Date of the CVA	19/05/2020

Section A. PERSONAL DATA

Name and Surname	Elías Ferreiro Vila		
DNI	36174518-A	Age	36
Researcher's identification number	Researcher ID	O-2604-2013	
	Scopus Author ID	25721923500	
	ORCID	0000-0002-2530-2414	

A.1. Current professional situation

Institution	Consejo Superior de Investigaciones Científicas			
Dpt. / Centre	Health Department / Instituto de Microelectrónica de Madrid			
Address	Avda. Alc. Gregorio Espino 27 9ºC, 36205, Vigo			
Phone	(0034) 652545513	Email	elibu22@gmail.com	
Professional category	Postdoctoral researcher		Start date	2019
UNESCO spec. code				
Keywords				

A.2. Academic education (Degrees, institutions, dates)

Bachelor/Master/PhD	University	Year
Programa Oficial de Doctorado en Ciencia y Tecnología de Materiales	Universidad de Santiago de Compostela	2012
Licenciado en Física Opción Optoelectrónica	Universidad de Santiago de Compostela	2006

A.3. General quality indicators of scientific production

E. Ferreiro-Vila has co-authored **23 articles (9 at D1, 16 at Q1 and 18 JCR)** and **2 book chapters**. He is the **first author of 6 Q1** articles and the **corresponding author of 2**.The Physical Review B 83 (20), 205120 publication was pinpointed as an **Editor's suggestion** and the **Adv: Funct Mat 29(48) 1901984 (2019)** was awarded with the **Back Cover** of the journal . He has contributed on **29 international conferences**,workshops or seminars, which **18 are oral communications**. He was invited to give a **keynote seminar** about **Spin Caloritronics** at the CEMAG Summer School: "Retos del Magnetismo Basico y Aplicado""

He obtained high-rank evaluations for three proposals in order to perform X-rays experiments on SrVO3 films at Swiss Light Source (SLS) synchrotron at PSI (Switzerland, 2017) and on SrFeO3 at ALBA synchrotron (Spain, 2019). It means that he has **access to State-of-art synchrotron techniques**, which are paramount to high-impact researchs.

Moreover, he was collaborating on a ERC-Proof of concept **project associated with a patent** from the Condensed Matter Lab (CIQUS, USC). Nowdays, he is one of the main developers of another **patent** concerning nanoTPT structure in collaboration with the ICMA.

Concerning teaching, he was **supervising a final projec**t for a student of Chemistry degree (Universidade de Santiago de Compostela, USC) and he performed **more than 100 hours teaching** at the department of Quantum Matter Physics (University of Geneva) and department of Physical-Chemistry (USC).

h-index:13 with around **740 citations** (one paper was cited more than 150 times and six papers above 50 citations) **Source: Google Scholar**
h-index:13 with around **523 citations** **Source: Scopus**
h-index:13 with around **506 citations** **Average Citations per year: 45 (58 at postdoctoral stage)** **Average Citations per item: 31.3** **Source: Web of Science (Publons)**

Section B. SUMMARY OF THE CURRICULUM

He has joined the **magnetoplasmonic lab** (IMM-CNM-CSIC) with a JAE predoc scholarship (2008 call) with which he was financed the rest of the doctoral thesis. During it, he has made the fabrication and characterization of **magnetoplasmonic multilayers** based on the combination of noble metals (Ag and Au) and ferromagnetic metals (Co and Fe) for their **application in biosensors and telecommunications**. It is also worth mentioning the completion of **several stays** (almost 3 months in total) at the **IMM (CNR) in Lecce, Italy** funded by the JAE preDOC grant and the nanoICT Exchange Visit program. The results obtained in these stays gave rise to several publications for the use of magnetoplasmonic materials as sensors. After his doctoral fellowship, he presented and defended his thesis in the Department of Applied Physics of the University of Santiago de Compostela (USC), obtaining the qualification of Outstanding CUM LAUDEn (october 2012).

