CONFERENCE PROCEEDINGS

Scientific and Technical Research Association

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05-06 July 2018

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Middlesex University Mauritius, Cascavelle, Coastal Road, Flic en Flac, Mauritius

KEYNOTE SPEAKER

J.R.Lino FINETTE
Né Le 23 Aout 1959 Republique De Maurice, 17 Avenue Brown Sequard, Quatre-Bornes, Republique De Maurice, Mauritius

J.R.Lino FINETTE was born in 1959. After my secondary education at the John Kennedy Colledge and the Royal Colledge he started to work as Junior Auditor at De Chazal DuMee & Co/ Coopers & Lee Brand. He started studying Accounting and was registered for the ICMA. Being more interested in Medicine, He had the opportunity to join a Medical Institute in 1986. He was also qualified as M.D from Piragove Medical Institute Odessa – Ukraine in 1994. He had his Internship in Orthopaedic surgery at Piragove Medical Institute, from 1994 – 1997.

From 1998 – 1999 also he was associated with Mauritius at the Ministry of Health & Quality of Life.

He joined the Ministry of Health & Quality of Life as Medical Officer in 1999.

He left the service in year 2000 to join the Rogers Group as Ship Surgeon from 2000 to 2004.

In 2004, He also joined Clinic Darné, a Private Clinic in Curepipe as House Doctor up to 2005.

In 2006, He was posted in Rodrigues Island as Senior Medical Officer for a period of two years.

In 2008, he returned to Mauritius and was posted at Brown Sequard Psychiatric Hospital. During his stay at BSH, He was affected to the Harm Reduction Unit. He was also posted in Beau-Bassin Prison where Mr J.R.Lino FINETTE started the Methadone Induction Program for in -mates. He was also involved in counseling in prisons.

In January 2016, He was posted at Mahebourg Hospital where we started the Suboxone/Naltrexone program.

He had attended many conferences given by UNODC on treatment of Drug Addiction and counseling in Prisons.

He is working since 2017 in Private Practice.

Bm Vishal GICICRST1809051	**Characterization, Extraction of Secondary Metabolites from Perilla frutescens for Therapeutic Additives – A Phytogenic Approach**

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Abstract
Objective
Though there are several methods of synthesizing silver nanoparticles, Green synthesis always has its own dignity. Ranging from the cost effectiveness to the ease of synthesis, the process is simplified in the best possible way and is one of the most explored topics. This study of extracting secondary metabolites from Perilla frutescens and using them for therapeutic additives has its own significance. Unlike the other researches that have been done so far, this study aims to synthesize silver nanoparticles from Perilla frutescens using three available forms of the plant: Leaves, Seeds and Commercial Leaf Extract Powder.
Keywords: Green synthesis, Nanoparticles, Therapeutic, Characterization

Anil Kumar GICICRST1809052	**Surface Quality Improvement in Electrical Discharge Machined Tungsten Carbide through Electrolysis Process**

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Abstract
Electrical discharge machining (EDM) is widely used for machining difficult to machine materials. Tungsten carbide is one such material used in industry for making tools and dies. Surface defects like recast layer, micro-craters and cracks are produced after electrical discharge machining leading to decrease in surface quality. Post machining operations become necessary for removal of the damaged surface layer to restore surface properties. However, this extends the machining time and increases the cost of production. A relatively new advancement in this direction is to perform electrolysis process after EDM with a view to enhance surface quality of the machined surface. The focus of the present study is to evaluate the performance the electrolysis process after EDM by varying current and pulse on time keeping all other parameters constant. The performance is evaluated in the form of surface roughness (Ra) and recast layer. It was observed that both surface finish and recast layer thickness are highly improved through the electrolysis process.

