

CURRICULUM VITAE (CVA)

Part A. PERSONAL INFORMATION

CV date	17/04/2023
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First name	Manuel Andrés		
Family name	Rodrigo Rodrigo		
Gender		Birth date	
ID number		WoS: I-6112-2013	SCOPUS: 34868498800
e-mail		URL Web blog.uclm.es/manuelrodrigo	
Open Research and Contributor ID (ORCID)		0000-0003-2518-8436	

A.1. Current position

Position	Full Professor		
Initial date	05/12/2009		
Institution	University of Castilla La Mancha		
Departament/Center	Chemical Engineering/ Faculty of Chemical Science&Technologies		
Country	Spain	Teleph. number	
Key words	Chemical engineering, electrochemical eng., environmental eng., energy		

A.2. Previous positions (research activity interruptions, art. 45.2.c))

Period	Position/Institution/Country/Interruption cause
01/10/1993-30/11/1993	Assistant Professor (Profesor Asociado)
01/01/1994-30/09/1996	FPI Grant Generalitat Valenciana
01/10/1996-30/09/1997	Assistant Professor (Profesor Ayudante Escuela Universitaria)
01/10/1997-03/04/2000	Assistant Professor (Profesor Ayudante de Facultad)
03/04/2000-04/12/2009	Associate Professor (Profesor Titular Universidad)

A.3. Education

PhD, Licensed, Graduate	University/Country	Year
PhD	University of Valencia	1997
Licensed (\approx graduate+master)	University of Valencia	1993

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

M.A. Rodrigo studied Industrial Chemistry at the University of Valencia, where he was graduated at the top of his class in 1993. He obtained a PhD degree in Chemical Engineering at the University of Valencia in 1997, with a Thesis focused on the development of automation systems (control algorithms) for the optimization of the biological nutrient removal processes in wastewater treatment facilities. In 1997, he joined UCLM as Assistant Professor and, casually, he began researching on electrochemical technology, a new topic in which no one else was specialized and no facilities were available. In 1999, he did a first postdoctoral training in the EPFL (Switzerland), where he was trained in electrochemical technology and he started working in electrolysis with boron doped diamond electrodes, one of the key topics in his research. In 2000, he was appointed as Associate Professor at the UCLM and expanded his research lines by starting to work on electrocoagulation and PEM fuel cells. Then, oxidants production, microbial fuel cells, soil electro-remediation, green powering of electrochemical devices and electrochemically assisted gas treatment focus his interest. A second training in the EPFL was carried out in 2003, this time, focused on electrocatalysis. In 2009, he was promoted to Full Professor in Chemical Engineering at the UCLM. From that moment on, he has working to consolidate a highly competitive and internationally minded research team, focused on the development of new and value-added applications

of electrochemical engineering, with expertise in the frontiers between electrochemistry-energy and electrochemistry-environment and with a relevant transfer of knowledge to the industry. During these years, he has kept a strong consultant collaboration with many companies in energy and environmental engineering, and several private-financed projects. He has also opened joint research lines with different research groups all around the World, specially promoting collaborations with Latin-America groups. Prof. Rodrigo has been invited Professor at the universities Paris Est Marne la Vallée (France) and Politécnica de Valencia. He has served as Vicedean of Chemical Engineering in the Faculty of Chemical Sciences and Technologies of the UCLM (2007-2015) where now is serving as Dean (2021-), vice-chair (2014-2016) and Chair (2020-) of Division 5 of ISE and Chair of the Working Party of Electrochemical Engineering of the EFCE (2011-2018), where he remains as a delegate, as well as in the Energy Section of this professional association (2018-). He is serving as Chair of the Division 5 of ISE in 2021. He was also Chair of the Spanish Excellence Network on Environmental and Energy Applications of Electrochemical Technology (2018-2021). Organizer of several meetings on electrochemical technology, including one ISE Topical Meeting, and one EFCE summer school. He has served in the Chemical Technology area of ANEP (National Agency for Research Projects Evaluation) (2015-2017) and in the Spanish AEI (National Agency for Research) in the Chemical Technology assessment field (2017-2019). In 2020 he received the Trajectory Award of the Group of Chemical Engineering of the Spanish Royal Society of Chemistry. **General indicators of quality of scientific production.** H-index of 73 according to SCOPUS and more than 500 paper indexed. From his papers ranked in the JCR, aprox. 80.6% are Q1, 12.4% Q2, 6.2 Q3 and 0.8% Q4. In addition, he has published more than 20 books and books chapters totalizing aprox 540 inputs in SCOPUS. Four successful evaluations of the research activities (1995-2000; 2001-2006 and 2007-2012; 2013-2018) and one from transfer activities (2000-2007). Since 2016, he has published 263 papers (231 Q1, 25 Q2, 6 Q3, 1 Q4 and 1 SCOPUS no WoS). Total number of citations is over 21500. He has presented more than 400 communications (more than half of them as oral communications) in national and international meetings including more than 50 keynotes. Prof Rodrigo has led or is now leading 15 public financed research projects (2255.33 k€), 3 public financed infrastructure projects (819.91 k€), 20 private financed research contracts (1105.71 k€) and collaborated or is collaborating in other 25 public financed research projects (4115.19 k€), 12 public financed infrastructure projects (2221.29 k€) and 20 private financed projects (712.00 k€). Prof Rodrigo was editor of the Journal of Electrochemical Science and Engineering from 2011 to 2016 and, currently, he belongs to the Editorial Board of Journals such as Separation & Purification Technology, Journal of Hazardous Materials and Journal of Applied Electrochemistry. He has been guest editor in 7 special issues of publications indexed in WoS. Prof Rodrigo is author of over 80 technical reports for companies, 5 patents, and he has supervised 21 PhD theses and currently is supervising 6 more.

