



## **Conference Proceedings**

**3rd ICSTR Bali – International Conference on Science & Technology  
Research, 21-22 December 2019**

**21-22 December 2019**

## **CONFERENCE VENUE**

**Ibis Bali Kuta, Jl. Raya Kuta No. 77, 80361 Kuta, Bali, Indonesia**

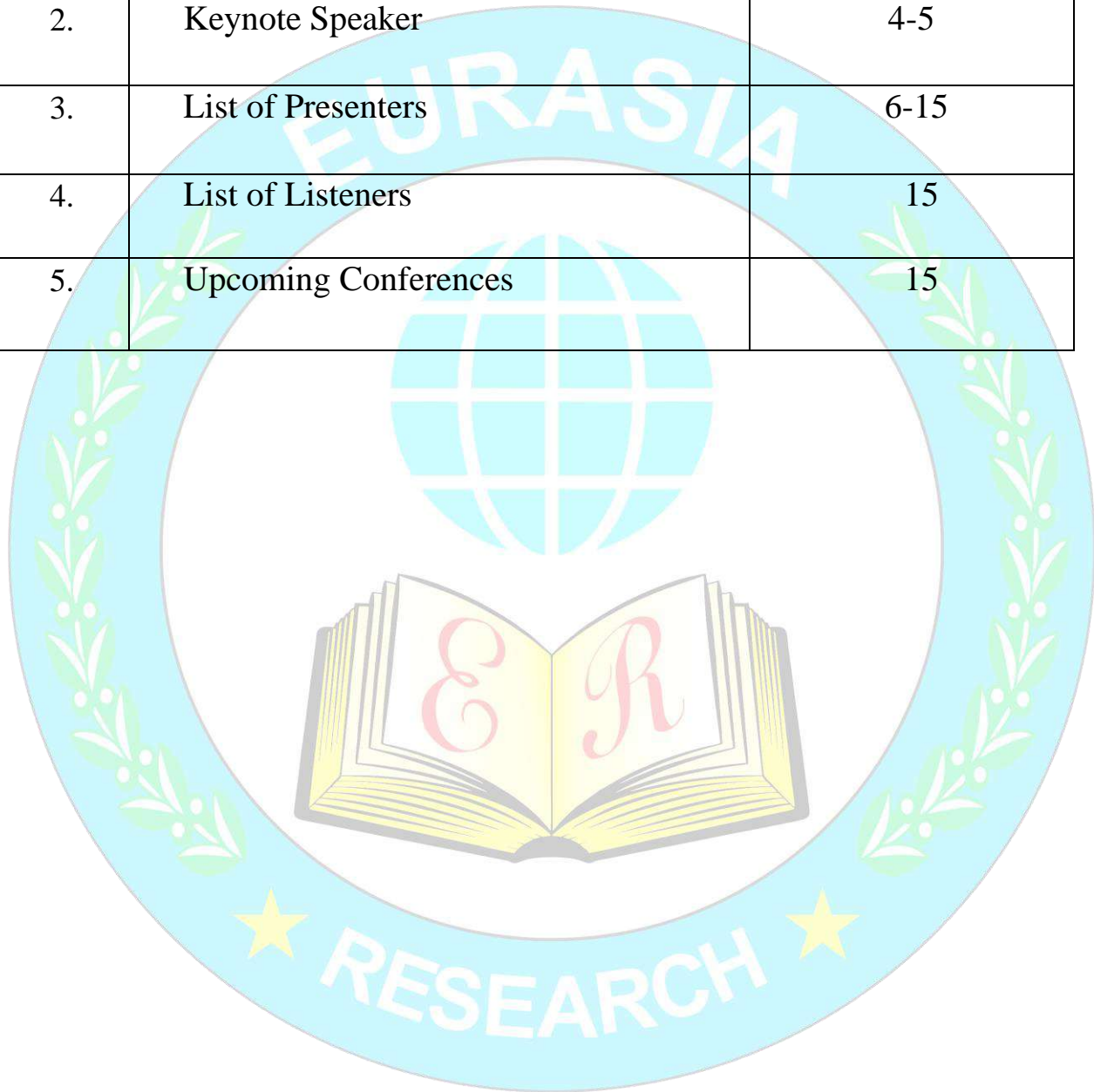
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**Preface:**

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## **KEYNOTE SPEAKER**



### **Agustiiani Putri**

**Researcher, Teacher and Assistant Professor of Mathematics and Natural Science Department, the State University of Jakarta, Indonesia**

