

### 3<sup>rd</sup> Water\_2020 Training School

“Fate, Treatment, Environmental and Economic Impacts of Micropollutants and Emissions”  
Santiago de Compostela, 21<sup>st</sup> - 24<sup>th</sup> September 2015



## COURSE PROGRAMME

| MONDAY, 21 <sup>st</sup> SEPTEMBER |     |   |
|------------------------------------|-----|---|
| 08:50                              | PR  | <b>Course opening</b><br>Prof. Juan M. Lema<br><i>Coordinator COST action Water2020 and REGATA network</i>  |
| 09:00 – 10:00                      | PR  | <b>Analytical determination of emerging micropollutants and their transformation products in the aquatic environment</b><br>Ass. Prof. Isaac Rodriguez (University of Santiago de Compostela)   |
| 10:00 – 11:00                      | PR  | <b>Ecotoxicological effects of micropollutants</b><br>Ass. Prof. Emma Martínez López (University of Murcia)   |
| 11:00 – 11:30                      | C   | <i>Coffee break</i>   |
| 11:30 – 12:30                      | PR  | <b>Fate of micropollutants in sewage treatment plants</b><br>Ass. Prof. Marta Carballa (University of Santiago de Compostela)   |
| 12:30 – 13:30                      | PR  | <b>Cometabolic (or metabolic ?) Biotransformation (or biodegradation?) of (organic) Micropollutants (OMPs) in Sewage Treatment Plants</b><br>Prof. Juan Lema (University of Santiago de Compostela)   |
| 13:30 – 15:00                      |     | <i>Lunch break</i>  |
| 15:00 – 16:30                      | FCh | <b>Practicum: Analysis of micropollutants in water (LC/MS, GC/MS)</b><br>Ass. Prof. María Llompart and Carmen García-Jares (University of Santiago de Compostela)<br><b>A01:</b> Solid phase microextraction and GC-MS analysis (Gerardo Álvarez Rivera)<br><b>A02:</b> Ultrasound-assisted emulsification microextraction and GC-MS/MS analysis (Pablo Lamas)<br><b>A03:</b> Solid phase extraction and LC-MS/MS analysis (Eugenia Guerra) |
|                                    | PR  | <b>Seminar: Mass balance of micropollutants in STPs</b><br>Ass. Prof. Marta Carballa (University of Santiago de Compostela)<br><br>( Finishing at 16.15h )  |
| 16:30 – 18:00                      | PR  | <b>Seminar: Mass balance of micropollutants in STPs</b><br>Ass. Prof. Marta Carballa (University of Santiago de Compostela)<br><br>( Starting at 16.45h )   |
|                                    | FCh | <b>Practicum: Analysis of micropollutants in water (LC/MS, GC/MS)</b><br>Ass. Prof. María Llompart and Carmen García-Jares (University of Santiago de Compostela)<br><b>A01:</b> Solid phase microextraction and GC-MS analysis (Gerardo Álvarez Rivera)<br><b>A02:</b> Ultrasound-assisted emulsification microextraction and GC-MS/MS analysis (Pablo Lamas)<br><b>A03:</b> Solid phase extraction and LC-MS/MS analysis (Eugenia Guerra) |
| SOCIAL PROGRAMME                   |     |   |
| 19.00 – 21:00                      |     | <b>Guided tour</b> through the historical part of the city of Santiago de Compostela.<br><i>Meeting Point: Entrance of Via Lucis Hostel at 18.45h</i>   |

