



**CONFERENCE PROCEEDINGS**

**21st International Conference on Researches in Science & Technology  
(ICRST), 8-9 Sept 2017, Bali, Indonesia**

8-9 Sept 2017

Conference Venue

Courtyard Marriott Bali Nusa Dua Resort, Indonesia

**21st International Conference on Researches in Science & Technology (ICRST), 8-9 Sept 2017, Bali,  
Indonesia**

Courtyard Marriott Bali Nusa Dua Resort, Indonesia 

**KEYNOTE SPEAKER**



**Professor M. Adlim  
Ph.D, Dean for Faculty of Marine and Fishery, Chemistry Department,  
Syiah Kuala University, Indonesia**

<p>Wenjing Wang GICICRST1710051</p>	<p>Novel amine impregnated graphene/SBA-15 composite with good stability for CO<sub>2</sub> capture</p> <p>Wenjing Wang The University of Queensland, Australia</p> <p>Abstract</p> <p>Carbon dioxide (CO<sub>2</sub>) is the major greenhouse gas that makes the largest contribution to global warming. Worldwide research activities have focused on developing different types of physical and chemical adsorbents for CO<sub>2</sub> capture. Amine functionalized mesoporous silica combining the merits of physisorption and chemisorption is one of the most promising materials for CO<sub>2</sub> capture. However, due to the low thermal conductivity of mesoporous silica coupled with high adsorption heat of chemisorption, the thermal stability and cycle stability are severe issues that should be considered for practical CO<sub>2</sub> capture. The introduction of graphene with superior properties, large theoretical specific surface area of 2630 m<sup>2</sup> g<sup>-1</sup> and excellent thermal conductivities, could be an effective way to solve the problem of stability. SBA-15 is a mesoporous silica, which has well-ordered hexagonal mesozone structure. However, to the best of our knowledge, the feasibility of graphene introduction to SBA-15 for CO<sub>2</sub> capture need further explore. In this work, novel nanocomposites of graphene (G) /SBA-15/hyper branched polymer(HBP) were synthesized and tested as CO<sub>2</sub> adsorbent. A capacity of up to 1.50 mmol g<sup>-1</sup> was obtained by G/SBA-15/HBP (50), indicating the presence of graphene within the system increased the capacity of conventional SBA-15/HBP to adsorb CO<sub>2</sub> by 51.51%. SEM images and N<sub>2</sub> sorption analyze indicate the introduction of graphene reduced the agglomeration and HBP could disperse more evenly into G/SBA-15. What's more, G/SBA-15/HBP (50) was relatively stable for 10 thermal cycles. The presence of graphene in the nanocomposite efficiently stabilizes HBP, improving cycle stability and adsorbent longevity.</p> <p>Keywords: CO<sub>2</sub> capture, mesoporous silica, graphene, amine functionalization</p>
<p>Frances Heale GICICRST1710052</p>	<p>Super hydrophobic Materials for Smart Decorative Paints</p> <p>Frances Louise Heale UCL Department of Chemistry, 20 Gordon St., Bloomsbury, London</p> <p>Claire J. Carmalt UCL Department of Chemistry, 20 Gordon St., Bloomsbury, London</p> <p>Ivan P. Parkin UCL Department of Chemistry, 20 Gordon St., Bloomsbury, London</p> <p>Abstract</p> <p>The super hydrophobic class of 'smart' materials is widely known for having extreme wetting characteristics. Water droplets upon these surfaces afford static water contact angles, <math>\theta</math>, in excess of 150° and water tilting angles less than 5°. The fabrication of coatings that emulate the micro and/or nano topographies of nature's waxy super hydrophobic surfaces ensures this special wettability phenomenon is observed. Each of our coating suspensions have been prepared via a versatile, facile and easily scalable method that combines either dual or single-scale functionalized silicon dioxide particles with low surface energy coatings. Different fatty acid and fluoralkylsilane</p>