**Topic: Climate Research**

Agustiiani Putri is a researcher, teacher and assistant professor of mathematics and natural science department at the State University of Jakarta, where he has been since 2015. Her research interests span both science technology and education. Much of her work has been on improving the understanding, design, and performance of climate technology, mainly through the application of data mining, statistics, and performance evaluation. In the climate technology, she has worked on characterizing the algae. She has explored the presence and implications of algae usage for reducing carbon emission in Indonesia. She has also produced the climate technology namely microalgae photo bioreactor. In addition, he has made numerous contributions to education and learning media; and she has examined the statistical models and created the learning media. She has attended roughly several conferences and workshop programs in Malaysia, Japan, Thailand, Singapore, Turkey, Indonesia, and Egypt. She has served on the panelist of the world youth forum in Egypt.

## **PLENARY SPEAKER**



### **Govind Sharan Dangayach**

**Department of Mechanical Engineering, Malaviya National Institute of Technology,  
Jaipur, India**

Dr. Govind Sharan Dangayach is Dean, Research & Consultancy, Professor in Department of Mechanical Engineering in Malaviya National Institute of Technology (MNIT), and Jaipur. He was graduated in Mechanical Engineering from M.B.M. Engineering College Jodhpur in the year 1985. He obtained Master's degree in Production Engineering from Indian Institute of Technology, Delhi. He earned his Doctorate in Industrial Engineering also at Indian Institute of Technology, Delhi. He has published 200 research papers in various International and National Journals. He is Guest Editor of three International Journals viz. Production Planning & Control (PPC), International Journal of Manufacturing Technology & Management (IJMTM), International Journal of Business Performance Management (IJBPM). He is Reviewer of Twenty Nine International Journals. He is Visiting Professor at DHBW Mosbach, Germany, Asian Institute of Technology (AIT) Bangkok, IIM Khozikode, IIM Shillong, & Leeds-Met India Bhopal. He delivered several Invited Lectures/ Key note addresses in India & abroad. He has 34 years of Teaching and Industrial Experience. He is Life member of various International & National professional Societies. He has guided 19 Ph.D. & 60 Master's thesis. Prof. Dangayach is Resource person/Expert of AICTE, UPSC and NBA Govt. of India. He has been nominated Member of Board of Management of Rajasthan Technical University by Govt. of Rajasthan. He is Member of BOS, BOG of several Universities in India. He was Chairman of The Institution of Engineers India, Rajasthan State Centre for the session 2014-16. Beside these his other key achievements are:

- Principal Investigator of two DST (Govt. of India) funded Research projects
- Cited in the list of TOP 20 prolific researchers of the world in 2015
- Won 2011 Emerald/IAM Research Fund Award
- Best Case Study award 2012-13 by Indian Institution of Industrial Engineering
- Biography published in 7th edition (2004) of "Marquis World's Who's & Who in Science & Technology", New Jersey, USA
- Best Paper Award and Certificate of Merit for 1996-97 by Institution of Engineers (India)



## PRESENTERS



Vatsala Srivastava  
ERCICSTR1927051

### Characterisation of Pulsar Emission and Timing Variabilities

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#### Abstract

Neutron Stars are compact stellar remnants of the massive main sequence stars. Pulsars are highly magnetized rotating neutron stars that emit a coherent beam of electromagnetic radiation along its magnetic axis. The typical spin periods range anywhere from a few milliseconds to a few seconds. In the simplest scenario, the emitted electromagnetic radiation along the magnetic axis of the pulsar is similar to the emission of magnetic dipole radiation. However, even after 50 years of their discovery the pulse evolution and morphology along with the detailed physics of the broadband pulsar emission are not well understood. Depending upon the spin period, the pulsar population can be broadly classified into two categories, viz., normal pulsars, and millisecond pulsars. Using the 'the psrqpy' package, which is a python tool for interacting with the ATNF( Australia Telescope National Facility) pulsar catalog, we generate the P-Pdot diagram which is helpful in studying the lifecycle and population properties of different classes of pulsars. During this project, we construct the pulse profiles and examine the properties of two different types of pulsars. Since individual pulsar signals are weak and usually get lost in the RFI(Radio frequency interference), we use the software PRESTO to build a detectable signal through the folding of data at a specific period. To construct the pulses we have used radio data from the Parkes radio telescope. For a set of normal and millisecond pulsar, we use PRESTO to generate pulse profiles and look for their evolution in time and frequency. The profiles and their evolution shed light on the emission properties as well as other derived properties of the pulsar, eg., magnetic field, characteristic age, dispersion measure, spin-down power.

