



INDIA INTERNATIONAL SCIENCE FESTIVAL 2019

IISF 2019 Kolkata

Young Scientists' Conference

Abstract Book

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IISF KOLKATA, 2019

Preface

The Young Scientists Conference (YSC) of the India International Science festival (IISF-2019) was held in the Biswa Bangla Convention Center (BBCC) in Kolkata during November 5-7, 2019. The grand event was inaugurated in the august presence of Prof. Ashutosh Sharma, Secretary, DST, Dr. Sekhar C. Mande, Director General, CSIR, Prof. Vijay Bhatkar, Chancellor, Nalanda University and President, VIBHA and Shri. U. Rajababu, Project Director, Mission Shakti, DRDO at the Main Hall of Biswa Bangla Convention Centre.

The conference brought near about 1500 researchers including experts from different subjects. Around 1400 young scientists/researchers/PhD scholars/post-doctoral fellows/entrepreneurs from various universities, post graduate colleges, engineering colleges, R&D organizations, national laboratories, IITs, NITs, IISERs, Industries and NGOs under the age of 45 participated YSC to discuss their research findings and exchange innovative ideas on the identified research themes such as - **Make in India, Bio Diversity, Frontier Areas of Sciences, Swachh Bharat, Swasth Bharat, Digital India, Water Crisis and Conservation.**

The conference activities were spread over three days with plenary, oral and poster sessions. There were interactive panel discussions on entrepreneurship, various aspects related to career progression, overseas education and opportunities for the young scientists. The dignitary representatives of embassies highlighted various educational programs of various countries. Near about 1000 delegates presented their scientific research through poster presentations.

This book of abstracts showcases the research findings of the brilliant minds of the country. Even a cursory look at the themes of the book of abstracts tells the huge potential and progress being made by our researchers in India.


YSC organizing committee thanks all the participants for making this event a grand success.

"Do not be led by others, awaken your own mind, amass your own experience, and decide for yourself your own path." ~ Atharva Veda

Coordinators, YSC


Jajati K. Nayak
Ayan Datta

Ms kusum sonkar

Image	Delegate ID	Theme	Details
	YSC 10738	Swachha Bharat	Category : Mechanical Engineering Organisation : pt.r.s.u. raipur Designation : student


A novel method of road cleaning application for Indian roads has been thought of and developed a "Simplified Road Cleaning machine with Modified technology suitable to Indian conditions. This equipment can be used for cleaning the long distances and wide width reduces the human effort, so that the cleaning can be done in a single drive. This system has been used to clean road and could clean various forms of papers, converse, food beverages, smooth dust and unwanted waste noticed on the roads The multipurpose road cleaning machine has a wide range of application. It can be used on all kind of roads in rural as well as the urban. Working on the basic principle of science, the project is a collaboration of mechanical machine to ltipurpose road cleaning the rising issues of cleanliness in India the can play a vital role. In this paper, our motive is to present a detailed qualitative study of cleaning system using the cleaner, the main focus being cleanliness with minimum utilization of resources available with us key words: road cleaner multipurpose, engine, mechanical device. It is seen at present that a human pushing machines and cleaning is doing with human effort and it is always to be done when roads are operated without traffic. Large machines have been made to overcome this problem, but it is very costly. In order to make less effort and very efficient system we use the brush system.

Dr Pooja Ghosh

Image	Delegate ID	Theme	Details
	YSC 10161	Swachha Bharat	Category : Others Organisation : IIT DELHI Designation : DST INSPIRE FACULTY


Anaerobic digestion (AD) is a prospective technology intended for sustainable bioenergy production from organic wastes. However, the development of effective methods for maximizing biogas yield and comprehensive insights into microbial metabolism and their syntrophic interactions for methane production are needed to improve the process economic viability. Thus, the present study intends to evaluate the potential of a co-digestion strategy utilizing Municipal Solid Waste (MSW) and sewage sludge (SS) for enhanced biogas production. Metagenomic analysis was performed to identify the dominant bacteria, archaea and fungi, changes in their communities with time and their functional roles during the course of AD. The maximum biogasyield of 586.2 mL biogas/g VS added with methane content 377 mL CH₄/g VS added and upto 69.5% methane was observed under an optimum ratio of MSW:SS (40:60 w/w). The dominant bacteria, archaea, and fungi were found to belong to Porphyromonadaceae, Methanosarcinaceae, and unidentified fungi, respectively. Bacteria and fungi were found to be majorly involved in hydrolysis and initial stages of AD. Probably, the most common archaea Methanosarsina sp. primarily followed the acetoclastic pathway and the hydrogenotrophic pathway was less followed as indicated by the reduction in abundance of syntrophic acetate oxidizers (SAO). An adequate understanding of microbial communities is important to manipulate and inoculate the specific microbial consortia to maximize methane production through the AD process.

Ms Shweta Kumari

Image	Delegate ID	Theme	Details
	YSC 11039	Swachha Bharat	<p>Category : Others Organisation : BIRLA INSTITUTE OF MESRA RANCHI Designation : RESEARCH SCHOLAR</p>


Electrocoagulation with aluminium anode and iron cathode were used for the removal of antibiotic (tetracycline) in batch mode. Time, voltage and electrode spacing were varied to determine the effect of these parameters on removal efficiency. All the experiments were performed using a constant dose of tetracycline at 50 mg/l. Optimal time was 135 min, which led to 96.25% tetracycline removal. Optimum voltage was 12 V which resulted in 98.38% removal, compared to 97.09%, 92.76% removal of tetracycline from water at 9V & 6V respectively. The effect of electrode distance on removal efficiency was also studied. For this electrode spacing was varied at 2 cm, 2.5cm, 3cm, 3.5cm & 4 cm and removal efficiency was 98.39%, 96.67%, 94.04%, 94.54 & 95.04%, respectively. The operating cost of electrocoagulation was also calculated and found to be 34.6 Rs/m³ at 2 cm, demonstrating that this method is very efficient for tetracycline removal from water. Also, sludge generated through this process was minimum. The results show that electrocoagulation can be an effective process for the removal of tetracycline from water.

Dr Anoop Kumar

Image	Delegate ID	Theme	Details
	YSC 10087	Swachha Bharat	<p>Category : Biology Organisation : University of North Bengal Designation : Assistant Professor</p>


More than 26 million people are suffering from Alzheimer's disease worldwide and are believed to double every 20 years. Thus, it is estimated that approximately 106 million people will be affected by AD in 2050. In India and all over the world the tradition of fasting to rejuvenate our body is related to faith on God. Autophagy is a tool of cell to breakdown unnecessary or used organelles for biosynthesis and surviving purpose. Autophagy is a double edge sword, in response to intra and inter cellular stress either acts as cell survivor or cell death. Paradoxical nature of autophagy is the subject of present study, it could be used for cleaning of amyloid plaques. Cell viability and cytotoxicity were evaluated by MTT assay, Neutral Red Uptake (NRU) Assay, Sulforhodamine B (SRB) assay, Lactate Dehydrogenase (LDH) assay, and Trypan blue exclusion assay. Autophagy and necrosis were evaluated by AO/EtBr staining, AVO formation, Morphological assessment assay. Apoptosis was evaluated by DNA fragmentation study and Annexin V-FITC. We observed RNS by Dihydroethidium (DHE) assay, ROS production by H2DCFDA, Nitric Oxide assay, and GST assay. The expression level of autophagic genes (Beclin-1, LC3A/B, Atg5, Atg12, Atg16L1, Atg7, LC3B, Atg3), APP, BACE 1, p53, beta-actin, and GAPDH were detected by ELISA. GAPDH-APP interaction was studied by sandwich ELISA. A new role of GAPDH and APP protein have been identified in autophagic cells. It was observed that the interaction with APP is regulated by glucose. This may be due to the reason that GAPDH besides being involved in glucose metabolism to provide energy, also acts as a regulator of autophagy by preventing aggrephagy. Taken all together, our study enlightens that starvation and nutrient deficiency-induced autophagy could be a promising strategy for AD therapy.

Mr Vicky Singh

Image	Delegate ID	Theme	Details
	YSC 11034	Swachha Bharat	<p>Category : Others Organisation : Birla Institute of Technology, Mesra, Ranchi Designation : Research Scholar (M. Tech- Environmental Science and Engineering)</p>

Micro-plastics, an emerging contaminant, is commonly defined as plastics of size less than 5 mm, commonly detected in surface water, sediments and in the upper levels of the ecological pyramid. The vulnerability and risks associated with microplastics are its persistence and toxicity to living beings. These microplastics particles are so tiny, that they cannot be detected easily in water. Thus, for the collection of micro-plastics, Manta net is generally used. These microplastics particles can act as a carrier of various toxic chemicals which ultimately enters into the food chain and can change metabolic processes by affecting intestinal damage. In the present investigation, microplastics were quantified and identified based on their functional group from a freshwater lake (Kanke Lake) in Ranchi, Jharkhand, India. The lake was divided into 3 segments (pisciculture department, water supply department and Ranchi municipal park) based on local administration of the district. Sampling along the periphery of the lake was done with the help of a net similar to Manta net, fabricated using mesh size 125 μm , trawled from a manual boat. Particles along with microplastic collected in the net were purified using H_2O_2 in the presence of Fenton's reagent followed through density separation by NaCl . The upper layer of the sample was then extracted using micro-pipette and filtered on Whatman filter paper. These micro-plastics particles, trapped on filter paper, were quantified using stereomicroscope (OLYMPUS S60) and identified using FTIR technique. The result of the FTIR technique showed that most of the particles were polypropylene, polyethylene-terephthalate and polystyrene. The morphological characteristics depicted that most of the particles were fibres. The quantification results showed that micro-plastics concentration was in order Pisciculture area > Ranchi municipal park > Water supply department. The total number of particles reported was 298 particles in 100 m³ of water.

Dr HARIHARASUTHAN RAJAGOPALAN

Image	Delegate ID	Theme	Details
	YSC 10056	Swachha Bharat	Category : Others Organisation : S.A.ENGINNERING OLLEGE Designation : PROFESSOR

CARBON EMISSION AND METHODS TO REDUCE IT FROM GRASS ROOT LEVELS

Hariharasuthan Rajagopalan

Department of Chemistry, S.A.Engineering College, Chennai 600077.India.saec@saec.ac.in


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India is a major contributor for Co₂ Emission which is the cause for global warming. And climatic change. It is mandatory to develop the methodology to reduce carbon emission in the micro level and as well as in macro level.

