

## Part A. PERSONAL INFORMATION

CV date 03/01/2019

First and Family name	José Antonio Odriozola Gordon		
Social Security, Passport, ID number	28406434P	Age	64
Researcher numbers	Researcher ID	N-2777-2013	
	Orcid code	0000-0002-8283-0459	

### A.1. Current position

Name of University/Institution	University of Sevilla		
Department	Inorganic Chemistry Dept./ Materials Science Institute		
Address and Country	Avd Américo Vespucio 49, CP 41092 Sevilla, Spain		
Phone number	9545542101	E-mail	<a href="mailto:odrio@us.es">odrio@us.es</a>
Current position	Catedrático de Universidad (Full Professor)	From	02/04/97
Espec. cód. UNESCO			
Keywords	Catalysis, Fuel Processors, Structured Catalysts and Reactors, CCU		

### A.2. Education

PhD	University	Year
Chemistry Degree	University of Sevilla	1976
Ph.D. in Chemistry	University of Sevilla	1981

### A.3. JCR articles, h Index, thesis supervised...

Number of papers <sup>1</sup>		Average citations <sup>1</sup> per paper	h index <sup>1</sup>	Times cited <sup>1</sup>					
Total	Q1			Sum	2014	2015	2016	2017	2018
303	205	20,85	43	6319	475	426	619	599	581

Thesis supervised		Patents		Sexenios	
Defended	In process	Issued to companies	US's property	Number	Date
30	8	5	6	6	31/12/2014

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

Chair of Inorganic Chemistry of the University of Sevilla and Research Professor of the Materials Science Institute of Sevilla, Spain. Fellow of the Spanish Society of Catalysis and of the American Chemical Society. Founder partner of CO2Value Europe a non-profit organization devoted to Carbon Capture & Utilization understood as any technology devoted to convert CO2 in added value products.

Ph.D. in Chemistry by the University of Sevilla (1981), Associate Professor (January 1985) and further Chair of Inorganic Chemistry at the University of Sevilla since 1997. Postdoctoral studies at Lawrence Berkeley Laboratory under Gabor Somorjai's

<sup>1</sup> Source: Web of Science

supervision. Visiting or invited Professor at Lawrence Berkeley Laboratory, University of Rennes 1, Universidad Nacional Autónoma de México and University of Strasbourg. Head of the Materials Science and Technology Panel of the Spanish National Agency for Evaluation and Prospective, ANEP (2004-2006). From November 2008 to February 2016 Head of the Inorganic Chemistry Department. From September 2009 Head of the doctoral School of the University of Sevilla and Extremadura on Science and Technology of Materials since its creation.

Head of the Surface Science and Catalysis Laboratory since 1996, has focussed his research in the surface chemistry of materials. Among these studies catalyst synthesis and characterization of surface species under reaction conditions (operando spectroscopies) are especially noteworthy. Moreover, as a result of the strong cooperation with copper and steel mills of the region the group has acquired a reputed expertise on the surface characterisation of steels and other metallic substrates. This expertise together with the background on Catalysis has driven the group to develop a new research line focussed on the manufacture and study of micromonoliths and microchannel reactors for energetic and environmental catalytic applications. The selection of papers and projects that follows tries to show up the main interests of the last years research.

### **Part C. RELEVANT MERITS**

#### **C.1. Publications 2014-2018 (including books)**

V. Garcilaso, J. Barrientos, O.H. Laguna, M. Boutonnet, M.A. Centeno, J.A. Odriozola; "Promoting effect of CeO<sub>2</sub>, ZrO<sub>2</sub> and Ce/Zr mixed oxides on Co/ $\gamma$ -Al<sub>2</sub>O<sub>3</sub> catalyst for Fischer-Tropsch synthesis"; *Renew. Energ.* 132, 2019, 1141-1150.

S. Navarro Jaén, M.A. Centeno, O.H. Laguna, J.A. Odriozola; "Pt/CePO<sub>4</sub> catalysts for the WGS reaction: Influence of the water-supplier role of the support the catalytic performance."; *J.Mat. Chem. A*, 6, 2018, 17001-17010

J. Plata, F. Romero-Sarria, J. Amaya Suárez, A.M Márquez, O.H Laguna, J.A Odriozola, J. Fernandez-Sanz; "Improving the Activity of Gold Nanoparticles for the Water Gas Shift Reaction using TiO<sub>2</sub>-Y<sub>2</sub>O<sub>3</sub>: an Example of Catalysts Design"; *Phys. Chem. Chem. Phys.*, 20, 2018, 22076-22083

L.F. Bobadilla, J.L. Santos, S. Ivanova, J.A. Odriozola, A. Urakawa; "Unravelling the Role of Oxygen Vacancies in the Mechanism of the Reverse Water-Gas-Shift Reaction by Operando DRIFTS and UV-Vis Spectroscopy"; *ACS Catal.*, 8, 2018, 8, 7455-7467

E. Jiménez-Barrera, P. Bazin, C. Lopez-Cartes, F. Romero-Sarria, M. Daturi, J.A. Odriozola; "CO/H<sub>2</sub> Adsorption on a Ru/Al<sub>2</sub>O<sub>3</sub> model catalyst for Fischer Tropsch: effect of water concentration on the surface species"; *Appl. Catal. B* 237, 2018, 986-995.