**Keywords:** Neutron star, Pulsars, Pulse profile, P-Pdot diagram, PRESTO

Annisa Pattalia  
ERCICSTR1927052

### The Effect of Rosemary Leaves Extract, Ginger, Java Turmeric, and Curcumin toward Ketoconazole as an Antifungal Activity

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#### Abstract

Dermatological fungal infections in Indonesia has high prevalence because its tropic climate and high humidity. Dermatophytosis is a common superficial fungal infection, caused by dermatophyta. Therapy for dermatophytosis came from conventional antifungi or new compounds from natural source. However, the effectiveness of both therapy did not work well. This research is to test interaction in combination between ethanolic extract of rosemary leaves, ginger, java turmeric, curcumin and ketoconazole against *Microsporum gypseum* and *Trichophyton mentagrophytes*. This research is to determine the minimum inhibitory concentration (MIC) and minimum fungicidal concentration (MFC) has been done by checkerboard method of CLSI, while to determine the combination effect (synergistic, additive, or antagonism) from compound with ketoconazole has been done by checkerboard method and the paper strips diffusion technique. Curcumin showed the antifungal activity with MIC value, against *Microsporum gypseum* are 1024 µg/mL and *Trichophyton mentagrophytes* with MIC value are 128 µg/mL. The MFC of curcumin against *Microsporum gypseum* are >2048 µg/mL and *Trichophyton mentagrophytes* with MFC value are 512 µg/mL. Synergistic interaction against *Microsporum gypseum* and *Trichophyton mentagrophytes* was

obtained from the combination of ginger extract with ketoconazole. Additive interaction against and *Microsporum gypseum* and *Trichophyton mentagrophytes* was obtained from the combination of rosmariny leaves extract, java turmeric, and curcumin, respectively the combination with ketoconazole. In conclusion, combination of ginger ethanolic extract with ketoconazole has increase an antifungal effect with low concentration if used both therapy.

**Keywords:** Rosemary, Ginger, Java Turmeric, Curcumin, Ketoconazole, Antifungal, Combination



**Prarthita Basu**  
ERICICSTR1927053

**Utilization of Sandstone Waste in Development of Sustainable Self-Compacting Concrete**

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**Ramesh Chandra Gupta**

Professor, Malaviya National Institute of Technology, Jaipur, India

**Vinay Agarwal**

Associate professor, Malaviya National Institute of Technology, Jaipur, India

**Abstract**

India is endowed with various dimensional stones and Rajasthan is known as “mineral majestic” of the country. It is estimated more than 90% of sandstone are generated from Rajasthan and approximately 900 million tons of sandstone waste are generated every year. There is no significant utilization have been noticed, which leads to arise various environmental hazards in this region. To overcome the problem and finding out an alternative sustainable building material, an experimental work was performed to find out the possible suitability of sandstone slurry in self-compacting concrete. In this study, fly ash-based cement was partially replaced with sandstone slurry from 0%-30% with a step increasing height of 5% by weight of cement. The trial program comprises of three phases. The preliminary work was the initial investigation to get the optimum water to powder ratio and superplasticizer dosage at which the highest compressive strength is achieved with acceptable flowability without segregation and bleeding. In next phase, the workability and mechanical properties along with microstructural analysis of SCC were examined for the optimum water to powder ratio along with superplasticizer dosage. The results indicated that sandstone slurry could be used up to 10% and 20% by weight of cement content for reinforced cement concrete and plain cement concrete respectively. The present study also emphases towards environmental impact of Self-compacting concrete containing sandstone slurry. In final phase, carbon footprint and e-CO<sub>2</sub> index were calculated. Irrespective of mixing proportion parameters CO<sub>2</sub> emission amount was decreased. However, study of durability parameters, calculation of e-resource and e-energy index is suggested as future scope of this study.