	Keywords: Electrical Discharge Machining (EDM), Electrolysis process, Surface roughness (Ra), Recast layer
Dr. Naveen Beri **GICICRST1809053**	**Experimental study on the electric discharge machining performance of powder metallurgy processed copper tungsten electrode using reverse polarity** **Dr. Naveen Beri** **Affiliation: Department of Mechanical Engineering, Beant College of Engg. & Tech., Gurdaspur - 143 521, Punjab, India** **Abstract** Electric discharge machining has established itself as one of the most commonly used nontraditional machining techniques. The possibility of using powder metallurgy processed electrodes to improve the electric discharge machining performance has been explored in recent times. In the present experimental study an attempt has been made to compare the performance of powder metallurgy processed copper tungsten electrodes with the conventional copper electrode using reverse polarity during electrical discharge machining of Inconel 718 alloy steel. The response parameters selected for the study are material removal rate (MRR) surface roughness (SR) Ra value, tool wear rate (TWR) and change in surface roughness (SR) Ra value of electrode before and after machining. It is concluded that powder metallurgy processed copper tungsten electrode gives better machining performance in comparison with the conventional copper. Surface roughness obtained with powder metallurgy processed CuW electrode is less as compared with that obtained with conventional copper electrode. This is attributed to detachment of powder metallurgy electrode constituent which further get deposited on the work surface and thereby reduces the surface cracks. Same is confirmed through scanning electron microscopy (SEM) analysis. Keywords: Electrical discharge machining (EDM), powder metallurgy (PM), material removal rate (MRR), surface roughness and tool wear rate (TWR).
Veronica Ngure **GICICRST1809057**	**Impact of Gold mining on the Environment and Human Health. A Case Study in the Migori Gold Belt, Kenya** **Veronica Ngure** **Department of Biological Sciences, Laikipia University, KENYA** **Theophilus Davies** **Department of Geology, University of Nigeria, Nsukka, Austin Avuru Building, Nsukka Road, 410001 Nsukka, NIGERIA** **Geoffrey Kinuthia** **Daystar University , KENYA** **Abstract** In Africa, mining is known to be the second largest source of pollution after agriculture, in generating high concentrations of waste and effluents. Samples of soils, water and fish (Rastrineobola argentea) collected from Migori Gold Belt (MGB) in Kenya were used to determine concentrations of cadmium (Cd), mercury (Hg), lead (Pb), and arsenic (As) that were analyzed by ACMELAB, Vancouver, Canada. Analyzed samples indicated that the concentrations of Cd, Pb, As and Hg were above the WHO/FAO maximum acceptable concentration. Soils recorded values of $4.5 - 570$ mg kg^{-1} Cd, $6.5 - 510$ mg kg^{-1} Pb, $0.06 - 76.0$ mg kg^{-1} As, and $0.46 - 1920$ mg kg^{-1} Hg, which were significantly different ($P < 0.05$) from allowable maximum level of 0.1-1.0, 10-70, 3-12, and 0.05-0.08 µg/g respectively; Water showed values of $1.5 - 10.5$ µgL^{-1} Cd, $0.5 - 11.1$ µgL^{-1} Pb, $0.06 - 23.0$ µgL^{-1} As, and $0.46 - 56.6$ µgL^{-1} Hg, which were significantly different ($P < 0.05$) from allowable maximum level of 0.005, 0.050, 0.010, 0.002 respectively while fish samples