The grassroot examination and reducing the Co₂ emission which is chiefly due to thermal power plants automobiles emission and in fact from the cooling gas too.

consumption of the power, electricity transportation and following energy thrift methods must be followed recommended and cultivate as a habit, among the citizens. This presentation presents different strategies that one could adapt to reduce Co₂ emission by practising methods that of macrograssroot levels. This could be an eye-opener for domestic industries, transport and other sectors to give environmental education and awareness to Indian citizens

Dr HARIHARASUTHAN RAJAGOPALAN

Image	Delegate ID	Theme	Details
	YSC 10057	Swachha Bharat	Category : Others Organisation : S.A.ENGINEERING COLLEGE Designation : PROFESSOR

CARBON EMISSION AND METHODS TO REDUCE IT FROM GRASS ROOT LEVELS

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Dr HARIHARASUTHAN RAJAGOPALAN

Image	Delegate ID	Theme	Details
	YSC 10186	Swachha Bharat	Category : Others Organisation : S.A.ENGINNERING COLLEGE Designation : PROFESSOR

CARBON EMISSION AND METHODS TO REDUCE IT FROM GRASS ROOT LEVELS

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The grassroot examination and reducing the Co₂ emission which is chiefly due to thermal power plants automobiles emission and in fact from the cooling gas too. consumption of the power, electricity transportation and following energy thrift methods must be followed recommended and cultivate as a habit, among the citizens.


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Dr Dipak Ashok Jadhav

Image	Delegate ID	Theme	Details
	YSC 12565	Swachha Bharat	Category : civil Engineering Organisation : Maharashtra Institute of Technology, Aurangabad Designation : Assistant Professor


Water crisis, wastewater treatment and depletion of conventional energy sources are major concerns present population facing in the present era. To, tackle this issue, advanced bioelectrochemical system i.e. biobatteries (microbial fuel cells) provide effective and efficient solution for wastewater treatment along with simultaneous electricity generation. In this system, microbes inoculated in anodic chamber capable to oxidize the organic carbon present in wastewater and generate protons and electrons. These electrons further harvested through external electric circuit to produce the direct current. In laboratory, such biobatteries are developed for providing effective and efficient solution for kitchen wastewater generated from canteen and hostel mess. Such system was made of carbon felt electrode material and ceramic separator along with external electronic circuit. Results showed that biobattery is capable to produce power density of 304 mW/m² under 100 Ohm resistance and open circuit voltage of 520 ± 36 mV. During initial period of operation, biofuel cells are capable to remove the organic matter by 78 ± 4.7% along with start-up time of 3 days. Efforts are put forward for enhancing the maximum energy recovery from such wastewater in biobatteries by optimizing the operation parameters and design constraints. Biobatteries thus provide an alternative approach for reduction in the biodegradable fraction of the kitchen waste generated at operating conditions, thereby, addressing the major environmental issues posed by existing waste management practices.

Mr Mohammad Tarique zeyad

Image	Delegate ID	Theme	Details
	YSC 11200	Swachha Bharat	Category : Biology Organisation : Aligarh Muslim University Designation : Research Scholar

Abstract: In an effort to assess the toxic potential of industrial wastewater, the samples were collected from Loni pesticide industrial areas of Ghaziabad City, India. Atomic Absorption spectrophotometer (AAS) and Gas Chromatography (GC) analysis revealed the presence of numerous heavy metals, organochlorine and organophosphate pesticides. The XAD, Dichloromethane (DCM) and n-Hexane extracted wastewater were analyzed for genotoxic potential using Ames Salmonella/mammalian microsome test. The XAD concentrated sample displayed the remarkable mutagenic action compared to sample obtained from solvent assisted liquid-liquid extraction. The strain TA98 was found utmost sensitive towards all the extracts with (+S9) and without (?S9) metabolic fraction. The toxicity of wastewater was further evaluated using plant models, (*Allium cepa*) and mungbean (*Vigna radiata*). Wastewater induced chromosomal aberrations in roots of *A. cepa* was found to be significant (p < 0.05).
Keywords: Genotoxicity; Oxidative stress; Gas chromatography; Plasmid nicking; CLSM, Pesticide wastewater.


Dr Man Vir Singh

Image	Delegate ID	Theme	Details
	YSC 10081	Swachha Bharat	<p>Category : Chemistry Organisation : Singhania University Designation : Assistant Professor</p>

Catalytic conversions of virgin and waste HD-PE plastics into renewable fuel/petrochemicals were carried out using a cobalt carbonate (CaCO_3) catalysts by a pyrolysis-catalytic cracking process. Renewable fuel can be used as the different purpose of energy-source like petrol/diesel engines. Renewable hydrocarbons fuel were characterized by 2D-GC \times GC/TOFMS, FT-IR spectroscopy, ICP, ^1H NMR spectroscopy, CHNS/O analyzer and its results found absolutely good hydrocarbon compounds as (petrochemicals obtained from virgin plastic and waste HD-PE). Conversion rates of four experiments as virgin HD-PE into renewable hydrocarbons fuel was found 80%, 84.40%, 88.22%, 92 %, light gases 19.69%, 15.35%, 11.53%, 7.77%, residues 0.31%, 0.28%, 0.25%, 0.30 recovered from the overall production. Conversion rates of four experiments as waste HD-PE into renewable hydrocarbons fuel was found 79%, 82%, 84%, 91 %, light gases 20.50%, 17.55%, 15.65%, 8.59%, residues 0.50%, 0.49%, 0.35%, 0.41. It was observed that it is the only degradation of virgin and waste HD-PE but not creating any other reactions.

Keywords:- Virgin and waste HD-PE, Renewable Hydrocarbons Fuel, Pyrolysis process, CoCO_3 Catalyst.


Mr Indranil Saha

Image	Delegate ID	Theme	Details
	YSC 10162	Swachha Bharat	Category : Mechatronics Engineering Organisation : Vellore Institute of Technology Designation : Junior Research Fellow

Growing economy, increasing when population rising living standards and increasing consumption levels in developing countries such as India results in generation of tons and tons of waste. Considering human health and clean environment effective farther disposal becomes necessary. Currently waste material is collected from household and business entities and disposed manually using waste bin and trucks.


The invention presents an automated waste management system composing automated waste bin, cart and tunnel to dispose waste bin an effective manner.

Ms riya sahu

Image	Delegate ID	Theme	Details
	YSC 10755	Swachha Bharat	Category : Nano Engineering Organisation : CSIR-AMPRI Designation : Project assistant II

Moisture resistant and high strength industrial stone waste based hybrid polymer composites are prepared using simple and cost effective compressive moulding technique. Hybrid polymer composites of inorganic stone waste powder are fabricated with various filler concentrations of 10, 20, 30, and 50 wt% in epoxy resin matrix system. Crystal structure and mineral composition of stone waste powder was carried out using X-Ray diffraction (XRD) analysis. Scanning electron microscopy (SEM) technique was performed to measure the dimension and surface morphology of stone waste powder and polymer hybrid composite. Fourier transform-infrared spectroscopy (FT-IR) confirmed the presence of various characteristics peaks in stone waste epoxy polymer composite. The variation of dielectric constant, dissipation factor, ac electrical conductivity of raw stone waste powder and their polymer composite were analyzed in the frequency range of 20Hz-2MHz. High dielectric constant of 275 at 20 Hz and low dissipation loss factor of 0.02 at 2 MHz were observed for stone waste powder. Dielectric constant of stone based polymer composites was decreased significantly from 275 to 45, 47, 55, and 60 for filler concentrations of 10,20,30 and 50% in epoxy matrix, respectively. Ultra low water absorption of 0.08 % and high flexural strength upto 39 MPa were achieved with a stone content of 50 wt%. Such low water absorption, high dielectric constant and flexural strength make it suitable for durable and sustainable electrical insulating and advanced construction materials applications through eco-friendly process.

Dr Dalapathi Gugulothu

Image	Delegate ID	Theme	Details
	YSC 10102	Swachha Bharat	<p>Category : Biology Organisation : Balaji Institute of Pharmaceutical Sciences Designation : HOD</p>

Novel bioadhesive microspheres of Silymarin:Formulation design and Anti-Parkinson efficacy evaluation

Dalapathi Gugulothu, Radhika Kandula and Suraj Kumar Choudhary

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Abstract

Background and problem

Silymarin is a standardized seed extract and acts as antioxidants. The short half-life, poor bioavailability and faster solubility in acidic media make it a suitable candidate for development of bioadhesive sustained release microspheres of Silymarin.

The present investigation was to develop bioadhesive sustained release microspheres of Silymarin using fenugreek, Colocasia esculaneta and synthetic polymer HPMC K4M and evaluate various physicochemical properties and In-Vivo anti Parkinson activity in retonone induced mice model.

Methods

Bioadhesive sustained release a microsphere of Silymarin was prepared by using aIonotropic gelationmethod to prepare microspheres using combination of Ca²⁺ as cationic components and alginate as anion. The developed microspheres was subjected to evaluation of practical yield, particle size, drug content, entrapment efficiency, swelling index, In-vitro mucoadhesion study and In-Vivo anti Parkinson activity in retonone induced mice model.


Results

Silymarin loaded microsphereswere successfully developed by using ion gelation technique using natural biodegradable polymers fenugreek, Colocasia esculaneta and synthetic polymer HPMC K4 M. The result of entrapment efficiency was found to be 70-80 %. The drug content uniformity and swelling studies (Swelling Index)was exhibited satisfactory. The In-Vitrodrug release profile of the developed microspheres was exhibited up to 12 hrs. Additionally, the developed microspheres were revealed superior In-Vivo anti Parkinson activity as compared to plain drug solution.

Conclusions


The bioadhesive sustained release microspheres of Silyamrin developed with Fenugreek and Colocasia esculenta are novel, low cost, patient friendly systems and they were exhibited superior anti-Parkinson activity as compared to Silymarin suspension.

Dr Ambily PS

Image	Delegate ID	Theme	Details
	YSC 10118	Swachha Bharat	Category : civil Engineering Organisation : CSIR- Structural Engineering Research centre Designation : Senior Scientist

Sustainability has become a primary focus in the construction industry. The minimization of the exploitation of non-renewable resources, efficient use of raw materials, the concept of the reuse and utilization of industrial byproducts are essential to meet the future demand. Cement being the most widely used inorganic binding material is responsible for more than about 5% of the total anthropogenic CO₂ emissions. Ultra high Performance concrete (UHPC) is an emerging material that allows more slenderness and increased durability while designing Reinforced concrete structures when compared to normal strength concrete. Because of the reasons such as high cement content, high energy technique for production and use of special aggregate, the ecological impact of UHPC is affected. This paper presents a novel experimental study for development of ultra high performance concrete without Portland cement and natural aggregate. The grade of the concrete produced is M150 and the flexural strength recorded was 10 MPa. In the proposed UHPC (i) complete removal of cement is done by Ground Granulated Blast-furnace Slag (GGBS), and silica fume (ii) complete replacement of aggregate is made by copper slag (CS) (iii) elimination of water for concrete curing is obtained from geopolymerization of the ingredients. Because of the saving of the natural resources and energy requirement, the UHPC produced will be a sustainable construction material.