**Keywords :** Self-Compacting Concrete, Sandstone Slurry, Workability, Compressive Strength, E-CO<sub>2</sub> Index, Carbon Footprint



**Govind Sharan Dangayach**  
ERICICSTR1927054

**Assessment of Greenness through Carbon Footprint**

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**Abstract**

With increasing global GHG emissions it is very important for global to reduce the harmful effect of GHG emissions for future generations. Since the last decade Carbon footprint has become one of the major concern for educational institutions to get their environmental impact and quantify sustainability effort. MNIT Jaipur campus is one of the technical institutes that decided to measure its carbon footprint. This research presents the maiden Carbon Footprint study of MNIT Jaipur Campus. This study was conducted using IPCC methodology with scope 1, scope 2 and scope 3. The scope 1 includes the direct transportation of campus and LPG consumptions. In scope 2, electricity was the only source of emission whereas scope 3 includes staff commuting, bore well water supply, wastewater



	<p>treatment, papers, aluminum can and solid waste. The total carbon footprint of MNIT Jaipur Campus was calculated to be 1182.69 ton CO<sub>2</sub> eq. This study concludes that 29% of the overall carbon footprint was found from purchased electricity. While emissions from LPG consumption (26%), solid waste (16%), water supply (12%) and aluminum can (10%). The activities wastewater (4%), staff commuting (1%) and direct transportation (1%) have low emission compare to other activities. GHG emission percentage from papers, staff commuting, and direct transportation are negligible. This has a great contribution to achieving carbon neutrality of the campus. The per capita average emission found to be 0.273 ton CO<sub>2</sub> eq. per person per year. Scope 3 emission has the highest contribution to the overall emission. From the literature, it was found that very few previous studies included scope 3 for calculating the carbon footprint, but this study shows that educational institutions have a significant impact on scope 3. Therefore every institution has needed to include the entire source associated with scope 3. This study can be used to comparing MNIT Jaipur against other technical institutes in the future <b>Keywords:</b> Carbon Footprint, Emission, Environmental Impact GHG, Technical Institutes, Greenness</p>
<p><b>Kamal</b> ERCICSTR1927056</p>	<p><b>Alert System Forearhquakes In Uttarakhand, India</b></p> <p><b>Kamal</b> Principal Investigator, EEW System Laboratory, IIT Roorkee, India</p> <p><b>Ajay Gairola, M.L. Sharma</b> Co-P.I., EEW System Laboratory, IIT Roorkee, India</p> <p><b>Pankaj Kumar, Govind Rathore,</b> Project Fellow, EEW System Laboratory, IIT Roorkee, India</p> <p><b>Piyooosh Rautela</b> Executive Director, State Disaster Management Authority, Govt of Uttarakhand, India</p> <p><b>Abstract</b> An Earthquake Early Warning System (EEWS) has been developed by Indian Institute of Technology Roorkee (IIT Roorkee) for Uttarakhand, a Himalayan province of India. Under this project, 166 accelerometers have been installed in 53,483 km<sup>2</sup> area in the Himalayan part of Uttarakhand. The data is streamed at the central server located in Earthquake Early Warning Laboratory at Centre of Excellence in Disaster Mitigation &amp; Management in IIT Roorkee through private network on 24 × 7 basis. Whole system is automatic and the early warning parameter is peak displacement (Pd). System is designed to issue the warning for the earthquakes whose magnitude is estimated more than 6 by the system in real time. An earthquake warning is issued to public through the sirens. The early warning sirens are installed in the public offices, government buildings, schools, colleges of the two major cities, Dehradun and Haldwani, and all 13 district emergency operation centers of the province. After hearing earthquake alarm, people can take necessary precautionary measures. This paper presents the details of instrumentation and working of the EEWS system for Uttarakhand, India. <b>Keywords:</b> Earthquakes, Early Warning, Alert System, Himalaya</p>
<p><b>Pratibha</b> ERCICSTR1927057</p>	<p><b>Mathematical Study of the Effect of the Nonspherical Particles on the Flow Through Constricted and Viscoelastic Artery</b></p> <p><b>Pratibha</b> Associate Professor, Department of Mathematics, IIT Roorkee, India</p> <p><b>Jyoti Kori</b> Research Scholar, Department of Mathematics, IIT Roorkee, India</p> <p><b>Abstract</b> The aim of this paper is to investigate the incompressible boundary layer pulsatile flow of nonspherical nanoparticles, suspended in a Newtonian fluid through a cylindrical tube whose walls are viscoelastic and constricted due to axisymmetric stenosis. Flow of fluid is governed by two dimensional Navier-Stokes equations with a drag force caused by Darcian effect due to particle suspension. Governing equations are solved numerically by using finite difference scheme for 3 aspect ratio 1000, Reynolds number 10-200, constriction ratio=0.4 mm and stenosis length=0.74 mm. We obtained that the fluid</p>



