

Joint Conference on
GREEN TECHNOLOGY AND ENVIRONMENTAL SCIENCE
&
WASTE MANAGEMENT AND RECYCLING



AVANI ATRIUM BANGKOK HOTEL



Scientific Program



Joint Conference on Green Technology And Environmental Science & Waste Management and Recycling

Bangkok Thailand
August 25, 2022

Avani Atrium Bangkok Hotel

Day 1 -(August 25, 2022)

Hall Name: Avani Atrium Bangkok Hotel

09:00-09:10 **Registrations**

09:10-09:20 Welcome Speech & Opening Ceremony

Keynote Forum

09:20-10:00 Title: Energy and comfort of urban buildings: effects of climate change in the city of Lyon (France)
Frédéric KUZNIK, Univ Lyon, CNRS, INSA-Lyon, Université Claude Bernard Lyon 1, CETHIL UMR 5008, F-69621, Villeurbanne, France.

10:00-10:40 Title: Electrochemically heterogenized Nano-AgHg amalgam material for degradation of gaseous acetaldehyde at solid-gas interphase
Muthuraman Govindan, Department of Environmental Engineering, Seoul National University of Science and Technology, Seoul 01811, Republic of Korea.

10:40-11:20 Title: Ban or Policy mix? A proposed action plan for sustainable consumption and production (SCP) of single-use plastic bags in the Sultanate of Oman.
Dr.Hameed Sulaiman, Biology Department, Sultan Qaboos University, Oman

Coffee(11:20-11:35)

Oral Forum

11:35-11:55 Title: A new method for calculating energy of matter.
Dr. Qing Li, ShiJiaZhuang Traditional Chinese Medical Hospital, ShiJiaZhuang, HeBei province, China.

11:55-12:15 Title: Use depleted oil/gas reservoir to geologically store CO₂ and harvest geothermal energy in North Oman.
Dr. Mingjie Chen, Water Research Center, Sultan Qaboos University, Oman.

12:15-12:35 Title: Core-Shell Rh@Pt and Rh@Ir Nanoparticle Thin Film Using Atomic Layer Deposition for HER Electrocatalysis.
Mr. Zou Yiming, School of Materials Science and Engineering, Nanyang Technological University, 50 Nanyang Avenue, Singapore 639798.

12:35-12:55 Title: Department of Botanical and Environmental Sciences, Guru Nanak Dev University, India.
Deachen Angmo, Conversion of sewage sludge into nutrient rich organic fertilizer through vermitechnology.

12:55-13:15 Title: Carbon sequestration potential of Vachellia tortilis in As Saleel Natural Park reserve in Oman
Mr. Rabie Al Rahbi, Biology Department, Sultan Qaboos University, Oman.

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Lunch (13:15 - 14:15)

Poster Presentations

14:15-14:35 Title: Innovative method of e-waste recycling with metals recovery.
Windy Piotr Grzybowski, Faculty of Chemical and Process Engineering, Warsaw University of Technology.

14:35 -14:55 Title: Environmental sustainability and tourism growth,
Pablo Juan Cardenas Garcia, University of Jaén, Spain.

Oral Presentation

14:55 -15:15 Title: Urban parks as a key city ecosystem in providing microclimate for city-dwelling bird population,
Miss. Mariam Hanan , School of Earth and Environment, University of Leeds, UK.

15:15-15:35 Title: Impact and influence of land cover in regulating city temperature: A case of Muscat,
Mr. Abdullah Sulaiman Al-Nadabi , Biology Department, Sultan Qaboos University, Sultanate of Oman .

Coffee(15:35-15:50)

15:50-16:10 Title: Genetically Manipulating TAGs Biosynthesis Pathway to Produce Plant Oil for Direct Use as Biodiesel
Prof. Dr. Iqbal Munir, Institute of Biotechnology and Genetic Engineering.

16:10-16:30 Title: Impact of mechatronics on industrial biotechnology.
Juan José Encinas C, Mechatronics Engineering Department.

16:30-16:50 Title: Fusarium graminearum as a nitrogen-fixing fungal-bacterial holobiont plant pathogen
Hina ali, Sarhad University of Science and Information Technology, 25000, Pakistan

16:50-17:10 Title: ASSESSMENT OF MANGROVES IN BARANGAY LIANGAN EAST PROTECTED AREA IN BACOLOD, LANA O DEL NORTE
DR. Janece Jean Polizon-Manubag, St. Therese de Avila Learning Center, Philippines

Closing Ceremony and Certificate Distribution

Scientific Program



August 26, 2022

Joint Conference on Green Technology And Environmental Science & Waste Management and Recycling

VIRTUAL PRESENTATION

Avani Atrium Bangkok Hotel

Day 2 -(August 26, 2022)

VIRTUAL PRESENTATION

Keynote Forum

- 10:00 -10:40 Title: Porous Poly(amino-amide): An Emerging Class of Functional Materials with Exceptionally High Multimedia Iodine Adsorption Ability
Dr. Subrata Chattopadhyay, Macromolecular Chemistry and Engineering Research (MCER) Group, Department of Chemistry, Indian Institute of Technology Patna.

Oral Forum

- 10:40- 11:10 Title: Recent Advances of Magnetic Gold Hybrids and Nanocomposites, and Their Potential Biological Applications
Mirza Muhammad Faran Ashraf Baig, The Hong Kong University of Science and Technology, Hongkong.
- 11:10-11:40 Title: Solid Waste Management in Iron & Steel Industry.
N P Srivastava, General Manager (Environment Control Department) Steel Authority of India Ltd. -Bokaro Steel Plant (India).
- 11:40-12:10 Title: Treatment of pharmaceutical industry wastewater using sequential nanofiltration process and organic Solvent Recovery from the retentates
Delia Teresa Sponza, Dokuz Eylül University, Engineering Faculty, Environmental Engineering Department, Turkey.

Poster

- 12:10-12:30 Title: Towards green psychology: The influence of Big Five personality on people's attitudes towards reducing plastic usage in China
Dr. Yong Li, School of Economics and Management, Shanghai Maritime University, China.
- 12:30-12:50 Title: Plastic bag usage and the policies: A case study of China
Dr. Bairong Wang, School of Economics and Management, Shanghai Maritime University, China.

Lunch Breake(12:50-13:30)

- 13:30-14:00 Title: NaOH and polyphenol recoveries from the retentates sulfonated poly(2,6-dimethyl-1,4-phenylene oxide) (SPPO), polyvinyl alcohol (PVA) membrane containing reverse osmosis process from a chemical industry
Delia Teresa Sponza, Dokuz Eylül University, Engineering Faculty, Environmental Engineering Department, Turkey.
- 14:00-14:30 Title: Catalysts and Catalysis for Waste Plastic Management- an Informative Review Author: Osman Y. Yansaneh
Ing. Osman Yusifu Yansaneh, Department of Chemical Engineering, Faculty of Science and Engineering, University of Hull (UoH), Kingston upon Hull HU6 7RX, UK.

Scientific Program



August 26, 2022

VIRTUAL PRESENTATION

Joint Conference on Green Technology And Environmental Science & Waste Management and Recycling

Avani Atrium Bangkok Hotel

- | | |
|-------------|--|
| 14:30-15:00 | Title: Analysis of municipal solid waste management in Nigeria.
Anisa Gumel , University of Salford, Manchester. |
| 15:00-15:30 | Title: Decentral Hydrogen
Paul Grunow , Trinity Solarbeteiligungen GmbH, Germany. |
| 15:30-16:00 | Title: Management of an island and grid-connected microgrid
Danilo de Paula e Silva , Federal Institute of Education, Science and Technology of Espírito Santo (IFES), Serra, E.S., Brazil |
| 16:00-16:30 | Title: Safer than Ever: Cross-Coupling Instead of Cooking
Ashot Gevorgyan , Department of Chemistry, UiT The Arctic University of Norway, 9037 Tromsø, Norway. |

Closing Ceremony

DAY 1

WAST MANAGEMENT & RECYCLING



Joint Conference on Green Technology And Environmental Science & Waste Management and Recycling

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Frédéric KUZNIK

Univ Lyon, CNRS, INSA-Lyon, Université Claude Bernard Lyon 1, CETHIL UMR 5008, F-69621, Villeurbanne, France

Energy and comfort of urban buildings: effects of climate change in the city of Lyon (France)

In cities, global warming combines with urban heat island resulting in extremely hot periods affecting health, comfort and energy consumption. The purpose of this work is to study the effect of the expected global rise in temperatures in summer on the thermal comfort and the energy consumption of typical residential buildings of the city of Lyon. In order to achieve this goal, new weather files have been created in order to predict the temperatures of the year 2070. They are generated for the IPCC RCP scenarios. The EnergyPlus tool is used to model typical residential buildings of Lyon. Those reference buildings are chosen depending on their construction year. Then, the predicted weather data files are implemented to model the buildings energy consumption and thermal comfort. The obtained results show a significant rise in both user discomfort and energy consumption and indicate that recently constructed buildings could still be improved in order to be performant enough under future high temperatures.