	<p>materials have been explored to ascertain the impact of chain length on the hydrophobicity of samples which were applied to a commercial adhesive in order to bond the paints to chosen substrates. Keywords: silicon dioxide; nanoparticles; hydrophobicity; self-cleaning; coatings; paints; suspension; wettability; robustness; fatty acids; fluoroalkylsilanes.</p>
<p>Maud Einhorn GICICRST1710053</p>	<p>Predictive modelling of active sites in Pd/<math>\alpha</math>-Al<sub>2</sub>O<sub>3</sub> catalysts Maud Einhorn, UCL Department of Chemistry, 20 Gordon Street, Bloomsbury, London, Professor GopinathanSankar UCL Department of Chemistry, 20 Gordon Street, Bloomsbury, London, Abstract Palladium catalysts supported on Al<sub>2</sub>O<sub>3</sub> have been studied extensively for many processes including methane and carbon monoxide oxidation.<sup>[1,2]</sup> Established characterisation methods for supported metal catalysts, specifically X-ray diffraction, neutron diffraction and X-ray absorption spectroscopy (XAS) can provide important structural information about a catalyst. Importantly, the information obtained through these methods averages the overall structure of the system. However, most supported catalysts may contain multiple unique catalytically active sites, which may have different properties and catalytic ability. Modern computational chemistry methods provide an opportunity to identify energetically favourable active sites within a supported metal catalyst. This study aims to use a hybrid quantum mechanics/molecular mechanical (QM/MM) method using the ChemShell computational chemistry software environment.<sup>[3,4]</sup> Potentially important Pd<sup>2+</sup> substitutional and interstitial sites will be generated within an <math>\alpha</math>-Al<sub>2</sub>O<sub>3</sub> lattice support. Once favourable sites have been identified computationally, spectroscopic signatures of these potential sites will be calculated to compare with experimental data. Keywords: Embedded-cluster model, density functional theory, molecular dynamics simulation, palladium, alumina, catalysis</p>
<p>ZakariAbdullahi GICICRST1710054</p>	<p>Assessment of the Phytoremediation Potentials of Senna Tora in the Removal of Heavy Metals From Contaminated Soils of the ChallawaIndustrial Estate Kano, Nigeria ZakariAbdullahi Department of Pure and Industrial Chemistry, Bayero University, Kano, Nigeria Abstract The concentrations of Zinc (Zn),Copper (Cu), Lead (Pb) and Cadmium (Cd), in soils and different plant organ of a native wild plant species Senna tora collected from Challawa industrial zone in Kano City, Nigeria were investigated using AAS technique. The aim was to establish its metal accumulating potential, which organ exhibit the greatest accumulation and evaluate whether the specie is suitable for phytoremediation programs. The bioaccumulation and transfer of metals from roots to shoots and from soil to roots and was evaluated in terms of translocation factor (TF) and bioconcentration factor (BCF). Results showed that the concentrations of heavy metals in the soils have the sequence of (Zn &gt;Pb&gt; Cu&gt;Cd) while in plants the trend was (Pb&gt;Zn&gt; Cu&gt;Cd). Generally, the shoot region of the studied specie accumulated more heavy metals than the corresponding roots. Based on BCFs and TFs values, the studied plant specie has potential for</p>