	<p>(blood) and particle (particle suspension) velocities increase by increasing the pulsating amplitude and aspect ratio of particle. Present analysis also indicates that the viscoelasticity of walls are affected by the amplitude of pulsatile flow of blood and for large value of amplitude viscoelastic effect decreases. Keywords: Bio-Mathematics, Fluid flow, Blood flow in Arteries</p>
<p>Deepak Panghal ERICSTR1927059</p>	<p style="text-align: center;"><b>A Framework for Implementation of Predictive Maintenance (PdM) System for Apparel Manufacturing Industry</b></p> <p style="text-align: center;"><b>Richa Verma</b> National Institute of Fashion Technology, New Delhi</p> <p style="text-align: center;"><b>Uttama</b> National Institute of Fashion Technology, New Delhi</p> <p style="text-align: center;"><b>Prabir janaa</b> National Institute of Fashion Technology, New Delhi</p> <p style="text-align: center;"><b>Deepak Panghala</b> National Institute of Fashion Technology, New Delhi</p> <p style="text-align: center;"><b>Abstract</b></p> <p>The garment manufacturing industry is highly machinery dependent industry. The Machine maintenance is very important task in garment manufacturing industry. In the current production setups even a machine downtime might lead to serious production problems. Effectively designed efforts to update maintenance management have become a necessity. Therefore, the purpose of this paper is:</p> <ul style="list-style-type: none"> <li>• To identify the various steps involve in implementation of PdM</li> <li>• To develop a frame work for implementation of PdM for apparel manufacturing Industry</li> </ul> <p>The various steps like Machine Criticality Analysis Criteria, Architecture Development, Hardware and software identification, and system deployment are disused in length. A PdM system is proposed to automate the process of anomaly detection for critical machines, hence improving the machine management and decreasing unscheduled downtime of the machines. The proposed system can effectively optimise the traditional maintenance programs by selection of the critical machine, identification of failures in the machine, and prediction of failure before the breakdown. Keywords: Predictive Maintenance, Machine Learning</p>
<p>Aulia Ratri Hapsari ERICSTR1927061</p>	<p style="text-align: center;"><b>Green Synthesis of Silver Nanoparticles using Aloe Vera Leaf Water Extract as A Creatinine Sensors3</b></p> <p style="text-align: center;"><b>Aulia Ratri Hapsari</b> Department of Chemistry, Faculty of Mathematics and Natural Sciences, Yogyakarta, Universitas Gadjah Mada, Indonesia</p> <p style="text-align: center;"><b>Yunita Amalia Khusna</b> Department of Chemistry, Faculty of Mathematics and Natural Sciences, Yogyakarta, Universitas Gadjah Mada, Indonesia</p> <p style="text-align: center;"><b>Annisa Nurhikmatillah</b> Department of Chemistry, Faculty of Mathematics and Natural Sciences, Yogyakarta, Universitas Gadjah Mada, Indonesia</p> <p style="text-align: center;"><b>Dwi Siswanta</b> Department of Chemistry, Faculty of Mathematics and Natural Sciences, Yogyakarta, Universitas Gadjah Mada, Indonesia</p> <p style="text-align: center;"><b>Abstract</b></p> <p>Creatinine is a uremic toxin compound, which is the end-result of metabolism. Detection and determination of creatinine levels in blood and urine in humans are clinically essential since it could reflect renal function. Silver nanoparticles (AgNPs) are now being developed as sensors for various analytes, one of which is the creatinine sensor. In this research, AgNPs were synthesized by reduction</p>

method, using aloe vera leaf water extract as a bioreductor. The FTIR spectra of aloe vera leaf showed some peaks, indicating the presence of -OH groups, carbonyl groups and C=C, which indicated the presence of benzoquinone. A stabilizing agent, sodium citrate, was also added when synthesizing AgNPs for preventing the formed AgNPs from agglomeration. The addition of aloe vera leaf water extract to the AgNO<sub>3</sub> 0.1 M reduced AgNO<sub>3</sub> to Ag<sub>0</sub>, which is shown by the color change. The color changed from colorless to brownish-orange after 24 h of stirring at room temperature, indicating the formation of AgNPs, which was then proved by the wavelength shift from 303 to 462 nm for AgNO<sub>3</sub> solution and AgNPs, respectively. To find out the ability of synthesized AgNPs as a creatinine colorimetric sensor, 1 mL of AgNPs was added into 3 mL of creatinine. One milliliter of NaOH was also added to the mixture to obtain the basic condition. The interaction between AgNPs and creatinine caused a blueshift from 462 to 405.5 nm, as indicated by the change in color from brownish-orange to yellow. Therefore, the AgNPs obtained from this green-synthesis are promising to develop as a creatinine colorimetric sensor.

