

December 17 & 18 2020

SCOPE

Biowastes produced from various industries, municipal activities and wastewater treatment units are the major reasons of worry for the environmentalists and health departments. Due to limitations and harmful impacts of conventional strategies, there is a need to develop sustainable and innovative technologies for the treatment of this kind of wastes. Integration of waste treatment technologies based on biorefinery concept within the Circular Economy is essential to transform biowastes into value-added products such as biopolymers, bio-hydrogen, biogas, bioactive compounds, chemical building blocks and materials. Besides, the depuration of wastewaters for the water reuse, by removal or conversion of pollutants of toxic and emerging concern in more biodegradable substrates completes the paradigm of the Circular Economy in the field of the management of wastewaters.

The **BIOTRES** and **REMTAVARES** Consortia belong to the R&D activities program between research groups in Technology from Comunidad de Madrid.



BIOTRES Consortium (S2018/EMT-4344)

Focused on the integration of different advanced technologies (thermochemical, chemical and biological) for the processing of urban biowastes into high value added bio-based chemicals and the co-production of bioenergy.

The first workshop organized by both Consortia pretends to be a meeting point of scientific experts in the use of wastes for the production of high value-added compounds and renewable energy in order to give attendees the opportunity to know the cutting edge of the research activities and consider needs and solution for these themes.



REMTAVARES Consortium REMTAVARES-CM (S2019/EMT-4341)

Committed to develop innovative technologies for the removal of priority pollutants and compounds of emerging concern as well as the recovery of resources from wastewaters and generated sludge (more biodegradable substrates, nutrients, biopolymers and advanced porous materials).

SCIENTIFIC PROGRAM

The scientific program of the workshop will consist of several invited lectures from distinguished speakers and shorts presentation from researchers of both consortia. Likewise, industrial sector will be also invited to this event.

ORGANISMOS DE INVESTIGACIÓN

Innovative technologies for sustainable management of urban and industrial waste streams

17/12/2020

09:00 - 09:15 Reception and Opening session. Welcome Speech
Juan Antonio Melero Henández & Fernando Martínez Castillejo

Section I. Advanced oxidation processes for the removal of priority pollutants in wastewaters

Chairman: Jose Antonio Casas (UAM) & Fernando Martinez (URJC)

09:15 - 09:55 Fenton process as effective treatment of aqueous effluents of a pharmaceutical plant: Operation and performance

Noelia López. Responsable de la planta de tratamiento de la empresa farmaceutica SERVIER

09:45 - 09:55 Continuous CWPO reaction using new developed foam supported catalysts
Esther Gómez (UAM-REMTAVARES)

09:55 - 10:05 Solar photocatalytic degradation of parabens in aqueous systems with graphitic carbon nitrides
Elena Parra García (URJC, REMTAVARES)

10:05 - 10:15 Ruthenium and platinum supported on carbon nanospheres for the degradation of naproxen by CWAO: kinetics, mechanism and application in real matrices
Estrella Serra Pérez (UCM, REMTAVARES)

10:15 - 10:25 Wet oxidation for the removal of high organic load wastes
Carlos Ruiz de León Gómez (UCM, REMTAVARES)

10:25 - 10:35 Application of catalytic hydrodehalogenation for the removal of the DBPs haloacetic acids
Julia Nieto-Sandoval (UAM-REMTAVARES)

10:35 - 11:00 Q&A Session

11:00 - 11:30 Coffe break

Section II. Electrochemical and bioelectrochemical technologies for wastewater treatment

Chairman: Karina Boltes (UAH) & Fernando Martinez (URJC)

11:30 - 12:00 Electricity Driven Low Energy and Chemical Input Technology for Accelerated Bioremediation
Sebastià Puig . Associate Professor of University of Girona. Laboratori d'Enginyeria Química i Ambiental. LEQUIA

12:00 - 12:10 Approach to Microbial Electrochemical Fluidised Bed Reactors (ME-FBR) and their application in the brewery industry
Yeray Asensio Ramírez (UAH, REMTAVARES)

12:10 - 12:20 Metland: controlling the flux of electrons to increase the efficiency of wastewater treatment
Amanda Prado de Nicolás (UAH, REMTAVARES)

12:20 - 12:30 Microbial electrochemical sensors for wastewater and environmental concerns
Antonio Berná Galiano (UAH, REMTAVARES)

12:30 - 12:40 Removal of antibiotics included in the EU watch list (Decision (EU) 2018/840) by heterogeneous electroFenton catalized by perovskite at circumneutral pH
Noelia San Segundo (URJC, REMTAVARES)

12:40 - 12:50 Perovskite $\text{LaMnxCu}_{1-x}\text{O}_3$ materials for heterogeneous electroFenton process
Sara Díaz (URJC, REMTAVARES)

12:50 - 13:15 Q&A Session

13:15 - 15:30 Lunch

Section III. Urban and industrial sludge: An opportunity for recovery of resources

Chairman: Daniel Puyol (URJC) & Juan García (UCM)