	<p>phytoextraction of the metal of interest in polluted soils. Key words: Phytoextraction, Cadmium, AAS, Bioaccumulation, Kano city.</p>
<p>AyubaAbdullahi Muhammad GICICRST1710055</p>	<p>A Comparative Computational Study on the Corrosion Inhibition Potentials of Some Amino and Hydroxycarboxylic Acids on Aluminium Metal</p> <p style="text-align: center;">Ayuba, A. Department of Pure and Industrial Chemistry, Bayero University, Kano, Nigeria.</p> <p style="text-align: center;">MUzairu, A. Department of Pure and Industrial Chemistry, Bayero University, Kano, Nigeria.</p> <p style="text-align: center;">Abba H. Department of Pure and Industrial Chemistry, Bayero University, Kano, Nigeria.</p> <p style="text-align: center;">Shallangwa, G. A Department of Chemistry, Ahmadu Bello University, Zaria, Kaduna, Nigeria</p> <p style="text-align: center;"><b>Abstract</b></p> <p>Studies on the corrosion inhibition potentials of aspartic, glutamic, citric, tartaric and malic acids were conducted on aluminium coupons corrosion using computational methods. The DFT-based quantum chemical computations of parameters associated with the electronic structures of the inhibitor molecules confirmed their inhibiting potential through HOMO, LUMO, electron density, dipole moment and their energies indicating the point of association of the molecules with the aluminium surface may be through <math>-NH_3</math>; for the amino acids and <math>-OH</math>; for the hydroxycarboxylic acids respectively. This was further corroborated by molecular dynamics simulation modelling of the adsorption of the single molecules of the inhibitors on the aluminium metal surface to ascertain the adsorption/binding energies and sites of the inhibitor molecules on the aluminium surface. The values obtained were negative and low, signifying low adsorption and inhibition. The trend in terms of the fraction of transferred electrons invoking HSAB principle was; aspartic acid &gt; glutamic acid &gt; citric acid &gt; tartaric acid &gt; malic acid. The obtained <math>E_{ads}</math> values; <math>-24.822 \pm 5.610</math> kcal/mol for aspartic acid, <math>-31.501 \pm 1.036</math> kcal/mol for glutamic acid, <math>-28.384 \pm 4.115</math> kcal/mol for citric acid, <math>-19.628 \pm 5.477</math> kcal/mol and <math>-19.982 \pm 5.774</math> kcal/mol for malic acid were all negative and of relatively low magnitude, suggesting relatively low stable adsorption interactions. This low affinity of the molecules for the aluminium surface will account for the low corrosion inhibition efficacy of the molecules. However, the magnitude of the calculated binding energies are all less than <math>100 \text{ kcal mol}^{-1}</math> this is despite the fact that the simulations did not take into consideration the specific covalent interactions between the molecules and the Al surface falls in the range of physisorptive interactions.</p> <p>Keywords: Corrosion Inhibition, Amino Acids, Hydroxycarboxylic Acids, Aluminium, Computation Study.</p>
<p>WachdaNyuwitoKirono GICICRST1710058</p>	<p>A Comparative Computational Study on the Corrosion Inhibition Potentials of Some Amino and Hydroxycarboxylic Acids on Aluminium Metal</p> <p style="text-align: center;">Ayuba, A. M. Department Of Pure And Industrial Chemistry, Bayero University, Kano, Nigeria.</p>

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	<p style="text-align: center;">Uzairu, A. Department Of Chemistry, Ahmadu Bello University, Zaria, Kaduna, Nigeria</p> <p style="text-align: center;">Abba, H. Department Of Chemistry, Ahmadu Bello University, Zaria, Kaduna, Nigeria</p> <p style="text-align: center;">Shallangwa, G. A Department Of Chemistry, Ahmadu Bello University, Zaria, Kaduna, Nigeria</p> <p style="text-align: center;"><b>Abstract</b></p> <p>Studies on the corrosion inhibition potentials of aspartic, glutamic, citric, tartaric and malic acids were conducted on aluminium coupons corrosion using computational methods. The DFT-based quantum chemical computations of parameters associated with the electronic structures of the inhibitor molecules confirmed their inhibiting potential through HOMO, LUMO, electron density, dipole moment and their energies indicating the point of association of the molecules with the aluminium surface may be through <math>-NH_3</math>; for the amino acids and <math>-OH</math>; for the hydroxycarboxylic acids respectively. This was further corroborated by molecular dynamics simulation modelling of the adsorption of the single molecules of the inhibitors on the aluminium metal surface to ascertain the adsorption/binding energies and sites of the inhibitor molecules on the aluminium surface. The values obtained were negative and low, signifying low adsorption and inhibition. The trend in terms of the fraction of transferred electrons invoking HSAB principle was; aspartic acid &gt; glutamic acid &gt; citric acid &gt; tartaric acid &gt; malic acid. The obtained <math>E_{ads}</math> values; <math>-24.822 \pm 5.610</math> kcal/mol for aspartic acid, <math>-31.501 \pm 1.036</math> kcal/mol for glutamic acid, <math>-28.384 \pm 4.115</math> kcal/mol for citric acid, <math>-19.628 \pm 5.477</math> kcal/mol and <math>-19.982 \pm 5.774</math> kcal/mol for malic acid were all negative and of relatively low magnitude, suggesting relatively low stable adsorption interactions. This low affinity of the molecules for the aluminium surface will account for the low corrosion inhibition efficacy of the molecules. However, the magnitude of the calculated binding energies are all less than <math>100 \text{ kcal mol}^{-1}</math> this is despite the fact that the simulations did not take into consideration the specific covalent interactions between the molecules and the Al surface falls in the range of physisorptive interactions.</p> <p><b>Keywords:</b> Corrosion Inhibition, Amino Acids, Hydroxycarboxylic Acids, Aluminium, Computation Study.</p>
<p>ElekalachiChukwuemeka Innocent GICICRST1710059</p>	<p style="text-align: center;"><b>Estimation of Global Solar Radiation with Sunshine Hours, Temperature and Relative Humidity in Gombe, Yola and Maiduguri in the North Eastern Nigeria</b></p> <p style="text-align: center;">Elekalachi C. I., Department of Industrial Physics ChukwuemekaOdumegwuOjukwu University, Uli, Anambra State, Nigeria</p> <p style="text-align: center;">Nwokoye A. O. C. Department of Physics and Industrial Physics, NnamdiAzikiwe University, Awka, Anambra State, Nigeria</p> <p style="text-align: center;"><b>Abstract</b></p> <p>Energy as a physical quantity plays an important role in determining the conditions in which living matters can exist. Solar energy is one of the renewable energy sources which is readily available in and out of the season. Measurement of the exact amount of this solar energy incident on any location on the earth's surface is a great challenge for mankind due to the non-availability of solar radiation measuring instruments such as</p>

