

# CURRICULUM VITAE

<b>Part A. PERSONAL INFORMATION</b>		<b>CV date</b>	07/10/2019
First and Family name	Carlos Gumiel Vindel		
Social Security, Passport, ID number	51105691J	Age	36
Researcher codes	WoS Researcher ID (*)		
	SCOPUS Author ID(*)	57192559015	
	Open Researcher and Contributor ID (ORCID) **	0000-0002-5525-5022	

(\*) At least one of these is mandatory

(\*\*) Mandatory

## A.1. Current position

Name of University/Institution	Antonio de Nebrija University		
Department	Industrial and Automotive Engineering Department		
Address and Country	C/ Santa Cruz de Marcenado, 27, 28015, Madrid, Spain		
Phone number	666264825	E-mail	<a href="mailto:cgumiel@nebrija.es">cgumiel@nebrija.es</a>
Current Position	Assistant Professor	From	02/09/2019
Key Words	Professor, Researcher, Materials, Engineering		

Name of University/Institution	Carlos III University of Madrid		
Department	Materials Science Engineering and Chemical Engineering		
Address and Country	Av. de la Universidad, 30, 28911, Leganés, Madrid, Spain		
Phone number	666264825	E-mail	<a href="mailto:cgumiel@ing.uc3m.es">cgumiel@ing.uc3m.es</a>
Current Position	Assistant Professor	From	04/09/2019
Key Words	Professor, Chemistry, Engineering, Materials		

Name of University/Institution	Ceramic and Glass Institute of Madrid (ICV-CSIC)		
Department	Electroceramics		
Address and Country	C/ Kelsen, 5, Campus de Cantoblanco, 28049, Madrid, Spain		
Phone number	666264825	E-mail	<a href="mailto:cgumiel@icv.csic.es">cgumiel@icv.csic.es</a>
Current Position	Postdoctoral Research Associate	From	01/05/2019
Key Words	Research Multiferroic Materials Thin Films Ceramics BiFeO <sub>3</sub>		

## A.2. Education

PhD	University	Year
Doctorate	Technical University of Madrid	2018
Master in Science and Technology Chemistry (Speciality Nanomaterials)	Complutense University of Madrid	2014
B. Sc Chemistry	Complutense University of Madrid	2013

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

I got my PhD from the Technical University of Madrid on April 23<sup>rd</sup>, 2018. Immediately afterwards I signed a postdoctoral contract for one year at the same University, belonging to the Postdoctoral Orientation Period (POP), since I was managed to defend my doctoral thesis before the completion of the third annuity of the FPI grant received in May 2015 from the Economy and Competitiveness Ministry. Currently, I work as an Assistant Professor at the Carlos III University of Madrid (Materials Science Engineering and Chemical Engineering Department) and at the Antonio de Nebrija University (Industrial and Automotive Engineering Department), as well as a Postdoctoral Research Associate at the Ceramics and Glass Institute of Madrid (ICV-CSIC), where I continue with my research labors.



My scientific career can be summarized from the following research line: the innovative and sustainable processing of electroceramic materials and devices with improved functional properties. In particular, the use of bottom-up approaches and surface functionalization strategies, or the growing ability to manipulate matter at different scale levels under energy-saving conditions, are among the competences that I manage today to attest the sustainable preparation of advanced assemblies and configurations with functional phases of scientific and industrial interest.