Ms SHRABANA SARKAR

Image	Delegate ID	Theme	Details
	YSC 10529	Swachha Bharat	Category : Biology Organisation : The university of Burdwan Designation : Ph. D. student

Environmental release of dye containing coloured textile effluent is an international concern due to its xenobiotic and mutagenic effect on water ecosystem and other related ecosystems. Available conventional processes are proved unable to break complete azo bond but biological organisms are able to degrade azo dye without producing any carcinogenic amine compound after treatment. Therefore, bacteria mediated dye degradation is a cheap and environment friendly method for waste water remediation. Two novel thermotolerant dye degrading bacteria *Chryseobacterium geocarposphaerae* and *Bacillus paramycoides* were isolated from coloured textile effluent of JayaShree Textile, Rishra, West Bengal, India. Both of these bacteria can potentially tolerate the presence of wide range of dyes, namely congo red, malachite green, methyl red, brilliant yellow, Orange G under aerobic condition. They also can degrade congo red up to a significant level (500 mg/L). Principle cause of this dye degradation is quick adaptation capability under any adverse condition and complex enzymatic network of bacteria. Hence, results of this study will potentiality open a new paradigm for dye containing textile waste water remediation by microorganisms.


Key words: Azo dye, decolourisation, degradation, thermotolerant bacteria

Ms Alka Kumari

Image	Delegate ID	Theme	Details
	YSC 10602	Swachha Bharat	<p>Category : Biology Organisation : Central Salt and Marine Chemical Research Institute Designation : Senior Research Fellow</p>


Polyethylene terephthalate (PET) is the most common single-use plastic worldwide and has steered endemic spread in all the ecosystem within the decades of its discovery now becoming a global issue. Traditional methods of plastic waste remediation release toxic chemicals in the environment that affects life at the various trophic level. The biological approach to remediate plastic waste would be an eco-friendly solution. The marine *Bacillus* sp. AIIW2 (Accession no. KU877334) was found to grow and utilize PET under controlled condition. In the present study, we studied the comparative transcriptomic expression of strain AIIW2 for finding genomic construction and pathways involved during the PET utilization. The functional annotation of *Bacillus* sp. AIIW2 transcriptome was performed and assembled contig were compared against the NR protein database using blastx algorithm. A total of 34528 contigs were found to be differentially expressed. Based on this analysis, the genes encoding alpha-ketoglutarate-dependent dioxygenase AlkB, ABC transporter permease, alcohol dehydrogenase, putative aldehyde dehydrogenase YfmT, acetyl-CoA acetyltransferase, dihydroxy acid dehydratase, NAD(FAD)-utilizing dehydrogenase, ABC transporter ATP-binding protein, aldo/keto reductase, para-nitrobenzyl esterase, expressions in PET treated condition in the upregulated genes. Upregulation of these genes may be involved in PET biodegradation. This approach establishes a foundation for finding the PET utilization pathway in marine bacterial strain and targeting optimized PET degradation.

Mr Ranjan Chaturvedi

Image	Delegate ID	Theme	Details
	YSC 10753	Swachha Bharat	Category : Mechanical Engineering Organisation : CSIR-AMPRI Designation : SRF


Polyvinyl chloride (PVC) is the third most used polymer in the world because its properties can be modulated by usage of variety of additives, including fillers. Precipitated Calcium Carbonate (PCC) is the most widely used filler in PVC. In this work we have explored replacement of PCC by Marble Waste Powder (MWP) in flexible semi rigid PVC formulations, melt processed using two roll mill. MWP used in this work contains about 80% calcite, which was collected from Udaipur, Rajasthan. Different samples were made by varying the weight percentage of fillers (MWP & PCC) in the formulations at two different plasticizers content. Our preliminary results involving tensile properties indicated marginal decrease in strength when using MWP as compared to PCC at 16% plasticizer content. At higher plasticizer content (30%) MWP performed better than PCC with higher tensile strength at all weight percentages (5% - 40%) of filler content. It should be further noted that this MWP was only physically processed and size reduction up to 2.5 microns by sieving. It is anticipated that with further size reduction and appropriate chemical treatment, MWP can be efficiently used as replacement for PCC in PVC based materials. This will not only significantly reduce the production cost but provide us a sustainable and efficient way towards management and successful utilization of marble waste generation in India.

Ms Nallammal Arumugam

Image	Delegate ID	Theme	Details
	YSC 10776	Swachha Bharat	Category : Others Organisation : Kanchi Sri Sankara Academy Matric. Hr.Sec.Schhol Designation : Atal Co-ordinator


Sanitation is a basic necessity that affects everyone's life. To accelerate the efforts to achieve universal sanitation coverage and to put focus on sanitation, the Prime Minister of India launched the Swachh Bharat Abhiyan (SBA) on 2nd October, 2014. SBA aims to achieve Swachh Bharat by 2019, as a fitting tribute to the 150th Birth Anniversary of Mahatma Gandhi. SWOT is a basic, analytical framework that assesses what an organization can and cannot do, as well as its potential opportunities and threats and what obstacles must be overcome or minimized to achieve desired results. So the situational analysis was done by reviewing the available literature on subject. Its main strengths were funding provisions, technological innovations and flexibility to states in implementation of program. The main weaknesses were toilet construction without demand generation, caste system, the political system, voluntary nature of campaign instead of compulsory and less focus on other aspects of sanitation. There are some opportunities in the form of waste management through biogas/Domestic biogas plants and providing scientific and visual proof of disease transmission. Changes in administration, recycling solid waste, sustainability of interest and finally to change the mindsets of the people are the potential threats.

Dr Sourav Poddar

Image	Delegate ID	Theme	Details
	YSC 10796	Swachha Bharat	<p>Category : Chemical Engineering</p> <p>Organisation : CIT</p> <p>Designation : Assistant Professor</p>

The demand of renewable energy is increasing day by day as there is a deficiency of fossil fuel and other forms. There are various forms of renewable energy, namely solar, wind, hydro, geothermal, biomass [1] and etc. Conversion of waste to energy can be applied by pyrolysis [2,3], gasification [4], incineration, anaerobic digestion, ethanol fermentation, landfill, photo-biological, dark fermentation, microbial fuel cell, electrolysis and etc. [5-7]. Amongst all pyrolysis is gaining importance due to its ability to convert waste to energy and has vast applicability. This research articles will focus on the simulation of poultry manure with algae using Aspen Plus® software [8, 9]. It had been observed that after co-pyrolysis of poultry manure [10] and algae [11-13] there exists three products namely pyro-char or bio-char, pyro-oil or bio-oil [14-15] and pyro-gas or bio-gas and a comparison have been done with the pyrolysis of poultry manure. Later bio-gas or pyro-gas when subjected to dry reforming and Fischer Tropsch process produces green gasoline, green diesel and green waxes [16-18]. The residues obtained after Fischer Tropsch process are unconverted hydrocarbons (C1 – C4) and alcohols which are rich in energy and can be subjected to Combined Heat and Power Plant [19,20] for generation of energy. This article will focus on the production of bio-products and green products. The flowrates used for the simulation were 250 – 500 tons//day with a temperature variation of 400 – 650oC. It has observed from the simulation that the production of bio-products, namely bio-oil and bio gas increases with the increase in temperature, whereas bio-char decreases with the increase in temperature. The green production also increases with the increase in temperature and the production of green products from co-pyrolysis of poultry manure and algae shows an increasing trend in comparison to pyrolysis of poultry manure.


Mr ADITYA KUMAR JHA

Image	Delegate ID	Theme	Details
	YSC 10982	Swachha Bharat	Category : Nano Engineering Organisation : BIRLA INSTITUTE OF TECHNOLOGY, MESRA, RANCHI Designation : PhD SCHOLAR

Synthetic dyes are immensely toxic and recalcitrant in nature. They can form secondary pollutants in water bodies which are also toxic in nature. Studies have been undertaken by researchers to degrade it using different methods. However, several methods have been discarded considering various shortcomings like, high consumption of energy, ineffective degradation, generation of toxic sludge, economically unfeasible and production of secondary toxic products and so on. Biosorption has been successful to some extent but leads to only decolorization rather than degradation. Application of nano particles for degradation of dyes has been reported by several scientists as effective and feasible, though chemically synthetic nano particles themselves pose contamination problems in water bodies. Keeping the above-mentioned facts in mind, in this study, photo catalytic degradation of two anionic dyes Methyl Orange and Congo Red was conducted using nZVI (zero-valent iron nano particles) in the presence of UV light. nZVI was biosynthesized using $\text{FeSO}_4 \cdot 7\text{H}_2\text{O}$ and leaf extract of *Shorea robusta* (sal) as reducing agent. Synthesis of nZVI was optimized by varying different parameters. Characterization of nZVI was done using SEM, FTIR, DLS & ZP, AFM, XRD and TEM. Degradation of these dyes was done by dried nZVI particles under UV illumination. Degradation was optimized by varying the concentration of dyes, dose of nZVI, pH of dyes and time and studied using UV spectrophotometer (peak at 560nm). Optimized condition was achieved at 1mM concentration of $\text{FeSO}_4 \cdot 7\text{H}_2\text{O}$, dose of sal leaf extract to precursor at 1:1, under no stirring after 40 minutes. Characterization of nZVI indicated its successful synthesis. Optimum degradation efficiency was 78 % for MO and 96 for CR. Germination test and FTIR of dyes before and after degradation also indicated degradation of dyes.

Keywords: Congo Red; Methyl Orange; Nano Zero Valent Iron; Photocatalytic Degradation.

Dr Radhika V

Image	Delegate ID	Theme	Details
	YSC 11149	Swachha Bharat	<p>Category : Applied Engineering</p> <p>Organisation : Sri Ramakrishna Engineering College</p> <p>Designation : Associate Professor</p>

AUTOMATIC BIOMEDICAL WASTE SEGREGATION USING IMAGE PROCESSING

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Abstract: A biomedical waste segregation system in hospitals for eliminating human intervention in segregation system is proposed. In the existing method, the medical wastes are segregated by humans into four major categories like red, blue, black and yellow bags. These bags are then transported to the dump yard by a single vehicle. This allows the mixing of bags and in addition it causes damages to the bags also. In dump yard again a human intervention occurs for the segregation of bags.


In this proposed method, the bags from the hospitals are separated automatically without human intervention. This leads to reduction in contagious diseases.

In the dump yard there is conveyor which contains the colour sensor and a camera system which is used to identify the bags condition. From the sensor and camera data's the wastes are segregated into four different big bags. The tired bags are also collected separately. This gives a great efficiency in biomedical waste management and reduces the human involvement which greatly prohibits the spread of many deadly diseases and makes the dump yard with less harm. This makes the surrounding environment clean and safe.

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Ms Soma Roy

Image	Delegate ID	Theme	Details
	YSC 11341	Swachha Bharat	Category : Others Organisation : Putiary Braja Mohan Tiwary Girls High School Designation : Asst. Teacher


Plastic Straw causes pollution, it is harmful to the marine animal and Human also. A search for alternative straw from natural sources like hollow tree branches (Varendra, Fig, Papaya, Pumpkin etc) has been used and the best alternative straw we got. All the straws are dried under sunlight and prepared in four to five days. No extra energy needed, no pollution. All the straws are biodegradable and fulfilled the requirement of plastic straw. this kind of straw making may give rise to a cottage industry along with help environment more sustainable. Among all, straw made from varendra tree was the best. This trees found abundantly in india, and does not require much care to grow. This tree has so many branches that one mature tree of five feet height can supply at least 10 straw.

