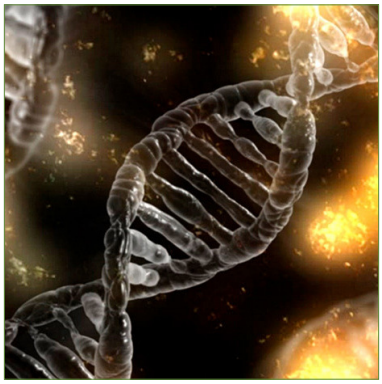
Scientific Tracks & Sessions
December 03, 2018

Recycling 2018







6th International Conference on
Recycling and Waste Management
December 03-04, 2018 | Dubai, UAE

allied academies

6th International Conference on

Recycling and Waste Management

December 03-04, 2018 | Dubai, UAE

Electric energy production from primary sieved solids through gasification

Petros Gikas and **Anthoula Manali**
Technical University of Crete, Greece

Micro-sieving is a novel rotary belt filtration process, which separates suspended solids (SS) from raw wastewater. The openings of the belt filter are typically between 150-350 μm, however, the filtration is primarily based on the cake that is formed on the belt, due to the accumulation of the separated SS (which are continuously removed through a scrubbing device). SS removal yield, for municipal wastewater has been measured between 30-50%, with parallel BOD reduction of about 20-30%. The produced biosolids (Primary Sieved Solids-PSS) have solids content between 35-45% and High Heating Value (HHV) between 23.5-24.4 MJ/kg, and thus they are ideal for gasification. However, additional drying is required, prior to gasification, to achieve solids content of about 85%. A complete system is under installation at the Wastewater Treatment Plant of Re-thymno, Greece. Initially, about 5000 m3/d of raw wastewater, will be treated by micro-sieving. The produced PSS will be further dried and then will be gasified to produce syngas. The latter will be fed into a co-generation engine for the production of thermal energy (will be used for PSS drying) and electric energy. Based on mass and energy balances, the produced electric energy will be sufficient to operate the system: micro-sieving-drying-gasification, while excess electric energy is expected to be produced. An additional benefit, apart from the energy production, is the enhancement of the performance of the downstream WWTP, due to the removal of a large fraction of SS from the wastewater, prior to the aeration tank. The study is supported by the European Commission, through the LIFE program: "New concept for energy self-sustainable wastewater treatment process and biosolids management (LIFE B2E4SustWWTP)", LIFE16 ENV/GR/000298.

Speaker Biography

Petros Gikas is Associate Professor at the School of Environmental Engineering, Technical University of Crete, Greece, and Director of the "Design of Environmental Processes Laboratory". His research interests are focused on municipal, industrial and agricultural waste and wastewater management. He is specifically active in the design of novel wastewater treatment processes, with emphasis in low cost – low energy treatment processes and on water reclamation and reuse applications. He is also working on energy recovery from biosolids and municipal solid waste, utilizing thermal or biological processes. He has over 50 publications and over 100 conference participations, while he is Associate Editor for the Journal of Environmental Management.

e: petros.gikas@enveng.tuc.gr

Notes:

allied academies

6th International Conference on

Recycling and Waste Management

December 03-04, 2018 | Dubai, UAE

Recovery of silver from electronic waste

Dusan Orac, Jakub Klimko, Matus Szabo, Dusan Klein, Jana Piroskova & Ivana Urban Kobialkova
Technical University of Kosice, Slovakia

The paper deals with recovery of silver from solution after leaching of electronic waste. Precipitation experiments were performed in 0.1 M thiosulphate solution where the silver concentration was 4.7 μ g/ml and in 0.5 M thiosulphate with a silver concentration of 5.98 μg/ml. As precipitating agents were chosen: NaBH4, Na2S2O4, KI, NaCl and Na2S. The maximum efficiency of precipitation was 100 % specifically in two cases using NaBH4 in a 0.1 M solution at 60 °C and precipitation with NaCl with the addition of 2 ml H2O2 also in a 0.1 M solution at 20 °C. Precipitation efficiency above 95 % was achieved with precipitation at 20 °C, using NaCl as a precipitant with the addition of 2 ml H2O2 in 0.5 M thiosulphate, Na2S in a 0.5 M solution and using NaBH4 in 0.1 M solution.