Keywords: Building Performance Simulation, Climate change, Urban Heat Island, Thermal comfort, Energy consumption of buildings, Future Weather Data.

Biography

Frédéric KUZNIK is Full Professor at the Nationale Institute of Applied Sciences in Lyon, France (INSA Lyon). He is the Director of the CETHIL laboratory, Center for Energy and Thermal Sciences of Lyon. He is also the Director of the joint laboratory with EDF (the French Electricity Company) called BHEE for Highly Energy Efficient Buildings. His domain of interest are, not exhaustively, energy efficient buildings and cities, thermal energy storage and comfort in buildings and cities. This activity resulted in over 200 international papers totalling about 7000 Google Scholar cites, ($h = 36$, $i10 = 81$).



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Muthuraman Govindan

Muthuraman Govindan, Youngyu Choi, Daekeun Kim*Kim*

Department of Environmental Engineering, Seoul National University of Science and Technology, Seoul 01811, Republic of Korea

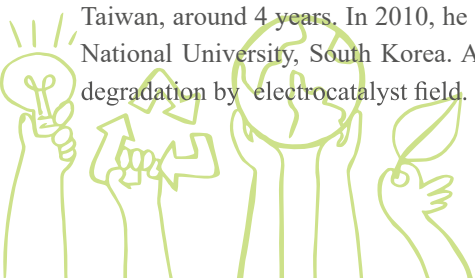
Electrochemically heterogenized Nano-AgHg amalgam material for degradation of gaseous acetaldehyde at solid-gas interphase

Degradation of indoor air borne acetaldehyde is critical in practical way. Instead of common adsorption in removal process, a gas phase sustainable degradative controlling method at ambient temperature needs to be developed. Here comes electrochemical method for ambient temperature degradative control under sustainable way. Although liquid phase acetaldehyde removal by electro-oxidative degradation is in nearly a matured state, a gas phase degradative removal is in infant stage. In a few attempts, gas diffusion electrodes used between liquid and gas interphase for the gaseous compounds degradation. In some cases, catalysts coated on a membrane has been used for the gaseous compounds degradation. Here in, authors attempted to use 3D foam electrode to make heterogenized catalyst as electron mediator by electrochemical method for the gas phase degradation of acetaldehyde at a membrane divided semi-solid electrolyte half-cell. A nickel foam electrode selected as base precursor material that was used to its heterogenization using electrochemical method in presence of Ag and Hg ions in solution. The electrochemically heterogenized material was characterized by XRD, SEM-EDS, and electrochemical redox analyses to understand the alloy composition and its confirmation. After the surface characterization of the alloy material, the alloy material served as anode in a membrane divided electrochemical cell. A chronoamperometric technique was adopted with fixed positive potential (depending on the redox peaks) and operated at semi-solid electrolyte layer contained half-cell by single pass method (continuous flow) for gaseous acetaldehyde degradation. Additional parameters such as gas flow rate and feed concentration effect on gaseous acetaldehyde degradation tested towards optimization. The continuous oxidative degradation of acetaldehyde optimized with online FTIR gas analyzer. Based on the GC-MS and FTIR analyses results, a degradation reaction scheme will be proposed.

Keywords: Alloy material, Heterogenization, Electro-catalysis, 3D foam electrode, Solid-gas interphase, Acetaldehyde.

Biography

He earned his master degree in physical chemistry and PhD degree in electrochemical field at Madras University at the year of 2003. Then moved to Busan, South Korea as postdoctoral fellow. He experienced electrochemical sensor at Prof. Zen's lab, Taichung, Taiwan, around 4 years. In 2010, he got a Brainpool fellowship from Korea Research Foundation (KRF) with Prof. Moon at Suncheon National University, South Korea. At present he is working as Research professor at SeoulTech, South Korea, under air pollutant degradation by electrocatalyst field. He handled 4 Projects and published more than 80 research articles in international journals.



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Hameed Sulaiman

Hoor Al Siyabi¹ and , Hameed Sulaiman¹ .

¹ Biology Department, Sultan Qaboos University, Oman

Ban or Policy mix? A proposed action plan for sustainable consumption and production (SCP) of single-use plastic bags in the Sultanate of Oman

The main thrust of this SCP action plan is to propose a mix of measures as an alternative to the recent ban on single-use plastic bags in the Sultanate of Oman. According to Be'ah - the mandated entity responsible for solid waste management in Oman, the average municipal solid waste (MSW) generation is 2.95 million tons per day. Next to organic fraction, plastic waste is predominant in the MSW composition. Without the implementation of effective measures, it is expected that Oman's marine environment will be heavily impacted by the amounts of plastic waste entering the Omani coast. This study utilized the descriptive research design to formulate the SCP Action Plan objectives, which employed mainly qualitative research to gather information. The overall structure of the action plan takes the form of six elements, including context analysis, objectives and expected results, planned measures, resources and capacities, communication and enforcement, and monitoring and evaluation of the plan. Through this action plan, it is recommended to have a policy mix to ensure effective enforcement of plastic regulation and mitigation measures. The mix of measures includes command and control, market-based, choice-based, and negotiated target setting. The findings will be of interest to policymakers in Oman, including the Environmental Authority and municipalities, to strengthen the enforceability and effectiveness of their policy mix to achieve sustainable production and consumption of single-use plastic bags.

Biography

Hameed Sulaiman is an Associate professor of environmental science at Sultan Qaboos University, Oman. He has 15 years of research experience in various fields of environment, published more than 50 papers in peer-reviewed journals. He has a long track record in environmental teaching, research, and outreach activities.



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Qing Li

Shijiazhuang Traditional Chinese Medical Hospital, Shijiazhuang, HeBei province, China.

Full Title of the Abstract A new method for calculating energy of matter

An approximate calculation of the spatial characteristics on finite range is required, so one quantitative continuum represents the accumulation of infinite great quantities is artificially divided it into smaller and comparable parts in which calculus operation can be applied. This operation is defined as Theorem 1 in which infinity is not involved, there is a comparable finity is constantly (forever) approaching and not reaching infinity, and only staying within a finite range. Theorem 1 can exist in this paper as a new mathematical basis for physics. Because the essence of all physical quantities is size comparison, and the size comparison relation of matter can only be space/time, so relation formula space/time is the only expression of the concept of matter, all physical quantities are applicable to this expression, each different physical quantity is a multi-dimensional representation of this expression. A new mass energy formula is also derived from this paper. There are also two points to emphasize in this equation: 1) When we talk about the energy of a moving particle, its velocity and mass are equivalent, so there is no matter with static mass and energy (velocity is 0). Similarly, it is meaningless to talk about a motion without mass (mass is 0). 2) When we talk about the energy of a moving particle, the change of velocity means the change of mass, the change of mass means the change of velocity, and these two changes also mean the change of energy. For a substance with a velocity of 0, its mass and energy are also 0..