I have published eight articles in high quality international journals. Another paper is currently in the submission stage. I have taken part in more than 25 contributions to national and international conferences, this including 4 presentations as Invited Talks. One of these talks was awarded as the "Best Oral Contribution" (CMSE conference, Xian, China, 2018). I have also participated in 4 research projects, 2 of them ascribed to the Spanish Plan Nacional de I+D+i. In a 3<sup>rd</sup> project, I have received funding for a stay at the "Central Laser Facility Octopus/Ultra", Oxford, UK, from the "Science and Technology Facilities Council". The aim of the stay was the luminescence measurements in nanoparticles for the early detection of colon cancer. In a 4th project that I was involved, an Innovative Teaching Project, I was awarded with the 2nd prize in the "V Contest in Scientific Communication" (UCM). I would like to mention about my solid involvement in national and international cooperation. At the national level, I have established a strong cooperation with the group of "Funceramics" from the Department of Electroceramics (ICV-CSIC), with the "Electroactive Oxides for Smart Devices" group (ICMM-CSIC) and with the Department of Materials Physics (UAM). Internationally, beyond the aforementioned stay at Oxford, I completed a three-month pre-doctoral stay at the University of Hasselt in Belgium, working in the "Inorganic and Physical Chemistry" research group. The stay was financed by the Spanish Economy and Competitiveness Ministry. Additionally, I was part of the Organising Committee of the "14th International Conference of the European Ceramic Society" that was held in Toledo (2015). Similarly, I have participated in the organization of 3 other scientific conferences of national scope, held in Cuenca (2017), Castellón (2019) and Vitoria-Gasteiz (2021).

In addition to my research labors, I have also carried out a significant teaching activity. In particular, I am currently teaching "Materials Engineering" and "Chemistry" at the Antonio de Nebrija University and at the Carlos III University of Madrid respectively. In the past, I collaborated at the Department of Inorganic Chemistry (UCM) during the academic courses 2013/14 and 2014/15 teaching "Chemistry". Additionally, I was the professor of the "Laboratory of General Physics II" during the academic course 2015/16 at the Department of Electronic Physics, ETSI Telecommunications, UPM.

## **Part C. RELEVANT MERITS**

### **C.1. Publications (including books)**

*Publication title:* Thin film processing of multiferroic BiFeO<sub>3</sub>: From sophistication to simplicity. A review.

*Authors:* C. Gumiel; D. G. Calatayud

*Journal:* *Boletín de la Sociedad Española de Cerámica y Vidrio*

*Impact Factor:* 2.383, 7/29 (Q1), 2021

*DOI:* 10.1016/j.bsecv.2021.08.002

*Publication Title:* Nanostructure stabilization by low-temperature dopant pinning in multiferroic BiFeO<sub>3</sub>-based thin films produced by aqueous chemical solution deposition

*Authors:* **C. Gumiel**; T. Jardiel; D. G. Calatayud; T. Vranken; M. K. Van Bael; A. Hardy; M. L. Calzada; R. Jiménez; M. García-Hernández; F. J. Mompeán; A. C. Caballero; M. Peiteado

*Journal:* *Chemistry of Materials*

*Impact Factor:* 7.393, 65/335 (Q1), 2020

*DOI:* 10.1016/j.bsecv.2021.08.002



*Publication Title:* Two-step doping approach releasing the piezoelectric response of BiFeO<sub>3</sub> bulk ceramics co-doped with titanium and samarium  
*Authors:* **C. Gumiel**; T. Jardiel; M.S. Bernardo; P.G. Villanueva; D.G. Calatayud; A.C. Caballero; M. Peiteado  
*Journal:* Boletín de la Sociedad Española de Cerámica y Vidrio  
*Impact Factor:* 2.383, 7/29 (Q1), 2020  
*DOI:* 10.1016/j.bsecv.2019.07.002

*Publication Title:* Combination of structural and microstructural effects in the multiferroic response of Nd and Ti co-doped BiFeO<sub>3</sub> bulk ceramics  
*Authors:* **C. Gumiel**; T. Jardiel; M.S. Bernardo; P.G. Villanueva; U. Urdirroz; F. Cebollada; C. Aragón; A. C. Caballero; M. Peiteado;  
*Journal:* Ceramics International  
*Impact Factor:* 3.830, 2/28 (Q1), 2019  
*DOI:* 10.1016/j.ceramint.2018.11.225

*Publication Title:* Synthesis and study of (Ca/Ba)<sub>0.45</sub>Eu<sub>0.05</sub>Zr<sub>2</sub>(PO<sub>4</sub>)<sub>3</sub> nanophosphors and (Ca/Ba)<sub>0.45</sub>Eu<sub>0.05</sub>Zr<sub>2</sub>(PO<sub>4</sub>)<sub>3</sub>@SiO<sub>2</sub> nanostructures with blue-green emission  
*Authors:* J. Isasi; L. Alcaraz; P. Arévalo; **C.Gumiel**; M. Peiteado  
*Journal:* Journal of Luminescence  
*Impact Factor:* 2.961, 26/95 (Q2), 2018  
*DOI:* 10.1016/j.jlumin.2018.08.082

