L. Berkeley N.L./CA-USA

A.3. Education

PhD, Licensed, Graduate	**University/Country**	**Year**
Licensed in Physics	Univ. Autónoma de Madrid	1982
PhD in Physics	Univ. Autónoma de Madrid	1989

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

Basilio Javier García has been leading the research on epitaxial growth in the Electronics and Semiconductors research group (Applied Physics Dpt., Universidad Autónoma de Madrid-UAM) during the last 20 years.

After obtaining the Bachelor in Physics (1978-1982) at UAM, he also obtained the Physics Degree (1984) and the PhD in Physics (1989) working on MOS silicon devices and Laser assisted diffusion in GaAs, respectively. His postdoctoral training started in the Microelectronic Sciences Laboratories, School of Engineering, Columbia University (New York, USA) research group, working with Professor R. M. Osgood Jr. in the topic of laser-assisted deposition and diffusion of metallic layers on GaAs from metalorganic precursors (1990).

A second postdoc was done at Laboratoire d'Analyse et d'Architecture des Systèmes (LAAS-CNRS Toulouse, France), learning the Molecular Beam Epitaxy (MBE) technique for the growth of III-V semiconductors such as GaInAs and AlGaAs on (111)B surfaces, working Dr. A. Muñoz-Yagüe and Dr. C. Fontaine (1992-1993).

After returning to UAM in 1993, he collaborated with Prof. J. Piqueras and J. L. Castaño, during the installation of a Chemical Beam Epitaxy (CBE) system (1993-1995). This system has been progressively developed from an initial RIBER CBE32 growth chamber, being operational since 1994, allowing the growth of III-V semiconductors of the systems (Al,Ga,In)(N,P,As), with Zn, Sn, Si and C as dopants, using gaseous precursors for all of them. Gas control lines, electronic control hardware and software, as well as electron diffraction (RHEED) real time acquisition have been also developed in the lab under his supervision.

He led the creation of the electronic nanolithography service at UAM, now working as a facility. He also collaborated on the opening of a new research line related to second harmonic generation, by ferroelectric domain inversion using electron beam direct writing (Prof. Luisa Bausá´s group at Física de Materiales Dpt. in UAM).

More recently, he has been working with Prof. W. Walukiewicz (2018) in Lawrence Berkeley National Laboratory (LBNL, USA) supported by a Fulbright research grant.

Nowadays, as Full Professor at UAM since 2019, he is working on the epitaxial growth of III-V nanowires and materials for high efficiency multiband solar cells, after incorporating Drs. Alejandro Braña, Nair López and Sergio Fernández, to his research group. Young researchers of the group have obtained grants from European programs for the group research lines (Marie Curie-IIF and Starting Grant to Dr. Nair López, Consolidator Grant to Dr. Sergio Fernández).

Collaborations with research groups leaded by Dr. Chantal Fontaine (LAAS-CNRS Toulouse), M. Mercedes Sánchez (Universidad de La Habana, Cuba) and N. Borgardt (National Research University of Electronic Technology MIET, Zelenograd, Russia) are in progress.

During his career, he has been reviewer of several international journals, supervised scientific personnel as group leader, and participated in several R&D projects: 13 national (6 as IP), 5 regional (1 as IP) and 1 european (1 as IP) projects. He has supervised 4 Ph.D. Thesis, 10 Master thesis and several Degree theses. He has co-authored 60 contributions to international meetings, published about 56 papers and granted 1 patent.

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

C.1. Most important publications in books and journals with "peer review" and in conferences *(see instructions).*

1.- *"Acoustic Rayleigh wave turbulence in soft viscoelastic matter*". M. Kharbedia, H. López-Menéndez, **B. J. García**, M. G. Velarde, F. Monroy.
Advanced Science, 2407528 (2025).

2.- "*On the absorption coefficient and bandgap energy of $GaP_{1-x}N_x$ layers grown on silicon substrates by CBE".* K. Ben Saddik, M. J. Hernández, M. A. Pampillón, M. Cervera, **B. J. García**.
Materials Science in Semiconductor Processing 185, 109011.1-109011.7 (2025).

3.- "*Optomechanical cavities based on epitaxial GaP on nominally (001)-oriented Si*". P. Mouriño, L. Mercadé, M. Sinusía, R. Resta, A. Griol, E. Barrigón, K. Ben Saddik, S. Fernández-Garrido, **B. J. García**, A. Martínez, V. J. Gómez.
Advanced Materials Technology 9, 2400525-2400534 (2024).

4.- "*On the piezoelectric properties of zinc oxide thin films synthesized by plasma assisted DC sputter deposition*". M. McKinlay, L. Fleming, M. Pelayo García, L. Nieto Sierra, P. Villar Castro, D. Araujo, **B. J. García**, D. Gibson, C. García Nuñez.
Advanced Materials Interfaces 11, 2400252.1-2400252.11 (2024).

5.- "*Giant Piezoelectric Effect Induced by Porosity in Inclined ZnO Thin Films*". M. Pelayo Garcia, K. Ben Saddik, M. S.p Baghini, D. A. Hughes, D. Gibson, **B. J. García**, C. García Núñez.
Advanced Electronic Materials 10, 2400138.1-2400138.15 (2024).

6.- "*Growth modes and coupled morphological-compositional modulations in $GaP_{1-x}N_x$ layers grown on nominally (001)-oriented Si substrates*".
K .Ben Saddik, S. Fernández-Garrido, R. Volkov, J. Grandal, N. Borgardt. **B. J. García.**
Journal of Applied Physics 134,175703.1-175703.15 (2023).

7.- *"A growth diagram for chemical beam epitaxy of $GaP_{1-x}N_x$ alloys on nominally (001)-oriented GaP-on-Si substrates".* K. Ben Saddik, **B. J. García**, S. Fernández-Garrido.
APL Materials 9, 121101.1-121101.8 (2021).

8.- "*Single GaAs nanowire based photodetector fabricated by dielectrophoresis*". C. García Núñez, A. F. Braña, N. López, J. L. Pau, **B.J. García**.
Nanotechnology 31, 225604.1-225604.13 (2020).