Mr Shuvrodeb Roy

Image	Delegate ID	Theme	Details
	YSC 11400	Swachha Bharat	Category : Agricultural Engineering Organisation : Indian Statistical Institute Designation : Visiting Scientist


Part of Indus Valley Civilization, India is still continuing its ancient practice agriculture to empower at least half of its population and to maintain one fifth of country's GDP. Even having modern agricultural practices and advanced equipment facilities, safe irrigation is gradually becoming problematic as ground water of nineteen states among thirty six states of India is reported to be affected with fluoride contamination and ground water of at least ten states is reported to be contaminated with arsenic. In this work, we have manufactured highly porous carbon structures from major agricultural waste biomasses like rice straw, bamboo, sugarcane waste and corn cob. Highly carbonized and aromatized carbon architectures were further surface engineered to enhance its porosity and surface area. Carbon structures were further characterized through standard surface and elemental characterization techniques, viz. CHN (carbon, hydrogen, and nitrogen), FTIR (Fourier transform infrared spectroscopy), BET (Brunauer–Emmett–Teller) and SEM (scanning electron microscopy) to understand the fundamental structural differences between different samples. Surface engineered structures were found to be consistently more potent in comparison to its native form as per our comparative characterizations performed so far. Finally, these high surface area containing mesoporous carbon structures were found to have tremendous tendency to sequester toxic heavy metalloid arsenic from single solute aqueous system. We further compared monolayer adsorption maxima of different carbon structures for arsenic sequestration through equilibrium isotherm analysis following Langmuir model. In terms of metal sequestration capability, sugarcane waste derived carbon structures were observed to be superior in comparison to the other agricultural waste derived architectures. This kind of comparative studies will be very effective for the application of these cost-effective, biodegradable and environmentally benign carbon architectures for sustainable waste water remediation practices.

Mr Kamlesh Dehariya

Image	Delegate ID	Theme	Details
	YSC 11524	Swachha Bharat	Category : civil Engineering Organisation : CSIR-National Environmental Engineering Research Institute Designation : Research Scholar


The management of silt generated from major drains in almost all the major cities are herculean task for municipal corporations all over India. Before monsoon municipal bodies clean the drain to avoid urban flooding, drain overflow and clogging. The drain silt is originated through surface runoff of storm water and wastewater particularly in monsoon season also cause hurdle in water flow in the draining system. The de-silting activities generate tones of waste which finally dumped as landfill. It has been noticed that almost all the landfill is overloaded and area for new landfill are nearly impossible to find because of huge space crunch. CSIR- NEERI working in the area of developing value added product from industrial and other waste developed process for management of drain silt by converting it into value added material for bulk utilization and proper disposal. The developed materials will reduce the load of construction industry on natural resources. The environmental benefit in form of carbon footprint and other dangerous health hazards.

Mr Prashant Bharat Kherra

Image	Delegate ID	Theme	Details
	YSC 11525	Swachha Bharat	Category : civil Engineering Organisation : CSIR-National Environmental Engineering Research Institute (NEERI) Designation : Research Scholar


Concrete as basic construction material are founder need of swiftly developing countries like India. The construction of state of are building for residential area under various schemes of Government of India like Pradhan Mantri Awas Yojana, offices, Metros etc. are inevitable. With all these advantages issues like urban heat island, urban flooding, depilation of ground water etc. also needs to be taken care. The scientist and researcher working on various expect of materials and processes to reduce the environmental expects of urbanization. The ideas of cool pavement and pervious concrete to migrate urban heat island were explored. The researcher has reported the pervious concrete using cement to achieve useable strength and other engineering properties with challenges. The smart geopolymetric pervious concrete developed at CSIR-NEERI with high strength and civil properties is successful tested. The industrial wastes mainly fly ash used as source of aluminosilicate with highly aqueous alkaline activation of high strength binder. Geopoymeric pervious concrete were prepared with coarse aggregates with no fine aggregates along with geo-polymeric binder and water. Appropriate mix designs are prepared using the above said ingredients and its main engineering properties such as compressive strength, flexural strength, void content, permeability and density has to be studied for its application as structural pervious concrete.

Mr Tajamul Ahad Sofi

Image	Delegate ID	Theme	Details
	YSC 11526	Swachha Bharat	Category : Others Organisation : Rabindranath Tagore University Designation : Research Scholar

Abstract-Swachh Bharat Abhiyan (SBA) or Swachh Bharat Mission (SBM) is the most significant mass movement for cleanliness in India. The official name of the campaign is in Hindi and translates to "Neat and tidy India Mission" in English and was launched on 2 October 2014 on Gandhi Jayanti at Rajghat, New Delhi by prime minister Narendra Modi. The main objectives of the campaign comprises of, elimination of open defecation, conversion of insanitary toilets to pour flush toilets, eradication of manual scavenging and above all to bring about a behavioural change in people regarding healthy sanitation practices and to ensure public participation in achieving these objectives. It is said that children are the potential of future generation. Therefore, students play a vital role in Swachh Bharath Abhiyaan. It is a politics free campaign inspired by patriotism. This campaign has initiated people globally towards cleanliness. Teachers and students of schools are joining this 'Clean India Campaign' very actively with great fervour and joy. A brief about this mission, its objectives, role in environmental protection and related health concerns has been discussed in this paper.

Prof Chinta Sudheer kumar

Image	Delegate ID	Theme	Details
	YSC 11543	Swachha Bharat	<p>Category : Others Organisation : Jawaharlal Nehru Technological University Kakinada Designation : Asst. Professor</p>

Comparative and Cost benefit Analysis for turnaround in Indian Railways (IR) for 21st Century - An Unique Model

Purpose:

Public sectors in India play pivotal role in the process of civilization and economic development. Indian Railways (IR) is one of the world's largest railway networks comprising 115,000 km of track over a route of 67,312 km and 7,112 stations. It is the second largest profit making Unit Undertaking after ONGC. Its operations cover twenty nine states and seven union territories and also provide limited international services to Nepal, Bangladesh and Pakistan. IR runs 12,617 passenger trains and 7,421 freight trains daily. In this paper, the purpose to review main concepts and methods to perform IR effectively in future to major 'turnaround'.

Methods:

21st century Model railway stations should be developed with Eco friendly, Plastic free stations, Make in India Product commercialization with Strategic operation of special trains on demand (TOD) (Cultural festivals; Religious holidays). Replacement of existing appliances with LEDs Conversion of waste/unused IR lands to recreation centers; Shopping Malls Commercialization of Integrated Tribal Development Agency/Projects; Tribal stalls or Canteen; Adds on Tea/coffee Cups Experimentation and Insertion of Televisions in Ac/Sleeper coaches Telecast of commercial adds like IRCTC Food on wheels; tourist places; temples; E-News/Flash news/weather etc., Experimentation/Introduction of Public/commercial adds on Freight train surface. 4.31 lakh hectares of IR should formulate a Statuary board to develop Indian Railway Forestry (IRF)/Indian Railway Green Belt Mission(IRGBM), Fan regulators and dust repellent coating on blades to be introduced in coaches. Foam tap water supply in place of existing system in trains and stations for less usage. Introducing IR in text books. Coaches with PV Panels and utilization of renewable energy for self sufficiency of power using alternative energy. Electronic Tabs with to be provided to Guards and TC's to replace paper. NSS activities, awareness programmes and public participation for clean Indian railway Initiatives(CIR).

Results:

This proposed multi structured model is compared with existing system to improve financial gains and turnaround results with steep energy conservation and make railways Eco-friendly and hygienic. This model is able to generate more revenues and implies economic growth. Newly proposed concepts like Trains on demand (TOD); Indian Railway Forestry (IRF)/Indian Railway Green Belt Mission(IRGBM); Clean Indian railways Initiatives(CIR) makes strategic turnaround in IR.


Conclusion:

"Micro Investments-More Revenues" to make turnaround in 21 century

Keywords:

Indian Railways (IR), Indian Railway Green Belt Mission (IRGBM) Trains on demand (TOD); Indian Railway Forestry (IRF), Clean Indian railway stations (CIR).

Dr Nilamkumar Patel


Image	Delegate ID	Theme	Details
	YSC 11613	Swachha Bharat	Category : Mechanical Engineering Organisation : Academic Designation : Associate professor

Hydrogen is one of two natural elements that combine to make water. Hydrogen is not an energy source, but an energy carrier because it takes a great deal of energy to extract it from water. It is useful as a compact energy source in fuel cells and batteries. Hydrogen is an energy carrier that can transform our fossil-fuel dependent economy into a hydrogen economy, which can provide an emissions-free transportation fuel.

To use hydrogen fuel in the engine we need to change or modify present S.I. engine. The present research proposal is regarding development of material which is compatible to hydrogen fuelled engine. We know, to use hydrogen in existing S.I. engine is not a difficult work. But after using hydrogen, it will create moisture inside the engine. So, to use hydrogen fuel in existing engine, we need to use such a material which will create less corrosion and should be light weighted to operate the engine more efficiently. Automobile industries are using material substitution to build lighter weight and fuel efficient engines, offering better properties materials of engine components, including engine valves and piston.


Valves and piston are very important components that are used at high operating temperature to control the flow & volumetric efficiency for achieving desired level of engine performance. The present work describes Al-SiC composites as possible alternate materials with its unique properties required for engine valve and piston to operate hydrogen fuelled engine. Al-SiC MMC is prepared by powder metallurgy and various casting techniques. In our research we have developed composite by stir casting process by using aluminium alloy with silicon carbide Nano particles and substitute sintering operation at 600oC temperature for one hour. Mechanical tests like microstructure, hardness, crushing load, surface roughness, etc. have already been conducted.

Ms Naisini Ariram

Image	Delegate ID	Theme	Details
	YSC 11618	Swachha Bharat	Category : Others Organisation : Central Leather Research Institute Designation : Senior Research Fellow


Development of pollution free processes had been a priority area for industrial researchers globally. Leather manufacturing is water and chemical intensive and hence leather technologists provide high priority for the development of cleaner leather manufacture processes. In leather manufacture, pre-tanning process particularly liming process results in the generation of high pollution load. Liming is carried out for opening up of the fiber structure of skin/hide matrix. The usage of lime, sodium sulphide and water in the conventional process generates high BOD, COD and TDS. In order to overcome the issues associated with conventional fiber opening, the present study is focussed on environment friendly fiber opening process by using supercritical carbon dioxide (SCCO₂). SCCO₂ medium is used for opening up the fiber structure of unhaired sheepskin. The SCCO₂ process was carried at varied pressure and time, and the process was optimized at 75 bar in 30 minutes. The optimized process does not involve the use of any chemicals and water, where as conventional process was used as a control. The experimental and control samples were characterized for scanning electron microscope, porosity, displacement study, and water absorption study to analyze the fiber structure, and characterized for shrinkage temperature, organoleptic properties and tensile strength to analyse leather properties. The leather developed from SCCO₂ based fiber opening was observed to have comparable properties with control leathers. The developed process also provides the option of recycling CO₂. Hence, we are able to create a new option for pollution free fiber opening process, which can reduce environmental impact associated with leather manufacture.

