

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 30/10/2025

Part A: PERSONAL INFORMATION			
First name	Javier		
Family name	Herguido		
Gender (*)	M	Birth date (dd/mm/yyyy)	05/08/1964
Social Security, Passport, ID number	xxxxxxxX		
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 15 th 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 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:

- 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 CO₂ 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: 135 papers (counting several reviews per invitation) in JCR-indexed journals such as *AIChEJ*, *Appl. Catal.*, *Catal. 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: 37 ([G-Scholar](#), 4465 citations), 32 ([Scopus](#), 3280 citations)

Part C. RELEVANT MERITS (sorted by typology)

C.1. Publications (ten most recent items)

- C1.1.** “Tuning e-fuel selectivity in sorption-enhanced CO₂ hydrogenation over In₂O₃/ZrO₂: 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 <https://doi.org/10.1016/j.fuel.2025.136974>
- C1.2.** “Intensifying synthetic natural gas production by functionalization of a NiFe/γ-Al₂O₃ 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. <https://doi.org/10.1016/j.fuel.2025.136698>
- C1.3.** “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. <https://doi.org/10.1016/j.cej.2025.164562>
- C1.4.** “Catalytic CO₂ 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. <https://doi.org/10.1016/j.cattod.2025.115351>
- C1.5.** “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. <https://doi.org/10.1016/j.biombioe.2025.107871>
- C1.6.** “Optimizing Sorption Enhanced Methanation (SEM) of CO₂ and synthetic biogas with a Ni₃Fe + LTA 5A mixture” - Mercader, V.D., Aragüés-Aldea, P., Durán, P., Francés, E., Herguido, J., Peña, J.A.*
Catal. Today, 453 (2025) 115662. <https://doi.org/10.1016/j.cattod.2025.115662>
- C1.7.** “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. <https://doi.org/10.1016/j.biombioe.2025.107764>
- C1.8.** “Biogas upgrading through CO₂ 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 CO₂ Utilization 93 (2025) 103038. <https://doi.org/10.1016/j.jcou.2025.103038>

- C1.9.** “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. <https://doi.org/10.1016/j.pecs.2024.101176>
- C1.10.** “Biogas upgrading through CO₂ methanation in a polytropic - distributed feed fixed bed reactor” - Durán, P., Aragüés-Aldea, P., González-Pizarro, R., Mercader, V.D., Cazaña, F., Francés, E., Peña, J.A., Herguido, J. *. *Catal. Today* 440 (2024) 114849. <https://doi.org/10.1016/j.cattod.2024.114849>

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 CO₂ methanation through distributed feeding in a Ni-Fe/Al₂O₃ 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 CO₂ 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 CO₂ 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 In₂O₃/ZrO₂ catalysts for enhancing methanol synthesis via CO₂ 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 CO₂ 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. IS07 - Iberoamerican Symposium on CO₂ 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 Leclercq, 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 CO₂ and H₂ 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 CO₂ hydrogenation"* MICINN, AEI, Proyectos I+D+i Pruebas de Concepto 2022: PDC2022-133066-I00, (12/2022 - 12/2024)
- C3.5.** *"CO₂ 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 CO₂ 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.