«Laboratory of Chemical and Environmental Technology» (ChemEnvTech)

School of Chemistry

Department of Chemical Technology and Industrial Chemistry

Aristotle University of Thessaloniki

https://www.chem.auth.gr/en/departments-laboratories/xtbx-dep-en/chemical-and-environmental-technology-lab-en/

Konstantinos S. Triantafyllidis

Professor, Lab Director

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"1st Aristotle Conference on Chemistry"

Thessaloniki, Greece

12-15 November 2023

Organizational structure

SCHOOL OF CHEMISTRY
ARISTOTLE UNIVERSITY OF THESSALONIKI
80 YEARS 2023

Department of General and Inorganic Chemistry

Department of Organic Chemistry and Biochemistry

Department of Physical, Analytical and Environmental Chemistry

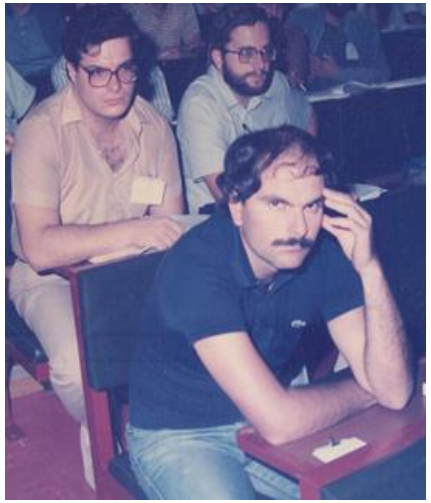
Department of Chemical Technology and Industrial Chemistry

- Laboratory of Polymer and Colors Chemistry and Technology
- Laboratory of Chemical and Environmental Technology
- Laboratory of Food Chemistry and Technology

History - Milestones

- The **Laboratory of General and Inorganic Chemical Technology** was established as an independent Chair, in the School of Chemistry of AUTH, in 1964.
- **Prof. Emmanuel Vogiatzakis** was the first Director of the Laboratory, from 1964 to 1977, that settled the **educational bases of Applied Chemistry and Technology**, offered to the students at the School of Chemistry.
- In the 1960s, the GICT Laboratory was educating and training chemists with solid knowledge of chemical technology to **meet the needs of the chemical industry**, especially in Northern Greece.
- In the 1970s (Prof. K. Sipitanos, Lab Director), the courses/books **"General Chemical Technology"** and **"Inorganic Chemical Technology"** were established.
- In the 1980s (Prof. G. Stalidis, Lab Director), the staff was expanded (K. Matis, D. Zamboulis, E. Deliyianni, D. Bakogiannakis, P. Mavros, C. Gkotsis, T. Angelidis, P. Spathis), and new Research Associates-PhD students, then staff members (A. Zouboulis, G. Gallios).
- The GICT Laboratory was **re-established/re-named in 2016, as "Laboratory of Chemical and Environmental Technology"**, currently being one of the three Laboratories of the Department of "Chemical Technology and Industrial Chemistry, in the School of Chemistry.

Prof. Emmanuel Vogiatzakis



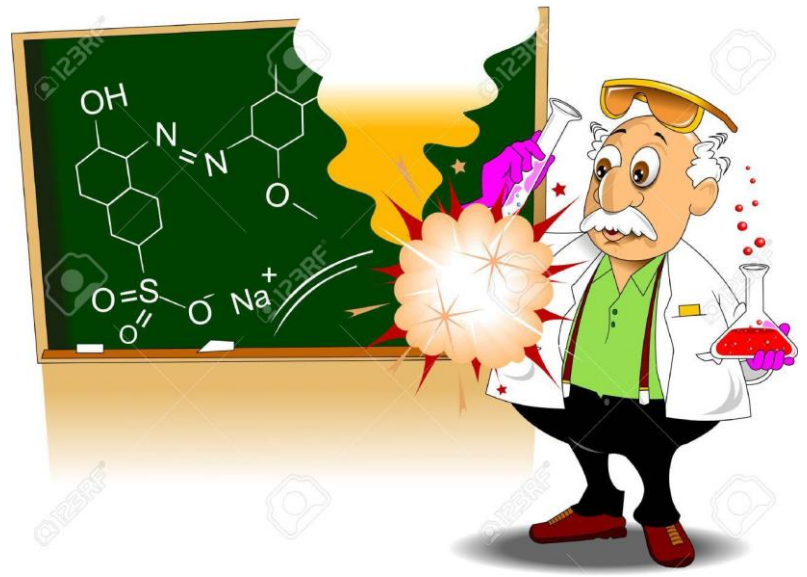
1983 - Ptolemaida Two-Day Workshop at ΔΕΗ premices on Fly Ash. From left Prof. Thomas Angelidis (front), Prof. Anastasios Zoumboulis and Prof. Konstantinos Matis (back)

Current status - Staff

- Theodoros Karapantsios, *Professor, Department Chair*
- Georgios Gallios, *Professor*
- Ioannis Karapanagiotis, *Professor*
- Margaritis Kostoglou, *Professor*
- Ioannis Katsoyiannis, *Assoc. Professor*
- Konstantinos Triantafyllidis, *Professor, Lab Director*
- Anastasios Zouboulis, *Professor*

- Apostolos Fotopoulos, *Laboratory Teaching Staff*
- Effrosyni Peleka, *Laboratory Teaching Staff*
- Charikleia Prochaska, *Laboratory Teaching Staff*

- Konstantinos Matis, *Professor Emeritus*
- Nikolaos Lazaridis, *Professor Emeritus*
- Panagiotis Spathis, *Professor Emeritus*
- Deliyanni Eleni, *Professor Retired*
- Dimitrios Zampoulis, *Professor Retired*



Courses (under- & post-graduate)

Undergraduate Courses:

- Chemical Technology
- Physical Processes
- Chemical Processes
- Green Chemistry
- Principles of Environmental Technology
- Transfer Phenomena
- Processes in Biotechnology
- Design in the Chemical Industry
- Inorganic Materials Technology – Nanotechnology

Other postgraduate programs/courses offered:

- «Physical & Chemical Methods for Diagnosis of Deterioration of Cultural Heritage Materials»
- «Materials of ecclesiastical cultural heritage objects & conservation materials»
- “European Master Course in Archaeological Materials Science – ARCHMAT”

Postgraduate Program “Chemical and Environmental Technology” courses:

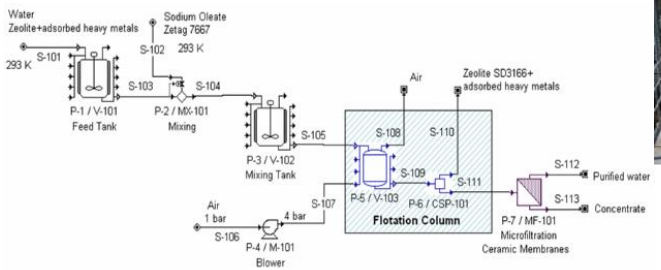
- Principles of Chemical Technology
- Environmental Technology and Management
- Catalytic Processes
- Separation Technologies for the Control of Environmental Pollution
- Design and Simulation of Waste Treatment Facilities
- Synthesis, characterization and applications of inorganic and hybrid nanomaterials

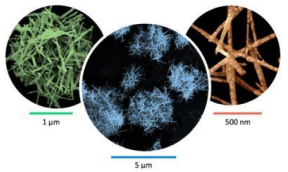
Number of students (per year/average values)	
Undergraduate (all courses)	700
Postgraduate	10
PhD	25
Postdoc	10

Research areas (overview)

❖ General Chemical Technology

- Intensification of heat exchange processes (boiling, condensation, evaporation, frying)
- Wetting of solid surfaces (dyes, coatings, biofilms)
- Stability control and rheology of emulsions and foams (food, cosmetics, detergents)
- Theoretical analysis and mathematical modelling for interpretation of experimental data.
- Medical diagnostics for assessment of human endothelium at Heart Failure and Coronary Disease, Cor-IS





❖ Aerospace applications

- Transport processes under non-terrestrial gravity conditions (0-20g): heat transfer, bubble/droplet dynamics
- Potable water monitoring and purification, biofilm studies and mitigation techniques .
- Wastewater chemical analysis techniques
- Decompression sickness on-line diagnostics, I-VED
- High performance nano-composite materials

❖ Environmental (Bio)Technology

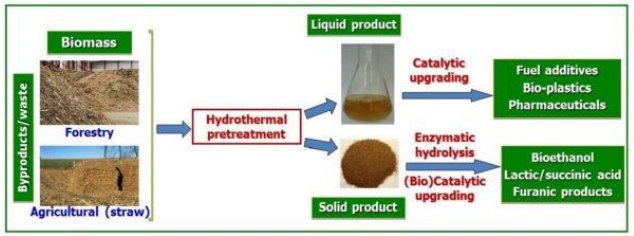
- Water and wastewater quality control and development of advanced treatment technologies
- Advanced flotation/separation processes
- Treatment of industrial solid toxic wastes
- Advanced biochemical treatment for exploitation of solid organic wastes
- Feasibility studies/design of surface and groundwater treatment plants, as well as liquid and solid waste.

❖ Technology & Preservation of Cultural Heritage Materials

- Repellent coatings, nanomaterials, gels, hybrid consolidants & self-cleaning agents for conservation
- Characterization of heritage materials & buildings
- Corrosion and Conservation of Building Materials of Historic Monuments and Cultural Heritage Objects

❖ Green Chemical Technology

- Integrated Biorefineries
- Green chemical processes for bioenergy and bio-based chemicals, fuels and polymers
- Valorization of forest, agricultural and algae biomass
- Plastic waste chemical upcycling
- Bio-processes for municipal waste valorization



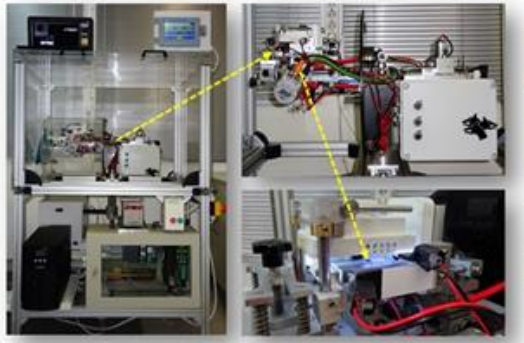
❖ Nano-materials – Adsorption – Catalysis

- Synthesis and characterization of inorganic and hybrid nano-structured and nano-porous materials
- (Nano)materials, nano-composites, coatings
- Adsorption processes in environmental applications
- Heterogeneous catalytic processes, reaction mechanisms
- Benign-by-design photocatalytic & advanced oxidation processes

Infrastructure – Equipment – Methods (indicative)

- **Materials**
  - Sol-gel, self-assembly, co-precipitation, impregnation
  - Activation (oxidation, reduction, functionalization)
- **Analytical & characterization**
  - Gas chromatography (GC-FID/TCD)
  - Liquid chromatography (HPLC-RID/PDA)
  - Ion chromatography (IC)
  - Mass spectrometry (MS)
  - Atomic absorption spectroscopy
  - Elemental analyzer
  - UV-Vis spectrophotometers
  - Dynamic Light Scattering/z-potential (DLS/z-potential)
  - N_2 porosimetry (BET, BJH, DFT)
  - Leaching tests
- **Lab-scale chemical & environmental processing**
  - Catalytic ozonation reactor
  - Biogas upgrading unit
- **(Micro)Pilot scale processes**
  - Membrane bioreactors (MBR)
  - High-pressure, continuous flow, fixed-bed reactor
  - Batch/CSTR (5L-8L) high-pressure rector
  - Continuous pyrolysis reactor
- **Theoretical/simulation**
  - Computational fluid mechanics software
  - Techno-economic analysis and LCA tools

LABORATORY OF CHEMICAL AND ENVIRONMENTAL TECHNOLOGY

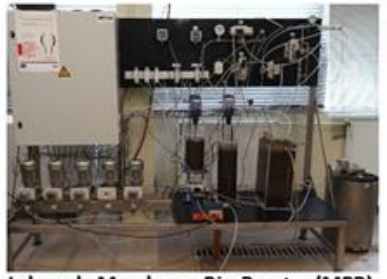


Experimental device for studying surface wetting properties

Instrumentation for surface/interfacial tension and rheological measurements

Micro-pilot unit fluidized bed/continuous pyrolysis reactor

High-pressure, fixed-bed, continuous flow catalytic reactor (micro-pilot unit)



Lab-scale Membrane Bio-Reactor (MBR)