Mr Ankit Gupta

Image	Delegate ID	Theme	Details
	YSC 11623	Swachha Bharat	<p>Category : Mechanical Engineering</p> <p>Organisation : CSIR-NEERI, Nagpur</p> <p>Designation : Scientist</p>


In India, over 1 billion used sanitary pads are being disposed of every month. With increased awareness about menstrual hygiene, this volume is likely to grow. The problem of inadequate disposal of menstrual waste is one of the major roadblocks in achieving the Swachh Bharat Mission. Current disposal practices include dumping in an open area, dustbin, flushing in toilets and either burying or burning in an open pit. Therefore, to address these issues, present work focuses on the decentralized incinerator of used sanitary pads. An improved sanitary pad incinerator "GreenDispo" is designed by CSIR-NEERI, with innovation in combustion chamber offering improved combustion of menstrual wastes. It ensures instant scientific & hygienic disposal in an automatic way, with auto power & thermal cut-off and is suitably insulated for energy conservation and user safety. Unlike the locally made incinerator operating at around 300°C resulting in harmful air emissions, GreenDispo has a primary and a secondary combustion chamber, which operates at 800± 50 °C and 950± 50 °C, respectively with 2 seconds of gases residence time to help reduce carcinogenic air emissions, produced during the burning of plastics/chlorinated products. The unit can efficiently burn pads with high moisture content and super absorbent polymers (SAP). The exhaust concentration of Total Particulate Matter (TPM), CO, SO₂, NO_x was observed to be 46.1 ± 6.7 mg/m³, 74.0 ± 4.5 mg/m³, 38.6 ± 5.9 mg/m³, 1.3 ± 0.4 mg/m³, respectively with less than 5% ash per napkin, meeting standards under Waste Management Rule 2016 (CPCB).

Ms Roshani Kumari

Image	Delegate ID	Theme	Details
	YSC 11631	Swachha Bharat	<p>Category : Biology Organisation : ICMR- National Institute for Research in Environmental Health Designation : Senior Project Research Fellow</p>

Clostridium perfringens, a rod-shaped, gram-positive, anaerobic, spore-forming bacterium is one of the most widely occurring bacterial pathogen associated with spectrum of diseases in humans. Out of the 20 virulent toxins known to be secreted by this rapid-growing pathogen, α -toxin, a zinc-containing phospholipase C (PLC) enzyme encoded by *plc* gene is the major virulence factor during infection that hydrolyzes phosphatidylcholine and sphingomyelin, promoting membrane disorganization. In patients infected with *C. perfringens*, polymicrobial infection with absence of polymorphonuclear leukocytes at the site of infection is a common presentation. This impairment of host-immune system with reduction of mature neutrophils in peripheral circulation is attributed to hyper-secretion of PLC in a dose-dependent manner. Besides neutrophils, this toxin exerts both secretagogue and cytotoxic activities in several focal experimental infectious states and also targets platelets, monocytes, endothelial cells and erythrocytes. Accumulated evidence has demonstrated that PLC activates nuclear factor kappa B (NF- κ B), mitogen-activated protein kinase (MAPK), and interferon regulatory factors (IRFs), the three key regulators of redox mediated pro-inflammatory cytokine response. Incorrect regulation of inflammatory mechanisms is detrimental as that could activate and deactivate by multiple immune patho-physiologic mechanisms including epigenetic modifications through a mitochondrial-ROS driven signaling pathway. Thus, the present study was designed to examine the in vitro role of PLC in the induction of mitochondrial-induced epigenetic modification by using a well-characterized human lymphocyte cell culture model system. Following exposure to PLC, defragmentation of mitochondrial DNA was recorded at non-coding regions of displacement loop and coding regions of fragment 1, 2, 3 and 5 of mitochondrial DNA (mtDNA). Impairment of mtDNA repair induced hypomethylation of D-loop, 12S+TF, 16S and Cyt B gene loci that led to deregulation of MT-CO1, MT-ND6, MT-ATPase 6 and MT-ATPase 8 gene expression profiles. In addition, up-regulation of miR24 expression and down-regulation of miR34a, miR150 and miR155 in the PLC treated cells were also observed. Expression of predicted target genes of the four mitomiRs showed decreased expression of K-Ras, MYC, EGFR and NF- κ B. Our findings provide novel insights into the derailment of redox machinery in PLC treated lymphocytes and its role in mitochondrial induced epigenetic modifications. Interestingly, epigenetic machineries not only play a pivotal role in lymphocyte homeostasis by contributing to cell-fate decisions, but thought to be one of the mechanisms by which intracellular pathogens survive within host cells. Therefore, further elucidation of molecular mechanisms by which PLC exert epigenetic modifications in vivo is highly essential.

Prof Aamirah Salam

Image	Delegate ID	Theme	Details
	YSC 11711	Swachha Bharat	<p>Category : Others Organisation : Amity University, Kolkata Designation : Assistant Professor</p>


Abstract: The scale and variety of a city like Kolkata puts it into a situation where smart city concepts have to be incorporated in parts and not as a whole. Its existing components and associated limitations demands much planned and structured methods to be incorporated in accordance with the ground realities. The glorious past of Kolkata is attributed to various reasons - one of which is the presence of an extensive network of canals within the city. The story of Kolkata Canals dates back to the early 19th century when the canals were trenched mainly to facilitate the transportation of goods to different parts of the city. The management of canals was transferred to the irrigation department in the year 1886 after which the canals were also utilized for the purpose of irrigation. From purpose driven to visual delight - the use of canals has been in more than one ways over the years. But with the growing needs of the city, population expansion and due to some poor administrative policies - these canals which were once the pride of the city have gone through some worst transitions over the years that have made them dark, polluted and ugly today. These blue corridors are symbolic of Kolkata's visual, perceptual, social, cultural, historic and traditional response and their beautification should resolutely counter the urban escalation and revive the long lost glory of the city. They thrive and deserve to be at their elegant self as they use to be and that seems to be the call of the day especially in the wake of trending issues like Swaccha Bharat, Swastha Bharat and Smart City Missions. This paper takes a look on the unique presence of these water channels throughout the city of Kolkata - followed by an analytical discussion that will ensure a smooth mobility in various domains associated with smart functioning of the city. The paper further does a physical study and formulates model proposals for 1 km stretch based on ground realities and integrating them with the present demands of the city.

Keywords: Canals; Urban Moveability; Swaccha Bharat; Swastha Bharat; Model Solutions.

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2. Roy, R., & Dhali, M. K. (2016). 'Seasonal water logging problem' : A study of Kolkata', Quest Journals, Journal of Research in Humanities and Social Science, Vol. 4 - Issue 4, pp. 01-09.

Mr Mohammad Amir

Image	Delegate ID	Theme	Details
	YSC 11744	Swachha Bharat	<p>Category : Biology Organisation : Integral University Designation : Junior Research Fellow</p>

Due to the urbanisation and industrialization, the use of plastic has increased tremendously. Surveying and managing this related hazard are getting overall consideration. About one million plastic drinking bottles are purchased every minute and approximately 5 trillion single-use plastic bags are used worldwide every year. As per the report of Central Pollution Control Board (CPCB), approximately 25,940 tonnes of plastic waste is generated in India out of which 15,600 tonnes of wastes get recycled. This still leaves nearly 10,000 tonnes waste in open area. The problem mentioned above has increased the demand of bio-based plastics. Bioplastics made from biopolymer like Polyhydroxybutyrate (PHB) isolated from microorganism has gained interest of researcher worldwide due to its biodegradable and non-toxic nature. These biopolymers are produced intracellularly by Gram positive and Gram negative bacteria when there is excess carbon source but limitation of other essential nutrients. The same microorganisms also produce extracellular enzymes that are capable of degrading PHB based bioplastics into simpler and innocuous molecules. In this study, bacteria were isolated from soil, screened and characterized those were able to produce and degrade PHB based bioplastics. Soil samples were collected from different regions of Lucknow, India. Soil burial method was done to study the decrease in weight of PHB films by the PHB depolymerase enzymes. 0.1 g of fresh PHB films were prepared and kept in clay pots containing sterile soil under controlled condition of temperature ($37 \pm 2^\circ\text{C}$), pH 7.0 and moisture (60%) for different incubation period of 30, 60 and 90 days, these films were treated with 1% microbial inoculums (*Orchobacterium haematophilaum*, *Pseudomonas stutzeri*). Results showed that 31%, 48% and 76% weight reduction were observed after 30, 60 and 90 days of incubation, respectively. SEM analysis was done to observe the surface change in soil burial method. As compared to control, a number of crest, holes, surface erosion and roughness was analysed in the degraded PHB film where bacterial colonies were found to attach on the surface of PHB films. This study confirms the role of PHB depolymerase producing novel bacterial strains that are capable for degrading the biodegradable plastics within 30 days when buried in soil. Therefore, PHB is found to be an eco-friendly polymer that can be used as a replacement of synthetic polymer when production is done at large scale by using selective microbes for the sustainable environment.


Ms AKANKSHA AWASTHI

Image	Delegate ID	Theme	Details
	YSC 11828	Swachha Bharat	Category : Applied Engineering Organisation : Dr. C. V. RAMAN UNIVERSITY Designation : ASSISTANT PROFESSOR

Electronic waste or e-waste is one of the rapidly growing problems of the world. E-waste comprises of a multitude of components, some containing toxic substances that can have an adverse impact on human health and the environment if not handled properly. In India, e-waste management assumes greater significance not only due to the generation of its own e-waste, but also because of the dumping of e-waste from developed countries. This is coupled with India's lack of appropriate infrastructure and procedures for its disposal and recycling. The production of electrical and electronic equipment (EEE) is one of the fastest growing global manufacturing activities. Rapid economic growth, coupled with urbanization and a growing demand for consumer goods, has increased both the consumption and the production of EEE. The Indian information technology (IT) industry has been one of the major drivers of change in the economy in the last decade and has contributed significantly to the digital revolution being experienced by the world. New electronic gadgets and appliances have infiltrated every aspect of our daily lives, providing our society with more comfort, health and security and with easy information acquisition and exchange. The knowledge society however is creating its own toxic footprints.


