



27-30
July

CRETE2021



7th International Conference on

Industrial & Hazardous Waste Management

Chania | Crete | GREECE

DAILY PROGRAM

USEFUL INFO

7TH

INTERNATIONAL CONFERENCE ON
INDUSTRIAL & HAZARDOUS WASTE MANAGEMENT
www.hwm-conferences.tuc.gr

27th - 30th
July

**CRETE
2021**

Organized by



Technical University of Crete
Greece



University of Padua
Italy

TUHH

Hamburg University of Technology
Germany



Tsinghua University (Beijing)
China



IWWG
International Waste Working Group



REGION OF CRETE

Central Sponsors



Sponsors



Exhibitors



Venue and Location

CRETE 2021 is hosted at MINOA PALACE RESORT, a luxury 5* beachside hotel, built within 35,000 sq. m. of maintained gardens. It is situated in the area of Platanias, 12 km west of the picturesque town of Chania and only a 30 min. drive from the Chania International Airport.



State of the art facilities, the latest audiovisual equipment, comfort, high-class decoration and cutting-edge design are only few words to describe the unique, “Imperial Congress Hall” in Western Crete.

Covering an area of 1,400 sq. m. & a maximum height of 5.50 m., in a rectangular shape, without columns, this venue has a capacity of over 1,500 delegates.

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PREFACE

CRETE International Conference on Industrial and Hazardous Waste Management was established in 2008, in an effort to gather and spread existing and new developments on the broad field of industrial waste, with emphasis to those presenting hazardous properties; a tradition, a steady biennial rendezvous of exceptional scientists and specialists from more than 50 different countries of the world.

After two postponements, CRETE 2021 is carried out in the wake of COVID-19 pandemics; an event that greatly influenced our lives during the past two years. So many things have changed...and if something became clearer than ever is that our planet is not as huge as it seems, countries as not so far away as we think and our problems are not as unique as we believe. That is why we need to cooperate and work together in order to face common challenges... and waste management is one of those.

Against any difficulties and with great pleasure we conduct CRETE 2021 this year in Chania, as a hybrid event (live + virtual), in an effort to gather all together again, always respecting measures and limitations imposed due to COVID-19. Welcome to Chania, where we will have the chance to gain unique and interesting experiences once again.

Evangelos, Rainer, Raffaello & Wenjing
Conference Co-Chairs



COMMITTEES & SECRETARIATS

SCIENTIFIC COMMITTEE

ANDERSON Sven | Chalmers University of Technology (SE)
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HENNEBERT Pierre | Nat. Institute for Industrial Environ. & Risks (FR)
HUBER-HUMER Marion | Un. of Natural Res. & Life Sciences, BOKU (AT)
KIM Jae Young | Seoul National University (KR)
KOMILIS Dimitrios | Democritus University of Thrace (GR)
KOMNITSAS Konstantinos | Technical University of Crete (GR)
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LAVAGNOLO Maria Cristina | University of Padua (IT)

LEKKAS Themistoklis | University of the Aegean (GR)
LISAK Grzegorz | Nanyang Technological University (SG)
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SUN Wenjie | Southern Methodist University (US)
THORNELOE Susan | US Environmental Protection Agency (US)
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VOUDRIAS Evangelos | Democritus University of Thrace (GR)
ZANETTI Mariachiara | Technical University of Turin (IT)
ZHANG Hua | Tongji University (CN)

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ORGANIZING SECRETARIAT

SIMANTIRAKI Fotini | Technical University of Crete (GR)
KATSAPRAKAKI Niki | Technical University of Crete (GR)

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NIKOLAOU Aris | Technical University of Crete (GR)

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RITZKOWSKI Marco | Technical University of Hamburg (DE)

SAI Xu | Nanjing University of Science and Technology (CN)

STEGMANN Rainer | Hamburg University of Technology (DE)

EXHIBITION

During CRETE 2021, a poster exhibition will be hosted at the Conference Venue, focusing on burning environmental aspects of COVID-19 pandemic.

COVID-19 ENVIRONMENTAL FOOTPRINT



By: Technical University of Crete | GR
Region of Crete | GR

Including posters on:

- ✦ Pandemic Evolution
- ✦ COVID-19 vs
 - Economy
 - Healthcare waste
 - Waste production
 - Plastics and packages
 - Industries
 - Gas emissions & air quality
 - Noise & light pollution
 - Ecosystems & wildlife
 - Water pollution & quality
 - Marine
 - CRETE

Edited by:

AIVALIOTI Maria | BOLOMYTIS Vlas-Dimitrios | GIANNIS Apostolos |
GIDARAKOS Alexandros | KATSAPRAKAKI Niki | MOUKAZIS Ioannis |
NIKOLAOU Aris | PAPOULIAS Panagiotis | PELLERA Frantseska-Maria |
SIMANTIRAKI Fotini

TUESDAY
JULY 27

TUESDAY JULY 27

AFTERNOON



Virtual IWWG Workshops | Projected at IMPERIAL 2

Chair: E. Gidarakos (GR)

15:00 – 17:30

A. Lagerkvist | Luleå University of Technology (SE)

HYDROTHERMAL TREATMENT – WHEN IS PRESSURE COOKING A GOOD CHOICE?

This theme will be discussed thematically. Each theme will be introduced through a short introduction of the state of art and outlines relevant issues to discuss. Areas of discussion include a) which materials can be affected by pressure cooking and which process variants can be useful for different materials? b) which impacts/products can be achieved? c) how to fit HTC in a waste treatment system? The underlying question is perhaps why HTC is not applied more than it is.

17:30 – 19:30

K. Kuchta | Hamburg University of Technology (DE)

S. Fiore | Technical University of Turin (IT)

ADVANCEMENTS IN MSWI BOTTOM ASH MANAGEMENT IN EUROPE

In Europe, nearly 19 Mt/y of bottom ash (BA) are produced. Of this quota, only 46 %wt. was treated, often in poorly performing plants, leaving behind 10 Mt of untreated and unrecovered BA, destined to landfill. The resulting 2.14 Mt loss of valuable materials included 1 Mt mineral fraction and 0.97 Mt ferrous metals, mostly from untreated BA, and 0.18 Mt non-ferrous metals, mostly from unrecovered BA. For the coarser fractions, the main obstacle to BA being used as recycling aggregate is the content of salts and potential toxic elements (PTEs), concentrated in a layer that coats BA particles. For the fine BA fractions, usually underexploited and landfilled, it is estimated that up to 0.95 Mt/y of ferrous and non-ferrous metals are not recovered in Europe.

During the workshop, the key results of BASH Treat project will be presented: the results of 2 industrial tests performed in BA treatment plants in Germany and Sweden; a novel dry treatment for the removal of salts and PTEs from BA coarse particles; a wet process for the recovery of heavy metal compounds from the fine fraction; a technical-economic assessment of the EU potential for the optimization of BA management.

WELCOME COCKTAIL | 20:00 – 23:00 | MINOA PALACE POOL BAR

WEDNESDAY
JULY 28

WEDNESDAY JULY 28

MORNING



OPENING SESSION | GRAND IMPERIAL | 9:00 – 10:00

Addresses

E. Gidarakos | Technical University of Crete, Greece

R. Cossu | University of Padua, Italy

R. Stegmann | Hamburg University of Technology, Germany

M. Ritzkowski | IWWG

OPENING LECTURE | GRAND IMPERIAL | 10:00 – 11:00

P. Roumeliotis | Panteion University, Greece

CHALLENGES OF THE POST-COVID ERA

COFFEE BREAK | 11:00 – 11:30

KEYNOTE LECTURES | GRAND IMPERIAL | 11:30 – 13:00

Chair: R. Stegmann (DE)

C. Wiedemann | Technical University of Braunschweig, Germany

THE SPACE DEBRIS ENVIRONMENT

G. Rettenberger | Tech. University of Applied Science in Trier, Germany

***LANDFILL FOR HAZARDOUS WASTE: SENSE OR NONSENSE?
CONCLUSIONS AND RECOMMENDATIONS***

LUNCH BREAK | 13:00 – 15:00

POSTER SESSION | IMPERIAL 1 | 15:00 – 16:00

S1. AGRO-INDUSTRIAL WASTE

GRAND IMPERIAL | 16:00 – 17:45

Chair: A. Giannis (GR)

*OLIVE MILL WASTEWATER TREATMENT IN A MICROBIAL FUEL CELL:
ELECTROCHEMICAL AND BIOCHEMICAL CHARACTERISATION AND
TOXICITY ASSESSMENT*

A. Tsiligiannis¹, G. Antonopoulou², I. Ntaikou², M. Alexandropoulou², G. Bampos¹, N. Charalampous¹, S. Dailianis¹, S. Bebelis¹, G. Lyberatos^{1,3}

¹University of Patras | ²Institute of Chemical Engineering Sciences | ³National Technical University of Athens, Greece

*EFFECT OF SALINITY AND AMMONIA ON THE PERFORMANCE OF AN
ANAEROBIC DIGESTER TREATING DILUTED POULTRY MANURE AND
OTHER CO-SUBSTRATES*

A. Eftaxias, V. Diamantis, A. Aivasidis

Democritus University of Thrace, Greece

*PRELIMINARY STUDIES ON THE INFLUENCE OF HYDRODYNAMIC
DISINTEGRATION ON CAPILLARY SUCTION TIME (CST) OF THE
DIGESTATE FROM AGRICULTURAL BIOGAS PLANTS*

