Fecha del CVA	19/01/2023

Parte A. DATOS PERSONALES

Nombre	María		
Apellidos	Blanco Rey		
Sexo		Fecha de Nacimiento	
DNI/NIE/Pasaporte			
URL Web			
Dirección Email	maria.blanco@ehu.es		
Open Researcher and Contributor ID (ORCID)	0000-0002-5189-6690		

A.1. Situación profesional actual

Puesto	Personal Doctor Investigador Permanente		
Fecha inicio	2013		
Organismo / Institución	Universidad del País Vasco UPV/EHU		
Departamento / Centro			
País		Teléfono	
Palabras clave	Teoría del funcional de la densidad; Densidad electrónica; Superficies de energía potencial; Química física de materiales; Materiales; Estado sólido; Caracterizacion; Estructura; Intercaras; Cadenas y escaleras de espines; Magnetismo		

A.3. Formación académica

Grado/Master/Tesis	Universidad / País	Año
Doctorado en Física de la Materia Condensada	Universidad Autónoma de Madrid	2006
Grade (Master Thesis entitled: "Orden-Desorden y Displacividad en Transiciones de Fase Ferroeléctricas")	Universidad del País Vasco	2002
Licenciado en Ciencias (Sección de Físicas, Especialidad Física del Estado Sólido), Premio Extraordinario de Licenciatura ("degree with honours")	Universidad del País Vasco	2001

Parte B. RESUMEN DEL CV
BRIEF VITA

June'13 -- Present: Permanent Researcher
Universidad del País Vasco UPV/EHU

Dec'10 -- May'13: Fellow "Gipuzkoa"
Donostia International Physics Center DIPC

Jan'07 -- Nov'10: Post-Doctoral Researcher
Surface Science Group (Prof. Sir David A. King), Department of Chemistry, University of Cambridge
Funded by a Postdoctoral studentship awarded by the "Ministerio de Educación y Ciencia" (EX2006-1096) and by a Marie Curie IEF Fellowship awarded by the European Commission (FP7-People-2007-2-1-IEF, 21981).

Jul'06 -- Dec'06: Post-Doctoral Researcher
Instituto de Ciencia de Materiales de Madrid ICMM-CSIC

Jan'03 -- Jul'06: PhD student
Instituto de Ciencia de Materiales de Madrid ICMM-CSIC
PhD in Physics, Universidad Autónoma de Madrid UAM, July 2006 (PhD Supervisor: Pedro L. de Andrés).
Funded by a FPU studentship (AP2001-1836) and by an I3P-Postgrado studentship awarded by CSIC.
Brief stay during PhD : Oct'04 -- Dec'04 in Universität Erlangen-Nürnberg, hosted by Prof. Klaus Heinz.

Oct'01 -- Dec'02: MSc student
Department of Condensed Matter Physics, UPV/EHU
MSc in Physics, November 2002 (Supervisor: Alberto García)
Funded by a FPU studentship of the "Ministerio de Educación y Ciencia" (AP2001-1836).

Jun'01: Licenciatura en Físicas, Universidad del País Vasco UPV/EHU

TEACHING ACTIVITY
(at Universidad del País Vasco UPV/EHU)

1. Degree: "Master in Nanoscience". Subjects:
- "Fundamentals of Nanostructure Characterization", compulsory, 1.5 ECTS/year since 11/2022
- "Nanostructural Properties", compulsory, 1 ECTS/year since 01/2015
- "Advanced Methods in Nanoscience", optional, 1 ECTS/year 05/2014-05/2018

2. University Degree in Chemical Sciences
Subject: Mathematics I (1st year), compulsory, 6 ECTS/year during 09/2018-07/2022

3. Master Thesis supervision. Degree: "Master in Quantum Technologies"
Two defended MSc Thesis in 2020 and 2022 (both co-supervised).