Biography

Qing Li, grew up in Shijiazhuang City, China, received his bachelor's degree in medicine from Hebei Medical University in 1992. In the meantime, he entered the functional department of Shijiazhuang Hospital of traditional Chinese medicine in Hebei Province. He has been a resident, attending physician, deputy chief physician and chief physician here. In 2011, he obtained his Master's degree in medicine from Hebei Medical University, In 2020, he got the Full Professor position in Hebei Medical University..He is interesting in physics. He has published more than 20 papers in medicine and physics and compiled two books



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Dr. Mingjie Chen

Mingjie Chen, *Ali Al-Maktoumi, Azizallah Izady*

Water Research Center, Sultan Qaboos University, Oman

Use depleted oil/gas reservoir to geologically store CO₂ and harvest geothermal energy in North Oman

CO₂ geological storage has been investigated and carried out as a strategic approach to mitigate climate change caused by drastic increase of CO₂ emission to the atmosphere in the past 20 years. To offset the cost associated with sequestration, partial stored CO₂ can be circulated to harvest geothermal energy from the storage formations, which has been demonstrated more efficient than conventional water-based method. Depleted oil/gas reservoirs are good candidates due to the existing infrastructure, confirmed trapping structure, and completed characterization. The purpose of this study is to evaluate CO₂ sequestration and subsequent geothermal production in a depleted oil reservoir in North Oman using numerical simulations. CO₂ injected, net stored, spatiotemporal distribution of reservoir pressure, temperature and CO₂ plume, recovered geothermal energy are assessed based on the model simulation. The findings provide a preliminary feasibility evaluation of operating CO₂ sequestration and CO₂-circulated geothermal recovery in the similar reservoirs in North Oman and worldwide.

Biography

Dr. Mingjie Chen holds a B.E. in Environmental Engineering (1997) from Tsinghua University (China), a M.Sc. in Environmental Sciences (2000) from Peking University (China) and a Ph.D degree in Environmental Sciences (2005) from University of California, Santa Barbara (USA). After 10 years of research experiences in Los Alamos National Lab, Tufts University, Lawrence Livermore National Lab in USA, Dr. Chen joined Water Research Center, Sultan Qaboos University (Oman) in 2014 as a senior hydrogeologist. Dr. Chen's recent research focuses on integrated CO₂ geological storage and CO₂ circulated geothermal harvest. Dr. Chen has authored 50 peer-reviewed journal papers and 20 conference papers. At present, Dr. Chen serves as the Associate Editor or Editorial Board for "Arabian Journal of Geosciences", "Journal of Hydrology", and "Journal of Modern Green Energy".



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Yiming Zou

Yiming Zou¹, Ronn Goei¹, Su-Ann, Ong¹, Jiamin Amanda¹, Alfred Ing Yoong Tok¹

School of Materials Science and Engineering, Nanyang Technological University, 50 Nanyang Avenue, Singapore 639798

Core-Shell Rh@Pt and Rh@Ir Nanoparticle Thin Film Using Atomic Layer Deposition for HER Electrocatalysis

Hydrogen gas generation efficiency via electrochemical water splitting have been limited mostly by the availability of electrocatalyst materials that require lower overpotential during the redox reaction. Noble metals have been used extensively as electrocatalysts due to its high activity and low overpotential. However, the use of single noble metal electrocatalyst is limited due to atomic aggregation caused by its inherent high surface energy resulting in poor structural stability, and hence poor electrocatalytic performance and long term stability. In addition, using noble metals as electrocatalysts also make its cost unnecessarily high. These limitations in noble metal electrocatalysts could be enhanced by combining two noble metals in a core-shell structure (eg. Rh@Ir) as a thin film over a base substrate. In the present work, atomic layer deposition (ALD) was used to fabricate nanoparticle thin films of Rh@Ir and Rh@Pt in a core-shell structure on glassy carbon electrodes. ALD enables the fabrication of nanoparticle with controllable size, which improves electrocatalysis performance. The Rh@Pt (with overpotential of 139 mV; Tafel slope 84.8 mV/dec) and Rh@Ir (with overpotential of 169 mV and Tafel slope of 112 mV/dec) core-shell electrocatalyst exhibited better electrocatalytic performance, as compared to single metal Rh electrocatalyst (overpotential of 300 mV and Tafel slope of 190 mV/dec). Both electrocatalysts also exhibited a good long term stability in the harsh acidic electrolyte condition when subjected to chronopotentiometry studies.

Biography

1) 2015-2019 Study for Bachelor degree of Materials Physics in Northeastern University, China.

2) 2020-now Study for Ph.D. degree of Materials Science and Engineering in Nanyang Technological University, Singapore.



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Deachen Angmo

¹Deachen Angmo, ²Jaswinder Singh, ^{1*}Adarsh Pal Vig

¹Department of Botanical and Environmental Sciences, Guru Nanak Dev University, Amritsar, Punjab 143005, India

²Post Graduate Department of Zoology, Khalsa College, Amritsar, Punjab 143005, India

Conversion of sewage sludge into nutrient rich organic fertilizer through vermitechnology.

The use of sewage sludge in agriculture is growing, yet it can be a major source of harmful substances entering the environment. The proper treatment of municipal sewage sludge has emerged as one of the most pressing environmental concerns. Vermicomposting is one of the technologies that could provide an environmentally sustainable alternative for sludge treatment in municipal sewage systems. In the present study sewage sludge (SS) i.e waste of the sewage treatment plant, was fed to *Eisenia fetida* with cattle dung (CD) support as feed material at various ratios (waste: CD) of 0:100 (SS0), 25:75 (SS25), 50:50 (SS50), 75:25 (SS75) and 100:0 (SS100) on dry weight basis. Co-composting with cattle dung improved their acceptability for *E. fetida* as well as their physico-chemical properties. By observing population buildup, growth rate, biomass and cocoon formation, the favourable ratio for survival, maximum growth, and population buildup of *E. fetida* was found in a 25:75 (SS25) ratio out of all ratios. Increased waste concentrations had a major impact on worm development and reproduction. From pre-vermicompost to post-vermicompost, nutrients like phosphorus increased, whereas organic carbon dropped in all post-vermicomposting end products. Heavy metals reduced dramatically from their original levels, with the exception of zinc and manganese, which increased. According to the findings of this study, the earthworm *Eisenia fetida* was able to convert sewage sludge into nutrient-rich manure and so play a significant role in sewage treatment plant waste management.

Keywords: Vermicomposting; Sewage sludge waste; *Eisenia fetida*; Growth and population.

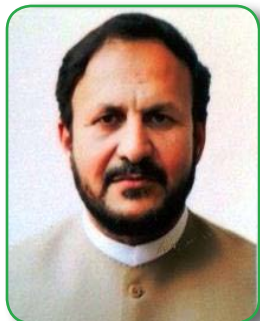
Biography

Deachen Angmo, an aspiring scholar in the field of environmental science, has been addressing important issues regarding the alternative treatment of solid waste. Her research examines the potential of earthworms to remediate the toxicity of solid waste and measures earthworms tolerance to microplastics and heavy metals. Miss Deachen Angmo's intention is to apply the remediation strategy in her home region of Ladakh where solid waste is currently unaddressed and growing threat. Angmo was recognized for her contribution in the field of environmental science by receiving young achiever award. Her exceptional leadership skills and ability to work with diverse groups of people ensures significant contribution from her in the future.



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Prof. Iqbal Munir

Iqbal Munir¹, IjazNaeem¹, Timothy P. Durrett², AqibIqbal¹, HamzaIqbal¹, MaazIqbal¹, Umair Munir¹.

¹Institute of Biotechnology and Genetic Engineering, the University of Agriculture Peshawar-Pakistan

²Department of Biochemistry and Molecular Biophysics, Kansas State University, Manhattan, KS 66506, USA.

Genetically Manipulating TAGs Biosynthesis Pathway to Produce Plant Oil for Direct Use as Biodiesel

Energy crises along with environmental concerns are driving researchers to develop viable alternative fuels from renewable resources. The use of Brassica juncea oil as an alternative fuel suffers from problems such as high viscosity, low volatility and poor cold temperature properties. The seed of *Euonymus alatus* produces low viscosity oil having unusual triacylglycerol (TAGs) called acetyl triacylglycerol (acTAGs) where the sn-3 position is esterified with acetate instead of a long chain fatty acid. The enzyme *Euonymus alatus* diacylglycerol acetyltransferase (EaDacT) present in these plants is an

Biography

Prof. Iqbal Munir is working as Director of the Institute of Biotechnology and Genetic Engineering, the University of Agriculture Peshawar-Pakistan and running several projects on Biofuel Production using transgenic technology. He has expertise in enzymology and plant biotechnology. He has the honor to discover novel enzymes and develop several crop varieties/hybrids. Considering his research and development achievements, he was granted with multiple international awards. He has played a leading role in strengthening the Institute of Biotechnology and Genetic Engineering that has been producing PhD/MPhil and BS graduates, training scientists, faculty of different research education institutes and providing analytical services to agro-business industry and research/ education institutes of the country. He has been nominated 03 time for country civil awards.