Later, he joined the **condensed matter laboratory** leaded by Professor Francisco Rivadulla at **CIQUS (USC**) as a postdoctoral researcher. Hired by a European project (Starting Grant) for the design of **new thermoelectric devices based on nanostructures in the form of multilayers** modulated by field of highly correlated electron systems (2DTHERMS). During these two years he published three scientific articles and made several international papers (APS March Meeting, E-MRS...).

At the end of these two years, he made a 2-year stay abroad in the prestigious **laboratory of Jean-Marc Triscone (University of Geneva)** funded with a **postdoctoral grant from the Xunta de Galicia (year 2014)** to finally return to the Rivadulla group in the third year of the scholarship (2017).

Back to Rivadulla group, he worked as an associate researcher involved in **thermal and thermoelectric conductivity measurements in two-dimensional oxides** in the CIQUS hired in charge of different research projects; and he teach as an **assistant professor in the department of Chemistry-Physics** in the USC. He also **co- supervised a final degree project** in Chemistry (2017-2018) and taught several training seminars to PhD students (2018).

Importantly, he has obtained the **Profesor Contratado Doctor** acreditation by ANEP. Finally, he has just started to developt a **patent** resulting from the on-going collaboration with Prof. J. M. de Teresa from Instituto de Ciencia de Materiales de Aragón (**ICMA**) concerning **nanoTPT** structures at 2019.

Nowadays, he continues the improvement of his skills as a **postdoc at bionanomechanics lab at Instituto de Micro y Nanotecnología (IMN-CSIC)**. The current **optomechanics** topics is very complementary to extend his expertises and to acquire new tools for characterizing this oxide multilayers as biosensors.

Section C. MOST RELEVANT MERITS (ordered by typology)

C.1. Publications

1 **Scientific paper**. Elias Ferreiro-Vila; et al. (10/1). 2019. Room Temperature AFM Electric Field-Induced Topotactic Transformation Between Perovskite and Brownmillerite SrFeOx with sub-micrometer spatial resolution.Advanced Functional Materials. Wiley. 29 (48)-1901984, pp.1-8.

2 **Scientific paper**. Elias Ferreiro-Vila; et al. (5/1). 2020. Topotactic transformation in SrFeO3-d triggered by low-dose Ga+ focused ion irradiation Applied Physics Letters. American Institute of Physics (AIP). 116-163103, pp.1-5.

3 **Scientific paper**. Alodia Orera; et al. (10/3). 2020. Interfacial stability and ionic conductivity enhanced by dopant segregation in eutectic ceramics: the role of Gd segregation in doped CeO2/CoO and CeO2/NiO interfaces Journal of Materials Chemistry A. Royal Society of Chemistry. 8, pp.2591-2601.

4 **Scientific paper**. Eric Langenberg; et al. (16/6). 2019. Ferroelectric domain walls in PbTiO3 are effective regulators of heat flow at room temperature Nanoletters. American Chemical Society (ACS). 19-11, pp.7901-7907.

5 **Scientific paper**. E. Ferreiro-Vila; et al. (12/1). 2019. Apparent auxetic to non-auxetic crossover driven by Co2+ redistribution in CoFe2O4 thin films APL Materials. American Institute of Physics (AIP). 7-031109, pp.1-6.

