

**Part A. PERSONAL INFORMATION**

**CV date**

12/05/2021

First and Family name	Luis Rafael Sánchez Granados		
Social Security, Passport, ID number		Age	■
Researcher codes	Open Researcher and Contributor ID (ORCID**)	0000-0002-0194-1908	
	SCOPUS Author ID (*)	57194110957	
	WoS Researcher ID (*)		

**A.1. Current position**

Name of University/Institution	University of Córdoba		
Department	Inorganic Chemistry and Chemistry Engineering		
Address and Country	Campus de Rabanales; Córdoba - SPAIN		
Phone number	(+34) 957 218 634	E-mail	<a href="mailto:luis-sanchez@uco.es">luis-sanchez@uco.es</a>
Current position	Full Professor	From	June - 2012
Key words	Solid State Chemistry; Photocatalysis; Environment; Materials		

**A.2. Education**

PhD, Licensed, Graduate	University	Year
Graduate Chemical Sciences	University of Córdoba	1990
PhD Sciences (Chemistry)	University of Córdoba	1994

**A.3. General indicators of quality of scientific production** (see instructions)

- 4 six-year term of research, the last from: 01/01/2016
- PhD thesis supervised on the last 10 years: 7
- Overall citations: 3052
- Average citations/year last 5 years: 231
- Overall Publications in first quartile (Q1): 87
- h index : 32
- Research Gate Score: 39,6 (132 research items; 13940 readings; 2758 citations)
- Publications (5 last years): 100 % cited, 68% in Q1: 50% in D1

**Part B. CV SUMMARY**

I performed a post-doc stage at the Electrochemistry and Catalyst and Organic Synthesis Laboratory of CNRS (Thiais-Paris; France, 1995). I joined the Inorganic Chemistry Department of the University of Córdoba in 1996, being professor of this department from 1998. I have been/am supervisor of 10 Master theses in Chemistry and Materials Science and Professor for the Degree Courses in Chemistry, Environmental Sciences, Biochemistry, and Applied Chemistry Master degree. I have also given lectures and specialized seminars for various masters and training courses.

The scientific activity is described and summarized in the following sections. This activity has been carried out mostly in the field of study of Solid State Chemistry, with special attention to the design of functional materials (oxides, hydroxides, chalcogenides, metals,...) in various forms: micro/nano particles, thin layers, composites, 3D arrays.

In the last ten years I started and lead a new line of research focused on the study of new inorganic materials for construction and environmental remediation, as well as the valorization of industrial wastes. As the most relevant results: (i) the preparation of stronger and more sustainable building materials using wastes in their formulation; (ii) the pioneering use of inorganic wastes to provide color or photocatalytic functionality to cement mortars; (iii) pioneering materials for NO<sub>x</sub> gas removal. This line of research has been successful in the form of contracts with industry-leading companies, relevant publications, projects with high funding and a high social impact on the media (TVE1, RNE, Onda Cero, etc. see <http://www.uco.es/investiga/grupos/inorganico/difusioacuten1.html>).

On the last 8 years I am working specifically in the study of materials for photocatalytic DeNO<sub>x</sub> actions. This line of research, in which this project is requested, is growing exponentially. Because the work and effort did into making impact publications (index h and number of citations grows by 5 % per year) and managing projects of interest on these years, it can be said that I become an **expert** and **leader** in the use of photocatalytic inorganic materials for atmospheric decontamination. As way of example, on this field of research, I have been invited to participate in the organizing and scientific committees of international symposia or to write book-chapter (*"Metal Oxide Nanomaterials for Nitrogen Oxides Removal in Urban Environments"* in *Tailored Functional Oxide Nanomaterials: From Design to Multi-Purpose Applications.*; Wiley Editorial, accepted for publication in 2021) (see section C5). Medium/long-term scientific objectives are focussed to the preparation of low cost and highly effective frontier materials for environmental remediation with the aim to be implemented for the benefit of the Society. A summary of the scientific-academic trajectory is set out in section C.5

