

Part A. PERSONAL INFORMATION

CV date 15/10/2021

First and Family name	Jose Angel Irabien Guliás	
Researcher codes	Open Researcher and Contributor ID (ORCID**)	0000-0002-2411-4163
	SCOPUS Author ID (*)	7003361364
	WoS Researcher ID (*)	I-4395-2014

(*) *Optional*

(**) *Mandatory*

A.1. Current position

Name of University/Institution	Universidad de Cantabria		
Department	Ingenierías Química y Biomolecular		
Current position	Catedrático Universidad	From	28/06/1991
Key words	Sustainable Engineering, Carbon Capture and Utilization, Waste Management		

A.2. Education

PhD, Licensed, Graduate	University	Year
Licenciado (Ciencias Químicas)	Universidad del País Vasco (UPV-EHU)	08/07/1976
PhD (Chemistry Science)	Universidad del País Vasco (UPV-EHU)	26/02/1982

A.3. General indicators of quality of scientific production (see instructions)

Research Evaluation (Sexenios de Investigación): 6

Knowledge Transfer Evaluation (Sexenios de Transferencia): 1

PhD thesis from 01/01/2012: 12

Total Citations (WoS): 9152

Citations last five years (WoS): 771 (2017), 970 (2018), 998(2019), 1261 (2020), 1232 (october2021)

Other indicators, **h-index (WoS): 50**

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

Four different periods of research can be identified in the Curriculum Vitae:

(1977-1982) PhD thesis UPV-EHU/ Friedrich-Alexander Universität (Erlangen-Nürnberg, Germany)

After finishing the Degree in Chemistry at the Basque Country University (UPV-EHU), Outstanding Award (1976), he was Assistant professor starting the research activity with the PhD thesis (supervisor Prof Dr A Romero) in the Department of Chemical Engineering (UPV-EHU). The PhD thesis went to end in 1982, being qualified as Excellent (sobresaliente cum laude) and Outstanding Award. In this period (1979 -80) he had a predoctoral stay in the Friedrich-Alexander Universität (Erlangen-Nürnberg, Germany) supported by a DAAD-Grant .

(1983-1991) Postdoctoral Research UPV-EHU/Kings College (University of London)

After the PhD thesis (1982) as Associate Professor in the UPV-EHU, teaching and postdoctoral research was conducted on the analysis, modelling and optimization of chemical reactors. In this period (from september 1985 to march 1986) a stay was spent as Academic Visitor in the Department of Biotechnology at the Kings College (University of London) supported by a Fleming Grant (British Council/MEC). Research results were published in international journals and private and public funding was obtained for research projects.

(1991-2003) Full Professor UC, DEPRO-Group (Development of Chemical Processes)

In July 1991 he got the position of Full Professor of Chemical Engineering in the University of Cantabria, starting with the research group DEPRO (Development of Chemical Processes),



which was growing with many international, national and regional research projects, coordinating more than 20 researchers. In this period the supervision of more than 10 PhD thesis, two patents and the publication of near 100 papers were the main results.

(2003-2005) Special Services in the Cantabria Regional Government were used to develop the activities of General Director of Environment in this period .

(2005-Now) UC Head of Research Unit, SOSPROCAN (Sustainable Production and Consumption)/Oxford University (Department of Engineering Science).

Coming back to the University of Cantabria in 2005 he continues as Full Professor and Head of the Research Unit SOSPROCAN with near 30 researchers, being the coordinator of the topics: Carbon Capture and Utilisation and Waste Management, Circular Economy and Sustainability. In (2019-2020) he takes Special Services as General Director of Universities, Research and Knowledge Transfer in the Cantabria Regional Government.

In the last 10 years he has been invited to many International Congresses as member of the scientific committees, organizing committees, Keynote Lecturer or Plenary Lecturer; more than 200 papers in Q1 scientific Journals have been published and more than 20 international, national and regional research projects have been carried out. A research stay as Academic Visitor (Madariaga Grant, 2015) in the Department of Engineering Science (University of Oxford) was applied to develop **new tools for the assessment of sustainable engineering**, a hot topic now, where carbon capture storage and utilization plays an important role.

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

C.1. Publications (*see instructions*)

From the 429 works shown in ORCID, with more than 9.000 citations in WoS (see ORCID 0000-0002-2411-4163) approximately 350 correspond to scientific articles in international journals, from which near 250 have been published in Q1 ranked journals.