6 **Scientific paper**. E. Langenberg; et al. 2016. Analysis of the temperature dependence of the thermal conductivity of insulating single crystal oxides APL Materials. American Institute of Physiccs (AIP). 4-104815.
7 **Scientific paper**. A. Sarantopoulos; et al. (6/2). 2015. Electronic Degeneracy and Intrinsic Magnetic Properties of Epitaxial Nb : SrTiO 3 Thin Films Controlled by Defects Physical Review Letters (Phys. Rev. Lett.). American Physical Society (APS). 115-16, pp.166801-1-166801-6.
8 **Scientific paper**. Mariagrazia Manera; et al. (5/2). 2014. Enhanced antibody recognition with magneto-optic surface plasmon resonance (MO-SPR) sensor Biosensors and bioelectronics. Elsevier. 58, pp.114-120.
9 **Scientific paper**. P.L. Bach; et al. 2013. Strain-induced enhancement of the thermoelectric power in thin films of hole-doped La2NiO4+d APL materials. AIP. 1-2, pp.021101-1-021101-6.
10 **Scientific paper**. Mariagrazia Manera; et al. (8/2). 2013. Enhanced magneto-optical SPR platform for amine sensing based on Zn porphyrin dimers Sensors and Actuators B. Elsevier. 182, pp.232-238.
11 **Scientific paper**. Elías Ferreiro-Vila; et al. (5/1). 2013. Magnetic modulation of surface plasmon modes in magnetoplasmonic metal-insulator-metal cavities Optics express. OSA. 21-4, pp.4917-4930.
12 **Scientific paper**. M. G. Manera; et al. (8/2). 2012. Spectroscopic, Morphologic and Magneto-Optical Surface Plasmon Resonance of ethane-bridged Zn porphyrins dimers in Langmuir-Schäfer thin film for sensing applications" Journal of Physical Chemistry C. 116, pp.10734-10742.
13 **Scientific paper**. M. G. Manera; et al. (11/3). 2011. Enhanced gas sensing performance of TiO2 functionalized magneto-optical SPR sensors" Journal of Materials Chemistry. 21, pp.16049-16056.
14 **Scientific paper**. E. Ferreiro-Vila; et al. (9/1). 2011. Magneto-optical and magnetoplasmonic properties of epitaxial and polycrystalline Au/Fe/Au trilayers" Physics Review B. 83, pp.205120-1-205120-8.
15 **Scientific paper**. David Meneses-Rodríguez; et al. 2011. Probing the Electromagnetic Field Distribution within a Metallic Nanodisk" Small. 7-23, pp.3317-3323.
16 **Scientific paper**. E. Th. Papaioannou; et al. 2010. Magneto-optic enhancement and magnetic properties in Fe antidot films with hexagonal symmetry" Physics Review B. 81, pp.054424-1-054424-5.
17 **Scientific paper**. E.Ferreiro-Vila; et al. (10/1). 2009. Intertwined magneto-optical and plasmonic effects in Ag/Co/Ag layered structures" Physics Review B. 80, pp.125132-1-125132-9.
18 **Scientific paper**. G Armelles; et al. 2009. Magnetoplasmonic nanostructures:systems supporting both plasmonic and magnetic properties" Journal of Optics A: Pure and Applied Optics. 11-11, pp.114023.
19 **Scientific paper**. E.Ferreiro; et al. 2008. Surface plasmon resonance effects in the magneto-optical activity of Ag/Co/Ag trilayers" IEEE Transactions on Magnetics. 44-11, pp.3303-3306.
20 **Book chapter**. M. G. Manera; et al. 2014. Gas sensing characterization by magneto-optic surface plasmon resonance technique Lecture Notes in Electrical Enginnering (LNEE). Springer. 162, pp.99-102.
21 **Book chapter**. M. G. Manera; et al. 2011. Plasmonic and magneto-plasmonic nanostructured materials for sensors and biosensors application" Lecture Notes of Electrical Engineering (LNEE). Springer. 91, pp.203-208.
22 **Annual booklet**. Elias Ferreiro-Vila; et al. (10/1). 2020. AFM ELECTRIC FIELD-CONTROL OF TOPOTACTIC TRANSFORMATIONS WITH SUB-MICRON SPATIAL RESOLUTION ESRF Highlights 2019. European Synchrotron Radiation Facility (ESRF). issue 2019, pp.151-152.
23 **Newsletter**. Elias Ferreiro-Vila; et al. (10/1). 2019. EXPLORING THE LOCAL TOPOTACTIC OXIDATION USING SOFT X-RAYS ALBA News. ALBA Synchrotron.