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

### **C.1. Publications** (see instructions)

1. Authors: L. Sánchez; last position and *corresponding author* of 9 participating authors  
Title: *Insight into the role of copper in the promoted photocatalytic removal of NO using Zn<sub>2</sub>Cu<sub>x</sub>Cr-CO<sub>3</sub> layered double hydroxide*  
Journal: Chemosphere, Year: 2021, Vol: 275 Pages: 130030
2. Authors: L. Sánchez; last position and *corresponding author* of 6 participating authors  
Title: *Cr<sup>3+</sup> substituted Zn-Al layered double hydroxides as UV-Vis light photocatalysts for NO gas removal from the urban environment.*  
Journal: Science of the Total Environment, Year: 2020, Vol: 706 Pages: 136009 Cited by:2
3. Authors: L. Sánchez; last position and *corresponding author* of 7 participating authors  
Title: *Effects of Fe<sup>3+</sup> substitution on Zn-Al layered double hydroxides for enhanced NO photochemical abatement.*  
Journal: Chemical Engineering Journal Year: 2020 Vol: 387 Pages: 124110 Cited by: 4
4. Authors: L. Sánchez; last position and *corresponding author* of 5 participating authors  
Title: *ZnO on rice husk: A sustainable photocatalyst for urban air purification*  
Journal: Chemical Engineering Journal Year: 2019 Vol: 368 Pages: 659-667. Cited by: 9
5. Authors: L. Sánchez; last position and *corresponding author* of 8 participating authors  
Title: *Mesocrystalline anatase nanoparticles synthesized using a simple hydrothermal approach with enhanced light harvesting for gas-phase reaction*  
Journal: Dalton Transactions Year: 2018 Vol: 47 Pages: 6590-6597. Cited by: 7
6. Authors: L. Sánchez; penultimate position, *corresponding author*, 6 participating authors  
Title: *Zn-Al layered double hydroxides as efficient photocatalysts for NO<sub>x</sub> abatement*  
Journal: Chemical Engineering Journal, Year: 2018 Vol: 346 Pages:151-158. Cited by: 23
7. Authors: L. Sánchez; last position and *corresponding author* of 4 participating authors  
Title: *α-Fe<sub>2</sub>O<sub>3</sub>/SiO<sub>2</sub> composites for the enhanced photocatalytic NO oxidation*  
Journal: Journal Alloys Compounds, Year: 2018 Vol: 735 Pages:1553-1561. Cited by: 12
8. Authors: L. Sánchez; 4th position and *corresponding author* of 7 participating authors  
Title: *Photocatalytic abatement by calcium aluminate cements modified with TiO<sub>2</sub>: improved NO<sub>2</sub> conversion.*  
Journal: Cement & Concrete Research Year: 2015 Vol: 70 Pages: 67 a 76. Cited by: 30
9. Authors: L. Sánchez; last position and *corresponding author* of 6 participating authors  
Title: *Efficient behaviour of hematite towards the photocatalytic degradation of NO<sub>x</sub> gases*  
Journal: Appl. Catalysis B: Environmental, Year: 2015 Vol:165 Pages: 529-536. Cited by:40
10. Authors: L. Sánchez; last position and *corresponding author* of 7 participating authors  
Title: *Enhanced photocatalytic degradation of NO<sub>x</sub> gases by regulating the microstructure of mortar cement modified with titanium dioxide*  
Journal: Building and Environment, Year: 2013 Vol: 69 Pages: 55-63. Cited by: 62

## C.2. Research projects

1. Reference: H2020-MSCA-ITN-2019  
Title: Self-healing, Multifunctional, Advanced Repair Technologies IN Cementitious Systems - SMARTINCS  
Funding entity: European Union, 2019  
Principal Investigator: Mercedes Sánchez Moreno (Universidad de Córdoba)  
Duration: from 01-12-2019 to 30-11-2023      Amount of the grant: 250.904,00 €  
Kind of involvement: Research team
2. Reference: MAT2017-88284-P  
Title: " Hydrotalcite-based 2D and 3D systems as photocatalysts for NOx gas removal "  
Funding entity: Ministerio de Economía, Industria y Competitividad; Conv. 2017.  
Principal Investigator: Luis Sánchez Granados (Universidad de Córdoba)  
Duration: from 01-01-2018 to 31-12-2020.      Amount of the grant: 108.900,00 €  
Kind of involvement: Principal Investigator
3. Reference: RTC-2015-3916-6  
Title: "New functional materials based on encapsulation techniques for the prevention, conservation and restoration of historical heritage. MATERPAT "  
Funding entity: Ministerio de Economía y Competitividad; Conv. 2015.  
Principal Investigator: Luis Sánchez Granados (Universidad de Córdoba)  
Duration: from 01/11/2015 to 31/03/2018.      Amount of the grant: 71.808,5 €  
Kind of involvement: Principal Investigator
4. Reference: XX PP. Modalidad 4.1  
Title: "New Materials for Urban Atmospheric Decontamination through the use of photochemical reactions induced by visible light"  
Funding entity: Universidad de Córdoba; Conv. 2015.  
Principal Investigator: Luis Sánchez Granados (Universidad de Córdoba)  
Duration: from 25-06-2015 to 30-06-2017.      Amount of the grant: 24.000,00 €.  
Kind of involvement: Principal Investigator
5. Reference: G-GI3000/IDI2.  
Title: "Preparation of next-generation building materials for improving environmental sustainability in urban environments: reduction of polluting gases (NOx) emitted by transport systems"  
Funding entity: Agencia de Obra Pública de Junta de Andalucía; Conv. 2011.  
Principal Investigator: Luis Sánchez Granados (Universidad de Córdoba)  
Duration: from 12-04-2012 to 30-04-2014.      Amount of the grant: 204.541,20 €.  
Kind of involvement: Principal Investigator
6. Reference: P09-FQM-4764  
Title: "Development of high value-added mortars for application in the restoration and maintenance of heritage buildings"  
Funding entity: Consejería de Innovación Ciencia y Empresa, Junta de Andalucía. Proyecto de Excelencia (Motriz). Convocatoria 2009  
Principal Investigator: Luis Sánchez Granados (Universidad de Córdoba)  
Duration: from 03-02-2010 to 31-12-2014      Amount of the grant: 229.024,00 €.  
Kind of involvement: Principal Investigator