**Keywords:** Green Synthesis, Silver Nanoparticle, Aloe Vera, Creatinine, Sensors

Neha Singh  
ERCICSTR1927062

**Effects of Natural Dyes on the Uv Protective Properties of Textile Materials**

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**Abstract**

Protective clothing especially designed, fabricated, or treated to protect personnel against hazards caused by extreme changes in physical environment, dangerous working conditions, or enemy action. In the recent years, a new type of peril related to the excess exposures to sun light which causes human skin damage have been noticed that is UV radiation through sun light. Approximately 10% of sun's energy is in the form of ultraviolet radiations. Atmosphere absorbs most of the lethal radiations emitted by the sun, only 5% of the harmful radiations reach to the surface of the earth. UV radiation can pilot the acute and chronic reactions and damage, such as acceleration of skin ageing and sunburn. The incidence of skin cancer has been rising worldwide due to excessive exposure to sun light. Elevated exposure to ultraviolet radiation component of sunlight results in skin damages; such as sunburn, premature skin aging, allergies and skin cancer. Medical experts suggest several means of protection of human skin against ultraviolet radiation; use of sunscreens, avoidance of the sun at its highest intensities, wearing clothing that covers as much of the skin surface. However, this paper gives an insight about how textile material specially dyed with natural dyes can be efficiently utilized for protecting human skin from the harmful ultraviolet radiations.

**Keywords:** Natural Dyes, UV Protection, Protective Clothing

Ananya Pramanik  
ERCICSTR1927063

**Textile Repurposing as an Effective Technique for Low Impact Waste Minimization**

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**Abstract**

The world grapples with piling waste every day. This waste is affecting the environment tremendously and hence, has become a global concern. Efforts are being made in every industry to minimize the waste and sustainability is the mantra. Worldwide huge quantities of textile waste gets dumped daily, which gets accumulated in the landfills, emanating poisonous gases into the air, seeping toxins into the ground water and depleting the natural resources. There are several waste reduction techniques determined by environmental and textile researchers. Amongst the existing techniques, this paper evaluates the technique of repurposing as an effective method for low impact waste minimisation. The history of repurposing textiles is traced across cultures the world over. "Quilt making" in America and "Kantha stitched fabric" in India can be taken as examples of repurposing. Repurposing technique has really started to make its niche in textile industry. Today, many designers are working with this



technique which has resulted not only in improved aesthetics and functionality of the waste textiles but also reduced environmental burden. The techniques employed by designers involve reshaping, laser cutting, cutting, and re-stitching the whole garment or sections of garments along with trims, off-cuts and vintage textiles. This results in manufacturing of inimitable textile pieces which are created either by hand or by involving the newest technologies. These productions resist the general trend of downgrading the worth placed on waste materials. Although, the concept of 'repurposing' emerged before the emergence of the concept of 'waste' but this is definitely the solution for future. This paper is based on secondary as well as primary research. Most of the information used is taken from books, journals, as well as interaction with the industry members practicing repurposing techniques.  
**Keywords:** Global, Textile Waste, Repurposing, Techniques, Designer's Work



**Dr. Md. Sirajul  
Islam**  
ERCICSTR1927055

**Seasonal and Tidal Dynamics of Nutrients and Chlorophyll a Concentration in Water at the Sundarbans Mangrove Ecosystems of Bangladesh**

