CURRICULUM VITAE (CVA)

IMPORTANT – The Curriculum Vitae cannot exceed 4 pages. Instructions to fill this document are available in the website.

Part A. PERSONAL INFORMATION

CV date	02/03/2026

First name	Javier		
Family name	Herguido		
Gender (*)	M	Birth date (dd/mm/yyyy)	05/08/1964
Social Security, Passport, ID number	xxxxxxxxX		
e-mail	xxxxxxx@xxxxxx.xx	URL Web	
Open Research and Contributor ID (ORCID)(*)		0000-0003-1940-9597	

(*) Mandatory

A.1. Current position

Position	Professor (Catedrático Universidad) of Chemical Engineering		
Initial date	October 15th 2007		
Institution	University of Zaragoza		
Departament/Center	Chemical and Environmental Engineering Department / School of Engineering and Architecture (EINA)		
Country	Spain	Teleph. number	(+34) 976 762393
Key words	Chemical reactors, Process Intensification, Catalysis, Hydrogen, Carbon dioxide utilization, Clean Energy, Fluidized beds, Membrane reactors		

A.2. Previous positions (research activity interruptions, art. 45.2.c))

Period	Position/Institution/Country/Interruption cause
1996-2007	Associate Professor (TU)/ Univ. Zaragoza/Spain/none
1991-1996	Adjunct Professor (ASOC)/ Univ. Zaragoza/Spain/none
1989-1991	Graduate Teaching Assistant (AY)/ Univ. Zaragoza/Spain/none

A.3. Education

PhD, Licensed, Graduate	University/Country	Year
B.Sc. and M.Sc. in Chemistry	Univ. Zaragoza/Spain	1987
PhD in Science	Univ. Zaragoza/Spain	1991

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

Javier Herguido is Professor of Chemical Engineering (Catedrático de Universidad) at the *School of Engineering and Architecture* (EINA) of the *University of Zaragoza* (Unizar), since 2007. He holds a B.Sc. and M.Sc. in industrial chemistry (1987). He earned his PhD in Science -Chemical Engineering program- in 1991 working on the development of a double-bed multi-solid circulating system for catalytic gasification of biomass. In 1993 holder of the chair *'Chaire Hélioparc'* at the Technology Center *Hélioparc Pau-Pyrénées* (France). Guest professor at several research centres and universities: *Laboratoire de Physico-Chimie Moléculaire* CNRS-France, *PUCP University*-Peru, *National University of Cuenca*-Ecuador.

He was recently the Head (Director) of the *Department of Chemical Engineering and Environmental Technologies* - Unizar (July 2016-December 2024), and currently he is the Secretary of the *Spanish Catalysis Society* (SECAT) governing board.

Regarding his research activity, he is a member of the *Aragon Institute for Engineering Research* (I3A-http://i3a.unizar.es/) where he co-leads the *Catalysis and Reactor Engineering* research Group (CREG-https://creg.i3a.es/). His current research activity focuses on the area of Chemical Reactor Engineering including:

a. Fluidized bed reactors with oxidizing and reducing zones for selective oxidation processes and for catalytic dehydrogenations.

b. Hydrogen and CCU technologies: his current research efforts are devoted to fields related with hydrogen production and/or purification from several sources, hydrogen utilization in Power to Gas processes such as CO_2 methanation, and Power to Liquid processes such as methanol production, e-fuels production enhancement.

c. Processes intensification, including the use of multifunctional reactors.

He has participated in 46 research projects, largely as main investigator. His scientific production includes: 136 papers (counting several reviews per invitation) in JCR-indexed journals such as *AIChEJ*, *Appl. Catal.*, *Cat. Today*, *CEJ.*, *CES*, *IECR*, *Int. J. Hydrogen Energy*, *J. Catal.*, *J. Power Sources*, *Powder Tech.*, *Studies Surf. Sci. Catal.*, *Prog. Energ. Combust. (PECS),* among others; over 430 presentations at scientific meetings; 3 patents; and the book "Chemical Reaction Engineering" (1999, Ed. *Síntesis*, Madrid). He has supervised 14 PhD thesis. He has the Extraordinary Doctorate Award and the *3M-Foundation Prize for Innovation* - 2004 (environment category). Member of organizing/scientific committees of many national and international congresses. He also acts as reviewer for several international organizations (ANEP-Spain, ANPCyT-Argentina, PUCP-Perú, SENACYT-Ecuador, …) and 21 international journals.

