



CONFERENCE PROCEEDINGS

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Research, 26-27 Feb 2019

26-27 February 2019

CONFERENCE VENUE

Flora Grand Hotel, Near Al Rigga Metro Station, Deira, Dubai, United Arab
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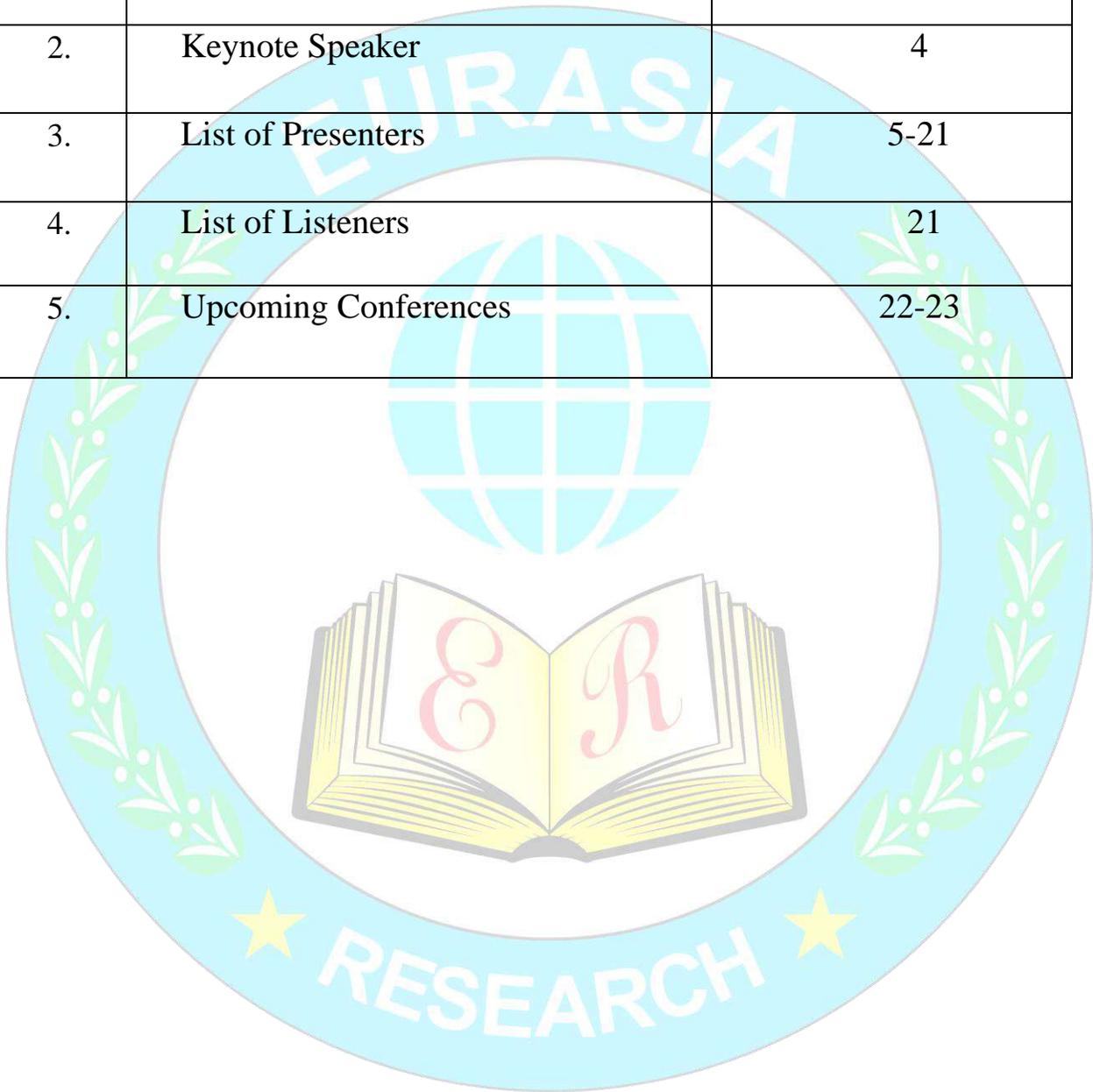
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Preface:

Scientific & Technical Research Association (STRA) is a conglomeration of academia and professionals for promotion of research and innovation, creating a global footprint. STRA aims to bring together worldwide researchers and professionals, encourage intellectual development and providing opportunities for networking and collaboration. These objectives are achieved through academic networking, meetings, conferences, workshops, projects, research publications, academic awards and scholarships. STRA strives to enrich from its diverse group of advisory members. Scholars, Researchers, Professionals are invited to freely join STRA and become a part of a diverse academic community, working for benefit of academia and society through research and innovation.

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Our mission is to make continuous efforts in transforming the lives of people around the world through education, application of research & innovative ideas.

KEYNOTE SPEAKER



Abdelmoiz Ramadan

Ministry of Education, TVET, Sudan, PhD Candidate, School of Computer Science and Information Technology, NENU, China

Topic: TVET in Developing Countries Based on the 21st Century: Challenges and Opportunities.

Abdelmoiz Ramadan is a teacher at Ministry of Education, Technical and Vocational Education and Training TVET, Sudan. He is PhD candidate, School of Computer Science and Information Technology, Northeast Normal University NENU, China. He joined NENU in 2015, his project title is: Towards Integration ICT in TVET: A Case Study in Sudan. He received his Masters of education in 2009 from Sudan University of Science and Technology SUST. His project attempts to integrate ICT technologies in the pedagogical practice and teacher professional development. He has published an article in international conferences and journals; World journal of education; PEOPLE: International Journal of Social Science and Springer. He is a member of the Advisory Board for Teaching & Education Research Association – TERA, Eurasia Research.



Shafiq Ur Rehman
ERCICSTR1901051

The Future Pakistan Asia Hybrid Aeronautical Engineering Edification Algorithm Trendy the Microelectronic World of Technology

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Abstract

The supreme significant perseverance exploration work is to create the new modern in world of technological education. In this article we designated the future education of technological Pakistan. With the help of our research methodology we make the Pakistan education is best and the other world schooling would also be exceptional. In this paper investigated the quantitative and qualitative approach in the future Pakistani and other world education. With the help of our algorithm we can make the technological world. The basic fundamental cause of education is to easy way to teach theoretical and mathematical way to scholars of Engineering, Medical, and Non-Engineering sciences also included. The basic fact of snoozing during the lecture is also problems with respect to teaching point view explain. We should follow the scientific methodology of the Pakistan world of technological education then we reduce the human error of the world education weaknesses. The adoption of Pakistan Algorithm.