HPLC – RI/Diode array

Planetary mill

High pressure stirred batch reactors

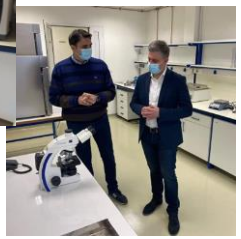
Furnaces & ovens

Gas Porosimeter

Laboratory of Environmental Monitoring and Research of the Region of Central Macedonia (organized by LCET)

The laboratory is located inside the customs zone of the Port of Thessaloniki, providing services for analysis of environmental samples for the Region of Central Macedonia, training to students & research. https://labpkm.gr

Scientific Coordinator: Assoc. Prof. I. Katsoyiannis



Services – Standardization – ISO accreditation

The Laboratory can offer the following services:

- Physical, chemical, microbiological, ecotoxicological analysis of environmental samples, water, liquid and solid waste.
- Environmental characterization and classification of solid waste with standard leaching tests (EN, TCLP, CEN / TS, NEN).
- Application of advanced biological and physicochemical technologies of water and waste treatment.
- Studies to maximize water recycling in industry and minimize the use of fresh water (Water pinch analysis).
- Waste management in the context of green chemistry and circular economy.
- Integrated biorefining process – design & development
- Technoeconomic analysis – LCA/LCC of biorefineries and waste treatment facilities.
- Design, synthesis and characterization of nanomaterials as catalysts and sorbents.
- Measurement of surface/interfacial and rheological properties of emulsions and foams (food, cosmetics, detergents).
- Determination of thermal and electrical properties of materials

ISO accredited services:

- ISO Standard 9001:2015 – Accreditation according to the Certification System 9001:2015 in the field of "Laboratory Analyzes of Water, Liquids and Solid Waste"

Facts & figures (publications, WOS)

Publications

1,338
Total

From 1990 to 2023

Citing Articles

27,475 Analyze
Total

26,617 Analyze
Without self-citations

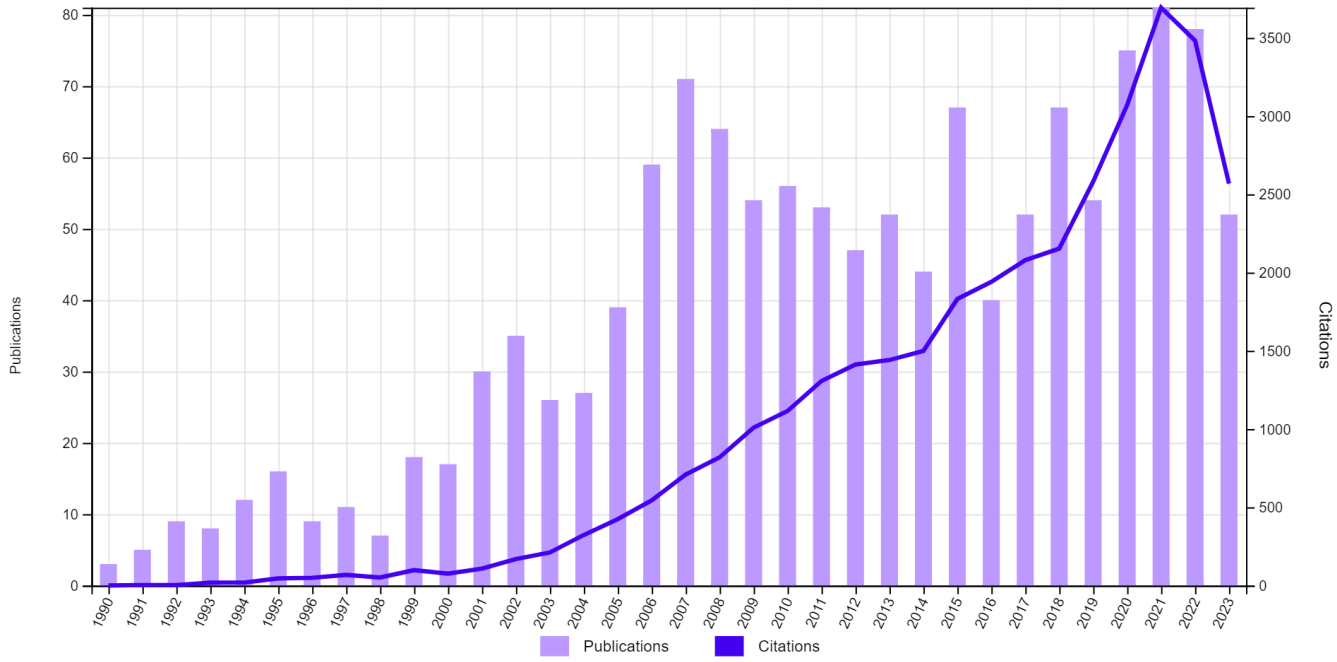
Times Cited

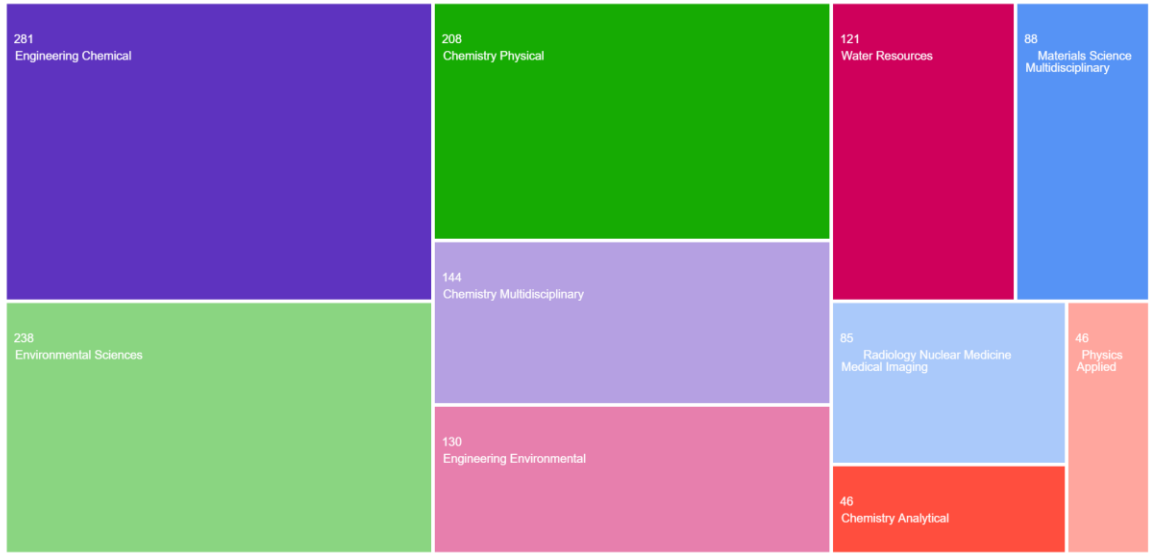
34,926
Total

26.1
Average per item

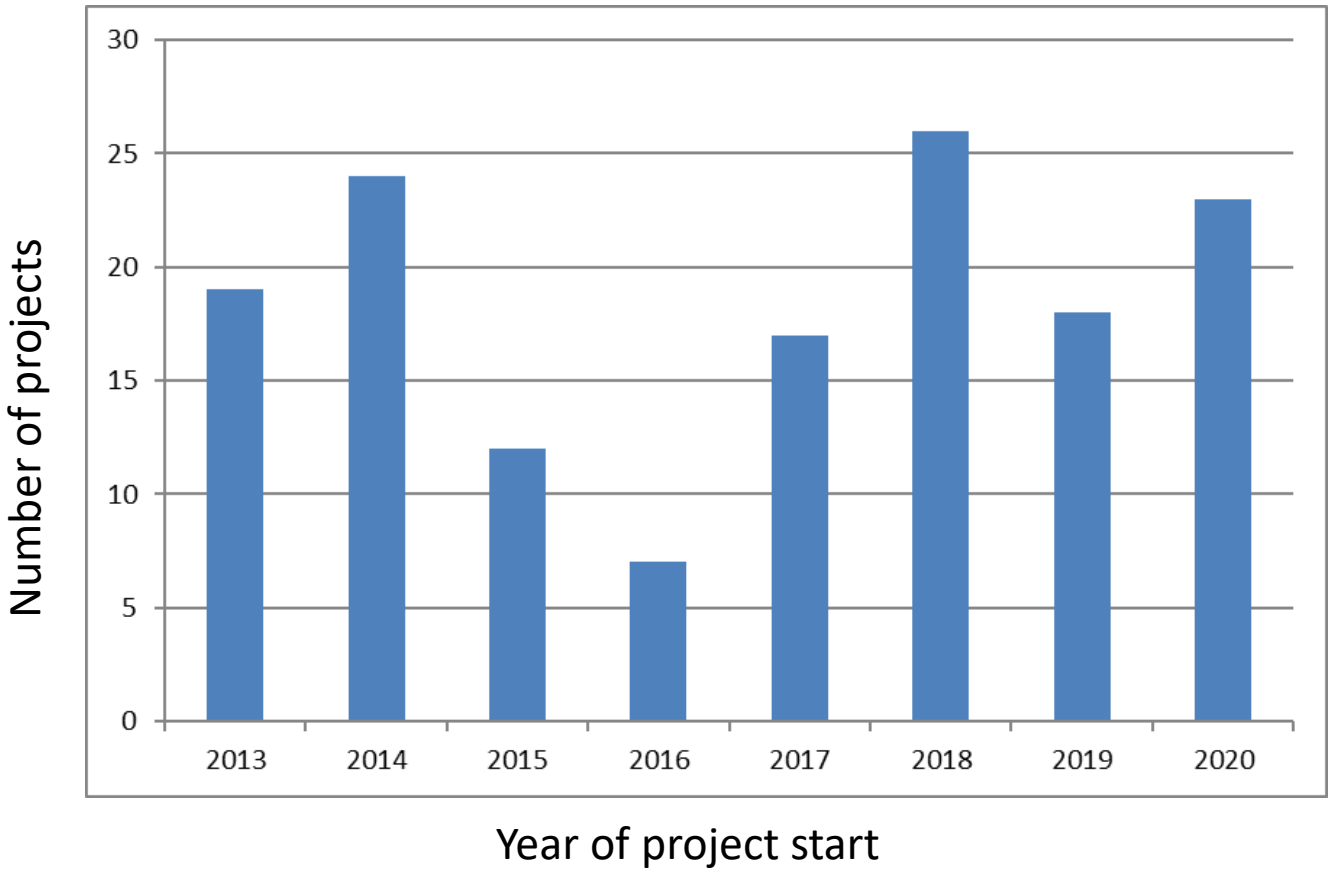
31,998
Without self-citations

88
H-Index





Facts & figures (Research projects)



Total research grants (last 5 years):

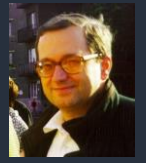
8,1 million euros

Funding/sources:

- ✓ **Competitive national projects (ESPA)**
- ✓ **Competitive EU projects (H2020 & Horizon Europe)**
- ✓ **European Space Agency**
- ✓ **Industrial contracts**

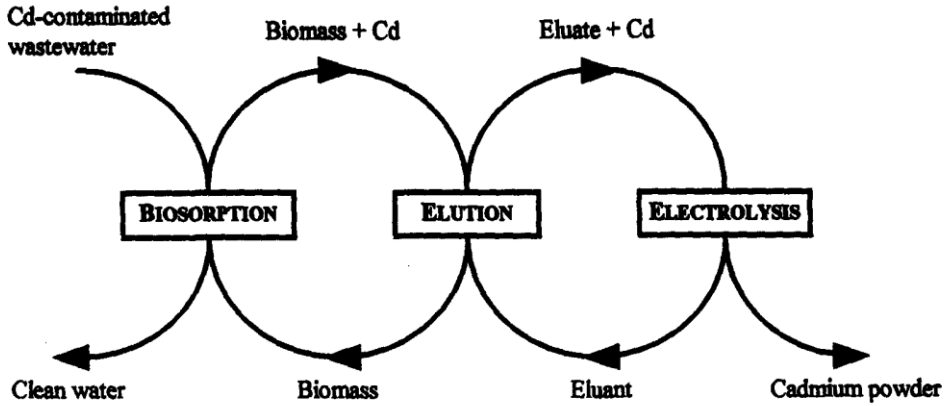
Research highlights: The Flotation Process Can Go Green

Water Separation Processes and Sustainability

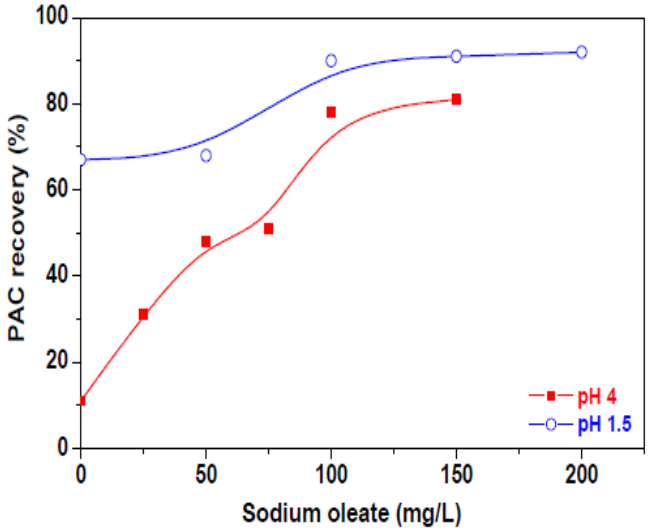


Prof. K. Matis

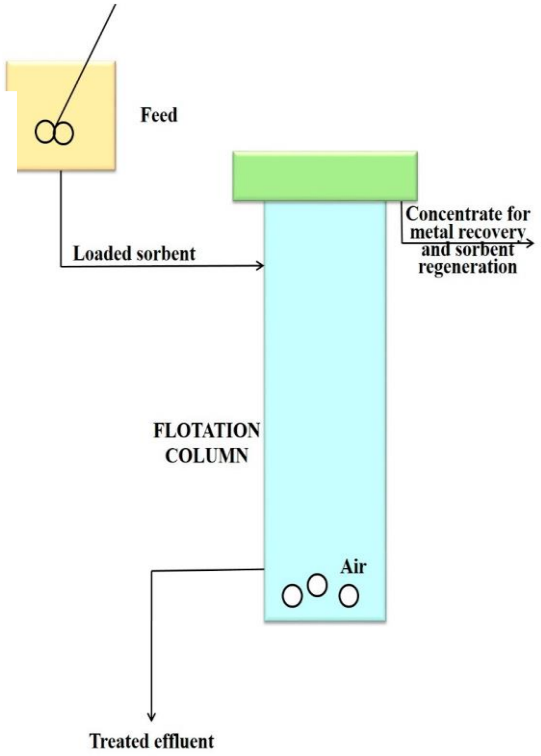
- **Flotation is a rather unique separation process combining three separate phases, gas/liquid/solid**
- It has been originated in minerals processing, known there as froth flotation
- Wastewater treatment has become a quite conventional application of flotation, e.g. in oil, food or chemical industries, and potable water treatment
- Various techniques are available. The use of biosurfactants in the process may be advantageous.



Removal of toxic metal ions from aqueous systems by biosorptive flotation

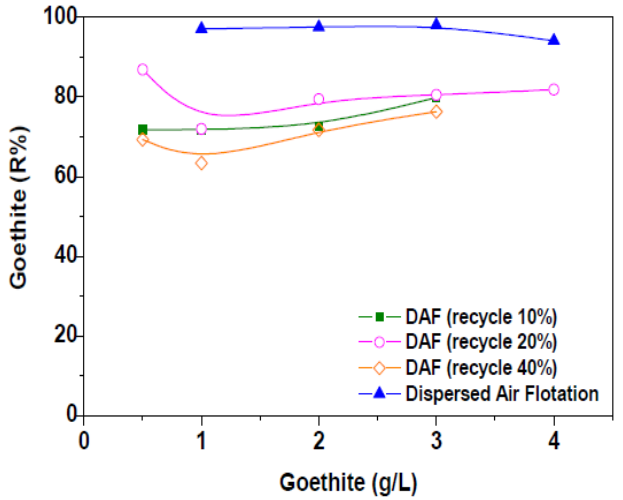


Floatability tests of 0.5 g/L powdered activated carbon, loaded with gold from thiourea solution: influence of collector concentration.



Scheme of a counter-current dispersed-air flotation rig

Photograph of hybrid flotation-microfiltration cell (i.e. microfiltration by submerged membranes inside the flotation cell)

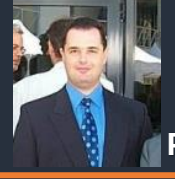


Comparison of dispersed-air with dissolved-air flotation for Zn(II) removal

Modeling of fine particles flotation process

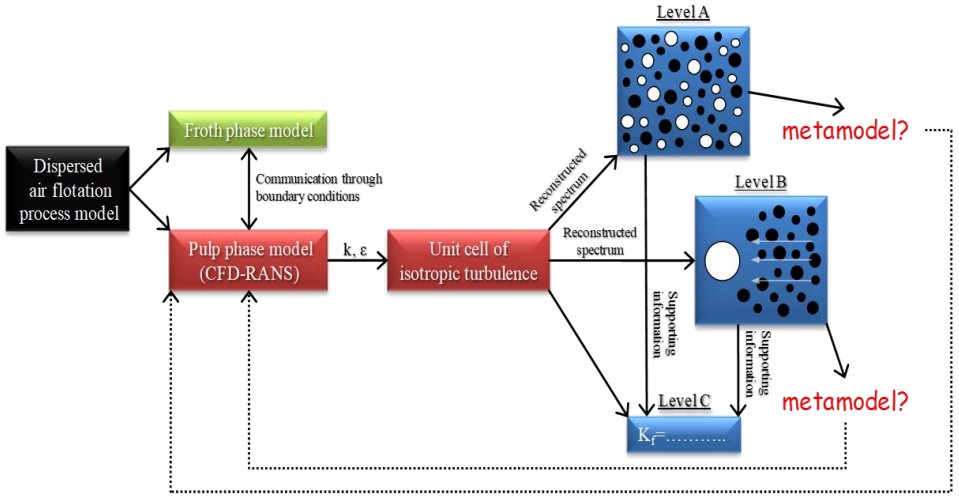
FineFuture HORIZON 2020

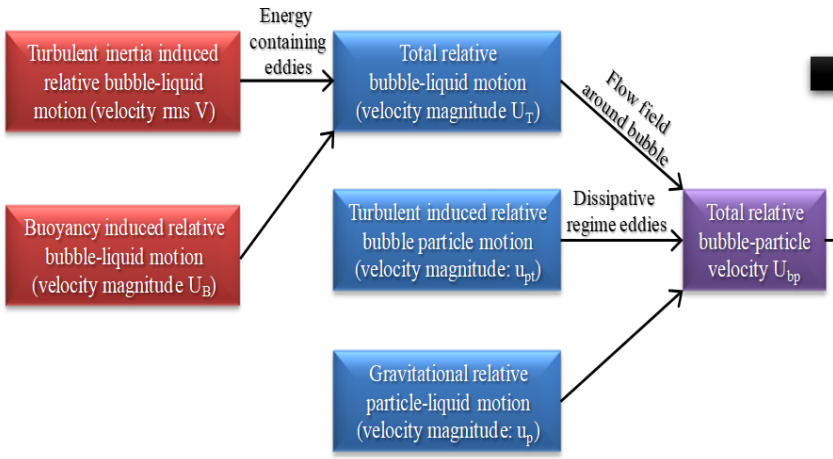
Prof. T. Karapantsios



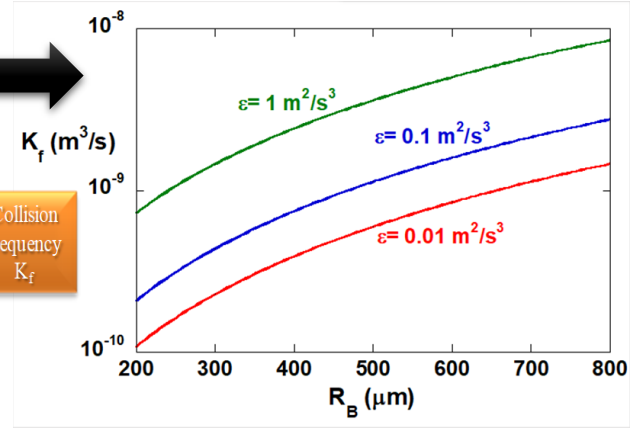
Prof. M. Kostoglou

- Development of a generalized framework for bubble-particle collision frequency in turbulent flow

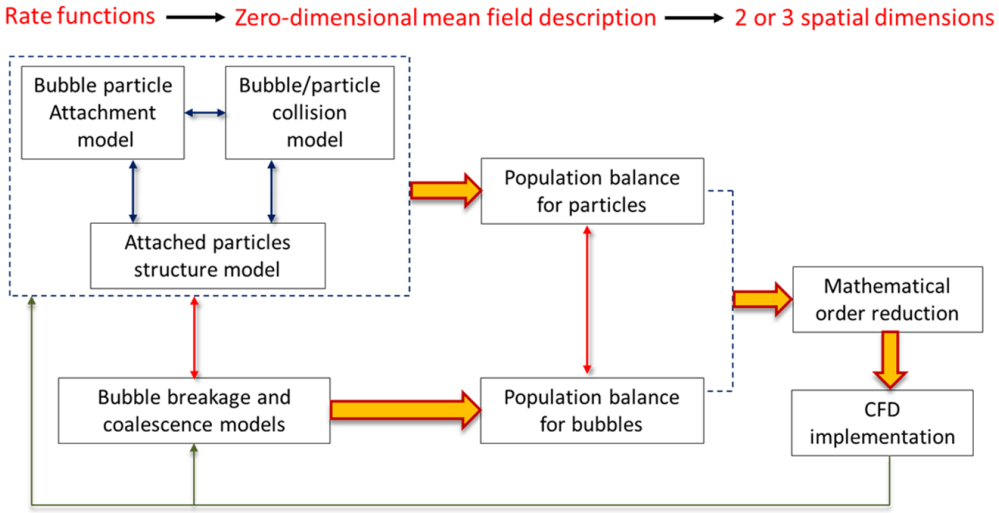


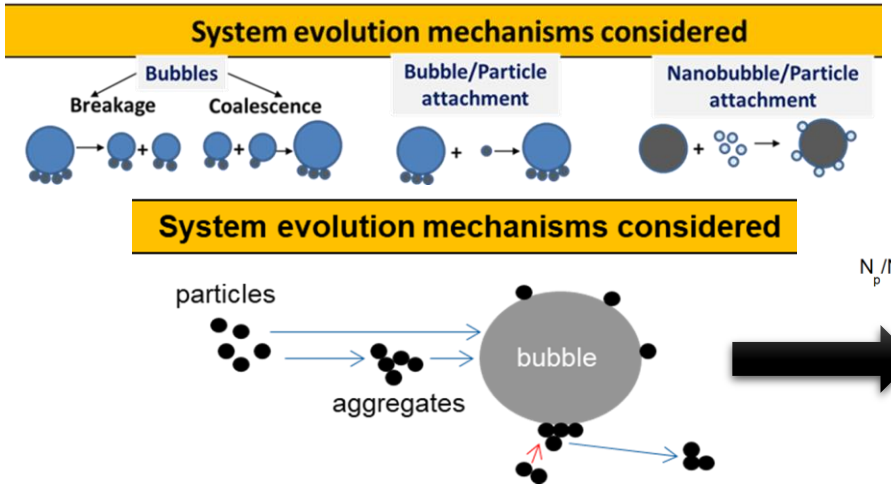


Bubble-particle collision frequency versus bubble radius

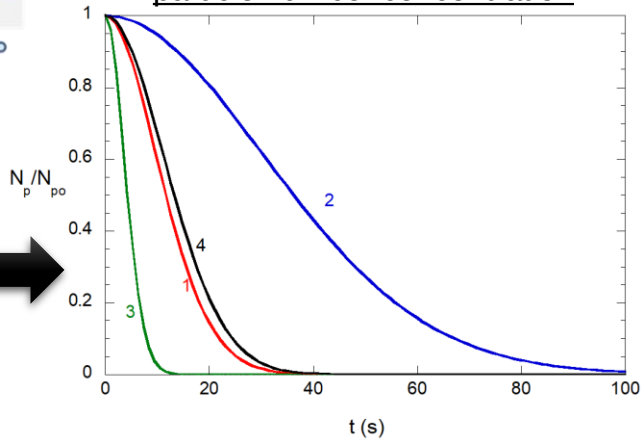


- Development of a robust mean field model to simulate flotation in turbulent flow field





