



Waste biorefinery technologies for accelerating sustainable energy processes

WIRE COST Action (CA20127)

7th Working Groups Workshop

03/07/2025 to 04/07/2025, Faro, Portugal

Location: Penha Campus, University of Algarve, "Complexo Pedagógico" (Estrada da Penha, 8005-139 Faro)

Program

Day 1 (03/07/2025)

8.30 – 9.00 h Registration & signing of the attendance list

9.00 – 9.30 h Opening ceremony
(*Paulo Brito & Jorge Semião*)

9.30 – 10.00 h

Keynote

Biochar and activated carbon as functional materials for biorefineries

(Margarida Gonçalves, NOVA University of Lisbon)

10.00 – 10.30 h Coffee break & poster session

10.30 – 11.00 h

Keynote

Production of renewable gases from waste via thermal gasification

(Paulo Brito, IPPortalegre)

11.00 h

WG1 presentations

11.00 – 11.20 h WG1 summary
(*Eduardo Robles, WG1 Leader*)

11.20 – 11.40 h Presentation 1: A comprehensive comparative study of ultrasound-alkaline and thermal-alkaline hydrolysis of duck feathers
(*Nidal Raydan, University of Pau and the Adour Region*)



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11.40 – 12.00 h Presentation 2: Development of sustainable bio-based polymers from natural rosin
(*Bilge Yilmaz, Karadeniz Technical University*)

12.00 – 12.20 h Presentation 3: Effect of pretreatment strategies on biogas and bioethanol production from waste-derived lignocellulosic substrates
(*Izabela Konkol, Polish Academy of Sciences*)

12.20 – 12.40 h Q&A

12.40 – 14.30 h Lunch

14.30 – 15.00 h
Keynote
Enhancing fuel properties of biomass and RDF via solar-powered torrefaction
(*Nelson Sousa, University of Algarve*)

15.00 h **WG2 presentations**

15.00 – 15.20 h WG2 summary
(*Marta Trninic, WG2 Leader*)

15.20 – 15.40 h Presentation 1: Sustainable valorization of marine plastic waste through catalytic pyrolysis
(*Nerijus Striūgas, Lithuanian Energy Institute*)

15.40 – 16.00 h Presentation 2: Decision concepts of a system dynamics-driven biorefinery roadmap for bioethanol production
(*Selim L. Sanin, Hacettepe University*)

16.00 – 16.30 h Coffee break & poster session

16.30 – 16.50 h Presentation 3: Comparative methane production from cheese whey at various two-stage configurations with biomass retention strategy
(*Kenan Dalkılıç, Hacettepe University*)

16.50 – 17.10 Presentation 4: Energy and exergy assessment of a landfill gas power generation system in Bayburt, Türkiye
(*Alperen Tozlu, Bayburt University*)

17.10 – 17.30 h Q&A

17.30 h Group photo and end of day 1



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20.00 h WIRE WGs Workshop dinner

Day 2 (04/07/2025)

8.30 – 9.00 h Registration & signing of the attendance list

9.00 – 9.30 h

Keynote

The Smart Grids research at the Smart and Sustainable Systems Lab of the University of Algarve

(Jânio Monteiro, University of Algarve)

9.30 h

WG3 presentations

9.30 – 9.50 h WG3 summary
(Corinna Maria Grottola, WG3 Leader)

9.50 – 10.10 h Presentation 1: Sustainable bioethanol production via integrated biorefinery based on microwaves
(María del Mar Contreras, Universidad de Jaén)

10.10 – 10.30 h Presentation 2: CO₂ capture at intermediate temperatures using tailored MgO-based sorbents: A pathway toward sustainable processes
(Laura Valentino, ISMN-CNR)

10.30 – 11.00 h Coffee break & poster session

11.00 – 11.20 h Presentation 3: A study of manufacturing scalability for supercapacitors using graphene oxide and a sequential HTC activation process
(Pablo J. Arauzo, University of Hohenheim)

11.20 – 11.40 h Presentation 4: Exploitation of ceramic membrane technology for hydrogen recovery from biogas reforming effluents
(Kyriakos Fotiadis, Centre for Research and Technology Hellas)

11.40 – 12.00 h Q&A

12.00 h

STSM presentations

12.00 – 12.15 h STSM summary
(Mara de Joannon, Grant Awarding Coordinator)



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- 12.15 – 12.30 h STSM 1: Unveiling the influence of ceria loading on Fe/ZrO₂ catalysts for CO₂ hydrogenation
(*Luca Consentino, ISMN-CNR*)
- 12.30 – 12.45 h STSM 2: Assessing alternative feedstocks for hydrogen production via electrolysis
(*Henrique Araújo, IST – University of Lisbon*)
- 12.45 – 13.00 h STSM 3: Electrochemical detection of heavy metals using waste-derived carbonaceous materials
(*Claudio Clemente, University of Naples “Federico II”*)
- 13.00 – 13.15 h STSM 4: Optical/laser diagnostic for biochar characterization
(*Corinna Maria Grottola, STEMS-CNR*)
- 13.15 – 14.30 h Lunch