	had metal concentration ranges of 2.0 – 10075 mg kg−1 Cd, 3.0 – 11075 mg kg−1 Pb, 0.014 – 1.87 mg kg−1 As, and 0.28 – 348 mg kg−1 Hg which were significantly different (P < 0.05) from acceptable level < 0.001, 0.05, < 0.05, 0.05 respectively. From this study, It was concluded that gold mining activities in MGB may have led to increased levels of Cd, Pb, As and Hg against their background levels and this may eventually lead to serious health implications in humans. It was therefore recommended that the public health sector should address this environmental contamination associated with the mining of gold, in order to alleviate the health problems that may arise. Key words: Environmental Health, gold mining, water pollution, heavy metals, Lake Victoria
Samuel Gafuma **GICICRST1809058**	**Textural hardness of selected Ugandan indigenous cooking and juice bananas under raw, cooking and cooling treatments** **Gafuma Samuel** **Kyambogo University, Dept. of Food Technology, P.O Box 1 Kyambogo, Kampala-Uganda** **Byarugaba Bazirake G.W** **Kyambogo University, Dept. of Food Technology, P.O Box 1 Kyambogo, Kampala-Uganda** **Mugampoza Diriisa** **Kyambogo University, Dept. of Food Technology, P.O Box 1 Kyambogo, Kampala-Uganda** **Abstract** **Textural hardness is important in determining the quality of cooked bananas and affects their cooking time, processing and energy used. There is scant information on textural hardness of Uganda's indigenous cooking and juice bananas under different cooking treatments. In this study, textural hardness of selected cooking and juice bananas was determined by penetration at 30, 50, 70, 90, 100 and 130 min in raw, boiled, steamed, mashed and cooled forms according to the modified method applied by Sediaty et al., (2009).** **Textural hardness of raw green mature juice bananas (JB) (36.17N for Kisubi to 42.43N for Ndiizi) was significantly higher (p<0.05) than that of cooking bananas (CB) (22.37N for Kibuzi to 26.72N for Nakabululu).** **Overall, cooked JB were harder than CB irrespective of cooking method and time. Boiling and steaming (approx. 97 to 99oC) rapidly decreased hardness of bananas in the first 30 min and decreased slowly thereafter. Boiling caused a higher decrease in hardness compared with steaming. Mashing produced intermediate hardness. Amongst JB, Kayinja was significantly harder than Ndiizi and Kisubi in boiled and steamed forms (p<0.05). Hardness of CB was not significantly different (p>0.05) at all cooking treatments. Comparing CB, Kibuzi was the softest while Kazirakwe was the hardest.** **Cooling significantly increased (p<0.05) hardness of bananas under all treatments with JB being on harder in all cases. Mashed and steamed bananas were significantly harder than boiled bananas when cooled (p<0.05). Bananas cooked longer had low hardness regardless of cooking method.** **These results indicate that textural hardness of bananas decreases with cooking time regardless of cooking method. Although all banana cultivars exhibited hardness on cooling, boiled form remained relatively softer when cooled compared with other treatments. Extended cooking led to similar effect. Therefore, bananas should either be boiled or steam-mashed for softest texture and should be eaten within about 30 min of serving. JB are not recommended for cooking because of the hard behavior established in this study.**

Keywords: textural hardness, cooking bananas (CB) and juice bananas (JB), raw, cooked and cooled, boiling, steaming and mashing.

Public participation in the design process: A strategic tool for the creation of preferred environments of social change

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Abstract
This study is concerned with the ongoing research program, of the master studio in architecture at Wollega University, Ethiopia. Since the research program started it developed a dual research strategy within which two interdependent research activities are taking place: the studio-based research, which has been carried out by the students, was concerned with 'research for design'. The other research activity was the teaching-based research project. This latter research was an inquiry into students' research processes carried out by the studio instructor. However, as research progressed the focus of interest in the studio has gradually moved away from the development of knowledge to inform better design (research for design), to the development of knowledge for better understanding the problems of design and for facilitating the creation of preferred environments for social innovation (research through design). In order to proceed with research through design as viewed from this widened perspective the studio finds that research methods too had to change. The studio practices have led to the development of 'the education-based research approach', which has the potential to link the studio's research-teaching activities with the needs of the society through public participation. In this advanced stage of the research program, while the students assuming the role of the principle researcher will be engaged in diagnosing the problems of design and evaluating existing designs, the instructor chooses to act as participating researcher on behalf of the society. This arrangement arises from the students' deeply rooted determination to make contribution towards the involvement of people in the process of decision making. In this article, the way public participation can make a difference in facilitating the creation of preferred environment for social change is explored, discussed and illustrated with empirical examples drawn from the students' research.
Keywords: studio-based, teaching-based, research, knowledge, empirical