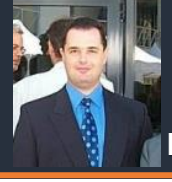
Evolution of the normalized bulk particle number concentration



Transport phenomena in micro-gravity
ESA Parabolic flights

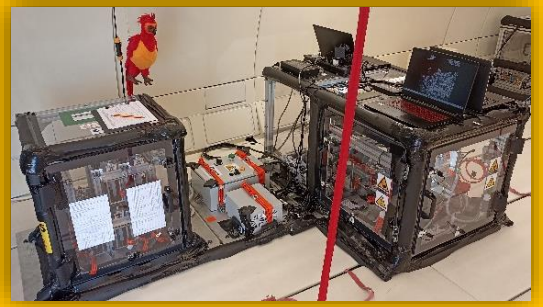
European Space Agency

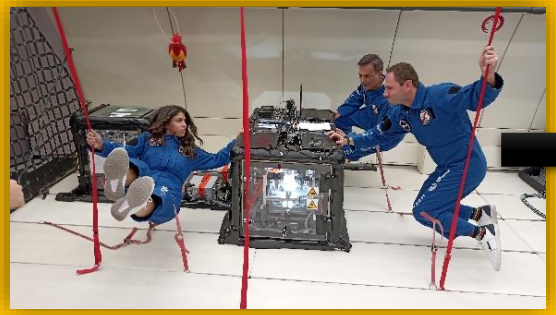
Prof. T. Karapantsios

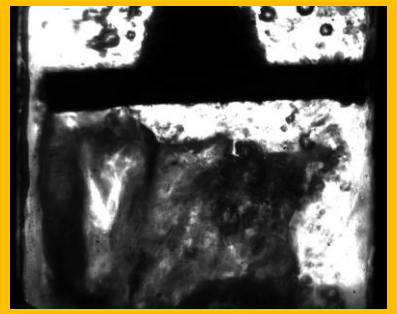


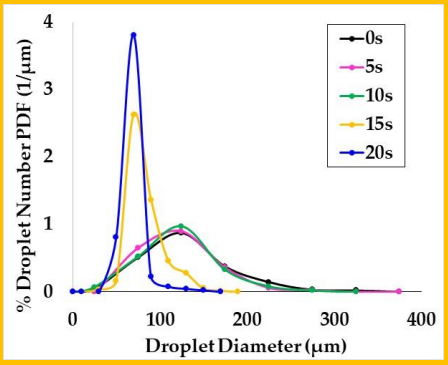
Prof. M. Kostoglou

❑ Emulsion droplet dynamics

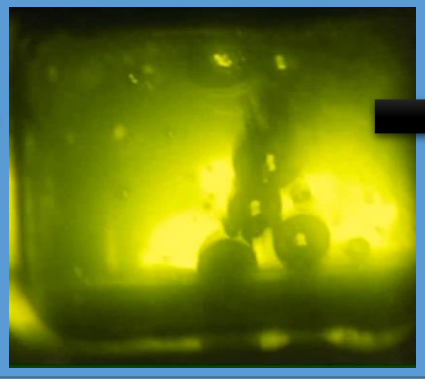


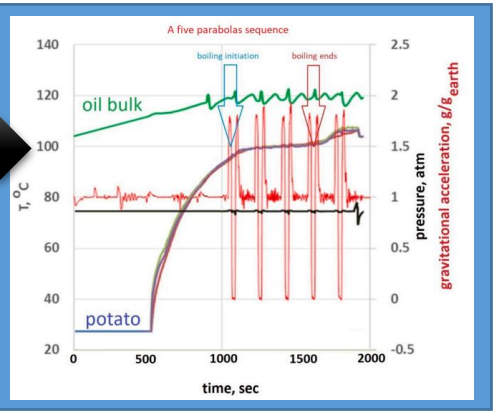


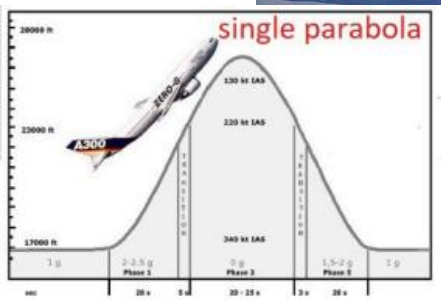




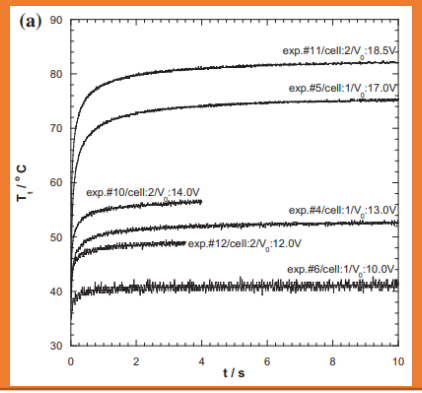
❑ Heat transfer in porous media







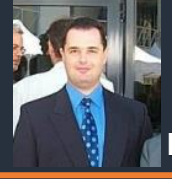
❑ Heat transfer from small objects



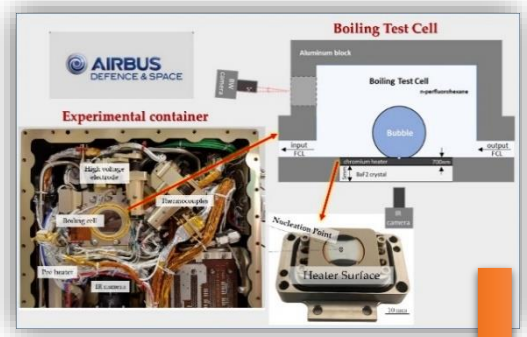
2-phase dispersion systems in space

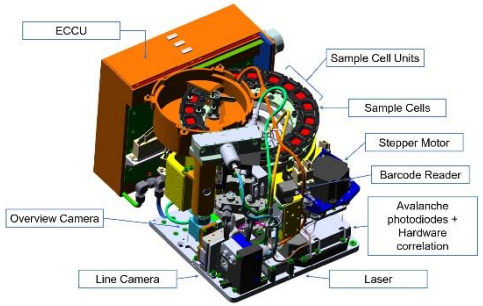
European Space Agency

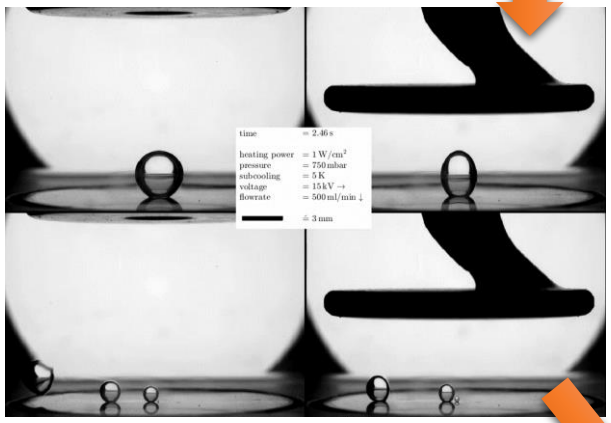
Prof. T. Karapantsios



Prof. M. Kostoglou





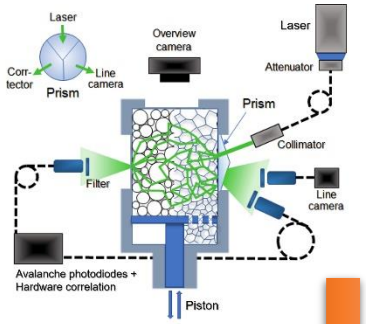


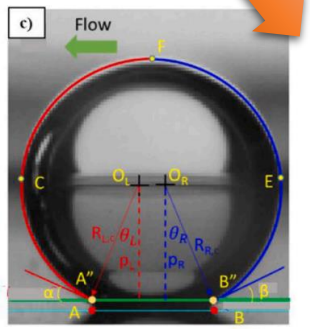
Boiling

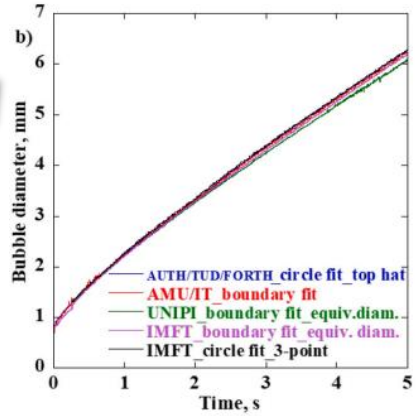
Reference Multiscale Boiling Experiment

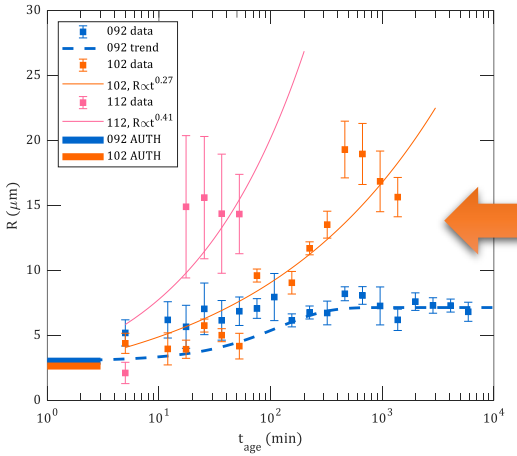
Emulsions

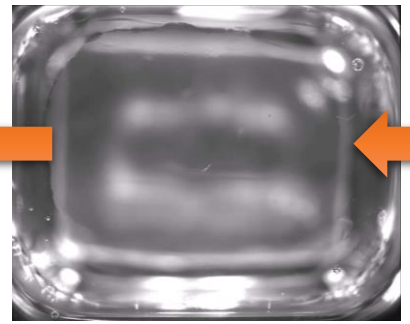
Particle Stabilised Emulsions and Foams







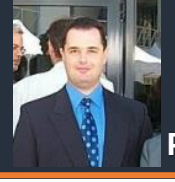




Multi-national team

Forced wetting dynamics of solid substrates

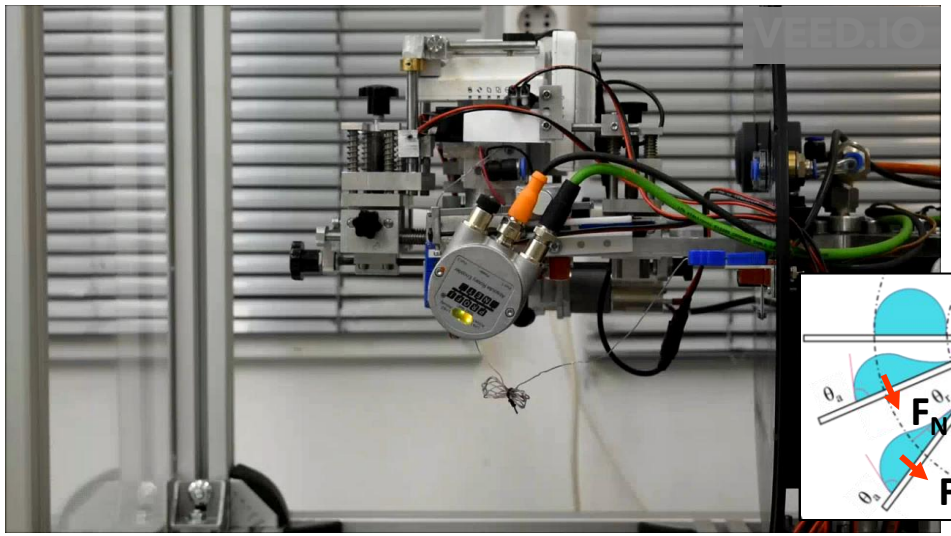
Prof. T. Karapantsios

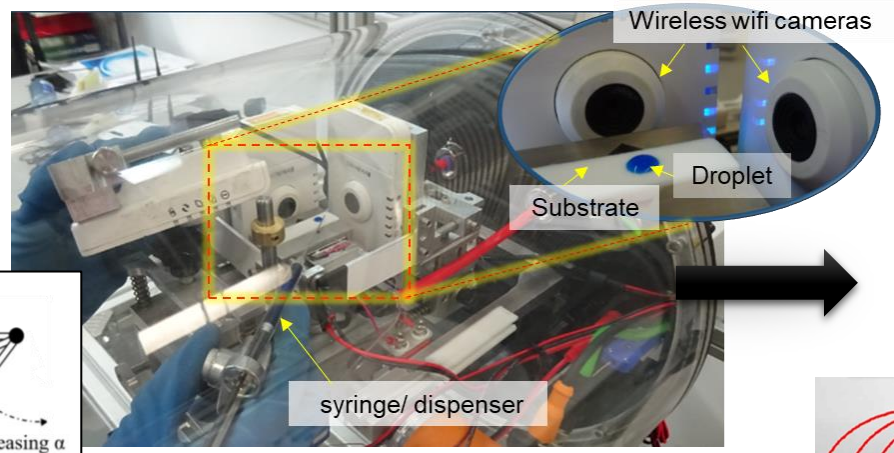


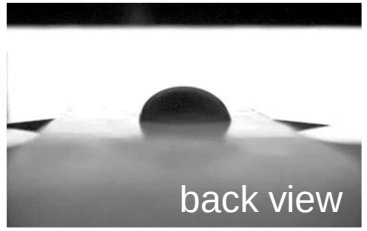
Prof. M. Kostoglou

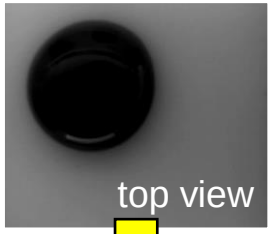
- 3D monitoring of droplets motion on solid substrates under the application of external body forces; **Kerberos device**