C.2. Participation in R&D and Innovation projects

1 727484, ANTS ERC-PoC-2016 - ERC-Proof of Concept-2016 ERC-PoC-2016 - ERC-Proof of Concept-2016. Victor Leboran. (Universidad de Santiago de Compostela). 01/01/2017-30/06/2018. 149.250 €.
2 Engineering of oxide interfaces for superconductivity and thermoelectric applications XUNTA DE GALICIA. Axudas de apoio a etapa de formacion posdoutoraldo doPlan Galego de Investigacion, innovacion e crecemento 2011-2015(I2C) (Ano 2014). Elias Ferreiro-Vila. (University of Geneva-Universidad de Santiago de Compostela). 01/05/2015-30/04/2018. 100 €. Principal investigator.
3 Design of thermoelectric devices based on two-dimensional oxide nanostructures (OXYTHERMS) Ministerio de Economía y Competividad. Francisco Rivadulla Fernandez. (Universidad de Santiago de Compostela). 2014-2018.
4 Orbital reconstructions on perovskite vanadate thin films (Proposal ID:20161168) Elias Ferreiro-Vila. (Paul Scherrer Institute (PSI)). 04/2017-04/2017. Principal investigator.
5 Origin of the dimensionality driven metal-insulator transition in SrVO3 (Proposal ID: 20161595) Elias Ferreiro-Vila. (Paul Scherrer Institute (PSI)). 03/2017-03/2017. Principal investigator.
6 New topological insulators based on oxide nanostructures (Reference: EM2013/037) XUNTA DE GALICIA. Victor Pardo Castro. (Universidad de Santiago de Compostela). 16/10/2013-07/08/2016. 99.000 €.
7 New Thermoelectric devices from layered and field-modulated nanostructures of strongly correlated electron systems(Reference ERC-2010-StG-259082-2DTHERMS) European Research Council. Francisco Rivadulla Fernández. (Universidad de Santiago de Compostela). 01/11/2010-01/11/2015. 1.428.000 €.
8 Dispositivos termoeléctricos basados en nanoestructuras de sistemas electrónicos altamente correlacionados (Reference MAT2010-16157) Ministerio de Ciencia e Innovación. Investigación. Francisco Rivadulla Fernández. (Universidad de Santiago de Compostela). 01/01/2010-31/12/2013. 110.000 €.
9 Funcionalización superficial de materiales para aplicaciones de alto valor añadido (FUNCOAT) MICINN - Consolider 2010; ref. CSD2008-00023. Alfonso Cebollada (IMM). (Consejo Superior de Investigaciones Científicas). 2009-2013.
10 NANOMAGMA-NANOstructured active MAGneto-plasmonic MAterials European Comission: NMP3-SL-2008-214107. Antonio García Martín.(Consejo Superior de Investigaciones Científicas). 2008-2011.
11 Nanoestructuras magnéticas organizadas : magnetismo y magnetoplasmónica" Ministerio de Educación y Ciencia MAT2005-05524-C02-01. Alfonso Cebollada (IMM). (Consejo Superior de Investigaciones Científicas). From 09/2007.
12 Nanoestructuras magnéticas: fabricación, autoorganización, simulación y propiedades CAM; Programas conjuntos de actividades de I+D; ref: S-0505/MAT/0194 NANOMAGNET. José Miguel García-Martín (IMM). (Consejo Superior de Investigaciones Científicas). From 09/2007.
13 Nanophotonics to Realise Molecular-Scale Technologies (PHOREMOST) " (Red de excelencia) EU FP6-511616; Unión Europea. Gaspar Armelles (IMM). (Consejo Superior de Investigaciones Científicas). From 09/2007.
14 Propiedades magnéticas y magneto-ópticas de nuevos materiales nanoestructurados Acuerdo de cooperación CSIC-CONACYT 2005MX0040. José Miguel García-Martín (IMM). (Consejo Superior de Investigaciones Científicas). From 09/2007.

C.3. Participation in R&D and Innovation contracts

C.4. Patents