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

C.1. Publications (*see instructions*)

Following, 10 publications, from 2012 to 2021, are highlighted based on the novelty and/or relevance of the topic, impact factor / number of citations (as for SCOPUS on 14/01/22):

1) Lopez-Vizcaino, R; Saez, C; Cañizares, P; Rodrigo, MA (2012) The use of a combined process of surfactant-aided soil washing and coagulation for PAH-contaminated soils treatment. SEPARATION AND PURIFICATION TECHNOLOGY, 88, 46-51 (76 citations. Soils and wastewater treatment process integration). **2)** Lopez-Vizcaino, R; Alonso, J; Cañizares, P; Leon, MJ; Navarro, V; Rodrigo, MA; Saez, C (2014) Electroremediation of a natural soil polluted with phenanthrene in a pilot plant. JOURNAL OF HAZARDOUS MATERIALS, 265,142-150 (48 citations. Scale-up of soil remediation processes with prototypes of more than 30 m³) **3)** Martínez-Huitle, C.A.; Rodrigo M.A.; Sirés, I.; Scialdone, O. (2015) Single and Coupled Electrochemical Processes and Reactors for the Abatement of Organic Water Pollutants: A Critical Review. CHEMICAL REVIEWS 15(24), 13362-13407 (705 citations. One of the review papers I have prepared for dissemination of electrochemical technology. Outstanding impact index of the journal); **4)** Pinar. FJ; Cañizares, P; Rodrigo MA; Úbeda, D; Lobato, J. (2015) Long-term testing of a high-temperature proton exchange membrane fuel cell short stack operated with improved polybenzimidazole-based composite membranes. JOURNAL OF POWER

SOURCES, 274, 177-185 (52 citations. Scale-up of fuel cells and lifetests). **5)** Pérez, J.F., Llanos, J., Sáez, C., López, C., Cañizares, P., Rodrigo, M.A. (2016) Electrochemical jet-cell for the in-situ generation of hydrogen peroxide. *Electrochemistry Communications* 71, 65-68 (52 citations. New concept cells for production of oxidants); **6)** Pérez, J.F., Galia, A., Rodrigo, M.A., Llanos, J., Sabatino, S., Sáez, C., Schiavo, B., Scialdone, O (2017) Effect of pressure on the electrochemical generation of hydrogen peroxide in undivided cells on carbon felt electrodes. *ELECTROCHIMICA ACTA* 248, 10 September 2017, 169-177 (26 citations. New concept cells for production of oxidants); **7)** Dewil, R., Mantzavinos, D., Poulis, I., Rodrigo, M.A. (2017) New perspectives for Advanced Oxidation Processes. *JOURNAL OF ENVIRONMENTAL MANAGEMENT*, 2017, 195, pp. 93–99 (271 citations, new visions for AOPs); **8)** Mena, E; López-Vizcaíno, R.; Millán, M.; Cañizares, P.; Lobato, J.; Rodrigo, M.A (2018). Vanadium redox Flow batteries for the storage of electricity produced in wind turbines. *INTERNATIONAL JOURNAL OF ENERGY RESEARCH*, 42, 720-730 (20 citations. Results on the use of RFB and green energy for powering environmental remediation cells). **9)** Ganiyu, S.O., Martínez-Huitle, C.A., Rodrigo, M.A. (2020) Renewable energies driven electrochemical wastewater/soil descontamination technologies: a critical review of fundamental concepts and applications. *APPLIED CATALYSIS B: ENVIRONMENTAL*, 270, 118857 (82 citations. prospective work indicating the path for powering environmental electrochemical processes with green energies); **10)** Carvela, M., Lobato, J., Rodrigo, M.A. (2021) Chloralkali low temperature PEM reversible electrochemical cells. *ELECTROCHIMICA ACTA*, 2021, 387, 138542 (2 citations. Recent results in which the EDEN® technology is based).