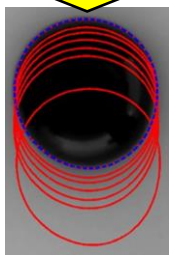
Tilting substrate (360°) → **normal force**



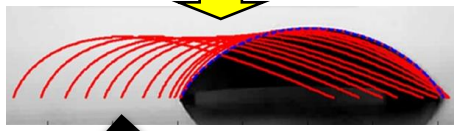




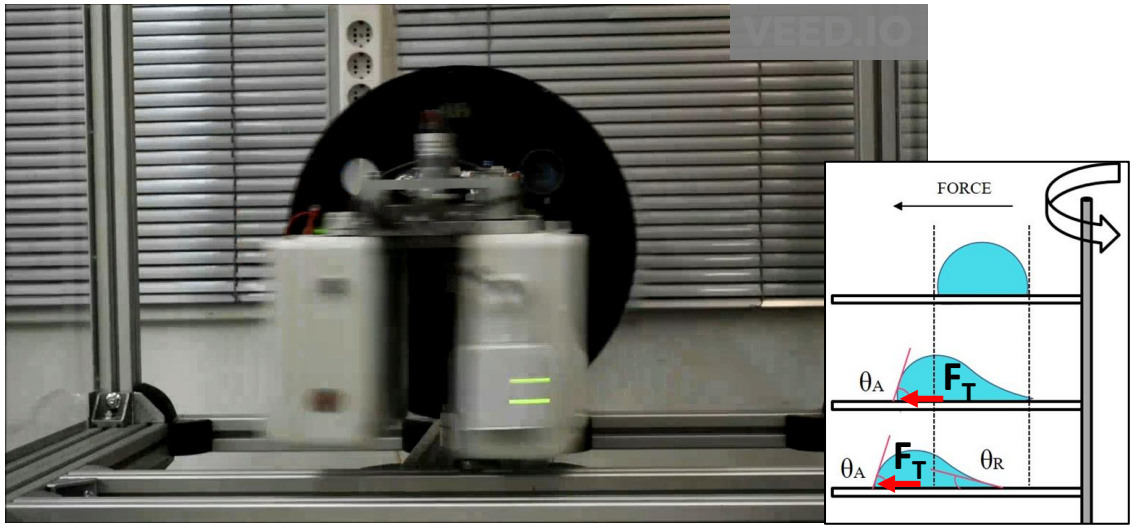


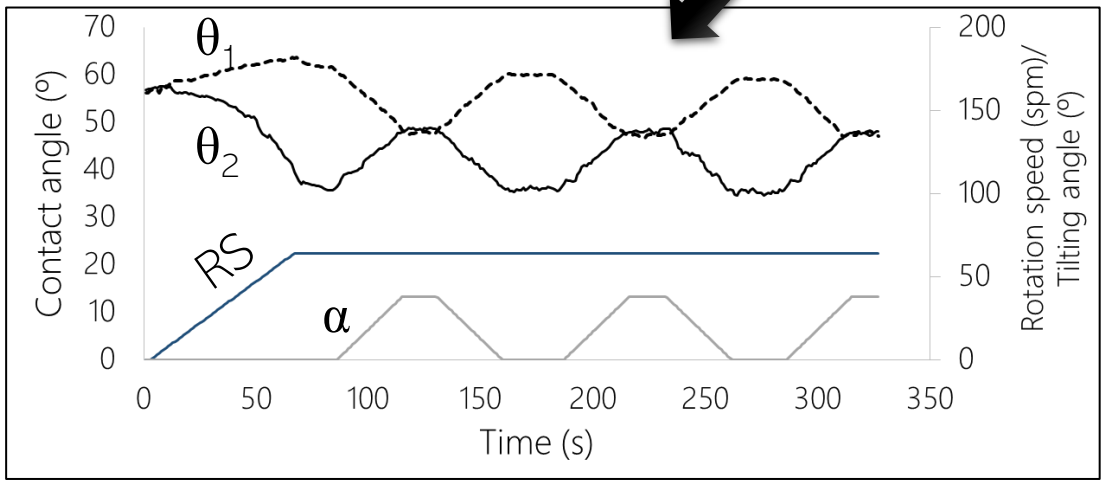


Droplet contour detection

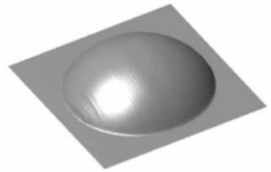


Rotating substrate (< 200rpm) → **tangential force**



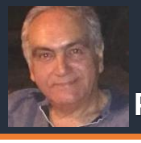


Droplet 3D reconstruction



Research highlights: Preservation of Cultural Heritage

Prof. I. Karapanagiotis



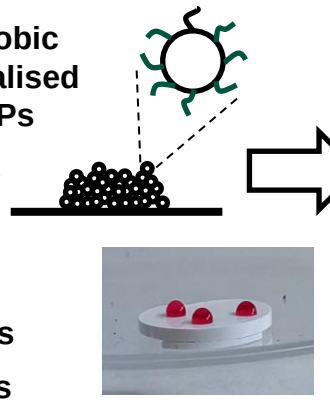
Prof. P. Spathis

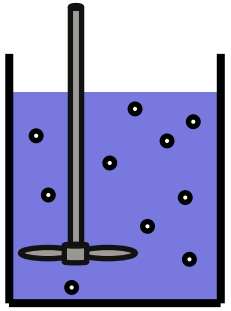
Super-amphiphobic coatings and consolidants for the protection of natural stone of the cultural heritage

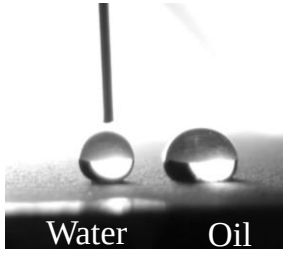
Archaeological site of Pella

NPs **Dispersion of NPs in sol** **Deposition on stone & superamphiphobicity** **Durability**

- Hydrophobic functionalised $CaCO_3$ NPs
- SiO_2 NPs
- TiO_2 NPs
- ZnO NPs
- Al_2O_3 NPs
- SnO_2 NPs



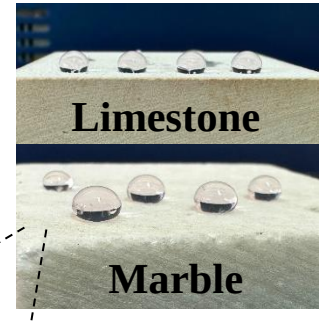


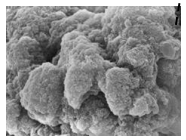


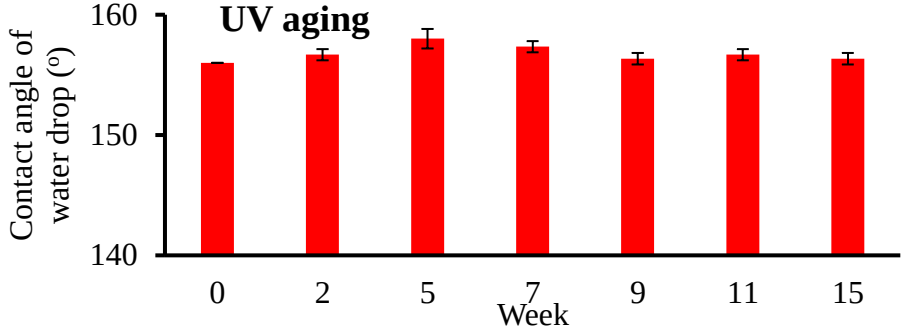
Sol-gel

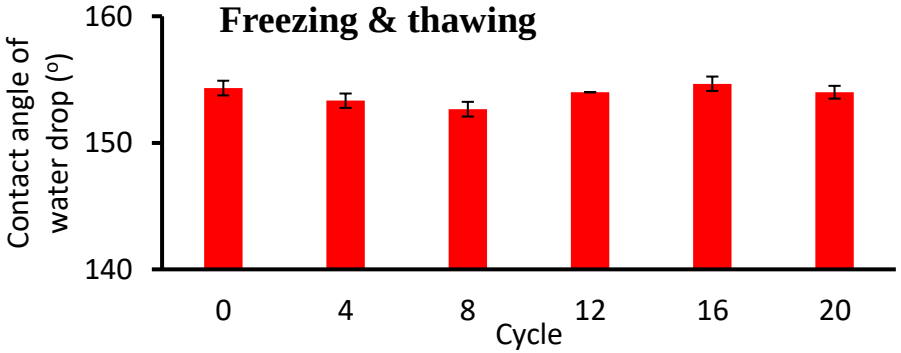
Silane (TEOS)

Low surface energy agent



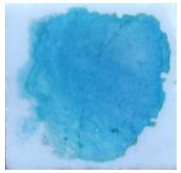






Pella Open Lab

This project was funded by the program 'Diagnostic and Preservation Open Lab of Pella's Palace' funded by EPAnEK - ESPA 2014-2020 Special Actions "Aquaculture - Industrial Materials - Open Innovation In Culture". Grant agreement No. Τ6ΥΒΠ-00069).

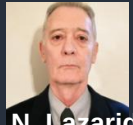


Self cleaning through photocatalysis (TiO_2 NPs)

Nanostructured and nanoporous materials

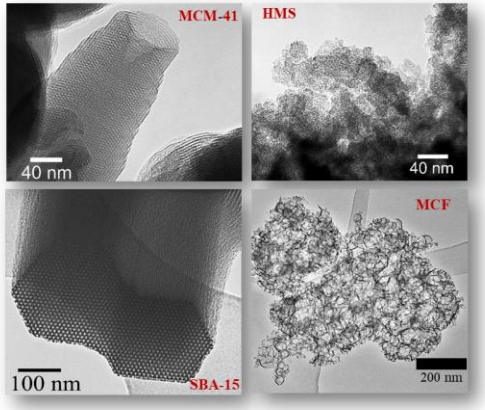

Prof. K. Triantafyllidis


Prof. E. Deliyanni

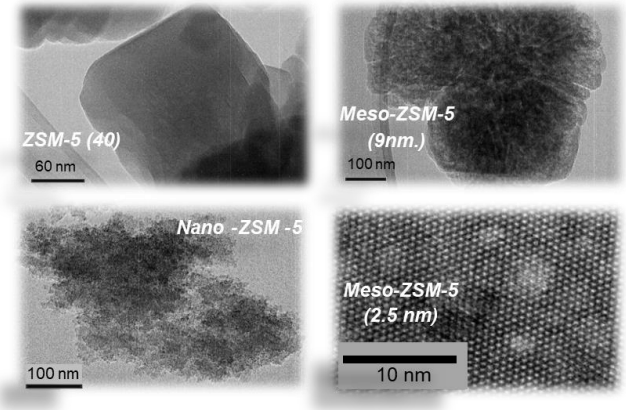

Prof. N. Lazaridis

Supports development

Ordered mesoporous (organo)silicas with varying pore structure and size

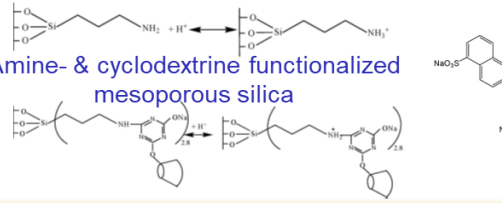


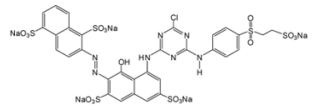
Conventional microporous & hierarchical ZSM-5 zeolites