Umer Hussain
ERCICSTR1901054

Analysis of Safety Awareness, Accident Prevention and Implementation of Behavior Based Safety Program in Energy Utility Firm

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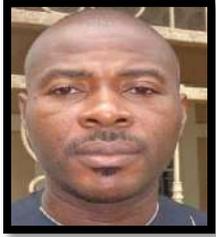
Abstract

Occupational Safety, Hazard Identification and Accident Prevention is an area of deliberation, studies and ongoing researches. Conventional Safety Techniques in organizations place core responsibility of safety coordination and accident prevention on the shoulders of senior management. Nowadays, an alternative concept adopted by industries to involve employees / front line workers and identifying at risk behaviours to promote safety culture is Behaviour Based Safety Program. BBS program is widely implemented in developed countries for identification of hazards and at risk behaviours, however, some studies and applications are conducted in Pakistan.

This research investigates the approach toward safety awareness and accident prevention in an oil and gas energy utility company. Data collection, Steps involved in establishing BBS culture and safety index trend chart are established to evaluate safety awareness. Results shows that after implementing BBS program a significant performance is enhanced as the safety index (SI) progressively increased up to 17% in period of four months. Employees demonstrated positive concerns towards safety and provide suggestion to strengthen BBS program as well.

Findings determine that BBS program is able to minimize accident in energy utility industries along with improving quality and creating safety environment.

Keywords: Safety Awareness, Accident Prevention, Behavior Based Safety, Oil And Gas, Energy Utility.



Jude O. Ozuomba
ERCICSTR1901055

Natural Dye from Cynodon Dactylon Adsorbed on Nanocrystalline TiO₂ for Photovoltaic Applications

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Abstract

The present energy and environment crisis has stimulated the interest in exploring renewable energy sources. The absorption spectrum of a semiconductor defines its possible uses and various doping methods have been extensively used to modify the electronic structures of photo-electrodes for dye-sensitized solar cells. The central idea in dye-sensitized solar cell fabrication is to separate the light absorption process from the charge collection process, mimicking natural light harvesting procedures in photosynthesis, by combining dye sensitizers with semiconductors. This study investigated the method of extracting chlorin natural dye from cynodon dactylon and its application as sensitizer for titanium (iv) oxide. After blending, the green pigment was extracted from the grass using 90% ethanol and the sensitized TiO₂ was found to have a reduced band gap energy and could absorb light beyond the ultraviolet region. Avaspec 2.1 spectrophotometer was used to obtain the optical absorption spectrum, while the well-known Tauc model was employed to determine the optical band gap. The current-voltage characteristics were measured using an Oriel class A solar simulator (AM 1.5, 1000W/m²) while data acquisition was computerized. Solar simulation was carried out in a dark room and we avoided exposing the cell to any radiant light before taking the I-V measurements. The energy conversion efficiency of a dye-sensitized solar cell fabricated from chlorin-doped nanocrystalline titanium dioxide was 1.008%.

Key Words: Dye-Sensitized Solar Cell, Natural Dye, Band Gap, Solar Simulation.



Neetu Choudhary
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PDCA of Presentation- A Structured Approach for the Presentation

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Abstract

Paper presents the well-known Deming cycle PDCA- Plan-Do-Check-Act cycle real life application to demonstrate structured approach for the presentation. The approach determines the importance of presentation skills beside technical skill, and addresses by the approach to develop it in an organized way.

PLANNING phase of the presentation includes WWWHWW abbreviation- WHY, WHAT, WHOM, HOW, WHEN, WHERE. Identifying WHY presenting is the core and the most important question. WHOM to present, guides in defining detailing of the content and approach of the presentation. Presentation of WHAT to be presented depends largely on to WHOM it to be presented. HOW determines the tool and technique required for the presentation, WHERE has dependency on what needs to be communicated through the presentation. This gives holistic way for planning any presentation/facilitation.

After planning comes-DO. Execution of the presentation initiates with the bang, an attention catching action. If attention is captured in 3 seconds of the presentation, whole message can be delivered effectively. DO covers Start-Body/content and end details. BANG at the beginning is to catch attention of audience and END BANG is to leave audience with the long lasting message. Content or body of the message covers practical aspects, dos and don'ts.

CHECK phase addresses taking feedback – hard and soft ways, during and after the presentation and how it can be utilized to give direction to the presentation. Paper address dealing with difficult audience, and handing different seniors in a professional's way without

	<p>diverting from the core theme. Act of the most important phase of the presentation and continuous improvement approach by identifying areas for improvement and enhancing skills to feed-in the knowledge base. This completed the cycle and connects the loop.</p>
 <p>Daouadi Khedidja ERCICSTR1901057</p>	<p>Sustainability and Environmental Quality to an Evaluation System of the Housing in Algeria</p> <p>Daouadi Khedidja Faculty of Science and Technology, University of Oum El Bouaghi Larbi Ben M'hidi, Algeria</p> <p>Abstract We all agree on the fact that our planet is facing big challenges of degradation and environmental crisis. Since the energy crisis in 1973, developed countries have never stopped looking for solutions: The United Nations General Assembly (World Commission on Environment and Development), 1987 known as 'Brundtland Report which defines the sustainable development. Then through the Rio Conference held in Brazil, which accorded great importance to the application of the principles of sustainable development based on the three pillars: social, environmental and economic; to other Interventions. Depends on this awareness planetary, it seems that actors in the field of architecture are among responsible to seek solutions. On the other hand, to measure the environmental quality in the realized buildings is an objective which tightens at an approach of improvement of the frame lives of the occupants and the users to guarantee them the conditions the most comfortable inside and outside the building. To favor the development of more and more successful buildings is the current context on the energy and environmental plan. In our field of investigation, we notice the absence of the evaluation of the quality environmental and the unavailability of a tool for its measuring which stands out as the main factor to make an environment quality improvement. The present search has for objective to adopt and adapt an environmental evaluation tool for the quality of the building in Algeria. Keywords: Sustainability, Environment, Quality, Energy, Algeria</p>
<p>Idris Wada ERCICSTR1901058</p>	<p>Comparative Studies on the Physico-Chemical Properties of Soap Produced from Various Vegetable Oils (Palm Kernel, Shear Butter, Olive And Soya Beans Oils)</p> <p>Yahaya Mobmi Musa Basic Studies Department Federal Polytechnic, Bauchi, Nigeria</p> <p>Idris Wada Science Laboratory Department, Federal Polytechnic, Bauchi, Nigeria</p> <p>Tanko Garba Science Laboratory Department, Federal Polytechnic, Bauchi, Nigeria</p> <p>Sake John Shekara Rafin Zurfi Bauchi, Bauchi State, Nigeria</p> <p>Abstract Soaps play an essential role in our daily live for cleansing and also removal of germs to keep us safe. Soaps were produced from the various vegetable oils (Palm Kernel, Shear Butter, Olive and Soya Beans Oils. Physical and chemical properties of the soaps such as saponification value, unsaponifiable matter, latherability and total fatty matter were carried out to determine the quality of the soaps produced. The result obtain shows that saponification value range was (167-170mg/KOH/g), unsaponifiable matter ranging from 1.1 to 2.5g/Kg, foaming ability or latherability 70- 100% and total fatty matter was in the range (60-78%). These parameters explains the quality of soap like high total fatty matter, high saponification value, high latherability and low unsaponifiable matter. The results indicated that the soap produced was good soap as. Also, the physical properties of the soaps agreed with the chemical properties of</p>

the soap.

