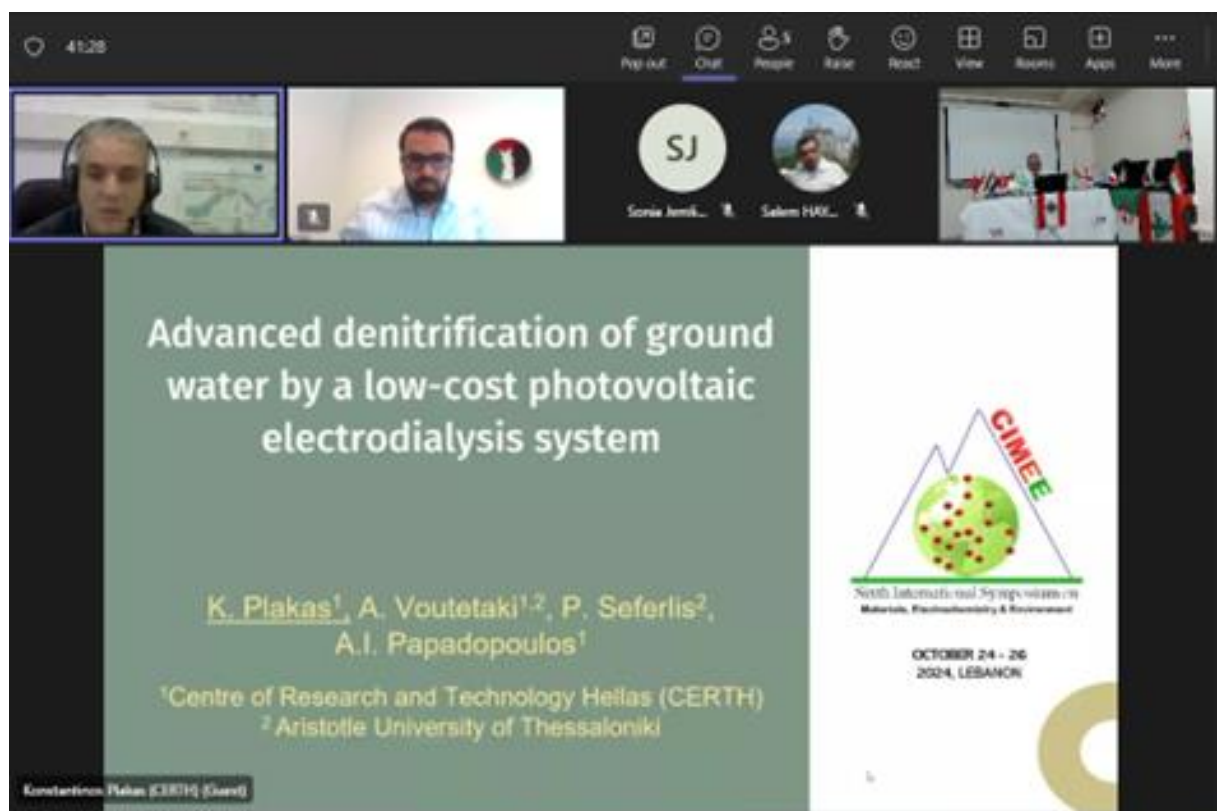
 CIMEE24 Scientific Program	
Day 1 – Thursday 24 October 2024 (Morning session)	
Opening Session (Lebanon time (GMT+3))	
08h30 – 09h00	Registration
09h00 – 10h20	Official Opening Ceremony: Lebanese National Anthem and LU anthem Opening plenary session & welcome Speech from the Conference Chair, Assoc. Prof. Ahmad El Moll , Lebanese university, Lebanon Opening address by Pr. Slim AbdelKafi , ENIS, Sfax Tunisia Opening Keynote session, Advanced denitrification of ground water by a low cost photovoltaic by electro dialysis system Assoc. Prof. Konstantinos V. Plakas , Senior researcher, Centre for Research & Technology Hellas, CERTH, Thessaloniki, Greece Keynote Session I: Waste & Biomass valorization, Chair/Co-chairs A. El Moll, K. Plakas
10h20 – 11h00	KL 1: The waste-to-wealth concept: advanced solutions for a more sustainable future Pr. Rafael Luque , Chemistry Department of KSU, Riyadh, Saudi Arabia KL 2: Lignin Valorization to Monomeric Phenols & High Value Chemicals through catalysis Pr. Vinu Ravikrishnan , Indian Institute of Technology, Madras, India
11h00 – 11h30	Break Networking, Roundtable Discussion, Photography
Afternoon Session	