N. García-Moncada, M. González-Castaño, S. Ivanova, M.A. Centeno, F. Romero-Sarria, J.A. Odriozola; "New concept for old reaction: novel WGS catalyst design"; *Appl. Catal. B* 238, 2018, 1-5.

C. Megias-Sayago, E. Alvarez, S. Ivanova, J.A. Odriozola.; "Epimerization of glucose over ionic liquid/phosphomolybdate hybrids: structure-activity relationship."; *Green Chem.* 20, 2018, 1042-1049.

L.F. Bobadilla, V. Garcilaso, M.A. Centeno, J.A. Odriozola; "Monitoring the reaction mechanism in model biogas reforming by in situ transient and steady-state DRIFTS measurements"; *ChemSusChem*, 10, 2017, 1193-1201.

M. Gonzalez-Castaño, S. Ivanova, O.H. Laguna, L.M. Martinez T, M.A. Centeno, J.A. Odriozola.; "Structuring Pt/CeO<sub>2</sub>/Al<sub>2</sub>O<sub>3</sub> WGS catalyst: Introduction of buffer layer."; *Appl. Catal. B* 200, 2017, 420-427.

L.F. Bobadilla, V. Blay, A. Alvarez, M.I. Dominguez, F. Romero-Sarria, M.A. Centeno, J.A. Odriozola.; "Intensifying glycerol steam reforming on a monolith catalyst: A reaction kinetic model."; *Chem. Eng. J.* 306, 2017, 933- 941.

J.L. Santos, T.R. Reina, S. Ivanova, M.A. Centeno, J.A. Odriozola; "Gold promoted Cu/ZnO/Al<sub>2</sub>O<sub>3</sub> catalysts prepared from hydrotalcite precursors: Advanced materials for the WGS reaction"; *Appl. Catal. B* 201, 2017, 310-317.

O.H. Laguna, M.I. Domínguez, M.A. Centeno, J.A. Odriozola; "Forced deactivation and postmortem characterization of a metallic microchannel reactor employed for the preferential oxidation of CO (PROX)"; *Chem. Eng. J.* 302, 2016, 650-662.

O. Sanz, I. Velasco, I. Pérez-Miqueo, R. Poyato, J.A. Odriozola, M. Montes; "Intensification of hydrogen production by methanol steam reforming"; *Int. J. Hydrogen Ener.* 41, 2016, 5220-5259.

