



CV date	11/04/2023
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## Part A. PERSONAL INFORMATION

First name	Esther		
Family name	Barrena		
Gender (*)	F	Birth date (dd/mm/yyyy)	10/02/1972
Social Security, Passport, ID number	DNI: 02896452Q		
e-mail	e.barrena@csic.es		
Open Researcher Contributor ID (ORCID)	B-7683-2014		0000-0001-9163-2959

### A.1. Current position

Position	Científico titular CSIC		
Initial date	01/09/2009		
Institution	CSIC		
Department/Center	<a href="#">Instituto de Ciencia de Materiales de Barcelona</a>		
Country	Spain	Teleph. number	935801853
Key words			

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

Period	Position/Institution/Country/
2002-2009	<b>Group Leader</b> Max-Planck-Institut für Metallforschung (MF-MPI) (Germany)
2001-2002	<b>Postdoc</b> Max-Planck-Institut für Metallforschung (MF-MPI) (Germany)
Period	Research interruption
11/2007	Child birth, 1 year parental leave
11/2010	Child birth, 6 months of parental leave

**Short research stays abroad:** 08/2005-10/2005: National Institute for Materials Science (NIMS), **Tsukuba, Japan**, International Center for Young Scientist (ICYS). Grupo de Yutaka Wakayama. 06/2000-09/2000: Grupo Prof. Dr. H. Spiess, Max-Planck-Institut für Polymerforschung, **Mainz, Alemania**. 10/1997-04/1998 Lawrence Berkeley National Laboratory, **Berkeley, USA**, in the group of M. Salmeron at the Center of Advanced Materials.

### A.3. Education

	University/Country	Year
Doctor in Physics	Universidad Autónoma de Madrid	2001
Licenciada en Ciencias Físicas	Universidad Autónoma de Madrid	1995

## Part B. CV SUMMARY

After the completion of my PhD in 2001, I acquired a postdoctoral position at the Max-Planck-Institute for Metal Research in Stuttgart (now Max-Planck-Institut für Intelligente Systeme). In 2002, I became the **group leader and responsible of the organic group** in the same department, which allowed me to lead my research lines. In 2005 I was invited as research fellow to the **National Institute for Materials Science (NIMS)**, Tsukuba, Japón in the frame of the International Center for Young Scientist (ICYS). At the end of 2009, I came to the ICMAB as CSIC tenured scientist to open a new research line in the study



of functional properties of organic semiconductors at nano- and molecular-scale, joining the group of Prof. C. Ocal (PCSI group). I have been principal investigator of **11 projects (national, german and EU funding)**, supervised **7 PhDs** (plus 1 in progress), participated in conferences with more than 30 oral contributions and **10 invited talks**. I am **the coordinator of the network “Organic electronic devices: from high-performance materials to advanced applications (ORGAED)”** (red de investigación del Plan Estatal de Investigación Científica, Técnica y de Innovación 2021-2023). I am also actively involved in training of master and bachelor students (>>10), mentoring, in evaluation panels, and in divulgation activities for public and students in primary and secondary schools.

**PhD thesis supervised: 7**  
**Number of JCR articles: 92** (web of science)  
**Book chapters: 3**  
**Citations: 2,968** (Scopus) / 3584 (Google scholar)  
**H index: 32** (Scopus)  
**Sexenios aprobados: 3**  
**Area AEI : Tecnología y Ciencia de Materiales (MAT)**

## Part C. RELEVANT MERITS)

### C.1. Selected Publications (\* being contact author)

R.T. Weitz, K. Amsharov, U. Zschieschang, E. Barrena Villas, D.K. Goswani, M. Burghard, H. Dosch, M. Jansen, K. Kern, H. Klauk, “Organic n-Channel Transistors Based on Core-Cyanated Perylene Carboxylic Diimide Derivatives”, *Journal of the American Chemical Society* 130, 4637-4645 (2008). (**citas 234**)

B. Schmidt-Hansberg, M. Sanyal, M. F. G. Klein, M. Pfaff, N. Schnabel, S. Jaiser, A. Vorobiev, E. Müller, A. Colsmann, P. Scharfer, D. Gerthsen, U. Lemmer, E. Barrena\*, W. Schabel “Moving through the Phase Diagram: Morphology Formation in Solution Cast Polymer\_Fullerene Blend Films for Organic Solar Cells” *ACS Nano*, 5, 8579–8590 (2011) (**citas 145**)

M. Sanyal, B. Schmidt-Hansberg, M. F.G. Klein, A. Colsmann, C. Munuera, A. Vorobiev, U. Lemmer, W. Schabel, H. Dosch, E. Barrena\* “In-situ x-ray study of drying temperature influence on the structural evolution of bulk heterojunction polymer–fullerene solar cells processed by doctor–blading” , *Advanced Energy Materials*, 1, 362 (2011) (**citas 92**)