C.2. Congress

Next, it is shown a list of ten plenary or keynotes presented during the selected period: **1)** Challenges of Electrochemical Technology in Water Reuse. 1ST INTERNATIONAL WORKSHOP ON ADVANCED ELECTROCHEMICAL OXIDATION FOR WATER REUSE (virtual edition) Nancy (France) 15/09/2020 -19/09/2020. **2)** The binomial Technology Readiness Level / Environmental Electrochemical Engineering: where are we and where are we going? 12th European Symposium on Electrochemical Engineering Leuwarden (Netherlands) 14/06/2021-17/06/2021; **3)** Nuevas fronteras de la tecnología electroquímica en energía y medio ambiente. IV Congreso Colombiano de electroquímica Antioquia (Colombia) 05/10/2020-07/10/2020; **4)** Development of Concentration Strategies for the Improvement of the Efficiency of Electrochemical Degradation Technologies. 68th Annual Meeting of the International Society of Electrochemistry Providence (Rhode Island, USA) 27/08/2017-01/09/2017. International Society of Electrochemistry; **5)** Application of electrochemical technologies for the removal of organochlorinated pesticides from polluted soil and wastewater XXI Simposio Brasileiro de Electroquímica e Electroanalítica Natal (Brazil) 17/04/2017- 21/04/2017; **6)** Different strategies to enhance bioremediation of diesel-polluted soils using electro-kinetic processes. 13th symposium on Electrokinetic remediation EREM 2014. Malaga (Spain) 07/09/2014-10/09/2014; **7)** Electro-disinfection: a key technology for the safe reclaiming of treated wastewater. ANQUE-ICCE-BIOTEC. Madrid (Spain) 01/07/2014- 04/07/2014; **8)** Composite membranes for high temperature PEM fuel cells: from single cells to stacks Hydrogen Days 2014. 5th international Conference on Hydrogen Technologies. Prague (Czech Republic) 02/04/2014-04/04/2014; **9)** Electrochemical assisted disinfection of treated wastewater for reuse. 64th Annual Meeting of the International Society of Electrochemistry, Queretaro México 08/09/2013- 13/09/2013; **10)** An Application of Electrochemical Engineering in Industrial Wastewater Treatment: Conductive Diamond Electrochemical Oxidation for the Treatment of Industrial Wastes. ChemH2O2013. Leading Edge Conference on Sustainability Water Management, Madrid (Spain) 01/10/2013- 02/10/2013

C.3. Research projects

Next, it is shown the list the research projects (only those financed in competitive public calls) ongoing or just concluded (2017-2019), in which I have been the Principal Investigator: **1)** Proof of concept Call 2021 (Spanish Government). Getting on top of Sustainable electrochemical remediation technologies for chlorinated hydrocarbons pollution associated to industrial activities (PDC2021-121105-I00).

