MINISTERIO DE CIENCIA, INNOVACIÓN Y UNIVERSIDADES

CURRICULUM VITAE (maximum 4 pages)

CV date	1/07/2020

Part A. PERSONAL INFORMATION

First and Family name	María Rosario de la Fuente Lavín		
Social Security, Passport, ID number	24405552E	Age	61
Researcher numbers	Researcher ID	https://orcid.org/0000-0002-7024-1462	
	Orcid code	http://www.researcherid.com/rid/O-1402-2016	

A.1. Current position

Name of University/Institution	Universidad del País Vasco, UPV/EHU		
Department	Dpto. Física Aplicada II, Facultad de Ciencia y Tecnología		
Address and Country	Apdo. 644 , 48080 Bilbao		
Phone number	946015339	E-mail	rosario.delafuente@ehu.es
Current position	Catedrática de Universidad	From	08/04/1995
Espec. cód. UNESCO	221107		
Palabras clave	Liquid crystal, dielelectric spectroscopy		

A.2. Education

PhD	University	Year
The dielectric response in dipolar systems. Non-exponential relaxation and memory effect	Universidad del País Vasco, UPV/EHU	1985

A.3.

100 papers, between 50 and 60 in Q1
h=24, 2149 citations,
923 cites in the last 5 years, 185/year
Number of supervised PhD in the last 10 years: 2
6 research “sexenios”, last 2018

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

My research activity began in 1981 with the completion of the Bachelor Thesis in which I made dielectric measurements of ferroelectric materials in audio and radiofrequency. From this arose in a natural way an interest in the study of the dielectric response in condensed matter and more specifically in the response of orientational polarization, on what my Doctoral Thesis defended in 1985.
Traditionally, the dielectric response was described by means of the Debye model associated with an exponential response function. However, in condensed matter it is rare to find dielectric responses that fit this model and functions were proposed, either in the temporal or frequency domain, in an empirical way. In my thesis, theoretical models were proposed for which the response function was calculated, which in the general case was non-exponential (Williams-Watts). This response function leads to a complex susceptibility similar to that frequently obtained in condensed matter. The models contemplated the dipoles as a two-level system and their interaction with the network, treated in the harmonic approach, gave them a dynamic behavior. From this work, four articles were published. After completing my Doctoral Thesis I joined other members of the then Department of Physics who had started a collaboration with the Department of Organic Chemistry of the University of Zaragoza on liquid crystals and that continues to this day. Throughout these years we have shared coordinated research projects of national calls (MEC, CICYT, MICINN ..) as well as European projects-networks.

Fruit of this collaboration with another, also stable, with the group of Physical Properties of Materials of the Polytechnic University of Catalonia, I have published the order of 90 articles in prestigious journals indexed in the JCR, which include the work carried out. These have been about various properties of liquid crystals and required a fine-tuning of the equipment available at that time and their future updates, in which I have always carried an active role being responsible for the so-called Dielectric Spectrocopy Laboratory. This laboratory has a complete equipment that includes five impedance analyzers as well as material to perform electro-optical experiments and measurements of spontaneous polarization. The type of liquid crystals studied has evolved over the years since it is a very active field and there is a lot of relationship between studies of fundamental properties and their possible applications. Thus we have studied liquid crystals: ferroelectric, antiferroelectric, gels obtained by in-situ photopolymerization, "bent-core", mesogenic dimers. The study in the latter revealed interesting properties showing some of them the nematic mesophase twist-bend, being a signatory of the first article in which it was identified as such (year 2011). This paper has 236 citations and has been selected by the editors os Physical Review E as their Milestone Paper for 2011 (to celebrate the 25th Anniversary of Physical Review E the American Physical Society is selecting just one paper for each year of its publication). I have supervised five doctoral theses and I have been responsible for four postdoctoral students (one year stays).

Part C. RELEVANT MERITS

C.1. Publications (including books)

"Ferroelectric-Ferroelastic Phase Transition in a Nematic Liquid Crystal"
N. Sebastian, L. Cmok, R.J. Mandle, M.R. de la Fuente, Olenik, D. Irena, M. Copic, A. Merteljç
PRL (2020) https://doi.org/10.1103/PHYSREVLETT.124.037801

“Distinctive dielectric properties of nematic liquid crystal dimers”
N. Sebastián, B. Robles-Hernández, S. Diez-Berart, J. Salud, G. R. Luckhurst, D. A. Dunmur, D. O. López and M. R. de la Fuente
Liq. Cryst. **44**, 177-190 (2017) , (invited)

“Understanding the twist-bend nematic phase: the characterisation of 1-(4-cyanobiphenyl-4'-yloxy)-6-(4-cyanobiphenyl-4'-yl) hexane (CB6OCB) and comparison with CB7CB”
D.A. Paterson, M. Gao, Y-K Kim, A. Jamali, Kirsten Finley, B. Robles-Hernández, S. Diez-Berart, J. Salud, M. R. de la Fuente, B.A.Timimi, H. Zimmermann, C. Greco, Alberta Ferrarini, J.M.D. Storey, D.O. López, O.D. Lavrentovich, G.R. Luckhurst, C .T. Imrie
Soft Matter, 12, 6827-6840 (2016)

“Photoresponsive Cyanostilbene Bent-Core Liquid Crystals as New Materials with Light Driven “Modulated Polarization Photoresponsive Cyanostilbene Bent-Core Liquid Crystals as New Materials with Light Driven Modulated Polarization”
M. Martínez-Abadía, B. Robles-Hernández, M. Rosario de la Fuente, R. Giménez and M. Blanca Ros
Advanced Materials **28**, 6586–6591 (2016)

