



**CURRICULUM VITAE (CVA)**

Part A. PERSONAL INFORMATION		CV date	2022
First name	María Ángeles		
Family name	Larrubia Vargas		
Gender (*)	Women	Birth date (dd/mm/yyyy)	21/02/1968
Social Security, Passport, ID number	25107431X		
e-mail	mavargas@uma.es	URL Web	
Open Researcher and Contributor ID (ORCID) (*)	0000-0002-5483-5025		

(\*) Mandatory

**A.1. Current position**

Position	Full Professor		
Initial date	05/10/2016		
Institution	University of Málaga		
Department/Center	Chemical Engineering	Science Faculty	
Country	Spain	Teleph. number	952131919
Key words	hybrid catalyst, nickel catalyst, NSR-SCR-technology, dry-steam reforming		

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

Period	Position/Institution/Country/Interruption cause
2007-2016	Associate Professor/ University of Málaga/Spain
2003-2007	Researcher (Programa Ramón y Cajal)/ U. Málaga/Spain

**A.3. Education**

PhD, Licensed, Graduate	University/Country	Year
Chemical Sciences	Málaga	1991

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

I obtained my bachelor's degree in Chemical (Industrial) in 1991 at the University of Malaga (UMA) and since then I have been linked to the Department of Chemical Engineering of the Faculty of Science of the UMA. In 1997 I obtained my PhD in Chemical Sciences at the same university (cum laude) and won the Extraordinary Doctorate Awards in the academic year 1998-99. In 1999, I obtained a fellowship from the Programa Nacional de Formación de Personal Investigador en el Extranjero from the Science ad Education Ministry for a two-year post-doctoral contract at the Dipartimento di Ingegneria Chimica e di Processo (DICheP), University of Genova (Italy) under the supervision of Prof. G. Busca.

In 2001 I came back to the University of Málaga as a hired researcher. In 2003 I was a researcher in the Ramón y Cajal programme. Then, I was promoted to Associate Professor in 2007 and Full Professor in 2016. I develop my research and teaching work at the Department of Chemical Engineering of the Faculty of Science in the UMA. I am a member of the research group "Catalytic Process Technologies, PROCAT", which is recognized as a consolidated research group of the Plan Andaluz de Investigación, Desarrollo e Innovación. I have four five-



years teaching periods recognized and four six-years researching periods, as well as five periods of Autonomic Recognitions (Junta de Andalucía).

My scientific activity is mainly developed in the field of the catalytic technologies, preferably applied technologies for environmental sustainability, as well as the recovery of wastes, the understanding of chemical processes from the integral point of view: design and characterization of catalysts and application.

I accumulate extensive experience in the active participation in Research Projects and Research Contracts, having been being Principal Investigator of several projects of the Plan Nacional. As a result, I have authored near 85 articles in peer-reviewed indexed journals, most of them in the first quartile (85%), in addition to some papers in non-indexed journals, giving an index  $h=27$  (Scopus data base). Since 2010 I have published 44 articles indexed in JCR, 90% are in Q1 and 5 articles non indexed as well as a large number of contributions to relevant National and International Congresses. (more than 100 contributions since 2010). I am co-author of a book chapter (ISBN: 978-1-61209-654-4). As for the transfer of results to the productive sector, I have participated in 1 patent.

I have participated in teaching undergraduate, graduate and doctoral subjects of different degrees at the University of Malaga for more than 20 years. Training of researchers has also been a constant, and thus, I have supervised 4 PhD thesis and numerous final Master/BSc degree projects students.