01/12/2021-30/11/2023 ,149500,00 €; **2)** International Joint Call AQUAPOLLUTANTS: Sustainable Electrochemical Reduction of contaminants of emerging concern and Pathogens in WWTP effluent for Irrigation of Crops (PCI2021-121963) 01/09/2021-31/08/2024. 150000,00 €; **3)** Society Challenges call (Spanish government): New Electro-Absorption Technologies for more Sustainable environmental and energy applications (PID2019-107271RB-I00) 01/06/2020-31/05/2023; 249260,00 €; **4)** European Commission Erasmus+: Addressing the current and Future skill needs for sustainability, digitalization, and the bio-Economy in Agriculture: European skills agenda and Strategy (2019-1-IT-EPPKA2-SSA-B) 01/01/2020-31/12/2023; 108883 €; **5)** Explora Ciencia/Tecnología call (Spanish government): Electrochemically-based Decarbonizing Energy (CTQ2017-91190-EXP) 01/11/2018 - 31/10/2020; 72.600 €; **6)** Explora Ciencia/Tecnología call (Spanish government): Emulating life in the production of energy: photomicrobiologic fuel cells for the production of electricity from sunlight (CTQ2013-49748-EXP) 01/01/2015 – 30/04/2017; 60.000 €; **7)** Society Challenges call (Spanish government): Electrochemical assisted remediation of organochlorinated polluted soil and wastewater produced in industrial activities (CTM2016-76197-R) 31/12/2016-29/12/2019; 423500,00 €; **8)** Castilla La Mancha Research Call: Sustainable Energy Storage throughout the hybrid sulfur process improved with polibenzimidazol membranes (SBPLY / 17/180501/000330) 01/09/2018 - 30/09/2021, 154.000,00 €; **9)** H2020. Self-Sustaining Cleaning Technology for Safe Water Supply and Management in Rural African Areas (SafewaterAfrica, 689925). 01/06/2016-31/12/2019. 3000 k€ (281.482 € UCLM); **10)** Excellence Networks (Spanish government): Environmental & Energy Applications of Electrochemical Technology. (CTQ2017-90659-REDT) 01/07/2018 - 30/06/2020. 20000,00 €

C.4. Contracts, technological or transfer merits

Next, it is shown the list the hired contracts ongoing or just concluded (2017-2021): **1)** 210253UCTR. “Servicio de asesoramiento para el escalado de un reactor BES para la depuración de aguas industriales obteniendo un rendimiento de depuración del 90% y la producción de biogas rico en hidrógeno”. AQUALIA GESTION INTEGRAL DEL AGUA S.A. 06/2021- 06/2022, 8784,60 €; **2)** UCTR190175. “Puesta en marcha de un proceso en continuo de la familia de la butamina HCL. Fase síntesis del etilénico”. LABORATORIOS SERVIER, 05/2019-12/2019, 82794,86 €; **3)** UCTR170067 “Estudio del control de la salinidad de los suelos”, CARBOTECNIA, 3/2017-5/2017, 5636,79€; **4)** UCTR160237 “Evaluación del tratamiento electroquímico de aguas residuales industriales”, SOLUCIONES MEDIOAMBIENTALES S.L., 01/2016-09/2016, 8784,00€; **5)** UCTR170185 “Estudio del proceso de desgomado de aceites”, F.FAIGES, S.L., 06/2017-11/2017, 10870,94 €; **6)** UCTR130212. “Estudio de I+D para el tratamiento de los efluentes líquidos generados por Laboratorios Servier en la planta de Toledo”, LABORATORIOS SERVIER S.A. 10/2013-09/2016. 136.488 €; **7)** UCTR190427 “Eliminación de HCH y otros compuestos organoclorados en limos del vertedero de Sardas (Sabiñánigo, Huesca) por procedimientos electrocinéticos” 01/12/2019- 01/05/2020, 19595,95 €; **8)** 200412UCTR. “Validación y Diseño de Técnicas Electrocinéticas para la Remediación de los limos del aluvial al pie del Vertedero de Sardás (Sabiñánigo-Huesca), contaminados con HCH y otros compuestos organoclorados”. 14/12/2020- 08/09/2022, 30250,00 €

Next, it is shown the list the two most recent patents: **9)** Proceso de desinfección de agua con electrodos de diamante. M.A. Rodrigo; P. Cañizares; C. Sáez; J. Lobato. Nº de solicitud: 201130933. País de inscripción: España. Fecha de registro: 06/06/2011. Fecha de concesión: 09/04/2014; **10)** Reactor combinado de electrocoagulación y electroflotación para el tratamiento electroquímico de agua residual. M.A. Rodrigo; P. Cañizares; C. Sáez; J. Lobato; C. Jiménez; F. Martínez Nº de solicitud: 201130644. País de inscripción: España. Fecha de registro: 25/04/2011 Fecha de concesión: 03/03/2014