Key words: e-waste, recycling, EEE, IT;

Ms Neakashika Chadha

Image	Delegate ID	Theme	Details
	YSC 11849	Swachha Bharat	<p>Category : Electrical Organisation : CSIR-Natioanal Physical Laboratory Designation : UGC-SRF</p>


Electromagnetic (EM) wave pollution has increased significantly all over the world due to emergence of electronic equipments, wireless devices, portable & smart technologies. However, Interference of EM waves not only damages internal machinery of the devices but also effects human health adversely which is point of concern. In parallel, buildup of wide variety of waste-streams especially Li-ion battery (LIB) waste, and absence of adequate recycling strategies, is become a global threat due to their toxicity. Herein, we have adopted waste to wealth strategy to partly resolve the LIB waste and to realize EM wave absorption by the synthesis of a porous, light-weight, biocompatible, flexible & stable chitosan mediated graphene (CG) sponge which works efficiently as EM wave absorber. Unlike, high energy requirements & processibility cost demanded by the conventional EMI shielding materials, this 3-D sponge is synthesized at room temperature using low cost & waste precursors such as chitosan and porous carbon (PC) recovered from old LIBs followed by lyophilization. Its observed that chemical conversion of LIB derived PC into graphitic oxide (GO) and reduced graphitic oxide (RGO) renders as a suitable filler in chitosan matrix. The CG sponges thus formed were characterized using FTIR, XRD, Raman & SEM techniques. It has a density of 30-40 mg/cm³ & porosity 99%, whereas synthesized material is tested in S-band (2-4 GHz) & X-band (8.2-12.4 GHz) frequency range where it shows promising results for EM absorption applications. The above material passes EMI shielding criteria and provides a cost effective, scalable and waste to wealth route for large scale production of such EM wave absorber by simply exploiting depleted battery and waste shrimp shells derived chitosan as raw materials. Consequently, we have also demonstrated the fundamental theory of multiple reflections in our work.. Due to conducting nature ,corrosion resistant property, it has wide application in antennas, radomes & mobile phones. Apparently, it can be easily sandwiched or laminated for textile, radar, defence applications in future.

Ms PRIYANKA MONDAL

Image	Delegate ID	Theme	Details
	YSC 11940	Swachha Bharat	<p>Category : Others</p> <p>Organisation : Department of Marine Science, University of Calcutta</p> <p>Designation : PhD Student</p>


The present study characterized the spatial distribution and ecological risk assessment of total and acid-leachable trace elements (TEs) in surface sediments (top 0 - 10cm; grain size $> 0.63 \mu\text{m}$) along the Hooghly (Ganges) River Estuary and Sundarban Mangrove Wetland, eastern part of India. The positive and mixohaline estuary has global significance contributing ecological and economic services. Sundarban Mangrove Wetland (SMW), located south of tropic of cancer, is the largest tide-dominating delta in the estuarine phase of the tidal Hooghly River with an area of 9630 km². It is a low lying, humid, vulnerable complex delta having geogenetic link to the tectonic Bengal basin. Protected as a UNESCO World Heritage site, it is characterized as the largest single block of tidal halophytic mangrove forest in the world. Sediment samples were collected during ebb tide covering fourteen sampling sites of diverse environmental stresses, mangrove coverage and tidal mixing. The elements, analyzed with the help of ICPMS, exhibited wide range of variations (mg kg⁻¹) with the following descending order: Fe(25050) > Al(16992) > Mn(517) > Zn(53) > Cu(33) > Cr(29) > Ni(27) > Pb(14) > As(5) > Se(0.37) > Cd(0.17) > Ag(0.16) > Hg(0.05). In the acid-leachable fraction, Cadmium (92%) was the most dominant followed by Pb (81%), Mn(77%), Cu(70%) and Se(58%) and are of potential hazards because of their higher susceptibility, bioavailability, and potential mobility. This specific fraction is favored by edaphic factors (such as, pH, and redox conditions) which when taken up by aquatic organisms result in environmental toxicity. An abrupt increase in Ag concentration (0.80 mg kg⁻¹) was encountered at Sajnekhali with the sediment pollution indices (Enrichment Factor (21.32), Contamination Factor (11.43) and Geo-accumulation Index(2.93)) indicating moderate to severe contamination of the sediment. The mean probable effect level quotient revealed 21% probability of toxicity to benthos. The result of multivariate analyses affirms that TEs originated from both lithogenic sources as well as from anthropogenic activities (such as urban and industrial activities). Hence the authors strongly recommend regular systematic monitoring emphasizing on accurate appraisal of the potential risk of TEs for effective and sustainable future management.

Mr Anuj Thukral

Image	Delegate ID	Theme	Details
	YSC 11946	Swachha Bharat	<p>Category : Electrical Organisation : CSIR-National Physical Laboratory Designation : Research Scholar</p>

Rapid technological advancement of electronic products have made our life comfortable and luxurious by saving time and being efficient. However, demand driven enhancement of their production created a new waste, termed as “Electronic waste (E-waste)”, which is largely contributed by end-of-life (EOL) or discarded waste electrical & electronic products. E-Waste is one of the fastest growing challenge to the world, due to lack of community awareness about its handling & disposal and limited large scale E-Waste recycling capabilities. Globally, about 45 million metric tons (MT) E-waste is generated every year and India is fifth biggest contributor with figure of 1.85 MT per year. From 310 million subscribers in 2001 to 1.012 billion in 2018, the number of mobile phone users in India has increased drastically which resulted in approx 170 million old mobile phones are being discarded or replaced annually contributing heavily to ever growing E-Waste streams. On one side, toxins from E-Waste dumped in landfills are slowly leaching into ground water and surrounding environment, making it dangerous for living beings. On the other hand, for every 1 million smart phones recycled, 35,274 lbs of copper, 772 lbs of silver, 75 lbs of gold, and 33 lbs of palladium can be recovered. Stats show that recycling 1 million laptops saves the energy equivalent to the electricity used by 3,657 homes in a year. Therefore, efficient & viable strategies for safe disposal and recycling of E-waste is an urgent global need. In this work, an attempt has been made to recycle EOL mobile phone via waste-to-wealth route, so as to recover constituent materials or their compounds via chemical treatment of dismantled components.


Dr Rachna Jain

Image	Delegate ID	Theme	Details
	YSC 12028	Swachha Bharat	<p>Category : Others Organisation : CSIR-NEERI Designation : Scientist</p>

According to Solid Waste Management rule 2016, India every municipality requires to segregate the waste fraction and only inert fraction to be dumped in to a sanitary landfill site. The leachate formed thereof is to be treated and then released in the environment. It is desirable that the leachate after treatment should satisfy the general standards of effluents for discharge of environmental pollutants [The Environment (Protection) Rules, 1986 and subsequent amendments]. The aim of the present study is to observe the effect of primary treatment (aeration) of raw leachate upon its physico-chemical as well as microbiological parameters in a real time situation. Leachate samples were collected from the sanitary landfill site at Baidyabati, Hoogly, West Bengal in two different seasons; monsoon and winter. The results of the study showed wide seasonal variation. BOD marginally decreases with treatment i.e 90 to 87 mgL⁻¹ in monsoon & 350 to 250 mgL⁻¹ in winter. COD values showed a decrease from 2040-1560 mgL⁻¹ in monsoon & 2851- 1460 mgL⁻¹ in winter after primary treatment. Various other parameters such as TOC, TSS, TDS and Phosphate were also found to be higher in winter than monsoon for raw leachate except for kjeldahl nitrogen where reverse is observed. Primary treatment reduces the level of these parameters by 30 to >90% across seasons.

Solvent extraction followed by GC-MS analysis of the raw leachate in winter indicated the presence of nine species of phthalic acid esters, among which five species have been quantified. Diethylphthalate was found to be most abundant (466 µg/L) followed by bis(2ethylhexyl)phthalate (110 µg/L). The microbial load in both raw and treated leachate was found quite high. Total coliform (Tc) and fecal coliform (Fc) were higher in monsoon (15*10⁷& 20 cells/100ml of sample) than winter (10*10⁵ & 18 cells/100ml of sample). 50% reduction in total bacterial CFU was observed after primary treatment in both season. Reduction is also observed in fungal load (dry mass) in both seasons. 16 different bacterial isolates have been cultured from the samples among which we have screened 4 potent isolates and characterized by 16s rRNA analysis. The present study reveals that most physico-chemical parameters exceed the surface water quality standard for raw leachate. Even after considerable reduction via primary treatment, certain parameters for treated leachate is exceeding surface water quality standard more in winter than monsoon. Hence further treatment is essential before the landfill leachate could be released to environment.

Dr JAYATI MITRA

Image	Delegate ID	Theme	Details
	YSC 12139	Swachha Bharat	Category : Chemistry Organisation : Dr. C. V. RAMAN UNIVERSITY Designation : ASSOCIATE PROFESSOR AND HEAD

Natural Electronics for Our Future:
Advancement, Openness, Manageability


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Abstract: We live in an inexorably electronic world, with PCs involving a focal piece of our lives. In 2019, there were an expected 50-60 processors for every individual, by and large, with certain people encompassed by upwards of 1000 processors regularly. While silicon hardware has unraveled a significant number of the difficulties related with our expanded utilization of gadgets, there are points of confinement to what silicon can do. Physicists are orchestrating an abundance of new natural materials for use in electronic gadgets that make novel properties difficult to duplicate with silicon. These materials hold gigantic guarantee to extend our electronic scene in manners that will profoundly change the manner in which society collaborates with innovation. Natural Electronics for a Better Tomorrow: Innovation, Accessibility, Sustainability looks at where natural gadgets are today, where synthetic researchers imagine the field is going, and the logical and designing difficulties that must be met so as to understand that vision.

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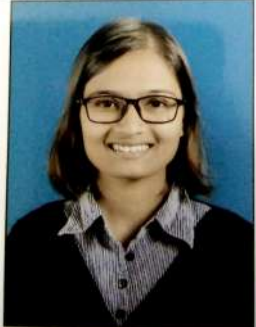
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Ms Akanksha Kor

Image	Delegate ID	Theme	Details
	YSC 12183	Swachha Bharat	Category : Others Organisation : Cummins College of Engineering, Karvenagar Designation : Student


In 2017, India slipped to the 177th position of the Green ranking according to the World Economic Forum. With the emerging smart city development across the cities in India, the Smart Garbage Management system is the need of the hour. It is estimated that a million tonnes of waste is generated and less than 60 percent of it is collected, the rest is left on the streets to be eaten by stray animals or stuck in the drains. Most of the dustbins out in the streets are filled with dirt or tobacco stains these days, leading to many people not throwing garbage in the dustbin. Statistics reflect that there is a need, the importance of waste separation in India and how automation can be introduced into existing systems. The segregation of solid waste is completely done by manual laborers which are less efficient, time-consuming and not completely feasible due to a large amount of waste. The proposed system is an IoT enabled intelligent bin which can segregate waste through sensors. Sensors are used for distance measurement purposes and to detect the type of waste (dry or wet). The end result of the proposed system is to open the lid intelligently as it sees a person approaching and segregate waste (Dry or Wet). The author's approach is a proper solution for the management of dry and wet waste as it can intelligently separate the two types of waste into respective bins and thus the problem of segregation can be cut at the bud. But at the same time, it is not the most perfect solution since the product is a bit expensive. By using different types of sensors, segregation of waste into metal/non-metal or plastic can be achieved.