I have held different academic position: Secretary of the Department of Chemical Engineering (09/2011-10/2013), Head of the Department of Chemical Engineering (10/2013-06/2016) and Vice-Dean (06/2016-to the present) at the UMA Faculty of Sciences. I am member of the Spanish Catalysis Society (SECAT) since 1997; I have been the secretary (2015-2021) and the president of the society since October 2021. I have participated in the organization of different scientific events and conferences: SECAT'03, XXI-SICAT2008, CATBIOR2011 and XXIII Jornadas Nacionales de Ingeniería Química

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

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

1. M. Cortés-Reyes, I. Azaoum, S. Molina-Ramírez, C. Herrera, M. Á. Larrubia, L. J. Alemany. "NiGa unsupported catalyst for CO<sub>2</sub> hydrogenation at atmospheric pressure. Tentative reaction pathways" *Industrial & Eng. Chemistry Research*, (2021) doi: 10.1021/acs.iecr.1c03115
2. M. Cortés-Reyes, S. Molina-Ramírez, J.A. Onrubia-Calvo, C. Herrera, M.Á. Larrubia, J.R. González-Velasco, L.J. Alemany. "Structured NSR-SCR hybrid catalytic technology: Influence of operational parameters on deNO<sub>x</sub> activity" *Catalysis Today*, 383, (2022) 287-298.
3. M. Cortés-Reyes, Juan Carlos Martínez-Munuera, Concepción Herrera, M. Ángeles Larrubia, Luis J. Alemany, Avelina García-García. "Isotopic study of the influence of oxygen interaction and surface species over different catalysts on the soot removal mechanism" *Catalysis Today*, in press, (2021) <https://doi.org/10.1016/j.cattod.2021.07.015>
4. M. Pinzón, M. Cortés-Reyes, C. Herrera, M.Á. Larrubia, L.J. Alemany. "Ca-based bifunctional acid-basic model-catalysts for n-butanol production from ethanol condensation" *Biofuels, Bioproducts and Biorefining*, 15(1) (2021) 218–230.
5. S. Molina-Ramírez, M. Cortés-Reyes, C. Herrera, M.A. Larrubia, L.J. Alemany. "CO<sub>2</sub>-SR Cyclic Technology: CO<sub>2</sub> Storage and in situ Regeneration with CH<sub>4</sub> over a new dual function NiBa unsupported catalyst" *Journal of CO<sub>2</sub> Utilization*, 40 (2020) 101201.
6. R. Granados-Fernández, M. Cortés-Reyes, E. Poggio-Fraccari, C. Herrera, M. A Larrubia, L. J. Alemany, "Biomass catalytic gasification performance over unsupported Ni-Ce catalysts for high yield hydrogen production" *Biofuels, Bioproducts and Biorefining*. 14 (1) 2020
7. M. Cortés-Reyes, C. Herrera, M. A Larrubia, L. J. Alemany. "Advance in the scaling up of a hybrid catalyst for NSR-SCR coupled systems under H<sub>2</sub>O+CO<sub>2</sub> atmosphere" *Catalysis Today* 356 (1) (2020) 292-300
8. M. Cortés-Reyes, M. A. Larrubia, C. Herrera, L. J. Alemany. "Influence of CO<sub>2</sub> and H<sub>2</sub>O co-feeding in the NO<sub>x</sub> abatement by SCR over an efficient Cu-CHA catalyst" *Chemical Engineering Science*. 201 (2019) 373-381
9. I. Pieta, M. Cortés-Reyes, M.Á. Larrubia, L.J. Alemany, W.S. Epling. "Mechanistic aspect of N<sub>2</sub>O formation over Pt-Ba/γ-Al<sub>2</sub>O<sub>3</sub> Catalysts" *Topics in Catalysis*, 62(1-4) (2019) 117-128



10. M. Cortés-Reyes, E. Finocchio, C. Herrera, M.A. Larrubia, L.J. Alemany, G. Busca. "A study of Cu-SAPO-34 catalysts for SCR of NO<sub>x</sub> by ammonia" *Microporous and Mesoporous Materials*, 241(2017) 258-265