In order to get an overview of the previous publications (last five years) in the topics of the project: carbon capture (membrane processes) and utilization (electrochemical processes) 10 articles in international journals have been selected, showing the quality of the scientific results and the cooperation with international and national research groups:

1. Guillermo Díaz-Sainz, Manuel Alvarez-Guerra, Beatriz Ávila-Bolívar, José Solla-Gullón, Vicente Montiel, Angel Irabien, Improving trade-offs in the figures of merit of gas-phase single-pass continuous CO₂ electrocatalytic reduction to formate, *Chemical Engineering Journal*, Volume 405, 2021,126965, ISSN 1385-8947 (2021) (Cooperation with Institute of Electrochemistry, Alicante)
2. Cátia Azenha, Cecilia Mateos-Pedrero, Manuel Alvarez-Guerra, Angel Irabien, Adélio Mendes, Enhancement of the electrochemical reduction of CO₂ to methanol and suppression of H₂ evolution over CuO nanowires, *Electrochimica Acta*, Volume 363,137207, ISSN 0013-4686, 137207 (2020)
3. Marcos-Madrado, A., Casado-Coterillo, C., Irabien, Á. Sustainable Membrane-Coated Electrodes for CO₂ Electroreduction to Methanol in Alkaline Media. *ChemElectroChem*, 6 (20), pp. 5273-5282 (2020)
4. Sohaib, Q., Vadillo, J.M., Gómez-Coma, L., Albo, J., Druon-Bocquet, S., Irabien, A., Sanchez-Marcano, J. CO₂ capture with room temperature ionic liquids; coupled absorption/desorption and single module absorption in membrane contactor *Chemical Engineering Science*, 223 (2020) (Cooperation with the Institut Europeen des Membranes, Montpellier-France)
5. M. Rumayor, A. Dominguez-Ramos, A. Irabien Towards the decarbonization of hard-to-abate sectors: A case of study of the soda ash production. *ACS Sustainable Chemistry & Engineering* 8, 11956-11966 (2020)



6. Aldaco, R., Butnar, I., Margallo, M., Laso, J., Rumayor, M., Dominguez-Ramos, A., Irabien, A., Dodds, P.E. Bringing value to the chemical industry from capture, storage and use of CO₂: A dynamic LCA of formic acid production *Science of the Total Environment*, 663, pp. 738-753 (2019) (Cooperation with UCL-UK).
7. Castro, S. Albo, J. Irabien, A. Photoelectrochemical Reactors for CO₂ Utilization *ACS Sustainable Chem. Eng.*, 6 (12), pp 15877–15894 (2018)
8. Albo, J. Vallejo, D. Beobide, G. Castillo, O. Castaño, P. Irabien, A. Copper-Based Metal Organic Porious materials for CO₂ electrocatalytic reduction to alcohols *ChemSusChem* 10,6, 1100-1109 (2017) **114 Citations**
9. Alvarez-Guerra, M. Albo, J. Alvarez-Guerra, E. Irabien, A. Ionic Liquids in the electrochemical valorisation of CO₂ *Energy and Environmental Science*, 8(9)2574-2599 (2015) **91 Citations**
10. Albo, J. Alvarez-Guerra, M. Castaño, P. Irabien, A. Towards the electrochemical conversión of carbon dioxide into methanol (2015) *Green Chem.* 17(4) 2304-2324. **221 Citations**

C.2. Research projects

Recent international and national projects and contracts show a **proven competence in management, direction and participation in research or innovation projects**

1. **Renewable Power to Chemicals: Proof of Concept and Sustainability Assessment (RP2Products) PID2020-112845RB-I00** Spanish Research Agency Budget 280.000 €
2. **Diseño multiescala de procesos de captura y utilización de dióxido de carbono (CTQ2016-76231-C2-1-R) (AEI/FEDER, UE)**, UC-UA 2017-2020 Budget : 320650 €
3. **Carbon Dioxide Capture and Utilization (CTQ2013-48280-C3-1R) MINECO**, UC-UA-UPM 2014-2017 Budget: 348.480 €
4. **“Valorización Química Sostenible de Dióxido de Carbono” CTQ2014-55716-REDT** Excellence Network UC/UCM/UPV-EHU/UA/UAM 01/12/2014-30/11/2017 28000€
5. **“The application of green technologies for sustainable water purification and reuse”**. (INDIGO-DST1-017) MINECO-EU 01/06/2012- 01/06/2015, International Project: UE-India 40.000€

