CV date	23-03-2025

Part A. PERSONAL INFORMATION

First name	Mª Asunción		
Family name	Fernández Camacho		
e-mail	asuncion@icmse.csic.es		
Open Researcher and Contributor ID (ORCID)	0000-0002-7487-7054		

A.1. Current position

Position	Research Professor		
Initial date	July-2002		
Institution	Consejo Superior de Investigaciones Científicas		
Department/Center	Instituto de Ciencia de Materiales de Sevilla		
Country	Spain	Teleph. number	+34- 954489531
Key words	Nanomaterials, nanostructured thin films, catalytic coatings, magnetron sputtering, plasma process, microstructure, nano-scale characterization		

A.2. Previous positions (research activity interruptions)

Period	Position/Institution/Country/Interruption cause
Dec-1980 / Jun-1983	PhD student at Max Planck Institute for Radiation Chemistry (Mülheim, Germany)
Jan-1984 / Jan-1987	Post-doc at Inorganic Chemistry Department (Univ. Seville)
Feb-1987 / Jan-1997	Tenured Scientist at CSIC-Materials Science Inst. Seville
Feb-1997 / Jul-2002	Senior Scientist at CSIC-Materials Science Inst. Seville
Jul-2002 / up-to-date	Research Professor at CSIC-Materials Science Inst. Seville

A.3. Education

PhD, Licensed, Graduate	University/Country	Year
Licensed in Chemistry	Univ. Cádiz (Spain)	1980
Doctor rer. Naturforschung (Validated PhD in Chemistry Univ. Cádiz)	Univ. Dortmund (Germany)	1983
Licensed in Physics	UNED – Open University (Spain)	1984

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

A.Fernández graduated in Chemistry from the University of Cádiz (1980) and completed her doctorate (1980-1983) at the "Max-Planck Institut für Strahlenchemie" in Mülheim a.d. Ruhr under the direction of Prof. H. Kisch. During this period, she was awarded a scholarship by the prestigious Max Planck Society and by the "Alfried Krupp" foundation, obtaining the title of Dr. rer. Naturforschung by the University of Dortmund in June 1983. The subject of this first stage of her research carrier was the photocatalytic production of hydrogen from water in the presence of semiconductor catalysts. At the same time, she graduated in Physics from the UNED in 1984. She returned to Spain to join the Inorganic Chemistry Department of the University of Seville at the end of 1983 as a post-doctoral researcher and continue her research on the application of semiconductor nanoparticles as photocatalysts. In 1986 the Institute for Materials Science (ICMS, CSIC - Univ. Seville) was created and she joined in 1987 as a CSIC tenured scientist. In 1991 she launched the research group "Nanostructured Materials and Microstructure" at ICMS to work on the physical-chemical study of materials with grain sizes below 50 nm (nanomaterials).

A. Fernández was successively promoted to Scientific Researcher in 1997 and to Research Professor in 2002. She is scientific in-charge of the electron microscopy service of the CICCartuja center since 1996. She has been director of the ICMS from July 2001 to November 2009 and head of the Department "Design of Nanostructured Materials and Microstructure" from 2010 to 2017. Since 2002, her research has been focused on the application of vapor phase deposition (PVD) technologies for the manufacture of nanoparticles and nanostructured coatings; as well as, on the study of nanomaterials and catalysts that are used for the storage and production of hydrogen in portable applications. She has promoted the application of advanced microstructural characterization techniques at the nano-scale to advance in the development of nanomaterials. This trajectory was recognized with the approval of a REGPOT European project for the purchase and installation of advanced equipment for high-resolution analytical transmission electron microscopy. The project allowed 100% financing the launch at the ICMS of the "Laboratory of Nanoscopies and Spectroscopies (LANE)" which is also providing valuable analysis services to companies mainly in the Andalusian region. Her recent work focuses on the application of plasma-assisted technologies (magnetron sputtering and surface treatments) for the development of catalytic coatings, supported nanoparticles and more recently porous nanostructured films that stabilize ultra-high density gas nanobubbles.
From October 2013 to March 2014, she has been a visiting professor in the Department "H2 & Energy" at the EMPA materials center of the ETH domain in Zürich (Switzerland). From August to October 2018, she has been a visiting researcher at the Physics Department of the Univ. Namur (Belgium) and from January to April 2021 a visiting researcher (Le Studium Fellow) at the GREMI laboratory of the CNRS-Univ. of Orléans (France).

-- According to Scopus data (in June-2024) she have published 263 articles in indexed Journals with 11.371 total citations and a H impact factor of 54. (ii) In Google Scholar (in June-2024): 13614 total cites, h index 60 and i10 index of 207.