Ms Megha Mane

Image	Delegate ID	Theme	Details
	YSC 12194	Swachha Bharat	Category : Others Organisation : Cummins College of Engineering for Women, Karvenagar, Pune Designation : Student

In 2017, India slipped to the 177th position of the Green ranking according to the World Economic Forum. With the emerging smart city development across the cities in India, the Smart Garbage Management system is the need of the hour. It is estimated that a million tonnes of waste is generated and less than 60 percent of it is collected, the rest is left on the streets to be eaten by stray animals or stuck in the drains. Most of the dustbins out in the streets are filled with dirt or tobacco stains these days, leading to many people not throwing garbage in the dustbin. Statistics reflect that there is a need, the importance of waste separation in India and how automation can be introduced into existing systems. The segregation of solid waste is completely done by manual laborers which are less efficient, time-consuming and not completely feasible due to a large amount of waste. The proposed system is an IoT enabled intelligent bin which can segregate waste through sensors. Sensors are used for distance measurement purposes and to detect the type of waste(dry or wet). The end result of the proposed system is to open the lid intelligently as it sees a person approaching and segregate waste(Dry or Wet). The author's approach is a proper solution for the management of dry and wet waste as it can intelligently separate the two types of waste into respective bins and thus the problem of segregation can be cut at the bud. But at the same time, it is not the most perfect solution since the product is a bit expensive. By using different types of sensors, segregation of waste into metal/non-metal or plastic can be achieved.

Mr NIHAL GUJRE


Image	Delegate ID	Theme	Details
	YSC 12255	Swachha Bharat	<p>Category : Others Organisation : IITG Designation : Research Scholar</p>

Abstract

Areca nut (Areca catechu L.) is produced largely about 78000 tonnes year⁻¹ (2017-18) (DASDA, 2019) in the state of Assam. However a large amount of its residues (husk) is underutilized and often treated as waste. Therefore, current study attempts to utilize the Areca nut husk for biochar preparation using tubular furnace and its characterization for various agricultural applications. Areca nut husk biochar (AHB) was prepared from Areca nut husk at variable residence time (30 to 90 min) and charring temperature (200 to 400° C) under slow pyrolysis conditions. Physical characterization, elemental investigation and surface studies were carried out for AHB using the standard protocols and techniques.

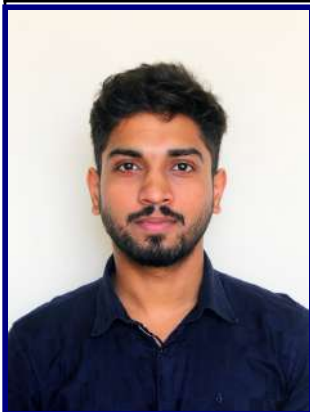
The study entails that, residence time had less influence on the characteristics of AHB for varied charring temperatures. High pH (>8.01) and conductivity (217-951 $\mu\text{S cm}^{-1}$) of AHB could be helpful in potentially neutralize soil acidity and increasing cation exchange capacity in soil. On elemental investigation, it was observed that the highest carbon content (58.75 %) and, lowest H/C (0.05) and O/C (0.65) ratios were obtained in the sample with the charring temperature 250 oC and residence time 60 min. Lower H/C and O/C ratios represent the higher degree of aromaticity (Killops and Killops, 2005). Moreover, high carbonization and aromatization structure make biochar highly stable against decay, long half-life period and, difficult to be decomposed and mineralized (Lehmann, 2007). Furthermore with FESEM micrograph, AHB showed inflated and macro porous surfaces with an average pore size of 9.17 μm . Surface properties are particularly useful for soil applications of biochar especially for enhancing soil water holding capacity, nutrient retention, harbouring useful micro-organisms and increasing the fertilizer use efficiency etc. Henceforth biochar derived from underutilized waste i.e. Areca nut husk, will not only helpful in improving soil quality but also addressing the issues of sustainable waste utilization in Northeast, India.

Dr Rajmohan K S

Image	Delegate ID	Theme	Details
	YSC 12290	Swachha Bharat	Category : Chemical Engineering Organisation : National Institute of Technology Warangal Telangana Designation : Assistant Professor


It has been reported plastic as one of the most important pollutants among the myriad pollutants that are released of in the ecosystem and environment. It plays a substantial part in human life due to its cheap, flexible and versatile use. Plastics are known to have composition of many chemical components to with stand their stability for various domestic applications. Despite various useful applications, plastics will take a longer time to degrade in the soil. The combustion of plastics releases chemicals such as dioxides and phosgene that are considered as a harmful to the ecosystem. The toxic materials released from the plastics, enters into water bodies and through food chain in the form of plastic. Microplastic polluted foods and the presence of slender amounts of phlathates in toys lead to serious health issues such as malignant cancers and congenital diseases and malignant cancers. The dioxins ejected from the plastic polymers are harmful and persistent organic pollutants which cause neurological damage and tumor to mankind. Inadequate and inefficient Waste Management practices have led to substantial plastic pollution of the water bodies. Plastics settle down on beaches which decreases recreation and aesthetic values. In this paper, we have reviewed the different ways for resource recovery from plastic wastes, possible consequences of plastics to the ecosystem and environment and available safety regulations for the proper and effective use of plastics. It also generates repository for scientific literature about the treatment of plastics using several methods, which can help to promote further improvement.

Mr Arun Sathyan

Image	Delegate ID	Theme	Details
	YSC 12334	Swachha Bharat	Category : civil Engineering Organisation : IIT Guwahati Designation : Research Scholar


Aquatic weeds are unwanted plants in water bodies, and they aggressively grow in such an environment to extends that affects other aquatic life and even wholly destroys the ecosystem. Hydrilla verticillata is one such dangerous weed commonly found in wide range of aquatic habitats in India. It is an invisible menace, invisible that is until it fills the water body that it infests “topping out” at the surface. Conventional methods of controlling this weed include biological, physical and chemical. Anaerobic digestion to produce biomethane is a sustainable biological method to get energy out of the aquatic weed biomass. However the presence of lignin in Hydrilla verticillata makes hydrolysis (a significant step in anaerobic digestion) bottleneck of anaerobic digestion, thereby delaying the hydrolysis phase and producing decreased amount of biogas. The aim of this work is to study the effect of four different types of thermal pretreatment techniques i.e., hot air oven, microwave, autoclave, and hot water bath on hydrolysis, compositional analysis and characterization of Hydrilla verticillata and compare among them and find the best pretreatment method exhibiting enhanced solubilization From previous studies it has been observed that pretreatment not only accelerates the hydrolysis process, but it also increases the methane production from anaerobic digestion. For that a Bio-chemical methane potential (BMP) test is proposed to be carried out with the best pretreated Hydrilla verticillata.

Ms Leena Panchal

Image	Delegate ID	Theme	Details
 <p>H2284</p>	YSC 12347	Swachha Bharat	<p>Category : Others Organisation : MKSSS's Cummins College of Engineering for Women Designation : Assistant Professor</p>


In 2017, India slipped to the 177th position of the Green ranking according to the World Economic Forum. With the emerging smart city development across the cities in India, the Smart Garbage Management system is the need of the hour. It is estimated that a million tonnes of waste is generated and less than 60 percent of it is collected, the rest is left on the streets to be eaten by stray animals or stuck in the drains. Most of the dustbins out in the streets are filled with dirt or tobacco stains these days, leading to many people not throwing garbage in the dustbin. Statistics reflect that there is a need, the importance of waste separation in India and how automation can be introduced into existing systems. The segregation of solid waste is completely done by manual laborers which are less efficient, time-consuming and not completely feasible due to a large amount of waste. The proposed system is an IoT enabled intelligent bin which can segregate waste through sensors. Sensors are used for distance measurement purposes and to detect the type of waste(dry or wet). The end result of the proposed system is to open the lid intelligently as it sees a person approaching and segregate waste(Dry or Wet). The author's approach is a proper solution for the management of dry and wet waste as it can intelligently separate the two types of waste into respective bins and thus the problem of segregation can be cut at the bud. But at the same time, it is not the most perfect solution since the product is a bit expensive. By using different types of sensors, segregation of waste into metal/non-metal or plastic can be achieved.

Dr Soumya Pandit

Image	Delegate ID	Theme	Details
	YSC 12367	Swachha Bharat	<p>Category : Others Organisation : Amity Institute of Biotechnology, Amity University, Mumbai Designation : Assistant Professor II</p>


Brackish water from the coastal region of Navi Mumbai was characterised and utilized for desalting purpose in a typical three-chambered microbial desalination cell (MDCs). Inexpensive Polyvinyl alcohol (PVA) composite ion exchange membrane (IEM) were prepared and tested as separators in three-chambered air cathode MDCs. MDCs consists of an anode, cathode and central desalination chamber separated by PVA -PDDA (–poly-diallyl dimethylammonium chloride) and PVA-STA (silicotungstic acid) as AEM and CEM respectively. The performance of MDCs operated in the batch mode were evaluated with respect to volumetric power output, TDS and COD removal. A significant reduction of $57\pm 3.7\%$ and $74\pm 5.5\%$ in COD and TDS was documented respectively from anode and middle chamber after 48 hours of batch operation. The maximum volumetric power density of 3.8 ± 0.7 W/m³ and coulombic efficiency of $10.27\pm 1.2\%$ was obtained when *Pseudomonas aeruginosa* was utilized in acetate medium fed MDCs. However, long term operation (12 weeks) of MDCs showed a gradual decrease in power output (3.4 ± 0.1 W/m³) possibly due to IEM fouling. Interestingly CEM were more prone to biofouling compared to the AEM. These results demonstrated efficient abilities of MDCs for the organic matter removal while desalting brackish water from the coastal region along with electricity production.

Mr Pranav Pawar

Image	Delegate ID	Theme	Details
	YSC 12369	Swachha Bharat	Category : Nano Engineering Organisation : IIT Bombay Designation : PhD student


Abstract-Capacitive deionization (CDI) is the next generation of water desalination and softening technology by using a relatively low capacitive current of electrochemical double layer. In order to achieve optimal desalination during capacitive deionization (CDI), CDI electrodes should possess high electrical conductivity, large surface area, and good wettability to water, narrow pore size distribution, and efficient pathways for ion and electron transportation. Among different carbon-based materials used for making electrode, the graphene-based materials are intensively studied because of its high surface area and good conductivity. We have successfully prepared graphene oxide by improved method. Hydrophilic nature of GO, which makes easy contact of hydrolyzed ions from water which reduces electrode water resistance. The optimal CDI electrodes should possess high electrical conductivity, large surface area, and good wettability to water. A scalable capacitive deionization route for high efficient purification of water using graphene-oxide as an electrode material is reported here. Hydrophilic nature of GO, which makes easy contact with hydrolyzed ions from water, reduces electrode water resistance. This wettability and low resistance to water make GO high efficient electrode material in capacitive deionization. The oxygen-containing groups in Graphene oxide enable to store pseudo charge making it attractive for capacitive deionization application. Our graphene-oxide electrodes show salt highest adsorption capacity among all carbon-based materials with a cell potential of 1V. The salt adsorption capacity of graphene-oxide increases with increasing ionic charges as Na⁺ recyclability and complete regeneration of electrodes along with high salt adsorption capacity, make it a potential electrode material for water purification.