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**Abstract**

The study was conducted to investigate the seasonal and tidal variations of nutrients and chlorophyll a concentration in water of Pasur river from the Sundarbans Mangrove Ecosystems during the period from March 2018 to February 2019. Samples were collected from five sampling stations during March, August and November where these months were considered as pre-monsoon, monsoon and post-monsoon seasons, respectively. Samples were analyzed in the water quality laboratory of BFRI, Dept. of ESRM and Dept. of BMB. During the seasons, nutrients concentrations as NH<sub>3</sub>-N, NO<sub>3</sub>-N, PO<sub>4</sub>-P, SO<sub>4</sub> and Chlorophyll a were ranged from 0.001 to 0.09, 3.5 to 50, 0.06 to 5.4, 30 to 272 and 0.18 to 1.75mg/l, respectively, throughout the high tides, whereas, during low tides the concentrations were 0.001 to 0.39, 4.2 to 47, 0.1 to 2.75, 20 to 179 and 0.218 to 1.88mg/l, respectively. The NO<sub>3</sub>-N was very high than suitable limit during both tides at monsoon and post-monsoon. The PO<sub>4</sub>-P was found moderately high during both tides at all stations. The SO<sub>4</sub> was found 187.8±50.63 and 76.87±21.95mg/l during high tide and during low tide, it was 135.4±36.58 and 95.73±10.81mg/l at pre-monsoon and post-monsoon, respectively; which were very high than suitable range of water quality. During low tide mean value of chlorophyll a concentration was 1.428±0.152mg/l at post-monsoon, which was higher than monsoon (0.649±0.176mg/l) and pre-monsoon (0.789±0.006mg/l). Nutrients and chlorophyll a concentration of Pasur river is fluctuating seasonally and tidally in some magnitude and their variations can alter the water quality as well as living organisms; that would be a major concern in Sundarbans mangroves environment.

**Keywords:** Chlorophyll A, Nutrients Concentrations, Seasonal Water Quality, Sundarbans Mangrove Ecosystems



**A.K. Obidu Huq**  
ERCICSTR1927058

**Formulation of a Functional Food Mixture from Organic Herbs & Spices and Its Efficacy on Pain Removal**

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**Abstract**

Functional foods have beneficial roles on health and well-being, beyond its basic nutrition. Nowadays, a lot of functional foods are emerging throughout the world. A functional food mixture (Karkuma Health Tonics) was formulated with the certain proportion of natural herbs and spices such as turmeric, zinger, mullberry and multi-floral honey with an aim to relieve pain. Bioactive components like gingerol from zinger rhizome, curcumin and essential oils from turmeric were extracted by appropriate processing techniques. This functional health tonic claims to reduce pain and thus elevated the efficacy of Karkuma health tonics as an adjuvant therapy. A three-month clinical trial of 30 patients with 15 patients each in case and control group was examined. In case group, all the patients fell within moderate to severe pain scale and after three months intervention with Karkuma, none of them had severe pain and almost 93% had no pain or mild pain. On the other hand, in control group no significant decrease in pain scale was observed after three months of control trial. The animal studies showed that no harmful or toxic ingredients were found in that Health Tonics mixture from the test report of Chittagong BCSIR laboratories, Bangladesh. Moreover, aflatoxin was not detected from another renowned laboratory's (Institute of Food Science and Technology, BCSIR) tests in Bangladesh. The heavy metal contents in this health tonics was below detection level and thus suggested that the newly developed Karkuma health tonic is also safe for consumption.

**Keywords:** Functional Foods, Organic, Herbs, Spices, Pain, Health Tonics

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**Plant Leaf Diseases Classification Using Convolution Neural Network**

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**Abstract**

A convolution neural network with few layers is proposed for plant leaf diseases classification. Fewer layers is selected in order to minimize computational cost, there for it can be implemented in mobile device. The proposed network consists of eight layers, six for convolutional layers and two for fully connected layers. PlantVillage dataset is used to assess the performance of the proposed network. The data set is divided into 80% of training data and 20% of validation data. The experiment result show that the proposed method has the accuracy 98.13 for training data the loss is 0.056. The result show that the proposed method work well on the data set.

**Keywords:** Plant Diseases, Convolutional Neural Network



**Gender Variances of Dietary Behavior among Elderly People Admitted in a Renowned Hospital, Bangladesh**

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**Abstract**

Dietary habit and diversification plays an important role for the betterment of geriatric nutrition which ensures quality of life and delay of degenerative diseases among the elderly. Therefore, a descriptive cross sectional study was carried out among 85 elderly individuals, who were randomly selected from Bangabandhu Sheikh Mujib Medical University, Dhaka during the mid of June 2019 with an aim to observe dietary diversification. Frequency of food intake and food preferences were varied between male and female. The consumption frequency of small fish, egg and milk was >3 times per week, which was significantly ( $p<0.05$ ) different in gender variations. The consumption of citrus fruits, colored fruits and vegetables by the elderly of more than 3 times were 6, 12 and 53% respectively in male, but in female it was 8, 18 and 63% respectively. Animal food items were more preferable in both respondents compared to vegetables. The preferences of foods mainly depends on their taste and food prices. Knowledge about food or nutritive value was very poor, only 39% was aware of it. The working place and load of work significantly affects the nutritional status of the elderly people. More undernutrition was observed in female (40%) compared to male (27%), as male were engaged with different outside activities at this stage while the female were engaged with little household activities in some cases. But, it was perceived that both male and female feel lonely at their maximum time. Therefore, it is the best time to take proper necessary steps to develop elderly friendly working and home environment for the betterment of geriatric nutrition at the highest policy level.

