CURRICULUM VITAE (maximum 4 pages)

Part A. PERSONAL INFORMATION

CV date	06/10/2023

First and Family name	María José Rivero Martínez		
Social Security, Passport, ID number		Age	
Researcher numbers	Researcher ID	L-3297-2014	
	Orcid code	0000-0002-0291-9200	

A.1. Current position

Name of University/Institution	Universidad de Cantabria		
Department	Dpto. Ingenierías Química y Biomolecular / E.T.S.I.I.T.		
Address and Country	Avda. Los Castros, s/n, 39005, Santander		
Phone number	942 202027	E-mail	mariajose.rivero@unican.es
Current position	Profesor Titular de Universidad – Associate Professor	From	02/07/2012
Espec. cód. UNESCO	330303, 330810		
Palabras clave	Water treatment, Chemical technology, Chemical research		

A.2. Education

	University	Year
Ingeniería Técnica Industrial, esp. Química	Universidad de Cantabria	1995
Ingeniería Industrial, esp. Química Industrial	Universidad de Cantabria	1999
Doctor por la Universidad de Cantabria	Universidad de Cantabria	2002

A.3. JCR articles, h Index, thesis supervised…

RESEARSH SIX-YEAR TERMS: (of 3 possible) Last one: 01/01/2019
TEACHING FIVE-YEAR TERMS: 4 Last one: 01/01/2022
THESIS SUPERVISED: 1) Improvements in the treatment of landfill leachate from RSU through advanced oxidation processes, Oscar Primo Martínez, 21/11/2008; 2) Contribution to the treatment of landfill leachate from urban solid waste through advanced oxidation processes, Elia Alonso Solana, 20/06/2013; 3) Progress on the performance of photocatalysis and electrochemical oxidation technologies applied to wastewater remediation, Carlos Javier Escudero Santiago, 21/12/2017; 4) Progress and challenges in the photocatalytic removal of emerging contaminants, Sara Domínguez Suárez, 21/12/2017; 5) Design of TiO_2-based materials for photocatalytic environmental applications, Paula Ribao Martínez, 28/09/2018; 6) New strategies in the generation of photocatalytic hydrogen, Juan Corredor Ortega, 04/06/2021; 7) Intensification of advanced oxidation technologies for effluent decontamination, Cristian Ferreiro Santiso, 04/11/2021; 8) Advances in the photocatalytic degradation of emerging halogenated pollutants: S-metolachlor and perfluorooctanoic acid, Laura Rancaño Vázquez, 30/06/2023.
JCR articles: 60. H INDEX: 26 (source: Scopus)
Accredited as Full Professor by ANECA.

Part B. CV SUMMARY *(max. 3500 characters, including spaces)*

Dr. María José Rivero Martínez is Associate Professor since 2012 and carries out her activity in the Department of Chemical and Biomolecular Engineering of the University of Cantabria. Trained as an Industrial Engineer in the specialty of Industrial Chemistry, she obtained a Doctorate from the University of Cantabria in 2002. Most of her research has been focused on the treatment of aqueous streams. She began working on membrane separation processes, ion exchange and adsorption; to continue with Advanced Oxidation Processes (AOPs) such as Fenton, photo-Fenton, electrochemical oxidation, and photocatalysis. A remarkable core of the work has been devoted to the treatment of landfill leachates through several of these technologies. From this research, several publications in indexed journals and two doctoral theses read in 2008 and 2013 have been derived. In this type of treatments the reduction of global pollution parameters such as total organic carbon, the study of the elimination of

emerging contaminants, as well as intermediate compounds formed and variations in the biodegradability of the treated effluent have been the main objectives of these studies.

After a 6-month postdoctoral stay at Cranfield University (United Kingdom) she has dedicated much of her research to improve the design of photocatalytic reactors with the aim of optimizing the energy efficiency, for example through the use of new systems of LED lighting. In this same field of expertise, she is currently working on the design of new catalysts. Some of them based on particles with magnetic properties that facilitates their separation and subsequent reuse. Other type of particles are synthesized with graphene oxide, which is intended to improve properties of the catalyst and modify its bandgap so that they can be activated in the presence of solar radiation. The third type of catalysts studied includes metals so that the plasmonic effect improves photocatalytic results. Some of the new materials have been also used for the photocatalytic generation of hydrogen. This research has led to 5 PhD dissertation defenses between 2017 and 2021.

This research is supported by more than 60 articles published in indexed journals, mostly in the first quartile of the categories of Chemical Engineering and Environmental Sciences. She has participated continuously in more than 25 research projects of competitive calls (5 as main researcher), 1 international project funded by AECID, 3 financed by the European Commission in Interreg calls, 1 EIG concert Japan call, 10 collaboration contracts with companies (4 as main researcher) and she has submitted more than 100 communications to international conferences.