-- Asunción Fernández was included in "The World's top 2% scientists list by Standford University in the topic Applied Physics" issued in 2023 –

Dr. Fernández actively participated in doctoral programs and graduate courses supervising 12 doctoral theses as well as 17 postdoctoral researchers for stays of more than one year at ICMS. At present some are staff researchers in prestigious institutions such as: Forschungzentrum Jülich (Germany), INSA in Lyon (France), Italian National Research Council (CNR), Lodz University of Technology (Poland), Centre Universitaire Ain Temouchen (Algeria), Univ. of Minho (Portugal), Univ. of Camerino (Italy), Univ. of Cádiz, Univ. of Seville, Univ. of Granada, Univ. Málaga, and the Spanish Research Council (CSIC).

Main recent Institutional responsibilities included:
-2018-present: Member of the Governing Council of the Andalusian Agency of Knowledge.
-2015-2023: Representative of the CSIC in the Joint Program "Fuel Cells and Hydrogen" of the EERA-AISBL (European Energy Research Alliance).
-2012-2014: Member of the CSIC Materials Science and Technology Area Panel.
-2007-2009: Member of the Steering Committee of the National Center of Accelerators-CNA.

Other merits: (i) Since 2018, member of the editorial board of Nanomaterials, MDPI open access publisher. Regular reviewer in JCR magazines. (ii) Member of the evaluation panels of various financing programs: Swiss National Science Foundation, Ambizione Program (2014), FWF Austrian Science Fund. The Elise Richter-Program (2016). (iii) Member of the Royal Spanish Physics Society (RSEF) since 2009. Member of the Governing Board of the specialized group of Solid State Physics GEFES (2009-2014). (iv) Member of ASEVA (Spanish Society of Vacuum), since 2017. (v) Member of SOCIEMAT (Spanish Society of Materials), since 2018.

Part C. RELEVANT MERITS

C.1. Publications (period 2010-2024).

Relevant publications (*) Corresponding author:

--“Synergistic Effect of He for the Fabrication of Ne and Ar Gas-Charged Silicon Thin Films as Solid Targets for Spectroscopic Studies”. A. Fernández, V. Godinho, J. Ávila, M. C. Jiménez de Haro, D. Hufschmidt, J. López-Viejobueno, G. E. Almanza-Vergara; F.J. Ferrer; J. L. Colaux; S. Lucas, M.C. Asensio. Nanomaterials, 14 (2024) 727 – [DOI: 10.3390/nano14080727
--“Microstructural characterization and thermal stability of He charged amorphous silicon films prepared by magnetron sputtering in helium”. Mat. Chem. Phys., 301 (2023) 127674 – [DOI: 10.1016/j.matchemphys.2023.127674]
--“Influence of helium incorporation on growth process and properties of aluminum thin films deposited by DC magnetron sputtering”. S. Ibrahim*, F. Zahrae Lahboub, P. Brault, A. Petit, A. Caillard, E. Millon, T. Sauvage, A. Fernández, Anne-Lise Thomann. Surface & Coatings Technology, 426 (2021) 127808 - [DOI: 10.1016/j.surfcoat.2021.127808]
--“Low gas consumption fabrication of 3He solid targets for nuclear reactions”. A. Fernández*, D. Hufschmidt, J.L. Colaux, J.J. Valiente-Dobón, V. Godinho, M.C. Jiménez de Haro, D. Feria, A. Gadea, S. Lucas. Materials and Design, 186 (2020) Art. Nr.108337 (10 pp) - OPEN ACCESS [DOI: 10.1016/j.matdes.2019.108337]
--“The nanostructure of porous cobalt coatings deposited by magnetron sputtering in helium atmosphere”. B. Lacroix*, V. Godinho, A. Fernández*. Micron, 108 (2018) 49-54. [DOI: 10.1016/j.micron.2018.02.004]
--“Nitrogen Nanobubbles in a-SiOxNy Coatings: Evaluation of Its Physical Properties and Chemical Bonding State by Spatially Resolved Electron Energy-Loss Spectroscopy”. B. Lacroix*, V. Godinho, A. Fernández*. J. Phys. Chem. C 120 (2016) 5651-5658. [DOI: 10.1021/acs.jpcc.5b09036]. **Front cover**.
--“STEM–EELS analysis reveals stable high density He in nanopores of amorphous silicon coatings deposited by magnetron sputtering”. R. Schierholz*, B. Lacroix, V. Godinho, J. Caballero-Hernández, M. Duchamp, A. Fernández*. Nanotechnology, 26 (2015) 075703 (10pp). [DOI:10.1088/0957-4484/26/7/075703]
--“A new bottom-up methodology to produce silicon layers with a closed porosity nanostructure and reduced refractive index”. V. Godinho*, J.Caballero-Hernández, D.Jamon, T.C. Rojas, R. Schierholz, J. García-López, F. J. Ferrer and A. Fernández*. Nanotechnology, 24 (2013) 275604 (10pp) - OPEN ACCESS. [doi:10.1088/0957-4484/24/27/275604]