**Keywords:** Gender Variances, Dietary Diversification, Working Environment, Elderly People

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Genetic Algorithm based Fuzzy k-means cluster-wise algorithm for prediction of bead width for the lab-joint weld in automated GMA welding process

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**Abstract**

Recently, demands for welding technologies for minimizing the cost and increasing the strength to weight ratio of critical structure such as aerospace, marine, nuclear etc. have been increased. In the last decades, the researches in welding science became more vital than other manufacturing sciences in many industrial sectors. A suitable process control algorithm that describe interaction of the welding parameters and their influence on optimal bead geometry in order to develop the automatic arc welding process, are required. Nevertheless, it is quite difficult task to apply them for various practical situations because relationship between the welding parameters and the bead dimensions is non-linear. To make effective use of automated GMA welding, it is imperative to predict on-line faults for bead geometry and welding quality with respect to welding parameters and welding conditions, and should also make use of a wide range of material thicknesses and be applicable for all welding positions. Therefore, typical transformed data such as welding voltage, arc current, welding speed, CTWD (Contact-tube-welding distance) and welding angle have been described as reference for determining bead geometry prediction. A full factorial design with two or three replications in order to investigate the effects of process parameters on bead geometry as a function of key output parameters in the robotic GMA welding process is performed with the lab joint welding technique. In this research, development of an optimal mathematical models to establish relationships between the input and output parameters with a GA(Genetic Algorithm) based Fuzzy k-means cluster-wise algorithm and predict bead geometry for GMA welding process as welding quality has been studied. The fitting of these developed regression models was checked by using a variance test (ANOVA), verifies the proposed the developed cluster-wise models have occupies preferable predication performance and practicability

**Keywords:** GMA Welding, ANOVA, Fuzzy Logic, Genetic Algorithm, K-Means Clus



**Handoko Kuncoro**  
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**Study on Structure, Stability and Ionic Conductivity of LZTP.4LO Solid Electrolyte**

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**Abstract**

This study aims to evaluate the structure, stability and ionic conductivity of the solid electrolytes of the Nasicon LMTP families with  $M = Z$  (Zr). In the synthesized electrolyte we also added Lithium oxide inside the LZTP to improve its conductivity. The evaluations have been performed by comparing the characteristics of LZTPs to ordinary material of Nasicon solid electrolyte (i.e. LAMP type). The synthesis of LZTP.4LO has been carried out using powder metallurgy method through the stages of making TiP, making LTP, making LZTP and adding Lithium oxide. The XRD pictogram analyses have indicated that the LZTP crystal structure that was synthesized had a structure in accordance with the type of LAMP in previous studies and the ICSD95979 standard for LTP. The results of SEM micrograph analyses have shown that the micro structure for both LAMP.4LO and LZTP.4LO were cuboid with a side length between 0.25-2 microns. The results of the stability analysis of the Cole-cole plot have indicated that the stability of LZTP.4LO ion conduction was better compared to other types of LAMP. Measurements of ionic conductivity from a range of 1000 Hz to 4000 Hz at room temperature have shown that ion conduction of LZTP.4LO solid electrolytes was more stable than LAMP.4LO and was almost constant around  $7-8 \times 10^{-4}$  S/cm.



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**Simple Ferrite-based Magnet Utilities Fulfilling Energy and Clean Water Needs for Slum Community near Beach**

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**Abstract**

Commonly, energy and water resources for slum community around coastal area still do not meet to the quality standard requirements set by the Indonesian government, specifically in technological cost, iron level concentration and the required amount of coli bacteria number. We have developed two simple ferrite-based magnet utilities fulfilling the energy and clean water needs especially for slum community near a beach. A wind turbin generator had been designed to obtain electricity from natural wind resources around coastal area. The generator has produced about 2mW power. The other side, a filter containing ferrite and limestone material had been designed to get clean water from raw water



around coastal area. The filter has capabilities to reduce iron level concentration up to 0,35 times and number of coli bacteria up to 0,17 times.

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