Keywords: Soya Beans, Palm Kernel, Latherability, Saponification



Farhan Saeed
ERCICSTR1901059

Enhancing the Bioactive Functionality of Barley Dietary Fiber through Chemical Treatments in Combination with Extrusion

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Abstract

The present research was carried out to observe the comparative effectiveness of different chemical treatments in combination with simultaneous extrusion on soluble and insoluble dietary fiber ratio to improve functional properties of barley. For the purpose, two varieties of barley i.e. Haider-93 and Jau-87 were assessed for chemical composition, mineral, non-starch polysaccharides and dietary fiber contents through respective methods. Then both were chemically treated through acid, alkaline and consecutive acid-alkaline treatments in combination with thermal treatment. Results of chemical composition revealed that Jau-87 was higher in moisture (11.4%), crude fat (2.67%) and crude fiber (4.70%) whereas Haider-93 exhibited higher ash (2.56%) and crude protein content (12.7%). Moreover, barley is rich source of potassium ranging from 4.77-5.07 g/kg. Likewise, main non-starch polysaccharides in barley are arabinoxylan (3.60-3.77%) and beta-glucan (3.65-3.67%). Furthermore, barley contains more IDF (12.00-12.40 g/100g dm) than SDF (4.73-5.70 g/100g dm). Additionally, modification of SDF (1.48%) and IDF (8.71%) ratio through extrusion processing was non-significant whilst acid-alkaline treatment showed highly significant results i.e. 771.46% increase in SDF and 53.39% decrease in IDF. It is concluded that chemical treatments alone or in combination with twin-screw extrusion increased SDF. However, simultaneous effect of acid and alkaline treatment most effectively increased the solubility of barley.

Keywords: Barley, Dietary Fiber, Extrusion, Chemical Modification



Fahad Suleiman
ERCICSTR1901060

Application of Mathematical Sciences to Farm Management

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Abstract

Agriculture has been the mainstay of the nation's economy in Nigeria. It provides food for the ever rapidly increasing population and raw materials for the industries. People especially the rural dwellers are gainfully employed on their crop farms and small scale livestock farms for income earning. Mathematics has enabled farming to be more economically efficient and has increased productivity. Farmers use mathematics as a system of organization to effectively utilize their time and manage their money. Farmers use numbers every day for a variety of tasks, from measuring and weighing, to land marking. This paper explores some of the ways mathematics is used in farming. For example, farmers use mathematics to determine the amount of seed they need to plant their crop and how much it will cost. They use math to purchase equipment and make payments. The paper recommends farmers should be mathematically oriented in order to boost their farming activities and also to ensure effective quality control of their farm products.

Keywords: Agriculture, Farming, Mathematics.



Aftab Ahmed
ERCICSTR1901061

Characterization and Nutritional Profiling of Potato Peel Blended Composite Flour Wheat Cookies

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Abstract

This study was carried out to evaluate the nutritional profile of potato peel and effect of wheat flour replacement with potato peel powder on the physico-chemical attributes of potato peel composite flour cookies. Potato peel showed to contain negligible fat contents, $6.20 \pm 0.20\%$ protein, $5.26 \pm 0.20\%$ ash, $12.4 \pm 0.40\%$ crude fiber and $8.20 \pm 0.27\%$ moisture of total weight, while total phenolic and flavonoid contents 4.5 mg/gm and 4.5 mg/gm respectively. Moreover, Potato peel showed higher water and oil absorption capacities compared to wheat flour. Then potato peel composite flour cookies were produced by replacing 3% in T1, 6% in T2, 9% in T3, 12% in T4 and 15% in T5 wheat flour with potato peel powder. The results showed significant difference among treatments for moisture, fiber, protein, ash, phenolic contents and antioxidant activity. Finally, potato peel composite flour cookies were subjected to sensory analysis the control group obtained maximum hedonic scale scores 8 followed by T1, T2, T3, T4 and the lowest in T5. The current scientific intervention is a way forward to explore this commodity for the formulation of functional and nutraceutical foods.

Keywords: Potato Rind, Phenolic Content, Organoleptic Evaluation.



Georgia Garani
ERCICSTR1901063

Integrating Time and Space in Astronomical Data Warehouses

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Abstract

Astronomical data are collected daily from many different instruments and are increasing continuously, already amounting to petabytes and in the years to come to exabytes. For dealing with this situation, an interdisciplinary field combining astronomy, informatics, data science and communications technologies, has been emerged the recent years called Astroinformatics. The storing, management and querying of these massive data volumes is of high importance and Astroinformatics could benefit significantly from the research undertaken on data warehousing and data mining. Data warehouses aim to consolidate data from several different external sources for analysis and reporting. The main research objective of this paper is twofold, firstly, to present the importance of data warehouses to process analytical queries of astronomical data and secondly, to demonstrate a logical model for integrating efficiently the spatiotemporal dimension of astronomical data to data warehouses for the support of OLAP queries.

Keywords: Astronomical data, Astroinformatics, Data warehouse, Data integration, Spatiotemporal dimension

Adams Samuel
Olorunfemi
ERCICSTR1901065

A Modified Smoothing Estimation Method for Time Series Observation in the Presence of Autocorrelated Error

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Abstract

Spline Smoothing is used to filter out noise or disturbance in an observation, its performance depends on the choice of smoothing parameters. There are many methods of estimating smoothing parameters; most popular among them are; Generalized Maximum Likelihood (GML), Generalized Cross-Validation (GCV), and Unbiased Risk (UBR), this methods tend to underestimate smoothing parameters in the presence of autocorrelation error. A new Spline Smoothing Estimation method is proposed by modifying the Generalized Cross-Validation and Unbiased Risk methods. It is demonstrated through a simulation study performed by using a program written in R to compare the new Spline Smoothing Estimation method and the three existing methods, the comparison was based on the predictive Mean Score Error criteria. The Proposed method is recommended; because it performed better than other methods, especially for a small sample size.