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	<p>pyranometer and pyreliometers in all the locations of interest. This necessitates the need for the use of empirical equations that are based on the climatic parameters of any location to estimate solar radiation. In this study, monthly mean global solar radiation <math>H_m</math>, monthly mean extraterrestrial global solar radiation <math>H_0</math>, monthly mean daylight hours (N) and monthly mean hours of bright sunshine (n), latitudes (<math>\phi</math>), maximum temperature (<math>T_{max}</math>) and relative humidity (RH) were used as climatic parameters for the development of different models for the estimation of global solar radiations. The meteorological data for this investigation were sourced from the archives of National Aeronautic and Space Administration (NASA). Using empirical Angstrom model as a base model, sunshine based regression equations, maximum temperature and relative humidity based equations were developed for the cities. The correlation coefficient (R) and Root Mean Square Error (RMSE), Mean Bias Error (MBE), Mean Percentage Error (MPE) and t - stat values were determined for each proposed models and were used to evaluate the performance of each of the developed models. The results of the error indicator and t – stat values obtained for the modeled equations showed that the developed equations can be used in estimation of global solar radiation.</p> <p>Keywords: Solar energy, global solar radiation, sunshine hours, maximum temperature, Relative humidity</p>
<p><b>AgungKurniawan</b> GICICRST1710060</p>	<p><b>Flooding Model as the Analysis of the Sea Level Increase as a Result of Global Warming in Coastal Area in Lampung</b></p> <p><b>AgungKurniawan</b> Vocational School, Universitas Gadjah Mada, Yogyakarta, Indonesia</p> <p><b>Abstract</b></p> <p>The melting of ice layers, as a direct impact on global warming, is indicated from a lesser thickness of ice layers is specifically causing an increase on the sea level. Lampung, as a province that has an ecosystem of regional coast, can be estimated to submerge. Flood modelling can be done to know the estimated flood range. The model of the flooded region is taken from Shuttle Radar Topography Mission (SRTM) data, which is normalized to get the visualisation of Digital Elevation Model (DEM). The purpose of this research is to know the estimated region of provincial coast of Lampung that is going to be flooded because of the raising of sea surface. This research uses flood inundation technique that uses one of the GIS mapping software. The result can be used as consideration to achieve policy in the building of regional coast. The regions that are flooded based on the scenario of the raising of two and three meter surface sea level are East Lampung Regency, West Lampung Regency, South Lampung Regency, Tanggamus Regency, Pesawaran Regency, and Bandar Lampung.</p> <p>Keywords : Increase On The Sea Surface, Flood Inundation, Flood Range</p>
<p><b>Yu-Zong Huang</b> GICICRST1710061</p>	<p><b>Three-Dimensional Reconstruction and 3D Printing of Kidney from Computer Tomography</b></p> <p><b>Jun-Wei Hsieh</b> College of Electrical Engineering and Computer Science National Taiwan Ocean University Computer Science and Engineering Keelung, Taiwan</p> <p><b>Yu-Zong Huang</b> College of Electrical Engineering and Computer Science National Taiwan Ocean University Computer Science and Engineering Keelung, Taiwan</p> <p><b>Abstract</b></p>