ORCID: http://orcid.org/0000-0003-1940-9597
Scopus: https://www2.scopus.com/authid/detail.uri?authorId=57195414034
h Index: 38 (G-Scholar, 4640 citations), 33 (Scopus, 3380 citations)

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

C.1. Publications *(ten most recent items)*

C1.1. "Low loading copper-based catalysts for effective CO_2 hydrogenation to methanol" - González-Pizarro, R., Renda, S., Lasobras, J., Soler, J., Menéndez, M., Herguido, J.*
Fuel., 408 (**2026**) 137642. [IF= 7.5] https://doi.org/10.1016/j.fuel.2025.137642

C1.2. "Tuning e-fuel selectivity in sorption-enhanced CO2 hydrogenation over In_2O_3/ZrO_2: the effect of LTA and FAU zeolites" - González-Pizarro, R., Calero-Berrocal, R., Lasobras, J., Renda, S., Rodríguez-Pardo, M.R., Soler, J., Menéndez, M., Herguido, J.*
Fuel., 406 B (**2026**) 136974. [IF= 7.5] https://doi.org/10.1016/j.fuel.2025.136974

C1.3. ""Intensifying synthetic natural gas production by functionalization of a NiFe/γ-Al_2O_3 catalyst with alkaline and alkaline-earth materials"- Mercader, V.D., Sanz-Monreal, P., Durán, P., Aragüés-Aldea, P., Francés, E., Herguido, J., Peña, J.A.*
Fuel., 406 (**2026**) 136698. [IF= 7.5] https://doi.org/10.1016/j.fuel.2025.136698

C1.4. "Proof of concept for a sorption-enhanced reactor with continuous sorbent flow: application to green methanol production"- Lasobras, J., Pizarro, R.G., Soler, J.*, Herguido, J., Menéndez, M.
Chem. Eng. J., 517 (**2025**) 164562. [IF= 13.2] https://doi.org/10.1016/j.cej.2025.164562

C1.5. "Catalytic CO_2 methanation for biogas upgrading using a polytropic fixed bed reactor" - Aragüés-Aldea, P., Pizarro, R.G., Durán, P., Mercader, V.D., Francés, E., Peña, J.A., Herguido, J.*
Catal. Today, 457 (**2025**) 115351. [IF= 5.3] https://doi.org/10.1016/j.cattod.2025.115351

C1.6. "Techno-economic assessment of a plant for the upgrading of MSW biogas to synthetic natural gas by thermocatalytic methanation" - Sanz-Monreal, P., Mercader, V.D., Aragüés-Aldea, P., Durán, P., Francés, E., Herguido, J., Peña, J.A.*
Biomass Bioenergy 198 (**2025**) 107871. [IF= 5.8] https://doi.org/10.1016/j.biombioe.2025.107871

C1.7. "Optimizing Sorption Enhanced Methanation (SEM) of CO_2 and synthetic biogas with a Ni_3Fe + LTA 5A mixture" - Mercader, V.D., Aragüés-Aldea, P., Durán, P., Francés, E., Herguido, J., Peña, J.A.*
Catal. Today, 453 (**2025**) 115662. [IF= 5.3] https://doi.org/10.1016/j.cattod.2025.115262

C1.8. "Effect of particles size and density on the segregation of catalyst-sorbent mixtures for direct sorption-enhanced DME synthesis: experimental and mathematical study" - Renda, S.*, J., Soler, J., Herguido, J., Menéndez, M.
Biomass Bioenergy 197 (**2025**) 107764. [IF= 5.8] https://doi.org/10.1016/j.biombioe.2025.107764

C1.9. "Biogas upgrading through CO_2 methanation in a multiple-inlet fixed bed reactor: simulated parametric analysis"-Aragüés-Aldea, P., Mercader, V.D, Durán, P., Francés, E., Peña, J.A., Herguido, J.* ***Journal of CO_2 Utilization*** 93 (**2025**) 103038. [IF= 8.4] https://doi.org/10.1016/j.jcou.2025.103038

