

## CURRICULUM VITAE ABREVIADO (CVA)

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

### Part A. PERSONAL INFORMATION

First name	Victoria Laura		
Family name	Barrio Cagigal		
Gender (*)	Female	Birth date	
Social Security, Passport, ID number			
e-mail		<a href="https://www.ehu.eus/en/web/supren/">https://www.ehu.eus/en/web/supren/</a>	
Open Researcher and Contributor ID (ORCID) (*)	0000-0003-2349-1183		

(\*) Mandatory

#### A.1. Current position

Position	Professor		
Initial date	28/05/2022		
Institution	University of the Basque Country (UPV/EHU)		
Department/Center	Chemical and Environmental Engineering	School of Engineering	
Country	Spain	Teleph. number	
Key words	Clean fuels, renewable energy processes, decarbonization, H <sub>2</sub> technologies, catalysis, microreactors, LCA assessment		

#### A.2. Previous positions (research activity interruptions, indicate total months)

Period	Position/Institution/Country/Interruption cause
02/03/2001-15/05/2009	Associate Professor at UPV/EHU

#### A.3. Education

PhD, Licensed, Graduate	University/Country	Year
Industrial engineer	University of the Basque Country (UPV/EHU)	31/10/1998
PhD	University of the Basque Country (UPV/EHU)	18/02/2002

(Include all the necessary rows)

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

Prof. V. Laura BARRIO, industrial engineer and PhD at the University of the Basque Country UPV/EHU in 2002 for the thesis: *Desarrollo y optimización de sistemas catalíticos para Unidades de Hidrotratamiento que permitan hidrotratamientos profundos de fracciones petrolíferas con el fin de que puedan fabricarse gasóleos de alta calidad*. This work, supported by predoctoral grants from Gómez-Pardo and Repsol-YPF Foundations, received the extraordinary award. She made a postdoctoral research at the Engler-Bunte-Institut, Karlsruhe Institute of Technology (2003-2004) with Prof. G. Schaub.

Barrio has co-authored over 90 articles and patents and is an active member of the consolidated research group **SuPrEn** (Sustainable Process Engineering). In the past decade, she has contributed to more than 20 projects and 15 industrial contracts of regional, national and international programs. Particular relevance to contract with Repsol, Zabalgarbi, Sader and Tamoin on innovative technologies for CO<sub>2</sub> capture and valorization where she was the PI (2019-2021). Additionally, she coordinates the European project UnLOHCKed (2023-2026) focusing on unlocking sustainable systems for H<sub>2</sub> transport.

Her current research focuses on the **Power-to-X** technologies as key for decarbonization including the development of novel catalytic processes and advanced reaction systems for hydrogen production from renewable sources, transport and storage, and valorization to synthetic fuels (e.g., methane, methanol and dimethyl ether) integrated with technology viability through LCA analysis.

Her work has significantly advanced scientific knowledge in the hydrogen field, fostering ideas and hypotheses that have led to high-impact results disseminated through publications and collaborations with prestigious institutions such as University of New South Wales (Prof. R. Amal), CNRS-Lyon (Valerie Meille), FAU-Nuremberg (Prof. A. Bosmann), Fraunhofer Institute for Microengineering and Microsystems IMM (Prof. G. Kolb), Paul Scherrer Institut (Dr. F. Vogel), Istituto Di Tecnologie Avanzate Per L'energia, CNR-ITAE (Prof. A. Vita) and the Imperial College London (Dr.J.M.Bermudez), among other national and international organizations.

She participates in activities such as the Researchers' Night (2024), an Open Session at the 5<sup>th</sup> CCESC Congress organized by the group (2024), invited talks on the radio, and publications on open platforms like Zenodo and social networks such as LinkedIn.

She has contributed to the training of young researchers, including predoctoral students within the group (2 research stays with Prof. Vita and Dr. Chatzichristodoulou), supporting their professional development and career advancement. In the group, supervision of 4 master's theses in collaboration with foreign universities and 22 at our institution, enhancing their academic growth and facilitating their subsequent career integration.

She collaborates with the Galician agency ACXUG in evaluating postdoctoral researchers and research groups and with ANECA in the assessment of six-year research periods (sexenios). She is guest editor for a special issue of the Int. Journal of Hydrogen Energy (2024).