Key words: Autocorrelation, Generalized Maximum Likelihood, Generalized Cross-Validation, Penalized Spline, Splines Smoothing, Time series and Spline regression.



Tabussam Tufail
ERCICSTR1901067

Nutritional & Biochemical Characterization of Wheat Straw Cell Wall with Special Reference to its Applications in Baking Industry

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Farhan Saeed
Muhammad Afzaal

Abstract

Background: In millennia, agro-industrial waste captured interest owing to its abundant availability, pollution reduction ability, low price, and lignocellulosic nature. It is important for the renewable energy, biofuels, and biochemicals generation and is obtained from various sources, agricultural and forestry waste stream. Among agricultural residues, globally, cell wall is most important by-product of wheat processing produced in larger quantity. About 529 million tons wheat straw is generated every year in all over the world.

Objective: The core objective of the current study was to characterize the wheat straw cell wall for its nutritional and bioactive profile.

Study design: The whole research was conducted in three different phases. In first phase, nutritional composition and mineral profile of cell wall from the straw of different wheat varieties were determined. In second phase, wheat straw of different varieties was characterized for its important bioactive constituents, such as lignin, cellulose, hemicelluloses, phytosterol, and policosanol (PC) content.

Results: Results showed that straw of different wheat varieties contained 7.79–9.27, 3.92–5.10, 3.41–3.93, and 1.56–2.19 g/100 g moisture, ash, protein, and fat contents, respectively, whereas potassium, calcium, phosphorus, and magnesium were 1.16–2.06, 0.11–0.75, 0.12–0.99, 0.07–0.94 ppm, respectively. Moreover, lignocellulosic mass: cellulose 37.79–38.16 g/100 g raw material, lignin 15.65–16.11 g/100 g raw material, hemicelluloses 28.21–28.93 g/100 g raw material, was present in wheat straw cell wall and varied significantly among different varieties. In addition, phytosterol ranged from 912 to 1199 mg/kg in straw of different wheat cultivars, whilst PC from 195.02 to 237.12 mg/kg.

Conclusion: Conclusively, wheat straw cell wall was an excellent source of many important bioactive moieties especially lignocelluloses and could have functional use.

Keywords: Wheat, Straw, Lignocellulosic Mass, Monosaccharides

Huma Bader Ul Ain
ERCICSTR1901069

Impact of Fermentation and Dynamic High Pressure Micro Fluidization on Dietary Fiber Properties of Different Cereals

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Abstract

The current investigation was carried out to evaluate the effect of fermentation in combination with dynamic high pressure micro fluidization on the dietary fiber properties of wheat and sorghum. For the purpose, two varieties of each cereal i.e. wheat (Ujala-16, FSD-08) and sorghum (Sorghum-11, JS-02) were procured from Ayub Agriculture Research Institute (AARI), Faisalabad. The study was comprised on two phases. In phase I, dietary fiber content of wheat and sorghum varieties was analyzed through enzymatic gravimetric method. In phase II, fermentation and dynamic high pressure micro fluidization were applied for the modification of dietary fiber ratio in wheat and sorghum. Results regarding dietary fiber content of cereal grains exhibited that wheat (12.03-12.20 g/100g) contained higher total dietary fiber followed by sorghum (6.70-6.90 g/100g). Moreover, modification of SDF (71.48, 77.81 %) and IDF (25.25, 25.17 %) ratio in Ujala-16 & FSD-08 and SDF (67.86, 67.05 %) and IDF (20.68, 22.01 %) ratio in sorghum-11 & JS-02, respectively through fermentation was significant. When these fermented wheat and sorghum dietary fibers were treated with dynamic high pressure micro fluidization, it showed highly significant results i.e. 152.67 & 150.23 % increase in SDF and 46.2 & 48.54 % decrease in IDF in Ujala-16 & FSD-08 and 137.27 & 138.02 % increase in SDF and 71.17 & 43.02 % decrease in IDF in sorghum-11 & JS-02, respectively. Conclusively, soluble dietary fiber was significantly increased through fermentation in combination with dynamic high pressure micro fluidization.

Keywords: Dietary Fiber, Wheat, Sorghum, Fermentation, Dynamic High Pressure Micro Fluidization, Modification

Dr. Shubham
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ERCICSTR1901070

Developing Community Based Sustainable Electronic Waste Management Model

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Abstract

Rapid economic growth, coupled with urbanization and growing consumption of electrical and electronic equipment (EEE) leads to production of huge e-waste which is a source of hazardous wastes. Electronic waste or e-waste is one of the fastest growing areas of the international waste stream. For developing economies, these material flows satisfy the demand for cheap second-hand electrical and electronic equipment. In addition, there is a lack of strong national regulation regarding trading and recovering materials waste electronic devices. Recycling is also a source of livelihood for the many urban and rural poor but often causes severe risks to health and the local environment. Overall, there has been relatively little research to date on e-waste in developing countries. Moreover, past researches focused on legislators, producers, or recyclers but present research shift attention to the role of consumers /community, which determine when equipment becomes e-waste and its disposal method. In sum, e-waste management represents a much greater sustainability challenge and need for community involvement towards sustainable environmental management goals. Current research therefore sought to address this knowledge gap with social and economic aspects of e-waste amongst community in developing nation like India and their willingness to participate towards sustainable e-waste management system. Study will use theoretical background Theory of Planned Behaviour (TPB) and Theory of Reasoned Action (TRA) to explain the citizen attitude towards e-waste management. Research also proposed a community based e-waste management system for proper channelization of the e-waste.

Keywords: E-Waste, Sustainability, Community Model, India.



Muhammad Nouman
ERCICSTR1901075

Distribution of Enzymes in Different Milling Fractions of Spring Wheat

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Abstract

The proposed work was carried out to extract enzymes in different milling fraction of wheat followed by the effect of milling on enzyme distribution. For this purpose, two varieties of wheat were procured from Ayub Agriculture Research Institute (AARI), Faisalabad. The study comprises of three main phases. For this purpose, physical characteristics of wheat grain like test weight, thousand kernel weights, were probed according to their respective methods. After physical characteristics, wheat was milled through Moore Roller Flour Mill and the flour of different streams were analyzed for the proximate composition and falling number according to AACC methods. In addition, different enzymes such as alpha-amylase, peroxidase and protease were extracted through megazyme assay kit and their activity was checked through spectrophotometer. At the end, data obtained for each parameter was subjected for appropriate statistical design to determine the level of significance. Results showed that highly significant, significant and non-significant variations were expounded in physico-chemical analysis of different spring wheats and their mill streams. Moreover, falling number showed highly significant variations among varieties and different mill streams, mean values varied from 290-325 sec. in whole wheat flour, 240 to 371 sec. in different mill streams respectively. It is evident from the analysis that alpha amylase, protease and peroxidase activity was highly significant among wheat varieties and different mill streams. Mean values of alpha amylase varied from 3.98-4.43 units/g protein in WWF and 2.21 to 5.99 units/g protein in different mill streams, for protease values was varied from 163.33 to 167.42 units/g protein in WWF and 2.15 to 443.93 units/g protein in different mill streams, At the end mean value of peroxidase varied from 2425 to 2565 units/g protein in WWF and 722.0 to 3762 units/g protein in different mill streams respectively. Conclusively, it is evident from whole research that obtained results regarding presence of enzymes in different wheat varieties and their mill streams will be beneficial for preparation of blends either by omitting the particular streams for the preparation of enzyme extraction and used in different products.