C1.10. "Multifunctional fluidized bed reactors for process intensification" - D. Zapater, S. R. Kulkarni, F. Wery, M. Cui, J. Herguido, M. Menendez, G. J. Heynderickx, K. M. Van Geem, J. Gascón, P. Castaño. ***Prog. Energ. Combust. (PECS)*** 105 (**2024**) 101176. [IF= 37.0] https://doi.org/10.1016/j.pecs.2024.101176

C.2. Congress *(ten most recent items)*

C2.1. "Cyclic adsorption-methanation optimization for Mechanical Mixture (MM) catalyst". V.D. Mercader, J. Glaser, P. Durán, P. Sanz-Monreal, P. Aragüés-Aldea, E. Francés, J.A. Peña, J. Herguido*. ***16th European Congress on Catalysis – EUROPACAT'2025***. Trondheim-Norway, August 31st-september 5th **2025**. Poster presentation #1072. *Abstracts e-book_Part 2_p. 194/358*

C2.2. "Enhanced CO_2 methanation through distributed feeding in a Ni-Fe/Al_2O_3 catalyst packed bed membrane reactor (PBMR)". P. Aragüés-Aldea, L. Floría, P. Durán, V.D. Mercader, E. Francés, J.A. Peña, J. Herguido*. ***16th European Congress on Catalysis – EUROPACAT'2025***. Trondheim-Norway, August 31st-september 5th **2025**. Poster presentation #1422. *Abstracts e-book_Part 3_p. 343/362*

C2.3. "Novel indium-based catalysts to improve selectivity in the DME synthesis process via CO_2 hydrogenation". S. Renda*, J. Soler, J. Herguido, M. Menéndez. ***16th European Congress on Catalysis – EUROPACAT'2025***. Trondheim-Norway, August 31st-september 5th **2025**. Poster presentation #931. *Abstracts e-book_Part 3_p. 288/362*

C2.4. "Low loading copper-based catalysts for effective CO_2 hydrogenation to methanol". R.G. Pizarro*, S. Renda, J. Soler, J. Herguido, M. Menéndez. ***16th European Congress on Catalysis – EUROPACAT'2025***. Trondheim-Norway, August 31st-september 5th **2025**. Poster presentation #1073. *Abstracts e-book_Part 3_p. 308/362*

C2.5. "Transition and noble metal doping of In_2O_3/ZrO_2 catalysts for enhancing methanol synthesis via CO_2 hydrogenation". R.G. Pizarro, J. Lasobras, S. Renda, J. Soler*, J. Herguido, M. Menéndez. ***16th European Congress on Catalysis – EUROPACAT'2025***. Trondheim-Norway, August 31st-september 5th **2025**. Poster presentation #1168. *Abstracts e-book_Part 3_p. 319/362*

C2.6. "Technoeconomic Assessment of a Plant for Synthetic Natural Gas Production from MSW Biogas via Direct Catalytic Methanation". P. Sanz-Monreal, V. D. Mercader, P. Durán, E. Francés, J. Herguido, J. A. Peña*. ***3rd Iberoamerican Congress on Chemical Engineering - CIBIQ 2025*** Lisbon-Portugal, September 8-10 **2025**. Oral presentation

C2.7. "Modeling and simulation of a multiple-inlet fixed bed reactor to analyze CO_2 methanation performances". P. Aragüés-Aldea, V. D. Mercader, P. Durán, E. Francés, J. Herguido, J. A. Peña*. ***3rd Iberoamerican Congress on Chemical Engineering - CIBIQ 2025. ISO7 - Iberoamerican Symposium on CO_2 Conversion and Utilization*** Lisbon-Portugal, September 8-10 **2025**. Poster presentation P 8.097

C2.8. "Advancing e-Fuels Production: Multifunctional Catalytic Reactors for Process Intensification". Javier Herguido*. ***8th Symposium on Green and Smart Technologies – SGST'2025*** Zaragoza- Spain, September 8-9 **2025**. Plenary Lecture. *Book of Abstracts.* p.p. 11-14.

C2.9. "Toward the process intensification of DME synthesis: novel catalysts, technologies and reactor configurations". Simona Renda*, Mario Leclerq, Jaime Soler, Javier Herguido, Miguel Menéndez. ***8th Symposium on Green and Smart Technologies – SGST'2025***. Zaragoza- Spain, September 8-9 **2025**. Oral presentation (O-5). *Book of Abstracts.* p.p. 25-26.