*Publication Title:* Thin film composites in the BiFeO<sub>3</sub>-Bi<sub>4</sub>Ti<sub>3</sub>O<sub>12</sub> system obtained by an aqueous solution-gel deposition methodology  
*Authors:* **C. Gumiel**; T. Vranken; M.S. Bernardo; T. Jardiel; A. Hardy; M. K. Van Bael; M. Peiteado  
*Journal:* Boletín de la Sociedad Española de Cerámica y Vidrio  
*Impact Factor:* 1.633, 10/28 (Q2), 2018  
*DOI:* 10.1016/j.bsecv.2017.09.001

*Publication Title:* The contribution of transmission electron microscopy (TEM) to understanding pre-columbian goldwork technology  
*Authors:* E. Vindel; J. García; C. Gumiel; V. Lopez-Acevedo; M. Hernando  
*Journal:* Archaeometry  
*Impact Factor:* 1.640, 28/45 (Q3), 2018  
*DOI:* 10.1111/arcm.12309

*Publication Title:* Solid state diffusion and reactivity in the multiferroic BiFeO<sub>3</sub>-Bi<sub>4</sub>Ti<sub>3</sub>O<sub>12</sub> composite system  
*Authors:* **C. Gumiel**; M.S. Bernardo; P.G. Villanueva; T. Jardiel; J. de Frutos; A.C. Caballero; M. Peiteado  
*Journal:* Journal of Materials Science  
*Impact Factor:* 2.993, 84/285 (Q2), 2017  
*DOI:* 10.1007/s10853-016-0666-1

## C.2. Research projects

*Project Title:* Directed Assembly of Functional Ceramics at the Nanoscale: Phosphor Materials and Multiferroic Systems  
*Funding Entity:* MINECO, MAT2016-80182-R  
*Institute/Faculty:* Ceramic and Glass Institute (CSIC)  
*Principal Researcher:* Dr. Marco Peiteado  
*Period:* 30/12/2016 – 29/12/2019  
*Budget:* 121.000 €



*Project title:* Preparation of Multiferroic Hetero-Structured Materials under Soft Conditions  
*Funding Entity:* CSIC 201460E104  
*Institute/Faculty:* Ceramic and Glass Institute (CSIC)  
*Principal Researcher:* Dr. Amador Caballero  
*Period:* 01/10/2014 – 30/09/2016  
*Budget:* 65.717,83 €

*Project Title:* Sustainable Processing of Complex Oxide-based Nanoarchitectures  
*Funding Entity:* MINECO, MAT2013-40722-R  
*Institute/Faculty:* Universidad Politécnica de Madrid  
*Principal Researcher:* Dr. Marco Peiteado  
*Period:* 01/01/2014 – 31/07/2017  
*Budget:* 189.648,98 €

*Project Title:* Multiphoton Fluorescence Lifetime of New Inorganic Hierarchical Heterostructures  
*Funding Entity:* Science and Technology Facilities Council, 20230032  
*Institute Faculty:* Instituto de Cerámica y Vidrio (CSIC)  
*Principal researcher:* Dr. David González Calatayud

### **C.3. Contracts and grants**

05/01/2019 to the Present. **Postdoctoral stay at the Ceramic and Glass Institute of Madrid (ICV-CSIC)**, carried out in the Funceramics Research group, under the supervision of Dr. Amador Caballero Cuesta.