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Financial and marketing factors on insurance brands

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Abstract
This paper presents issues linked to the key elements of finance and management, used at the level of 31 insurance companies registered in Romania at the end of 2016. We analyze the importance of the effects of financial and marketing factors on insurance companies. Our results highlight the valence of communication of corporate social responsibility in terms of financial performance on Romanian insurance market. This study has multiple implications on understanding the role of transparency in the insurance companies. The insurer should use more the web-sites and the social media platforms, for example Facebook, Instagram and Twitter, for a better communication with the potential insured.
Keywords: corporate social responsibility, insurance, social media

Dr. Dinesha P. GICICRST1809054	**Performance and emission studies of a SI engine using ethanol-butanol-acetone and gasoline blends**
	Dinesha P. **Department of Mechanical and Manufacturing Engineering, Manipal Institute of Technology, Manipal Academy of Higher Education, Manipal - 576104, India** **Shiva Kumar** **Department of Mechanical and Manufacturing Engineering, Manipal Institute of Technology, Manipal Academy of Higher Education, Manipal - 576104, India** **Abstract** **Use of conventional fuels in gasoline engines result energy crisis and environmental pollution. These has necessitated the search for alternative fuels. Ethyl alcohol is one of the promising fuels than can substitute gasoline in SI engine. The present work investigates the effect of using acetone-butanol-ethanol and gasoline blends in a spark ignition. The experiments were conducted on a multi cylinder MPFI spark ignition engine connected to hydraulic dynamometer. The fuel blends were prepared by mixing ethanol-butanol- acetone and gasoline in the ratio 5:5:2:88 by percentage (B1) and 10:5:2:83 by percentage (B2). The speed of the engine was varied from 1500 to 3000 rpm in steps of 500 rpm by keeping load constant at 6 kg. Performance and emission parameters were measured and baseline gasoline data. It is observed that a slight reduction in brake thermal efficiency was observed for increase in ethanol percentage fuel operation. Emission parameters like CO and HC were drastically reduced with increase in CO_2 emission. However NOx emission was found to be higher for ethanol blended fuels.** **Keywords: brake thermal efficiency; butanol; emissions; ethanol; gasoline.**
Shiva Kumar GICICRST1809055	**Performance And Emission Test On I.C Engines Using Vegetable Oils As Lubricants**
	Shiva Kumar **Department of Mechanical and Manufacturing Engineering, Manipal Institute of Technology, Manipal Academy of Higher Education, Manipal-576104, India** **Dinesha P.** **Department of Mechanical and Manufacturing Engineering, Manipal Institute of Technology, Manipal Academy of Higher Education, Manipal-576104, India** **Abstract** **Lubricants perform as anti-friction media. They facilitate smooth operations, maintain reliable machine functions, and reduce the risks of frequent failures. At present, the increasing prices of crude oil, the depletion of crude oil reserves in the world, and global concern in protecting the environment from pollution have renewed interest in developing and using environment-friendly lubricants derived from alternative sources. A biolubricant is renewable lubricants that is biodegradable, non-toxic, and emits net zero greenhouse gas. Biolubricant from non edible vegetable oils have received considerable research attention in the last decades owing to their remarkable improved tribological characteristics. In the present work bio lubricant prepared from gingelly oil has been explored for its viability to be used in diesel engines. Performance studies have been conducted by using neat and esterified gingelly oil and its influence on the engine performance and emissions were studied and have been compared with the neat mineral oil lubricant. Experimental results indicate that performance of the engines**

slightly increases as well as the emissions will be reduced by using vegetable oil based lubricant in a diesel engine.

Keywords: biolubricant, gingelly oil, brake thermal efficiency, emissions.