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Piotr Grzybowski

Faculty of Chemical and Process Engineering, Warsaw University of Technology, Warsaw, Poland

Innovative method of e-waste recycling with metals recovery.

An innovative method of the recycling of e-waste is presented. E-waste mostly combine PCB (Printed Circuit Board) where metal elements are covered with resin and are hard to separate. E-waste are classified as a dangerous type of the waste and require licenses for collecting, transportation and further treatment. At present such wastes are treated mostly in metallurgical process and any metals are separated from the melted blend formed. Such a process is of poor efficiency and its application is limited with regard to the access to metallurgical infrastructure. New approach toward e-waste treatment is based on Microvawe Thermal Treatment (MTT) nad Microvawe Oxidation System (MOS) developed and implemented at ATON-HT S.A. company. These processes enable effective destruction and carbonization of organic fraction present within the e-waste input and also safe and complete oxidation of gases and vapors to CO₂ and H₂O. Any toxic gases which may be formed in the MTT process are further adsorbed. Besides this technological line is equipped with ORC module to regenerate the heat from hot gases and produce electricity to power up microvawes generators. E-waste treated in MTT process transform into solid, mineral product, free from organic fractions like resin and polymers and containing only metals, metals oxides, glass and ceramics. E-waste in such a form can be later easily treated in hydrometallurgical processes to leach off all metallic fractions leaving only minerals which are then safe for the environmet when sent to a landfill.

Biography

Piotr Grzybowski Ph.D. Chem Eng. Works at the Faculty of Chemical and Process Engineering at the Warsaw University of Technology. He is involved in numerous projects on waste tretment and recycling. He possesses together over thirty patents. Cooperatres with AUT Auckland N.Z., QUT Brisbane, Australia and Kanazwa University Japan where he had academic trainings. Lately he was involved in pilot plant construction for chemical recycling of waste PET according to his original technology. He has wide realtions with industry. He is also a consultant for energy company ENEA.



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Pablo Juan Cárdenas-García

University of Jaén, Spain

Environmental sustainability and tourism growth

The objective of this analysis was to provide greater knowledge about the relationship between environmental sustainability and tourism growth. Environmental sustainability has become one of the main strategic objectives of international tourist destinations. Being more sustainable should be equivalent to having more capacity to better place the tourism product on international markets given the growing degree of environmental awareness of demand and, consequently, it should mean a significant improvement in the main tourism macromagnitudes of the countries (GDP, employment, consumption, investment, etc.). In this sense, it is important to know to what extent this is being the case, or if, on the contrary, a greater growth in tourist activity is deteriorating the environmental sustainability of destinations and, with it, their ability to compete in the future.

The main objective of this work is, precisely, to know if the economic growth of the countries affects their environmental sustainability and in what sense. To do this, using indicators from different international organizations, an econometric model is built that allows determining the existence of a relationship between the environmental dimension and tourism growth, as well as the type of relationship between both variables.

The model is applied at the country level and makes it possible to differentiate the countries whose environmental sustainability has remained constant from those that have gained or lost environmental sustainability as their tourism activity has grown in recent years.

Biography

Phd in Economics from the University of Jaén (Spain), I have extensive research experience, of international quality in my specialty: Tourism Economics, which has led to the publication of numerous articles in national and international journals of recognized prestige -indexed in JCR and Scopus-. Currently, I develop my research work in the fields of tourism analysis, planning and management, being the main line of research that I have developed and, therefore, the one that best defines and represents me as a researcher, that related to the economic impact of tourism and the analysis of tourism as an instrument of economic development.



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Mariam Hanan

Mariam Hanan¹, *Reginald Victor², Abdullah Al-Nadabi² and Erika Cuellar Soto²*

¹ School of Earth and Environment, University of Leeds, UK

² Biology Department, Sultan Qaboos University, Oman

Urban parks as a key city ecosystem in providing microclimate for city-dwelling bird population

Human activities increasingly influence many ecosystems, including man-made city ecosystems. Birds are versatile enough to thrive in rapidly changing urban environments. On the other hand, birds display significant sensitivity to environmental alterations, meaning that fragmentation of vegetation cover due to urbanization can have serious implications for the city-dwelling bird population. This study was conducted in one of the popular parks in the Muscat governorate of Oman. This study aims to measure air and surface temperature in relation to concrete built ecosystems to understand how the microclimate in the park influences city dwelling bird populations. Three areas of 50 x 50 meter plots were established and divided into four sub-plots; open, understory, canopy and concrete. The concrete sub-plot was taken as a temperature reference only. In all the sub-plots, air and surface temperature data were collected at three hour intervals, separated into morning, afternoon and evening, before and after the bird count. The bird count was carried out for 30 minutes, focusing on ten species commonly present in Oman. The results showed that the temperature was highest in August at 35.4 °C. Bird count was lowest overall in the afternoon when temperatures were highest. In addition, the use of open and forested areas by birds throughout the day varied significantly, but overall the canopy layer was favored. The latter indicates that the canopy cover provided by the park serves as a shelter for city bird populations during extreme temperatures. In general, the study concludes that parks in hyper-arid cities like Muscat not only compensate for the lack of natural vegetation in urban areas but also act as bird refuges despite their intended recreational function.

Biography

Mariam Hanan is a prospective University of Leeds student joining the Sustainability and Environmental Management program in September 2022.



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Abdullah Al-Nadabi

Abdullah Al-Nadabi¹ and Hameed Sulaiman¹

¹ Biology Department, Sultan Qaboos University, Sultanate of Oman

Impact and influence of land cover in regulating city temperature: A case of Muscat, Oman

Land cover plays a major role in regulating heat and temperature in urbanized cities. Therefore, issues related to climate change can be mitigated through increased vegetation cover to reduce temperature especially during summer in hot climatic zones like Oman. Field measurements were carried out in sub-cities within Muscat governorate in different land use types. Surface and air temperature were measured in different land cover, including road, pavements, soil and vegetation. Vegetation cover recorded the lowest surface temperature (26.92 ± 0.29)°C in the day, and in the night (18.48 ± 0.26)°C with a significance difference compared to other land covers in winter. Correspondingly, air temperature measured above the surface at 1.5 m is strongly influenced by the type of land cover. Similarly in summer, vegetation recorded the lowest surface temperature, however the difference in temperature between summer and winter is closer to 10.0°C. In contrast, man-made structures recorded the highest mean value reaching 53.20 ± 0.51 °C in the day and 41.37 ± 0.24 °C in the night. The study found that the air temperature above vegetation cover in summer was lower by about 1.80°C - 2.10°C and 1.40°C - 2.60°C in the day and night respectively. The outcome of this finding stresses the importance of land cover in altering city's micro-climate and therefore it needs to be considered as a key component in planning sustainable cities.

Biography

Abdullah Al-Nadabi is currently a PhD scholar at Sultan Qaboos University, Oman. He got his Master's degree in environmental science. He has published articles related to climate change and carbon sequestration. He participated in many conferences related to building climate resilient city and sustainability. His research interests are in multi-disciplinary area that focus on environment, climate change issues and vulnerability assessment.



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Rabie Al Rahbi

Rabie Al Rahbi¹ , and *Hameed Sulaiman¹*

¹ Biology Deptment, Sultan Qaboos University, Oman

Carbon sequestration potential of *Vachellia tortilis* in As Saleel Natural Park reserve in Oman

Protected areas play an important role in climate change mitigation around the world in terms of carbon sequestration. Native species are recognized as keystone species in the arid protected areas. As Saleel Natural Park reserve in Al Kamel Wa Alwafi in Ash Sharqiya South Province in Oman is a protected area by law. Carbon storage was estimated in the densely vegetated area of *Vachellia tortilis* in the middle of the reserve. Transects lines were used to cover the area of 1029 m² with thirty circular plots at intervals of equal distance. Dimeter at stump height (30 cm) was measured for the trees within each plot. The measurements in each plot started clock wise from north to south of the plot. A total of 1495 stems were measured and fit in an allometric equation to estimate the carbon storage. The total mean biomass in the study area is estimated as 96.4 kg/m². The total carbon stock in the area is about 49.6 ton C/m². The area in the middle of the reserve is estimated to sink about 182 ton of CO₂ equivalent /m². Despite the harsh arid climatic conditions, this species under protection in the reserve has greater potential to sequester atmospheric carbon as an ecosystem regulation service. The findings of the study will serve as a strong evidence for the reserve authorities to strengthen their strategies for protecting individual species and also conservation areas as a whole.