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	<p>Through observing computerized tomography image, doctors can judge the patient's kidney health. Because the image of Computed Tomography is a two-dimensional image, the doctors have to build the entire three-dimensional model in their imagination. This situation increases the difficulty of analyzing the disease, so the goal of this paper is how to use two-dimensional computer tomography images to reconstruct three-dimensional model, and print it by 3d printer. Smoothing and threshold processing the computer tomography images to catch contour and vessels of kidney; combining cross-section images and longitudinal section images of the computer tomography by their features; and using Spline method to fill the gap between the layers of data points. Finally, we build a 3D model and dig out vessels by our method in STL file format.</p> <p><b>Keywords</b>—Computer tomography, 3D-reconstruction, image process, spline</p>
 <p><b>AnasTukurBalarabe</b> GICICRST1710063</p>	<p><b>An Investigation Into The Ber And Ser Performances Of M-AryQam And M-AryPsk</b></p> <p><b>AnasTukurBalarabe</b> Computer ScienceSokoto State University</p> <p><b>ShehuMalami S/Tudu</b> Computer ScienceSokoto State University</p> <p><b>ZahriyaLawal Hassan</b> Computer ScienceSokoto State University</p> <p><b>Abstract:</b></p> <p><b>In The Last Few Decades Data Communication Has Recorded Massive Improvements. These Improvements Were Brought About By Advancement In Digital Circuitry, Its Availability And Constant Reduction In Cost. Before The Advancement Of Digital Communication Technology, Analog Communication Was The Dominant Means Of Transmitting Data. As The Global Population Expands, The Need To Transfer Data Over Long Distances Increases, But The Major Problem With Analog Communication Is That The Quality Of Signals Is Lost With Distance. In Addition, It Has Minimal Security And Does Not Support Data Integration. Digital Communications Provided Alternative To Analog Communication. Today, Digital Modulations Have Become Part And Parcel Of The Present And Future Communication Technologies. In View Of Their Importance As The Foundation For Digital Communication, It Is Imperative To Study And Understand The Characteristics Of These Schemes. Despite The Advantages Of These Schemes, The Traditional Channel Impairments, Such As Noise Can Affect Their Performance. Moreover, Data Transmission Is Mostly Done Over Wireless Channel, Which Is Very Unpredictable, And Is Characterised By Multipath Fading Effects. This Research Presented A Study Of Digital Modulation Schemes Using Matlab/Simulink. Bit Error Rate (Ber) Performance Of The Selected Schemes Were Measured And Compared In Matlab/Simulink Symbol Error Rate (Ser) Performance Of The Schemes Was Also Measured And Compared In Using Matlab/Simulink. The Result Revealed That Qam Has Best Ber And Ser Performance.</b></p> <p><b>Keywords:</b>Ber, Ser, Qam, Psk, Qpsk, Awgn, Snr, Ebno.</p>



FarhadHassaniMehraban  
GICICRST1710066

**Perishable Inventory Management through Identification Technology:  
The Applications of RFID and TTI Technology in Food Supply Chain**

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**Abstract**

While, the world produces more than 4 billion metric tons of food annually, one third of the total production gets wasted at the same time due to unoptimised storage, distribution and movement (i.e. improper temperature control throughout supply chain). Here, not only grower, farmer, retailers, manufacturer, distributor or Government but also municipalities are suffered by food loss as a major contributor to landfill wastage.

Hence, with the increasing concerns about food management, attention is placed on the monitoring of different potential risk factors for food handling. In short, this research demonstrates how applications of Radio Frequency Identification (RFID) could enable real time data collection, as a promising solution to perishable inventory management. However, as many scholars concluded that RFID alone could not measure the safety and quality of the food, in this paper, the technology of time temperature integrators (TTI) is included in the model to ensure the quality of temperature sensitive goods along their entire lifespan will be watched likewise.