Ms Ankita Das

Image	Delegate ID	Theme	Details
	YSC 12405	Swachha Bharat	Category : Software Engineering Organisation : Heritage Institute of Technology Designation : Research Scholar


The government of India launched the Swachh Bharat Mission (SBM) in the year 2015. The mission idea involves several elements including waste management which is one of the important issues in India. The mission is not only successful in the urban area but also quite popular in the rural areas as well. There is a specific mission on the rural development under SBM called the Swachh Bharat Mission Gramin. The rural areas of India have specific characteristics including the type of waste that is generated. The organic fraction of the waste generated is higher than the urban areas. There are some specific types of waste such as cow dung, agricultural waste, vegetable waste and other biomass are generated in the villages. These waste needs to be utilized in a resource efficient way. It is always a difficulty to break through the common practices of the village and introduce something new. There are several technologies available which can help not only manage the generated waste but also developing a sustainable waste management system for the rural areas. Under the current study, a smart strategic framework have been proposed for bio-waste management in the rural areas. The kernel of the proposed model is essentially data driven verified by the security protection of the Block chain technology with the super connectivity of Internet of Things (IoT) to handle diverse possible cases. The realistic cases have been identified and model adaptivity have been validated. The results shows that the model is efficient enough to handle bio-waste generated in the rural areas. The robustness of the model dictates that it may be replicated. The model can also be considered as a prima facie towards the development of smart villages in India.

Mr Anil Kumar Thakur

Image	Delegate ID	Theme	Details
	YSC 12422	Swachha Bharat	Category : civil Engineering Organisation : AcSIR, CSIR-AMPRI Designation : Ph.D. Research Scholar


India is a developing country and has witnessed an exponential growth in construction & building sector. To meet the requirement of building materials for civil infrastructure involve an exploitation of natural clay. India generates about 12 million tons of marble waste annually which pose major environment issue for human, soil, water and air pollution. In contrast, there is urgent need for sustainable utilization of marble waste in value added product. This research work deals with the production of green composite bricks consisting of marble waste via continuous cold extrusion technique. The brick samples were prepared at different molarities (2-8 M) and were cured at 70 °C temperature for 24 hours. Test results showed that incorporation of marble waste increases the compressive strength (> 5 MPa) and decreases water absorption (the requirement of building brick specifications as per IS 1077:1992. The finding of this research showed a feasible solution for production of environmental friendly and cost-effective composite bricks.

Ms THANESHWARI SAHU

Image	Delegate ID	Theme	Details
 THANESHWARI SAHU	YSC 12439	Swachha Bharat	Category : Others Organisation : S.O.S OF ELECTRONICS AND PHOTONICS PT. RAVISHANKAR UNIVERSITY RAIPUR Designation : STUDENT

Since most of the single used plastic are used in packaging field because of its quality to carry anything anywhere. Although it's harmful in many aspects for society and land fields. Our packaging is more sustainable as we use agricultural waste for our materials. To replace the single use plastic there are biodegradable plastic bags are available which have plant based raw material that can be easily decomposed. In some cases it has less strength to carry some material, to improve its strength processed plant fine fibers such as mesocarp of a coconut are blended with biodegradable plastic that can be further made into other items. We can use sugarcane fiber, wheat and rice straw and bamboo with biodegradable plastic. The available plastic waste could be used to make road when it is blended with bitumen.

Mr Prachal Dhok

Image	Delegate ID	Theme	Details
	YSC 12446	Swachha Bharat	Category : Chemistry Organisation : CSIR- AMPRI, Bhopal Designation : Ph.d Schlor

Simultaneous Production Of Radiation Shielding Materials From A Single Source Low Cost Precursor Useful For Strategic Sector

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Materials for Radiation Shielding and Cement Free Concrete Division
Council of Scientific and Industrial Research (CSIR) - Advanced Materials and Processes Research Institute (AMPRI),
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Abstract:-

From last more than one decade CSIR-AMPRI, Bhopal has been invariably engaged in the area of development of advanced, non-toxic, cost-effective radiation shielding materials. Red Mud, Brine Sludge, Fly Ash etc. are mainly the industrial by-products which were used as raw materials for the making radiation shielding material, but now agricultural wastes by their special chemical treatments are also used for developing cost effective radiation shielding material. The agro-residues can be efficiently, exhaustively and economically used for the development of advanced non-toxic radiation shielding materials. Initially, the unique designing of chemical constituents and mineralogical constituents of various promising and appropriate agro-wastes along with other suitable chemical compounds has been conceptualize, which undergoes various synergistic and simultaneous chemical reactions. Further processing of the same leads to the recovery of nano precursors, which were then further utilized separately for simultaneously making radiation shielding materials. These radiation shielding materials have been developed in various flexible and non-flexible matrices in the form of tiles, panels, glass etc. depending upon the requirement.

The developed nano precursor sources were characterized using various complementary techniques like XRD, FTIR, FESEM and EDX etc. The use of developed radiation shielding materials, posses broad application spectrum ranging from complex shielding installations of public domain such as X-ray, CT scanner room and for medical equipment's, electronic items, gadgets etc. and bunkers for army personnel's, nuclear power plants etc. of strategic natures.

Key words:- Radiation; Shielding; Non-toxic; Low Cost Precursor ;Strategic Sector


Ms SUMONA KOLEY

Image	Delegate ID	Theme	Details
	YSC 12448	Swachha Bharat	<p>Category : Others Organisation : National Institute of Technology, Agartala Designation : Student</p>

Waste management and energy crisis are the major issues that we are facing right now. A promising way to get rid of the huge amount of unwanted solid waste is Anaerobic Digestion. With the reduction of high volume of solid waste, anaerobic digestion also gifts us another product as biogas as a renewable energy source. Organic carbon present in these organic wastes has a high-energy potential, which can be converted to biogas. Hydrilla verticillata is one of the lignocellulosic biomass, which is a submerged aquatic herb that poses serious ecological threat. It is an invisible menace, invisible that is until it fills the water body that it infests “topping out” at the surface.


They simply outcompete the growth of submerged native plants and affect the aquatic ecosystem through altering the water chemistry and depleting dissolved oxygen level in water. Rather than being an invasive weed, Hydrilla is also considered as the storehouse of lignocellulose. Biogas production through anaerobic digestion of this lignocellulosic mass can effectively manage the invasive weed as well as mitigate environmental pollution caused by burning of fossil fuel. But the presence of lignin in Hydrilla verticillata makes hydrolysis (a major step in anaerobic digestion) bottleneck of anaerobic digestion thereby delaying the hydrolysis phase and producing decreased amount of biogas. The aim of this work is to study the effect of four different types of thermal pretreatment techniques i.e., hot air oven, microwave, autoclave, and hot water bath on hydrolysis, compositional analysis and characterization of Hydrilla verticillata and compare among them and find the best pretreatment method exhibiting enhanced solubilisation. From previous studies it has been observed that pretreatment not only accelerates the hydrolysis process, but it also increases the methane production from anaerobic digestion. For that a Bio-chemical methane potential (BMP) test is proposed to be carried out with the best pretreated Hydrilla verticillata.

Mr UPENDRA KUMAR YADAV

Image	Delegate ID	Theme	Details
	YSC 12454	Swachha Bharat	Category : Physics Organisation : JAIPRAKASH UNIVERSITY CHAPRA Designation : RESEARCH SCHOLAR

The father of our nation Mahatma Gandhi always put the emphasis on swachhta as swachhta lead to healthy and prosperous life.He wanted to India to be a clean India. He very well had a clear understanding of the pathetic condition of rural people.It been 73 years of independence and even today,more than half of India`s population does not have proper toilet, conserdering this fact in mind the present Government of India,wants to fulfill the dream of Mahatma Gandhi and usher a clean India by 2019.which will mark the 150th birth anniversary of Mahatma Gandhi,To make India`s a fifth free country in five years,to construct community and public toilets in rural areas ,to provide running water supply, to treat waste water.to keeps roads pavement and localities clean .Swachh Bharat Abhiyan with the help of the Government of India political parties,NGOS,Corporate and village MUKHIYA and with active people participation,is slated to completed in2020.

Mr MD IQBAL ANSARI


Image	Delegate ID	Theme	Details
	YSC 12459	Swachha Bharat	Category : Biology Organisation : AcSIR, CSIR- CIMFR, DHANBAD Designation : PhD Research Scholar

Municipal solid wastes (MSW) which became global issues to any nation. An enormous increase in population and rise in living standard has led to generation of tremendous amount of MSW. Its disposal is a stinging widespread problem in both urban as well as rural areas in developed and developing countries. MSW management solutions must be financially sustainable, technically feasible, socially, legally acceptable and environmentally friendly. Rags pickers refer to those who pick discarded materials consist of biodegradable and non-biodegradable and earn their livelihood by generating source of income. They play a vital role in municipal solid waste management mostly in the developing nation. Despite the fact rag pickers save almost 14% of the municipal budget annually but their role is unrecognized and they are generally deprived of the right to work. It is an estimate, which reveals that the rag-pickers reduce up to 20% load on transportation and on landfill. Children living and working on streets are expected to adopt substandard life style due to lack of basic facilities. This provokes their quality of life which includes physical health; social and psychological functioning tends to develop, sense of insecurity, depressions, hopelessness, anxiety etc.

A questionnaire survey was conducted pertaining on age, sex, educational status, health, habits, and their socio-economic standard was carried out haphazardly from various places of the city. The present article demonstrates the role of rag pickers in the MSW management and also reveals that most of rag pickers can be properly educated and trained to protect themselves from various unhygienic activities such as collection and segregation process. Government should devise a major step in their proper continuous health monitoring and make use of these unrecognized rag pickers who are crucial part of the society. This article will be fruitful in providing the platform for decision makers for better sustainable municipal management system of the country.

Key words: MSW, rag pickers, economics, unhygienic, health and diseases

Dr Manoj Gupta

Image	Delegate ID	Theme	Details
	YSC 12464	Swachha Bharat	<p>Category : civil Engineering Organisation : CSIR-AMPRI Bhopal Designation : Scientist</p>

Stone waste generated during processing in form of solid fragments and slurry is usually disposed outside the industries in landfills and also used for making inexpensive jewellery products. Stones with various textures and colors are extracted from various regions in the world using multiple techniques through mining process. In 2012, 123.5 million tons of marble/stone and ornamental stones was produced worldwide and India produced about 16 % of stone in the world. Moisture resistant and high strength industrial stone waste based hybrid polymer composites are prepared using simple and cost effective compressive moulding technique. Hybrid polymer composites of inorganic stone waste powder are fabricated with various filler concentrations of 10, 20, 30, and 50 wt% in epoxy resin matrix system. The variation of dielectric constant, dissipation factor, ac electrical conductivity of raw stone waste powder and their polymer composite prepared with various filler concentration were analyzed in the frequency range of 20Hz-2MHz. High dielectric constant of 275 at 20 Hz and low dissipation loss factor of 0.02 at 2 MHz were observed for stone waste powder. The present results shows an effective approach to use the industrial waste materials for making electrical insulating sheet.