



*“Ecofriendly
multipurpose Biobased
Products from
municipal biowaste”*



13 – 14 October 2022

Cyprus University of Technology
Sewerage Board of Limassol-Amathus

“Ecofriendly multipurpose Biobased Products from municipal biowaste”

Training School 2022



Organization

Cyprus University of Technology

Archbishop Kyprianou Str. 30, Limassol, Cyprus

Sewerage Board of Limassol-Amathus

Franklin Rousvelt 76, Limassol, Cyprus

Practical Information

Venue: Municipal University Library

Agiou Andreou 273/1, Limassol, Cyprus

Training School 2022

<https://www.lifeebp.eu>

Invited Speakers

- Professor G. Mannina, University of Palermo, Italy
- Professor M. J. Taherzabeh, University of Borås, Sweden
- Professor P. Morone, University of Rome - Unitelma Sapienza, Italy
- Assoc. Prof. Y. W. Tong, National University of Singapore, Singapore
- Asst. Prof. A. Kiparissides, Aristotle University of Thessaloniki, Greece
- Asst. Prof. I. Vyrides, Cyprus University of Technology, Cyprus
- Asst. Prof. N. Tzortzakis, Cyprus University of Technology, Cyprus
- Dr D. Ladakis, Agricultural University of Athens, Greece
- Dr S. Solaro, HSE & Procurement Manager, Hysytech, Italy
- A. Markidou, PANKEMI Lab (member of Panchris Group), Cyprus



Topics

- Biorefinery development
- Waste valorization
- White biotechnology
- Green chemistry
- Anaerobic digestion
- Circular economy principles
- Life cycle analysis
- Process design & costing
- Socio-economic analysis
- Industrial applications

Scope

- Technology development for the production of bio-based products
- Bio-economy and biorefinery principles
- Sustainable industrial development



Agenda of Training School

Thursday 13th October 2022

8:30-9:00

Registration

Welcome speeches

9:00-9:30

Michail Koutinas, Ass. Prof. Chair of the Department of Chemical Engineering, CUT

Dr Gregoris Panayiotou, Executive Mechanical Engineer, SBLA

Training School

9:30-10:15

"LIFEERP: optimisation of processes for the production of biobased products (BPs) to use as fertilisers/biostimulants in agriculture, as biosurfactants and as biopolymers for the production of plastics."

Simone Solaro, Hysytech

10:15-11:00

" Sustainability transition and the role of green finance "

Piergiuseppe Morone, University of Rome

11:00-11:30

Coffee Break

11:30-12:15

" Sustainable biorefinery development using waste streams "

Dr Dimitrios Ladakis, Agricultural University of Athens

12:15-13:00

" Phosphorous recovery from waste/wastewater using treated biowaste: challenges and prospects "

Ioannis Vyrides, Cyprus University of Technology

13:00-14:30

Lunch Break

14:30-15:15

" Process development "

Alexandros Kiparissides, Aristotle University of Thessaloniki

15:15-16:00

" Analysis and formulation of animal feeds produced from bioorganic residues "

Androula Markidou, Pankemi Lab

19:00

LIFEERP Networking Dinner



Agenda of Training School

Friday 14th October 2022

9:30-10:15

" Fungi biorefinery "

Mohammad Taherzadeh, *University of Borås*

10:15-11:00

" A decentralized solution for managing food waste in cities using anaerobic digestion "

Tong Yen Wah, *National University of Singapore*

11:00-11:30

Coffee Break

11:30-12:15

" Achieving wider updates of water smart solutions: insights from Palermo University case study "

Giorgio Mannina, *University of Palermo*

12:15-13:00

" Exploitation of plant-based wastes and compost as a substitute growing medium component for seedling production in nurseries "

Nikolaos Tzortzakis, *Cyprus University of Technology*

13:00-14:00

Lunch Break

14:00

Departure to the premises of SBLA at Moni

14:30-16:00

Tour in the Wastewater Treatment plant

<https://www.lifeebp.eu>



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Piergiuseppe Morone

Piergiuseppe Morone is Full Professor of Economic Policy at Unitelma Sapienza with a strong interest in green innovation and sustainable circular bioeconomy pushing his research at the interface between innovation economics and sustainability transitions, an area of enquiry that has attracted growing attention over the last decade. His work regularly appears in prestigious innovation and environmental economics journals.

He is the coordinator of the Bioeconomy in Transition Research Group (BiT-RG) and the director of the School of Sustainability Studies and Circular Economy (SUSTAIN). Moreover, he is/was involved in several European projects (including: H2020, BBI-JU, Life, Erasmus+, COST, Horizon Europe and CBE-JU) acting as scientific coordinator, vice-chair and WP Leader. He was Economic advisor to the Italian Minister of the Environment, Land and Sea Protection, till February 2021. He is now Local Unit Scientific Coordinator in the LIFE EBP project (2020-2024), Scientific Committee member of BIOVOICES and Biobridges projects (BBI JU CSAs).