K. Umiejewska, M. Żubrowska-Sudoł, A. Garlicka¹ J. Walczak, K. Sytek-Szmeichel

Warsaw University of Technology, Poland

*COPPER ADSORPTION ON ACTIVATED BIOCHARS DELIVERED FROM
ORANGE PEELS AND COFFEE RESIDUES IN FIXED BED COLUMN*

A. Zografos, A. Giannis

Technical University of Crete, Greece



S2. WEEE & PLASTICS | IMPERIAL 3 | 16:00 – 17:45

Chair: J.N. Hahladakis (QA)

WASTE FROM ELECTRICAL EQUIPMENT: CHARACTERIZATION OF RECYCLED DISHWASHERS

E. Evangelou¹, G.N. Anastassakis¹, S. - D. Karamoutsos², A. Stergiou²

¹ National Technical University of Athens | ² Ecoreset S.A., Greece

VALORIZATION OF PLASTIC-RICH FRACTIONS REJECTED FROM WASTE ELECTRIC AND ELECTRONIC EQUIPMENT RECYCLING PLANTS

B.B. Perez-Martinez¹, A. Lopez-Urionabarrenechea¹, A. Serras Malillos¹, E. Acha¹, M. Martínez-Santos¹, A. Iriondo¹, B.M. Caballero¹, A. Asueta², S. Arnaiz²

¹ University of the Basque Country | ² Basque Research and Technology Alliance, Spain

SOME DATA ON THE MASSIVE SUBSTITUTION OF REGULATED BROMINATED FLAME RETARDANTS IN PLASTIC PRODUCTS AND WASTE - THE FLAME RETARDANTS THAT COULD HINDER THE RECYCLING OF PLASTICS

P. Hennebert

INERIS, France

PLASTIC WASTE, RECOVERY AND RECYCLING IN QATAR: LESSONS LEARNED AND GUIDELINES TO MOVE FORWARD

J.N. Hahladakis

Qatar University, Qatar

WEDNESDAY JULY 28

AFTERNOON



IWWG WORKSHOP | IMPERIAL 2 | 16:00 – 17:45

REMEDIATION OF LANDFILLS

R. Stegmann | Hamburg University of Technology, Germany
R. Cossu | University of Padua, Italy
M. Ritzkowski | JOMA Umwelt- Beratungsgesellschaft mbH, Germany

Landfills are longterm facilities that have to be operated, maintained and repaired for unpredictable times. In addition, there is the possibility of landfill mining. The speakers will give short introductions to different aspects of remediation as a basis for discussion.

COFFEE BREAK | 17:45 – 18:15

SPECIAL SESSION | GRAND IMPERIAL | 18:15 – 19:45

COVID-19 ENVIRONMENTAL FOOTPRINT



M. Aivalioti | Technical University of Crete, Greece

COVID-19 pandemic changed the lives of the majority of the world's population and caused the death of millions of people worldwide. Lockdowns, isolation, restrictions, etc. slowed down our life speeds, creating notable changes on our planet, sometimes in a positive and sometimes in a negative direction. The environmental footprint of the pandemic has already begun to be an important field of research, as its recording and study can lead to important conclusions on the state of the various environmental media, as well as the impact of human actions on them.

WEDNESDAY JULY 28

AFTERNOON



VS1. WEEE | Projected at IMPERIAL 2 | 18:15 – 19:45

Chair: H.M.V.M. Soares (PT)

A COMPARATIVE STUDY OF WEEE LEGISLATION IN INDIA AND EUROPE

A. Gote, S. Diedler, K. Kuchta

Hamburg University of Technology, Germany

*RECOVERY AND PURIFICATION OF GOLD FROM PRINTED CIRCUIT
BOARDS USING A SIMPLIFIED AND EFFICIENT STRATEGY*

F.F. Neto, H.M.V.M. Soares

University of Porto, Portugal

*ECONOMIC AND ENVIRONMENTAL EVALUATION OF LITHIUM-ION
BATTERY RECYCLING PROCESSES OF ELECTRIC VEHICLES*

R. Tolomeo, L. Santelia, G. De Feo, L. Sesti Osséo

University of Salerno, Italy

*A ZERO-WASTE, SUSTAINABILITY APPROACH FOR TEACHING AND
LEARNING ELECTRICAL ENGINEERING AN E-WASTE CASE PERSPECTIVE*

S.O. Enochoghene

Lead City University, Nigeria

*OSCAR'S GREEN STORY – FUN AND EDUCATIONAL WAY TO PROMOTE
RECYCLING AND PROCESSING OF WEEE*

S. Kalambura¹, V. Zebec- Živković², M. Mihalinčić¹

¹University of Applied Science Velika Gorica | ²Faculty of Education, Croatia

VS2. CASE STUDIES I | Projected at IMPERIAL 3 | 18:15 – 19:45

Chair: M. Ritzkowski (DE)

*USE OF ALOE VERA TO DEMOTE WEAR AND CONTRIBUTE TO CLEANER
FAST FASHION*

M.Karypidis¹, M. Zarkogianni²

¹International Hellenic University | ²Aristotle University of Thessaloniki, Greece

*EVALUATION OF MICROPLASTICS REMOVAL METHODS IN A
LABORATORY-SCALE WASTEWATER TREATMENT PLANT*

D. Anastasaki¹, C. Deligianni¹, E. Iatrou¹, J. Grønsund², T. Bilstad²

¹Technical University of Crete, Greece | ²University of Stavanger, Norway



DRIVERS AND BUSINESS CASE FOR A PROFITABLE LANDFILL MINING PROJECT : THE CASE STUDY OF ONOZ LANDFILL (BELGIUM) - RAWFILL

C. Neculau¹, L. Lamair¹, I. Aziz¹, R. De Rijdt², D. Caterina³, I. Isunza Manrique³, C. Inauen⁴, A. Watlet⁴, E. Wille⁵, The Rawfill Team

¹SPAQuE, Belgium | ²ATRASOL s.p.r.l., Belgium | ³University of Liege, Belgium | ⁴UK Research and Innovation, United Kingdom | ⁵OVAM, Belgium

ECOLOGICAL IMPRESSION OF FOREST ROAD NETWORK

M. Chatzigeorgiou¹, A. Stergiadou¹, N. Terliamis¹, G. Kolkos¹, D. Moutsopoulos², V. Datsi¹

¹Aristotle University of Thessaloniki | ²Democritus University of Thrace, Greece

UTILIZATION OF THE SUPERCRITICAL EXTRACTION TO DECONTAMINATE PLASTICS WASTE FOR RECYCLING

N. Aboud^{1,2}, A. Alassali¹, C. Picuno¹, K.Kuchta¹, A.Zeinolebadi³

¹Technical University of Hamburg | ²Eurotechnica GmbH | ³Polymer Consult Buchner GmbH, Germany

CRUMB RUBBER FROM END-OF-LIFE TIRES: COMPARATIVE LIFE CYCLE ASSESSMENT OF TREATMENT SCENARIOS

I. Bianco, D. Panepinto, M.C. Zanetti

¹Technical University of Turin, Italy

THURSDAY
JULY 29

It's All Greek

INDUSTRIAL AND HAZARDOUS WASTE
MANAGEMENT INFRASTRUCTURE AND
SERVICES IN GREECE

**ΥΠΟΔΟΜΕΣ & ΥΠΗΡΕΣΙΕΣ ΔΙΑΧΕΙΡΙΣΗΣ
ΒΙΟΜΗΧΑΝΙΚΩΝ & ΕΠΙΚΙΝΔΥΝΩΝ
ΑΠΟΒΛΗΤΩΝ (ΒΕΑ) ΣΤΗΝ ΕΛΛΑΔΑ**



8:30 – 9:00

ΠΡΟΣΕΛΕΥΣΗ | GRAND IMPERIAL

9:00 – 11:00

ΓΕΝΙΚΕΣ ΟΜΙΛΙΕΣ

ΥΠΟΔΟΜΕΣ ΔΙΑΧΕΙΡΙΣΗΣ ΑΠΟΒΛΗΤΩΝ ΣΤΗΝ ΕΛΛΑΔΑ

Μ. Γραφάκος | Γ. Γ. Συντονισμού Διαχείρισης Αποβλήτων - Υπουργείο Περ/ντος & Ενέργειας

ΕΠΙΣΚΟΠΗΣΗ ΠΑΡΑΓΩΓΗΣ, ΥΠΟΔΟΜΩΝ ΚΑΙ ΥΠΗΡΕΣΙΩΝ ΔΙΑΧΕΙΡΙΣΗΣ ΒΙΟΜΗΧΑΝΙΚΩΝ ΚΑΙ ΕΠΙΚΙΝΔΥΝΩΝ ΑΠΟΒΛΗΤΩΝ ΣΤΗΝ ΕΛΛΑΔΑ

Π. Μέρκος, Επιθ. Περ/ντος, ΥΠΕΝ

ΠΑΡΑΔΕΙΓΜΑΤΑ ΥΒΡΙΔΙΚΩΝ ΠΡΟΓΡΑΜΜΑΤΩΝ ΔΙΑΧΕΙΡΙΣΗΣ ΕΠΙΚΙΝΔΥΝΩΝ ΑΠΟΒΛΗΤΩΝ / ΠΕΔΙΩΝ

Ε. Γιδαράκος | Πολυτεχνείο Κρήτης

ΥΠΟΔΟΜΕΣ ΚΑΙ ΥΠΗΡΕΣΙΕΣ ΔΙΑΧΕΙΡΙΣΗΣ ΕΠΙΚΙΝΔΥΝΩΝ ΑΠΟΒΛΗΤΩΝ ΥΓΕΙΟΝΟΜΙΚΩΝ ΜΟΝΑΔΩΝ (ΕΑΥΜ)

Σ. Τσιγκρής | ENVIRODENT Ε.Π.Ε.

ΥΠΟΔΟΜΕΣ ΚΑΙ ΥΠΗΡΕΣΙΕΣ ΑΝΑΚΥΚΛΩΣΗΣ ΧΡΗΣΙΜΟΠΟΙΗΜΕΝΩΝ ΜΠΑΤΑΡΙΩΝ: ΠΑΡΟΥΣΑ ΚΑΤΑΣΤΑΣΗ, ΑΝΑΓΚΕΣ ΚΑΙ ΠΡΟΟΠΤΙΚΕΣ

Σ. Κόπολας | ΣΥΣΤΗΜΑΤΑ SUNLIGHT Α.Β.Ε.Ε.

ΑΞΙΟΛΟΓΗΣΗ ΤΗΣ ΠΑΡΑΓΩΓΗΣ ΚΑΙ ΔΙΑΧΕΙΡΙΣΗΣ ΕΠΙΚΙΝΔΥΝΩΝ ΙΑΤΡΙΚΩΝ ΑΠΟΒΛΗΤΩΝ ΤΗΝ ΠΕΡΙΟΔΟ ΤΗΣ ΠΑΝΔΗΜΙΑΣ COVID-19

Ν. Κοθρής | ΟΜΙΛΟΣ ΕΛΛΑΚΤΩΡ

11:00 – 11:30

ΔΙΑΛΕΙΜΜΑ

11:30 – 14:00

ΔΡΑΣΕΙΣ ΕΤΑΙΡΕΙΩΝ

ΧΩΡΟΣ ΥΓΕΙΟΝΟΜΙΚΗΣ ΤΑΦΗΣ ΕΠΙΚΙΝΔΥΝΩΝ ΑΠΟΒΛΗΤΩΝ ΤΗΣ MOTOR OIL ΕΛΛΑΣ

Δ. Μπεκιάρης | MOTOR OIL ΕΛΛΑΣ

ΔΙΑΧΕΙΡΙΣΗ ΒΙΟΜΗΧΑΝΙΚΩΝ ΑΠΟΒΛΗΤΩΝ ΤΗΣ EUROPA PROFIL ΑΛΟΥΜΙΝΙΟ Α.Β.Ε.

Ν. Φλώρος | EUROPA PROFIL ΑΛΟΥΜΙΝΙΟ Α.Β.Ε.

ΔΙΑΧΕΙΡΙΣΗ ΑΠΟΒΛΗΤΩΝ ΣΤΟ ΕΡΓΑΣΤΑΣΙΟ 'ΑΛΟΥΜΙΝΙΟ ΤΗΣ ΕΛΛΑΔΟΣ' ΤΗΣ ΜΥΤΙΛΗΝΑΙΟΣ Α.Ε.

Ι. Καρναχωρίτης | ΜΥΤΙΛΗΝΑΙΟΣ Α.Ε.

ΤΕΧΝΟΛΟΓΙΕΣ ΔΙΑΧΕΙΡΙΣΗΣ ΕΠΙΚΙΝΔΥΝΩΝ ΑΠΟΒΛΗΤΩΝ

Β. Παυλάκου | CINAR Α.Ε.

**ECORECOVERY & ΠΑΡΑΓΩΓΗ ΣΤΕΡΕΟΥ ΔΕΥΤΕΡΟΓΕΝΟΥΣ ΚΑΥΣΙΜΟΥ |
ΟΡΘΕΣ ΤΕΧΝΙΚΕΣ & ΑΣΦΑΛΗΣ ΛΕΙΤΟΥΡΓΙΑ ΜΟΝΑΔΩΝ ΑΝΑΚΤΗΣΗΣ
ΑΠΟΒΛΗΤΩΝ**

Κ. Χατζηδάκης | ECORECOVERY A.E.

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Σ. Καβούρη | POLYECO A.E.

**ΚΑΛΕΣ ΠΡΑΚΤΙΚΕΣ ΚΥΚΛΙΚΗΣ ΟΙΚΟΝΟΜΙΑΣ ΣΤΟΝ ΚΛΑΔΟ ΔΙΥΛΙΣΗΣ ΣΤΗΝ
ΕΛΛΑΔΑ**

Α. Μουντούρης | ΕΛΛΗΝΙΚΑ ΠΕΤΡΕΛΑΙΑ A.E.

**ΑΣΦΑΛΙΣΗ ΜΟΝΑΔΩΝ ΔΙΑΧΕΙΡΙΣΗΣ ΑΠΟΒΛΗΤΩΝ: ΕΝΑΣ ΟΔΗΓΟΣ
ΠΕΡΙΟΡΙΣΜΟΥ ΤΩΝ ΚΙΝΔΥΝΩΝ**

Μ. Δρακάτου | HOWDEN MATRIX GROUP

14:00 – 15:30

ΓΕΥΜΑ

15:30 – 17:30

ΠΕΡΙΠΤΩΣΕΙΣ ΜΕΛΕΤΗΣ

**ΑΠΟΚΑΤΑΣΤΑΣΗ ΠΑΛΑΙΟΥ ΧΩΡΟΥ ΑΠΟΘΕΣΗΣ ΑΡΣΕΝΟΠΥΡΙΤΗ
ΟΛΥΜΠΙΑΔΑΣ ΤΩΝ ΜΕΤΑΛΛΕΙΩΝ ΚΑΣΣΑΝΔΡΑΣ**

Β. Γαζέα | ΕΛΛΗΝΙΚΟΣ ΧΡΥΣΟΣ Α.Ε.

**ΑΠΟΤΕΛΕΣΜΑΤΙΚΗ ΔΙΑΧΕΙΡΙΣΗ ΕΛΑΙΩΔΩΝ ΑΠΟΒΛΗΤΩΝ ΠΛΟΙΩΝ -
ΕΛΛΗΝΙΚΗ ΠΕΡΙΠΤΩΣΗ ΜΕΛΕΤΗΣ**

Ε. Δημητρακάκης | HELLENIC ENVIRONMENTAL CENTER A.E.

**ΠΡΟΣΔΙΟΡΙΣΜΟΣ ΑΝΑΚΥΚΛΩΣΙΜΟΥ ΜΕΡΟΥΣ ΤΟΥ SRF ΚΑΤΑ ΤΗΝ ΣΥΝ-
ΕΠΕΞΕΡΓΑΣΙΑ ΤΟΥ ΣΤΗΝ ΤΣΙΜΕΝΤΟΒΙΟΜΗΧΑΝΙΑ**

Σ. Αντίοχος | ΤΙΤΑΝ ΤΣΙΜΕΝΤΩΝ Α.Ε.

**ΤΙΠΟΤΑ ΣΤΑ ΑΠΟΒΛΗΤΑ: ΕΝΑ ΤΟΛΜΗΡΟ ΠΡΑΣΙΝΟ
ΕΠΙΧΕΙΡΗΜΑΤΙΚΟ ΜΟΝΤΕΛΟ ΚΑΘΟΔΗΓΗΣΗΣ ΤΩΝ ΤΟΠΙΚΩΝ ΚΟΙΝΩΝΙΩΝ
ΣΤΟ ΜΟΝΟΠΑΤΙ ΤΗΣ ΚΥΚΛΙΚΗΣ ΟΙΚΟΝΟΜΙΑΣ**

Μ. Τόκας | ΤΙΤΑΝ ΤΣΙΜΕΝΤΩΝ Α.Ε.

**ΣΧΕΔΙΑΣΜΟΣ ΓΙΑ ΥΠΟΔΟΜΕΣ & ΥΠΗΡΕΣΙΕΣ ΔΙΑΧΕΙΡΙΣΗΣ ΥΓΡΩΝ
ΑΠΟΒΛΗΤΩΝ ΣΤΟ ΕΠΙΧΕΙΡΗΜΑΤΙΚΟ ΠΑΡΚΟ ΕΞΥΓΙΑΝΣΗΣ (ΕΠΕ) ΟΙΝΟΦΥΤΩΝ**

Α. Λουκάτος | ΕΑΝΕΠ Οινοφύτων Ασωπού

**ΤΕΧΝΟΛΟΓΙΑ ΞΗΡΗΣ ΑΠΟΘΕΣΗΣ ΚΑΙ ΕΦΑΡΜΟΓΗ ΤΗΣ ΣΤΑ ΜΕΤΑΛΛΕΙΑ
ΚΑΣΣΑΝΔΡΑΣ**

Δ. Δημητριάδης | ΕΛΛΗΝΙΚΟΣ ΧΡΥΣΟΣ Α.Ε.

17:30 – 18:00

ΔΙΑΛΕΙΜΜΑ

18:00 – 19:30

ΣΥΖΗΤΗΣΗ



ΚΕΝΤΡΙΚΟΙ ΧΟΡΗΓΟΙ



ΧΟΡΗΓΟΙ



THURSDAY JULY 29

MORNING



Keynote Lecture | IMPERIAL 3 | 9:00 – 9:45

Chair: R. Stegmann (DE)

R. Cossu | University of Padua, Italy

CLOSING THE LOOP OF MATERIALS IN WASTE MANAGEMENT

S3. WASTE CHARACTERIZATION & REUSE | IMPERIAL 3 |
9:45 – 11:30

Chair: P. Hennebert (FR)

CLASSIFICATION AND CHARACTERIZATION OF REFRACTORY WASTE MATERIALS USED AS AGGREGATES IN INNOVATIVE LIME-BASED MORTARS

P.N. Maravelaki, K. Kapetanaki, Ch. Gryparis, N. Kallithrakas-Kontos, M. Galetakis

Technical University of Crete, Greece

PROPERTIES OF INORGANIC POLYMERS BASED ON WASTE CONCRETE CONTAINING CuO AND ZnO NANOPARTICLES

A.I. Vavouraki, I. Gounaki, D. Venieri, K. Komnitsas

Technical University of Crete, Greece

COMPOST PRODUCTION USING REED BIOMASS FROM A CONSTRUCTED WETLAND TREATING OILFIELD PRODUCED WATER

A.I. Stefanakis¹, A. Evangelou², D. Komilis²

¹Technical University of Crete | ²Democritus University of Thrace, Greece

CONTINUOUS COLUMN ADSORPTION OF LANDFILL LEACHATE ONTO ORANGE PEELS AND PALM LEAVES ACTIVATED BIOCHARS

M. Samara¹, I. Papadopoulou¹, C.M. Galanakis², A. Giannis¹

¹Technical University of Crete | Galanakis Laboratories, Greece

THURSDAY JULY 29

MORNING



CARBON FIBRES AND CHEMICALS RECLAMATION FROM WASTE COMPOSITES: MODELLING OF THE PROCESS IN ASPEN PLUS

A. Serras-Malillos, E. Acha, A. Lopez-Urionabarrenechea, B.B. Perez-Martinez, B.M. Caballero

University of the Basque Country, Spain

SAMPLING OF GRANULAR WASTE AND MATERIALS CONTAINING RARE PARTICLES OF INTEREST BY COMPOSITION DISTRIBUTION AND BY PARTICLE SIZE DISTRIBUTION

P. Hennebert¹, G. Beggio^{1,2}

¹INERIS, France | ²University of Padua, Italy

VS3. HEALTHCARE WASTE / COVID19

Projected at IMPERIAL 2 | 9:45 – 11:30

Chair: E. Voudrias (GR)

DENTAL HEALTHCARE RELATED DISPOSABLES IN THE ATHENS UNIVERSITY SCHOOL OF DENTISTRY. CIRCULAR ECONOMY CHALLENGES

I. Tzoutzas, G. Tsarouchas, A. Macrynika, S. Tsigris

National & Kapodistrian University of Athens, Greece

DENTAL AMALGAM WASTE MANAGEMENT AT THE DENTAL SCHOOL OF THE NATIONAL AND KAPODISTRIAN UNIVERSITY OF ATHENS

I. Tzoutzas, G. Tsarouchas, A. Macrynika

National & Kapodistrian University of Athens, Greece

ESTIMATION ON GENERATION AMOUNT OF WASTE PERSONAL PROTECTIVE EQUIPMENT DUE TO COVID-19 IN KOREA

S.W. Rhee, Y. Choi, H.J. Choi

Kyonggi University, Republic of Korea

MANAGEMENT OF COVID-19 HEALTHCARE WASTE FROM THE CIRCULAR ECONOMY POINT OF VIEW

E.A. Voudrias

Democritus University of Thrace, Greece

MICROBIOLOGICAL AND CHEMICAL MONITORING OF SARS-COV-2 IN UNTREATED WASTEWATER SAMPLES FROM FIVE MUNICIPAL WASTE-WATER TREATMENT PLANTS OF CRETE: SOME INITIAL REMARKS

D. Chochlakis¹, V. Sandalakis¹, A. Xylouri¹, N. Kounalakis², C. Petroulaki¹, D. Marinopoulou¹, A. Kokkimagoula¹, E. Ouranou¹, M. Pitsaki¹, A. Psaroulaki¹

¹University of Crete | ² Hellenic Mediterranean University, Greece

COFFEE BREAK | 11:30 – 12:00

S4. TOXICOLOGY & RISK | IMPERIAL 3 | 12:00 – 13:30

Chair: J. Römbke (DE)

WASTE HAZARD PROPERTIES HP 4 'IRRITANT' AND HP 8 'CORROSIVE' BY PH AND ACID / BASE BUFFER CAPACITY

P. Hennebert

INERIS, France

COMPILATION AND EVALUATION OF ECOTOXICOLOGICAL DATA GAINED IN WASTE TESTING - RESULTS OF A LITERATURE REVIEW

J. Römbke¹, P. Pandard², M. Wahlström³

¹ECT Oekotoxikologie GmbH, Germany | ²INERIS, France | ³Technical Research Centre of Finland, Finland

EMISSION OF HALOCARBONS FROM AN HAZARDOUS WASTE LANDFILL IN ITALY

M. Ravina, A. Facelli, M.C. Zanetti

Technical University of Turin, Italy

DEVELOPMENT AND APPLICATION OF METHODS FOR THE DETERMINATION OF PESTICIDE RESIDUES IN NATURAL WATERS AND SEDIMENTS

M. Kapsi, V. Sakkas, T. Albanis

University of Ioannina, Greece

THURSDAY JULY 29

MORNING



VS4. RISK ISSUES | Projected at IMPERIAL 2 | 12:00 – 13:30

Chair: S. Andersson (SE)

CONTAMINATION OF PLASTICS WITH PAH AS A RESULT OF THE MECHANICAL RECYCLING PROCESS

A. Alassali, W. Calmano, K. Kuchta

Technical University of Hamburg, Germany

MECHANISMS, ENVIRONMENTAL AND HEALTH IMPACTS OF LONG-TERM EXPOSURE TO INDUSTRIAL HAZARDOUS WASTE

D. Petrakis

University of Crete, Greece

RISK ASSESSMENT INTERPRETATIONS FOR HEAVY METALS AND ORGANIC POLLUTANTS – HUMAN EXPOSURE THROUGH FISH CONSUMPTION

E. Renieri, D. Petrakis

University of Crete, Greece

EVALUATION OF A BATTERY OF BIOTESTS TO IMPROVE WASTE ECOTOXICITY ASSESSMENT (HP 14), USING INCINERATION BOTTOM ASH AS A CASE STUDY

B.S. Bandarra¹, T. Vidal², R.C. Martins¹, M.J. Quina¹, J.L. Pereira², J. Römbke³

¹University of Coimbra | ²University of Aveiro, Portugal | ³ECT Oekotoxikologie GmbH, Germany

PASSIVE LONG-TERM DIOXIN SAMPLING USING ADIOX

S. Andersson^{1,2}

¹Babcock & Wilcox Volund AB | ²Chalmers University of Technology, Sweden

LUNCH BREAK | 13:30 – 15:00

POSTER SESSION | IMPERIAL 1 | 15:00 – 15:30

THURSDAY JULY 29

AFTERNOON



Virtual Keynote Lecture | Projected at IMPERIAL 2 |
15:30 – 16:15

Chair: R. Cossu (IT)

G. De Feo | University of Salerno, Italy

***THE IMPORTANCE OF COMMUNICATION ABOUT INDUSTRIAL AND
HAZARDOUS WASTE***

S5. MARINE POLLUTION BY PLASTICS & OTHERS |
IMPERIAL 3 | 16:15 – 18:00

Chair: D.F. Lekkas (GR)

*LITTERED CIGARETTE BUTTS: THE FORGOTTEN TWO-SIDED TYPE OF
PLASTIC POLLUTION*

E. Psillakis¹, N. Solomou¹, D. Bowman², E. Fernandez¹, N. Koutela¹, D.
Venieri¹

¹Technical University of Crete, Greece | ²SepSolve Analytical, Canada

*CAN ADVANCED OXIDATION PROCESSES ENABLE BIODEGRADATION OF
PLASTICS BY SURFACE ACTIVATION?*

Chr. Argirusis¹, G. Sourkouni², Ch. Kalogirou², A. Gödde², P.K. Pandis¹

¹National Technical University of Athens, Greece | ²Clausthal University of
Technology, Germany

SCREENING OF MICROPLASTICS IN MARINE TABLE SALTS

F. Bonfante¹, E. Syranidou², N. Kalogerakis², S. Fiore¹

¹Technical University of Turin, Italy | ²Technical University of Crete, Greece

SHIP-GENERATED WASTES: THE CASE STUDY OF THREE GREEK PORTS

A. Bushi, E.E. Klontza, D.F. Lekkas

University of the Aegean, Greece

THURSDAY JULY 29

AFTERNOON



VS5. SPECIAL WASTE MANAGEMENT |

Projected at IMPERIAL 2 | 16:15 – 18:00

Chair: M. Zanetti (IT)

INNOVATIVE RECYCLING PROCESS FOR PVC CONTAINING PHTHALATES – CIRCULAR FLOORING

S. Wagner^{1,2}, M. Schlummer¹, G. Pappa³, Ch. Boukouvalas³, K. Magoulas³

¹Technical University Munich | ²Fraunhofer IVV, Germany | ³Technical University of Athens, Greece

A LIFE CYCLE ANALYSIS TO OPTIMALLY MANAGE WASTED PLASTIC PESTICIDE CONTAINERS IN GREECE

G. Garbounis, D. Komilis

University of Thrace, Greece

COAGULATION AND FENTON REACTION PERFORMANCE FOR THE TREATMENT OF TANNERY EFFLUENTS: A CASE STUDY OF GREECE

M.P. Kavvalakis^{1,2}, V. Amargianitakis¹, M. Thanopoulou¹, K. Petsalaki¹, M.N. Tzatzarakis², E.G. Dialynas¹

¹DIALYNAS S.A. | ²University of Crete, Greece

LCC ANALYSIS OF CONSTRUCTION AND DEMOLITION WASTE MANAGEMENT CHAIN

F. Carollo¹, S. Pantini¹, F. Ceruti², L. Rigamonti¹

¹Technical University of Milan | ²ENEA, Italy

CHARACTERIZATION OF POST-EARTHQUAKE CONSTRUCTION AND DEMOLITION WASTES THOUGHT HYPERSPECTRAL IMAGING ANALYSIS

G. Bonifazi, O. Trotta, G. Capobianco, S. Serranti

Sapienza University of Rome, Italy

COFFEE BREAK | 18:00 – 18:30



S6. WASTE EXPLOITATION | IMPERIAL 3 | 18:30 – 20:15

Chair: A. Franzetti (IT)

BIOSURFACTANT PRODUCTION FROM WINERY AND OLIVE OIL RESIDUES AND THEIR USE IN SOIL REMEDIATION

A. Chebbi¹, M. Vaccari¹, M. Tazzari³, F. H. Gomez Tovar¹, S. Scaffoni², A. Franzetti³

¹University of Brescia | ²ENEA | ³University of Milano-Bicocca, Italy

REMEDIATION OF ANTIBIOTICS AND HERBICIDES IN SOIL BY COLD ATMOSPHERIC PLASMA IN A NOVEL CYLINDER-TO-CYLINDRICAL GRID DBD REACTOR

M. Hatzisymeon¹, D. Tataraki², C. Tsakiroglou¹, G. Rassias², C.A. Aggelopoulos¹

¹Institute of Chemical Engineering Sciences | ²University of Patras, Greece

FUNCIONALIZATION OF DISCARDED CIGARETTE BUTTS INTO BIOCHARS FOR COPPER ADSORPTION

P. Papazoglou, A.I. Vavouraki, E. Kastanaki, E. Psillakis, A. Giannis

Technical University of Crete, Greece

VS6. HYDROTHERMAL PROCESSES |

Projected at IMPERIAL 2 | 18:30 – 20:15

Chair: J.N. Hahladakis (QA)

HYDROTHERMAL LEACHING OF SCANDIUM FROM RED MUD

J. Bumba¹, A. Diamantopoulos², O. Solcova¹, A. Giannis²

¹Institute of Chemical Process Fundamentals of the CAS, Czech Republic | ²Technical University of Crete, Greece

HYDROTHERMAL CONVERSION OF LIGNITE FLY ASH INTO SYNTHETIC ZEOLITE

A. Rovithi, E. Iatrou, E. Kastanaki, A. Stratakis, A. Giannis

Technical University of Crete, Greece

HYDROTHERMAL TREATMENT OF AGRO-INDUSTRIAL WASTE IN THE MEDITERRANEAN AREA: INFLUENCE OF THE OPERATING PARAMETERS ON THE CHARACTERISTICS OF HYDROCHAR

C. Pusceddu¹, I. Moukazis², A. Poletti¹, R. Pomi¹, E. Gidakos²

¹Sapienza University of Rome, Italy | ²Technical University of Crete, Greece

EVALUATING THE HYDROCRACKING FRAMEWORK OF OXYGENATED PLASTICS AND VACUUM GASOL BLENDS

D. Trueba, R. Palos, J.M. Arandes, A. Gutiérrez

University of the Basque Country, Spain

TRANSFORMATION AND STABILIZATION OF HEAVY METALS IN SEWAGE SLUDGE USING HYDROTHERMAL CO-CARBONIZATION WITH BIOMASS

C. He¹, C. Tang², A. Giannis³

¹Tampere University, Finland | ¹Hohai University, China | ³Technical University of Crete, Greece

VS7. CASE STUDIES II | Projected at IMPERIAL 4 | 18:30 – 20:15

Chair: S. Malinconico (IT)

*DETERMINATION OF EMERGING POLLUTANTS WITH POSSIBLE
ENDOCRINE ACTION IN GREEK WASTEWATER TREATMENT SAMPLES*

E. I. Iatrou, Z. Pournara, A. Kokkinomagoula, M. Tzatzarakis, A. Tsatsakis
University of Crete, Greece

*AGROCHEMICALS CONTAMINATION AND AGEING EFFECTS ON
GREENHOUSE PLASTIC FILM FOR RECYCLING*

P. Picuno¹, Z. Godosi², C. Picuno³, K. Kuchta³

¹University of Basilicata | ²Freelance Consultant, Italy | ³Hamburg University of Technology, Germany

*USE OF ANAEROBIC DIGESTRATE FROM BIOGAS PLANT EFFLUENTS AND
GLYCEROL AS RAW MATERIALS FOR THE PRODUCTION OF BIOMASS
AND BIOENERGY*

D. Kasiteropoulou¹, M. N. Metsoviti¹, A. Papadopoulou¹, N. Gougoulas², A. Mpesios¹, L. Ntoufas², X. Spiliotis¹, G. Papapolymerou¹

¹University of Thessaly | ²GRINCO S.A., Greece

*CHEMICAL LOOPING COMBUSTION AND HCL ADSORPTION OF MSW
SYNGAS WITH OXYGEN CARRIER SORBENT COMPOSITES*

G. Liu¹, X. Wu¹, Y. Zhao¹, A. Veksha¹, A. Giannis², T.T. Lim¹, G. Lisak¹

¹Nanyang Technological University, Singapore | ²Technical University of Crete, Greece

*MICRO X-RAY FLUORESCENCE (μ XRF) AS A FAST MULTIELEMENTAL
TECHNIQUE FOR MONITORING ARSENIC ACCUMULATION IN THE FERN
PTERIS VITTATA*

G. Bonifazi¹, G. Capobianco¹, S. Serranti¹, R. Marabottini², S. Stazi³, M. Antenzio¹, P. Brunetti¹, M. Cardarelli¹

¹Sapienza Rome University | ²University of Tuscia | ³University of Ferrara, Italy

RESOURCE RECOVERY EXEMPTIONS IN NEW SOUTH WALES, AUSTRALIA

N. Ahmed, J.M. Nash, P.A. Gorman, J. James-Hall, P.M. Maurici
Douglas Partners Pty Ltd, Australia

FRIDAY
JULY 30

FRIDAY JULY 30

MORNING



KEYNOTE LECTURE | GRAND IMPERIAL | 9:00 – 9:45

Chair: R. Cossu (IT)

R. Stegmann | Technical University of Hamburg, Germany

WASTE AVOIDANCE MANAGEMENT

S7. MINE WASTE | GRAND IMPERIAL | 9:45 – 11:30

Chair: M. Zannetii (IT)

RECOVERY OF RARE EARTH ELEMENTS FROM RED MUD

A. Liliou¹, M.L. Saru¹, A. Veksha², G. Lisak², A. Giannis¹

¹Technical University of Crete, Greece | ²Nanyang Technological University, Singapore

RESEARCH EFFORTS FOR BAUXITE RESIDUE VALORISATION AT MYTILINEOS ALUMINIUM OF GREECE PLANT

E. Balomenos, P. Davris*, A. Pagkle, Y. Karnachoritis

MYTILINEOS S.A., Greece

CHROMITE ORE ADDITION TO SERPENTINIZED MAGNESITE MINING BY-PRODUCTS FOR THE PRODUCTION OF REFRACTORIES

K. Kalaitzidou¹, E. Pagona¹, G. Skyfta¹, E. Tzamos², A. Zouboulis¹, M. Mitrakas¹

¹Aristotle University of Thessaloniki | ²North Aegean Slops SA, Greece

S8. WASTEWATER & SLUDGE | IMPERIAL 3 | 9:45 – 11:30

Chair: M.C. Lavagnolo (IT)

THE EFFECT OF COVID19 LOCKDOWN ON HYDROGEN SULFIDE PRODUCTION FROM A SEWER PUMPING STATION IN ATHENS, GREECE

V. Diamantis^{1,2}, T. Sideris^{1,3}, C. Michailidis^{1,2}, A. Eftaxias^{1,2}

¹Democritus University of Thrace | ²ACT4ENERGY P.C | ³DIMTECH S.A., Greece

QUALITY AND QUANTITY EVALUATION OF HOSPITAL WASTEWATER: THE CASE STUDY OF A GENERAL HOSPITAL IN CRETE, GREECE

S. Gyparakis¹, T. Manios¹, N. Markakis¹, I. Sabathianakis¹, I. Louloudakis¹, E. Karagiannis², M.S. Fountoulakis³, A. S. Stasinakis³

¹Hellenic Mediterranean University | ²Medical Waste S.A. | ³University of the Aegean, Greece

REDUCTION OF ENVIRONMENTAL IMPACT OF ANTIBIOTIC LEVOFLOXACIN BY OZONATION OF WASTEWATER AND SLUDGE

I. Bosevski, A. Žgajnar Gotvain

University of Ljubljana, Slovenia

QUALITY EVALUATION OF APOSELEMIS WATER TREATMENT PLANT SLUDGE AND ITS SAFE REUSE

S. Gyparakis, E. Diamadopoulos

Technical University of Crete, Greece

VS8. HAZARDOUS WASTE |

Projected at IMPERIAL 2 | 9:45 – 11:30

Chair: F. Paglietti (IT)

CHARACTERIZATION AND MANAGEMENT OF ASBESTOS CONTAINING SOIL DURING REMEDIATION

I. Lonigro¹, S. Serranti¹, S. Malinconico², G. Bonifazi¹, B. Conestabile Della Staffa²

¹La Sapienza University of Rome | ²INAIL, Italy

FRIDAY JULY 30

MORNING



IDENTIFICATION, CHARACTERIZATION AND MAPPING OF ASBESTOS CEMENT ROOFS USING LABORATORY-SCALE IMAGE ANALYSIS AND CORRELATION WITH REMOTE SENSING DATA

G. Bonifazi¹, D. Taddei², S. Bellagamba², M.P. Bogliolo², P. De Simone², S. Serranti¹

¹La Sapienza University of Rome | ²INAIL, Italy

ASBESTOS DESTRUCTION PROCESSES: THE ITALIAN EXPERIENCE AS CASE OF STUDY

F. Paglietti¹, S. Malinconico¹, G. Bonifazi², S. Serranti², C. Massaro²

¹INAIL | ²La Sapienza University of Rome, Italy

DESIGN AND DEVELOPMENT OF A PACKAGE PROTOTYPE FOR INTERMEDIATE LEVEL SOLID WASTE (ILW)