Speaker Biography

Dusan Orac works as an associate professor and co-director at Institute of Recycling Technologies, Faculty of Materials, Metallurgy and Recycling, Technical University of Kosice. He completed his PhD in 2010 a habilitation in 2014 at Technical University of Kosice, Slovakia in field Environmental Engineering. His scientific and research activities are focused on treatment of industrial as well as municipal wastes. His educational activities are focused on secondary raw materials, hydrometallurgical processes and production of precious and rare metals. He is a co-author of 22 scientific international publications and has more than 100 citations mostly in CC journals and his H-index is 5.

e: dusan.orac@tuke.sk

Notes:

allied academies

6th International Conference on

Recycling and Waste Management

December 03-04, 2018 | Dubai, UAE

Urban mining of precious metals and copper from mobile motherboards: Recovery studies

K Pavan Kumar Reddy2, Kushal Gaddam1, Vamshi Chirtha1, Akhil V1, MRP Reddy1, Rajesh Kumar1 and K Srinivasa Vadayar2

1Centre for Materials for Electronics Technology, India

2JNTUH College of Engineering, India

Globalization of information and communication has not only revolutionized our lives, economies and industries but also led to hazardous wastes generated from electronics. E waste or Electronic waste is a term for electrical and electronic equipment's that have become discarded or obsolete. Almost all E waste contains some or other form of recyclable material including plastic, glass and metal. The need of recycling the e waste is increasing day by day with the increase in production of electronic devices and discarding them after usage. The economics of E-waste recycling lies with the recovery of precious metals. A mobile mother board contains many valuable metals like gold, silver, palladium and copper. Recovery of precious metals and valuable metals is a big challenge as it also contains hazardous substances such as cadmium, bromine, mercury, dioxins, furans etc.

Thermo Gravimetric Analysis (TGA) has performed to study the thermal degradation characteristics of Mobile Mother Board (MMB). MMBs were calcined at 8000C about two hours in a gas fired furnace for complete combustion of MMB. The flue gases were treated at 1200°C for removing the organic toxins using a gas cleaning system.

Calcined MMBs are made into fine powder and elemental analysis made for the MMBs. Based on the composition of the elements present in MMBs different types of fluxes were added with different composition to concentrate the precious elements in Black copper during smelting process at temperature of 13000C where the gangue can be separated as slag. The chemical composition of the smelted copper is presented and discussed. This study reveals that mobile mother boards are rich source of copper and precious metals.

Speaker Biography

K PAVAN KUMAR REDDY has completed his bachelor degree in Mechanical Engineering at the age of 21 years from JNTU Hyderabad University, INDIA. He is pursuing his masters in Metallurgical Engineering in JNTU Hyderabad University. He has participated in International conference on Semiconductors and workshop on E waste Management organized by C-MET Hyderabad. He has given oral presentation in All INDIA seminar on "Advances in Metallurgy and Manufacturing Process" organized by The Institute of Engineers – INDIA.

e: pavan.2111kumar@gmail.com

Notes:

allied academies

6th International Conference on

Recycling and Waste Management

December 03-04, 2018 | Dubai, UAE

Efficient demolishing technology and waste management

Rawaa Al-Muzainy

Civil Engineering Academic, Kuwait

Efficient demolishing technology (EDT) is the process where the building is studied beforehand through structural drawings and programming. The structural drawings are used to determine the steel and metal links that are selected precisely centroid of the building to bear the stresses on the columns on the floor below and in parallel the stress of other structural members, in order to collapse the building safely. Alongside, the concrete beams are recommended to be injected with chemicals so cracking and dispersion happens faster. Then the robot excavator deconstructs the building according to the programming set, managing the construction waste before and after demolishing process. Therefore EDT enhances the environment by reusing the construction waste like ((Masonry and CMU, all untreated wood including lumber and finish materials, wood sheet materials , wood trim, metals, roofing, insulation, carpet and pad, gypsum board, unused (leftover) paint, piping and Electrical conduit)) and speeds the deconstruction process with minimum noise and damages to the surroundings. Whereas, the traditional demolishing process, like hydraulic excavators and wrecking ball, take longer and insufficient controlling is done on waste management. Thus, recycling and environmental applications are not targeted. Therefore, having EDT in the construction industry is 60% efficiency in recycling and reusing the construction waste as well as maintaining sustainable solutions within engineering and business.

Speaker Biography

Rawaa Almuzainy has completed her Master's Degree with Merit Award in Civil Engineering from Cardiff University, UK. She is accredited by the institutions of Civil and Structural engineering in the London. She has been teaching for 3 years at Australian College of Kuwait and was a structural designer for Gulf Consultancy in Kuwait. She is certified as an active member at Kuwait society of engineering and ACI – Kuwait Chapter. She specializes in buildings, structures and building environment.

e: r.almuzaini@ack.edu.kw

Notes:

allied academies

6th International Conference on

Recycling and Waste Management

December 03-04, 2018 | Dubai, UAE

Bio-electricity generation from waste vegetables (fluted pumpkin, water leaf and cabbage) using MFCs

Ihesinachi A Kalagbor, Emabie K Porokpege, and Nyon T
Ken Saro-Wiwa Polytechnic, Nigeria

Bio-electricity generation from organic wastes through the metabolic activities of microbes using MFCs is a promising Green Technology transforming Waste to Energy. Organic wastes from vegetables are generated daily in large quantities in Port Harcourt from the markets. Baseline survey revealed that if these wastes are not properly managed, their accumulation may lead to serious health problems. The heaps of vegetable waste at the market refuse dump which is our sample collection site, has close proximity to other places of business. This study was carried using these vegetables which are consumed daily by the people. Various weights of 4kg, 6kg, 8kg, 10kg and 12kg were used. Results showed that the 12kg substrates produced the highest voltage of 460 mV, 132 mV and 280 mV for fluted pumpkin, water leaf and cabbage respectively. The pH, DO and BOD values from the substrate solution of each vegetable waste indicated that the biodegradation efficiency of this process was optimal. The electricity generated was capable of powering small portable devices such as cellphones, rechargeable torches and an electrical bulb of 2V.

Speaker Biography

Ihesinachi A. Kalagbor obtained a Ph.D degree in Analytical Chemistry from University of Port-Harcourt, Rivers State Nigeria in 2006. She is a Chief lecturer and Director, Research & Development Centre, Ken Saro-Wiwa Polytechnic Bori. She has carried out a lot of research on heavy metals in water, soil, fruits, vegetables and crops. To date, she has supervised 67 students to graduation in Chemistry. She is involved with a team of researchers in her institution working on a pilot scheme for the generation of electricity using waste organic materials. She has published 26 papers in reputed journals. She is a Fellow of the Chemical Society of Nigeria (FCSN), Fellow, Institute of Chartered Chemistry of Nigeria (FICCON), Fellow, African Scientific Institute (FASI), Member, Royal Society of Chemistry (MRSC), Member, International Water Association (MIWA) and Affiliate Member of IUPAC. She is currently the coordinator, Women in Chemistry (WIC) Rivers Chapter, Nigeria.

e: ksinachi@yahoo.com

Notes:

allied academies

6th International Conference on

Recycling and Waste Management

December 03-04, 2018 | Dubai, UAE

Recycling waste plastics for road construction as an aggregate modifier - Innovation for sustainable development in developing economies