Biography

Rabie Al Rahbi is currently a PhD scholar at Sultan Qaboos University had his Msc in environmental Science. He is working in Environment Authority of Oman. Currently he is the director of environmental planning department with earlier work experience as environmental inspector, environmental planner and head of impact assesment section. He participated in the prepration of environment chapters in many national and international policies, stratgies and regulations. His research interests are environmental management, environmental impact assesment, biological conservation, ecosystem services and climate change.



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Juan José Encinas C

Mechatronics Engineering Department, Ricardo Palma University, Peru

Impact of mechatronics on industrial biotechnology

This research was carried out to determine the impact of mechatronics in the health sector, since currently mechatronics has an impact in multiple areas of the industry, but lately especially in biotechnology. Its development was valued, from the perspective of different researchers, which has allowed its insertion in this sector. This development benefits both patients and physicians, as they have revolutionized the field of medical equipment and devices. Biotechnology has applications in important industrial areas such as: health care, the development of new approaches for the treatment of diseases; agriculture with the development of improved crops and food. Robotics and digital image and signal processing were also found to have a greater impact on medicine. Likewise, an analysis of the mechatronics applied to this science was made, which showed that the surgical and therapeutic areas are the most favored and are nourished by innovative techniques, which are more reliable and less invasive for the patient.

Biography

Juan José Encinas Cantaro, He was born in Lima, Peru. He is a Mechatronic Engineer. Session Chair and participant of the 4th North American Industrial Engineering and Operations Management Conference-IEOM 2019 in Toronto, Canada. He received a certificate for attendance and presentation at the 2nd International Conference on Automation Engineering and Intelligent Manufacturing-ICIMA 2018 in Penang, Malaysia. He participated in the X International Symposium on Innovation and Technology-ISIT 2019 in Cusco, Peru. Member of the steering and technical committee of the ISIT. He participated as part of the Peru Section of the IEEE in the XXVI International Congress of Electronics, Electricity, Engineering and Computing-INTERCON 2019 in Lima, Peru. He with experience in research, development and innovation in the fields of mechatronics, medical robotics, telemedicine, aerospace engineering and bioengineering. Researcher in programming by IPCEM agents. Lecturer and Consultant in Mechatronic, Spatial and Biomedical Technologies. He is also a consultant in information and communication technologies in the Peruvian government sector.



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Dr. Hina Ali

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⁴ Sarhad University of Science and Information Technology, 25000, Pakistan.

Fusarium graminearum as a nitrogen-fixing fungal-bacterial holobiont plant pathogen

In nature, fungal endophytes often have facultative endohyphal bacteria (FEBs). Can a model plant pathogenic fungi have them and does it affect their phenotype? We constructed a growth system/microcosm to allow an *F. graminearum* isolate to grow through natural soil and then be re-isolated on gentamicin-containing medium, allowing endohyphal growth of the bacteria while killing other bacteria. *F. graminearum* PH-1 labelled with a His1mCherry gene staining the fungal nuclei fluorescent red was used to confirm re-isolation isolate re-isolation. Most of the holobiont isolates contained about 10 16SrRNA genes per fungal mCherry gene through qPCR. The Fg-FEB holobiont isolates were sub-cultured several times, and the FEB content on lab media was stable. Sequencing the 16SrRNA gene from several Fg-FEB holobiont isolates revealed known endophytic bacteria capable of nitrogen fixation. We tested the pathogenicity of one common Fg-FEB holobiont Fg-S.maltophilia and found increased pathogenicity. The bacterial 16SrRNA gene load per fungal His1mCherry gene inside wheat stayed the same as in culture. Finally, strong evidence was found for Fg-S.maltophilia symbiotic nitrogen fixation. Thus, fungal pathogens outside lab conditions might contain facultative endohyphal bacteria, positively affecting their pathogenicity and ecological fitness.

Biography

Deachen Angmo, an aspiring scholar in the field of environmental science, has been addressing important issues regarding the Dr. Hina Ali. She has done her doctorate degree in Biochemistry and Molecular Biology from Fujian Agriculture and Forestry University, China. She is serving as Assistant Professor in Sarhad University of Science and Information Technology, Peshawar since 2021. Currently now she is working as a postdoctoral researcher in Animal Genomics and Bioresource Research Center, Kasetsart University, Bangkok, Thailand. She has published 10 research papers in well-reputed journals. Her research is focused on Genetics, Genomics, Bioinformatics and Molecular Biology.



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Prof. Roko Andricevic

University of Split, Faculty of civil engineering, architecture and geodesy, Croatia

Ecological quality assessment under uncertainty for transitional and coastal waters

The temporal and spatial variability of pollution pressures of the coastal waters resulting from river discharges is the main cause of environmental problems along the coastline. The ecological quality assessment based on the repeated measurements sustained over a historical time frame, are often challenged with a limited spatial and temporal frequency of data. Instead of dealing with statistical measures in terms of geometric means and/or some quantiles, this study proposes an alternative approach, which is based on quantifying the uncertainty using the full probabilistic description for selected quality indicators. The ecological quality ratio, representing the amount of deviation from a reference condition, is described as a probability of exceedance from the reference condition, named the risk of deviation. The impact coming from the river estuary is analyzed using the loading capacity concept to examine the exchange flows and loading dynamics of nutrients discharged in coastal waters. The freshwater flow over the salinity gradient in the estuary is analyzed to evaluate the impact on quality indicators in transitional ecosystems. The developed methodology is presented in the case study of coastal and transitional water bodies in the Central Eastern Adriatic Sea in Croatia.

Biography

Roko Andricevic is a full professor since 2001 at the Faculty of Civil Engineering, Architecture and Geodesy, University of Split. He obtained his Ph.D. from Civil and Environmental Engineering Department, University of Minnesota, USA. He spent ten years as assistant and associate professor at the Desert Research Institute, University of Nevada Systems in Las Vegas. After returning to the Croatia in 2001, he was nominated as the Assistant Minister in the Ministry of Environmental Protection and Physical Planning, Republic of Croatia. From 2006-2008 prof. Andricevic was serving as a Dean of Civil Engineering Faculty at University of Split and from 2008-2014 was a Vice-rector for science at the University of Split. From 2014-2016 prof Andricevic was nominated as Vice-minister of Science and education in the Croatian Government. Prof Andricevic interest is in water resources management, environmental science and environmental risk assessment.



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Dr. Janece Jean Polizon-Manubag

*Janece Jean Polizon-Manubag (1), Darwin Manubag (2),
Noel Ian Rico (3) and Sharon Rose Tabugo (4)*

St. Therese de Avila Learning Center¹, Local Government Unit-Iligan², Armed Forces of the Philippines³, Mindanao State University-Iligan Institute of Technology⁴, Iligan City, PHILIPPINES

ASSESSMENT OF MANGROVES IN BARANGAY LIANGAN EAST PROTECTED AREA IN BACOLOD, LANA DEL NORTE

We conducted a rapid assessment of mangroves in the 10 Ha. protected area of Barangay Liangan East in Bacolod, Lanao del Norte to identify the naturally existing species of mangroves, and to survey sources of *Sonneratia* plantlet. Thirteen species were identified namely: *Sonneratia alba*, *Xylocarpus granatum*, *Bruguiera parviflora*, *B. cylindrica*, *Aegiceras floridum*, *Avicennia officinalis*, *Rhizophora apiculata*, *R. mucronata*, *R. stylosa*, *Acrostichum aureum*, *A. speciosum*, *Acanthus ebracteatus* and *Nypa fruticans*. These mangrove trees can trap sediment by means of their complex aerial root system and functions as land expander. It is important to note the presence of *A. aureum* (Pteridaceae) commonly known as leather fern or mangrove fern which is a bioindicator of soil degradation in the mangrove forest area. The zonation of mangrove species from landward, mid and seaward zones indicated the right species planted, except for *Rhizophora* recorded at the seafront zone. The *S. alba* plantlets with 2 leaves were found close to the mother plant and at the inundated areas which could be a good source for planting material. The ripe fruits of *S. alba* were observed during the months of December to January which could be propagated for the community-based nursery site establishment.

