

## prof. Raúl Muñoz Torre

### CV SUMMARY

Raúl Muñoz joined the Dept. of Chemical Engineering and Environmental Technology at UVa in Nov 2005 as Juan de la Cierva researcher, with a research focused on biological gas treatment of Volatile Organic Compounds. In February 2007, at the age of 28, Raúl Muñoz successfully competed in the Spanish National Program “Ramón y Cajal”. In July 2007, the applicant carried out a 3-month research stay at Nanyang Technological University (Singapore). The applicant started his 5-year senior researcher contract Ramon y Cajal in January 2008 at UVa, which represented the consolidation of the biological gas treatment and microalgae technology research lines at UVa. In 2009, he carried out a 3-month research stay at UNSW (Australia), and a 1-month research stay at Universidad Mayor de San Simon (Bolivia). In 2004, 2013 and 2016, Raúl also conducted 3, 6 and 1-month research stays, respectively, at UAM-Cuajimalpa (México), and in 2014 a 3-month research stay at Universidad de la Frontera (Chile). In 2019, Raúl carried out a 1-month research stay at the University of Texas in Austin (USA). Raúl Muñoz Joined the Institute of Sustainable Processes in 2017.

Over the past 10 years, 37 international and 12 national collaborations with leading research groups in the fields of biological gas treatment, bioplastic valorization, biohydrogen production and microalgae technology were initiated and maintained. Over the past 10 years, Raúl Muñoz has published 250 JCR publications (83% Q1), 31 international book chapters, and has edited 2 books in international editorials. The research carried out by the applicant has contributed to the development of new concepts of greenhouse gas biorefineries, new biotechnologies for biogas valorization and novel configurations of microalgae-based wastewater treatment. The novelty of his work has been awarded with the invitation to 30 keynote and plenary talks in prestigious international conferences over the past 10 years. During this period, 106 oral presentations and 35 posters in international conferences have been coauthored by the applicant. The total number and budget of competitive R&D projects obtained by Raúl Muñoz as Principal Investigator (PI) accounted for 26 and 7.795.114 €, respectively, in the past 10 years. It is worth mentioning that the fundamental research carried out at TRL 3-4 within the Spanish State R&D Program in the field of microalgae and biogas upgrading has been up-scaled and validated at TRL 6-7 in European Innovation Actions and BBI-JU Flagships by the applicant as PI, which has conferred him exceptional bioprocess design skills at demo scale. Raúl is currently P.I of four Horizon 2020 and Horizon Europe projects (DEEP PURPLE, CIRCULAR BIOCARBON, CHEERS, MANUREFINERY), 5 Marie Curie IF (BIOBREW, PHYTOVALUE, SYN2VALUE, NANOBOOSTERS, WASTE4Bio) and five national R&D projects (Generación de conocimiento 2021, Líneas Estratégicas 2021, 2022, Prueba de Concepto 2022, Colaboración Público-Privada 2021).

On the other hand, the applicant has actively collaborated with the industrial sector and public administrations at national and international level, leading as PI 42 R&D contracts (budget of 3.031.459 €) in the past 10 years. Most of this research has focused on the validation at pilot or demo-scale of innovative technologies for biogas upgrading, biological air treatment, GHG mitigation, microalgae-based wastewater treatment and bioplastic valorization. This active technology transfer was awarded with the “*Agustín de Molina y Betancourt Award*” and “*Juan Lopez de Peñalver Medal*” by the Spanish Royal Academy of Engineering in 2018 and 2017, respectively. In addition, the applicant was the Chair of the Organizing and Scientific Committee of 4 International Conferences (*IWA-WATER&INDUSTRY 2011*, 275 attendees; *4<sup>th</sup> International Conference on Odor Management in the Environment*, 150 attendees; *IWALGAE 2019*, 274 attendees, *PHOTOREFINERIES 2024*) and 2 Technical Workshops for Industries (*Characterization and Management of Odor and Greenhouse Gases in Wastewater Treatment Plants-2015*, 40 attendees; *Anaerobic Digestion: Quo Vadis-2021*, 140 attendees). In addition, the applicant has disseminated the main results of his research in specialized journals such as *RETEMA* (3 papers) and in 47 international and 35 national seminars in the last decade.

Raúl has supervised 28 postdoctoral researchers (incl. 6 JDC and 5 MSCA-IF), 22 PhD theses, 27 Master theses, 30 final year projects and more than 40 undergraduate research projects over the past 10 years. In this period, Raúl was member of the scientific committee of 42 international conferences, project evaluator in 10 countries and member of the PhD evaluation committee of 43 Theses (27 International). Finally, Raúl was a regular reviewer in 44 JCR journals, collaborator (Gestor) at the Environmental Technology division of the Spanish Research Agency (CTM-TMA) from July 2018-July 2022 and external evaluator of the European ERC programme.