Based on the proposed model, a decision support system (DSS) considered for a supply chain includes one retailer and a number of suppliers with two main goals of reducing retailing costs (e.g transportation, ordering and purchasing) and increasing suppliers reliability. Since the goal is to explain a mixed integer programming of bi-objective problem, the model is solved with exact solution method for small scales and in the end sensitivity analysis on key parameters of the study is implemented. According to the demonstrated outcomes, a pilot run of the system revealed that the performance of the receiving operation assignment and food quality assurance activities improved significantly.

**Keywords:** RFID, TTI, perishable, inventory management, mixed integer programming

Atiqah Aziz  
GICICRST1710068

**Efficacy of Methanolic Crude Extracts of Pseuduvaria Macrophylla on the  
Human Breast Cancer Cell Line (MCF7) - effect of concentration**

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**Abstract**

Preliminary study on the anti-oxidant and anti-cancer activities has been done on different parts of Pseuduvariamacrophylla (Annonaceae) in

	<p>methanolic and hexanolic crude extracts. This species is a Malaysian local plant naturally found at montane forest area and traditionally has been used to treat clinical symptoms. Previous study demonstrated promising anti-cancer potential in methanolic crude extracts using single concentration especially on breast cancer cells under 24 hours treatment. The present study investigate the efficacy concentration of bark and leaf methanolic extract on MCF-7 breast cancer cell line under 48 and 72 hours of treatment. The method employed was MTT assay to determine the half maximal inhibitory concentration (IC<sub>50</sub>) of both extracts at different concentration under 48 &amp; 72 hours of treatment. The IC<sub>50</sub> was obtained by plotting the coccentration (µg/mL) versus the percentage of inhibition of each extracts. The MCF7 cell line had decrease response to both extracts within 72 hours but showing promising cytotoxicity within 48 hours especially for leaf methanolic extracts at concentration of 140 µg/mL to inhibit 50% of tested cancer cell line, meanwhile the medium inhibitory concentration (IC<sub>50</sub>) of bark methanolic extract on MCF7 cells was 160 µg/mL. The results showed that the the IC<sub>50</sub> of leaf methanolic extracts was comparably lower than the IC<sub>50</sub> of bark methanolic extracts. In fact, leaf methanolic extracts demonstrated better efficacy on the MCF7 after been treated within 48 hours compared to 72 hours. In other words, leaf methanolic extract more potent than bark methanolic extracts.</p> <p><b>Keywords</b> Annonaceae, MTT assay, IC<sub>50</sub>, MCF-7 cell line</p>
<p>ArzuAkgul GICICRST1710069</p>	<p><b>On Quasi Subordinations For Analytic And Bi-Univalent Function Class</b></p> <p>Arzu Akgül Department of Mathematics, Faculty of Arts and Science, Kocaeli University, Kocaeli, Turkey</p> <p><b>Abstract</b> In this study, certain subclasses of analytic bi-univalent functions are defined and established bounds for the coefficients for this subclass. Also several related classes are considered and connections to earlier known results are made.</p> <p><b>Keywords:</b> Bi-univalent functions, bi-starlike functions, coefficient estimates</p>
 <p>SehrishIftikhar GICICRST1710070</p>	<p><b>Baseline sensitivities of alternariasolani isolates from potato to penthiopyrad and novel succinate dehydrogenase inhibitors</b></p> <p>SehrishIftikhar Institute of Agricultural Sciences, University of the Punjab, Lahore, Pakistan</p> <p>Ahmad Ali Shahid Center of Excellence in Molecular Biology, University of the Punjab, Lahore, Pakistan</p> <p>Kiran Nawaz Institute of Agricultural Sciences, University of the Punjab, Lahore, Pakistan</p> <p>and Waheed Anwar Institute of Agricultural Sciences, University of the Punjab, Lahore, Pakistan</p> <p><b>Abstract</b> Potato (<i>Solanum tuberosum</i> L.) is the most idely grown solanaceous crop in the world. Early blight is one of the most prevalent foliar diseases of potato caused by <i>Alternariasolani</i>. In present study, we assessed the baseline sensitivities of <i>A. solani</i> isolates to penthiopyrad and novel SDHIs viz., C1-</p>