Piergiuseppe is Associate Editor of *Cleaner and Circular Bioeconomy*, member of the Editorial Boards of *Current Opinion in Green and Sustainable Chemistry* (ELSEVIER) and *Open Agriculture* (De Gruyter Open) and acts as Guest Editor for various journal including the *Journal of Cleaner Production* (ELSEVIER) and *Sustainability* (MDPI).

Since April 2022 Piergiuseppe is the vice-chair of the Circular Bio-based Europe Joint Undertaking (CBE JU) Scientific Committee.



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Giorgio Mannina

Dr Giorgio Mannina is Professor of Sanitary and Environmental Engineering at the Engineering Department of Palermo University – Italy. His research interest and focus is on: advanced wastewater treatments (MBR, MBBR, hybrid processes, IFAS, Granular systems etc..), BNR processes, environmental water quality mathematical modelling etc. He is authors of more than 350 papers of which >100 on ISI Journals and Editors of around 10 books with more than 30 authored chapters. He has been invited to give several plenary/keynotes and invited talks, seminars and lecturers in the international conferences as well as the universities/research institutions. Prof. Mannina has been visiting Professor/Researcher in several Universities: Columbia University, New York (USA), Tongji University (Shanghai, Cina), Norwegian University of Science and Technology (NTNU), Norway, Katholieke Universiteit Leuven, (Belgium), Laval University (Canada), The University of Queensland, Australia, Gdansk University (Poland).

Prof. Mannina is Associate/Guest Editor of multiple ISI Journals: Journal of Bioresource Technology, Journal of Environmental Management, Journal of Hydrology etc. He is Chair of the International Water Association (IWA) Task Group on Membrane Bioreactor modelling & control and Member of the IWA Specialist Group "Membrane Technology". Prof. Mannina is Fulbright research Fellow at Columbia University (New York, USA)- 2018. He is/has been Chair of International Conferences, seminars and Advanced courses supported by IWA.



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Mohammad J. Taherzadeh

Mohammad J. Taherzadeh is professor in Bioprocess technology since 2004 at University of Borås in Sweden and chairman of Swedish Centre for Resource Recovery. Prof. Taherzadeh has PhD in Bioscience from Sweden, and MSc and BSc in Chemical Engineering from Iran. He is developing processes to convert wastes and residuals to value added products with focus on pretreatment and fermentation using filamentous fungi and anaerobic bacteria. He has more than 400 publications in scientific peer-reviewed journals, ca 40 book chapters, and 8 books.

Homepage www.taherzadeh.se and www.hb.se/scr.



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TONG Yen Wah

Associate Professor Tong Yen Wah joined the Department of Chemical and Biomolecular Engineering at the National University of Singapore (NUS) in 2001 after graduating from the University of Toronto with a PhD in Chemical Engineering. His expertise is in biomaterials research for tissue engineering and in bioenergy from food wastes and biomass wastes, with over 200 publications and 10000 citations. His recent works in food wastes management has been successfully commercialized with distributed anaerobic digesters that can be effectively used in cities through a spin-off company from NUS. Dr Tong is currently the co-Programme Director for a NRF CREATE programme with Shanghai Jiao Tong University (SJTU) on “Energy and Environmental Sustainability Solutions for Megacities”, E2S2-CREATE, a collaborative research programme between NUS and SJTU funded by the Singapore National Research Foundation for S\$89 million on studying coupled problems in megacities related to energy, environment, health and waste.



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Ioannis Vyrides

Dr Ioannis Vyrides is Assistant Professor in CUT at the Department of Chemical Engineering; he obtained his PhD from Imperial College London (2009). He worked as postdoctoral researcher (2009-2010) at Kings College for developing anaerobic microbial consortium from isolated microbial strains. Dr Vyrides is the group leader of the Environmental Engineering laboratory since 2012. His research interests focus on Phosphorus recovery from waste/wastewater, CO₂ capture and utilization and wastewater treatment. During his PhD at the Imperial College London (2009) (supervised by Prof. Stuckey) he has developed the Submerged Anaerobic Membrane Bioreactor (SAnMBR), an innovative biogas and wastewater treatment system. Dr Vyrides was the Cyprus representative in the Cost Action ES1202 (Water_2020, 2012-2016) and has organized the 2nd Training School with the topic “Wastewater Resource Recovery Technologies”. Dr Vyrides has been awarded grants from the Leventis Foundation (2005-2009), from the EMBO (2012). Dr Vyrides has recently attracted funding from Interreg Balkan Med Programme (2 research grants that was coordinator for CUT), from Research & Innovation Foundation (5 research grants which at the 3 he was the PI and at 2 he was coordinator for CUT). He has supervised a Marie Curie individual fellowship (ElectroSAnMBR, started in March 2020 hosted in his laboratory). Dr Vyrides has published 56 articles in peer-reviewed journals, in the research field of phosphorus recovery, biogas upgrading, wastewater treatment and CO₂ utilization. Dr Vyrides has strong collaborations with international academic groups, and he collaborates with several local companies to develop and improve their processes.