Rabia Shabir Ahmad
ERCICSTR1901076

Evaluation of Nutritional and Antioxidant Properties of Carrot Pomace Powder in Cookies

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Uswa Ahmad

Abstract

Carrot pomace is rich source of nutrients and antioxidants that may enhance both nutrition and shelf life of food products. In the present study, it was aimed to enrich standard cookie recipe by addition of carrot pomace powder (CPP) at different replacing levels (5, 10 and 15%). Carrot pomace powder was analyzed for chemical composition and CPP cookies were further evaluated for physicochemical, rancidity and organoleptic parameters at storage interval of 0, 15, 30 and 45 days. The results demonstrated that CPP had high amount of dietary fiber (44.48 g/100g), total phenolics (72.02 mgTAE/100g) and beta-carotene (3.42 mg/100g). Substitution of CPP in cookies had highly significant effect on physicochemical, rancidity and organoleptic parameters treatment wise. During storage, moisture of CPP cookies significantly increased while other physicochemical parameters had non-significant effect. Rancidity parameters of cookies significantly increased during storage and T3 showed less increase as compared to control. The highest level of replacement (15%) had a significant adverse effect on the product. Overall acceptability indicated that panel members liked the products up to 10% of added carrot pomace compared to control. Conclusively, CPP may enhanced both nutritional and antioxidant properties of cookies.

<p>Adeela Hameed ERCICSTR1901077</p>	<p>Key Words: Carrot Pomace, Crude Fiber, Beta-Carotene, Cookies, Physicochemical, Rancidity</p> <p>Evaluating the Anti-Oxidant and Anti-Bacterial Activity of Different Unifloral Honey</p> <p>Adeela Hameed Government College University, Faisalabad, Pakistan</p> <p>Abstract</p> <p>Honey is a viscous, aromatic and sweet product. It contains at least 200 substances, which include phenolic acids, flavonoids, certain enzymes, ascorbic acids, organic acids and protein compounds that possess a health-promoting potential. The phytochemical compounds of honey exhibit correlation between the phenolic and flavonoid contents with their biological properties. The proposed work was carried out to determine the antioxidant and antimicrobial profiling between three unifloral honeys i.e. ACACIA NILOTICA, CITRUS LIMETTA and BRASSICA RAPA obtained from APIS MELIFERA. For the purpose, the raw material was procured from the National Agricultural Research Center (NARC), Islamabad. The antioxidant potential was evaluated through different parameters like total phenolic contents, total flavonoids contents, free radical scavenging activity (DPPH assay), ascorbic acid and ferric reducing assay (FRAP) whereas, proline content and protein content were also determined. Moreover, the antibacterial activity was analyzed to check the antimicrobial potential of honey. Among monofloral honey, Citrus honey obtained from Apis melifera have strong antioxidant activity in comparison with acacia and brassica and showed improved results for TPC, TFC, DPPH etc. Moreover, Citrus honey inhibit the growth of bacterial stains more effectively than the other honey i.e. acacia and brassica. In the nutshell, honey is effectual to restrain from various physiological malfunctioning and safeguard against various maladies.</p>
<p>Saleha Hameed ERCICSTR1901079</p>	<p>Therapeutic Potential of Mung Bean Against Lifestyle Oriented Diseases</p> <p>Saleha Hameed Institute of Home and Food Sciences, Government College University, Faisalabad, Pakistan</p> <p>Abstract</p> <p>Mung bean (<i>Vigna radiata</i>), a common food, enriched with valuable nutrients along with beneficial biological activities. The compositional analysis showed mung bean composed of about 20–24% protein in which, albumin makes over 25% and globulin 60%, the main storage proteins. The carbohydrates content 50-60%, fat 1.81-1.85% and ash 3-4%. The antioxidant potential of mung bean exhibit presence of higher amounts of flavone, isoflavone, flavonoids, and isoflavonoids and twelve phenolic acids mainly cinnamic acid, gallic acid, caffeic acid etc. High levels of proteins, amino acids, oligosaccharides, and polyphenols in mung beans are thought to be the main contributors to the antioxidant, antimicrobial, anti-inflammatory, antitumor activities, antiseptis effect of this food and are involved in the regulation of lipid metabolism. It also helps to reduce LDL and increase HDL level reducing chronic heart diseases. The hyperglycemic effect was produced due to the presence of polyphenols in mung bean. Conclusively, mung beans are effectual to attenuate lifestyle related maladies.</p>
 <p>Ahsan Javed ERCICSTR1901080</p>	<p>Exploring The Synergistic Effect Of Calcium And Vitamin D On Lipid Profile; A Randomized Clinical Trial</p> <p>Ahsan Javed Institute of Home & Food Sciences, Government College University, Faisalabad, Pakistan</p> <p>Farhan Saeed Institute of Home & Food Sciences, Government College University, Faisalabad, Pakistan</p> <p>Muhammad Nouman Institute of Home & Food Sciences, Government College University, Faisalabad, Pakistan</p> <p>Abstract</p>

The present study has been designed to investigate the role of calcium and vitamin D on lipid profile and related disorders. For this purpose, randomized double-blind controlled clinical trial was conducted among 40 healthy subjects; Body Mass Index (BMI) ≥ 25.5 kgm₂, age: 25 ± 5 y). Subjects were randomly assigned into four groups to receive: 1) 400 mg/d calcium +200 IU vitamin D; 2) 600 mg/d calcium + 200 IU vitamin D; 3) 800 mg/d calcium +200 IU vitamin D and 4) 1000 mg/d calcium +200 IU vitamin D for 6 months. Fasting blood samples were taken at baseline and after the follow up of 6 months measures serum lipid profile. Results indicated that in group 4, 8% reduction in LDL, 4.5 % in total cholesterol and 3 % increase in HDL was observed as compared to the other groups. Whereas, the other parameters i.e. triglycerides, non-HDL-cholesterol levels and ApoA-I remained unchanged. Conclusively, calcium plus vitamin D supplementation for consecutive 6 months among health subjects have beneficial effects on LDL and total cholesterol thus reduces the Cardio Vascular Diseases.