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	<p><b>C12. The fungicide concentration that effectively inhibits mycelial growth by 50% relative to the control (EC50) for 25 isolates showed that the majority of the isolates were sensitive to all the new succinate dehydrogenase inhibitors (SDHIs). Analysis of EC50 values for penthiopyrad showed that 19 isolates were sensitive and 6 isolates had reduced sensitivity to penthiopyrad in mycelial growth assay. In contrast, all the isolates were sensitive to newly designed SDHIs. The EC50 values were also established for spore germination assay. Analysis of EC50 values of spore germination assay for penthiopyrad showed that 18 isolates were sensitive and 7 isolates had moderate resistance against penthiopyrad. While all the isolates were sensitive to twelve novel SDHIs in spore germination assay. The discrepancies of sensitivities of <i>A. solani</i> isolates to penthiopyrad and SDHIs propose that their binding confirmation in complex II may differ slightly. The data presented in this study will help the potato growers in regions with prevalent penthiopyrad resistance to avoid fungicides against which resistance is reported and in selecting SDHI candidates that remain efficacious.</b></p> <p><b>Keywords: Complex II, fungicide resistance, SDHI, early blight, potato</b></p>
<p><b>Mahtuflkhsan GICICRST1710071</b></p>	<p><b>Development of Mahogany Leaf (<i>Swieteniamacrophylla</i>) as Source of Green Battery to Help Rehabilitation in Bukit Suligi Educational Forest</b></p> <p><b>Mahtuflkhsan</b> Department of Forest Management, Faculty of Forestry, Bogor Agricultural University, Indonesia</p> <p><b>Abstract</b> Nowdays, major problem faced by Bukit Suligi Educational Forest is deforestation in which around 70% FTC (Forest Training Facility) has been burned, and palm oil is illegally planted surrounding the area. From burned area, rehabilitation is the real choice to preserve Bukit Suligi Educational Forest. According to the problem, a study needs to be done to prove that there are trees in the forest that can produce an alternative energy for the community. This is what will change the perception of people who think the value of forest is lower than palm oil plantation. Utilization of mahogany leaf (<i>Swieteniamacrophylla</i>) as one of alternative sources that can generate electricity based on the characteristics of mahogany leaf produces a bitter taste in the tongue entirely. This research is done by getting mahogany leaf in Bukit Suligi Educational Forest and making green battery model from mahogany leaf extract in Forestry Vocational School of Pekanbaru. Based on the results, 720 ml green battery model can generate electricity of 3,87 volts. Therefore, mahogany leaf extract is potential for a new alternative electrical energy. From this research, it can be expected that community around the forest will take an initiative to restore degraded forests with mahogany plant.</p> <p><b>Keywords: mahogany leaf, green battery, rehabilitation.</b></p>
<p><b>SyedMozafarMirvakili GICICRST1710072</b></p>	<p><b>Identifying the Criteria of Architectural Design of House with approach of Promoting Children's Creativity</b></p> <p><b>SyedMozafarMirvakili</b> Ph.D student in Department of art and architecture, south tehran branch, Islamic Azad University, Tehran, Iran</p> <p><b>Abstract</b> Children are considered as the capital and saving of every society, having the most influential role in the growth of every country. Paying attention to the children and their needs in the house such as education, raring, growth and entertainment may have a pivotal role in their personal life. In this article, it was tried to analyze and perceive a precise understanding of influential</p>