Trinity Ama Tagbor 1, Troutman H2, Appiah J K3 and Adjei D1

1Council for Scientific and Industrial Research- Building and Road Research Institute, Ghana

2 EAP Consult Ltd, Ghana

3 Latex Foam Rubber Products Ltd, Ghana

In many developing countries, including Ghana, disposal of plastic waste through conventional methods of landfilling, incineration and communal dumps are not able to effectively deal with the increasing volumes of wastes generated daily. Wide-spread occurrence of haphazard littering results in heavily polluted beaches, rivers, gutters and roadsides with detrimental impact on human health, ecosystems, critical urban infrastructure and therefore on productivity and the economy. Conventional bitumen used as a binder in asphalt roads does not meet increasing material performance requirements resulting from rapid increases in vehicular traffic intensity and the deteriorating effects of climate change (CC), particularly in hot and humid tropical climates. Polymers are added to conventional bitumen mixes to increase the stability and durability of roads and to reduce the cost of construction and maintenance over the lifetime. This paper is one part of a broader study exploring alternative uses for waste plastics in the construction industry as a potential sink for sustainable management of waste plastics and also for performance enhancement and cost reduction in the construction sector to support a myriad of development needs of rapidly-developing economies.

This paper reviews literature on polymer modified bitumen (PMB) with focus on waste plastic modified aggregates (PCA). In this study, the history and benefits of using waste PCA in asphalt are outlined followed by a review of some studies on using PCA in asphalt and a discussion of its possible application as a sustainable material for flexible road construction in a developing economy such as Ghana.

Speaker Biography

Trinity Ama Tagbor is specialized in Natural Product Chemistry. She has many years of experience in research, development and advisory services in construction materials from local sources. Her research areas include innovative construction materials from local sources, Polymer modified construction materials including waste plastic/bitumen composite materials for construction of roads and buildings for sustainability, emulsion and insecticidal emulsion paints from local materials. Her current research is on incorporation of waste materials into construction for cost effectiveness and sustainable management of waste plastic. She is currently a member of committee which is planning to organize a conference on 'Building Climate resilience of Infrastructure in Ghana' which is scheduled to take place in Ghana in 2019.

e: amitagbor@yahoo.co.uk

Notes:

allied academies

6th International Conference on

Recycling and Waste Management

December 03-04, 2018 | Dubai, UAE

Utilization of agricultural wastes in thermal insulators development

Abu-Jdayil Basim
Chemical & Petroleum Eng. Dept., UAE University, UAE

The UAE has one of the highest levels of energy consumption per capita in the world. The commercial and residential buildings in UAE account for almost 70% of the total energy consumption. An on-going search for finding the proper alternatives to preserve energy and minimize energy losses, heat insulators, part of building materials, are steadily getting their importance as a means of saving energy. Extensive use of insulating materials in construction eventually results in lower energy consumption and has positive reflection on the environment by reduction in carbon emission. Heat insulating materials (polyurethane, polystyrene, and mineral wool) available in the local market are relatively expensive and suffer from the low mechanical properties, which limit its application in the construction process. Consequently, there is a necessity to develop and come up with a cheap insulating material that possesses excellent mechanical properties as far as energy saving, prevention of water leak, and ease of handling and machining are concerned. Cost reduction of the thermal insulation materials can be achieved by using natural materials and/or wastes as a part of the main matrix, which will also contribute in the reduction of CO_2 emission. In this study, focus was made on the formulation and development of polymer-filler composite as an insulating material local agricultural waste materials (Date pits and Date Palm wood) as a filler. The solid samples produced were then subjected to different physical, mechanical and chemical tests to come up with a product formulation having competitive properties.

Speaker Biography

Abu-Jdayil B has completed his PhD in 1996 from Erlangen-Nurnberg University, Germany. He is a professor of chemical engineering at the UAE University. He has over 75 publications that have been cited over 1800 times, and his publication H-index is 24.

e: babujdayil@uaeu.ac.ae

Notes: