



Part A. PERSONAL INFORMATION

CV date

18/06/2025

First name	Rocio		
Family name	Ruiz Bustos		
e-mail			URL Web
Open Researcher and Contributor ID (ORCID) (*)			0000-0003-0573-1745

(*) Mandatory

A.1. Current position

Position	Profesor Titular de Universidad		
Initial date	27/04/2015		
Institution	University of Córdoba		
Department/Center	Mechanics	School of Engineering Sciences	
Country	Spain	Teleph. number	
Key words	Materials Science, Solid State Chemistry, Condensed Matter Physics		

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

Period	Position/Institution/Country/Interruption cause
2014-2015	Profesor Sustituto Interino, University of Córdoba
2013	Consultant at CETEMET, Centro Tecnológico Metalmecánico y del Transporte
2008-2012	Senior Research Scientist. Science and technology Park Albacete
2005-2008	Juan de la Cierva Researcher, University Complutense de Madrid
2003-2005	Post-doc, University of Oxford, UK

A.3. Education

PhD, Licensed, Graduate	University/Country	Year
Ph.D. in Chemistry. Supervisor: Prof. M.A. Alario-Franco	Universidad Complutense de Madrid	2003
Master of Science (M.Sc.) in Chemistry	Universidad de Granada	1997
Qualified Teacher Status	National College for Education & Leadership. Department for Education. GOV, UK.	2013

Part B. CV SUMMARY (max. 5000 characters, including spaces)

I obtained my chemistry degree (Inorganic) from the University of Granada and my Ph.D. from the Complutense University, in Madrid. My Ph.D. work consisted in the synthesis and characterization (structural and magnetic) of cuprates $\text{Sr}_2\text{RE}(\text{Ru/Cr})\text{Cu}_2\text{O}_8$ with RE = Rare



Earths, being some of them superconductors. The peculiarity of these compounds is that they can only be obtained using high pressures (60-80 kbar) and temperatures, so a high-pressure “Belt-type” device was needed in all the cases. As a part of my PhD I did two stays abroad. The first one was in the University of Cambridge, where I spent 4 months learning the Rietveld method to obtain crystal structure models from the X-ray diffraction data. The second one was in the University of McMaster, in Canada, where I worked 3 months using the SQUID to magnetically characterize the high-pressure samples prepared in Madrid.

During my postdoctoral time I worked for three and a half years in the Inorganic Chemistry Laboratory at Oxford University funded by a European grant. During this time, I studied magnetoresistance compounds.

My following position was back in my previous group in Madrid through a Juan de la Cierva contract where my research was related with the high-pressure synthesis of novel multiferroic materials. After that, I moved to the Scientific and Technologic Park of Albacete (Castilla La Mancha University). I spent there four years helping to establish a new group (INSOFC) within the Fuel Cell section. The rationale behind this move was to set up a research program for the in-situ characterization of Solid Oxide Fuel Cells (SOFCs). This program combines the expertise in the engineering, testing and development of materials for energy applications present within the section with my own expertise in the use of scattering techniques (neutron and X-ray) to study unconventional and complex systems. Some relevant projects that the group obtained to set up this program have been from the Regional Government of Castilla-La Mancha and the Spanish Ministry of Science and Innovation.

In 2014 I moved to the University of Córdoba where I am an associate professor. I have directed the department of Mechanics for 6 years (2016-2022). Currently I am the General Director of Undergraduate Studies at the University of Córdoba.

To date I have published more than 30 articles, participated in over 40 conferences, most of them international. I have participated in many competitive research projects, and I have coordinated an international one, funded by the International Atomic Energy Agency.

Part C. RELEVANT MERITS (*sorted by typology*)

C.1. Publications (*see instructions*)