Biography

Dr. Janece Jean P. Manubag finished her Ph.D. Botany at the University of the Philippines Los Banos, Philippines and passed the Licensure Examination for Professional Teachers majoring Biology. She is an advocate of the environment, voluntarily involved in teaching students on environmental awareness through the Junior Chamber International movement. She is also a national trainer of mangrove conservation and rehabilitation where she advocated to adapt the Pagatpat planting at the seaward zone. She is also a volunteer of the local government unit of Iligan for the assessment of coral reef of Iligan Bay Protected Area and Marine Sanctuary in Iligan City, Philippines.





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Subrata Chattopadhyay

Mohd. Avais and Subrata Chattopadhyay

Department of Chemistry, Indian Institute of Technology Patna, India

Porous Poly(amino-amide): An Emerging Class of Functional Materials with Exceptionally High Multimedia Iodine Adsorption Ability.

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To cope with the impending energy crisis, nuclear energy appeared as most efficient and sustainable alternative to the contemporary greenhouse gas emitting techniques. However appropriate disposal of nuclear wastes is a challenging issue in context of the production of nuclear energy. One of the major and important components in nuclear waste is ¹²⁹I which has very long half life and thereby is of serious concern, as the volatile iodine can pollute the environment via both air and water and cause serious concern to human health. This makes it indispensable to find out appropriate materials which can adsorb iodine and save the environment. In this context design and use of different porous materials such as MOF, COF and porous polymers are gaining significant attention.¹⁻³

In this context we focus our studies on the design of different porous poly(amino-amide) and their applications in Iodine adsorption. While exploring the design of porous poly(amino-amide), we used both colloid templating (endotemplate) approach and exotemplate synthesis to prepare such materials with a detail analysis on the mechanism of pore generation.⁴ ⁵ The prepared materials demonstrate exceptionally high iodine adsorption capacity, due to synergic presence of both amine and amide (π electron rich) functionalities within the network. High iodine adsorption capacity of such materials in different media such as water, air & organic solvents and their high thermal and chemical stability makes them very promising materials for practical applications.

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Biography

Dr. Subrata Chattopadhyay currently working as an assistant professor at the department of Chemistry, Indian Institute of Technology Patna. He completed M.Sc. (Chemistry) from Indian Institute of Technology Madras. Thereafter, he moved to RWTH Aachen University, Germany and completed his PhD studies under the supervision of Dr. Helmut Keul and Prof. Dr. Martin Moeller. His research interest lies on sustainable design of stimuli responsive and biodegradable functional polymers and materials for various end applications, such as drug delivery, antimicrobials, sensing and environmental remediation.

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Mirza Muhammad Faran Ashraf Baig

The Hong Kong University of Science and Technology

Recent Advances of Magnetic Gold Hybrids and Nanocomposites, and Their Potential Biological Applications

Magnetic gold nanoparticles (mGNP) have become a great interest of research for nanomaterial scientists because of their significant magnetic and plasmonic properties applicable in biomedical applications. Various synthetic approaches and surface modification techniques have been used for mGNP including the most common being the coprecipitation, thermal decomposition, and microemulsion methods in addition to the BrustSchiffrin technique, which involves the reduction of metal precursors in a two-phase system (water and toluene) in the presence of alkanethiol. The hybrid magnetic-plasmonic nanoparticles based on iron core and gold shell are being considered as potential theranostic agents. In this critical review, in addition to future works, we have summarized recent developments for synthesis and surface modification of mGNP with their applications in modern biomedical science such as drug and gene delivery, bioimaging, biosensing, and neuro-regeneration, neuro-degenerative and arthritic disorders. I shall discuss the techniques and biological applications of mGNP majorly based on my own research.

Keywords: nanohybrids; magnetic gold nanoparticles; nanocomposites; surface functionalization; core-shell nanocomposites; magnetic-plasmonic nanoparticles; biological applications

Biography

His research work mainly focuses on the construction and function of DNA nanomachines, which are cutting edge and challenging topics. He designed and constructed unique DNA molecular tension probes using a short circular DNA nanotechnology technique and functionalized these probes with fluorophores, gold nanoparticles, small molecular drugs, and peptide ligands. He also achieved nano-specific precision in organizing plasmonic nanoparticles on the nano DNA frameworks to achieve plasmon resonance effects. His work on the DNA nanomachines provided an efficient mechanism of fluorescence resonance energy transfer that realizes the bio-imaging, and detection of biological events, and functions of the biomolecules. He have been working on multilayered hybrid magnetic nanoparticles for applications in nanomedicine from last two years.



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N P Srivastava

General Manager (Environment Control Department), Steel Authority of India Ltd. - Bokaro Steel Plant, India.

Solid Waste Management in Iron & Steel Industry

In a Iron and Steel Industry, slag generated from basic oxygen furnace (LD-slag) is a recyclable waste, generated anywhere between 10-18% of total crude steel produced in Integrated Steel Plants. BOF Slag generation depends to a large extent on quality of raw material as well as steelmaking process. One way of increasing slag utilization is reducing slag generation, however there are technological and operational challenges with this approach. In view of the limits of internal BOF slag recycling, gainful utilization of BOF slag for external applications need to be explored holistically. The biggest impediment to large scale application of BOF Slag is presence of free lime in the slag, CaO and MgO contained in the flux during BOF Steelmaking remain partly inactive or crystallizes as the slag solidifies and cools. These inactive materials, particularly free CaO, reacts with water and volume increases through hydration eventually. Significant enhancement of BOF slag utilization will only be possible when an integrated innovative approach is undertaken for addressing the issue from technical, techno-economic, policy and consumer perspective. The paper gives an overview of different innovative approaches taken worldwide by several investigators for debottlenecking limiting factors of LD slag which makes it possible to be utilized gainfully in wide application viz. as a cement additives and concrete admixtures, replacement of stone in rail track ballast, soil conditioner, LD slag sand, in paver blocks, road making and for waste water treatment.

Biography

Mr Navin Prakash Srivastava is graduated in Electrical Engineering from Lucknow University. He has completed MBA with HR specialization (with distinction) from Symbiosis, Pune and also Post Graduated with specialization in Environmental Law and Policy from National Law University, New Delhi. He was Trained in CORUS Consulting (Erstwhile British Steel UK), He is Certified Lead Auditor for ISO 14001: EMS, ISO 9001 : QMS, ISO 45001: OHSMS, Certified Auditor of ISO 50001 and also a Certified Energy Auditor from Bureau of Energy Efficiency (BEE).



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Delia Teresa Sponza

Dokuz Eylül University, Engineering Faculty, Environmental Engineering Department, Turkey Country

Treatment of pharmaceutical industry wastewater using sequential nanofiltration process and organic Solvent Recovery from the retentate

The development of organic solvent resistant nanofiltration membranes has offered new opportunities for this membrane technology to be applied within the pharmaceuticals productive processes that employ organic solvents as reaction media. The recovery of organic solvents is a very important aspect to be taken into account during the production processes in pharmaceutical industry. The organic solvent nanofiltration is a very promising way of treatment, concentration and purification. Under optimal design conditions, organic solvent (butanol and ethyl acetate,) nanofiltration from the retentate of this process can be also an effective process to recovery of organic solvent consumption. In this study, the effects of specific permeate fluxes (5, 12, 30 and 45 L/m².h), retention coefficient of the wastewater ($k = 0,02, 0,2$ and $0,05$), pressure difference (4, 10, 15 and 30 bar) on the nanofiltration yields and rejection percentages were studied. NTR membrane area was 15,6 m². The COD, BOD₅, TSS yields were around 98% and 99% with a retention coefficient of 0,05 at a permeate flux of 30 L/m².h and at a pressure of 30 bar in the permeate effluent of nanofiltration reactor. The butanol and ethyl acetate recoveries were 87% and 89% from the retentate of the membrane reactor.

