

CURRICULUM VITAE

CV date	10/05/19
---------	----------

PERSONAL INFORMATION

First and Family name	Carlos Escudero Rodríguez		
Passport	PAI924622	Age	40
Researcher numbers	Researcher ID	F-8044-2011	
	ORCID code	0000-0001-8716-9391	

Current position

Name of University/Institution	Consorcio para la construcción, Equipamiento y explotación del Laboratorio de Luz de Sincrotrón (CELLS)		
Department	Experiments Division		
Address and Country	Carrer de la Llum 2-26, 08290 Cerdanyola del Vallès, Barcelona, Spain		
Phone number	935924024	E-mail	cescudero@cells.es
Current position	Beamline Scientist	From	19/05/2014

Education

PhD with European Mention	University of Barcelona	2008
PhD in Chemistry with Honors (qualified as Cum Laude)	University of Barcelona	2007
Advanced Studies Diploma (DEA) in Chemistry	University of Barcelona	2004
Experimental Master in Chemistry	University of Barcelona	2003
Certificate of Pedagogic Aptitude (CAP) in Physics and Chemistry	Polytechnic University of Catalonia	2002
Degree in Chemistry	University of Barcelona	2002

JCR articles, h Index, thesis supervised

Obtained from Web of Science and Scopus:

Number of articles in journals indexed in JCR: 38

Citations received: 752

Average of citations per year (last 5 years): 99

h-index: 13

PhD thesis currently supervised: 1

CV SUMMARY

I am Beamline Scientist at the ALBA Synchrotron Light Source (ALBA-CELLS), the first and only synchrotron in Spain, since 2014. I joined ALBA as Postdoc Researcher in 2012 after a three years stage (from 2009 to 2012) as Postdoc Researcher at the Lawrence Berkeley National Laboratory (LBNL, Berkeley). From 2009 to 2011 I was there as a Fulbright Scholar with a grant from the Spanish Government and the third year I was directly hired by Prof. Miquel Salmeron. Previously, I was at the *Universitat de Barcelona* (UB) as Associate Professor (“*Professor Ajudant LOU*”, from 09/2007 to 09/2008 and “*Professor Associat 6P*”, during 02-09/2007). I obtained the Degree in Chemistry at UB in 2002, a Master degree in

Experimental Chemistry in 2003 and defended the Doctoral Thesis in Chemistry at UB in 2007, qualified *cum laude* and with European mention. During my last year of the Chemistry degree (from May to July 2001) I did an Internship in BAYER, S.A. In 2002 I obtained the Certificate of Pedagogic Aptitude (CAP) in Physics and Chemistry at the *Universitat Politècnica de Catalunya* (UPC) In addition to UB, I also conducted research at the Institut de Ciència de Materials de Barcelona (ICMAB-CSIC) and at the *Università degli Studi di Catania* (Italy).

My research initially focused on Chirality and Supramolecular Chemistry but during my stay in Berkeley, and ever since, I focused on heterogeneous catalysis and, in particular, on the characterization of catalysts by means of *in situ* synchrotron techniques. I have participated in 9 competitive research projects, in 1 of them as principal investigator, and in 2 other non-competitive projects at ALBA Synchrotron. I have published more than 35 articles in prestigious international scientific journals, which include "Science", "Angewandte Chemie", "Applied Catalysis B: Environmental", "Chemical Communications", "Journal of Catalysis" and "ACS Catalysis", among others. My h-index is 13 and 2 of my articles have been cited more than 100 times. I have more than 70 contributions to conferences (3 Invited Lectures). I have been awarded with different fellowships during my research stage in Barcelona and I was awarded with a *Fulbright scholarship* during my postdoctoral stage in Berkeley.