A. Tonti¹, F. Massaro², F. Giannetti²

¹INAIL | ²Sapienza University of Rome, Italy

INTERACTION OF TIN IONS WITH ENGINEERING COMPOSITE BARRIER MATERIAL FOR DESIGNING RADIOACTIVE WASTE STORAGE

R.K. Ileri Durmus, S. Akyil Erenturk

Istanbul Technical University, Turkey

COFFEE BREAK | 11:30 – 12:00

**MANAGEMENT OF INDUSTRIAL WASTE AND WASTEWATER
CONTAMINATED WITH PFAS**

J. Kumpiene | Luleå University of Technology, Sweden

This session is dedicated for exchange of ideas and experience when dealing with PFAS contaminated waste and wastewater. Per- and polyfluoroalkyl substances (PFAS) is a family of contaminants that received much attention during the last decade, as numerous PFAS-contaminated sites have been identified. The extent of PFAS contamination and the awareness of their risks have been driving the development of remediation techniques forward. Traditional method of dealing with PFAS-contaminated materials - landfilling - is not suitable any more as leachate treatment systems are not adjusted to hinder PFAS spread. In situ technologies that are being tested and applied so far at contaminated sites are based on retardation of PFAS spreading through adsorption on reactive carbon injected into soil or in installed reactive barriers. Nevertheless, this principle is partly effective as not all PFAS molecules have affinity for organic matter; as well as long-term efficiency is not known yet. In addition, materials that originate in industry (solid waste and wastewater) need to be treated to hinder further spread of PFAS into the environment. Thus, techniques that could destroy PFAS molecules are highly relevant and sought by industry, owners of contaminated sites and remediation technology companies.

**MANAGEMENT OF INDUSTRIAL WASTE AND WASTEWATER
CONTAMINATED WITH PFAS**

I. Carabante, J. Kumpiene | Luleå University of Technology, Sweden

**ELECTROCHEMICAL AND VACUUM ULTRAVIOLET COMBINED
TREATMENT FOR PFAS DEGRADATION IN WATER AND INDUSTRIAL
WASTEWATERS**

J. N. Uwayezu, I. Carabante, J. Kumpiene | Luleå University of Technology, Sweden

**COMBINATION OF SORPTION/DESORPTION AND PHOTOCATALYTIC
REDUCTION PROCESSES FOR PFAS REMOVAL**

Z. Ren, T. Leiviskä | University of Oulu, Finland

FRIDAY JULY 30

MORNING



IWWG WORKSHOP | IMPERIAL 3 | 12:00 – 13:30

**VEHICLE INDUSTRY: WASTE AND WASTEWATER TREATMENT IN
A CIRCULAR ECONOMY PERSPECTIVE**

M. Zanetti	Technical University of Turin, Italy
M.C. Lavagnolo	University of Padua, Italy
P. Viotti	Sapienza University of Rome, Italy

In the last 20 years the automotive industry has noticeably expanded thus determining the increase of End-of-Life Vehicles (ELVs) and the related waste and wastewater production. In the EC about the 80% of the total weight of vehicle is recycled; the remaining 20% is mainly formed by the so-called Automotive Shredder Residue (ASR) and tyres. The EC Directive 2000/53/CE establishes that before the end of 2015 the maximum amount of ELV wastes that may be landfilled is equal to the 5% b.w. and the maximum amount that may be incinerated is the 10 % b.w. In this workshop the vehicle production process will be examined showing some examples of waste and wastewater recovery in a circular economy perspective. Besides the demolition phases of a vehicle will be examined too in order to optimize the vehicle dismantling operations, to increase the reuse of components in new vehicles and to find new technological solution for the recovery of materials and energy. The final result is the increase of the vehicle environmental sustainability that may be quantified also by means of a Life Cycle Assessment approach.

FRIDAY JULY 30

MORNING



Virtual IWWG Workshop | Projected at IMPERIAL 2 |
12:00 – 13:30

G. De Feo | University of Salerno, Italy

**ENVIRONMENTAL EDUCATION FOR ALL AGES IN WASTE
MANAGEMENT**

It is commonly assumed that there is no age limit to change mindset and behaviour. However, children and youth can easily pick up and understand environmental issues and can be encouraged to act as agents of change for promoting and enabling change to happen within their extended family. Childhood and youth education is therefore a key means not only to make children and youth fully aware of their active role in a future sustainable society but also to make those messages understandable for everyone to encourage people to develop both awareness and a practice of waste management. Educating children and young people regarding the importance of environmental issues is essential, since instilling the right behaviour in them is also beneficial to the behaviour of their families. Although education is considered the foundation that should give cultural and ethical tools for understanding why sustainable development is so vital for the present and future, there is a poor fit between this awareness and the existing school policies in environmental and sustainability education. Moreover, research in the field of environmental and sustainability education highlighted the need of a methodological change from transmissive learning toward active learning approaches and of educators with the knowledge, behaviours, attitudes, values, and skills required for practicing environmental and sustainability education. In this workshop, an innovative education framework named 'Greenopoli' will be presented, discussing its diversity and complexity.

LUNCH BREAK | 13:30 – 15:30

POSTER SESSION | IMPERIAL 1 | 15:30 – 16:00

FRIDAY JULY 30

AFTERNOON



S9. CASE STUDIES | GRAND IMPERIAL | 16:00 – 18:00

Chair: M. Ritzkowski (DE)

COMPOSTABLE FOOD PACKAGING PROS AND CONS. BIO-BASED PLASTICS AND PAPER APPLICATIONS

Z. Markevičiūtė, V. Varžinskas

Kaunas University of Technology, Lithuania

ENERGY, A MAJOR OVERSIGHT IN THE CIRCULAR ECONOMY AND RESOURCE MANAGEMENT?

C. Cord'Homme

CNIM, France

CIRCULAR ECONOMY IN THE OIL REFINING SECTOR: WASTE VALORIZATION AS RAW MATERIALS, ADDITIVES OR FUELS

E. Tsapra, A. Mountouris, P. Pagoni

Hellenic Petroleum SA, Greece

CLOSURE, POST-CLOSURE-CARE AND AFTER-USE OF LANDFILLS

M. Ritzkowski

JOMA Umwelt- Beratungsgesellschaft mbH, Germany

SPACE DEBRIS AND MEGA-CONSTELLATIONS

C. Wiedemann

Technical University of Braunschweig, Germany

THE GREAT PROBLEM OF PLASTICS

E. Gidarakos | Technical University of Crete, Greece

J.N. Hahladakis | Qatar University, Qatar

M. Aivalioti | Technical University of Crete, Greece

Can you imagine your life free of plastics? Some of us (think they) can, some cannot. The truth is that plastics are present everywhere, either as raw material of useful goods, or as improperly managed waste on earth and oceans, even as a contaminant in the food chain and our bodies. The severity of the problem of plastic pollution is nowadays clear, however its dimensions seem to become bigger and bigger, forcing search on solutions, as well as enforcement of restrictions. Just on 3 July 2021, the EU ban on disposable plastics (e.g. straws, cups, plates) came into effect. Will this work? Is that enough? What other actions are taken or need to be taken in the near future?

VS9. SITE REMEDIATION |

Projected at IMPERIAL 2 | 16:00 – 18:00

Chair: W. Lu (CN)

ADVANCED REMEDIATION OF PYRENE CONTAMINATED SOIL USING COMBINED TECHNOLOGY OF DOUBLE DIELECTRIC BARRIER DISCHARGE (DDBD) PLASMA AND COMPOSTING

Y. Abbas, W. Lu

Tsinghua University, China

MODELING AND OPTIMIZATION OF PHOTO-FENTON DEGRADATION OF 124-TCB AT NEUTRAL PH CONDITIONS USING A VISIBLE LED SOURCE

L. Conte^{1,2}, A. Checa-Fernández¹, C. M. Domínguez¹, A. Santos¹

¹Complutense University of Madrid, Spain | ²INTEC – CONICET – UNL, Argentina

SYNERGETIC REMEDIATION OF HCH-POLLUTED SEDIMENTS BY THE ALKALINE AND ULTRASONIC ACTIVATION OF PERSULFATE: PERFORMANCE AND RESIDUAL TOXICITY

A. Checa-Fernández¹, C. M. Domínguez¹, L. Conte^{1,2}, A. Santos¹

¹Complutense University of Madrid, Spain | ²INTEC – CONICET – UNL, Argentina

FRIDAY JULY 30

AFTERNOON



REGENERATION OF GRANULATED ACTIVATED CARBON SATURATED IN 1,2,4-TRICHLOROBENZENE BY THERMAL ACTIVATION OF PERSULFATE

A. Sanchez-Yepes, D. Lorenzo, A. Romero, A. Santos

Complutense University of Madrid, Spain

ESSEVA, STUDY ON MERCURY BEHAVIOUR, MONITORING AND ABATEMENT IN E-F-W FACILITIES

H. de Chefdebien¹, C. Priault², C. Coste³

¹CNIM | ²Véolia Propreté | ³Suez RV France, France

COMPARISON OF DRILLING WASTE TREATMENT TECHNOLOGIES FOR OIL FIELDS IN RUSSIA

G. Ilinykh, N. Sliusar, V. Korotaev

Perm National Research Polytechnic University, Russia

COFFEE BREAK | 18:00 – 18:30

ROUND TABLE DISCUSSION & CLOSING CEREMONY

GRAND IMPERIAL | 18:30 – 20:00

Chair: R. Stegmann (DE)