C2.10. "Process Intensification of Low-Temperature Syngas Production via the LT-rWGS: A Fluidized-Bed Reactor (SEFBR) with Continuous Sorbent Feeding (CSF)". J. Lasobras*, R. González-Pizarro, S. Renda, J. Soler, J. Herguido, M. Menéndez. ***8th Symposium on Green and Smart Technologies – SGST'2025*** Zaragoza- Spain, September 8-9 **2025**. Poster presentation (P-7). *Book of Abstracts.* p.p. 57-58.

C.3. Research projects *(ten most recent items)*

C3.1. "*Use of CO_2 and H_2 to produce methanol via Sorption Enhanced Reactors – **CO2SER***" MICINN, AEI, Proyectos de I+D+i Retos Investigación PID2022-139819OB-I00, (09/**2023**-08/**2026**)

C3.2. "*Energy harvesting from Biogas and renewable Hydrogen intensified through tri-functional solids and Unconventional reactor Configurations - **EBHUC***" MICINN, AEI, Proyectos de I+D+i Retos Investigación PID2022-136947OB-I00, (09/**2023**-08/**2026**)

C3.3. "*Energía e Hidrógeno Renovable / LA4- Generación de hidrógeno y biometano a partir de biomasa*" MICINN, AEI – DGA, Programa de Energía e Hidrógeno Renovable en el marco de los planes complementarios del Plan de Recuperación, Transformación y Resiliencia-MMR. (01/**2023** – 12/**2024**)

C3.4. "*Continuous Sorption Enhanced Reactors for CO_2 hydrogenation*" MICINN, AEI, Proyectos I+D+i Pruebas de Concepto 2022: PDC2022-133066-I00, (12/**2022** - 12/**2024**)

C3.5. "*CO_2 as raw material for high-performance Inorganic Materials and for Zeolite-Assisted Transformation to E-fuels - **CIMZATE***" MICINN, PLEC2022-009239, (10/**2022** – 09/**2025**)

C3.6. "Methane selective Oxidation and CO_2 hYdrogenation in Catalytic Advanced reactors - *MOCYCA*" MINECO, AEI, I+D+i Retos Investigación PID2019-106196RB-I00, (**2020-2023**).

C3.7. "Energy valorization of biogas and renewable hydrogen: intensification by advanced materials and multifunctional reactors- *RECO2*" MINECO, AEI, I+D+i Retos Investigación PID2019-104866RB-I00, (**2020-2023**).

C3.8. "Materiales avanzados con propiedades catalítico-absorbentes en la revalorización de biogás" DGA, (Programa RIS3), LMP232_18, (**2019-2020**).

C3.9. "*Process intensification in the production of liquid fuels from syngas - INPROCOL*" DGI, CTQ2016-76533-R, (**2017-2019**).

C3.10. "New reactor configurations for energetic combined upgrading of biogas and renewable hydrogen-*RECOBIOHY*" DGI, CTQ2016-77277-R, (**2017-2019**).

C.4. Contracts, technological or transfer merits *(five selected items)*

C4.1. *Patent*: *Reactor system for sorption-enhanced catalytic reactions with continuous regeneration of adsorbent, and related methods*
Menéndez M., Herguido J., Soler J., Lasobras J.
EP23382685.8. (2023). Owner entity: University of Zaragoza.

C4.2. *"Desarrollo de membranas cerámicas catalíticas para la eliminación de nitratos en aguas subterráneas de la cuenca mediterránea - NITRANEM".* Funding entity: **MINECO**. Program: INNPACTO. IPT-2012-0126-310000. 2013-2015.

C4.3. "*Investigación de nuevo proceso de obtención de aromáticos a partir de metano gas*". Contract: OTRI. Funding entity: **CDTI (MITYC)**. Project: AROMET participation of CEPSA, 2010-2012.

C4.4. *Patent*: *Two-zone fluidized bed reactor*
Menéndez M., Herguido J., Téllez C., Soler J., Gimeno M.P.
WO2009153382. Priority country: Spain. Priority date: 19/06/2008. Owner entity: University of Zaragoza.

C4.5. *Patent*: *Procedimiento para la obtención de hidrocarburos aromáticos a partir de metano*
Menéndez M., Herguido J., Téllez C., Soler J., Gimeno M.P.
WO2009153381. Priority country: Spain. Priority date: 20/06/2008. Owner entity: University of Zaragoza.