C.2. Congress
Relevant invited presentations in international conferences.
-- iPlasmaNano-XI Conference. Seville (Spain). September 2022. “Nanostructured thin films through the bottom-up magnetron sputtering deposition in Helium”.
--5th European Conference on Nano Films (ECNF). Cranfield (UK), March 2018. “Structure-based design and applications of closed porous coatings fabricated by magnetron sputtering”
--International Symposium on Metastable and Nanomaterials ISMANAM 2015, Paris (Francia), July 2015. “Porous amorphous-Silicon coatings fabricated by magnetron sputtering with Helium as process gas”.
-- 49th International Conference on Metallurgical Coatings and Thin Films. San Diego (CA - USA), May 2023. "Nanoporous/Nanocomposite Thin Films by Magnetron Sputtering Deposition in Helium and other Light Gases: New Materials and Applications"
● **Contributions in Scientific Committees or Symposium chair**.
--E-MRS 2018 Fall Meeting, Warsaw (Poland), 17-20 September, 2018. Symposium L: Advances in nanoparticles, synthesis, characterization, theoretical, modelling, and applications. Member of Scientific Committe.
--European Conference on Nanofilms (ECNF) – Member of the scientific committee (2012, 2016, 2018); conference chair (2014).
--International Conference on Innovation in Thin Films Processing and Characterization (ITFPC) – Member of the scientific committee (2015, 2017)

C.3. Research projects
● In the period 2013-2022 **as project’s principal investigator** in all of them: 1x European, 4x National, 3x from Andalucía region, 2x infrastructure acquisition,10x other programs (COST, Madariaga, CSIC internal projects, access to large facilities).
Relevant projects:

-- “Nanostructured thin films grown by magnetron sputtering deposition with plasmas of Helium and other light gases” P.I. A.Fernández. Grant from “Ministerio de Ciencia e Innovación”. Ref.: PID2021-124439NB-I00. Period: 1-09-2022/31-08-2026. Budget: 114.950,00 €
--“Development of catalysts and supports for CO_2 neutral chemical energy storage processes based on liquid organic hydrogen carriers” (CO2&H2) P. I. A.Fernández. Grant from “Ministerio de Ciencia, Innovación y Universidades”. Ref.: RTI2018-093871-B-I00. Period: 1-1-2019 / 30-9-2022 Budget: 176.176,00 €
--“Adquisición e instalación de un microscopio electrónico de transmisión”.I.P.: A. Fernández. MINECO. Ayudas a infraestructuras y equipamiento científico-técnico. FEDER, Convocatoria 2015. Ref. CSIC15-CE-3298. Financiación MINECO: 420.160,00 €
--“Advanced laboratory for the Nanoanalysis of Novel Functional Materials. (ALNANOFUNC)”. Coordinator: A.Fernández. European Grant from the Capacities program: FPVII, Ref.: CT-REGPOT-2011-1-285895. Period: 1-10-2011 / 31-03-2015. Budget for the CSIC-ICMS: 2.687.409,00 €

C.4. Contracts, technological or transfer merits

● Contracts with companies in the period 2013-2022:
--"Caracterización microestructural y química de materiales para avisadores sonoros". P.I. A.Fernández. Technological support contract witn the company Clarton Horn. Period: 2010-2024.
--“Caracterización microestructural y química de materiales por microscopia electronica”. P.I. A.Fernández, M.C. Jiménez. I+D contract with the company Abengoa Research. Period: 14-02-2014/13-02-2016.
--“Caracterización microestructural y química de materiales en células CIGSe”. P.I.: A.Fernández, V. Godinho, I+D contract with the company Abengoa Solar. Period: 13-05-2014/12-05-2017.
--"Optimización del proceso de oxidación de anillos de Kovar para la fabricación de uniones vidrio-metal". P.I. A.Fernández. Technological support contract witn the company Rioglass Solar SCH S.L. Period: 16-06-2019 / 15-01-2021.

● Throughout my scientific career I have been co-inventor of 10 national patents of which 9 have had PCT extension and of these 4 entered national phases and in turn 2 were granted in the USA and other countries (in these cases the cost and management of these patents are in charge of licensees or holders by contract with the CSIC).

Relevant patents

--“Proceso de producción de hidrógeno mediante hidrólisis catalizada de un hidruro complejo, e instalación con reactor semicontinuo para llevar a cabo el procedimiento”, M.A. Jiménez, M.M. Jiménez, B. Sarmiento, M.A. Fernández, G.M. Arzac, E. Jimenez, nº de solicictud: P201031899, país de prioridad: España, Fecha de prioridad 22/Diciembre/2010, Entidad Titular: Hynergreen Technologies S.A.
Solicitud USA nº: 13/268095. Fecha de solicitud: 7 de octubre de 2011. (USA Patent Application 20120156576). Concedida. Nr. de publicación: US13/268,095. Fecha de publicación: 4-Marzo-2014.
--“Procedimiento de obtención de un material sólido con agregados gaseosos mediante pulverización catódica por magnetrón en condiciones estáticas o cuasiestáticas para reducir el consumo de gas”. P201831107. Fecha de prioridad: 15/11/2018. Propiedad: Consejo Superior de Investigaciones Científicas. Extensión internacional PCT/ES2019/070729, Fecha: 28/Oct/2019.