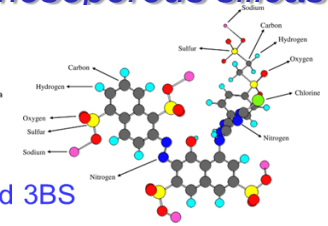


Deep desulfurization of model and real diesel fuels

Sorption of dyes by organo-functionalized mesoporous silicas

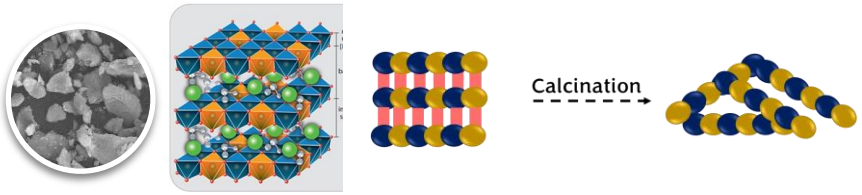


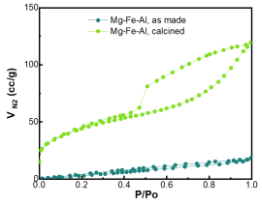




Remazol Red 3BS

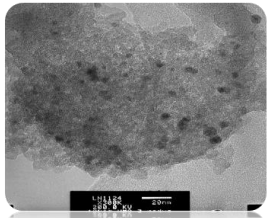
Layered double hydroxides



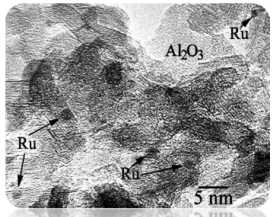


Supported metallic nano-catalysts

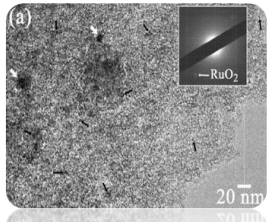
Ag nanoparticles supported on mesoporous silica HMS



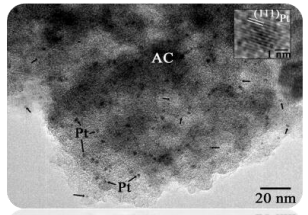
Ru nanoparticles supported on γ-Al_2O_3



Ru supported on activated carbon



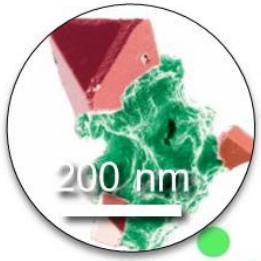
Pt supported on activated carbon



(nano)PhotoCatalysts: Design, Synthesis & Characterizations

Nanostructured Metal oxides (MOXs)

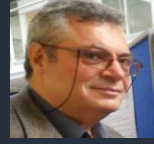
1-D nanomaterials (MOFs & MOXs)



Multiphases Composites of MOXs & MOFs

Nanoclusters decorated on graphitic phases (graphite or g-C_3N_4)

Development of optimized processes for exploration of chromite ores and Platinum Group Metals, ore enrichment and exploitation of the extraction and enrichment by-products



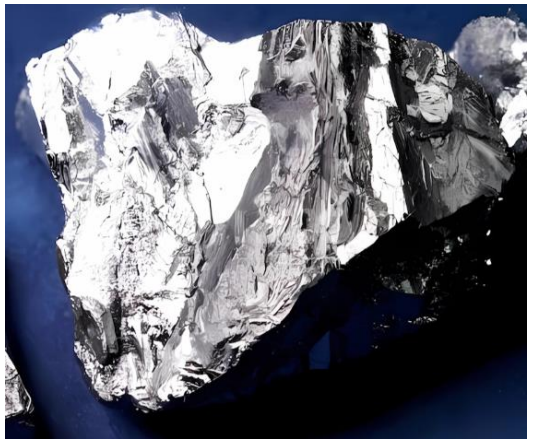
Prof. A. Zouboulis

CHROMEupgrade TARGETS

•The research on and development of optimized processes for the exploration of chromite and platinum group elements.
•The enrichment of the ores.
• The separation the 2 main mineral phases of the enrichment processes by-product (olivine-serpentine) for their valorization in the frame of the circular economy.
• The research on the Critical Raw Materials availability of these ores.

METHODOLOGY – WORK PACKAGES

1. Literature review and collection information about deposits and production of chromite.
2. Sampling & Mapping.
3. Lab scale separation and enrichment tests.
4. Byproducts utilization.
5. Design, construction, operation and evaluation of a pilot enrichment device.



PROJECT PARTNERS

ECORESOURCES
RESEARCH • TECHNOLOGY • CONSULTANCY

NATIONAL TECHNICAL UNIVERSITY OF ATHENS
SCHOOL OF MINING AND METALLURGICAL ENGINEERING
Laboratory Of Metallurgy

ELLIMET GREEK MINING COMPANY

ARISTOTLE UNIVERSITY OF THESSALONIKI

European Union
European Regional Development Fund

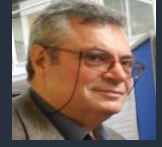
HELLENIC REPUBLIC
MINISTRY OF ECONOMY & DEVELOPMENT
SPECIAL SECRETARY FOR ERDF & CF
MANAGING AUTHORITY OF EPAnEK

EPAnEK 2014–2020
OPERATIONAL PROGRAMME
COMPETITIVENESS ENTREPRENEURSHIP INNOVATION
(project code: T2EDK-01293)

ΕΣΠΑ 2014-2020
ανάπτυξη - εργασία - αλληλεγγύη
Partnership Agreement 2014 - 2020

Co-financed by Greece and the European Union

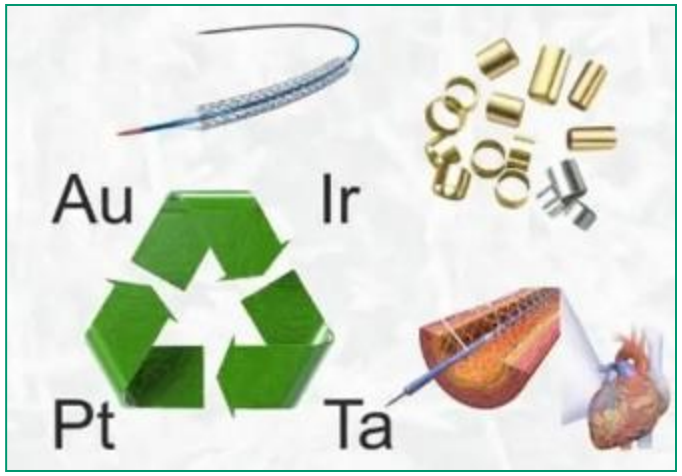
Investigating the recovery of noble metals from single-use medical technology specific waste streams



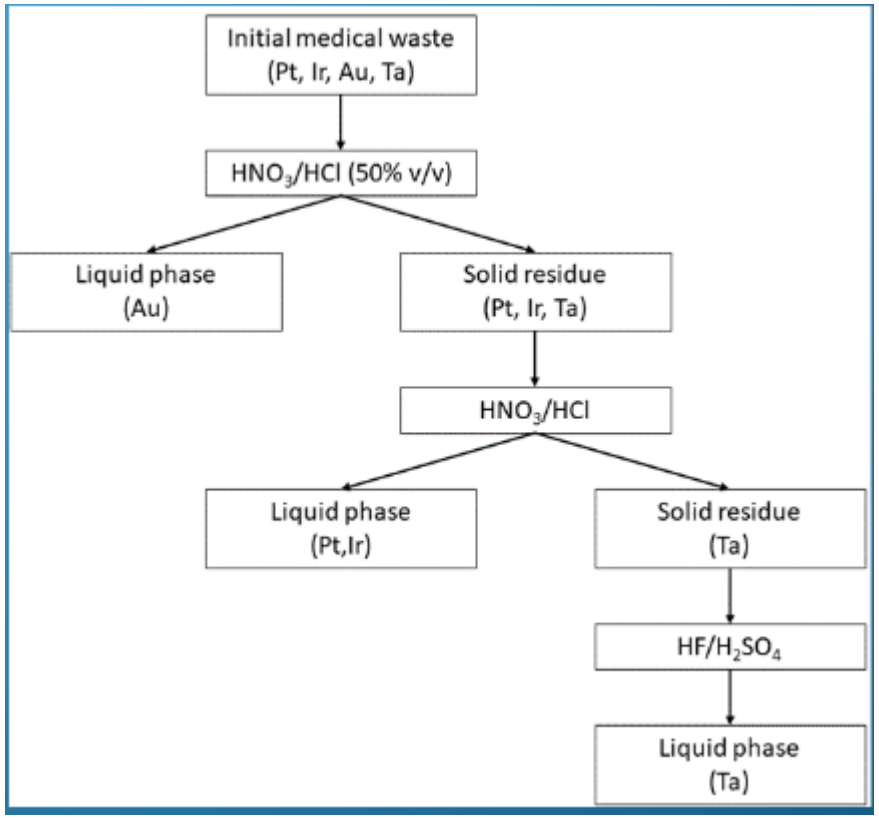
Prof. A. Zouboulis

RECAT TARGET

- The development of an integrated process for the safe medical waste disposal.
- The complete recovery of precious metals from discarded medical equipment and diagnostic systems.
- The medical waste risk management minimization with simultaneous significant financial benefit.



Flow-chart of the proposed selective recovery method of the noble metals



PROJECT PARTNERS

ARISTOTLE UNIVERSITY OF THESSALONIKI

NORTH AEGEAN SLOPS S.A.
ENVIRONMENTAL PROTECTION SERVICES

ASSIST HOMECARE

ΙΠΠΟΚΡΑΤΕΙΟ
ΓΕΝΙΚΟ ΝΟΣΟΚΟΜΕΙΟ
ΘΕΣΣΑΛΟΝΙΚΗΣ

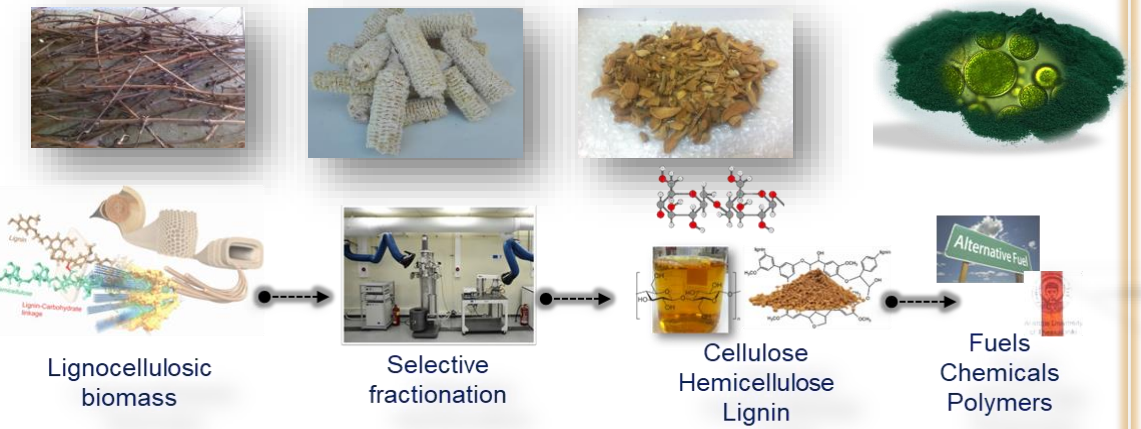
Greece 2.0
NATIONAL RECOVERY AND RESILIENCE PLAN