Regarding institutional positions in the university, she has participated as Academic Manager ETSIIT attached to the Deputy Director of Chemical Engineering (UC) (2006-2007), Deputy Director of the Department of Chemical Engineering and Inorganic Chemistry (UC) (2009-2012) and Director of the Department of Engineering Chemistry and Inorganic Chemistry (UC) (2012-2014). At the moment, she is Coordinator of the Master's Degree in Chemical Engineering of the UPV/EHU-UC (2019-).

Part C. RELEVANT MERITS

C.1. Publications (including books)

Latest publications between 2018 and 2023 are listed. The main research in photocatalysis has focused on the development of new materials highlighting the use of graphene and photocatalytic reactors of high energy efficiency thanks to the use of LEDs. Works dealing with other advanced oxidation processes are also highlighted.

1. Pelayo, D., Rivero, M.J., Santos, G., Gómez, P., Ortiz, I. Techno-economic evaluation of UV light technologies in water remediation. *Science of the Total Environment* 868,161376 (2023). DOI: 10.1016/j.scitotenv.2022.161376.

2. Barquín, C., Rivero, M.J., Ortiz, I. Shedding light on the performance of magnetically recoverable TiO_2/Fe3O_4/rGO-5 photocatalyst. Degradation of S-metolachlor as case study. *Chemosphere* 307,135991 (2022). DOI: 10.1016/j.chemosphere.2022.135991.

3. Shen, Y., Martín de Vidales, M.J., Gorni, G., Rivero, M.J., Ortiz, I., Dos santos-García, A.J. Enhanced peroxymonosulfate activation in the morphotropic phase boundary of molybdenum doped LaCoO3-δ perovskite. *Chemical Engineering Journal*, 446, 137352 (2022). DOI: 10.1016/j.cej.2022.137352.

4. Rumayor, M., Corredor, J., Rivero, M.J., Ortiz, I. Prospective life cycle assessment of hydrogen production by waste photoreforming. *Journal of Cleaner Production* 336,130430 (2022). DOI: 10.1016/j.jclepro.2022.130430

5. Corredor, J.; Harankahage. D.; Gloaguen, F.; Rivero, M.J.; Zamkov, M.; Otiz, I. Influence of QD photosensitizers in the photocatalytic production of hydrogen with biomimetic [FeFe]-

hydrogenase. Comparative performance of CdSe and CdTe. *Chemosphere* 278, 130485 (2021). DOI: 10.1016/j.chemosphere.2021.130485. IF (2021): 8.943 Q1.

6. Rivero, M.J.; Ribao, P.; Gomez-Ruiz, B.; Urtiaga, A.; Ortiz, I. Comparative performance of TiO_2-rGO photocatalyst in the degradation of dichloroacetic and perfluorooctanoic acids. *Separation and Purification Technology* 240, 116637 (2020). DOI: 10.1016/j.seppur.2020.116637. IF (2020) 7.312 Q1.

7. Fresno, F.; Iglesias, O.; Alfonso-González, E.; Rivero, M.J.; Ortiz, I.; de la Peña O'Shea, V.A. Assessing the feasibility of reduced graphene oxide as an electronic promoter for photocatalytic hydrogen production over Nb-Ta perovskite photocatalysts. *Catalysis Today* 362, 22 (2020). DOI: 10.1016/j.cattod.2020.05.027. IF (2020): 6.766 Q1.

8. Ferreiro, C.; Villota, N.; Lombraña, J.I.; Rivero, M.J. An efficient catalytic process for the treatment of genotoxic aniline wastewater using a new granular activated carbon-supported titanium dioxide composite. *Journal of Cleaner Production* 228, 1282 (2019). DOI: 10.1016/j.jclepro.2019.04.198. IF (2019): 7.246 Q1.

9. Ribao, P.; Corredor, J.; Rivero, M.J.; Ortiz, I. Role of reactive oxygen species on the activity of noble metal-doped TiO_2 photocatalysts. *Journal of Hazardous Materials* 372, 45 (2019). DOI: 10.1016/j.jhazmat.2018.05.026. IF (2019) 9.038 Q1.

10. Gómez-Ruiz, B.; Ribao, P.; Diban, N.; Rivero, M.J.; Ortiz, I.; Urtiaga, A. Photocatalytic degradation and mineralization of perfluorooctanoicacid (PFOA) using a composite TiO_2−rGO catalyst. *Journal of Hazardous Materials* 344, 950 (2018). DOI: 10.1016/j.jhazmat.2017.11.048. IF (2018): 7.650 Q1.

C.2. Research projects and grants

Proof of concept towards the heterogeneous photocatalysis implementation (PDC2022-133563-I00). Funded by MCIN/AEI/10.13039/501100011033 y UE Next GenerationEU/PRTR. Total budget: 101.200 €. Project leader: María José Rivero Martínez. 01/12/2022 – 30/11/2024

IMPRUV: Integrated Microplastics Remediation by Magnetic-Based Photocatalytic Materials (PID2021-122563OB-I00). Funded by the Spanish State Research Agency. Total budget: 169.400 €. Project leader: María José Rivero Martínez. 01/09/2022 – 31/10/2025.