WASTE SECTOR AND THE EU CLIMATE GOALS FOR 2030

POSTERS

1. *ESTABLISHING A MICROBIAL ELECTROLYSIS CELL FOR HYDROGEN PRODUCTION FROM ACIDIFIED CHEESE WHEY*
G. Antonopoulou¹, I. Apostolopoulos², G. Bamos², S. Bebelis², G. Lyberatos^{1,3}
¹Institute of Chemical Engineering Sciences | ²University of Patras | ³National Technical University of Athens, Greece
2. *MICROWAVE ASSISTED CO-PYROLYSIS OF AGRICULTURAL AND PLASTIC WASTE FOR THE PRODUCTION OF OIL AND CHAR*
G. Fragkou, I. Moukakis, E. Kastanaki, E. Gidarakas
 Technical University of Crete, Greece
3. *SOLAR PHOTOCATALYTIC DEGRADATION OF PHARMACEUTICALS IN HOSPITAL WASTEWATER EFFLUENTS OVER GRAPHITIC CARBON NITRIDE AT LAB AND PILOT PLANT SCALE*
 C. Kosma¹, I. Rapti¹, T. Albanis^{1,2}, I. Konstantinou^{1,2}
¹University of Ioannina | ²University Research Center of Ioannina, Greece
4. *PERFORMANCE OF A 50 m³ CONTAINERIZED PLUG-FLOW DIGESTER TREATING AGRO-INDUSTRIAL WASTES*
A. Eftaxias, V. Diamantis, A. Aivasidis
 Democritus University of Thrace, Greece
5. *PHOTOCATALYTIC DEGRADATION OF NITROARENES BY CDS-BASED COMPOSITES*
K. Kostelenos, F. Bairamis, N. Karamoschos, E. Paraschoudi, I. Konstantinou, D. Tasis
 University of Ioannina, Greece
6. *ESTABLISHING SAFE PRACTICES FOR THE USE OF ENERGY BY-PRODUCTS WITH THE RESPECT TO MINIMIZING NEGATIVE IMPACTS ON HEALTH AND ENVIRONMENT*
M. Zimova¹, E. Curdova¹, K. Hochmalova^{1,2}, L. Mateju¹, E. Hlinkova¹
¹Institute of Public Health Prague | ²Czech University of Life Sciences in Prague, Czech Republic

7. *THE LARGE DETECTOR VOLUME 3D GAMMA RAY CAMERA RT-58*

P. Otahal, J. Vosahlik, D. Bednar

National Institute for Nuclear, Chemical and Biological Protection, Czech Republic

8. *THE PROTECTION OF SURFACE RADIOACTIVE CONTAMINATION DETECTORS*

E. Fialova^{1,2}, P. Otahal¹

¹National Institute for Nuclear, Chemical and Biological Protection | ²Masaryk University in Brno, Czech Republic

9. *RECYCLE AND UTILIZATION OF DISPOSABLE FACE MASKS AS CEMENT REINFORCEMENT ADDITIVES DURING THE COVID -19 PANDEMIC*

T. Krasoudaki, K. Kapetanaki, A. Kaditis, PN. Maravelaki

Technical University of Crete, Greece

10. *INCREASED LIGHT POLLUTION DUE TO COVID-19 QUARENTINE MEASUREMENTS AND THE "MUSKUNA DEVICE" PROJECT*

B. Vargas, M. Quizhpe, J. Caicho, E. Guamba

Yachay Tech University, Equador

11. *TACKLING THE COVID19 PANDEMIC: A MULTI-CRITERIA METHODOLOGY APPROACH AND SOME IMPACT ON THE ENVIRONMENT*

C. Zopounidis¹, C. Lemonakis²

¹ Technical University of Crete | ²Hellenic Mediterranean University, Greece

12. *ANAEROBIC BIODEGRADATION OF BILGE WATER USING A COUPLED MICROBIAL ELECTROLYSIS CELL AND ANAEROBIC GRANULAR SLUDGE SYSTEM*

G. Gatidou¹, C.G. Samanides¹, M.S. Fountoulakis², I. Vyrides¹

¹Cyprus University of Technology, Cyprus | ²University of the Aegean, Greece

13. *UV AGING EFFECTS ON MOST COMMON USED PLASTICS LDPE, HDPE, PP AND PS: AN INSIGHT INTO MICROPLASTICS' FORMATION*

N.M. Ainali¹, D.N. Bikiaris¹, D.A. Lambropoulou²

¹Aristotle University of Thessaloniki | ²CIRI-AUTH, Greece

14. EVALUATING THE PERFORMANCE OF MICROBIAL ELECTROLYSIS CELLS WITH MODIFIED CARBON ELECTRODES IN REAL BILGE WATER TREATMENT AND METHANE PRODUCTION

G. Gatidou, M.K. Constantinou, G. Constantinides, I. Vyrides
Cyprus University of Technology, Cyprus

15. THE USE OF UNMANNED AERIAL VEHICLES TO DETECT LEACHATE AND WASTEWATER LEAKS FROM THE MUNICIPAL SOLID WASTE LANDFILLS

N.N.Slyusar, T.G. Filkin
Perm National Research Polytechnic University, Russia

16. PHOTOCATALYTIC DEGRADATION OF THE ANTIVIRAL DRUG ABACAVIR USING TITANIA-GRAPHENE NANOCOMPOSITES IN LANDFILL LEACHATE

K. Vasilopoulou^{1,2}, C. Nannou^{1,2}, E. Ioannidou³, E. Evgenidou^{1,2}, G. Kyzas³, D. Bikiaris¹, D. Lambropoulou^{1,2}

¹Aristotle University of Thessaloniki | ²CIRI-AUTH | ³International Hellenic University, Greece

17. XPS STUDY OF THE INTERFACE OF COTTON FABRIC TREATED WITH CATIONIC MODIFIER AND REACTIVE DYE

L. Sygellou¹, K. Papapetros^{1,2}, K.S. Andrikopoulos^{1,2}, L. Tsimpouki², G. Bokias², G. Voyiatzis¹

¹FORTH, ICE-HT | ²University of Patras, Greece

18. DYEING AND PRINTING OF COTTON AND WOOL FABRICS WITH NATURAL DYES

M. Zarkogianni, N. Nikolaidis
Aristotle University of Thessaloniki, Greece

19. WET PEROXIDE OXIDATION OF CHLORINATED COMPOUNDS IN POLLUTED WATER USING GOETHITA ACTIVATED WITH UREA AT NEUTRAL pH

D. Lorenzo, A. Romero, A. Sanchez-Yepes, A. Santos
Complutense University of Madrid, Spain

20. *USE OF AGRICULTURAL RESIDUES AS ADDITIVES FOR UPGRADING OF BRICKS*

D. Vamvuka, A. Stratakis, C. Volani
Technical University of Crete, Greece

21. *WASTE MATERIALS IN THE THERMAL POWER PLANTS*

A. Petrovic, B. Savic
The Higher Education Technical School of Professional Studies in Novi Sad, Russia

22. *TRANSBOUNDARY MOVEMENT OF HAZARDOUS WASTE: IMPLICATION AND BEST PRACTICES*

M. Ragousis, V. Pavlaku, E. Davris, E.Kofitsa
CINAR SA, Greece

23. *USE OF MATERIAL SYSTEM ANALYSIS FOR DEPICTING AN ANALYZING WASTE AND RECYCLING FLOWS*

J. Kovanda
Charles University Environment Centre, Czech Republic

24. *HAZARDOUS MATERIAL MANAGEMENT IN CLOSED INDUSTRIAL SITES*

Z. Nivolianitou
National Center for Scientific Research "DEMOKRITOS", Greece

25. *DESIGN OF A LOW-COST SYSTEM FOR THE MANAGEMENT OF LEACHATES PRODUCED IN SMALL AND MEDIUM-SIZE LANDFILLS*

C. Mandylas, M.S. Fountoulakis, A.S. Stasinakis
University of the Aegean, Greece

26. *PHOTOCHEMICAL DEGRADATION OF THE ANTIDEPRESSANT SERTRALINE BY UVC/PS & UVC/H₂O₂ PROCESSES IN SYNTHETIC WASTE WATER*

C. Drosou, Y. Petrakis, K. Tyrovola, N.P. Xekoukoulotakis
Technical University of Crete, Greece

27. *MODERN APPROACH TO STUDENT EDUCATION IN THE FIELD OF WASTE MANAGEMENT*

B. Savic, A. Petrovic
The Higher Education Technical School of Professional Studies in Novi Sad, Russia

28. *DECREASING PLASTIC WASTE IN TOURISTIC AREAS THROUGH DEPOSIT-REFUND SYSTEM*

D. Koukouli, D.F. Lekkas

University of the Aegean, Greece

29. *OPTIMIZATION OF GROWTH CONDITIONS FOR THE MARINE MICROALGA TETRASELMIS STRIATA - AN ALTERNATIVE RAW MATERIAL FOR FISH FEED*

V. Patrino¹, A. Daskalaki¹, C.N. Economou¹, I. Kotzamanis², D. Bokas³, D.V. Vagenas¹, G. Aggelis¹, A.G. Tekerlekopoulou¹

¹University of Patras | ²Hellenic Centre for Marine Research | ³PLAGTON S.A., Greece