9.- "*Growth of $GaP_{1-x-y}As_yN_x$ on Si substrates by Chemical Beam Epitaxy*". K. Ben Saddik, A. F. Braña, N. López, W. Walukiewicz**, B.J. García**.
Journal of Applied Physics 126, 105704.1-105704-8 (2019).

10.- "*A Novel Growth Method to Improve the Quality of GaAs Nanowires Grown by Ga-Assisted Chemical Beam Epitaxy*". C. García Núñez, A.F. Braña, N. López, **B.J. García**.
Nano Letters 18, 3608-3615 (2018).

C.2. Congress.

1.-*"GaP on Si integration by Chemical Beam Epitaxy".* M. A. Pampillón, M. Martín-Bravo, M. J. Hernández, M. Cervera, **B. J. García.**
European Conference on Innovative and Advanced Epitaxy (Opera Cost Action CA20116). Pisa (Italy). 19-23 May 2025. Oral presentation.

2.-*"Silicon epitaxy using trisilane"*. M. A. Pampillón, M. Martín-Bravo, M. J. Hernández, M. Cervera, **B. J. García.**
22nd European Molecular Beam Epitaxy Workshop. Auron,French Riviera (France). 9-13 March 2025. Poster.

3.-*"GaPAsN based short period superlattices for the integration of III-V solar cells on silicon".* K. Ben Saddik, R. Volkov, N. I. Borgardt, M. J. Hernández, S. Fernández-Garrido, **B. J. García**.
21th European Molecular Beam Epitaxy Workshop. Madrid (Spain) 16-19 April 2023. Oral presentation.

4.-"*Optical properties of $GaP_{1-x}N_x$ layers grown on silicon substrates by chemical beam epitax*y". K. Ben Saddik, M. J. Hernández, M. A. Pampillón, M. Cervera, S. Fernández-Garrido**, B. J. García**.
21th European Molecular Beam Epitaxy Workshop. Madrid (Spain) 16-19 April 2023. Poster.

5.-"*Growth modes and chemical phase separation in $GaP_{1-x}N_x$ layers grown by chemical beam epitaxy of nominally-oriented (001) Si"*. K. Ben Saddik, R. Volkov, J. Grandal, N. I. Borgardt, S. Fernández-Garrido, **B. J. García**.
21th European Molecular Beam Epitaxy Workshop. Madrid (Spain). 16-19 April 2023. Oral presentation.

6.-*"Luminescence properties of $GaP_{1-x}N_x$ alloys grown on nominally (001)-oriented GaP-on-Si substrates by chemical beam epitaxy".* K. B. Saddik, P. Álamo, J. Lähnemann, R. Volkov, N. I. Borgardt, T. Flissikowski, O. Brandt, **B. J. García**, S. Fernández-Garrido.
Compound Semiconductor Week, *Ann* Arbor, (Michigan, U.S.A.)/on-line.1-3 June 2022. Oral presentation.

7.-"*Growth modes and chemical phase separation in $GaP_{1-x}N_x$ layers grown by chemical beam epitaxy of nominally-oriented (001) Si*". K. Ben Saddik, R. Volkov, J. Lähnemann, J. Grandal, N. Borgardt, **B. J. García**, S. Fernández-Garrido.

European Materials Research Society Conference, symposium C. Virtual Conference. 30 May-6 June 2022. Oral presentation.

8.-"*Chemical beam epitaxy of $GaP_{1-x}N_x$ alloys and $GaP_{1-x}N_x/GaP_{1-y}As_y$ short-period superlattices on nominally (001)-oriented GaP-on-Si substrates*". K. B. Saddik, R. L. Volkov, J. Lähnemann, J. Grandal, N. I. Borgardt, **B. J. García**, S. Fernández-Garrido.
21st International Conference on Molecular Beam Epitaxy. Puerto Vallarta (México)/on-line. 6-9 September 2021. Oral presentation.

9.-"*Chemical beam epitaxy of $GaP_{1-x}N_x$ on GaP/Si(001)*". K. B. Saddik, R. L. Volkov, J. Lähnemann, J. Grandal, M. Pérez-Cerdán, N. I. Borgardt, **B. J. García** S. Fernández-Garrido.
Compound Semiconductor Week, Stockholm (Sweden)/on-line. 9-13 May 2021. Oral presentation.

10.-"*Photodetector fabrication by dielectrophoretic assembly of GaAs nanowires grown by a two-steps method*". C. García Núñez, A.F. Braña, N. López, J. L. Pau**, B. J. García**.
SPIE, Optical Sensing, Imaging, and Photon Counting: Nanostructured Devices and Applications. San Diego (USA). 6-10 August 2017. Invited Conference.

C.3. Projects or research lines in which you have participated.

1.- "*Quantum engineered III-V solar cells on silicon*" (PID2020-114280RB-I00). Funding Agency: Ministerio de Ciencia e Innovación (166.980 €).
Universidad Autónoma de Madrid. 2021−2026. **Principal investigator.**

2.- "*Integration of III-V semiconductors on silicon for electronic and photovoltaic applications*" (TEC2016-78433-R). Funding Agency: Ministerio de Ciencia e Innovación (205.700 €).
Economía (57.800 €) Universidad Autónoma de Madrid. 2016−2020. **Principal Investigator.**

3.- "Multiband solar cells from highly mismatched alloys". (TEC2013-48350-R). Funding Agency: MINECO 2014-2015.
Universidad Autónoma de Madrid. 2014−2016. **Principal Investigator**.

4.- *"Highly mismatched alloy materials to implement multiband solar cells".* (HIMAMIS-FP7-People-IIF-2012-326579). Funding Agency: European Comission-Marie Curie IIF (230.036 €).
Universidad Autónoma de Madrid. 2013-2015. **Principal Investigator.**

5.- *"ZnO and Ga(As,N) nanowire synthesis for high sensitivity detection in UV and IR ranges".* (TEC2010-20796). Funding Agency: Ministerio de Ciencia e Innovación (163.350 €).
Universidad Autónoma de Madrid. 2011-2014. Principal investigator: José Luis Pau Vizcaíno.