OPENING Keynote Lecture

Opening Keynote session, Advanced denitrification of ground water by a low cost photovoltaic by electro dialysis system
Assoc. Prof. Konstantinos V. Plakas, Senior researcher, Centre for Research & Technology Hellas, CERTH, Thessaloniki, Greece



41:28

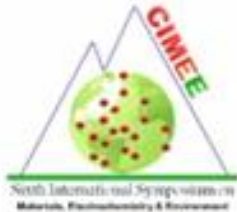
Pop-out Chat People Raise Hand React View Rooms Apps More

SC SJ
 Soha Jirik... Salem HAK...

Advanced denitrification of ground water by a low-cost photovoltaic electro dialysis system

K. Plakas¹, A. Voutetaki^{1,2}, P. Seferlis², A.I. Papadopoulos¹

¹Centre of Research and Technology Hellas (CERTH)
²Aristotle University of Thessaloniki


 North International Symposium on
 Materials, Electrochemistry & Environment
 OCTOBER 24 - 26
 2024, LEBANON

Konstantinos Plakas [CERTH] (Guest)

01:10:25

Pop out Chat People View Rest View Rooms Apps More Camera MIC Share Leave

SJ Salim HAY... IO

The AQUASOLE system

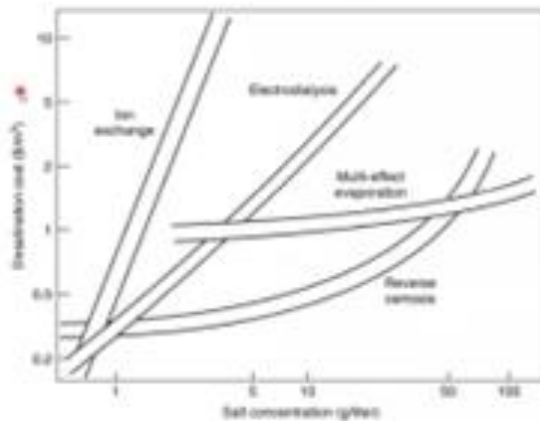
DC supply Charge controller Batteries Power supply to stack electrodes Drinking water Irrigation water

Groundwater Pre-treatment Low pressure feed pump SED stack Final treatment

Konstantinos Pelan (CERTH) (Guest)

Integrated SED system interconnected with photovoltaic (PV) panels for the treatment of nitrate-rich groundwater

ED vs alternative technologies



Comparative costs of the major desalination technologies as a function of salt concentration (Baker, R.W., *Membrane technology and applications*, 3rd Ed., John Wiley & Sons Ltd, United Kingdom, 2012)

➤ The operating costs of electrodialysis (ED) and ion exchange (IEX) scale almost linearly in proportion to the salt concentration of the feed. Therefore, these technologies are best suited to low salt-concentration feed streams (0.5-1 g/L).

➤ ED systems allow:

- ✓ short processing times
- ✓ higher water recoveries (>90%)
- ✓ coupling with renewable energies (direct use of electrical energy)
- ✓ use of selective membranes for the separation of specific ions (e.g. NO₃⁻) against other useful components (e.g. Ca²⁺, Mg²⁺)

Mute (Ctrl+Shift+M)

SJ Salim HAY... IO

Konstantinos Pelan (CERTH) (Guest)

KL 1: The waste-to-wealth concept: advanced solutions for a more sustainable future

Pr. Rafael Luque, Chemistry Department of KSU, Riyadh, Saudi Arabia

02:20:04

RD KP SJ IO ND RV

Rafael Luque

RUDN university

Universidad Ecotec

The waste-to-wealth concept: advanced solutions for a more sustainable future

Prof. Rafael Luque

rafael.luque@ksu.edu.sa

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rluque@ecotec.edu.ec

02:26:14

RD KP ND IO RV SJ

Rafael Luque

OUTLINE

1. Introduction. Food for Thought
2. Fractions from lignocellulosics fractions
 1. Hemicellulose
 2. Cellulose
 3. Lignin
3. Hemicellulosic/cellulosic by-products valorisation
 1. Methyl levulinate
 2. Humins

QUO VADIS? PRESENT AND FUTURE.....