30. *USE OF COAGULATION-FLOCCULATION FOR THE REMOVAL OF MICROPLASTICS FROM WATER*

D. Tsagkogoanni¹, O. Arvaniti¹, G. Antonopoulou², A.S. Stasinakis¹

¹University of the Aegean | ²Institute of Chemical Engineering Sciences, Greece

31. *AN OVERVIEW OF RECENT ADVANCES IN CATALYTIC DECOMPOSITION OF N₂O ON NOBLE METAL AND METAL OXIDE CATALYSTS*

T. V. Fountouli¹, C. Drosou¹, G. Artemakis¹, N.D. Charisiou², M.A. Goula², I. V. Yentekakis¹

¹Technical University of Crete | ²University of Western Macedonia, Greece

32. *CO OXIDATION ON SUPPORTED IRIDIUM NANOPARTICLES UNDER EXCESS O₂ CONDITIONS: STUDY OF RATE HYSTERESIS PHENOMENA*

C. Drosou¹, A. Stratakis¹, T.V. Fountouli¹, G. Artemakis¹, N.D. Charisiou², M.A. Goula², I.V. Yentekakis¹

¹Technical University of Crete | ²University of Western Macedonia, Greece

33. *H₂ AND/OR C₃H₆ ASSISTED SELECTIVE CATALYTIC REDUCTION OF NOX OVER Ir/ACZ CATALYSTS*

G.I. Theodoridis¹, N.D. Charisiou¹, A.I. Tsiotsias¹, C. Drosou², I.V. Yentekakis², M.A. Goula¹

¹University of Western Macedonia | ²Technical University of Crete, Greece

34. *ACTIVITY, STABILITY AND LIMIT CYCLES BEHAVIOR OF CO OXIDATION OVER Ir / La_{1-x}Sr_xMnO₃ -PEROVSKITE CATALYSTS*
C. Drosou¹, A. Stratakis¹, T.V. Fountouli¹, V. Nikolaoy¹, C. Matsouka^{2,3}, I. Nalbandian³, V. Zaspalis^{2,3}, N.D. Charisiou⁴, M.A. Goula⁴, I.V. Yentekakis¹
¹Technical University of Crete | ²Aristotle University of Thessaloniki | ³CERTH | ⁴University of Western Macedonia, Greece
35. *BOOSTING CIRCULAR ECONOMY: CONSTRUCTION AND DEMOLITION WASTE-METALLURGICAL SLAGS MIX AS PRECURSOR FOR ALKALI-ACTIVATED MATERIALS*
A. García-Díaz, D. Eliche-Quesada, S. Bueno, L. Pérez-Villarejo
University of Jaén, Spain
36. *SIMULTANEOUS ADSORPTION OF MIXTURE OF ANIONIC AND CATIONIC DYES ONTO UNTREATED BANANA PEELS AND BANANA PEEL ACTIVATED CARBON*
A. Stavrinou^{1,2}, C. A. Aggelopoulos¹, C. D. Tsakiroglou¹
¹FORTH/ICE-HT | ²University of Patras, Greece
37. *OXYGEN UPTAKE RATE TESTS AS A TOOL TO EVALUATE INACTIVATION OF ACTIVATED SLUDGE MICROORGANISMS*
K. Umiejewska, M. Żubrowska-Sudoł, A. Garlicka, J. Walczak, K. Sytek-Szmeichel
Warsaw University of Technology, Poland
38. *PRODUCTION OF CATHODIC CERAMIC ELECTRODES FOR MICROBIAL FUEL CELLS FOR MUNICIPAL LANDFILL LEACHATE TREATMENT*
P.K. Pandis^{1,3}, K. Bariamis¹, I. Vlachos¹, G. Sourkouni², V.N. Stathopoulos³, C. Argiris¹
¹National Technical University of Athens, Greece | ²Clausthal Centre for Materials Technology, Germany | ³National and Kapodistrian University of Athens, Greece
39. *BIOCHAR DERIVED FROM PYROLYSIS AS SOIL AMENDMENT*
M. Monachos, P. Chazirakis, E. Gidarakos
Technical University of Crete, Greece

**40. NOVEL METHANOGENIC PATHWAYS FROM ANAEROBIC DIGESTERS
– A POTENTIAL UPGRADE TO WASTE-TO-ENERGY**

T.Y.C. Lam^{1,2}, P.H. Lee², G.Y.A. Tan¹

¹ The University of Hong Kong, Hong Kong | ²Imperial College London, United Kingdom

**41. EVALUATION OF PROPERTIES OF BIOCHARS PRODUCED FROM
PYROLYSIS OF URBAN WASTES FOR AGRICULTURAL APPLICATIONS**

S. Sfakiotakis, D. Vamvuka

Technical University of Crete, Greece

**42. MICROWAVE THERMAL REMEDIATION OF HEXADECANE
CONTAMINATED SOIL**

I. Moukazis¹, K. Koutsourou¹, E. Kastanaki¹, P. Merkos², E. Gidarakos¹

¹Technical University of Crete | ²Special Environmental Inspector Service, Greece

**43. INCORPORATION OF NEW TECHNOLOGIES IN LARGE SCALE
BIOSLURPING IMPLEMENTATIONS**

P. Papoulias¹, E. Gidarakos²

¹Marg Tech | ²Technical University of Crete, Greece

**44. EFFICIENCY EVALUATION OF A WELL NETWORK BY DETERMINING
THE AQUIFER AND WELL LOSS**

V. D. Bolomytis, E. Gidarakos

Technical University of Crete, Greece

**45. COSMETIC MICROPLASTICS ADHERE TO ROOTS OF FLOATING
PLANTS AND AFFECT THEIR GROWTH**

U. Rozman, T. Skalar, G. Kalčikova

University of Ljubljana, Slovenia

**46. CERAMIC COATING ON BRAKE DISCS FOR REDUCING WEAR DEBRIS
EMISSION OF ELECTRIC VEHICLES**

J. Zhang, R. Cai, H. Hu, X. Nie

University of Windsor, Canada

47. *CREATING A LIFE CYCLE INVENTORY OF A CENTRALIZED
COMPOSTING FACILITY IN THE MEDITERRANEAN REGION*

P. Chazirakis^{1,2}, A. Giannis¹, E. Gidarakos¹

¹Technical University of Crete | ²DEDISA, Greece

48. *MECHANICAL STRENGTH BEHAVIOUR IN COPPER SLAG BASED
GEOPOLYMERS*

M.A. Gómez-Casero, L. Pérez-Villarejo, D. Eliche-Quesada

University of Jaén, Spain

CRETE 2021

Tuesday 27 July Afternoon	Virtual IWWG Workshop: A. Lagerkvist Luleå University of Technology (SE) "HYDROTHERMAL TREATMENT – WHEN IS PRESSURE COOKING A GOOD CHOICE?" Virtual IWWG Workshop: K. Kuchta, S. Fiore, M. Abis, F.G. Simon, M. Bruno Hamburg University of Technology (DE) & Technical University of Turin (IT) "ADVANCEMENTS IN MSWI BOTTOM ASH MANAGEMENT IN EUROPE"			
Welcome Cocktail				
Wednesday 28 July Morning	Opening Session - Addresses E. Gidarakos, R. Cossu, R. Stegmann, M. Ritzkowski Opening Lecture: "CHALLENGES OF THE POST-COVID ERA" by P. Roumeliotis Panteion University (GR)			
Coffee Break				
Keynote Lecture #1: "THE SPACE DEBRIS ENVIRONMENT" by C. Wiedemann TU Braunschweig (DE)				
Keynote Lecture #2: "LANDFILL FOR HAZARDS WASTE: SENSE OR NONSENSE ? CONCLUSIONS AND RECOMMENDATIONS" by G. Rettenberger Technical University of Applied Science in Trier (DE)				
Afternoon	Lunch Break			
Poster Session				
Session #1: Agro-Industrial Waste		Session #2: WEEE & Plastics	IWWG Workshop: R. Stegmann, R. Cossu, M. Ritzkowski "REMEDICATION OF LANDFILLS"	
Coffee Break				
Special Session: M. Aivalioti "COVID-19 ENVIRONMENTAL FOOTPRINT"		Virtual Session #1: WEEE	Virtual Session #2: Case Studies I	
Keynote Lecture #3: "CLOSING THE LOOP OF MATERIALS IN WASTE MANAGEMENT" by R. Cossu University of Padua (IT)				
Thursday 29 July Morning	Session #3: Waste Characterization & Reuse		Virtual Session #3: Healthcare Waste / COVID19	
Coffee Break				
Session #4: Toxicology & Risk		Virtual Session #4: Risk Issues		
Lunch Break				
Poster Session				
Virtual Keynote Lecture #4: "THE IMPORTANCE OF COMMUNICATION ABOUT INDUSTRIAL AND HAZARDOUS WASTE" by G. De Feo University of Salerno (IT)				
Session #5: Marine Pollution by Plastics & Others		Virtual Session #5: Special Waste Management		
Coffee Break				
Session #6: Special Waste		Virtual Session #6: Hydrothermal Processes		
CRETAN NIGHT				
Keynote Lecture #5: "WASTE AVOIDANCE MANAGEMENT" by R. Stegmann Technical University of Hamburg (DE)				
Friday 30 July Morning	Session #7: Mine Waste	Session #8: Wastewater & Sludge	Virtual Session #8: Hazardous Waste	
Coffee Break				
IWWG Special Session: J. Kumpiene "MANAGEMENT OF INDUSTRIAL WASTE AND WASTEWATER CONTAMINATED WITH PFAS"		IWWG Workshop: M. Zanetti, M.C. Lavagnolo, P. Viotti "VEHICLE INDUSTRY: WASTE AND WASTEWATER TREATMENT IN A CIRCULAR ECONOMY PERSPECTIVE"	Virtual IWWG Workshop: G. De Feo "ENVIRONMENTAL EDUCATION FOR ALL AGES IN WASTE MANAGEMENT"	
Lunch Break				
Poster Session				
Session #9: Case Studies		IWWG Workshop: E. Gidarakos, J.N. Hahladakis, M. Aivalioti "THE GREAT PROBLEM OF PLASTICS"	Virtual Session #9: Sites Remediation	
Coffee Break				
ROUND TABLE DISCUSSION "WASTE SECTOR AND THE EU CLIMATE GOALS FOR 2030"				
CLOSING CEREMONY				