6.- "*$Ga_{1-y}In_yAs_{1-x}N_x$ quantum well laser structures by chemical beam epitaxy*".(TEC2007-65892/MIC). Funding Agency: MEC (100.500 €).
Universidad Autónoma de Madrid. 2007- 2010. **Principal Investigator.**

7.- **"**Crecimiento epitaxial de heteroestructuras basadas en $Ga_{1-y}In_yAs_{1-x}N_x$ con precursores gaseosos en ultra alto vacío" (MAT2003-07841). Funding Agency: MCyT (56.350 €)
Universidad Autónoma de Madrid. 2003- 2006. **Principal Investigator**.

C.4. Participation in technology/knowledge transfer activities and exploitation of results

N. López, **B. J. García**, A. F. Braña, J. L. Castaño. Patent ES2810599B2. "*Dispositivo semiconductor*". Spain. 07/12/2021. Universidad Autónoma de Madrid.

MINISTERIO DE CIENCIA E INNOVACIÓN

Cofinanciado por la Unión Europea

AGENCIA ESTATAL DE INVESTIGACIÓN

CURRICULUM VITAE ABREVIADO (CVA)

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

Part A. PERSONAL INFORMATION

First name	Francisca		
Family name	Peiró Martínez		
Gender (*)	Woman	Birth date	
ID number			
e-mail	francesca.peiro@ub.edu	URL Web	
Open Researcher and Contributor ID (ORCID) (*)		0000-0002-5697-0554	

A.1. Current position

Position	Full Professor		
Initial date	19/05/1995		
Institution	University of Barcelona		
Departament/Center	Electronics and Biomedical Engineering		
Country	Spain	Teleph. number	
Key words	Electron Microscopy, Electronics, Nanotechnology		

A.2. Previous positions (research activity interuptions, indicate total months)

Period	Position/Institution/Country/Interruption cause
1988-1995	TEM technician at the Scientific and Technological Centers of Universitat de Barcelona (UB)
1994-1995	Assistant Professor at the Electronics Department of Universitat Autònoma de Barcelona
1995 - 2017	Associated professor at UB

A.3. Education

PhD, Licensed, Graduate	University/Country	Year
Degree Physics	University of Barcelone	1988
Doctorate Physics Sciences	University of Barcelone	1993
Master in Management and Academic Policy	University of Barcelone	2011

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

Francesca Peiró is the leader of the Laboratory of Electron Nanoscopy (**LENS**) of the Nanoscience and Nanotechnology Institute (**IN2UB**) of the University of Barcelona. The main objective of LENS is the development of TEM instrumental methods and data treatment for advanced scientific problems. LENS pursues challenging objectives and cutting-edge methodologies as the combination of electron tomography, precession and electron energy loss spectroscopy (EELS), with machine learning and DFT simulation tools for data analysis. LENS successfully achieved international groundbreaking results as the innovative EELS-tomography culminating with the obtention of 3D maps of iron oxidation states in core shell nanoparticles (Nano Lett. 2016, 16), measuring inversion parameter in spinel oxides at atomic resolution (Nano Lett. 2018, 18, 5854-5861), and an **instrumental patent in exploitation** on precession assisted EELS. Is worth mentioning the innovative protocols por quasi parallel beam alignments and reciprocal space tomography (Ultramicroscopy 211 (2020), and the application of machine learning to data treatment (Ultramicroscopy 221 (2021)).

1. Scientific contributions: I have been PI in Spanish, Catalan and international projects and participated in EU actions, with **cumulative funds more than 4 M€.** I received three times the UB *Incentive Program for the **Enhancement of Research Activity Prize***. After being the **IP of a Consolider** project (IMAGINE 2009-2016) and of two **networks of excellence** on advanced aberration corrected TEM, I also foster the development of electron microscopy in the Catalan context through the project **MERIT** (FEDER 3.35 M€) whose tendering was finished in January 2022. The sinergy stablished between the LENS group and the TEM-MAT unit of the Scientific and Technological Centers of the UB (CCiTUB), merged in a **recognition as node of the national Spanish Scientific and Technological Infrastructure (ICTS) ELECMI** devoted to TEM for Materials Science in 2018 and evaluated and approved again in 2021. Since 2018 I am the **Scientific Coordinator** of the Barcelona node of **ELECMI** and since 2021, **Vice-president of the Spanish Society of Microscopy.**

General indicators of quality of scientific production:

• Publications: **255** / 13 Book Chapter / **h index = 52** (Google scholar) **44** (Scopus); **44** (WoS)
• Quotations 8,211 Times Cited / Without self-citations 6848 (WoS) / 24.5 quotations/paper / **248 quotations/year**
• **5 research sexennial periods**: from 1989-2018 / **1 sexennial of knowledge transfer**
• Conferences 60 Invited / international 484 / national 160

Current research lines in the frame of national and international projects are:
- TEM tools for phase characterization of novel piezoelectric lead-free materials.
- Advanced TEM tools for CIGS based solar cells (In4CIS EU), solid oxide fuel cells and mixed ionic and electronic conductors and advanced metal-semiconductor nanoparticles (PID2019), and epitaxied heterostructures (COST).
- User-friendly software tools for advanced data mining in analytical TEM (PDC2021).
- Nanoscale and in-operando characterization of electrodes and electrolytes in all solid-state batteries (TED2021).
- New instrumental and data analysis procedures in transmission electron microscopy (PID2022).
- Enhancing the performance of Cu oxide nanocatalysts in carbon dioxide electrolyzers (CLIMA 2023).

2. Social contribution of the research: *2a) Industrial relationships:* I have been IP of **13 research contracts with DELPHI-Mechatronics Automotive systems** (100 k€) to optimize electrical contacts for automotive applications and I am member of **CEMIC,** (http://www.cemic.ub.es/), Center of Microsystems Engineering for instrumentation and control, a center TECNIO -ACCIÓ of the Catalan Agency for Company Competitivity.
2b) Outreach activities: I contributed to the course ***MOOC*** Técnicas Microscópicas de caracterización and I regularly participate in activities for the *dissemination of Nanoscience and Electron Microscopy* as Nanoeduca (2015), Fira de Berga (2014), Festa de la Ciència (2015, 2016, 2021, 2022), Espai Ciència (2016), 10alamenos9 (FECYT 2016--2024), Summer Courses of El Escorial (2011, 2013, 2016, 2018) and Juliols UB (2018); Research European Night (2022). Current activities in this field are FCRI projects #100tifiques (2021, 2022, 2023), and FECYT projects Nanoinventum (2022 -) and Ginna (2022).