1. En orden alfabético: Battle, P.D., Blundell,..., Rosseinsky, M.J., Ruiz-Bustos, R., Sikora, M., Steer, C.A. $\text{Ca}_{2.5}\text{Sr}_{0.5}\text{GaMn}_2\text{O}_8$: Diamagnetic Ga in control of the structural and electronic properties of a bilayered manganate (2004) *Journal of the American Chemical Society*, **126** (39), pp. 12517-12527.
2. Ruiz-Bustos, R., Aguirre, M.H., Alario-Franco, M.Á. New materials derived from Ybco: $\text{CrSr}_2\text{RECu}_2\text{O}_8$ (RE = La, Pr, Nd, Eu, Gd, Tb, Dy, Y, Ho, Er, Lu) (2005) *Inorganic Chemistry*, **44** (9), pp. 3063-3069.
3. Ruiz-Bustos, R., Dos Santos-García, A.J., Alario-Franco, M.A. A pressure range in the synthesis of the $\text{RuSr}_2\text{RECu}_2\text{O}_8$ family (2007) *Zeitschrift für Anorganische und Allgemeine Chemie*, **633** (11-12), pp. 1919-1924.
4. Alario-Franco, M.Á., Ruiz-Bustos, R., Dos Santos-García, A.J. Ahead of the lanthanide contraction; pressure and ionic size in the synthesis of $\text{MSr}_2\text{RECu}_2\text{O}_8$ (RE = Rare Earth, M = Ru, Cr, Ir): A Gaussian relation (2008) *Inorganic Chemistry*, **47** (14), pp. 6475-6481.
5. Ruiz-Bustos, R., Cantos-Gómez, A., Dos Santos-García, A.J., Sánchez-Bautista, C., Van Duijn, J. On the stability of Sr-doped La_2CuO_4 against different electrolytes for IT-SOFCs (2011) *Fuel Cells*, **11** (1), pp. 59-64.
6. J. van Duijn, R. Ruiz-Bustos, A. Daoud-Aladine. Kagome type lattice distortion in the pyrochlore material $\text{Hg}_2\text{Ru}_2\text{O}_7$. *Physical Review B*. **86**, 214111 (2012). DOI: 10.1103/PhysRevB.86.214111.
7. G. Berti, S. Sanna, R. Ruiz-Bustos, J. van Duijn, A. Brambilla, Á Muñoz-Noval,

- F. Demartin, L. Duò and C. Castellano. Evidence of a correlation between magnetic and structural transitions in $Y_{2-x}Zn_xRu_2O_7$ pyrochlore compounds. *RSC Advances* **5**, 100809 (2015). DOI: 10.1039/c5ra20878e.
8. C. Castellano, G. Berte, S. Sanna, R. Ruiz-Bustos, J. van Duijn, A. Brambilla, Á. Noval Muñoz, P. Carretta, L. Duò, F. Demartin. Evidence of local structural order and spin-lattice coupling in the frustrated pyrochlore $Y_2Ru_2O_7$. *Physical Review B* **91**, 224101 (2015). DOI: 10.1103/PhysRevB.91.224101.
 9. G. Berti, S. Sanna, C. Castellano, J. van Duijn, R. Ruiz-Bustos, L. Bordonali, G. Bussetti, A. Calloni, F. Demartin, L. Duò, A. Brambilla. Observation of mixed valence Ru components in Zn doped $Y_2Ru_2O_7$ pyrochlores. *Journal of Physical Chemistry C* **120**, 11763 (2016). DOI: 10.1021/acs.jpcc.5b12411.
 10. J. van Duijn, K. H. Kim, N. Hur, R. Ruiz-Bustos, D. T. Adroja, F. Bridges, A. Daoud-Aladine, F. Fernandez-Alonso, J. J. Wen, V. Kearney, Q. Z. Huang, S.-W. Cheong, T. G. Perring, C. Broholm. Induced quadrupolar singlet ground state of praseodymium in a modulated pyrochlore. *Physical Review B* **96**, 094409 (2017). DOI: 10.1103/PhysRevB.96.094409.
 11. Rocío Ruiz-Bustos, Antonio López-Uceda, María Isabel López-Martínez and Joost Van Duijn. The Mechanical Performance of Recycled Slate Waste Fiber Composites Based on Unsaturated Polyester Resins. *Materials* **2023**, 16, 6041. <https://doi.org/10.3390/ma16176041>.
 12. Rocío Ruiz Bustos, Joost van Duijn, Gianrico Lamura, Pascual Manuel, Samuele Sanna. Magnetic ordering in the frustrated pyrochlore $Yb_2Ru_2O_7$. <https://doi.org/10.1016/j.jallcom.2024.176661>. *Journal of Alloys and Compounds* 1008 (2024) 176661