## C.2. Congress

1. S. Molina-Ramírez, D. Peltzer, M. Cortés-Reyes, C. Herrera, L. Cornaglia, M.Á. Larrubia, L.J. Alemany. "Captura y utilización cíclica del CO<sub>2</sub> mediante inyección de CH<sub>4</sub> para la obtención de corrientes CO+H<sub>2</sub>" Reunión de la SECAT 2021. Comunicación Oral.
2. I. Azaoum, S. Molina-Ramírez, M. Cortés-Reyes, C. Herrera, M.Á. Larrubia, L.J. Alemany. "Hidrogenación de CO<sub>2</sub> a presión atmosférica sobre catalizador NiGa no soportado" Reunión de la SECAT 2021. Comunicación Oral.
3. C. Moreira, S. Molina-Ramírez, M. Cortés-Reyes, C. Herrera, M.Á. Larrubia, L.J. Alemany. "Licuefacción hidrotermal asistida para rendimiento y flexibilidad de la materia prima en la producción mejorada de biocrudos" Reunión de la SECAT 2021. Comunicación Póster.
4. S. Molina-Ramírez, M. Cortés-Reyes, C. Herrera, M.Á. Larrubia, L.J. Alemany. "Catalytic upgrading of bioetanol to n-butanol over a novel hydrotalcite-base-modified catalyst" XXVII Congreso Iberoamericano de Catálisis. 2020. Comunicación Oral.
5. S. Molina-Ramírez, E. Poggio-Fraccari, M. Cortés-Reyes, C. Herrera, M.Á. Larrubia, F. Mariño, L.J. Alemany. "CeO<sub>2</sub>-NiO catalyst for carbon monoxide oxidation active under substoichiometric oxygen conditions for passive DOC system" XXVII Congreso Iberoamericano de Catálisis. 2020. Comunicación Póster.
6. D. Peltzer, S. Molina-Ramírez, L. Cornaglia, M. Cortés-Reyes, C. Herrera, M.Á. Larrubia, L.J. Alemany. "Mechanistic approach of CO<sub>2</sub>-storage and regeneration process using Ni-modified unsupported model catalyst" XXVII Congreso Iberoamericano de Catálisis. 2020. Comunicación Póster.
7. M. Cortés-Reyes, J.C. Martínez-Munuera, C. Herrera, M.Á. Larrubia, L.J. Alemany, A. García-García. "Influence of oxygen interaction and surface species present over different catalysts on the soot removal mechanism studied by pulse experiments with labeled oxygen" International Conference on Environmental Catalysis 2020. Comunicación Oral.
8. S. Molina-Ramírez, M. Cortés-Reyes, M.Á. Larrubia, C. Herrera, L.J. Alemany. "Estudio del proceso cíclico de captura y conversión de CO<sub>2</sub> en corrientes enriquecidas en H<sub>2</sub> empleando CH<sub>4</sub> con un catalizador NiBa no soportado" Reunión de la SECAT 2019. Comunicación Póster.
9. M. Cortés-Reyes, M.Á. Larrubia, C. Herrera, L.J. Alemany. "Cu-CHA como catalizador eficiente en el proceso SCR en presencia de H<sub>2</sub>O y CO<sub>2</sub>" XXVI Congreso Iberoamericano de Catálisis. 2018. Comunicación Oral.
10. M. Cortés-Reyes, J.A. Auñón, C. Herrera, M. González, M.Á. Larrubia, L.J. Alemany. "Could hydrogen co-feeding save the diesel engines?" European Hydrogen Energy Conference 2018. Comunicación Oral.

## C.3. Research projects

1. Gestión Sostenible de Recursos y Valorización Energética de Residuos con balance cero en CO<sub>2</sub>. PY20\_00243

Participation as researcher. Start-End date: 2021-2024

Principal researcher: Luis J. Alemany Arrebola

Junta de Andalucía. Ayudas Proyectos I+D+i destinadas a universidades y entidades públicas de investigación

2. CTQ2017-87909R. Hacia emisión cero: combinación de carburantes avanzados y sistemas catalíticos híbridos para mejora de rendimiento y reducción de contaminantes en motorizaciones Diesel

Participation as researcher Start-End date: 2017-2019; Total amount: **199.650€**

Principal Researcher: Concepción Herrera y Luis J. Alemany

3. CTQ2013-47853-R. Biocarburantes sostenibles para el transporte. Nuevos biocombustibles. Rendimiento de las motorizaciones e impacto de las emisiones