“Molecular dynamics of a binary mixture of twist-bend nematic liquid crystal dimers studied by dielectric spectroscopy”
B. Robles-Hernández, N. Sebastián, J. Salud, S. Diez-Berart, D. A. Dunmur, G. R. Luckhurst, D. O. López, M. R. de la Fuente
Phys. Rev. E **93**, 062705 (2016)

“Twist, tilt and orientational order at the nematic to twist-bend nematic phase transition of 1’’,9’’-bis(4-cyanobiphenyl-4’-yl) nonane (CB9CB): a dielectric, 2H-NMR and calorimetric study”
B. Robles-Hernández, N. Sebastián, M. R. de la Fuente, D. O. López, S. Diez-Berart, J. Salud, M. B. Ros, D. A. Dunmur, G. R. Luckhurst and B. A. Timimi
Phys. Rev. E **92**, 062505 (2015)

“Dielectric, calorimetric and mesophase properties of 1’’-(2’,4-difluorobiphenyl-4’-yloxy)-9’’-(4-cyanobiphenyl-4’-yloxy) nonane: an odd liquid crystal dimer with a monotropic mesophase having the characteristics of a twist-bend nematic phase”
N. Sebastián, D.O. López, B. Robles-Hernández, M.R. de la Fuente, J. Salud, M.A.

Phys. Chem. Chem. Phys. **16**, 21391-21406 (2014)

M.R. de la Fuente, D. Dunmur, "*Dielectric Properties of Liquid Crystals" in "Handbook of Liquid Crystals"* ed. by J.W. Goodby, P.J. Collings, T. Kato, C. Tschierske, H.F. Gleeson and P. Raynes (Wiley-VCH, Weinhein, 2014), Vol. 2, Part I (101-146) ISBN 978-3-527-32773-7

"Disentangling molecular motions involved in the glass transition of a twistbend nematic liquid crystal through dielectric studies"
D. O. López, N. Sebastian, M. R. de la Fuente, J. C. Martínez-García, J. Salud, M. A. Pérez-Jubindo,S. Diez-Berart, D. A. Dunmur, and G. R. Luckhurst
J. Chem. Phys. **137**, 034502 (2012)

"Phase behavior and properties of the liquid-crystal dimer: 1",7"-bis(4-cyanobiphenyl-4'-yl)-heptane: A twist-bend nematic liquid crystal"
M. Cestari, S. Diez-Berart, D.A. Dunmur, A. Ferrarini, M.R. de la Fuente, D.J.B. Jackson, D.O. Lopez, G.R.Luckhurst, M.A. Perez-Jubindo, R.M. Richardson, J. Salud, B.A. Timimi, H. Zimmermann,
Phys. Rev. E **84**, 031704 (2011), 236 citations

"Piezoelectric and Electric-Field-Induced Properties of a Ferroelectric Bent-Core Liquid Crystal"
A. Jákli, I. Pintre, J.L. Serrano, M.B. Ros and M.R de la Fuente
Advanced Materials **21**, 3784-3788 (2009)

C.2. Research projects and grants

Group: LIQUID CRYSTALS
2010-2015 **GRUPO DE INVESTIGACIÓNDEL SISTEMA UNIVERSITARIO VASCO**
GI/IT-449-10, 388 000 € PRINCIPAL RESEARCHER M. Rosario de la Fuente Lavín

"MATERIALES FUNCIONALES AUTOORGANIZADOS: ESTUDIO ESTRUCTURAL Y FENOMENOLOGÍA ÓPTICA Y DIELÉCTRICA"
2013-2015 **MEC MAT2012-38538-C03-02**, 110 000 € PRINCIPAL RESEARCHER: César Luis Folcia

"MATERIALES SUPRAMOLECULARES FUNCIONALES: 1. Diseño, preparación y caracterización de los materiales. 2. Propiedades estructurales, ópticas y dieléctricas. 3. Preparación y estudio de las propiedades física bajo micro y nanoconfinamiento"
2010-2012 **MICINN.MAT2009-14636-C03-02** 130 000 € PRINCIPAL RESEARCHER: César Luis Folcia

Grupo: CRISTALES LÍQUIDOS
2007-2009 **GRUPO DE INVESTIGACIÓNDEL SISTEMA UNIVERSITARIO VASCO**
GIC07/40-IT-484-07, 85 834 € PRINCIPAL RESEARCHER M. Rosario de la Fuente Lavín

"MATERIALES ÓPTICOS Y OPTOELECTRÓNICOS BASADOS EN ORGANIZACIONES MESOMORFAS: CARACTERIZACIÓN ESTRUCTURAL Y ESTUDIO DE SUS PROPIEDADES Y FENOMENOLOGÍAS "
2006-2009 **MEC. MAT 2006-13571-C02-02** 170 610 € PRINCIPAL RESEARCHER: César Luis Folcia

C.3. Contracts

C.4. Patents

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

-Evaluations for **ANECA**. CER Ciencias Experimentales. Mención de calidad a programas de doctorado. (2007, 2008 and 2011).

-Evaluations for **ANECA**. CER Ciencias Experimentales. Planes de doctorado 2009

-Evaluations for **ANECA**. **VERIFICA**, CER Ciencias Experimentales. Verificación planes de doctorado 2012, 2013, 2014

-Evaluations for **ANECA**. **VERIFICA**, CER Ciencias Experimentales. Verificación grado, máster planes de doctorado (2015-till now)

-Evaluations for **AQU**. **VERIFICA,** Verificación planes de doctorado (2012 till now)