1. Conclusions

RV KP ND SJ RD

Rafael Luque

PNAS PLASTIC WASTE VALORIZATION

Carbon deposition

Separation by ultrasound

Spent catalyst

Regeneration

Value-added CNTs

Fresh catalyst

المملكة العربية السعودية
King Saud University

KL 2: Lignin Valorization to Monomeric Phenols & High Value Chemicals through catalysis
 Pr. Vinu Ravikrishnan, Indian Institute of Technology, Madras, India

01:44:01

Department of Chemical Engineering IIT Madras

Lignin Valorization to Monomeric Phenols & High Value Chemicals through Catalysis

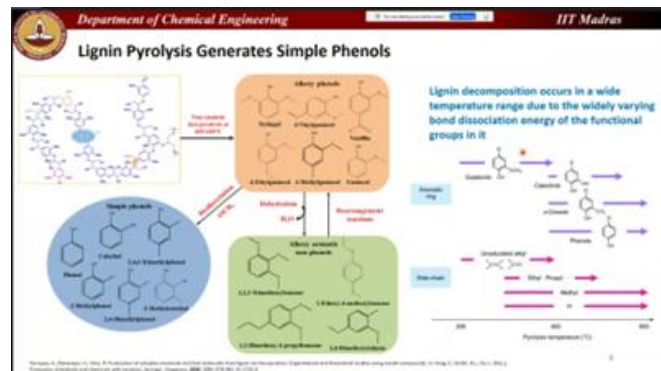
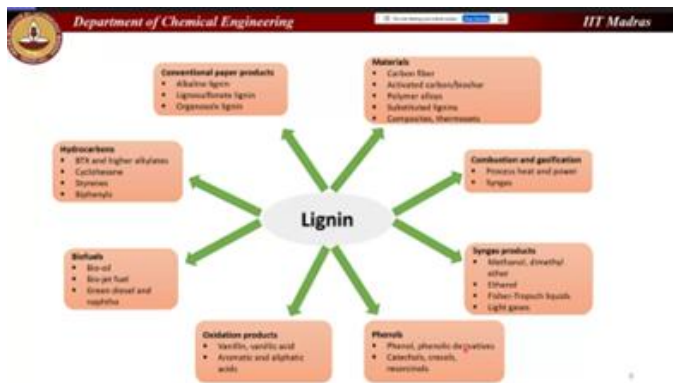
IGTS INSTITUTE FOR GREEN AND SUSTAINABLE TECHNOLOGY

Prof. R. Vinu
vinu@iitm.ac.in

MITM MOLECULAR AND THERMAL TRANSFORMATION OF BIOMASS

CIMEE 2024, Lebanon
24 Oct. 2024

R Vinu [Event]



02:09:10

Department of Chemical Engineering IIT Madras

Conclusions

- ❖ Lignin conversion to monomeric phenols is an attractive option both from economics and fine chemicals standpoint, and is imperative for 2G-bioethanol refineries
- ❖ High temperature pyrolysis & hydrothermal liquefaction results in simple phenols (phenol, cresols, xylenols), while hydrogenolysis yields C7-C9 phenols
- ❖ Bimetallic carbon supported catalysts are promising candidates to improve the lignin conversion and phenolic yields and selectivities (to propyl gualacol)
- ❖ The nature of carbon support and the solvent also influence the yield and selectivity to products, especially in transfer hydrogenolysis using H-donor solvents
- ❖ Lignin-first biorefinery approach via RCF (reductive catalytic fractionation) is an emerging option to convert lignin to phenols before ethanol production
- ❖ Conversion of monomeric phenols to further value-added products via microbial conversion pathways is a necessary step for further value-added bioproducts

R Vinu [Event]