C.2. Congress

1. M. Moreno Luque, M. I. López Martínez, M. Carmona Cabello, J. van Duijn, R. Ruiz Bustos. Study of the stability of steels and bio-fuels to reduce fuel storage tank degradation. 6th International Conference on Materials Engineering and Nanotechnology 5th-6th of November 2022. Kuala Lumpur, Malaysia.
2. Rocío Ruiz-Bustos, Lourdes Santiago-Vinuesa, Joost van Duijn. Designing new natural slate based, environmentally friendly, composites for multiple applications. 13th International Conference on Materials Chemistry (2017). 10/07/2017. Liverpool (UK).
3. Joost van Duijn, Rocío Ruiz Bustos, S. Sanna: Modification of the Magnetic Properties of $Y_2Ru_2O_7$ by Zn/Mg Doping on the Y site. VII Reunión Bienal del Grupo Especializado de Física del Estado Sólido de Real Sociedad Española de Física 2014. 2/01/2014. Ciudad Real.
4. Joost van Duijn, Rocío Ruiz Bustos: Kagome-like Lattice Distortion in the Pyrochlore Material $Hg_2Ru_2O_7$. American Physical Society March Meeting 2013. 18/03/2013. Baltimore (USA).
5. Antonio Cantos-Gómez, Rocío Ruiz Bustos, Joost van Duijn: Stability and Conductivity of $La_{2-x}Ce_xZr_2O_7$ Pyrochlores. The Energy Materials Research Conference 2012. 20/06/2012. Torremolinos.
6. R. Ruiz-Bustos, A. Cantos-Gómez, A. J. Dos santos-García, C. Sánchez-Bautista, J. Canales-Vázquez, J. van Duijn. On the stability of Sr-doped La_2CuO_4 against different electrolytes for IT-SOFCs. Póster. Workshop on Solid Oxide Fuel Cells: Materials and Technology. Parque Científico y Tecnológico de Albacete, España. 18-20 Noviembre de 2009.
7. Rocío Ruiz Bustos, Joost van Duijn, Adrian D. Hillier and Laurent C. Chapon. Absence of long-range magnetic ordering at the metal-insulator transition in $Hg_2Ru_2O_7$. Póster. 42nd IUPAC Congress, Chemistry Solutions, Glasgow, Reino Unido, 2-7 Agosto 2009.

C.3. Research projects

1. Project Reference: PR1/08-15778.
Title: Síntesis y caracterización de nuevos sistemas multifuncionales obtenidos a altas presiones y temperaturas.
Principal Investigator: Rocío Ruiz Bustos & Joost van Duijn
Participation: Co-IP
Financial Entity: Universidad Complutense de Madrid.
Duration: 01/01/2008- 31/12/2008
Budget: 6.000 €.
2. Project Reference: PII109-0083-2105.
Title: Materiales multifuncionales para aplicaciones energéticas.
Principal Investigator: Rocío Ruiz Bustos and Joost van Duijn (UCLM).
Participation: co IP.
Financial Entity: Junta de Castilla-La Mancha.
Duration: 01/04/2009 - 31/12/2012.
Budget: 100.000 €.
3. Project Reference: IAEA Research Agreement No15770/F12022.
Title: “Non destructive Micro-Structural characterization of Solid Oxide Fuel Cells”.
Principal Investigator: Rocío Ruiz Bustos.
Participation: Principal Investigator.
Financial Entity: International Atomic Energy Agency.
Duration: 11/09/2009 - 11/09/2012.
Budget: 10.000 € (network meetings attendance).
4. Project reference: MAT2010-15245.
Title: Diseño y caracterización microestructural de materiales, con propiedades complementarias entre sí, para simplificación de los componentes de Pilas de Combustible (SOFC).
Principal Investigator: Joost van Duijn (University of Castilla-La Mancha).
Participation: Investigator.
Financial Entity: MICINN.
Duration: 01/01/2011 - 31/01/2013.
Budget: 48.400 €.
5. Project reference: MAT2015-65295-R.
Title: Magnetic Nanocomposites for Energy and Sensor Applications.
Principal investigators: José Miguel Colino García, José Ángel De Toro Sánchez.
Participation: Investigator.
Financial entity MINECO.
Duration: 01/01/2016 – 31/12/2019.
Budget: 100.000 €.
6. Project Reference: UCO Activa DU.34.5B.21.01.
Title: Mejora de la eficiencia energética de dispositivos electrónicos mediante el uso de compuestos magnetoeléctricos avanzados.
Principal Investigator: Rocío Ruiz Bustos
Participation: Principal Investigator
Financial Entity: Universidad de Córdoba.
Duration: 01/05/2021 - 01/05/2022
Budget: 12.000 €.

C.4. Contracts, technological or transfer merits

1. Title: Desarrollo de celdas de combustible de óxido sólido.
Company: Área de Sistemas Alternativos de Generación y responsable de proyectos de desarrollo de celdas de combustible de óxido sólido, División de Energía, IKERLAN-Energía, Parque Tecnológico de Álava.
Principal investigator: Rocío Ruiz Bustos.
Affiliation: Parque Científico y Tecnológico de Albacete.
Duration: 01/08/2008 – 01/10/2012.
2. Title: Insitu XRD measurements on Fe catalysts.
Company: Catsurfchem B.V..

Principal investigator: Rocío Ruiz Bustos and Joost van Duijn.
Affiliation: University of Castilla-La Mancha.
Duration: 01/10/2014 – 31/12/2014.
Budget: 7.500 €.