CIPEA: Challenges in the implementation of photocatalysis for environmental applications (RTI2018-099407-B-100). Funded by the Spanish State Research Agency. Total budget: 135.520 €. Project leader: María José Rivero Martínez. 01/01/2019 – 31/07/2022.

FOTOAMBIENTE: New developments in photocatalysis for environmental applications (CTM2015-69845-R) Funded by the Ministry of Economy and Competitivenes. Total budget: 176.660€. Project leader: María José Rivero Martínez. 01/01/2016 – 31/12/2018.

LUV2INNOVATE: Innovative systems for the treatment of aqueous effluents with photochemical processes with UV-V LEDs (RTC2019-006820-5). Funded by the Spanish State Research Agency. Total budget: 183.108 €. Project leader: Inmaculada Ortiz. 01/04/2020 – 31/12/2022.

X-MEM: Outperforming functionality: composite/mixed matrix porous materials in membrane-based processes (EIG CONCERT JAPAN/PCI2018). Funded by the Spanish State Research Agency. Total budget: 99.850 €. Partners: University of Cantabria (coordinator), Yamaguchi University (Japan), Jerzy Haber Institute of Catalysis and Surface Chemistry, Polish Academy of Sciences (Poland), Atılım University (Turkey), Ege University (Turkey), Hacettepe University (Turkey). Project leader: Nazely Diban (UC). 01/04/2019 – 31/03/2022.

HYLANTIC EAPA_204/2016: Atlantic network for renewable generation and supply of hydrogen to promote high energy efficiency. Funded by the European Comision (Interreg Atlantic call). Partners: University of Cantabria (coordinator), Universidade do Porto (Portugal), Ulster University (UK), Dublin City University DCU (Ireland), CNRS. Délégation Bretagne Pays de la Loire (France), LNEG (Portugal), UlemCo Ltd Liverpool (UK), APRIA SYSTEMS (Spain), Auriga Energy Limited (UK), A. Silva Matos (Portugal), and Pure Energy Centre (UK). Total budget: 2,500.000 €. Project leader: Alfredo Ortiz (UC). 01/10/2017 – 30/09/2020.

PEMFC-SUDOE: Energetic sustainability in the SUDOE region PEMFC-SUDOE. SOE1/P1/E0293. Funded by the European Comision (Interreg SUDOE call). Partners: University of Cantabria (coordinator), Centre National de la Recherche Scientifique. Délégation régionale Languedoc Roussillon (France), Universidade do Porto Faculdade de Engenharia (Portugal), Laboratório Nacional de Energia e Geologia (Portugal), Institut National Polytechnique de Toulouse (France), Ariema Energia y Medioambiente S.L. (Spain), Apria Systems S.L. (Spain), Institut de la Filtration et des Techniques Séparatives (France), and Nanoinnova (Spain). Total budget: 1,812,666.67 €. Project leader: Alfredo Ortiz (UC). 01/07/2016 – 30/06/2019.

C.3. Contracts

LED4Future: New generation of photocatalytic UV-LED reactors for the removal of persistent compounds in waster. Funded by APRIA SYSTEMS, S.L. Total budget: 21.780,00€. Project leader: María José Rivero Martínez. 01/04/2019-31/03/2020.

FOTOEMERG: Development of an advanced photocatalytic system for the elimination of emerging pollutants. Funded by OXITAL SERVICIOS, S.L. Total budget: 53.603€. Project leader: María José Rivero Martínez. 02/02/2017 – 30/12/2018.

C.4. Patents

C.5. Institutional responsibilities

Academic Manager ETSIIT attached to the Deputy Director of Chemical Engineering (UC) (2006-2007).
Deputy Director of the Department of Chemical Engineering and Inorganic Chemistry (UC) (2009-2012).
Director of the Department of Engineering Chemistry and Inorganic Chemistry (UC) (2012-2014).
Coordinator of the Master's Degree in Chemical Engineering of the UPV/EHU-UC (2019-).

C.6. Memberships of scientific societies

Spanish Royal Society of Chemistry (Real Sociedad Española de Química, RSEQ)
National Association of Chemists and Chemical Engineers of Spain (Asociación Nacional de Químicos e Ingenieros Químicos de España, ANQUE)

C.7. Post-doctoral research stays

Cranfield University, Location: Cranfield (Great Britain) Date: June 1, 2004 – November 30, 2004. Development of a photochemical membrane reactor for the elimination of emerging organic compounds.

C.8. External assessor

External assessor for ANEP, 2012-2018.
External assessor for General Direction of Scientific and Technical Research of the Ministry of Economy and Competitiveness, 2015.
External assessor for AEI (Spanish State Research Agency), 2018-2022.