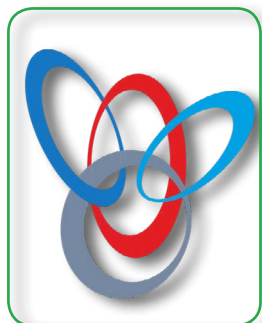
Biography

Prof. Dr. Delia Teresa Sponza is currently working as a professor at Dokuz Eylül University, Department of Environmental Engineering. Scientific study topics are; Environmental engineering microbiology, Environmental engineering ecology, Treatment of fluidized bed and activated sludge systems, Nutrient removal, Activated sludge microbiology, Environmental health, Industrial toxicity and toxicity studies, The effect of heavy metals on microorganisms, Treatment of toxic compounds by anaerobic / aerobic sequential processes, Anaerobic treatment of organic chemicals that cause industrial toxicity and wastewater containing them, Anaerobic treatability of wastewater containing dyes, Treatment of antibiotics with anaerobic and aerobic sequential systems, Anaerobic and aerobic treatment of domestic organic wastes with different industrial treatment sludges, Treatment of polyaromatic compounds with bio-surfactants in anaerobic and aerobic environments, Treatment of petrochemical, Textile and olive processing industry wastewater by sonication, Treatment of olive processing industry wastewater with nanoparticles and the toxicity of nanoparticles. She has many international publications



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Yong Li

General Manager (Environment Control Department), Steel Authority of India Ltd. -Bokaro Steel Plant, India.

Towards green psychology: The influence of Big Five personality on people's attitudes towards reducing plastic usage in China

Plastic pollution has become one of the most pressing environmental issues. It is important to understand why an individual is or is not supportive for reducing plastic usage. The purpose of this study is to use the Big Five personality structure (extraversion, agreeableness, conscientiousness, neuroticism, and openness) to explore how personality traits impact people's attitudes towards reducing plastic usage in China. A sample of 521 citizens in China is analyzed using a semi-structured online survey. The results indicate a positive and significant relationship between people's conscientiousness personality and their attitudes towards reducing plastic usage, and more importantly, this relationship is moderated by education level. The role of education in plastic crisis management is two-fold: first, a direct influence is observed in the improvement of people's environmental knowledge and anti-plastic awareness; second, an indirect influence is found in the development of a social norm and social pressure that emphasizes environmental responsibilities. Results of this study contribute to the literature on environmental psychology and plastic management, and provide important insights into plastic management.



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Bairong Wang

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Plastic bag usage and the policies: A case study of China

Reducing the usage of plastic bags has been a pressing task for governments around the world. In China, the government also makes extensive efforts to contrast the negative effects of plastic bag usage by issuing different laws and policies. Conducting an on-site counting of bags used by consumers, this study investigates the usage of plastic bags in China and evaluates the effectiveness of these policies within both supermarkets and vegetable markets (popular markets primarily for vegetables in China). Besides, 5 different factors are investigated to learn their potential influence on the usage of plastic bags, including generation, gender, the price for plastic carrier bags, the packaging style of products, and market type. Results show a boomerang effect of the pricing policy (i.e., charging for plastic carrier bags) in China. Specifically, the policy decreases the usage of plastic carrier bags by 44%. However, the total usage of plastic bags increases, rather than decreases due to the excessive usage of free inner plastic packaging bags used as alternatives to plastic carrier bags. Old and middle-young consumers are disproportionately affected by the pricing policy and behave significantly differently in their usage of plastic bags. Loopholes in management and policies are also discussed.

Reducing the usage of plastic bags has been a pressing task for governments around the world. In China, the government also makes extensive efforts to contrast the negative effects of plastic bag usage by issuing different laws and policies. Conducting an on-site counting of bags used by consumers, this study investigates the usage of plastic bags in China and evaluates the effectiveness of these policies within both supermarkets and vegetable markets (popular markets primarily for vegetables in China). Besides, 5 different factors are investigated to learn their potential influence on the usage of plastic bags, including generation, gender, the price for plastic carrier bags, the packaging style of products, and market type. Results show a boomerang effect of the pricing policy (i.e., charging for plastic carrier bags) in China. Specifically, the policy decreases the usage of plastic carrier bags by 44%. However, the total usage of plastic bags increases, rather than decreases due to the excessive usage of free inner plastic packaging bags used as alternatives to plastic carrier bags. Old and middle-young consumers are disproportionately affected by the pricing policy and behave significantly differently in their usage of plastic bags. Loopholes in management and policies are also discussed.

Biography

Bairong Wang is an assistant professor at the School of Economics and Management at Shanghai Maritime University. Her research focuses on consumer behavior and policy analysis.



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Prof. Dr. Delia Teresa Sponza

Dokuz Eylül University, Engineering Faculty, Environmental Engineering Department, Turkey Country

NaOH and polyphenol recoveries from the retentates sulfonated poly(2,6-dimethyl-1,4-phenylene oxide) (SPPO), polyvinyl alcohol (PVA) membrane containing reverse osmosis process from a chemical industry

The variations of permeate fluxes (3,7, 15, 25 and 45 L/m²h) ,pressure(5, 15, 25 and 35 bar) temperature (21, 35, 40 and 55°C) on the yields of the reverse osmosis (COD, polyphenols, TSS,dis COD and color)were studied . The variation of reverse volume reduction factor, retentate temperature were also investigated. For maximum COD, total polyphenols, TSS,dis COD and color removals in the penetrate of the reverse osmosis were found to be 99%, 98%, 98% , 99% and 98% at a permeate flux of 25 L/m².h , at a temperature of 40 °C and at a pressure of 25 bar with a 80% recovery of NaOH from retentate. Gallic acid, caffeic acid, caftaric acid, catechin, and malvidin 3- glucoside) was recovered from the retentate of the reverse osmosis with concentrations approximately above 94% of the feed. The effluent water can be used as irrigation purpose according to the Regulation The cost analysis showed that recoveries of water, NaOH and polyphenols decreased significantly the total of the treatment process

Biography

Prof. Dr. Delia Teresa Sponza is currently working as a professor at Dokuz Eylül University, Department of Environmental Engineering. Scientific study topics are; Environmental engineering microbiology, Environmental engineering ecology, Treatment of fluidized bed and activated sludge systems, Nutrient removal, Activated sludge microbiology, Environmental health, Industrial toxicity and toxicity studies, The effect of heavy metals on microorganisms, Treatment of toxic compounds by anaerobic / aerobic sequential processes, Anaerobic treatment of organic chemicals that cause industrial toxicity and wastewater containing them, Anaerobic treatability of wastewater containing dyes, Treatment of antibiotics with anaerobic and aerobic sequential systems, Anaerobic and aerobic treatment of domestic organic wastes with different industrial treatment sludges, Treatment of polyaromatic compounds with bio-surfactants in anaerobic and aerobic environments, Treatment of petrochemical, Textile and olive processing industry wastewater by sonication, Treatment of olive processing industry wastewater with nanoparticles and the toxicity of nanoparticles. She has many international publications



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Osman Y. Yansaneh

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Catalysts and Catalysis for Waste Plastic Management -an Informative Review

The dependability on plastics continues to increase irrespective of the shopping cost placed on single-use plastics and bans imposed on their use by some governments around the world. These bans and costs on plastic use are due to the increased wastes of these plastics and their post-consumer effects on the environment and human health. Pyrolysis has been reported as a top treatment method, with thermal cracking being the fundamental technique. However, this technique has vast limitations. As such, catalyst and their application are among few approaches to address this deficiency. As such, this presentation reviews the role of catalysts and catalysis for sustainable waste plastic management. The common catalysts used in this process and the available (common and uncommon) types of catalytic pyrolysis are discussed. The objective of this report was to evaluate and proffer sustainable solutions to the environmental problems of waste plastics and resolve the limitations surrounding thermal pyrolysis, which is beneficial to industrial-scale operations and research work types as a whole.

Keywords: waste plastics; environmental challenges; thermal cracking; catalytic pyrolysis, heterogeneous catalysis; industrial-scale production

Biography

Osman Yusifu Yansaneh, a certified Petro-Chemical Engineer, is an Associate Fellow at Higher Education Academy, UK. He is a PhD scholar at the University of Hull, England and his degree is under review in the meantime. His research focuses on waste plastics to valuable materials, which are applicable in a range of industries including the transport sector, infrastructure and civil engineering, oil and gas industry, among others. Osman holds an MSc Petroleum, Oil and Gas: Chemical Engineering Technology from the University of Hull, England. He also earned an MBA from University of the People, California, USA and a couple of other postgraduate and professional certificates/diplomas. Osman did a B.Eng. (Hons.) in Mechanical and Maintenance Engineering from the University of Sierra Leone. He has designed and fabricated a couple of engineering systems and have authored several publications. His research interests include waste plastics, biomass, pyrolysis, oil and gas, renewable energy and sustainability, material science and the environment.