3. Contribution to research training and education: Since 2004 until 2022 I was the **director of the educational innovation group e-LINDO (Electronics and Educational Innovation)**. I received three times (2019-2020-2021) the mention of Physics Degree Council as ***Excellent Professor***.
• **15 Doctoral Thesis supervised** (2 more in the making), 20 Thesis of Master and 10 Final Degree Works.
• Direction of 8 post-doctoral researchers
• Supervision of research in secondary school with 5 research projects supervised (FORCES)
Three Doctoral Thesis received the Best Doctoral Thesis Award given by the Spanish Society of Microscopy in the modality of Instrumental Developments (L. Yedra 2015, A. Eljarrat 2017, G. Martin 2019) and two **Extraordinary Doctoral Award** (L. López-Conesa 2015, P. Torruella 2022).

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

C.1. Publications (*10 selected publications in the last five years*)

1. *Machine learning data augmentation strategy for EELS: generative adversarial networks*
Daniel del-Pozo-Bueno, Lluis Yedra, Demie Kepaptsoglou, Quentin Ramasse, Francesca Peiró, Sònia Estradé ***Microscopy and microanalysis 30, 278–293 (2024)*** / https://doi.org/10.1093/mam/ozae014 IF: 2.9 / Q1
2. *Revealing Local Grain Boundary Chemistry and Correlating it with Local Mass Transport in Mixed-Conducting Perovskite Electrodes*
Sha, Zijie; Douglas, James O.; Yedra, Lluís.; Seymour, Ieuan D.; Estradé, Sònia; Skinner, Stephen.J.; Kilner, John.A. / ***Small 2024***, 2404702 (Hybrid Gold Open Access) / https://doi.org/10.1002/smll.202404702 / **IF: 13** / Q1
3. *Localization and Directionality of SurfaceTransport in Bi2Te3 Ordered 3D Nanonetworks*
A. Ruiz-Clavijo, N. Pérez, O. Caballero-Calero, J. Blanco, F. Peiró, S. Plana-Ruiz, M. López-Haro, K.Nielsch, and M. Martín-González / ***ACS Nano 17 (2023)***, 16960−16967 / https://doi.org/10.1021/acsnano.3c04160 / **IF: 17.1**
4. *Enhanced diffusion barrier layers for avoiding degradation in SOFCs aged for 14000 h during 2 years*
Lucile Bernadet, J.Segura-Ruiz, L.Yedra, S.Estradé, F. Peiró, D. Montinaro, M.Torrell, A. Morata, A.Tarancón ***Journal of Power Sources 555 (2023)*** 232400 / DOI:10.1016/j.jpowsour.2022.232400 / **IF: 9.794**
5. *Comparative of machine learning classification strategies for electron energy loss spectroscopy: Support vector machines and artificial neural networks*; Daniel del-Pozo-Bueno, Demie Kepaptsoglou, Francesca Peiró, Sònia Estradé. ***Ultramicroscopy 253 (2023)*** 113828 / DOI: doi.org/10.1016/j.ultramic.2023.113828/ **IF: 2.994** / Q1
6. *Spontaneous Hetero-attachment of Single-Component Colloidal Precursors for the Synthesis of Asymmetric Au−Ag2X (X = S, Se) Heterodimers* / M. Lin, G. Montana, J. Blanco, Ll. Yedra, H. van Gog, Marijn A. van Huis, M. López-Haro, J.J. Calvino, S. Estradé, **F. Peiró**, and A. Figuerola.
Chemistry of Materials 2022 34 (24), 10849-10860 / **IF: 11.162**
7. *Insights into interface and bulk defects in a high efficiency kesterite-based device*

R. Fonoll-Rubio, J. Andrade-Arvizu, J. Blanco-Portals, I. Becerril-Romero, M. Guc, E. Saucedo, **F. Peiró**, L. Calvo-Barrio, M. Ritzer, C.S. Schnohrgh, M. Placidi, S. Estradé, V. Izquierdo-Roca and A. Pérez-Rodríguez
Energy Environ. Sci., 2021, 14, 507 / **IF 33.250**

8. *Facile and Efficient Atomic Hydrogenation Enabled Black TiO2 with Enhanced Photo-Electrochemical Activity via a Favorably Low-Energy-Barrier Pathway* **-** Wang, X.; Mayrhofer, L.; Hoefer,M.; Estrade, S.; Lopez-Conesa, L.; Zhou, H.; Lin, Y.; **Peiró, F.**; Fan, Z.; Shen, H.; Schaefer, L.; Moseler, M.; Braeuer, G. and Waag, A. Adv. **Energy Mater. 9, 1900725 (2019) / IF: 24.884**

9. *Engineering Transport in Manganites by Tuning Local Nonstoichiometry in Grain Boundaries* **/** Chiabrera, F.; Garbayo, I.; López-Conesa,L.; Martín, G.; Ruiz-Caridad, A.; Walls, M.; Ruiz-González, L.; Kordatos, A.; Núñez, M.; Morata, A.; Estradé, S.; Chroneos, A.; **Peiró, F.**; and Tarancón, A. **Adv. Mater., 1805360 (1-8pp) (2019) IF: 21.95**

10. *Independent Tuning of Optical Transparency Window and Electrical Properties of Epitaxial SrVO3 Thin Films by Substrate Mismatch* - Mirjolet, M.; Vasili, H.B.; López-Conesa, L..; Estradé, S.; **Peiró, F.**;Santiso, J.; Sánchez, F.; Machado, P.; Gargiani, P.; Valvidares. M.; Fontcuberta, J. **Adv. Funct. Mater. 29, 2019**, 1904238, **IF: 15.621**