In the UB, my teaching activities were related to the career of Chemistry, specifically related to laboratory practices at different levels and other subjects, e.g. Organic Chemistry. I have supervised the work of different students (Master, PhD) in Barcelona and Berkeley and I have supervised a Postdoc researcher from Argentina during his 6 months stay in ALBA. I am currently co-supervising my first official PhD student together with Prof. Jordi Llorca from UPC. I have also taught postgraduate courses at the ALBA Synchrotron (Master in Synchrotron Radiation), *Universidad de Cádiz* and from 2014 up to now I have collaborated in the *European master in Nanoscience and Nanotechnology* from the UB. In 2010, during my stay at LBNL I participated in the program *Industry Initiatives for Science and Math Education*, which included the supervision of a teacher during his stay in my research lab.

During my stay at the LBNL in Berkeley, I participated in the development of a high-pressure gas cell to perform *in situ* X-ray Absorption Spectroscopy (XAS) experiments under more realistic conditions, and through a collaboration we implemented a similar setup for liquids in ALBA that now it is available to external users.

RELEVANT MERITS

Selected publications

- N.J. Divins; I. Angurell; C. Escudero; V. Pérez-Dieste; J. Llorca. *Influence of the support on surface rearrangements of bimetallic nanoparticles in real catalysts*. **Science**, 2014, 346, 620-623.
Impact factor: 34.661 (Q1 Sciences Multidisciplinary); Times cited: 92
- C. Escudero; J. Crusats; I. Díez-Pérez; Z. El-Hachemi; J.M. Ribó. *Folding and Hydrodynamic Forces in J-Aggregates of 5-Phenyl-10,15,20-tris-(4-sulfophenyl)-porphyrin*. **Angewandte Chemie International Edition**, 2006, 45, 8032-8035.
Impact factor: 10.232 (Q1 Chemistry Multidisciplinary); Times cited: 109
- C. F. Schiller; M. Ilyn; V. Pérez-Dieste; C. Escudero; C. Huck-Iriart; N. Ruiz del Arbol; B. Hagman; L. R. Merte; F. Bertram; M. Shipilin; S. Blomberg; J. Gustafson; E. Lundgren; J. E. Ortega. *Catalytic Oxidation of Carbon Monoxide on a Curved Pd Crystal: Spatial Variation of Active and Poisoning Phases in Stationary Conditions*. **Journal of the American Chemical Society**, 2018, 140, 16245–16252.
Impact factor: 14.357 (Q1 Chemical Engineering, Catalysis)