Participation as researcher Start-End date: 2014-2017

Investigador Principal: MA Larrubia Vargas y Luis J. Alemany Arrebola



**4. PRI-PIBAR-2011-1343. Procesos catalíticos para biocombustibles a partir de la producción sostenible de algas**

Participation as researcher Start-End date: 2011-2014; Total amount: **89.000€**

Principal Researcher: Luis J. Alemany Arrebola

**5. CTQ2009-10649. Eliminación simultánea de NOx y partículas de los gases de descarga de motores diesel. Estudio del proceso de regeneración en condiciones DPNR**

Participation as researcher

Start-End date: 2009-2012; Total amount: **114950,01€**

Principal Researcher: L. J. Alemany

#### **C.4. Contracts, technological or transfer merits**

**1-Waste into fuel - catalyst and process development for waste biomass valorization**

Ref.- 8.06/5.32.4868 UE. Institute of Physical Chemistry of the Polish Academy of Sciences

Participation as researcher

Start-End date: 16/06/2017 a 15/06/2018

Total amount: **10000,00€**

Principal Researcher: Luis José Alemany Arrebola

**2-Nuevo proceso catalítico en flujo laminar para la obtención de biocombustibles avanzados (CATALBIO)**

Participation as researcher

Start-End date: 01/02/2016 a 31/12/2017

Total amount: **54000,00 €**

Ref.- 8.06/5.32.4562 CDTI. Bio-Oils Huelva S.L.

Principal Researcher: Luis José Alemany Arrebola.

**3-Biocarburantes sostenibles de nueva generación Contrato asociado a Proyecto Yellowhorn (Programa FEDER-INTERCONECTA)**

Participation as researcher

Start-End date: 01/06/2015 a 30/06/2015

Total amount: **2000,00 €**

Ref.-8.06/5.32.4194-1 CDTI. Bio-Oils Huelva S.L.

Principal Researcher: Luis José Alemany Arrebola.

**4-Biodiesel Sostenible de Nueva Generación, inclusión de nuevas materias primas sostenibles para la producción de biodiesel. Contrato asociado a Proyecto Yellowhorn (Programa FEDER-INTERCONECTA)**

Participation as researcher

Start-End date: 01/03/2014 a 31/05/2015

Total amount: **60000,00 €**

Ref.8.06/32.4194 CDTI BIOSOST Entidad Financiadora: BIO-OIL (Huelva).

Principal Researcher: Luis J. Alemany Arrebola

**5-Characterización catalítica y ensayos de reactividad**

Participation as researcher

Start-End date: 01/05/2014 a 31/12/2014

Total amount: **2000,00 €**

Ref.- 8.06/5.32.4279. Institute of Power Engineering - Research instituto

Principal Researcher: Luis José Alemany Arrebola.

**6-Biocarburantes sostenibles de nueva generación. Fase 1. Contrato asociado a Proyecto Yellowhorn**

Participation as researcher

Start-End date: 01/06/2013 a 31/12/2013

Total amount: **8000,00 €**

Referencia: 8.06/32.3983 CDTI. Bio-Oils Huelva S.L

Investigador Principal: Luis J. Alemany Arrebola

**7-Contrato asociado a Proyecto Yellowhorn (Programa FEDER-INTERCONECTA)**

Participation as researcher

Start-End date: 01/06/2012 a 31/12/2014

Total amount: **210000,00 €**

Referencia: 8.06/32.3957 INNTERCON. ACEITES DEL SUR COOSUR-ACESUR

Principal Researcher: Luis J. Alemany Arrebola

**8-Contrato asociado a Proyecto Yellowhorn (Programa FEDER-INTERCONECTA)**

Participation as researcher

Start-End date: 01/06/2012 a 31/12/2014

Total amount: **150.000,00 €**

Referencia: 8.06/32.3958 INNTERCON. IINGENIERÍA Y GESTIÓN DEL SUR

Principal Researcher: Luis J. Alemany Arrebola