C.2. Conferences and Organization of congress:

484 International Conferences / 60 Invited / 160 National Conferences

Organisation of Congress

Member of the International Advisory Board of the International Conference on Electron Microscopy & XXXV Annual Meeting of EM Society of India (EMSI), (University of Delhi, July 9-11, 2014 India)
Member of the Scientific Committee of the Conference Microscopy at the Frontiers of Science (MFS) [Oporto 2015, Zaragoza 2017, Granada 2019, Braga 2021 (on-line), Braga 2023 (in person)]
Trobades Científiques de la Mediterrània (Maó 2021) /4th International Workshop ELECMI (Barcelona 2022)
Chairwoman at National and International Conferences: Conference on Electronic Devices (CDE, Valladolid 2013) / Microscopy at the Frontiers of Science (MFS) (Oporto 2015, Zaragoza 2017) / Journées EELS (JEELS, Tarragona 2016) / Nanotech Poland (Poznan 2017) / Analytix (Singapore 2019)
Organiser and chair of the next EuropeanMicroscopy Congress EMC2028

C.3. Research Projects

1. WATERSense. Ultrasensitive nanoplatform enabling on-site and continuous water pollutant detection based on analyte fingerprinting / EU HORIZON-EIC-2024-PATHFINDEROPEN-01-01 / EISMEA/E/01 / IP: Marta Estradé / Role F.Peiró: Researcher / CODE: 101186814 / BUDGET: 673.375 € / DATES: 01/10/2025 - 30/09/2029

2. 2023CLIMA00011. Towards a decarbonized chemical industry: enhancing the performance of Cu oxide nanocatalysts in carbon dioxide electrolyzers / Ajuts per finançar projectes de recerca per a la mitigació i adaptació al canvi climàtic / AGAUR, Generalitat de Catalunya / Investigador Principal: Roc Matheu / Ll. Yedra
CODE: / BUDGET: 208.395,00€ € / DATES: 29/01/2024-28/01/2026

4. NEOTEM: Nuevos procedimientos instrumentales y de análisis de datos en microscopía electrónica de transmisión **/** Proyectos de generación de conocimiento 2022 **/** MICIIN - Ministerio de Ciencia e Innovación
Investigador Principal: Francisca Peiró Martínez / Sònia Estradé
PID2022-138543NB-C21 / BUDGET: 137500,00 € / DATES: 01/09/2023-31/08/2025

5. Nuevas herramientas de TEM: hacia la comprensión de las baterías de estado sólido **(TED2021-129663B-C55)**. Proyectos estratégicos orientados a la transición ecológica y a la transición digital / **MICIIN**- Ministerio de Ciencia y innovación / IP: Ll. Yedra Cardona / Francisca Peiró Martínez / 40.000,00 € / DATES: 01/12/2022-30/11/2024

6. ***European Network for Innovative and Advanced Epitaxy*** **(OPERA)** (https://www.cost.eu/actions/CA20116/)
Program:**COST ACTION**/IP: Noelle Gogneau/REFERENCE:CA20116 / ORGANISM: EU / 27/09/2021 - 26/09/2025

7. Sistema de control de la Precesión Electrónica del Haz y software de Análisis para operación en modo barrido-transmisión en el TEM (ICT2021-006758) **ICTS 2021** - PLAN DE RECUPERACIÓN Y RESILIENCIA / **MICIIN** /UE NEXT GENERATION / IP: Francisca Peiró / 378.240,00 € / 01/01/2021 - 31/03/2022

8. HERMES. Herramientas Avanzadas para EELS Cuantitativo **Proof of Concept** (PDC2021-121366-I00)
Programa Estatal de Generación de Conocimiento y Fortalecimiento Científico y Tecnológico / **MICIIN** / IP. F. Peiró, S. Estradé / BUDGET: 100.050,00 € / 01/12/2021 – 30/11/2023

9. MERIT, TEM for Research Innovation and Transfer of Knowledge (IU16-015923) / Program: **UE- FEDER** cooperative projects for the creation, construction, acquisition and improvement of shared scientific and technological equipment and platforms (Resolució EMC/337/2019) / IP:D. Espriu / INSTITUTIONS: IBEC, FBG-UB, IDIBELL, IDIBAPS, FHSJD) / Generalitat de Catalunya – 1.675.000,00 / DATES: 05/2020 - 12/2023

10. In4CIS, *New in-line optical methodologies for advanced assessment of high efficiency CIGS industrial processes* / **SOLAR-ERA.NET Cofund Program (H2020 Cost program) Project Number 48 / UE**, Agencia Estatal de Investigación **/** Period: 2019-2022 / PI: Marcel Placidi (IREC) / Role F.Peiró: Researcher

11. TOTEM (PID2019-106165GB-C21): Towards novel methods insights in scanning transmission electron microscopy / **MCNN** - Ministerio de Ciencia, Innovación y Universidades**,** State Programme for Knowledge Generation and Scientific and Technological Strengthening of the R+D+i **/** Role F.Peiró: **Principal Investigator and Project Coordinator** / Budget 169.400,00 € / Period 2020-2023

C.4. Contracts, technological or transfer merits

1. Patent in exploitation: Joint ownership agreement. EP12160112.4 Method and System for Improving Characteristic Peak Signals in Analytical Electron Microscopy / Company: NANM - NanoMEGAS SPRL / Fundació Bosch i Gimpera (FBG) FBG306930. Period: 2012-2032 / Role F.Peiró: co-inventor.