14.30 – 15.00 h

Keynote

Biogas industry in Türkiye: Past, present and future with cases from the field

(Gokhan Turker, Istanbul Medeniyet University)

15.00 h

WG4 presentations

- 15.00 – 15.20 h WG4 summary
(*Diogo Santos, WG4 Leader*)
- 15.20 – 15.40 h Presentation 1: Podcasting as a tool for enhanced scientific communication and dissemination
(*Anup Paul, ISEL-IPL*)
- 15.40 – 16.00 h Presentation 2: Reflections on editing a book: A personal experience
(*Lucian Staicu, University of Warsaw*)
- 16.00 – 16.20 h Presentation 3: Bridging policy, innovation and industry for a sustainable biorefinery future
(*Theo Zacharis, Innovation & Strategy, Greek Scientists Society*)
- 16.20 – 16.40 h Presentation 4: Strategic project management in biorefinery development in Serbia within the transition to a sustainable bioeconomy
(*Ana Kitić, University of Niš*)



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16.40 – 17.00 h Q&A

17.00 h Best Poster Awards & Closing ceremony
(Paulo Brito & Jorge Semião)

Poster presentations

Presenter	Title	WG
Mehmet Emin Ergün	Phosphoric acid-activated carbon from <i>Pinus nigra</i> biomass for reinforced guar gum insulation foams	1
Florian Zikeli	Agri-food wastes as a rich source for novel material solutions in a circular economy framework	1
Charalambos Chasos	Wood biomass thermodynamic and chemical properties data and pathways for advanced liquid biofuels and SAF production	1
Elina Dace	Life cycle assessment of microbial protein production using hybrid living materials	1
Vera Proskynitopoulou	Transforming food waste into sustainable soil solutions	1
Bojana Bajić	Sustainable valorization of bioethanol production residues via xanthan bioprocessing	2
Ana Momčilović Ristanović	Innovative Framework for Circular Economy-Based Integrated Organic Waste Management	2
Ilgi Karapinar	Ultrasonic-assisted extraction of fermentable sugar from lignocellulose biomass for biofuel production	2
Gorica R. Ivaniš	Modeling of thermodynamic data relevant for sustainable processing of (bio)waste	2
Aybike Kamiloğlu	Utilization of tea industry wastes in biofuel production	2
Jelena Dodić	Improvement of bioethanol production sustainability through biotechnological valorization of distillery stillage	2



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Siniša Dodić	Modelling of biogas production from organic fraction of municipal solid waste	2
Marko Mančić	Integrating waste-to-energy into municipal energy transition roadmap for the city of Nis	2
Milan Grozdanovic	Local biomethane supply for district heating: feasibility and CO ₂ impact assessment	2
Cigdem Yangin-Gomec	Integration of biogas upgrading at a municipal wastewater treatment plant co-digesting primary sludge with Municipal Solid Waste	3
Luciana Cimino	Insights into the effect of alkali metal ions on the pyrolytic behavior of biomass-derived acidic polysaccharides	3
Nikolaos I. Tsongidis	Hydrothermal liquefaction of essential oil residues: conventional process coupling with concentrated solar thermal technologies	3
Jean-Bernard Michel	Turquoise & circular hydrogen from plastic waste and marine methane hydrates	3
Antonio Fabozzi	Iron as H ₂ vector: A solid-state pathway for safe and scalable hydrogen transport	3
Pino Sabia	Ammonia and NO _x emissions controls from biogas oxidation in MILD combustion assisted by non-thermal plasma	3
Jaime Moreno Garcia	Fungal pellet immobilization of modified <i>Escherichia coli</i> for enhanced bioethanol production from red grape stalks	3
Hilal Taymaz-Nikerel	Energetically favorable pathways for carbon dioxide fixation in bacteria	3
Rui Galhano dos Santos	Synergistic conversion of food and forestry wastes via liquefaction	3
Samaneh Mollashahi	Biogas production from agricultural wastes and invasive plants in Saxony: a life cycle assessment of two ecological pathways for energy production	3
Triantafyllia Grekou	Upgrading biogas with membrane gas absorption using potassium-based solvents	3
Michalis Mouratidis	A detailed chemical kinetic model of biomass pyrolysis	3



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Raffaele Ragucci	A systematic analysis of thermal dry reforming of slow pyrolysis bio-oil components	3
Chara Poravou	Overview of thermochemical technologies coupling with concentrated solar technologies for renewable fuel production	3
Aldona Balčiūnaitė	Science in a minute: Promoting WIRE COST Action research through short videos	4
José Condeço	From molecules to mindsets: Communicating CO ₂ capture and conversion in biorefineries for a circular bioeconomy	4
Ines Belhaj	Promoting collaboration and open access publishing through the WIRE network	4
Ana Paula Ramos	The gender balance in the EU - Trends in R&D	4
José Copa Rey	Integrating hydrogen education into the biorefinery landscape: the role of IPPortalegre in advancing circular and sustainable energy systems	4
Ana Filipa Ferreira	Communicate and disseminate to transform: Applying life cycle thinking in sustainable development	4