15:30 - 16:00 Photo-EBPR and PPBPonds: New phototrophic factories for phosphorus recovery and bioplastics production

Joana Fradinho (Universidade Nova de Lisboa)

16:00 - 16:10 Syngas production from electrochemical reduction of CO₂

Daniel Torres (UAM, BIOTRES)

16:10 - 16:20 Valorization of a refinery oily sludge into carbon-based materials

Sara Jerez (URJC- BIOTRES)

16:20 - 16:30 Valorization of the OFMSW by steam explosion pre-treatment and photo-fermentation

John A. Villamil (URJC, BIOTRES)

16:30 - 16:40 Production of PHA from refinery wastewater with mixed cultures of purple phototrophic bacteria

Javier San Martín (URJC, REMTAVARES)

16:40 - 16:50 Application of sludge-based activated carbons for effective adsorption of neonicotinoid pesticides

Eva Sanz Santos (UCM -REMTAVARES)

16:50 - 17:15 Q&A Session

National Plan of Treatment, Sanitation, Efficiency, Savings and Reuse

Ministry for the Ecological Transition and the Demographic Challenge

17:30 - 18:00 Current situation and future prospects

Laura Díaz, Jefa de Área de la Subdirección General de Planificación Hidrológica

18/12/2020

Section IV. Biological Valorization of urban biowastes

Chairman: Ignacio Ballesteros (CIEMAT) & Elena Díaz (UAM)

09:15 - 09:55 PERSEO Biorefinery: URBAN Biorefinery Model

Caterina Coll Lozano, Chief Operating Officer & Innovation Manager, IMECAL

09:45 - 09:55 Energy recovery from lignocellulosic biomass by hydrothermal carbonization and anaerobic digestion: A circular economy concept

Ricardo Paúl Ipiates Macas (UAM, BIOTRES)

09:55 - 10:05 Fractionation of Municipal Green Waste Biomass

Pablo Doménech Martínez (CIEMAT, BIOTRES)

10:05 - 10:15 Maximizing PHA production from acetate, propionate and butyrate using Purple Phototrophic Bacteria

Luis Díaz Allegue (URJC, BIOTRES)

10:15 - 10:25 Production of microbial oils from vegetable wastes

María Gallego García (CIEMAT, BIOTRES)

10:25 - 10:35 Integrated waste treatment through the symbiosis of bio and catalytic processes

María Ventura (URJC, BIOTRES)

10:35 - 11:00 Q&A Session

11:00 - 11:30 Coffe break

Section V. Chemical Valorization of lignocellulosic wastes

Chairman: Gabriel Morales (URJC) & José Miguel Campo (ICP-CSIC)

11:30 - 12:00 Valorization of lignocellulosic residues in chemical products

Antonio José Sánchez Rojo (Jefe de Departamento de Desarrollo Tecnológico, TÉCNICAS REUNIDAS)

12:00 - 12:10 Inorganic salts hydrates as selective fractionation of lignocellulosic biomass

Marta Lara Serrano (ICP-CSIC, BIOTRES)

12:10 - 12:20 Hydrogen production from bio-oil aqueous phase steam reforming over agglomerated Co-Cr/SBA-15 catalysts

Pedro Megía Hervás (URJC, BIOTRES)

12:20 - 12:30 K/Sn-USY: Efficient transformation of glucose to methyl lactate

José Manuel Jiménez Martín (URJC - BIOTRES)

12:30 - 12:40 Furfural Valorization to monomers (succinic and adipic acids)

Irene Martínez Salazar y Ana Orozco Saumell (ICP-CSIC, BIOTRES)

12:40 - 12:50 Aqueous-phase reforming of light fraction of bio-oil obtained by waste biomass pyrolysis for energy and/or hydrogen recovery

Jéssica Justicia González (UAM , BIOTRES)

12:50 - 13:15 Q&A Session

13:15 - 15:30 Lunch

Section VI. Current innovative technologies for treatment and valorization of waste effluents

Chairman: Juan Antonio Melero (URJC) & Fernando Martinez (URJC)

15:30 - 16:00 Ideation, innovation and industrialization of eco-efficient solutions in the environment of wastewater treatment plants

Victor Monsalvo (AQUALIA)

16:00 - 16:10 10 Years of technology development in electromicrobiology to reach the water market

Abraham Estevé (UAH, REMTAVARES)

16:10 - 16:20 Treatment techniques for water containing cyanuric acid

Jaime Carbajo (UAM, RENMTAVARES)

16:20 - 16:30 From homogeneous to heterogeneous Fenton systems for treatment of highly furfural concentrated effluents from petroleum refinery plants

Carlos Gonzalez (URJC, REMTAVARES)

16:30 - 16:40 Fenton oxidation of microplastics: impact on the nature and size

David Ortiz (UAM, REMTAVARES)

16:40 - 16:50 IMDEA - energía - “Pyrolysis characteristics of waste mixtures containing organic food and gardening pruning”

Adrián Lago Cambeiro

16:50 - 17:15 Q&A Session