Technology Transfer portfolio

November 2024

Technology transfer has always been a priority in our group. In addition to the high number of RDI projects and technology transfer contracts, LEQUIA researchers are inventors or several patents and co-founders of two spinoff companies: SISTLTech (2003) and Ecomemb (2022).

Expertise

- Adsorption and oxidation processes
- Anammox autotrophic nitrogen removal
- Membranes for water treatment
- Microbial electro-synthesis
- Phosphorous recovery from wastewater
- Socio-natural systems
- Water (electro)-bioremediation

Pilot plat for the electro-bioconversion of carbon dioxide

Recycling of membranes for water treatment

Patents and utility models

- Automated real time control system for membrane bioreactors Smart Air MBR®. Universitat de Girona, OHL Medio Ambiente INIMA SAU. Inventors: Rodriguez-Roda, J. Comas, M. Poch, G. Ferrero, J. Sipma, P. Clara, S. Rovira, H. Monclús, J. Canals. ES2333837B1.

- Bioelectrochemical system for water treatment. Universitat de Girona. Inventors: J. Colprim, M.D. Balaguer; S. Puig, N. Pous. EP2925679B1.

- Reactor for wastewater treatment. Universitat de Girona, Inbrooll Ind S.L. Inventors: V. Salvadó, T. Serra, J. Colomer, N. Pous, M. Font, I. Pijoan, J. Scheerer. ES1234189U.

INSTITUTE OF THE ENVIRONMENT
Universitat de Girona – Campus Montilivi s/n – 17003 Girona – Catalonia, Spain
Tel. +34 972 419 859 – Fax +34 972 418 150 – info.lequia@udg.edu – www.lequia-udg.com

Biological treatment and resource recovery from wastewater

> Anammox and partial nitritation to remove nitrogen from wastewater
> Struvite and k-struvite precipitation for phosphorous recovery
> Panammox® process to treat landfill leachates
> Biminex® process to reduce excess sludge in WWTPs
> Sanitation reactor by filtration with Daphnia

Bioelectrochemical systems

> Electro-bioremediation of polluted waters
> Electro-bioconversion of CO_2 into added value compounds
> Biogas upgrading by electro-methanogenesis
> Electricity-driven isolation of microbial protein
> Operational parameters, design and scale-up of bioelectrochemical systems

Procesos avanzados de adsorción y oxidación

> Analysis of polluting gases
> Analysis of odour-causing compounds
> Adsorption processes for gas and water treatment
> Biogas upgrading: removal of siloxanes and volatile organic compounds
> Modification of activated carbon to obtain new adsorbents
> Thermal oxidative regeneration of adsorbents

Membranes for water treatment

> Membrane technologies: reverse osmosis, nanofiltration, microfiltration, forward osmosis, electrodialysis, membrane distillation
> Assessment of water purification treatment, and membrane concentration of urban/industrial wastewater and drinking water
> Integration of membrane bioreactors (MBRs) at different scales
> Monitoring, modelling and automatic control
> Removal of pharmaceutical compounds from wastewater
> Decision support systems for the integrated supervision of MBRs
> Manufacture and modification of membranes for water treatment
> Recycling of reverse osmosis for water treatment
> Study of *fouling* and *clogging* phenomena

Environmental Decision Support Systems (EDSS)

> Multi-criteria decision support systems within the water cycle
> Integration of artificial intelligence and modelling tools in EDSS to manage complex systems. Software Novedar_EDSS (wastewater treatment plants design) and software DrinkIA® (operation of drinking water treatment plants)
> Life Cycle Assessment studies (LCA) of sanitation systems
> Integrated control of urban water cycle. Knowledge-based modelling of microbiologic operational problems in wastewater treatment

Socio-natural systems

> Study of the ethic and political dimensions of technologies: values, perceptions, narratives, acceptances
> Urban planning, circular economy and nature-based solutions within the environmental justice
> The hydro-social cycle: decision-making and conflicts associated with urban water cycle and its governance
> Vulnerability to droughts and floods, participative planning and multi-criteria analysis
> Agent-based modelling and generation of environmental policy scenarios

INSTITUTE OF THE ENVIRONMENT
Universitat de Girona – Campus Montilivi s/n – 17003 Girona – Catalonia, Spain
Tel. +34 972 419 859 – Fax +34 972 418 150 – info.lequia@udg.edu – www.lequia-udg.com