C.3. Contracts, technological or transfer merits

1. **Estudio comparativo de tecnologías de desulfuración de humos de barcos** Solvay Química SL 17/07/2018-31/08/2019 43923€
2. **Estudio de Caracterización y Análisis del Tratamiento de Estabilización de las Cenizas de Combustión de la Incineradora de Zabalgarbi para su posterior Vertido y/o Valorización** Sader, S.A./UC 30/12/2013-31/03/2016 39.840,74 €
3. **Inventario de Ciclo de Vida y Modelado de las Tecnologías de Incineración de Residuos en España y Portugal (FENIX LIFE 08 ENV/E/000135)** Escuela Superior de Comercio Internacional (Universidad Pompeu Fabra)/UC 28/06/2010 -30/06/2013 40.270,57 €

C.4. Patents

ES2 389 201 B1 T.M. Mayer, J.A. Irabien, A. Dominguez, E. García, A. M. Urriaga
Procedimiento integrado de electro-oxidación fotovoltaica para la depuración y reutilización de aguas residuales urbanas. Date: 16/03/2011 Sociedad General de Aguas de Barcelona

ES2 270 705 B1 Irabien, A. Garea, R., Aldaco; O. Pérez, J. M. Saenz.
Título: Procedimiento para el tratamiento de aguas residuales con fluoruros mediante obtención de fluoruro cálcico sintético. Date. 16/05/2005 Universidad de Cantabria/Derivados del Flúor



C.5. Management

Director of the Department of Chemistry (UC), 1992-96; Director of the Sommer Courses (UC), 1993; President of the Doctorate Studies (UC), 1993-97; Director of the Department of Chemical Engineering and Inorganic Chemistry (UC), 2001-03. ; General Director of the Environment, Cantabria Regional Government, 2003-05 Head of the Chemical Engineering Studies ETSIIyT (UC), 2007-09; Director of the Chemical and Biomolecular Engineering Department (UC) 2018;2019-20 General Director Universities, Research and Knowledge Transfer Cantabria Regional Government

C.6. Academic and Research Assessment

Continuous collaboration with the Regional, Spanish, European and American Agencies of Academic and/or Research Quality Assessment.

Research Quality Assessment (ANEP, Spanish Agency Environmental and Chemical Technology (Coordinator , 1992-94) Higher Education Quality Assessment: ANECA-Spain, AQU-Cataluña, Agencia Andaluza de Calidad. Universitaria and International Higher Education Quality Assessment , Lithuania 2012-13 . research evaluation for international agencies: Republica Checa, Eslovenia, Italia, Francia, Argentina, Finlandia, etc (2013-2020).

C7. International Committees, Societies, Prizes etc.

President of the Chemical Engineering Section RSEQ, 2014-2018;
President of AQUIQAN-ANQUE, 2013-2017;
Trustee of the European Federation of Chemical Engineering (EFCE) 2014-2015;
Member of the Executive Board, European Federation of Chemical Engineering (EFCE) 2012-2013;
President of the Section Environmental Protection and Sustainability (EFCE) 2010-2012.; Editor in Chief of the Journal Low Carbon Economy 2012;
Prize to the supervision of the best Spanish PhD thesis in Engineering 2012, Fundación SENER; Prize CEPESA-RSEQ Innovation in Chemical Engineering, 2012;
President of the Organizing Committee 34 Biannual Meeting RSEQ, (Santander, 2013). Member of Scientific Committees: CHISA (Prague, 2012-2014-2016- 2018), European Congress of Chemical Engineering (Copenhaguen, 2004), Mediterranean Congress of Chemical Engineering (Barcelona, 2011,2014), Green Process Engineering (Seville,2014; Toulouse 2018) World Congress of Chemical Engineering (Barcelona, 2017).
Premio ANQUE 2019

Other activities

A collaboration with the Cantabria Regional Government has taken place two times, the first one as Regional Director for the Environment (2003-2005) and the second one as Regional Director for Universities, Research and Knowledge Transfer (2019-2020).