4. PhD supervision: Two defended PhD Thesis in 2017 and 2022 (co-supervised), one expected in 2024 (co-supervised).

SUMMARY OF RESEARCH THEMES (recent ones are marked with *)

1. Electron scattering

- Development of computational tools for analysis of electron diffraction data: multiple scattering formalisms and global optimization algorithms for surface structure determination.
- Collaborations with several experimental groups in the determination of surface structures using low-energy electron diffraction (LEED).
- (*) Scattering at impurities with Green's functions and Fermi Surface Harmonics methods.

2. DFT

- Studies of surface chirality related to structure and reactivity
- Simulations of gas-surface interactions, with focus on recombination reactions and energy loss processes, using ab-initio molecular dynamics (AIMD).
- Non-adiabatic and anharmonic models of the STM manipulation dynamics of atoms and molecules on surfaces.

- (*) DFT analysis of the magnetic properties of nanostructured systems: spin-polarized band structures, magnetic ordering, anisotropy. Studied cases involve lanthanide alloys, metal-organic networks on surfaces, and topological insulators.
- (*) Treatment of spin-orbit interactions in DFT. Magnetic anisotropy and Dzyaloshinskii-Moriya interactions.
- (*) Constrained random phase approximation and Hubbard-I methods in strongly correlated systems.

3. Multiplets in magnetic systems

- (*) Multiplet models and simulations of X-ray spectroscopies (e.g XMCD) aimed at resolving the magnetic states of individual atoms on surfaces.
- (*) Numerical Renormalization Group for the Kondo problem

SUMMARY OF RESEARCH ACTIVITY

Publication Statistics Since 2009

(from Web of Science January, 2023 based only on indexed journals)

Total no. of papers: 53
Total no. of citations: 1766 (93 per year on average)
h-index: 20

Recognised periods of research activity ("sexenios"): 3
Periods: 2003-2008, 2009-2014 y 2015-2020
Certified by ANECA, UNIBASQ.

Summary of participation in international conferences and workshops (last 10 years)
- 20 times as presenting author (2 invited talks, 12 contributed talks)
- 5 times in organising committees (1 as conference chair)
- Member of the Scientific Committee of the European Conference on Surface Crystallography and Dynamics (ECSCD) since 09/2012

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**. M.M. Otrokov; et al. (11/44). 2019. Prediction and observation of an antiferromagnetic topological insulator Nature. 576, pp.416-422.
2 **Artículo científico**. C. Wäckerlin; A. Cahlik; J. Goikoetxea; et al; P. Jelinek. 2022. Role of the Magnetic Anisotropy in Atomic- Spin Sensing of 1D Molecular Chains ACS Nano. ACS. 16, pp.16402-16413.
3 **Artículo científico**. M. Blanco-Rey (AC); G. Bihlmayer; A. Arnau; J.I. Cerdá. (1/4). 2022. Nature of interfacial Dzyaloshinskii-Moriya interactions in graphene/Co/Pt(111) multilayer heterostructures Physical Review B. APS. 106, pp.064426.
4 **Artículo científico**. J. Goikoetxea; C. Friedrich; G. Bihlmayer; S. Blügel; A. Arnau; M. Blanco-Rey (AC). (6/6). 2022. Multiplet effects in the electronic correlation of one-dimensional magnetic transition metal oxides on metals Physical Review B. APS. 106, pp.035130.

5 **Artículo científico**. M. Blanco-Rey (AC); R. Castrillo-Bodero; K. Ali; P. Gargiani; F. Bertran; P.M. Sheverdyaeva; J.E. Ortega; F.M. Schiller. (1/9). 2022. Effect of the valence state on the band magnetocrystalline anisotropy in two-dimensional rare-earth/noble-metal compounds Physical Review Research. APS. 4, pp.013237.

6 **Artículo científico**. L. Fernández; M. Blanco-Rey; et al.(2/18). 2020. Influence of 4f filling on electronic and magnetic properties of rare earth-Au surface compounds Nanoscale. RSC. 12, pp.22258-22267.

7 **Artículo científico**. Otrokov, M.M.; Rusinov, I.P.; Blanco-Rey, M.; et al; Chulkov, E.V.(1/4). 2019. Unique thickness-dependent properties of the van der Waals interlayer antiferromagnet MnBi2Te4 films PHYSICAL REVIEW LETTERS. APS. ISSN 0031-9007.