Keywords: Calcium, Vitamin D, Lipid Profile, Total Cholesterol.



Naufal Rasyid
ERCICSTR1901081

Corruption and Economic Growth In G20: An Ec2sIs Analysis

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Abstract

As the world main economic forum, the political commitment of G20 leaders is built to solve many challenges of global economic growth, one of which is corruption eradication (Sherpa G20 Indonesia, 2018). The G20 Anti-Corruption Working Group (ACWG) that was established in 2010 is expected to overcome corruption in G20. In fact, decrease in corruption followed by decrease in economic growth. Besides that, dualism views from the impact of corruption on economic growth is often a debate, as “sand the wheels” or “grease the wheels”. This study aimed to examine simultaneous relationship among corruption and economic growth as well as factors that influence it in G20 countries in 2010-2016 by using simultaneous equations model. The estimation method that used is Error Component Two-Stage Least Square (EC2SLS). The results show that there is a negative simultaneous relationship among corruption and economic growth, also confirms “sand the wheels” view. In addition, investment and number of workers has a positive effect on economic growth. On the other hand, inflation has a positive effect on corruption while the percentage of urban population and regulatory quality has a negative effect on corruption.

Keywords: Corruption, Economic Growth, Simultaneous, EC2SLS, G20



Manjula Sampath
ERCICSTR1901082

Effect of Recycle Polyethylene (rPE) on Properties of Titanate Coupling Agent Treated Natural Rubber (NR) / Low-Density Polyethylene (LDPE) / rPE Composites

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Abstract

A series of 70:30 NR:LDPE/rPE composites with titanate coupling agent were prepared by partially replacing the 30 parts per hundred parts of polymer (phpp) virgin LDPE with rPE from 10-30 phpp at 5 php intervals. Physico-mechanical property and morphological analyses

of the composites were conducted. Resistance to ageing, percentage swelling in p-xylene, water absorption capacity and gel content of the composites were also investigated. The tensile properties, stress and strain of the composite have been improved with the addition of rPE. In conclusion, virgin LDPE could be blended with rPE at 20 php in NR:LDPE/rPE composites with titanate coupling agent while having improved physio mechanical properties and higher thermal stability.

Keywords: NR:LDPE/Rpe Composites, Physico-Mechanical Property, Morphological Analyses, Titanate Coupling Agent, Percentage Swelling

Kiran Bukhari
ERCICSTR1901083

Application of Silver Doped Titanium Dioxide by Using Renewable Energy Resource (Sunlight) for the Treatment of Slaughterhouse Wastewater

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Abstract

In this research the application of sunlight assisted photocatalytic oxidation process has been used to treat slaughterhouse wastewater by using mobilized titanium dioxide and silver doped titanium dioxide as a catalyst by following standard sol gel method. The operating parameters (catalyst dose, pH and exposure time) governed the efficiency of the process in terms of BOD, COD and nitrogen degradation. An increase in catalyst dose and exposure time increased the degradation of slaughterhouse wastewater. However, process efficiency was decreased with elevating the pH. At optimal process conditions (catalyst dose of 1.5g/l; pH=3; UV exposure time= 120min), 50.11% BOD, 40.083% COD, 37.405% nitrogen degradation was achieved with titanium dioxide. However, doping with silver metal increased the photo-response of titanium dioxide by reducing its large bandgap from UV (300-400 nm) to visible region (400-700nm) of solar spectrum which remarkably enhanced the efficiency of the process and resulted in 85.16% BOD, 73.07% COD and 62.68% nitrogen degradation at catalyst dose of 1.5g/l, pH 3 and sunlight exposure time of 90 min. Longer treatment time significantly reduced the process efficiency, thus BOD, COD and nitrogen removal approached to 82.01%, 69.07% and 60.27% respectively at 150min of sunlight exposure time.

Key Words: Photocatalytic Oxidation Process, Wastewater, Titaniumdioxide



Anja Pfennig
ERCICSTR1901053

Influence of Surface Texture on the Corrosion and Corrosion Fatigue Behavior of High Aligned Steels Exposed to Different Saline Aquifer Water Environments

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Abstract

Coupons of X5CrNiCuNb16-4 with different surface roughnesses that may be used as injection

pipe with 16% Chromium and 0.05% Carbon (1.4542, AISI 630) were exposed for 3000 h to CO₂-saturated saline aquifer water similar to the conditions in the Northern German Basin at ambient pressure and 60 °C. Additionally, corrosion fatigue experiments (ambient pressure, technically clean CO₂, saline aquifer water of Stuttgart Aquifer) were performed using specimen of X46Cr13 (1.4043, AISI 420C) with regard to the influence of the roughness of technical surfaces on the number of cycles to failure at different stress amplitudes. Corrosion fatigue specimen with different surfaces (technical surfaces after machining and polished surfaces) of duplex stainless steel X2CrNiMoN22-3-2 (1.4462) were compared at load amplitudes from 175 MPa to 325 MPa in the geothermal brine of the Northern German Basin at 98 °C. Surface corrosion layers and pits reveal carbonate corrosion products on the surface such as FeCO₃ and FeOOH as the main precipitation phases with no dependence on the original surface roughness. Corrosion rates for polished and technical surfaces were below 0.005 mm/year compared to corrosion rates of 0.035 mm/year after shot peening. At high stress amplitudes above 275 MPa technical surfaces (P50% at Sa 300 MPa=5x10⁵) resulted in more cycles to failure than polished (P50% at Sa 300 MPa=1.5x10⁵). The greater slope coefficient for technical surfaces $k = 19.006$ compared to polished surfaces $k=8.78$ demonstrate earlier failure at given stress amplitude Sa. Although rather low scatter ranges (technical surface: TN=1:1.35, polished surface: TN=1.1.95) indicate no change in failure mechanism it may be assumed that at low stress pitting is the initiating crack growth process whereas at high stress amplitudes the formation of microcracks is reason for crack propagation and failure.