C.5. National and International assessment and advisory tasks as expert evaluator

- Member **selection committee of Research Projects on Materials Science** MAT (2006/2008/2009/2011/2014/2022)
- Evaluator of National Research Projects of **Agence Nationale de la Recherche (ANR)** (2011)
- **Foreign Researchers Mobility grants (PIV),** in the AGAUR agency of the Government of Catalonia (2004, 2009)
- **Pre-doc and post-doc international mobility grants (BE, Beatriu de Pinós),** (2005 to 2009-2011-2012-2018)
- **Collaborative Transpyrenees Projects** on Innovative Technological Projects (CTP-ITT), GENCAT (2005)
- **University Educational Innovation Projects (MQD),** AGAUR agency of the Government of Catalonia (2008)
- **Program of Research in Education** (REDICE 2014), Institute of Educational Sciences (ICE) of UB.
- **National Infrastructures Calls** for the Spanish Science Ministery (2014-2016)
- **Infrastructures Calls** for the Basc Country (2016, 2017, 2018)
- **Massive on-line Open Courses (MOOC's) applications** for the AGAUR, Generalitat de Catalunya (2014)
- Evaluator of **Post-Graduate Courses** for the "Asociación Universitaria Iberoamericana de Posgrado" (2015)
- Evaluator of Post Doctoral fellows of the **Cofund project H2020** P-Sphere (2016)
- **International Expert Evaluator of Research projects**, Poland (2018)
- Member of **Expert Evaluation Pannel for UE-FET OPEN Actions** (2018), (2019-2022) selected but conflict of interest
- Evaluator of **ESTEEM3 Transnational Access Grants** (2019-2022)
- **Referee** of research journals**: Some of the last:** 2021 Nature, ACS Review 2022 Micron, Advanced Energy, …
- Member of the **jury of 18 PhD thesis** / **44 times in committees of selection** of teacher and researchers

C.6. Institutional responsibilities

2009: Director of LENS, Laboratory of Electron Nanoscopy, Institute of Nanoscience and Nanotechnology
2021: Director of the Consolidated Research Group MIND Micro-nanotechnology and nanoscopies for Electronic and Photonic Devices (2021 SGR 00242)
2022: Director of the Department of Electronics and Biomedical Engineering at University of Barcelona
2004 – 2022: Director of the educational innovation Group e-Lindo (Educational Innovation in Electronics) for implantation of innovative blended teaching and flipped classroom methodologies in the department.6
2012: Member of the Steering Committee of the Institute of Nanoscience and Nanotechnology (In2UB).
2018: Coordinator of the area in In2UB: Modeling, Simulation and Nanoscopic Methods
2014 - 2018: Member of the Scientific Committee of ELECMI
2019: Member of the User Council of the Scientific and Technological Centers (CCiTUB) of UB
2019: **Scientific Coordinator of the Barcelona node of the Spanish Scientific and Technological Singular Infrastructure (ICTS) ELECMI** devoted to Electron Microscopy for Materials Science**.**

C.7. Memberships of scientific societies

2005: Member of the European Microscopy Society (EMS) and of the Spanish Microscopy Society (SME)
2018: Member of the Association of Women Researcher and Technologists (AMIT)
2021: Member of the Catalan Society of Physics (SCF)
2021: Member of the Catalan Society of Nanoscience and Nanotechnology (SCN2)
2021: Vice-president of the Executive Board of the Spanish Microscopy Society (SME)
2024: Member of the executive board of the European Microscopy Society as chair of EMC2028

C.8. AWARDS

2022 EXCELLENT TEACHING QUALITY AWARD of the Social Council of the University of Barcelona
2022 DISTINCTION JAUME VICENS VIVES to the University Teaching Excellence, Generalitat de Catalunya
2023 2022 ICREA Academia award

CURRICULUM VITAE (maximum 4 pages)

CV date	15/01/2025

Part A. PERSONAL INFORMATION

First and Family name	Diego Cabello Ferrer		
Social Security, Passport, ID number		Age	
Researcher numbers	Researcher ID	O-1756-2014	
	Orcid code	0000-0002-4859-2899	

A.1. Current position

Name of University/Institution	Universidad de Santiago de Compostela		
Department	Centro Singular de Investigación en Tecnoloxías da Información		
Address and Country	Rúa Jenaro de la Fuente s/n		
Phone number		E-mail	Diego.cabello@usc.es
Current position	Full Professor	From	31/07/1997
Espec. cód. UNESCO	120304,330793, 330703, 330714, 330719, 220990, 22030,220308		
Palabras clave	Microelectronic design, CMOS sensors, integrated circuit design, electronic technology, energy harvesting, image and signal processing, computer vision		

A.2. Education

PhD/Degree	University	Year
Physics PhD	University of Santiago de Compostela	1984
Physics Degree	University of Granada	1978

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

Number of six-year research: 6 Date of the last sexenium grants: 2022
Number of PhD thesis supervised (last 10 years): 0
Total Nº of citations: 852/1169/2051 (WoS/Scopus/GoogleScholar)
Average citations/year during the last 5 years (without including the current year): 35,2/49,4/75,4 citations/year (WoS/Scopus/GoogleScholar)
Nº of JCR papers timeline 2011-2021: 5 Q1, 6 Q2 y 4 Q3
H index: 15/17/22 (WoS/Scopus/GoogleScholar)

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

Since 1997 I am Full Professor of the Electronics and Computer Science Department of the University of Santiago de Compostela and associated researcher at the Research Center in Information Technologies (CITIUS). Previously, I was an Associate Professor and Collaborating Professor at that university and Assistant Professor at the University of Granada. In 1989 I started the formation of a research group that I currently coordinate focused on Computational Vision and that integrates 9 Ph. Doctors. As a result of my research activity, I have published more than 200 scientific papers in areas such as the development of electronic instrumentation for biomedicine, biomedical signal processing, image analysis and interpretation, artificial neural networks and their application in image analysis, efficient implementation of image processing algorithms on cellular neural networks and their realization at the hardware level, design of mixed signal integrated circuits for early vision, applications of artificial vision in the detection of antipersonnel mines or in security and vidieovigilance tasks or the characterization of sensors and circuits for energy harvesting. Of these scientific works, 64 have been published in national or international journals or book chapters, with 43 articles in JCR journals. The remaining works correspond to publications derived from participation in conferences, both national and international. In two of the publications I have been an editor. I have participated in 30 funded research, development and innovation activities (14 of them as principal investigator) consisting of R & D & I projects financed in competitive international, national and regional calls, R & D contracts with companies and research structuring activities. On the other hand, I have supervised 9 doctoral theses, the last 4 with European doctorate recognition.