Funded by the European Union
NextGenerationEU

Integrated biorefinery to platform chemicals, polymers and fuels

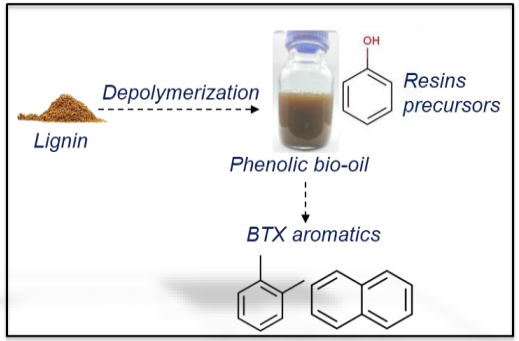
Prof. K. Triantafyllidis

Forestry/agricultural residues, food industry wastes and microalgae

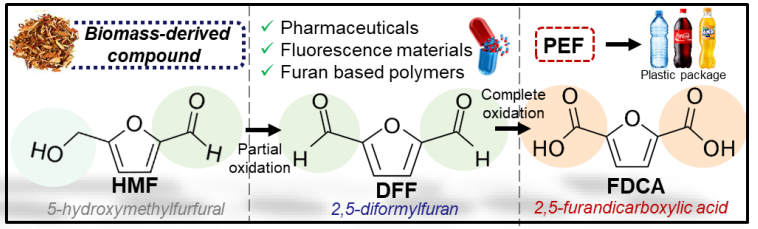


Platform chemicals

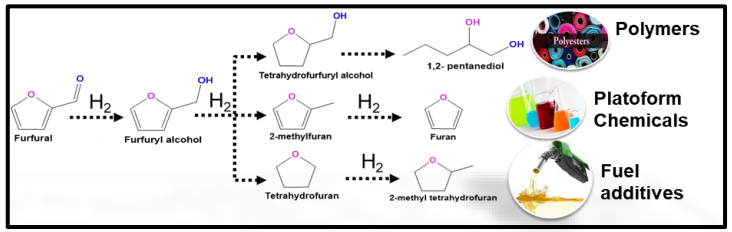
Phenol based chemicals



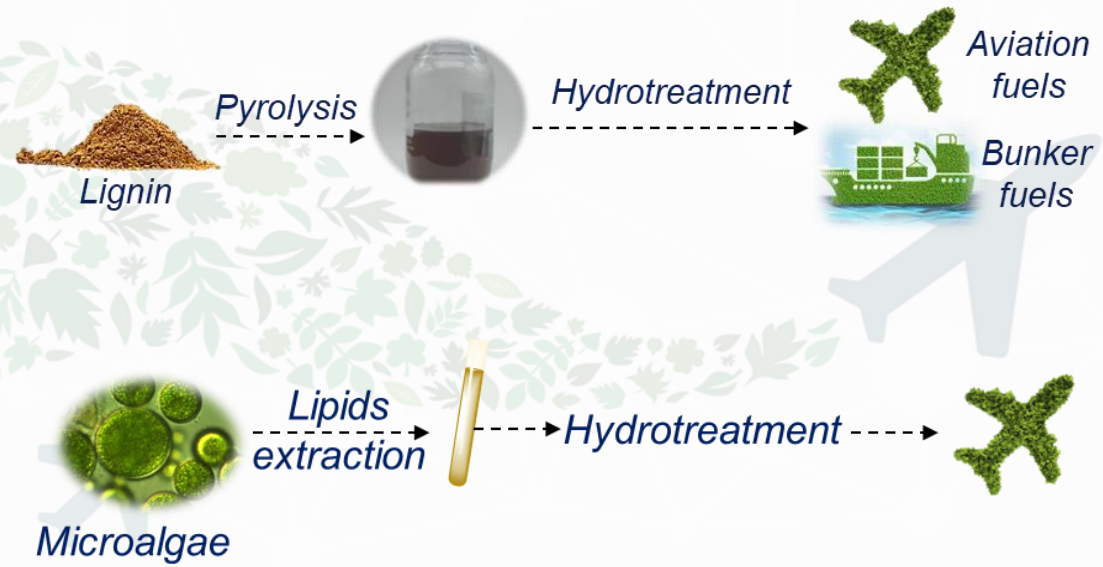
HMF based chemicals



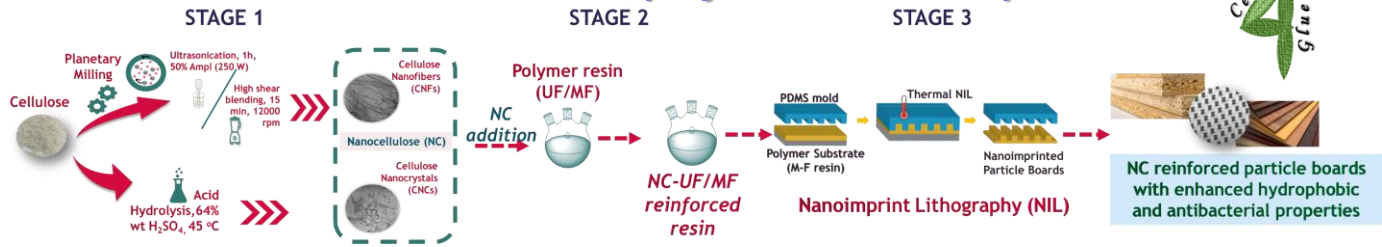
Furfural based chemicals

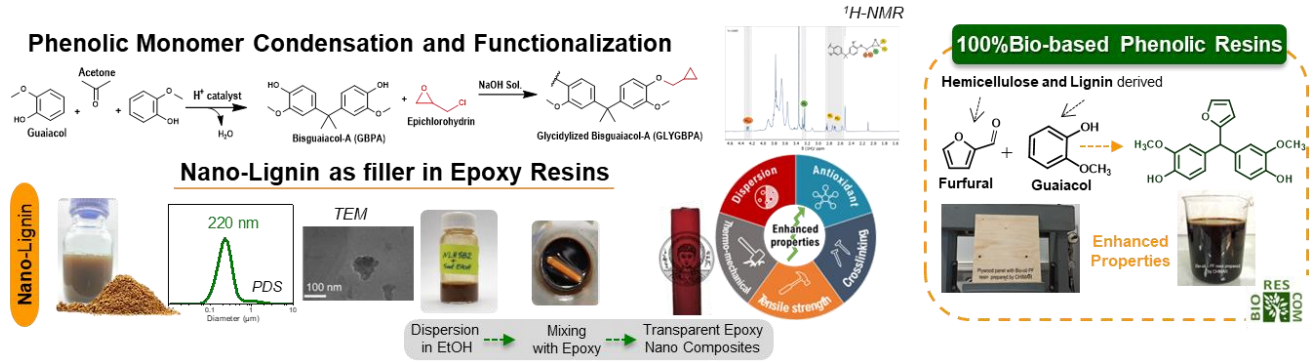


Biofuels

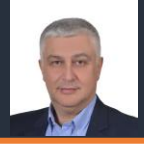


Biobased Monomers, polymers and Composites





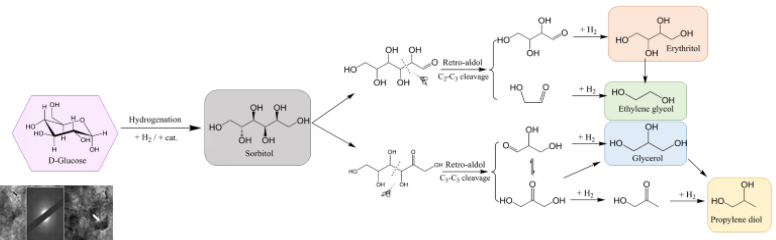
Heterogeneous catalysis

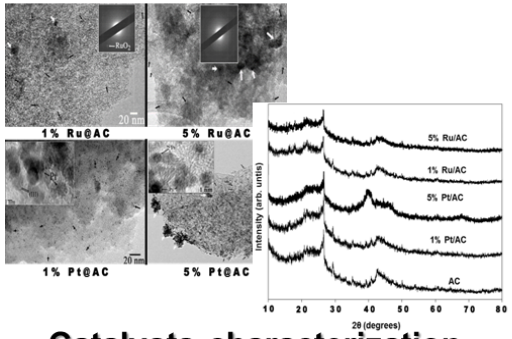


Prof. K. Triantafyllidis

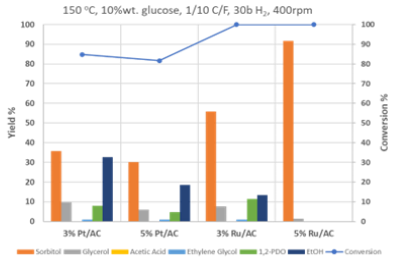
Catalytic hydrogenation of glucose to sugar alcohols & glycols

BIOMAC



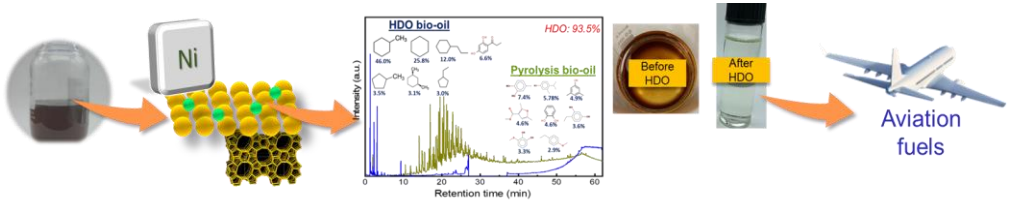


Catalysts characterization

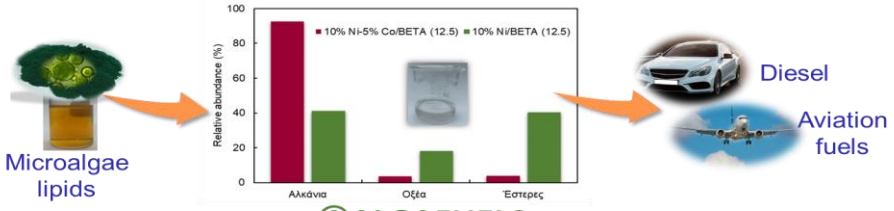


Process Optimization

Biofuels production via hydrodeoxygenation of lignin and lipids oil



FLEXI-GREEN FUELS

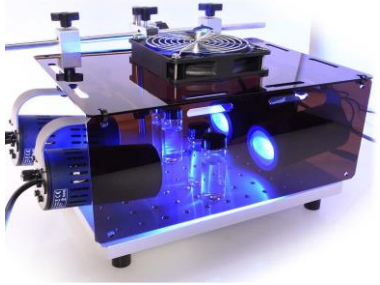


ALGAFUELS

PhotoCatalysis

Synthetic chemistry (biomass valorization)

Environmental remediation applications

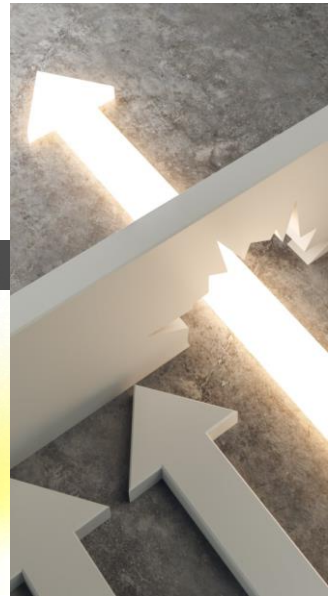


Our approach in photochemistry…

The possibly LOW*est*

environmental footprint

- avoid precious/noble metals
- avoid additives/hazardous chemicals
- ambient conditions (low energy)
- simple & low-cost setups
- solar light utilization



Plastic waste chemical recycling (Pyrolysis)

eLECTRO

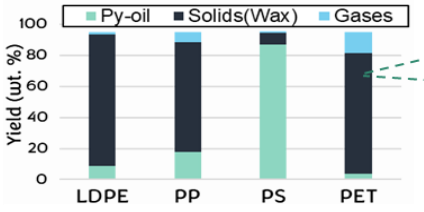
Horizon Europe Project

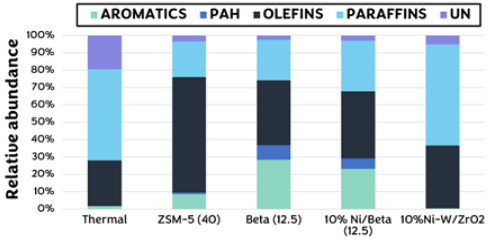
Catalytic upgrading of plastic waste **py-oil** → **C_5-C_{12} naphtha-range HCs down-stream cracking**

PLASTIC WASTE

Fast Pyrolysis

In situ catalytic upgrading





High M.W. Waxes

CFP

CATALYSTS

Aluminosilicate (ZSM-5, Beta)