- L. Collado; A. Reynal; F. Fresno; M. Barawi; C. Escudero; V. Perez-Dieste; J. M. Coronado; D. P. Serrano; J. R. Durrant; V. A. de la Peña O'Shea. *Unravelling the effect of charge dynamics at the plasmonic metal/semiconductor interface for CO₂ photoreduction*. **Nature Communications**, 2018, 9, Article number 4986.
Impact factor: 12.353 (Q1 General Chemistry)
- C. Huck-Iriart; L. Soler; A. Casanovas; C. Marini; J. Prat; J. Llorca; C. Escudero*. *Unraveling the chemical state of Cobalt in Co-based catalysts during Ethanol Steam Reforming: an in situ study by Near Ambient Pressure XPS and XANES*. **ACS Catalysis**, 2018, 8, 9625–9636.
Impact factor: 11.384 (Q1 Catalysis)
- A. Tuxen; S. Carencio; M. Chintapalli; C.-H. Chuang; C. Escudero; E. Pach; P. Jiang; F. Borondics; B. Beberwyck; A.P. Alivisatos; G. Thornton; W.-F. Pong; J. Guo; R. Perez; F. Besenbacher; M. Salmeron. *Size-Dependent Dissociation of Carbon Monoxide on Cobalt Nanoparticles*. **Journal of the American Chemical Society** 2013, 135 - 6, 2273 - 2278.
Impact factor: 11.444 (Q1 Chemistry Multidisciplinary); Times cited: 118
- M. Tasbihi; F. Fresno; U. Simon; I.J. Villar-García; V. Pérez-Dieste; C. Escudero; V.A. de la Peña O'Shea. *On the selectivity of CO₂ photoreduction towards CH₄ using Pt/TiO₂ catalysts supported on mesoporous silica*. **Applied Catalysis B: Environmental**, 2018, 239, 68 - 76.
Impact factor: 11.698 (Q1 Environmental Science)
- L. Collado; I. Jansson; A.E. Platero-Prats; V. Pérez-Dieste; C. Escudero; E. Molins; L. Casas i Doucastela; B. Sánchez; J.M. Coronado; D.P. Serrano; S. Suarez; V.A. de la Peña O'Shea. *Elucidating the Photoredox Nature of Isolated Iron Active Sites on MCM-41*. **ACS Catalysis**, 2017, 7, 1646-1654.
Impact factor: 11.384 (Q1 Catalysis)
- I. Danila; F. Pop; C. Escudero; L.N. Feldborg; J. Puigmarti-Luis; F. Riobe; N. Avarvari; D.B. Amabilino. *Twists and turns in the hierarchical self-assembly pathways of a non-amphiphilic chiral supramolecular material*. **Chemical Communications**, 2012, 48, 4552-4554.
Impact factor: 6.378 (Q1 Chemistry Multidisciplinary)
- Z. El-Hachemi; O. Arteaga; A. Canillas; J. Crusats; C. Escudero; R. Kuroda; T. Harada; M. Rosa; J.M. Ribo. *On the mechano-chiral effect of vortical flows on the dichroic spectra of 5-phenyl-10,15,20-tris(4-sulfonatophenyl)porphyrin J-aggregates*. **Chemistry - A European Journal**, 2008, 14, 6438 - 6443.
Impact factor: 5.454 (Q1 Chemistry Multidisciplinary)
- Z. El-Hachemi; C. Escudero; F. Acosta-Reyes; M.T. Casas; V. Altoe; S. Aloni; G. Oncins; A. Sorrenti; J. Crusats; J.L. Campos; J.M. Ribo. *Structure vs. properties - chirality, optics and shapes - in amphiphilic porphyrin J-aggregates*. **Journal of Materials Chemistry C**, 2013, 1, 3337-3346.
Impact factor: 5.066 (Q1 Materials Chemistry)
- S. Carencio; A. Tuxen; M. Chintapalli; E. Pach; C. Escudero; T.D. Ewers; P. Jiang; F. Borondics; G. Thornton; A.P. Alivisatos; H. Bluhm; J. Guo; M. Salmeron. *Dealloying of Cobalt from CuCo Nanoparticles under Syngas Exposure*. **Journal of Physical Chemistry C**, 2013, 117, 6259-6266.
Impact factor: 4.835 (Q1 Materials Science Multidisciplinary)
- L. Soler; A. Casanovas; C. Escudero; V. Pérez-Dieste; E. Aneggi; A. Trovarelli; J. Llorca. *Ambient Pressure Photoemission Spectroscopy Reveals the Mechanism of Carbon Soot Oxidation in Ceria-Based Catalysts*. **ChemCatChem**, 2016, 8, 2748 - 2751. (cover)
Impact factor: 4.803 (Q1 Inorganic Chemistry)