Part C. RELEVANT MERITS

C.1. Publications (including books)

1. García-Lesta, D, Cabello, D, López, P, Brea V.M. HOPBAS10K: A 98*98 Pixels CMOS Vision Sensor for Background Subtraction. IEEE Sensor Journal, 24 (7), 11927-11935, april 2024. DOI: 10.1109/JSEN.2024.3367169. Journal impact factor (JIF 2023): 4.3 Rank: 15/76 [Q1], Instruments & Instrumentation.
2. O. Pereira-Rial, P. López, J. M. Carrillo, V. M. Brea, D. cabello. A 11mA Capacitorless LDO with 3,08nA Quiescent Current and SSF-based Adaptive Biasing. IEEE Transc. On Circuits and Systems II: Express Briefs. 69 (3), 844-848, march 2022. DOI: 10.1109/TCSII.2021.3130674. Journal Impact factor (JIF 2022): 4,4 Rank: 84/275 [Q2], Engineering, Electrical & Electronic
3. O. Pereira-Rial, J.M. Carrillo, P. López, D. Cabello. A 0.6 V, ultra low-power, 1060 μm^2 selfbiased PTAT voltage generator for implantable biomedical devices. AEU-Intenational Journal of Electronics and Communicataions, vol. 137, pp.153800, 2021. DOI: 10.1016/j.aeue.2021.153800. Journal Impact factor (JCR 2020): 3,183 Rank: 102/273. [Q2], Engineering, Electrical & Electronic
4. D. Cabello, E. Ferro, O. Pereira-Rial, B. Martínez-Vázquez, V.M. Brea, J.M. Carrillo, P. López. On Chip Solar Energy Harvester and PMU with Cold Start-Up and Regulation Output Voltage for Biomedical Applications. *IEEE Transactions on Circuits and Systems-I: Regular Papers*. 67 (4), pp. 1103-1114, 2020. DOI: 10.1109/TCSI.2019.294452. Journal Impact Factor (JCR 2020): 3.605 Rank: 80/273 [Q2], Engineering, Electrical & Electronic
5. E. Ferro, V.M. Brea, P. López, D. Cabello. Micro-Energy Harvesting System Including a PMU and a Solar Cell on the Same Substrate with Cold Startup from 2,38 nW and Input Power range up to 10 µW using Continuous MPPT. *IEEE Transactions on Power Electronics*, 34 (6), pp. 5105-5116, 2019. DOI:10.1109/TEPEL.2018.2877105. Journal Impact Factor (JCR 2019): 6,373 Rank: 22/266 [D1], Engineering, Electrical & Electronic.
6. M. Suárez, V.M. Brea, J. Fernández-Berni, R. Carmona-Galán, D. Cabello, A. Rodríguez-Vázquez. Low Power CMOS Vision Sensor for Gaussian Pyramid Extraction. *IEEE Journal of Solid State Circuits*, 52 (2), pp.483-495, 2017. DOI:10.1109/JSSC.2016.261058. Journal Impact Factor (JCR 2017): 4,075 Rank: 34/260 [Q1], Engineering, Electrical & Electronic
7. E. Ferro, V.M. Brea, P. López, D. Cabello. Dynamic Model of Switched-Capacitor DC-DC Converters in the Slow-Switching Limit including Charge Reusing. *IEEE Transactions on Power Electronics*, 32 (7), pp.5293-5311, 2017. DOI: 10.1109/TPEL.2016.2607800. Journal Impact Factor (JCR 2017): 6,812 Rank: 14/260 [Q1], Engineering, Electrical & Electronic.
8. D. García-Lesta, D. Cabello, E. Ferro, P. López, V.M. Brea, Wireless Sensor Network with Perpetual Motes for Terrestrial Snail Activity Monitoring, *IEEE Sensors Journal*, 17 (15) pp. 5008-5015, 2017. DOI: 10.1109/JSEN.2017.2718107. Journal Impact Factor (JCR 2017): 2,617 Rank: 14/61 [Q1], Instruments & Instrumentation
9. J. Illade-Quinteiro, P. López, Víctor M. Brea, D. Cabello and G. Doménech-Asensi, Four-Transistor pinned photodiodes in standard CMOS technologies for time-of-flight sensors, *Semiconductor Science and Technologies*, 30 (4), pp. 045002-045013, 2015. Journal Impact Factor (JCR 2015): 2,098 Rank: 65/257 [Q2], Engineering, Electrical & Electronic
10. J. Illade-Quinteiro, P. López, V. Brea, D. Cabello and G. Doménech-Asensi. Distance Measurement Error in Time-of-flight Sensors due to Shot Noise. *Sensors,* Vol 15, 4624-4642. 2015. DOI: 10.3390/s150304624. Journal Impact Factor (JCR 2015): 2,003 Rank: 12/56 [Q1], Instruments & Instrumentation.

C.2. Research projects and grants

1. Title: Multispectral Intelligent Vision System with Embedded Low-Power Neural Computing (MISEL)
   Funding: 2020 FETPROACT-09-2020 Neuromorphic computing technologies, European Commission, Grant agreement ID: 101016734
   Participating entities: VTT Technical Research Centre of Finland (líder), AMO, BERGISCHE UNIVERSITAET WUPPERTAL, FRAUNHOFER GESELLSCHAFT ZUR

FOERDERUNG DER ANGEWANDTEN FORSCHUNG E.V., KOVILTA OY, LABORATOIRE NATIONAL DE METROLOGIE ET D'ESSAIS, POLITECHNIKA LODZKA, LUNDS UNIVERSITET, UNIVERSITY OF SANTIAGO DE COMPOSTELA.
Duration: 01/01/2021 - 31/12/2024
Principal investigator: Jacek Flack (VTT), WP3: Víctor Brea (USC)
Amount (USC): 653.301,25 €
Type of participation: investigator