*M. Aghamohammadi, R. Rödel, U. Zschieschang, C. Ocal, H. Boschker, R. T. Weitz, E. Barrena\*, H. Klauk* “Threshold-Voltage Shifts in Organic Transistors Due to Self-Assembled Monolayers at the Dielectric: Evidence for Electronic Coupling and Dipolar Effects” *Acs Applied Materials & Interfaces* 7 22775-22785 (2015) (**80 cites**)

A. Pérez-Rodríguez, I. Temiño, Carmen Ocal, M. Mas, E. Barrena “Decoding the Vertical Phase Separation and Its Impact on C8-BTBT/PS Transistor Properties” *ACS Appl. Mater. Interfaces* 10, 7296–7303 (2018) (**53 cites**)

I. Gelmettia, N.F. Montcada, A. Pérez-Rodríguez, E. Barrena, C. Ocal, I. García-Benito, A. Molina-Ontoria, N. Martín, A. Vidal-Ferrana, E. Palomares “Energy Alignment and Recombination in Perovskite Solar Cells: Weighted Influence on the Open Circuit Voltage” *Energy and Environment Science* 12 (2019) (**83 cites**)

F. Silvestri, M.J. Prieto, A. Babuji, L.C. Tănase, L. de Souza Caldas, O. Solomeshch, Th. Schmidt, C. Ocal, E. Barrena\* “Impact of Nanomorphology on Surface Doping of Organic Semiconductors: The Pentacene–C60F48 Interface” *ACS Appl. Mater. Interfaces* 12, 25444–25452 (2020) (2 cites)



A. Babuji, I. Temiño, A. Pérez-Rodríguez, O. Solomeshch, N. Tessler, M. Vila, J. Li, M. Mas-Torrent, C. Ocal, E. Barrena\*, Double Beneficial Role of Fluorinated Fullerene Dopants on Organic Thin Film Transistors: Structural Stability and Improved Performance, *ACS Appl. Mater. Interfaces*, 12, 25, 28416–28425 (2020) (**13 cites**) <https://doi.org/10.1021/acsami.0c06418>

A. Babuji, F. Silvestri, L. Pithan, A. Richard, Y. H. Geerts, N. Tessler, O. Solomeshch, C. Ocal, E. Barrena\* “Effect of the Organic Semiconductor Side Groups on the Structural and Electronic Properties of Their Interface with Dopants” *ACS Appl. Mater. Interfaces*, 12, 51, 57578 (2020). DOI: 10.1021/acsami.0c172713 (**citas 6**)

A. Babuji, A. Cazorla, E. Solano, C. Habenicht, H. Kleemann, C. Ocal, K. Leo, E. Barrena\* “Charge-Transfer Complexes in Organic Field-Effect Transistors: Superior Suitability for Surface Doping” *ACS Appl. Mater. Interfaces* (2022) DOI: 10.1021/acsami.2c09168

## C.2. Research projects (last 10 years)

**REDES DE INVESTIGACIÓN** Plan Estatal de Investigación Científica, Técnica y de Innovación 2021-2023.: DISPOSITIVOS DE ELECTRONICA ORGANICA: DESDE MATERIALES DE ALTO RENDIMIENTO A APLICACIONES AVANZADAS

Duración: Concedido 03/2023 (dos años)

Entidad financiadora: Ministerio de Ciencia e Innovación

Referencia: RED2022-134503-T, Puesto ocupado por el interesado: **Coordinadora**

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**ITN Doctoral Training Network “EIFFEL”**: EFFICIENT FULLERENE-FREE ORGANIC SOLAR CELLS”

Duración: Concedido 03/2023 (cuatro años)

Entidad financiadora: EUROPEAN RESEARCH EXECUTIVE AGENCY (REA) Horizon 2020

Referencia: 101072772, Presupuesto del grupo CSIC: 251,971.2 EUR

Puesto ocupado por el interesado: **Investigador principal (IP)**

**Consorcio internacional**: Chemnitz University of Technology, University of Würzburg, University of Mons, Dresden University of Technology, Heliatek GmbH, Eurecat, French National Centre for Scientific Research (CNRS), infinityPV ApS, University of Cyprus, ICMAB-CSIC

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**Proyectos I+D+I Programa Estatal de Investigación “Fotoquímica y estabilidad de interfases modelo orgánico/agua para la descomposición del agua”**

Duración: desde 12/2019 hasta 12/2022

Entidad financiadora: Ministerio de Ciencia e Innovación

Referencia: PID2019-110907GB-I00, Presupuesto: 193.600 EUR, Puesto ocupado por el interesado: **IP** (co-IP: Albert Verdguer)

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**ITN Doctoral Training Network “SEPOMO”** Spins for Efficient Photovoltaic Devices based on Organic Molecules”

Duración: desde 10/2016 hasta 10/2019

Entidad financiadora: EUROPEAN RESEARCH EXECUTIVE AGENCY (REA) Horizon 2020

Referencia: Grant agreement No: 722651

Presupuesto grupo CSIC: 247.872,96 EUR, Puesto ocupado por el interesado: **IP, Consorcio**

**internacional**: University of Oxford, Chemnitz University of Technology, University of Würzburg, University of Mons, Dresden University of Technology, Heliatek GmbH, Eurecat, French National Centre for Scientific Research (CNRS), Merck, ICMAB-CSIC.