## C.3. Contracts, technological or transfer merits

Title: "Fire-resistant panel preparation study based on fly ash geopolymers and other precursors "  
Company: Adenium Ibérica S.L.  
Principal Investigator: Luis Sánchez Granados (Universidad de Córdoba)  
Duración: from 16/11/2016 to 31/08/2018  
Amount of the contract: 71.036,96 €

#### C.4. Patents

Inventors: L Sánchez, M. Cruz, J. Balbuena, L. Fuertes.

International publication number: WO 2020/012053 A1

Title: Fireproof Compositions and Materials

Country of Priority: International

International publication date: 16/01/2020

Owner: Adenium Ibérica, S.L

#### C.5, Additional information

##### *Research Activity:*

- 114 papers in scientific journals of international relevance. (41 from 01/01/2010)
- 117 communications at national and international congresses. (56 from 01/01/2010)
- Guest Editor of "Journal of Nanoscience & Nanotechnology" [17, 2017, 4385]
- Principal Investigator of 6 national projects and 12 research contracts.
- Researcher participating in other 15 national and 2 european projects (8 from 01/01/2010)
- Supervisor of 10 Doctoral Theses and 9 Bachelor's Thesis (7 from 01/01/2010)
- Scientific Reviewer for more than 36 international journals (more than 180 revisions; more than 50 from 01/01/2010)

##### *Research experience abroad:*

- Research Stay; Molecular Science and Technology Institute (ISTM); University of Padova (Italia, 1 week 2011)

##### *Scientific Committees:*

- Member of the Scientific Committee of the Symposium "2nd Global Conference on Catalysis, Chemical Engineering & Technology" (Roma, Italia, September 2018).
- Member of the Organizing and Scientific Committee of the Symposium I-10 "Multi-functional oxide nanomaterials: from design to advanced applications" en "21st International Conference on Solid State Ionics" (Padova, Italia, June 2017).
- Member of the Scientific Committee "VI Meeting on Nanoscience and Nanotechnology of Andalusian Researchers; NANOUCO"; January 2017 y del "VII Meeting on Nanoscience and Nanotechnology of Andalusian Researchers; NANOUCO"; January 2019
- Member of the Solid State Chemistry Group board, from Spanish Royal Society of Chemistry- from 2009.

##### *Awards, Recognitions, Scholarships:*

- International Scholarship ERASMUS TST– 2011.

##### *Development of Research Lines:*

Solid State Chemistry. Synthesis and structural characterization of solids.  
Photocatalysis and Environment. Inorganic compounds for building materials:  
Reactivity, color, photocatalytic reactions, etc.

##### *Academic Management (at University of Córdoba):*

- Vice-Dean for Academic Organization and Coordination; Faculty of Sciences; 2009-2012.
- Director for Teaching Activity and Teacher Staff; Rectorship, 2012 a 2014.
- Member of the Governing Council of the University of Córdoba, from May 2015.
- Secretary of Inorganic Chemistry and Chemical Engineering Department, year 2107.
- Head of Inorganic Chemistry and Chemical Engineering Department, from June 2020.