8 **Artículo científico**. Novko, D.; Blanco-Rey, M.; Tremblay, J.C.2017. Intermode Coupling Drives the Irreversible Tautomerization in Porphycene on Copper(111) Induced by Scanning Tunnelling Microscopy JOURNAL OF PHYSICAL CHEMISTRY LETTERS. 8, pp.1053-1059. ISSN 1098-0121.

C.2. Congresos

1 Maria Blanco-Rey; Castrillo-Bodero; Ali; Sheverdyaev; Ortega; Fernandez; Schiller. Magnetocrystalline anisotropy in two-dimensional EuAu2 and GdAu2: the role of band structure. Deutsche Physikalische Gesellschaft Spring Meeting 2022. DPG. 2022. Alemania.

2 M. Blanco-Rey; A. Sarasola; C. Nistor; L. Persichetti; C. Stamm; C. Piamonteze; P. Gambardella; S.M. Stepanow; M.M. Otrokov; V.N. Golovach; A. Arnau. Importance of organic ligands and substrates in of 2D metal-organic coordination network magnetism. Joint European Magnetic Society Meeting 2019. JEMS. 2019. Suecia. Participativo - Ponencia oral (comunicación oral). Congreso.

3 M. Blanco-Rey; A. Sarasola; M.M. Otrokov; A. Ayuela; L. Fernandez; M. Ormaza; M. Ilyn; J.E. Ortega; F.M. Schiller; A. Arnau. Magnetocrystalline Anisotropy in Bidimensional Systems: Transition-Metal-Organic Coordination Networks and Lanthanide-Metal Alloys. International Max Planck Research School For Functional Interfaces in Physics and Chemistry (MPRS): "From Models to Reality". Fritz Haber Institute of the Max Planck Society. 2018. Alemania. Participativo - Ponencia invitada/ Keynote. Congreso.

C.3. Proyectos o líneas de investigación

1 **Proyecto**. IT1527-22, IT1527-22: DESARROLLO DE NUEVAS METODOLOGÍAS EN PROBLEMAS DESTACADOS DE FÍSICA DE LA MATERIA CONDENSADA. Grupos de Investigación Consolidados del Sistema Universitario Vasco (Gobierno Vasco). Asier Eiguren Goyenechea. (Universidad del País Vasco). 01/01/2022-31/12/2025. 331.092 €.

2 **Proyecto**. PID2019-103910GB-I00 VIBRACIONES Y MAGNETISMO EN SISTEMAS NANOSCOPICOS CON ACOPLAMIENTO SPIN-ORBITA. Ministerio de Economía y Competitividad (MINECO). Asier Eiguren Goienetxea. (Universidad del País Vasco). 01/06/2020-31/05/2023. 117.370 €.

3 **Proyecto**. GIU18/138, GIU18/138: TEORIA COMPUTACIONAL EN FÍSICA DE LA MATERIA CONDENSADA. Grupos de Investigación UPV/EHU. 1. (Universidad del País Vasco). 01/09/2019-31/12/2022. 28.654 €.

4 **Proyecto**. IT1260-19, IT1260-19: DESARROLLO DE NUEVAS METODOLOGÍAS EN PROBLEMAS DESTACADOS DE FÍSICA DE LA MATERIA CONDENSADA. Grupos de Investigación Consolidados del Sistema Universitario Vasco (Gobierno Vasco). Asier Eiguren Goyenechea. (Universidad del País Vasco). 01/01/2019-31/12/2021. 82.000 €.

5 **Proyecto**. FIS2016-75862-P: PROPIEDADES ESTRUCTURALES, ELECTRONICAS Y MAGNETICAS DE SISTEMAS EN LA ESCALA NANOMETRICA. Ministerio de Economía y Competitividad (MINECO). Andrés Arnau Pino. (Universidad del País Vasco). 30/12/2016-29/12/2019. 135.000 €.