Contamination of a Belgian adult population by endocrine disruptors (mercury, cadmium, organochlorine pesticides and PCBs)

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Abstract

Research Objectives: The aims of this study were to (1) determine the current exposure level of some endocrine disruptors namely cadmium, mercury, organochlorine pesticides and PCBs in 252 participants from the general population of Liège (Belgium); (2) assess the temporal trends in exposure; and (3) identify some critical subpopulations in terms of exposure levels according to their daily habits or demographic characteristics.

Methodology: A total of 252 volunteers (18-77 years old) living in the Liège area (Belgium) were recruited. The urinary mercury levels were determined by flow-injection cold vapor atomic absorption spectrometry (FIMs). The urinary cadmium levels were measured by graphite furnace atomic absorption (GFAA). 15 organochlorine pesticides or metabolites and 3 PCBs were measured in serum by gas chromatography coupled to a mass spectrometer (GC-MS).

Findings: Mercury was positively detected in nearly 70% of the urines analyzed, with a maximum level measured at 17μg/l (12.8μg/g creat). Fortunately, these high levels represent a minor exception (P97.5 =5μg/l). Only 37% of the participants had urinary cadmium levels above the LOD (0.5 μg/L). More than 63% of our participants above 60 years had higher cadmium levels than other age groups. The pattern of PCBs observed in the serum of our population was consistent with those previously reported, with PCB-153 being the most abundant, followed by PCB-180, and to a lesser extent by PCB-138. In general, the OCs detection rate was low in our participants. 4,4′-DDE was only found in 48% of our participants likely due to our high LOQ. On the other hand, the low detection rate of b-HCH and HCB was expected since a huge decline (more than 50%) was observed in most European countries over the last 3 decades. Despite the ban of OCs (4,4′-DDE, ßHCH, and HCB) since the middle of 70′s in Belgium, 66% of our participant had detectable levels of at least one OC and 44% at least two of them.

Research outcomes: This study provides current levels of exposure to some endocrine disruptors namely cadmium, mercury, some organochlorine pesticides and PCBs in the general Belgian population living in Liege. In general the body burden of cadmium, organochlorine pesticides and PCBs in our population was found either lower or similar to those reported in other countries. On the other hand, urinary mercury levels were higher, since large proportion of our population still has several dental amalgams, unlike other neighborhood countries in which the amalgam uses are either restricted or banned.

Future scope: Monitoring of EDC is still needed in parallel to other emerging EDCs with similar endocrine disrupting properties that can exhibit additive or synergic effects, e.g. bisphenol A, phthalates, parabens, flame retardants, etc

Keywords: human biomonitoring, organochlorines, endocrine disruptors,

	mercury, cadmium
Farbod Tabaei **GICICRST1809062**	**Question Generator Model for Design Process Improvement** **Farbod Tabaei** **Shahid Beheshti University, Department of Architecture, Tehran, Iran** **Abstract** In analyzing the design process, while "linkography" is a useful tool for diagnosis, it is not a treatment. Analytical thinking requires a designer to ask appropriate questions in every "move" of the design. Based on the researches done on the creative design process, a creative designer benefits from more "critical moves" that produce almost equal amounts of "forelinks" and "backlinks" in a design process. This research introduces a question generator model for generating more "critical moves" in a design process. The model consists of three tools, which are "Search", "Compute" and "Visualize". The tools complement each other. They also help the designer to generate questions continuously in a design process. According to many design researchers, questions are been categorized into two groups: idea generative questions, which help the designer to think divergently, and evaluative-analytical questions that help him to think in a convergent manner. The hypothesis is that after analyzing a design process and diagnosing its weak points (i.e., lack of "critical moves" or unbalanced numbers of "forelinks" and "backlinks"), the question generator model enables the architect to improve his design process. Three novice architects and three professional architects have participated in the experiment. Each has been asked to solve three design problems first without using the question generator model, then using the model. For analyzing the design processes "linkography" has been used. The result shows that the model is more helpful for novice designers to improve their design process than for professionals. Keywords— Analytical thinking - Creativity - Convergent thinking - Design process - Divergent thinking - Linkography

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