| <b>TUESDAY, 22<sup>nd</sup> SEPTEMBER</b>   |    |   |
|---|----|---|
| 9:00 – 10:00                                | PR | <b>Micropollutant removal by tertiary treatment based on oxidative enzymes</b><br>Prof. Maria Teresa Moreira (University of Santiago de Compostela)   |
| 10:00 – 11:00                               | PR | <b>Modelling micropollutants fate under uncertainty</b><br>Dr. Miguel Mauricio (University of Santiago de Compostela)   |
| 11:00 – 11:30                               | C  | <i>Coffee break</i>   |
| 11:30 – 12:30                               | PR | <b>Emissions of GHGs in wastewater treatment plants</b><br>Dr. Adrian Oehmen (University of Lisbon)   |
| 12:30 – 13:30                               | PR | <b>Innovative Biotechnologies for GHG and Odour Treatment in WWTPs: overcoming mass transfer and microbiology limitations</b><br>Prof. Raul Muñoz (University of Valladolid)  |
| 13:30 – 15:00                               |    | <i>Lunch break</i>  |
| 15:00 – 18:00                               | PP | <b>Practicum: Wastewater treatment technologies</b><br><b>A01:</b> Hybrid anaerobic MBR at pilot-scale (Tomás Allegue)<br><b>A02:</b> Ozonation reactor at pilot-scale (Teresa Alvariño)<br><b>A03:</b> UV treatment (Lidia Paredes)<br><b>A04:</b> Enzymatic post-treatment (Yolanda Moldes) |
| 16:20 – 16:40                               |    | <i>Break</i><br><b>A05:</b> Anaerobic digestion of sewage sludge (Lorena González)<br><b>A06:</b> Biofiltration of gaseous effluents (Santiago Gómez)<br><b>A07:</b> Anaerobic digester at pilot-scale (Antón Taboada)  |
| <b>WEDNESDAY, 23<sup>rd</sup> SEPTEMBER</b> |    |   |
| 9:00 – 10:00                                | PR | <b>LCA as a tool to evaluate the environmental impact of wastewater treatment processes</b><br>Dr. Sara Gonzalez García (University of Santiago de Compostela)  |
| 10:00 – 11:00                               | PR | <b>Economical evaluation of sewage treatment plants</b><br>Ass. Prof. Konstantinos P. Tsagarakis (Democritus University of Thrace)  |
| 11:00 – 11:30                               | C  | <i>Coffee break</i>   |
| 11:30 – 12:30                               | PR | <b>Assessment of eco-efficiency of the water cycle by LCA and LCC</b><br>Dr. Desiree Marín Navarro (CETAQUA-Barcelona)  |
| 12:30 – 13:30                               | PR | <b>Risk assessment of persistent pharmaceuticals in biosolids</b><br>Dr. Amaya Franco Uría (University of Santiago de Compostela)   |
| 13:30 – 15:00                               |    | <i>Lunch break</i>  |
| 15:00 – 16:30                               | I2 | <b>Practicum: Ecotool for a STP</b><br>Dr. Desiree Marín (CETAQUA-Barcelona)  |
| 16:30 – 18:00                               | I2 | <b>Practicum: Economic costs of STPs</b><br>Prof. Francesc Hernández (University of Valencia)   |
| <b>SOCIAL PROGRAMME</b>                     |    |   |
| 20:30                                       |    | <b>Farewell dinner at Restaurante O'Dezaseis</b> (Rúa de San Pedro, 16, Santiago de Compostela)   |
| <b>THURSDAY, 24<sup>th</sup> SEPTEMBER</b>  |    |   |
| 9:00 – 11:00                                | PR | <b>Team work on case studies of wastewater treatment containing PPCPs. Discussion of alternative treatment schemes</b><br>Dr. Sonia Suárez (University of Santiago de Compostela)   |
| 11:00 – 11:30                               | C  | <i>Coffee break</i>   |
| 11:30 – 13:30                               | PR | <b>Team work with LCA and economical evaluation</b><br>Ass. Prof. Almudena Hospido (University of Santiago de Compostela)   |
| 13:30 – 14:00                               | A  | <b>Certificate award ceremony and Closure of the course</b><br><b>Vice-rector of Internationalization:</b> Alumdena Hospido<br>Ass. Prof. Marta Carballa and Prof Juan M. Lema  |
| 14:30 - 19:30                               |    | <b>Technical visit:</b> Sewage treatment plant of Guillarei (Guillarei-Pontevedra)  |