2. Title: European Training Network (ETN) on Multimodal Environmental Exploration Systems-Novel Technologies (MENELAOSNT)
   Funding: H2020-MSCA-ITN-2019, ENG 860370
   Participating entities: Universitaet Siegen, Fraunhofer Gesellschaft zur Foerderung der Angewantd Forschung E.V., Ingeniería Insitu SL, Universitatea Politehnica din Bucaresti, Sabanci Universitesi, Universidad de Santiago de Compostela (USC), Weizmann Institute of Science.
   Duration: 48 meses, inicio 01/01/2020
   Amount: 501.809,76 € (USC)
   Coordinador: Paula López (Universidad de Santiago de Compostela)
   Type of participation: investigator
3. Title: Sensores CMOS de visión, gestión de energía y seguimiento de objetos sobre GPUs
   Funding: Ministerio de Ciencia, Innovación y Universidades, RTI2018-097088-B-C32
   Participating entities: Instituto de Microelectrónica de Sevilla (IMSE), Universidad Politécnica de Cartagena, Universidad de Santiago de Compostela.
   Duration: 01/01/2019 – 31/12/2021
   Amount: 81.796,00 €
   Principal investigator (subproyecto USC): Víctor M. Brea Sánchez
   Type of participation: investigador
4. Title: Nanoeaters-II: Transfer and valorization of NANOtechnologies to innovative PYMEs from the Euroregion. Work Package: Eyepress: Autonomous Implantable System for Monitoring of IntraOcular Eye Pressure.
   Funding: INTETERRREG V A España-Portugal (POCTEP) (2014-2020)
   Participating entities: Universidad de Santiago de Compostela, Iberian Nanotechnology Lab (Braga, Portugal)
   Principal investigator: of the project: GAIN (Xunta de Galicia), of the work package: Víctor M. Brea Sánchez
   Reference: 0181_NANOEATERS_1_E
   Duration: 01/01/2017 - 31/12/2019
   Amount: 126.707,27
   Type of participation: Investigator
5. Title: integrated vision systems for feature extraction with energy harvesting and management on-chip for unmanned aerial platforms
   Funding: Ministerio de Economía y Competitividad
   Reference: TEC2015-66878-C3-3-R
   Participating entities: Instituto de Microelectrónica de Sevilla (IMSE), Universidad Politécnica de Cartagena, Universidad de Santiago de Compostela.
   Duration 01/01/2016 - 31/12/2018
   Amount: 171.578,00 €
   Principal investigator (USC subproject): Paula López Martínez
   Type of participation: Investigator

C.3. Contracts

1. Title: Artificial vision systems for carry out traffic studies using images captured by RPAS (Sistemas de visión artificial para realizar estudios de tráfico mediante imágenes captadas por RPAS).
   Type of contract: Contract associated with the grant obtained by the company in the NEOTEC 2015 call of the CDTI (Plan de empresa Aplygenia SL, EXP-0084916/SNEO-20151181)

Founding: Aplygenia, S.L.
Amount: 45.089,44 € (IVA no incluido)
Duration: 01/11/16 – 30/06/2018
Principal investigators: Víctor M. Brea Sánchez, Manuel Mucientes Molina

2. Title: Technologies for lateral protection, smart and adaptatives (ADAPTA) (Tecnologías de funciones de protección lateral, inteligentes y adaptativas)
   Type of contract: contract associated with ADAPTA project, CENIT program, INGENIO 2010 program (CENIT-2008 1031).
   Founding: Innovaciones Microelectrónicas, S.L. (Anafocus)
   Participating entities: Universidad de Santiago de Compostela
   Duration: January, 2009 - March, 2012
   Amount: 130.500 € (IVA no incluido)
   Principal investigator: Diego Cabello Ferrer

C.4. Patents

1. Inventors: Manuel Felipe Mucientes Molina, Víctor M. Brea Sánchez, Mauro Fernández Sanjurjo, Paula López Martínez, Diego Cabello Ferrer
   Title: *vTrack4VC: Tracking system for counting and classifying vehicles*.
   Software registers under exploitation: Rexistro territorial da propiedade intelectual, oficina delegada de Santiago de Compostela, asiento registral número 03/2016/754
   Nº: SC210-16
   Date of presentation: 27/06/2016
   Exploitation contract date, amount and licensee: 19/07/2016, Apligenia SL. Royalties: 30 % of the net sells of the services and products that incorporate the licensed technology.

C.5 Awards

- "Best paper Award ECCTD 2003": "On the Mathematical Domain of a CMOS Discrete-Time Cellular Non-linear Network Cell" (V.M. Brea, F. Pardo, D.L. Vilariño, D. Cabello and A. Paasio), European Conference on Circuit Theory and Design, AGH University of of Science and Technology, Krakow, Poland, 2003. European Circuit Society.
- "Best student paper Award ECCTD 2013, Third place": "A 176*120 pixel CMOS vision chips for Gaussian filtering with massively parallel CDS and A/D-conversion" (M. Suárez, V.M. Brea, D. Cabello, J. Fernández-Berni, R. Carmona-Galán, A. Rodríguez-Vázquez), European Conference on Circuit Theory and Design, Technische Universität Dresden, 2013. PhD student: M. Suárez.

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

- Head of the Electronics and Computer Science Department of the University of Santiago de Compostela from June 14, 2002 to November 10, 2006
- Dean of the Faculty of Physics of the University of Santiago de Compostela from June 17, 1997 to January 31, 2002.
- Member of the Research Selection Committee. Consellería de Presidencia y Administración Pública, Government of Galicia (Xunta de Galicia). Type of activity: proposal of resolution of the calls for the general plan of knowledge of the Galician R & D program. From April 21, 1998 to June 26, 2006.
- Member of the Selection Committee of the Electronic Technologies and Communications, Electronic and photonic devices, Sensors and Microsystems area. Type of activity: selection of projects submitted to the Fundamental Research Projects program. 2008 call for research projects of the national R + D + I plan.
- Organizer member of the WASC 2015, http://eunevis.org/wasc2015/index.php
- Reviewer of international journals: IEEE Trans. on Circuits and Systems, IEEE Trans. on Power Electronics, IEEE Trans. on Biomedical Circuits and Systems, International Journal of Circuit Theory and Applications, Microprocessor and Mycrosystems, Journal of Real-Time Image Processing, …