Keywords: High Alloyed Steel; Pitting; Surface; Roughness; CO₂; Pipeline; Corrosion; CCS; CO₂-Storage

Corrosion and Fatigue of Heat Treated Martensitic Stainless Steel 1.4542 used for Geothermal Applications

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Abstract

During capture and storage technology (CCS) as well as in geothermal energy production steels used require resistance against the corrosive environment such as: heat, pressure, salinity of the aquifer and CO₂-partial pressure. 1.4542 shows unusual corrosion phenomena, but has been proven to be sufficient resistant in corrosive environments. Therefore differently heat treated coupons of 1.4542 and for comparison X20Cr13 and X46Cr13 were kept at T=60 °C and ambient pressure as well as p=100 bar for 700 h - 8000 h in an a) water saturated supercritical CO₂ and b) CO₂-saturated synthetic aquifer environment similar to on-shore CCS-sites in the Northern German Basin. Additionally fatigue tests were performed via push-pull tests with a series of 30 specimens was tested at stress amplitudes between 150 MPa and 500 MPa (sinusoidal dynamic test loads, R=-1; resonant frequency ~ 30 Hz). FeCO₃ and FeOOH are corrosion products also after dynamic corrosion tests. Martensitic microstructure offers good corrosion resistance in geothermal environment. The S-N-curve did not show typical fatigue strength and very steep slopes of possible fatigue strength for finite life. No correlation could be found between the inclusions, e.g. Al, and early rupture although specimens with inclusions at the fracture surface and its cross section endured lower number of cycles. Applied potential proofed to enhance fatigue life tremendously.

Keywords: High Alloyed Steel, Geothermal Environment, CCS, Corrosion, Pit, Heat Treatment, Fatigue, Endurance Limit.



Sunil Kumar Ghosh
ERCICSTR1901068

Bio-Pesticides-A New Era For Environmentally Sound Control of Mite (Tetranychus Urticae) on Eggplant (Solanum Melongena) to Overcome Harmful Effect of Chemical Pesticides

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Abstract

Eggplant or brinjal (*Solanum melongena* L.) crop is susceptible to various insect and mite pests of which red spider mite, *Tetranychus urticae* (Tetranychidae: Acarina) is the most predominant. *Tetranychus urticae* was most active during May i.e., 22-24 Standard Meteorological Week (SMW) and September-October i.e., 40-43 SMW. Highest mite population (22.87/leaf) was recorded on 42nd SMW (first week of October). Sudden fall of population was found in last week of June because of heavy rains. The mite population always recorded higher on the upper canopy (52.75% population) of the plant as compared with the middle (30.64% population) and lower canopy (16.61% population). This result implies that mites were most densely populated in the young and new leaves of eggplant. The mite population had significantly positive correlation with temperature, minimum and average relative humidity where as non-significant positive correlation with maximum relative humidity and weekly total rainfall. Among the seven treatments evaluated microbial toxin- avermectin resulted in the best suppression of mite population (87.10 % suppression), closely followed by chemical insecticide, fenazaquin and mixed formulation of botanical pesticide, azadirachtin with botanical extract, *Spilanthes* (79.24 % and 70.66% suppression). Spectrophotometric scanning of crude methanolic extract of *Spilanthes* flower showed strong absorbance wave length between 645-675 nm. Considering the level of peaks of wave length the flower extract contain some important chemicals of which polysulphide compounds are important and responsible of pest control. azadirachtin and botanical extract individually did not produce good results (moderate mite suppression) but when azadirachtin is used as a mixture with botanical extracts provided better results recording more than 65 % suppression. Microbial toxin, plant extracts and botanical insecticide are ecofriendly bio-pesticides having less toxic or no hazardous effects on human health and the environment, and therefore, they can be incorporated in Integrated Pest Management (IPM) programmes and organic farming.

Keywords— Bio-pesticides, organic farming, seasonal fluctuation, vegetable IPM.

Suvash Chandra Bala
ERCICSTR1901071

Observation on Pathogenicity and Population Dynamics of Foliar Nematode, Aphelenchoidesbesseyi Infecting Tuberose in West Bengal, India

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Abstract

The pathogenic potential of foliar nematode, *Aphelenchoidesbesseyi* inducing floral malady symptoms and fluctuation of nematode populations in tuberose were determined under field conditions. Pathogenicity experiment in tuberose cv. Calcutta single was carried out with eight treatments and each treatment was replicated three times for two consecutive years. The freshly collected nematode (*A. Besseyi*) was inoculated into tuberose with the help of a dispenser in the treatments viz. T1= 0 control, T2 =10, T3 = 100, T4 =500, T5 =1,000, T6 =2,500, T7 =5,000 and T8 =10,000 nematodes per plant. The population of *A. besseyi* in tuberose cv. Bidhan rajani-3 was monitored from the plots of a different set of experiment. The flower samples were collected from the fixed plots at monthly interval during the crop growing period. The nematode population was extracted from the flower samples and estimated with the help of multi-chambered counting disc under stereoscopic binocular microscope. In pathogenicity experiment revealed inoculation of nematodes at higher levels progressively

decreased plant growth parameters as compared to uninoculated ones. The inoculated plants displayed typical symptoms; outer surface of stalk appeared rough, stunted growth and distorted flower stalks bearing few florets. The infected stalks produced florets and those florets failed to open produced blind head. An initial inoculum density of 100 nematodes per plant was found to be pathogenic in tuberose causing significant reduction in yield and quality flower quality. Monitoring on nematode population during the plant growth period (cv. Bidhan rajani-3) revealed that *A. besseyi* maintained maximum population during July month of rainy season that coincided with the start of heavy flush of tuberose. The least population was observed during December to February. However, this study show that initial inoculums density of 100 *A. besseyi* per plant to be considered pathogenic to tuberose; this population level caused significant reduction of stalk length, spike length, number of florets as well as overall flower yields. The fluctuation of nematode population recorded lowest during December to February and the peak density during July when the air temperature, relative humidity and total rainfall remained fairly high.

Key words: Foliar nematode, *Aphelenchoides besseyi*, Tuberose, pathogenicity, population fluctuation

Dr. Saima Gulzar
ERCICSTR1901091

Sustainable Urban Development: A challenge in Current Urbanization Scenario of Pakistan

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Abstract

The industrial revolution brought the development of major urban centers with economic incentives throughout the world. The urban population was found to be only 10% in 1990 that reached almost to 50% in the present world and in near future would be around 70%. The major contributors are the developing countries and Pakistan stands among higher ranks in the list. The unchecked and unplanned urbanization in developing countries are adversely deteriorating the environment and generating multiple social, ecological and economic constraints. Lahore being the second largest cities of Pakistan is facing several challenges such as lack of integrated urban development planning, unchecked urban growths, densification of urban centers, environmental pollutions, insufficient infrastructure, and ecological imbalance, decentralization in social systems, haphazard industrialization and reduction in green areas. Sustainable urban development practices are the only solution for livable cities that provides quality life for its inhabitants. Sustainable Urban Development is a dynamic and multi-dimensional process that takes into account different components of local, regional and global development like environmental quality, economic growth and well-being of the population.

