

Part A. PERSONAL INFORMATION

CV date 26/06/2024

First and Family name	Pedro García Haro		
ID number	██████████	Age	██
Researcher codes	Open Researcher and Contributor ID (ORCID)	0000-0003-1861-4062	
	Scopus ID	47962112100	

A.1. Current position

Name of University/Institution	Universidad de Sevilla		
Department	Chemical and Environmental Engineering		
Address and Country	Escuela Técnica Superior de Ingeniería, Camino de los Descubrimientos, s/n, 41092 Sevilla (Spain)		
Phone number	██████████	E-mail	██████████
Current position	Profesor Titular de Universidad	From	31/05/2021
	Vice-Dean Head of Studies		26/06/2023
Keywords	Energy systems analysis, Process design and simulation, Sustainability in industrial processes, BtL (biomass-to-liquids), Refineries, Hydrogen, climate impact, thermochemical biorefineries		

A.2. Education

PhD	University	Year
Chemical and Environmental Technology	Universidad de Sevilla	2013
Master	University	Year
Environmental Engineering	Universidad de Sevilla	2011
Long-cycle degree (5-years)	University	Year
Chemical Engineering	Universidad de Sevilla	2009

A.3. General indicators of quality of scientific production

Accreditation I3 (I3/2019/484)

Accreditation for Full Professor (2023)

Sexenios de investigación (*accredited research periods*): 2 (2010-2015; 2016-2021)

JCR articles (2012-): 27

Q1 articles: 23, Q2 articles: 3, Q3 articles: 1

Total citations WoS (2012-): 656

Cites per year (last year: 2022): 135

h index (2012-): 16

i-10 index (2012-): 20

Source: WoS and Google Scholar

Doctoral Thesis supervised:

1. Karla Guerra Huilca (full supervision), Universidad de Sevilla, 2023
2. Raúl Gutiérrez Álvarez (full supervision), Universidad de Sevilla, 2022
Title: Electricity, fuels, and chemicals from near-commercial concentrated solar-biomass hybrid solutions: a techno-economic assessment
3. Miguel Ángel Vázquez Domínguez (co-supervision), Universidad de Sevilla, 2020
Title: Contribución al Desarrollo de Biorrefinerías Termoquímicas Basadas en la Hidrocarbonilación de DME
4. Cristina López Aracil (full supervision), Universidad de Sevilla, 2017
Title: Time-integrated GHG emissions in advanced waste-to-energy plants producing fuels, chemicals and electricity from MSW refuse
5. Maria Arvidsson (co-supervision), Chalmers University of Technology (Sweden), 2016
Title: Assessing Integrated Gasification-Based Biorefinery Concepts for Decarbonisation of the Basic Chemicals Industry

Part B. CV SUMMARY

Pedro Haro is Associate Professor at the Department of Chemical and Environmental Engineering of the Universidad de Sevilla (USE), researcher of the [Cátedra Fundación CEPSA-Energía](#) and Director of Academic Programmes of the School of Engineering. He is author of several publications, most of them in important journals of the *Energy & Fuels JCR subject*. He has intensively collaborated with several universities and research centers during his career (including pre- and post-doctoral training). Pedro has also an active role in teaching for all levels (bachelor, master, and doctorate) and has supervised 5 doctoral theses. Pedro is an expert on process modeling and simulation (including the use of Aspen Plus process simulator). He also did a research stay at the Karlsruhe Institute of Technology (formerly FZK, Germany) in the framework of the [bioliq®](#) project for the production of synthetic gasoline from agricultural residues. Before joining USE, Pedro was post-doc at the *Asociación de Investigación y Cooperación Industrial de Andalucía (AICIA)* with a *Torres Quevedo* grant (2014-15) and at the Chalmers University of Technology (Energy and Environment Department, Division of Energy Technology) in Sweden (2013-14). At Chalmers, Pedro has focused on the evaluation of pre-commercial and demonstration projects for energy recovery from biomass (production of bio-Substitute Natural Gas: bio-SNG). He has dealt with the evaluation of process modifications in the [GoBiGas](#) project (demonstration project to produce substitute natural gas, bio-SNG, in Sweden) for the reduction of investment risk and simplification of process layout. The results of this evaluation have highlighted the priority for present and future experimental research on syngas cleaning and conditioning. At AICIA, Pedro has continued with the evaluation of pre-commercial and demonstration projects. In 2017, he was awarded with the prestigious Fulbright-Schuman grant (Scholar) at the University of Princeton for the preliminary assessment of the role of hydrogen future penetration of renewable electricity in U.S. and European grids. The assessment conducted at Princeton (2017/18) highlighted the importance of long-duration large-scale chemical storage and particularly the case of hydrogen was analyzed. From the results of this work, Pedro has started a research line at the University of Seville for dynamic energy systems analysis and sustainability assessment for green hydrogen. Before becoming Associate Professor, he was a *Juan de la Cierva-Incorporación* fellow (Energy subject) at USE (2018), where he started a long-term cooperation with CEPSA including the coordination of the “Refinery and Petrochemical Industries” course for master students. Since 2017, he is external evaluator and rapporteur of international projects (H2020/Europe, Innovation Funds, and BBI). Lately, he is principal investigator of a project for the incorporation of green hydrogen in the refineries of CEPSA in Andalusia and researcher in other public and private funding hydrogen project.

Part C. RELEVANT MERITS**C.1. Publications (only the most relevant)**

1. Opportunities for low-carbon generation and storage technologies to decarbonise the future power system. *Appl Energy* 2023;336. Impact factor: 11.446; Q1 (JCR: Energy & Fuels)
2. Gutiérrez RE, Guerra K, Haro P. Market profitability of CSP-biomass hybrid power plants: Towards a firm supply of renewable energy. *Appl Energy* 2023;335. Impact factor: 11.446; Q1 (JCR: Energy & Fuels)
3. Gutiérrez RE, Guerra K, Haro P. Exploring the techno-economic feasibility of new bioeconomy concepts: Solar-assisted thermochemical biorefineries. *Appl Energy* 2022;322. *Appl Energy* 2022;302. Impact factor: 11.446; Q1 (JCR: Energy & Fuels)
4. Guerra K, Haro P, Gutiérrez RE, Gómez-Barea A. Facing the high share of variable renewable energy in the power system: Flexibility and stability requirements. *Appl Energy* 2022;310. Impact factor: 11.446; Q1 (JCR: Energy & Fuels)
5. Ronda A, Gómez-Barea A, Haro P, de Almeida VF, Salinero J. Elements partitioning during thermal conversion of sewage sludge. *Fuel Process Technol* 2019;186:156-166. Impact factor: 4.982; Q1 (JCR: Energy & Fuels)
6. Alonso-Fariñas B, Gallego-Schmid A, Haro P, Azapagic A. Environmental assessment of thermo-chemical processes for bio-ethylene production in comparison with bio-chemical and fossil-based ethylene. *J Clean Prod* 2018;202:817-829. Impact factor: 6.395; Q1 (JCR: Green & Sustainable Science & Technology)

7. Mrkajić V, Stanisavljevic N, Wang X, Tomas L, Haro P. Efficiency of packaging waste management in a European Union candidate country. *Resour Conserv Recycl* 2018;136:130-141. Impact factor: 7.044; Q1 (Environmental Engineering)
8. Aracil C, Haro P, Fuentes-Cano D, Gómez-Barea A. Implementation of waste-to-energy options in landfill-dominated countries: Economic evaluation and GHG impact. *Waste Manage* 2018;76:443-456. Impact Factor: 5.431 Q1 (Environmental Engineering)
9. Aracil C, Haro P, Giuntoli J, Ollero P. Proving the climate benefit in the production of biofuels from municipal solid waste refuse in Europe. *J Clean Prod* 2017;142:2887-2900. Impact factor: 5.651; Q1 (JCR: Green & Sustainable Science & Technology)
10. Arvidsson M, Haro P, Morandin M, Harvey S. Comparative thermodynamic analysis of biomass gasification-based light olefin production using methanol or DME as the platform chemical. *Chem Eng Res Des* 2016;115:182-194. Impact factor: 2.538; Q2 (JCR: Chemical Engineering)
11. Cutz L, Haro P, Santana D, Johnsson F. Assessment of biomass energy sources and technologies: The case of Central America. *Renewable Sustainable Energy Rev* 2016;58:1411-1431. Impact factor: 8.050; Q1 (JCR: Energy & Fuels)
12. Haro P, Johnsson F, Thunman H. Improved syngas processing for enhanced Bio-SNG production: A techno-economic assessment. *Energy* 2016;101:380-389. Impact factor: 4.520; Q1 (JCR: Energy & Fuels)
13. Haro P, Trippe F, Stahl R, Henrich E. Bio-syngas to gasoline and olefins via DME - A comprehensive techno-economic assessment. *Appl Energy* 2013;108:54-65. Impact factor: 5.261; Q1 (JCR: Energy & Fuels)

Other publications:

- Oficina de Ciencia y Tecnología del Congreso de los Diputados. Informe C: Hidrógeno verde como combustible. 2022. doi: 10.57952/87d5-vg85
Experto consultado

C.2. Research projects and grants (last 5 years)

1. Diseño y gestión óptima de sistema modular de almacenamiento híbrido basado en baterías y H₂ renovable para dotar de flexibilidad a las comunidades energéticas (H2REGRID). TED2021-131604B-I00. Spanish Ministry of Science and Innovation. PI: Francisco Rodríguez Rubio. Pedro Haro, Leader of Hydrogen WP. 690.000 €. 2022-2024.
2. Waste biorefinery technologies for accelerating sustainable energy processes, CA20127 COST Actions. 440.000 €. Pedro García Haro. Spanish representative. 2022-2026.
3. Refineries as Green Hydrogen Technologies' Incubators (GH2T), PID2020-114725RA-I00. Spanish Ministry of Science and Innovation. Pedro Haro. PI. 100.000 €. 2021-2024.
4. Calcium looping gasification of biomass assisted by solar energy (CALGASOL), P18-RT-4512. Junta de Andalucía. Alberto Gómez Barea. Researcher. 150.000 €. 2019-2023.
5. Producción y Almacenamiento Geológico de H₂ renovable como Solución al Futuro Incremento de la Cuota de Electricidad Renovable en Europa (EUH2BC), EUIN2017-87680. Spanish Ministry of Economy and Competitiveness. 10.000 €. Pedro García Haro. Principal Investigator. 2018.
6. Mining the European Anthroposphere, [CA15115](#). COST Actions. 440.000 €. Pedro García Haro. Coordinator of STSM. 2016-2020.
7. Red de excelencia de Biorrefinerías sostenibles. CTQ2016-81848-REDT. Spanish Ministry of Economy and Competitiveness. Member of the network. 2016-.
8. Development of a new Technology for material and energy valorization of Urban Waste through optimal gasification and Ash Stabilization (NETuWAS), CTM2016-78089-R. Spanish Ministry of Economy and Competitiveness. 150.000 €. Alberto Gómez-Barea. Researcher. 2016-2020.

Grants:

1. Juan de la Cierva – Incorporación post-doctoral fellowship (IJCI-2017-32830). 42.000,00 €. Spanish Ministry of Science, Innovation and Universities. 2018.
2. Fulbright-Schuman Grant (Scholar) at Princeton University. 20.000,00 €. U.S. Department of State & European Commission. 2017.
3. *José Castillejo* Grant for postdoctoral research stays (JC2015-00224). 10.260,00 €. Ministry of Education of Spain. 2016.
4. Post-doctoral Grant. Contrato Acceso SECTI. 127.999,68 €. Universidad de Sevilla (V Plan Propio Investigación US), Spain. 2015.
5. Post-doctoral Grant. Torres Quevedo (PTQ-13-06203). 90.499,50 €. Ministry of Economy and Competitiveness of Spain. 2014.
6. Doctoral Grant. FPU (AP2010-0119). 65.000,00 €. Ministry of Education of Spain. 2011.
7. Doctoral Grant. PIF. 84.560,00 €. Universidad de Sevilla, Spain (*IV Plan Propio Investigación US*). 2010.

C.3. Contracts, technological or transfer merits

1. Atmosphere: NUEVAS TECNOLOGÍAS PARA EL ALMACENAMIENTO, GENERACIÓN Y SEGURIDAD DE PLANTAS DE HIDRÓGENO VERDE. Convocatoria Misiones Ciencia e Innovación Grandes Empresas CDTI. Leader: Iberdrola. Researcher. 2023-2026.
2. Collaborative agreement between AICIA and CTH for the optimization of SNG process (code ES-1270/2014). Chalmers University of Technology. 19.500 €. Pedro Garcia Haro. Principal Investigator. 2014-2015.
3. MBOP: Ingeniería básica de un demostrador de gas natural (code ES-1269/2014). Abengoa Hynergreen. 63.600 €. Pedro Ollero de Castro. Researcher. 2011-2012.
4. REHSOL: Ingeniería Conceptual Sistema Procesador Producción de Hidrogeno (code PI-0867/2011). Abengoa Hynergreen. Pedro Ollero de Castro. Researcher. 2011.
5. Planta de Procesado de Biocombustible para Alimentación a Pila de Carbonato (code 853). Abengoa Hynergreen. 336.400 €. Pedro Ollero de Castro. Researcher. 2011-2015.

Reviewer Activities (International Projects and Grants)

- 2020– External Evaluator. COST Actions (hydrogen). European Cooperation in Science and Technology.
- 2020– Rapporteur. Innovation Fund (Hydrogen and Intra-day energy storage), CINEA. Research Executive Agency, European Commission.
- 2018– Rapporteur and External Evaluator. H2020, Green Deal, Horizon Europe (renewable energy, including hydrogen), CINEA. Research Executive Agency, European Commission.
- 2018– External Evaluator. Fulbright Research Awards (hydrogen). Polish-U.S. Fulbright Commission.
- 2017– External Evaluator. Bio-Based Industries JTI (H2020). Research Executive Agency, European Commission.

Membership to National and International Organizations and organization of high-level International Meetings and Conferences

- 2024– Vice-President of the *Federación Española de Profesionales de Ingeniería Química (FEPIQ)*.
- 2018– Member of the International Scientific Committee and Topic Organizer (Technological options for energy grid balancing, Municipal and industrial wastes) for the 27th, 28th and 29th European Biomass Conference and Exhibition (EUBCE).
- 2015 Symposium on Renewable Energy and Products from Biomass and Waste. Ponferrada, Spain. IEA (Task 33)-Universidad de Sevilla. Local Coordinator.