She is an active member of several platforms, including Clean Hydrogen, EERA, PTeH<sub>2</sub>, PTeCO<sub>2</sub>, and Secat, further contributing to research networks and scientific progress.

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

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

**1. Authors:** Alconada, K., Barrio, V.L.

Title: Enhancing perhydrobenzyltoluene dehydrogenation performance with Co, Mo and Mn metal oxides: A comparative study with Pt/Al<sub>2</sub>O<sub>3</sub> catalyst.

Journal: Applied Catalysis B : ENVIRONMENTAL 357, 124349. **2024**. Q1-2023.

**2. Authors:** Méndez-Mateo, D., Barrio, V.L., Requies, J.R., Gil-Calvo, M.

Title: Graphene-based versus alumina supports on CO<sub>2</sub> methanation using lanthanum-promoted nickel catalysts.

Journal: ENVIRONMENTAL SCIENCE&POLLUTION RES. 31(25), 36093. **2024**. Q1-2023.

**3. Authors:** Villamayor, A., Alonso, A., Barrio, V.L., Rojas, S., G-Berasategui, E.

Title: UV- and visible-light photocatalysis using Ni–Co bimetallic and monometallic hydrotalcite-like materials for enhanced CO<sub>2</sub> methanation in sabatier reaction.

Journal: HELYON 9(8), 18456. **2023**. Q1.

**4. Authors:** I. García–García, Emma Lovell, Roong Jien Wong, V.L. Barrio, Jason Scott, J.F. Cambra, Rose Amal.

Title: Silver-based plasmonic catalysts for carbon dioxide reduction.

Journal: ACS SUSTAINABLE CHEMISTRY & ENGINEERING 8(4), 1879-1887. **2020**. Q1.

**5. Authors:** I. García–García, Emma Lovell, Roong Jien Wong, V.L. Barrio, Jason Scott, J.F. Cambra, Rose Amal.

Title: Silver-based plasmonic catalysts for carbon dioxide reduction.

Journal: ACS SUSTAINABLE CHEMISTRY & ENGINEERING 8(4), 1879-1887. **2020**. Q1.

**6. Authors:** A. Sanchez, S. Yañez, C. Rial T., Alberto Coelho, et al. (author position: 4/10).

Title: Multicatalysis combining 3D-printed devices and magnetic nanoparticles in one-pot reactions: Steps forward in compartmentation and recyclability of catalysts.

Journal: ACS APPLIED MATERIALS & INTERFACES 44(29), 14671-14682. **2019**. Q1.

**7. Authors:** I. García–García, V.L. Barrio, J.F. Cambra.

Title: Power-to-Gas: Storing surplus electrical energy. Study of catalyst synthesis and o.c.

Journal: INT. J. OF HYDROGEN ENERGY 43(37), 17737-17747. **2018**. Q2,T1.

**8. Authors:** A. Díaz, C.R. Tubío, C. Carbajales, Alberto Coelho, et al. (author position: 8/10).

Title: Three-dimensional printing in catalysis: combining 3D heterogeneous copper and palladium catalysts for multicatalytic multicomponent reactions.

Journal: ACS CATALYSIS 8, 392-404. **2018**. Q1.

**9. Authors:** Bizkarra, K., Bermudez, J.M., Arcelus-Arrillaga, P., Barrio, V.L., Cambra, J.F., Millan, M.

Title: Nickel based monometallic and bimetallic catalysts for synthetic & real bio-oil steam ref.  
Journal: INT. J. OF HYDROGEN ENERGY 43(26), 11706-11718. **2018**. Q2, T1.

**10. Authors:** U. Izquierdo, S. Neuberg, S. Pecov, G. Kolb (author position: 7/9).

Title: Hydrogen production with a microchannel heat-exchanger reactor by single stage water-gas shift; catalyst development.

Journal: CHEMICAL ENGINEERING JOURNAL 313, 1494-1508. **2017**. Q1.

**C.2. Congress**, indicating the modality of their participation (invited conference, oral presentation, poster)

The research group organized the **Scientific Topic 22** of the **18<sup>th</sup> International Congress on Catalysis – ICC 2024**, held from July 14 to 19, 2024, titled *Catalytic Reactions for Hydrogen Storage and Release*. **Chairs:** V. MEILLE, IRCELYON, France and L. BARRIO. This scientific congress gathered over 500 oral presentations in both short and long formats, as well as more than 1500 posters.

The research group also organized the **5<sup>th</sup> International Symposium on Catalysis for Clean Energy and Sustainable Chemistry (5<sup>th</sup> CCESC)**, held from July 21 to 23, 2024. This scientific congress brought together over 100 presentations by nationally and internationally renowned researchers.

To date, project members have contributed **22 international works**, mainly oral presentations (5 posters) including **1 invited** (2023 Internt. Conference on Green Energy and Power Eng.).

**C.3. Research projects**, indicating your personal contribution. In the case of young researchers, indicate lines of research for which they have been responsible.

**1.- Title:** Tecnologías innovadoras para la generación competitiva de hidrógeno verde (Hidrura. Ref. KK-2024/00035).

Financing entity: Gobierno Vasco EJ(GV. Principal investigator (PI): V.L. BARRIO.

Start date: 01/01/2024 End date: 31/12/2025 Support: 72 507 €

Role: PI collaborating with management and H<sub>2</sub> generation through pyrolysis (modeling&TEA).

**2.- Title:** DEMO - Doctoral Network: International cooperation for sustainable aviation biofuels –ICARUS (call: HORIZON-CL5-2022-D3-03-02) (Ref.: 101122303).

Financing entity: CNIEA. Principal investigator (PI): I. AGUIRREZABAL

Start date: 01/06/2023 End date: 31/05/2026 Support: 251 906,25 €

Role: Team member collaborating with PhD students exchange with institutions & companies.

**3.-Title:** Unlocking the potential of LOHCs through the development of Key sustainable and efficient systems for Dehydrogenation- UnLOHCKed (Ref.: 101111964).

Financing entity: European Commission-Horizon 2020. Principal investigator: V.L. BARRIO.

Start date: 01/06/2023 End date: 31/05/2024 Support: 440.187,5 €

Role: Project coordinator with seven partners and dehydrogenation research activities.

**4.-Title:** Tecnologías clave para impulsar la economía del hidrógeno en el País Vasco: generación de hidrógeno verde (Ref.: KK-2021/00054).

Financing entity: Gobierno vasco EJ/GV. Elkartek 2020. Principal investigator: P.L. ARIAS.

Start date: 27/02/2021 End date: 26/02/2023 Support: 81.760 €

Role: Team member collaborating with research activities.

**5.-Title:** Breakthrough developments for HYdrogen VALUE chain: from renewable electricity to end-users **HYVALUE** (Ref: PID2020-112889RB-I00).

Financing entity: Ministerio de Ciencia e Innovación. Proyectos I+D+i (Retos). PI: V.L.BARRIO.

Start date: 01/01/2021 End date: 31/12/2024 Support: 181.5000 € (type A).

Role: PI collaborating management and methanation, H<sub>2</sub> transport and LCA activities.

**6.-Title:** Sustainable and cost-efficient catalyst for hydrogen and energy storage applications based on liquid organic hydrogen carriers: economic viability for market uptake- SHERLOHCK (Ref.: 101007223).

Financing entity: European Commission-Horizon 2020. Principal investigator): V.L. BARRIO.

Start date: 01/01/2021 End date: 31/12/2023 Support: 384.671,25 €

Role: PI collaborating with research activities for catalyst development for H2 transportation

**7.-Title:** Eficiencia en materiales para nuevas tecnologías de almacenamiento de energía-CICe (Ref.: KK-2019/00097).

Financing entity: Gobierno Vasco EJ/GV. Etortek. Principal investigator: P.L. Arias.

Start date: 01/01/2019

End date: 31/12/2020

Support: 75.375 €

Role: Researcher.

**8.-Title:** Tecnologías catalíticas y fotocatalíticas avanzadas para la generación de metano a partir de energías renovables. TECNORENO. ENE2017-82250-R.

Financing entity: Ministerio de Economía, Industria y Competitiv. Proyectos I+D+i (**Retos**).

Principal investigator: V.L. BARRIO. Classified as type A. Role: PI and photo&thermo activity.

Start date: 01/01/2018

End date: 31/12/2020

Support: 157.300 € (+FPI)

**9.-Title:** Proceso de generación de metano en áreas de población alejadas a partir de energía eléctrica renovable. RENOGAS. ENE2014-53566-P.

Financing entity: Ministerio de E., I. y C. Proyectos I+D - Programa ... de **Excelencia**.

Principal investigator: V.L. BARRIO and J.F. CAMBRA. Role: Co-PI and research.

Start date: 01/01/2015

End date: 31/12/2017

Support: 78.400 € (48 400 +30 000)

**C.4. Contracts, technological or transfer merits**, Include patents and other industrial or intellectual property activities (contracts, licenses, agreements, etc.) in which you have collaborated. Indicate: a) the order of signature of authors; b) reference; c) title; d) priority countries; e) date; f) Entity and companies that exploit the patent or similar information, if any.

#### **CONTRACTS:**

**1- Title:** Almacenamiento de hidrógeno en cavernas y tecnologías de purificación. Ref.

PT10912. Company: Tamoin 12/06/2024 - 11/02/2025.

Total funding (vat excluded): 12 980 € (+iva). PI: V. L. Barrio.

**2- Title:** Estudio prospectivo de catalizadores novedosos utilizados en vectores energéticos.

Ref.: TR42132. Company: Aimplas 01/11/2023 - 31/01/2024.

Total funding (vat excluded): 3 000 € (+iva). PI: V. L. Barrio.

**3- Title:** Óxido de aluminio secundario de alta pureza para la fabricación de LEDs y componentes electrónicos-HPP (Fase I, II and III).

Company: Befesa Aluminio. 06/2020-12/2021 / 07/2021-12/2021 / 01/2022-06/2022.

Total funding (vat excluded): 20.500, 30 000 €, 35.000 € (+iva). PI: V. L. Barrio.

**4-Title:** Investigación y desarrollo de tecnologías innovadoras y competitivas de captura y

valorización de CO<sub>2</sub> industrial- LOWCO<sub>2</sub>-. Company: Petronor, Sader, Zabalgardi and

Tamoin 01/01/2019 - 31/12/2021. Total funding (vat excluded): 280.018,40 €. PI: V. L. Barrio.

**5-Title:** Estudio experimental del reformado de gas de alto horno.

Company: Arcelor Mittal 14/06/2017 - 30/06/2018. Total funding: 14.458,82 €(+iva). PI: Arias.

**6-Title:** Desarrollo de un proceso para el reformado de gases siderúrgicos.

Company: Arcelor Mittal 09/10/2016 - 09/03/2018. Total funding: 52.941,18 €(+iva). PI: V. L.

Barrio.

**7-Title:** Sistema de alimentación ininterrumpida mediante pila de combustible alimentada con

biohidrógeno de fermentación anaerobia. Company: Consorcio de Aguas de Bilbao Bizkaia

01/07/2015 - 31/05/2017. Total funding: 14.000,00 €(+iva). PI: J.F. Cambra.

**8-Title:** Planta de transformación para el tratamiento de animales muertos porcinos.

Company: Purines Almazán, S.L.(Contrat for EU project APRE,ECO/09/256136/SI2.569401).

30/11/2013 - 30/04/2014. Total funding (vat excluded): 13.098,00 €(+iva). PI: V. L. Barrio.

#### **PATENTS:**

**1-Inventors:** José Cambra, Pedro Arias, Belén Güemez, V. Laura Barrio.

Title: Procedure for obtaining hydrogen from natural gas.

Publication number: WO/2006/136632. Extend to: Europe, EEUU and Hong-Kong.

End-date: 01/12/2027. Operating license acquired by IBERINCO (previously INECOSA ING).

**2-Inventors:** J. Núñez, P Arias, B. Eguia, J.Cambra, M. Güemez, V.L.Barrio.

Title: Reactor de precipitación gas-líquido-sólido. Publication number: WO/2007/085671.

Extend to: Europe. Operating license: under revision by Befesa.