Metal-modified (10% Ni/Beta, 10% Ni-W/ZrO_2)

py-oil production

BiogasUp

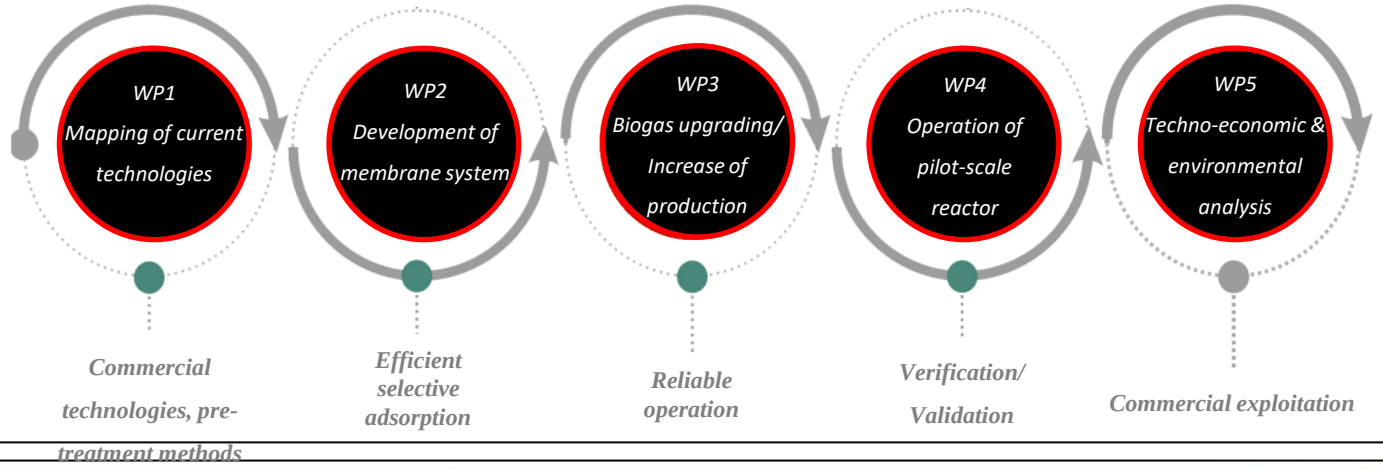
Optimization of anaerobic sludge treatment process with simultaneous biogas upgrading

Prof. A. Zouboulis

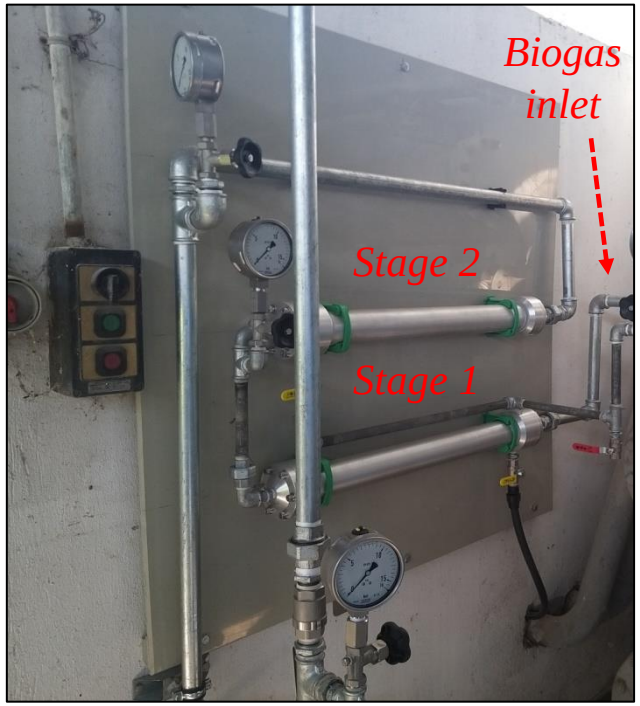
PROJECT TARGETS

- *The development of a **novel membrane technology** for the purification and upgrading of biogas*
- *The **production of biomethane** as a natural gas substitute for the production of thermal & electrical energy or transport fuel*
- *The application of an intelligent method for the pre-treatment of the reactor feed substrate **by recycling & utilizing the produced CO_2** for the hydrolysis of complex organic compounds*

METHODOLOGY – WORK PACKAGES



TWO-STAGE MEMBRANE SYSTEM



PROJECT PARTNERS

ELGO - DIMITRA
HELLENIC AGRICULTURAL ORGANIZATION - DIMITRA

AKTOR
member of ELLAKTOR Group

European Union
European Regional Development Fund

HELLENIC REPUBLIC
MINISTRY OF ECONOMY & DEVELOPMENT
SPECIAL SECRETARY FOR ERDF & CF
MANAGING AUTHORITY OF EPAnEK

EPAnEK 2014–2020
OPERATIONAL PROGRAMME
COMPETITIVENESS ENTREPRENEURSHIP INNOVATION
(project code: T2EDK-01293)

ΕΣΠΑ 2014-2020
ανάπτυξη - εργασία - αλληλεγγύη
Partnership Agreement 2014 - 2020

Co-financed by Greece and the European Union

CO_2 capture and utilization (microbial methanation)

Prof. A. Zouboulis

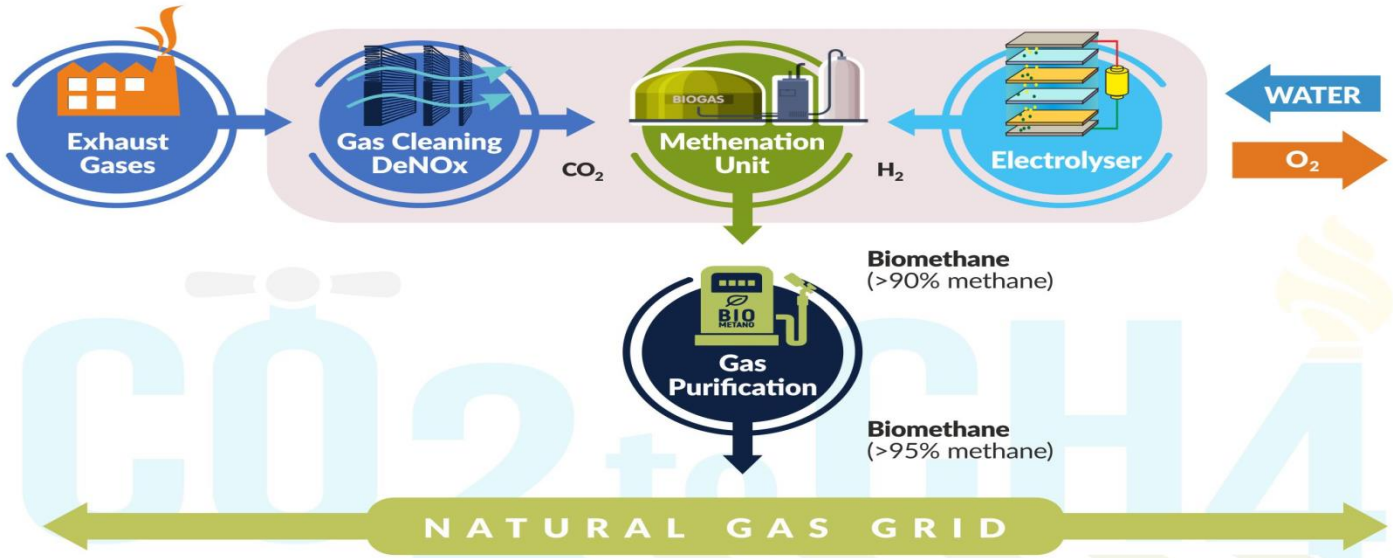
CO2 to CH4 Life

Demonstration of a mobile unit for hybrid energy storage based on CO_2 capture and renewable energy sources

With the contribution of the LIFE Programme of the European Union

LIFE20 CCM/GR/001642

LIFE CO2toCH4 Mobile Unit for Hybrid Energy Storage



THE OBJECTIVES

 # 01 Efficient energy storage and CO_2 capture & utilisation
By constructing, testing and operating (TRL8) a smart mobile unit for hybrid energy storage able to be installed in remote energy systems that commonly have low capacity.

 # 02 Maximise efficiency
By developing technically advanced systems and control architectures based on microbial resource management.

 # 03 Process Sustainability
By demonstrating system evaluation and assessment of environmental, economic and social impacts

 # 04 Market exploitation
By identifying any safety, environmental, regulatory, or resource (economic) constraints that may affect its penetration into the market./ By assessing the viability, cost and benefits of the proposed system.

 # 05 Replication, Transferability
By defining business requirements and critical success factors that must be met.

 # 06 Promote public awareness on climate change mitigation & circular economy concepts.
By fostering employment growth and increasing capacity building in relevant technologies for increased competitiveness. / By contributing to the implementation of the EU policy and legislation.

Coordinating Beneficiary: PPC Renewables

PARTNERS: NATIONAL TECHNICAL UNIVERSITY OF ATHENS (NTUA) | ΑΡΙΣΤΟΤΕΛΕΙΟ ΠΑΝΕΠΙΣΤΗΜΙΟ ΘΕΣΣΑΛΟΝΙΚΗΣ | 800 ANNI 1222-2022 | UNIVERSITÀ DEGLI STUDI DI PADOVA | NEVIS | ΔΕΗ | ELGO - DIMITRA HELLENIC AGRICULTURAL ORGANIZATION - DIMITRA

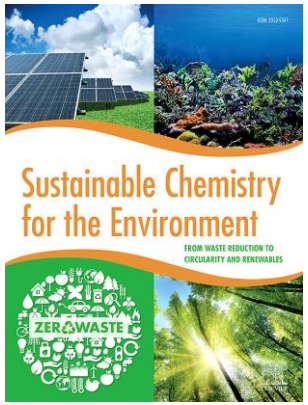
PROJECT'S DURATION: 01/10/2021 - 30/09/2025 / **PROJECT'S TOTAL BUDGET:** 3.888.985€ (55% EU funding)

Dissemination, communication and outreach

- Advanced Study Institute: "Innovations in Advanced Flotation Technology", Kallithea, Chalkidiki (Greece), 12-25 May 1991 (Chairs K. Matis & P. Mavros)
- Biennial Meeting & General Assembly of the European Low Gravity Research Association, Santorini, Greece, September 21 – 23, 2005 (Chair Th. Karapantsios).
- 17th International Conference on Chemistry and Environment, Division of Chemistry and Environment, Organization AGC/EuChemS, 16-20/9/2019, Chair: I. Katsoyiannis
- 5th EuChemS Conference on Green and Sustainable Chemistry (5th EuGSC), Organization AGC/EuChemS, 26-29/9/2021, Chair: K. Triantafyllidis
- 9th IUPAC International Conference on Green Chemistry", Athens, Organization AGC/EuChemS, 5-9 Sept. 2022, Chair: K. Triantafyllidis
- Working meeting of the "LIFE CO2toCH4" Research Project (30/03/2023) at ELGO DIMITRA with the participation of members of the laboratory.
- Parabolic Flights of the European Space Agency, May 2009 (from left to right: Prof. Th. Karapantsios, Dr. S. Evgenidis, Dr. K. Zacharias).

Recognitions

- 2023: Speech at the United Nations Conference on Water, which took place in New York, at the UN headquarters March 22-24, 2023, by Assoc. Prof. I Katsogiannis
- 2023: Members of the LCET within 2% of the world's leading scientists (and in the first places from the point of view of AUTH), according to the ranking of Stanford University (USA)
- 2023: Editor-in-Chief of the international journal "Sustainable Chemistry for the Environment", Gold open access, Elsevier (K. Triantafyllidis)
- 2022: President of the Association of Greek Chemists (I. Katsoyiannis)
- 2022: Presentation of Prof. Katsoyiannis at the Zero Pollution Platform Meeting of the European Commission in Brussels, 15 December 2022 (I. Katsoyiannis)
- 2021: President of the Board of Directors of the Hellenic Academy of Industrial Property (I. Katsoyiannis)
- 2020: Representative of the Association of Greek Chemists to the Division of Green and Sustainable Chemistry, European Chemical Society (DGSC/EuChemS) (K. Triantafyllidis)
- 2019: Election to the board of directors of the European Union of Chemists (for the first time a Greek chemist participates in this governing body) (I. Katsoyiannis)
- 2019: 1st "Innovative Technology Award" and "Business Seeds Award" of the National Bank of Greece for the "Medical device from space for the diagnosis of Coronary Artery Disease" among 204 entries, in the context of the "11th International University Entrepreneurship and Innovation Competition" 2018-Ennovation 2018" (Prof. Karapantsios group, S. Evgenidis)
- 2018: Award "Excellence in Natural Science" by the Rector of Aristotle University (A. Zouboulis)



Ένωση Ελλήνων Χημικών
Association of Greek Chemists

EuChemS
European Chemical Society

Future & Outlook