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Anisa Gumel

Salford Business School

Analysis of municipal solid waste management in Nigeria.

This study examines the present condition of solid waste management in Nigeria. The author explores the challenges and opportunities affecting municipal solid waste management in “Nigeria” and determines the most profound challenges by analysing the interdependence and interrelationship among identified variables.

In this study, multiple stakeholders, including 15 waste management professionals interviewed online, were utilised to identify the difficulties and opportunities affecting municipal solid waste in Nigeria. The interviews were transcribed and coded using NVivo to produce pertinent variables. An online survey of Nigerian internet and social media users was done to validate statements made by experts on the identified variable. In addition, a panel of five experts participated in a focus group discussion to discover the most influential factors that influence municipal solid waste management in Nigeria by analysing the interrelationships as well as the driving and reliant power of variables.

The results show significant factors affecting municipal solid waste in Nigeria, including inadequate funding, lack of knowledge, and absence of legislation, as well as behavioural, financial, technological, and legal concerns grouped into five categories. Some claims stated by experts in the interview are supported by the survey data, while others are not. In addition, the focus group reveals patterns, correlations, and driving forces between variables that have been analysed. This study will provide decision-makers with a roadmap for resolving important waste management concerns in Nigeria and managing scarce resources effectively. It will also help non-governmental organisations combat malaria in Nigeria and other underdeveloped nations. In addition, the work contributes to the literature for future scholars to consult.

According to our knowledge, this is the only study of its kind that focuses extensively on the factors affecting municipal solid waste management to empirically determine the interrelationships between identified barriers and the most influential challenges affecting municipal solid waste management in Nigeria.

Keywords: Solid waste management, stakeholders, experts, public

Biography

Anisa is a final year PhD student at the University of Salford, Manchester, Salford business school. Her field of expertise is in sustainability and international development, and her thesis focuses on municipal solid waste management in developing countries; case study: Nigeria. With her MSc background in global health and environment, she aims to identify key influential socio-economic factors affecting municipal solid waste implementation in Nigeria and evaluate mitigation strategies that can be utilised starting from Nigeria and extending to similar developing countries.

Joint Conference on Green Technology And Environmental Science & Waste Management and Recycling

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Paul Grunow

Trinity Solarbeteiligungen GmbH, Germany

Decentral Hydrogen

Decentral hydrogen is introduced as fast transition path to short and long-term power storage. It circumvents slow infrastructure installments and enables on-site storage and heat coupling in addition to direct use of local electric power. The power-to-gas approach is extended to small combined heat and power devices in buildings that alternately operate fuel cells and electrolysis. While their heat is used to replace existing fossil heaters on-site, the power is either fed into the grid or consumed via heat-coupled electrolysis to balance the grid power at the nearest grid node. In detail, the power demand of Germany is simulated as a snapshot for 2030 with 100% renewable sourcing. The standard load profile is supplemented with additional loads from 100% electric heat pumps, 100% electric cars, and a fully electrified industry. The renewable power is then scaled up to match this demand with historic hourly yield data from 2018/2019. An optimal mix of photovoltaics, wind, biomass and hydropower is calculated in respect to estimated costs in 2030. In most master plans, hydrogen is understood to be a substitute for fossil fuels. This talk focuses on hydrogen as a storage technology in an all-electric system. The target is to model the most cost-effective end-to-end use of local renewable energies, including excess hydrogen for the industry. The on-site heat coupling is the principal argument for decentralization here. Essentially, it flattens the future peak from exclusive usage of electric heat pumps during cold periods. Batteries are tried out as supplementary components for short-term storage, due to their higher round trip efficiencies. Switching the gas net to hydrogen is considered as an alternative to overcome the slow infrastructure expansions. Further decentral measures are examined in respect to system costs.

Biography

Paul Grunow has completed his Ph.D at the age of 30 years from Technical University Berlin and Helmholtz-Zentrum Berlin and postdoctoral studies from the COPPE/UFRJ in Rio de Janeiro, Brazil. He is the general manager of Trinity Solarbeteiligungen GmbH, an investment company in renewable energies. Before, he co-founded three companies in the area of photovoltaics based in Berlin, i.e. Solon, Q-Cells, PI Photovoltaik-Institut Berlin. He has published more than 12 papers in reputed journals.



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Danilo de Paula e Silva

Federal Institute of Education, Science and Technology of Espírito Santo (IFES), Serra, E.S., Brazil

Management of an island and grid-connected microgrid Danilo de Paula e Silva

Microgrid management is a multi-objective problem that involves purchasing and selling energy, time-variant renewable generation, and maintenance costs. The microgrid can operate autonomously on an island or through mode connected with the main grid. This paper proposes an original optimization model for the management of an isolated microgrid that allows the automatic grid connection to provide ancillary services to the main grid, such as selling the excess renewable generation and purchasing electricity to charge the battery bank. The proposed optimization is formulated via hybrid economic model predictive control using weather forecasts performed by a mesoscale meteorological model. This paper also proposes a new hybrid model of a battery bank that includes the grid connection/disconnection. Furthermore, the hybrid models of renewable energy sources convert weather data to the wind and photovoltaic power by using the mixed logical dynamical framework. The proposed algorithm is sensitive to the forecasting error, which causes variations of 1% in the met demand, 27.3% in the battery bank costs, and 13.3% in the financial profits. Compared to multi-period mixed integer linear programming and rule-based strategy, we show that the proposed controller manages the microgrid more safely (i.e., it provides state of charge below its critical value during a period less than 25% of that offered by other strategies). In locations with high energy generation, only the proposed optimization furnishes energy sale profit.

Biography

Graduated, Master's and PhD in Electrical Engineering. He worked as an electrical engineer in the areas of electrical maintenance, automation and control, industrial, electrical installations, photovoltaic systems design, medium voltage substations design, and technical coordinator. He has been a professor since 2013 and in 2017 he is a professor at Federal Institute of Espírito Santo, Serra, Brazil working in the research group with partner with Electrical Eng. Department, Federal University of Espírito Santo, Vitória, Brazil. He is currently developing research on energy management, renewable sources, optimization, energy storage system, advanced control techniques and intelligent microgrids.



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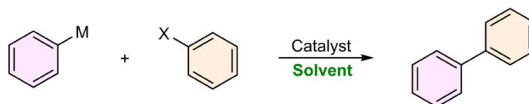
Ashot Gevorgyan

Department of Chemistry, UiT The Arctic University of Norway, 9037 Tromsø, Norway

Safer than Ever: Cross-Coupling Instead of Cooking

Development of renewable, safe, cheap and highly efficient solvents is a longstanding challenge in chemistry. From now on vegetable oils and related systems can be used not only for cooking but also in the organic synthesis. We have shown that transition metal-catalyzed cross-coupling reactions can be realized in a range of vegetable oils, butter and waxes used as a solvent. We have developed appropriate methodologies for high-throughput screening and isolation techniques applicable for vegetable oils and related systems. Vegetable oils can be exceptionally good reaction medium allowing Suzuki-Miyaura, Sonogashira and Buchwald-Hartwig cross-couplings to proceed with quantitative yields.^{1,2}

Vegetable Oils and Related Lipids as New Reaction Medium



Gevorgyan, A.; Hopmann, K. H.; Bayer, A. Lipids as versatile solvents for chemical synthesis. *Green Chem.* 2021, 23, 7219-7227.

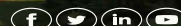
Gevorgyan, A.; Hopmann, K. H.; Bayer, A. Improved Buchwald-Hartwig amination by the use of lipids and lipid impurities. *Organometallics* 2022, <https://doi.org/10.1021/acs.organomet.1c00517>.

Biography

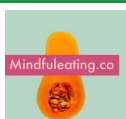
Ashot obtained his PhD from University of Rostock, Germany, examining homogeneous catalysis and C-H functionalization. He then accomplished a 2 year postdoctoral studies in the Center of Molecular and Macromolecular Studies, Poland. There, he developed novel strategies for the selective and sustainable reduction of organic substrates. In 2018, Ashot moved to UiT The Arctic University of Norway, where he worked on the discovery of novel sustainable strategies for chemical fixation of CO₂. In 2021, he established his group at UiT The Arctic University of Norway. Currently, his research is focused on the develop renewable solutions for organic synthesis.

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