- T.R. Reina, S. Ivanova, M.A. Centeno, J.A. Odriozola; "The role of Au, Cu & CeO<sub>2</sub> and their interactions for an enhanced WGS performance"; Appl. Catal. B 187, 2016, 98-107.
- O.H. Laguna, A. Pérez, M.A. Centeno, J.A. Odriozola; "Synergy between gold and oxygen vacancies in gold supported on Zr-doped ceria catalysts for the CO oxidation"; Appl. Catal. B 176, 2015, 385-395.
- O. Arbeláez, T.R. Reina, S. Ivanova, F. Bustamante, M.A. Centeno, A. L. Villa, J.A. Odriozola; "Mono and bimetallic Cu-Ni structured catalysts for the water gas shift reaction"; Appl. Catal. A 497, 2015, 1-9.
- L.F. Bobadilla, A. Penkova, A. Álvarez, M.I. Domínguez, F. Romero-Sarria, M.A. Centeno, J.A. Odriozola; "Glycerol steam reforming on bimetallic NiSn/CeO<sub>2</sub>-MgO-Al<sub>2</sub>O<sub>3</sub> catalysts: Influence of the support, reaction parameters and deactivation/regeneration processes"; Appl. Catal. A 492, 2015, 38-47.
- M. González-Castaño, T. Ramírez Reina, S. Ivanova, M.A. Centeno, J.A. Odriozola; "Pt vs. Au in Water Gas Shift Reaction"; J. Catal. 314, 2014, 1-9.
- L.F. Bobadilla, A. Penkova, F. Romero-Sarria, M.A. Centeno, J.A. Odriozola; "Influence of the acid-base properties over NiSn/MgO-Al<sub>2</sub>O<sub>3</sub> catalysts in the hydrogen production from glycerol steam reforming"; Int. J. Hydrogen Ener. 39, 2014, 5704-5712.
- O.H. Laguna, W.Y. Hernández, G. Arzamendi, L.M. Gandía, M.A. Centeno, J.A. Odriozola; "Effect of gold deposition on CuOx/CeO<sub>2</sub>: catalyst characterization and kinetics for the PROX reaction."; Fuel, 118, 2014, 176-185.
- T.R. Reina, S. Ivanova, J.J. Delgado, I. Ivanov, V. Idakiev, T. Tabakova, M.A. Centeno, J.A. Odriozola; "Viability of Au/CeO<sub>2</sub>-ZnO/Al<sub>2</sub>O<sub>3</sub> catalysts for pure hydrogen production by the Water-Gas Shift reaction"; ChemCatChem, 6, 2014, 1401-1409.
- S. Palma, L. Bobadilla, A. Corrales, S. Ivanova, F. Romero-Sarria, M.A. Centeno, J.A. Odriozola; "Effect of gold on a NiLaO<sub>3</sub> perovskite catalyst for methane steam reforming."; Appl. Catal. B 144, 2014, 846-854.
- T.R. Reina, S. Ivanova, M.A. Centeno, J.A. Odriozola; "Boosting the activity of a Au/CeO<sub>2</sub>/Al<sub>2</sub>O<sub>3</sub> catalyst for the WGS reaction"; Catal. Today 253, 2015, 149-154.
- T.R. Reina, E. Papadopoulou, S. Palma, S. Ivanova, M.A. Centeno, T. Ioannides, J.A. Odriozola; "Could an efficient WGS catalyst be useful in the CO-PROX reaction?"; Appl. Catal. B 150-151, 2014, 554-563
- O.H. Laguna, W.Y. Hernández, G. Arzamendi, L.M. Gandía, M.A. Centeno, J.A. Odriozola; "Gold supported on CuOx/CeO<sub>2</sub> for the purification of hydrogen by the CO preferential oxidation reaction (PROX)."; Fuel, 118, 2014, 176-185
- S. Ivanova, O.H. Laguna, M.A. Centeno, A. Eleta, M. Montes and J.A. Odriozola; "Microprocess technology for hydrogen purification"; Renewable Hydrogen Technologies. Production, Purification, Storage, Applications and Safety. Chapter 10, pp. 225-243. 2013. Elsevier. L.M. Gandía, G. Arzamendi, P.M. Diéguez (eds). ISBN: 978-0-444-56352-1
- O.H. Laguna, M.I. Domínguez, F. Romero-Sarria, J.A. Odriozola, M.A. Centeno; "Role of oxygen vacancies in gold oxidation catalysis"; Heterogeneous Gold Catalysts and Catalysis. Chapter: 13, pp. 489-511. 2014. The Royal Society of Chemistry. RSC Catalysis Book Series N°18. Zhen Ma, Sheng Dai (eds). ISBN: 978-1-84973-917-7
- T.R. Reina, M. González, S. Palma, S. Ivanova, J.A. Odriozola; "Twenty years of golden future in the Water Gas Shift reaction", Heterogeneous Gold Catalysts and Catalysis. Chapter 5, pp.111-139. 2014. The Royal Society of Chemistry. RSC Catalysis Book Series N°18. Zhen Ma, Sheng Dai (eds). ISBN: 978-1-84973-917-7
- O.H. Laguna, L.F. Bobadilla, W.Y. Hernández, M.A. Centeno.; "Low temperature CO oxidation"; Perovskites and Related Mixed Oxides Concepts and Applications. Chapter 20, pp. 451-473. 2016. Wiley-VCH, Weinheim. Pascal Granger, Vasile I. Parvulescu, Serge Kaliaguine, Wilfrid Prellier (eds). ISBN: 978-3-527-33763-7
- O.H. Laguna, M.I. Domínguez, M.A. Centeno, J.A. Odriozola.; "Catalysts on metallic surfaces: monoliths and microreactors"; New materials for catalytic applications. Chapter: 4, pp. 81-120. 2016. Elsevier, Amsterdam. Vasile I. Parvulescu, Erhard Kemnitz (eds). ISBN: 978-0-444-63587-7

## **C.2. Research projects and grants**

Structured Catalytic Systems for Biofuels Production; Spanish Office of Economy and Competitivity (ENE2015 -66975-C3-2-R); 01/January/2016-31/December/2018)

Valorization of Non-Conventional Gas: Microchannel Reactors in GTL; Spanish Office of Economy and Competitivity (ENE2012-37431-C03-01); 01/January/2013-

31/December/2015

Integration of Microchannel Catalytic Reactors for Hydrogen Production from Alcohols; Spanish Office of Economy and Competitiveness (ENE2009-14522-C05-01); 01/August/2009-31/July/2012