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Alexandros Kiparissides

Alexandros Kiparissides CEng (AK) is Assistant Professor at the Department of Chemical Engineering AUTH, Honorary Professor at the Department of Biochemical Engineering at UCL, Associate Editor of the Biochemical Engineering Journal and committee member of the IChemE Biochemical Engineering Special Interest Group (BESIG) and the Sargent Centre for Process Systems Engineering (CPSE). He holds a Diploma in Chemical Engineering from AUTH (2006), a PhD in Chemical Engineering from Imperial College London (2012) and was the recipient of a post-doctoral fellowship from École polytechnique fédérale de Lausanne (EPFL, 2012-15) before joining UCL as an Assistant (2015) and later Associate Professor (2020). He has supervised 6 PhD candidates (3 graduated and 3 ongoing), more than 20 MSc and Diploma Theses and acted as co-supervisor for an additional 6 PhD candidates. He has published over 22 papers and two book chapters on the integration of mathematical models and experimentation for bioprocess design and optimization (h-index 13, June 2022). His work is largely funded by EPSRC (through the Centre for Doctoral Training (CDT) in Emerging Macromolecular Therapies (EP/L015218/1) and the Future Targeted Healthcare Manufacturing Hub (EP/P006485/1), and via industry (e.g. Lonza, Process Systems Enterprise, Aglaris, GSK, Algenuity). The focus of his research is the development of integrated methodologies combining multi-scale modelling, systems biology and wet-lab experiments to understand and optimize cell metabolism under industrial bioprocessing conditions.



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Nikolaos Tzortzakis

Dr. Nikolaos Tzortzakis is an Assistant Professor in the Department of Agricultural Sciences, Biotechnology and Food Sciences, Cyprus University of Technology. He has extensive research experience on issues of plant nutrition, hydroponics and substrate determination, climate change and abiotic stress, exploitation of plant wastes in greenhouse/field crops as well as postharvest preservation of fresh produce. He is involved (coordinator/partner) in EU and national projects and organised international conferences in Hydroponics (ISHS) and in Postharvest Pathology (ISHS/ISPP). He received high quality and international recognition as ranked in the 2% of his main subfield discipline for 2020 and 2021. He has published 158 papers/book chapters (h-index: 29) and presented his research in 154 scientific conferences in diverse areas, such as Vegetable Science, Aromatic/Medicinal Plants, Greenhouse Crops/Hydroponics, Growing media evaluation, Fresh produce preservation.



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Androulla Markidou

Androulla Markidou (AM), was born in 1953 and graduated (1977) from the Budapest Polytechnic University, Hungary with a degree in Chemical Engineering (Bachelor) and MSc in the field of Biology and Food Technology.

She has previously served as Quality Manager and Production Manager at constructing material and bentonite extrusion processes. Since 1985, AM has been working as Director and Shareholder of Panchris Group (PAP), actively involved with the financial day to day responsibilities of the group. In 1999, AM acted as the sole establisher of PAP's laboratory, which in 2007 obtained ISO 17025 accreditation by the Cypriot Body (KOIII).



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Dimitrios Ladakis

Dr Dimitrios Ladakis is chemical engineer with his Diploma acquired from the University of Patras. He acquired his MSc in ‘Food Bioprocesses and Biorefineries’ from the Department of Food Science and Human Nutrition (DFSHN) (Agricultural University of Athens-AUA) with his MSc dissertation focusing on fermentation development and bioprocess design of succinic acid production using spent sulphite liquor. He concluded his PhD at the Department of Chemical Engineering at the University of Patras in 2018 focusing on biochemical engineering, bioprocess development, design and techno economic evaluation of succinic acid production via continuous cultures. Dr Ladakis is currently postdoctoral researcher in the Food Bioprocesses and Biorefineries group at DFSHN – AUA (Greece).



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Simone Solaro

Simone Solaro graduated in Chemical Engineering at Politecnico di Torino where he has been consultant in chemical process engineering and lab test management for 7 years. He is an active partner of Hysytech since 2004, leading HSE and Quality assurance department and Purchase department. He has been scientific and administrative involved in several EU and regional projects, coordinating LIFE16 ENV IT 000179 *LIFECAB* and LIFE19 ENV IT000004 *LIFE EBP*. He is co-author of three PCT patents on hydrocarbons reforming and fuel processing, three IT/EU patents on biomethane and LNG production process and technologies, and one IT/EU patent for biowaste treatment with selective oxidation to produce bio-polymers. He is also co-author of some papers on catalysis and bio-polymers.



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