[Spins for Efficient Photovoltaic Devices based on Organic Molecules](#) | [SEPOMO Project](#) | [Fact Sheet](#) | [H2020](#) | [CORDIS](#) | [European Commission \(europa.eu\)](#)

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**Proyecto EXPLORA** “Un Material Bifuncional Basado en Heteroestructuras orgánico/grafeno para la disociación fotocatalítica de agua “

Duración: desde 05/2017 hasta 04/2019

Entidad financiadora: Ministerio de Economía, Industria y Competitividad

Referencia: MAT2015-72848-EXP, Presupuesto: 25000 EUR, Puesto ocupado por el interesado: **IP**



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**Proyectos I+D+I Programa Estatal de Investigación “Nuevas Intercaras Optimizadas para Dispositivos Responsivos basados en Moléculas”**

Duración: desde 12/2016 hasta 12/2019

Entidad financiadora: Ministerio de Economía, Industria y Competitividad

Referencia: MAT2016-77852-C2-1-R

Presupuesto: 242.000 EUR, Puesto ocupado por el interesado: **IP** (co-IP: Nuria Aliaga)

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**Proyecto coordinado Deutsche Forschungsgemeinschaft (DFG) “Polymeric Solar Cells: Molecular Orientation, Structure, and Optoelectronic Performance (PSOP)”**

Duración: desde 05/2013 hasta 05/2015

Entidad financiadora: Deutsche Forschungsgemeinschaft (DFG)

Entidades participantes: Universidad de Karlsruhe y ICMAB-CSIC

Referencia: BA 3772/1-3, Presupuesto: 88.470 EUR, Puesto ocupado por el interesado: **IP**

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**C.3 Conferences** Due to the lack of space, here I list only invited contributions (last 10 years):

10/2019 NanoScientific Forum Europe (**NSFE 2019**), University of Bologna (Italy)

10/2017 International Conference on Functional Nanomaterials & Nanotechnology (**ICFNN-2017**), Nepal, supported by the NIMS- Tsukuba (Japan)

09/2015 **31 ECOSS** European Conference on Surface Science (Barcelona)

10/2013 **ALS User Meeting** Workshop on nanostructured, self-assembled, thin film formation (Berkeley, USA)

06/2013 **NIMS Conference 2013-** Structure Control of Atomic/Molecule Thin Film and Their Application, (Tsukuba, Japan)

**C.4 Conferences organization**

-June 2016 “International workshop on Organic Electronics: Recent Developments and -Challenges (OE2016)” (Place, MPI, Stuttgart) (<https://www.fkf.mpg.de/oe2016>)

-2019 Simposio “Materiales Moleculares en Superficies” en la XXXVII Biental de Física (Zaragoza, 15 a 19 de julio de 2019)

-2024 organization chair: **4th International Conference on Interface Properties In organic and Hybrid Electronic: Perspectives & Key Challenges**

**C.5 Supervisor of PhD Thesis**

Dimas García de Oteyza (2007), Sonia Matencio (2015), Mahdiah Aghamohammadi (2016), Ana Pérez Rodríguez (2018), Rogger Palacios (2021), Francesco Silvestri (2021), Adara Babuji (2022) (see [Theses – PHYSICAL CHEMISTRY OF SURFACES AND INTERFACES \(icmab.es\)](#))

**C.6 Other commitments**

-Evaluator for the German Research Foundation (DFG), Swiss National Science Foundation and the Spanish evaluation agency. -Evaluator in Beam Time Allocation Panel ESRF C09 (for evaluation of proposals) 2022-2024. -Member of the direction board of **GEFES-RSEF** (from 02/2018), -Mentor in STEM TALENT GIRL (<https://talent-girl.com/>)

**C.7 Divulagation**

De todas las actividades, destaco aquí la participación en la lectura teatralizada “*Madame Châtelet i les seves seguidors d’Instagram*” (@madamechatelet). He participado en varias representaciones teatralizadas en Inspiraciencia (1), en escuelas de primaria (3), en institutos de secundaria (1), en Science and Tech Girls Vallès (1) y en el Cosmocaixa ([Madame Châtelet i les seves seguidors a Instagram - Un projecte de l'ICMAB-CSIC - YouTube](#)).