H<sub>2</sub> Production: Microchannel Reactors; Regional Government of Andalucía: Excellence Projects (P06-TEP-01965); 13/April/2007–12/April/2010

### **C.3. Contracts**

Desarrollo experimental de nuevas soluciones tecnológicamente avanzadas para la fabricación de aceros inoxidables. Acerinox S.A.; I.P.: José Antonio Odriozola Gordon; 15/02/2017 – 31/12/2019; Universidad de Sevilla

Aplicación de química computacional a procesos catalíticos de epoxidación.; Repsol S.A.; I.P.: Javier Fernández Sanz; 20/12/2012 – 30/09/2013; Universidad de Sevilla

Desarrollo de sistemas catalíticos compactos para aplicaciones energéticas. Técnicas Reunidas S.A.; IP: José Antonio Odriozola Gordon; 01/04/2011 – 10/12/2013; Universidad de Sevilla

Estudio en ambientes agresivos de aceros inoxidables ferríticos con adiciones especiales de determinados elementos de aleación. ACERINOX, S.A.; IP: José Antonio Odriozola Gordon; 15/04/2010 – 30/06/2011; Universidad de Sevilla

Procesado de bioetanol y otros alcoholes en sistemas compactos. DIGEMA, Diseño y Microrreactores catalíticos para el reformado de gas y reacción de Fischer-Tropsch. Petrobrás; IP (US): José Antonio Odriozola Gordon; 01/01/2006 – 31/12/2008; Universidad de Sevilla

### **C.4. Patents**

J.A. Odriozola, T. Ramirez Reina, M.A. Centeno, S. Ivanova, V. Idakiev, T. Tabakova, L.F. Bobadilla, F. Romero Sarria y M.A. Centeno. Gold catalysts and the use thereof in the water-gas shift reaction. (ES P201101163, PCT/ES2012/070717; WO2013/057347 A1 ); Priority date: 17/October/2012; University of Sevilla-CSIC

J.A. Odriozola, S. Ivanova, J.L. Santos, M.A. Centeno, T. Ramirez Reina, V. Idakiev, T. Tabakova, I. Bogoev. Gold catalysts supported on hydrotalcites CuO/ZnO/Al<sub>2</sub>O<sub>3</sub> and the use thereof in the water-gas shift reaction. (ES P201400683); Priority date: 14/October/2014; University of Sevilla-CSIC

E. Falabella Souza-Aguiar, A.F. Costa, L.M. Gandia, I.B. dos Santos, M.C. Arzamendi, L.C. Almeida, M.Montes, J.A. Odriozola. Method for Preparing Structured Catalytic Systems (WO 2014/085890 A1); Priority date: 06/December/2013; PETROLEO BRASILEIRO SA (Petrobr.s), Brasil

N. Garcia Moncada; M. Gonzalez Castaño; F. Romero Sarria; S. Ivanova; M.A Centeno Gallego; J.A. Odriozola Gordon. Catalytic complex formed by a mechanical mixture of catalyst and ionic conductor. (ES P201500441); Priority date: 02/June/2015; University of Sevilla-CSIC

### **C.5. Editor**

M.J. Pomeroy, S. Hampshire, M.A. Centeno, J.A. Odriozola and Y. Laurent (Eds.). Nitrides and Oxynitrides 2, Materials Science Forum vol. 383, 2002; doi:10.4028/www.scientific.net/MSF.383

Fanor Mondragon and Jose Antonio Odriozola, Special Issue Guest Editors of Topics in Catalysis Volume 59, Issue 2-4, February 2016, dedicated to the XXIV Congreso Iberoamericano de Catalisis held in Medellin (Colombia) in September 2014.

Luis M. Gandia, Mario Montes and Jose A. Odriozola, Special Issue Guest Editors of Catalysis Today volume 273, September 2016, dedicated to ICOSCAR5 (International Conference on Structured Catalysts and Reactors) to be held in San Sebastian (España). <http://dx.doi.org/10.1016/j.cattod.2016.05.038>

Luis M. Gandia, Mario Montes and Jose A. Odriozola, Editors of Catalysts Special Issue "Structured and Micro-structured Catalysts and Reactors.". September 2017.

Tomás Ramirez Reina and José A. Odriozola, Editors of "Heterogeneous Catalysis for Energy Applications", The Royal Society of Chemistry, to appear in 2019.

Tomás Ramirez Reina, Harvey Garcia-Arellano and José A. Odriozola, Editors "Engineering Solutions for CO<sub>2</sub> Conversion", Wiley\_VCH, to appear in 2019.

Mario Montes, Luis M. Gandia and José A. Odriozola, "Structured and Micro-structured Catalysts and Reactors." World Scientific Publishing, to appear in 2020.