Research projects and grants

- MINCIU RTI2018-093996-B-C32. *Caracterización en condiciones de operación de catalizadores sintetizados por vía mecanoquímica para aplicaciones energéticas: activación de metano y producción de hidrógeno*. Convocatoria 2018 de la convocatoria de Proyectos I+D+i «Retos Investigación» del Programa Estatal de I+D+i Orientada a los Retos de la Sociedad. 2019-2021. PI: Carlos Escudero. 90.750 €.
- ALBA-CELLS IH2018NAPP. *Conventional Pd(NPs)/ceria vs inverse CeO₂(NPs)/Pd catalysts for CO oxidation reaction: Identification of the electronic nature of the nanoparticles and their interaction with the support*. In House Research call 2018. 2018-2019. PI: Carlos Escudero. 16.000 €.
- MINECO MAT2015-72848-EXP. *Un material bifuncional basado en heteroestructuras orgánico/grafeno para la disociación fotocatalítica de agua*. Convocatoria 2015 del Programa Estatal de Fomento de la Investigación Científica y Técnica de Excelencia (Plan Estatal de Investigación Científica y Técnica y de Innovación 2013-2016). 2016-2018. PI: Esther Barrena; Investigador: Carlos Escudero. 25.000 €.
- ALBA-CELLS IH2014NAPP. *Exploring the supramolecular self-assembly of a family of porphyrins for a better understanding of the formation of thin films, nano- and mesostructures*. In House Research call 2014. 2014-2015. PI: Carlos Escudero. 25.000 €.
- MINECO MAT2012-38567-C02-02. *Materiales zeolíticos como estructuras anfitrionas de nanopartículas. Caracterización avanzada y estudios espectroscópicos en condiciones de operación*. Convocatoria 2012 del subprograma de Proyectos de Investigación Fundamental no Orientada (Programa Nacional de Proyectos de Investigación Fundamental). 2013-2015. PI (subproject during 2015, before investigator with full dedication): Carlos Escudero. 81.900 €.
- DOE CSD-KC32. *Nanoscience and Nanoparticles for 100% Selective Catalytic Reactions*. 2010-2012. Lead PI: Gabor Somorjai; Investigador: Carlos Escudero. 606.000 €.
- DOE MSD-KC31. *Chemical and Mechanical properties of Surfaces, Interfaces and Nanostructures*. 2008-2010. Lead PI: Miquel Salmeron; Investigador: Carlos Escudero. 1.490.000 €.
- MEC AYA2006-15648-C02. *Procesos de ruptura de simetría especular y su relación con la emergencia abiótica de la quiralidad*. Convocatoria 2015 del Programa Estatal de Fomento de la Investigación Científica y Técnica de Excelencia (Plan Estatal de Investigación Científica y Técnica y de Innovación 2013-2016). 2006-2009. PI: J.M. Ribó; Investigador: Carlos Escudero. 242.000 €.

Fellowships and Awards

- 2013 and 2014. Grant award for workshop organization from the grupo especializado de Nanociencia y Materiales Moleculares (NANOMATMOL), Spain
- 2009–2011. Post-doctoral Fulbright Fellowship. Fulbright Program, Spain
- 2008. Doctoral degree *Cum Laude* with European Mention

Scientific Review Committees

- From 2018, Scientific Review Panel of Helmholtz-Russian Science Foundation Joint Research Groups
- From 2017, Scientific Review Panel of Advanced Light Source (Berkeley Synchrotron, Lawrence Berkeley National Laboratory, Berkeley, CA)
- From 2013, Scientific Review Panel of Molecular Foundry (Lawrence Berkeley National Laboratory, Berkeley, CA)

Organisation of research activities

- *Synchrotron Radiation to study Atomic Layer Deposition*, June 12-15, 2016, Spain (Scientific committee).
- *ALBA synchrotron, new instrumentation for Nanoscience and Molecular Materials Characterization*, November 13-14, 2014, Spain (Organizer).
- *Alba Synchrotron: Experimental applications to study structure and reactivity*, February 6, 2014, Spain (Organizer).
- *ALBA synchrotron, new instrumentation for Nanoscience and Molecular Materials Characterization*, November 14-15, 2013, Spain (Organizer).

Other merits

- Membership of scientific societies: Asociación Española del Vacío y sus Aplicaciones (ASEVA, International Union for Vacuum Science, Technique and Applications); Asociación de Usuarios de Sincrotron de España (AUSE)
- Invited talks in Lawrence Berkeley National Laboratory (US, 2009), Universidad Autónoma de México (Mexico, 2011), XXXIV Reunión Bienal de la Real Sociedad Española de Química (Spain, 2013), etc.
- Referee activities: *Surface Science, Materials, Rev. Sci. Instruments, Sustainable Chemistry and Pharmacy, J. Phys. Chem. B and C, ACS Appl. Mat and Interfaces.*