2018-2019. **POP Postdoctoral Contract (Postdoctoral Orientation Period)** granted by the Spanish Ministry of Economy and Competitiveness due to the obtaining of the Doctorate before the end of the 3<sup>rd</sup> year of the FPI predoctoral grant.  
*Contract Modality:* Temporary full-time employment contract  
*Contracting Entity:* Technic University of Madrid  
*Faculty / Center:* ETSI Telecommunications  
*Department:* Electronic Physics  
*Contract Duration:* 05/01/2018 to 04/30/2019

03/21/2016–20/06/2016. **Predocotoral Stay at the Institute for Materials Research, Hasselt University (Hasselt, Belgium).**  
Stay granted by the Spanish Ministry of Economy and Competitiveness.  
Stay carried out in the “Inorganic and Physical Chemistry” research group, under the supervision of doctors An Hardy and Marlies Van Bael.

2015-2018. **Predocotoral Contract (FPI)**, granted by the Spanish Ministry of Economy and Competitiveness.  
*Contract Modality:* Temporary full-time employment contract  
*Contracting Entity:* Technic University of Madrid  
*Faculty / Center:* ETSI Telecommunications  
*Department:* Electronic Physics  
*Contract Duration:* 05/01/2015 to 04/24/2018

2011-2014. **Internship Researcher** at the "Functional Inorganic Materials" research group, under the supervision of Professor Dr. José M<sup>a</sup> González Calbet. Department of Inorganic Chemistry I. Faculty of Chemistry, Complutense University of Madrid.



## C.4. Other merits

### Invited talks in scientific conferences

*Title:* Two-step doping approach to obtain  $\text{Sm}^{3+}$  and  $\text{Ti}^{4+}$  co-doped  $\text{BiFeO}_3$  ceramics with effective piezoelectric properties.

“The 8th Global Conference on Materials Science and Engineering (CMSE 2019)”, Kitakyushu City, Japan, 2019.

*Title:* Some critical issues in the obtaining of  $\text{BiFeO}_3$  ceramics with an effective microstructure.

“XIV Reunión Nacional de Electrocerámica”, Castellón, Spain, 2019.

*Title:* Application of an aqueous solution-gel deposition methodology to the sustainable preparation of thin film composites in the multiferroic  $\text{BiFeO}_3$ - $\text{Bi}_4\text{Ti}_3\text{O}_{12}$  system.

“The 7th Global Conference on Materials Science and Engineering (CMSE 2018)”, Xian, China, 2018.

*Title:* Synthesis, microstructure and properties of  $\text{BiFeO}_3$ -based multiferroic materials.

“EMN Meeting on Ceramics 2016”, Hong Kong, 2016.

### Organization of R&D Events

Member of the organizing committee of the “XIV National Electroceramics Meeting”. National Conference held in Vitoria-Gasteiz from July 7<sup>th</sup> to 9<sup>th</sup>, 2021.

Member of the organizing committee of the “XIV National Electroceramics Meeting”. National Conference held in Castellón from June 26<sup>th</sup> to 28<sup>th</sup>, 2019.

Member of the organizing committee of the “XIII National Electroceramics Meeting”. National Conference held in Cuenca from June 21<sup>st</sup> to 23<sup>rd</sup>, 2017.

Member of the organizing committee of the “14th International Conference of the European Ceramic Society”. International Conference held in Toledo from June 21<sup>st</sup> to 25<sup>th</sup>, 2015.

### Awards

Award for Best Oral Contribution entitled “Application of an aqueous solution-gel deposition methodology to the sustainable preparation of thin film composites in the multiferroic  $\text{BiFeO}_3$ - $\text{Bi}_4\text{Ti}_3\text{O}_{12}$  system”, which was presented as an Invited Talk at “The 7th Global Conference on Materials Science and Engineering” held in Xian (China) from November 1<sup>st</sup> to 4<sup>th</sup>, 2018.

2<sup>nd</sup> Prize at the “V Contest in Scientific Communication 2014” as a team member of the Innovative Teaching Project (PMCID N°21-2013, Complutense University of Madrid).

### Accreditations and Acknowledgments

Accredited for the DOCTOR ASSISTANT TEACHER figure by the National Agency for Quality Assessment and Accreditation (ANECA).

### Innovation and Improvement of Teaching Quality Project

Participation in the project team, composed of 8 members, entitled “Minerals as interdisciplinary elements: an alternative to traditional teaching. Application to the case of gold” (PMCID N°21-2013, Complutense University of Madrid).