Keywords: Sustainable, Development, Urban, Challenges, Pakistan

Manufacturing & Performance of an Economical Uni-axial Shake Table

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Abstract

The researchers and engineers encountered many problems to precisely replicate earthquake motion. Earthquakes are one of the nature's worst catastrophes and are still unpredictable, with much statistical research it has been observed that the earthquakes have increased with passing years and have become a major concern for the world especially for those countries which are located on the fault lines for instance Japan, Bangladesh and Pakistan etc. So, it was imperative to devise a mechanism to check earthquake response and apply some necessary mitigations for the safety of humanity. After many years of research an indispensable testing apparatus was formed named as Shake Table. Shake table is being used in earthquake research centers as it's the only way to replicate dynamic effects of earthquake. A uni-axial shaking table was installed in University of Engineering & Technology Taxila, Pakistan which is operated on 3 HP servo motor coupled with encoder, motion controller and supported on



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HSB mechanical linear drive. The system was assembled in a simple way with care to guarantee sufficient replication of given wave by shake table. This paper focuses on the development of a linear analytical model of a uni-axial, shaking table by using conjunction of structural dynamics and linear control theory.

Keywords: Shake Table, Earthquake, Economical, Fault Lines, Dynamic Effect, Linear Control Theory



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ERCICSTR1901097

On Generalization of Extending Acts and M-Jective Acts

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Abstract

The author has introduced in a diagram of acts and homomorphisms, the concept of generalized of quasi injective which is also represent a generalization of M-injective acts. Here we introduce the concept of M-jective acts, which is a generalization of the concept of M-injectivity. The concept of M -jjective acts is used here to solve the problem of finding a necessary and sufficient condition for a direct sum of extending acts to be extending. Indeed, we show that relative jectivity is necessary and sufficient for a direct sum of two extending acts to be extending as in module theory. We also introduced the concept of generalized extending acts, and give some properties of such acts in analogy with the known properties for extending acts.

Keerthana Balaji
ERCICSTR1901096

Mini Tests Pre and Post Lectures: An Efficient Method for Understanding Concepts in Computer Science

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Abstract

Teaching computer science has been a challenge in this ever improving and fast adapting technological era. The updates in the field of computer science has put students on their toes to learn the best, and to achieve this, increasing their curiosity could prove to be beneficial. Here, in our study, we had tried and attempted to achieve the same. There were 25 lectures conducted using the following concept. A total of 5 questions related to the lecture topic of the day were given to the students to answer, before each the lecture. Then the lecture was taken for a period of 40 minutes. At the end of the lecture, another 5 question were given to answer, which were related to the ones asked in the beginning of the lecture. It was made sure that the questions did not repeat but at the same time, the concept was the same. We found that the mean of the incorrect answers before the lecture was 3.09 ± 0.27 and that post the lecture was 2.47 ± 0.50 . Comparison of means was done between the pre-test scores and post-test scores. It was seen that there was a significant difference ($p < 0.001$) in the reduction of the incorrect answers. Encouraging the student to concentrate on their mistakes and helping in identifying the mistakes to rectify them, surely gives them a chance to get the concepts right. If the student has concentrated in the lecture, at the end of the lecture the student must be able to answer the post lecture questions. The curiosity to find out the answers keeps them attentive in the lectures. In addition to the above said, self-assessment by the students makes them more

responsible. This method, if added with feedback at the end of each session for each student, it might prove to be an efficient method in getting the student to understand the code, rather than rote memory.

Keywords: Computer Science, Education, Evaluation, Regular Assessment, Didactic Lecture



Pavel Krystynik
ERCICSTR1901062

Phosphorus Recovery from Sewage Sludge

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Abstract

Phosphorus (P) is one of the key macronutrients essential for plant growth. Current agriculture is dependent on application of phosphates (fertilizers based on phosphorus) to enhance plant growth and to meet increasing food consumption demands. Given the fact that P is non-renewable resource, it is essential to find indirect and secondary P resources – especially from waste (P-enriched) materials. The example of such P secondary sources can be sewage sludge, waste biomass or P contaminated waste water. P recovered from waste water can be precipitated by various precipitation methods as magnesium-ammonium phosphate (struvite) under defined conditions. P obtained from sewage sludge is concentrated in solid residual after treatment by thermochemical methods (e.g. pyrolysis) – ashes. In case of waste biomass, solid residual is called bio-char, which contains concentrated P and also other non-volatile elements (heavy metals). P in bio-char have a great potential to be extracted by chemical leaching using acidic solutions, however, heavy metals are recovered as well. Further treatment methods for pure phosphorus recovery need to be applied to acidic leachate – e.g. sequential precipitation, membrane filtration etc. The aim of this contribution is to demonstrate capability of acid chemical leaching of phosphorus followed by its precipitation from the liquid phase.



**I. Iresha Prabodhanie
Jayathilake**
ERCICSTR1901098

The Overview of Poverty Allevation Programmes in Sri Lanka

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Abstract

This research is an application of multidimensional poverty data above the main poverty alleviation programme in Sri Lanka. The case of Samurdhi Programme The sustainable development goals, and Millennium development goals have approached the “Eradicate poverty”, it is a main problem in the society. This research has used the secondary data, journals, books, etc.

This research has focused on The Samurdhi Poverty alleviation programme, has what type of impact for upgrading the lively hood of poor people continuously it has encountered difficulties in its battle against poverty. Since the independence, the country has recovered significantly, mainly through the implementation of various social assistant programmes. However, the poverty in Sri Lanka is still widespread and acute, and is generally a rural phenomenon. Poverty reduction has been slow due to widening inequalities among income groups and across regions. Sri Lanka has a long history of social programs and of food subsidies in particular. Like many other countries, the government of Sri Lanka has a number of social assistance and poverty alleviation programs. The largest one of these is the Samurdhi program, which was introduced in 1995. The main objective of Samurdhi is to ensure the participation of the poor in the production process by increasing access to resources for self-employment, enhancing their health and nutritional status as well as improving rural infrastructure. Samurdhi does not emerge as an efficient transfer program. It is modestly successful in reaching the intended beneficiaries, but it transfers a large portion of its resources to the non-poor. Moreover, the non-randomness of its targeting errors indicates that the program would need extensive redesign in order to improve its efficiency. This paper presents a description of the structure of Samurdhi and examines its design and targeting outcomes. In light of these results, the paper intends to stimulate a discussion of whether this program is an

effective vehicle for reducing vulnerability and poverty alleviation, as well as observed the upgrade of lively hood. We had found of this research Samurdhi beneficierries are more upgrade their lively hood than non samurdhi holders.

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