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	<p>factors on the issue such as familiarity with new theories of creativity, understanding total aspects of house users and interactive role of physical environment of house in progress or suppression of children's creativity and so on. This study having considered organization and analysis of data with help of descriptive and analytical methods of tried to offer an appropriate solution for designing a successful and effective house. Keywords: house's physical characteristics, creativity, children</p>
<p>Sadia BinteRezaq GICICRST1710073</p>	<p>Climate Adaptive Technology for Agriculture A Solution for Coastal Districts of Bangladesh</p> <p>Sadia BinteRezaq Independent Researcher/Environmental PR actioner House 227, lane 3 Baridhara DOHS, Dhaka</p> <p>Abstract:</p> <p>Bangladesh is one of the most vulnerable countries due to climate change in the world. In each year, several climate related hazards impacts both the economy and the physical setting of the country. Among them, cyclone and storm surge, drought, flood and erratic rainfall, heat and cold wave are at extreme. These hazards among other impacts also affect the agriculture and food security of the country. As the hazard situation is eminent and predicted to increase in the near future there is a growing need for adaptive technologies. The main objective of the project is to develop a policy advocacy strategy regarding climate change adaptation (CCA) technologies based on an extensive policy and relevant literature review, consultation and field observation. In order to accomplish this goal the study is designed to find out the current climatic hazard scenarios, its impact on agriculture and food security and the existing adaptation practices to withstand the impact. With the help of this information the analysis, then proposes several possible adaptive technologies.</p> <p>There are several adaptation options are being currently in practice to withstand the climate change impact on agriculture. Different government and non-government organization are providing financial and technical support to the local farmers in order to increase their adaptive chances. However, there are is a need for more advanced adaptation practices and institutional support.</p> <p>Although local people considering several options to cope with climate change challenges, but most of those are not institutionalized and effective for shorter periods. At first there is a need for national level adaptation advocacy which will include national level risk mapping, weather monitoring and early warning system, monitoring and regulation of the market and development of a suitable and sustainable variety of crops. Second, several local level government adaptation are also proposed which include proper drainage and irrigation system, excavation of khals and prevent illegal trading of seeds. Finally, a local community level option is proposed which includes educating farmers so that they can adapt with the sustainable varieties and prepare themselves better during emergencies, facilitate the use of indigenous techniques and encourage them for a diversified livelihood.</p> <p>Keywords: climate change, agriculture, development, adaptation</p>
<p>Sri Mulyati GICICRST1710074</p>	<p>Removal of Cd<sup>2+</sup> And Pb<sup>2+</sup> Heavy Metals in Water By Using Adsorption-Ultrafiltration Hybrid Process</p> <p>Sri Mulyati Department of Chemical Engineering, University of Syiah Kuala, Indonesia</p> <p>Syawaliah</p>

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	<p>Doctoral School of Engineering Science, University of Syiah Kuala, Indonesia</p> <p><b>Mukramah</b> Doctoral School of Engineering Science, University of Syiah Kuala, Indonesia</p> <p><b>NasulArahman</b> Department of Chemical Engineering, University of Syiah Kuala, Indonesia</p> <p><b>Abstract</b> Pollution caused by heavy metals is a serious problem for the environment. Cadmium and Lead are heavy metals that are highly toxic to living beings. These metals are non-biodegradable and remain in the environment for a long period of time. The removal process of these heavy metals with adsorption using Aceh natural zeolite followed by the membrane filtration has been conducted. Operating parameters such as contact time, sample pH and adsorbent dose found to affect the removal efficiency in the adsorption process. PES membrane which prepared by phase inversion technique was used to eliminate the residual heavy metals remained in the effluent of adsorption process. The final concentration after removal with both processes was 0.21 mg/L and 0.242 mg/L for Cd<sup>2+</sup> and Pb<sup>2+</sup>, respectively. Although the concentration are still above the permitted threshold, which is no more than 0.005 mgL<sup>-1</sup> for Cd<sup>2+</sup> and 0.01 mgL<sup>-1</sup> at maximum for Pb<sup>2+</sup>, this combination can however still be an alternativethat can be employed to remove heavy metals in water. Keywords: Adsorption, ultrafiltration, hybrid process, cadmium, lead, water purification</p>
<p><b>Mukramah</b> GICICRST1710076</p>	<p><b>The Morphology of Poly(ether sulfone) Membrane Fabricated from Different Polymer Solution</b></p> <p><b>NasulArahman</b> Department of Chemical Engineering, University of Syiah Kuala, Banda Aceh, Indonesia</p> <p><b>TeukuMaimun</b> Department of Chemical Engineering, University of Syiah Kuala, Banda Aceh, Indonesia</p> <p><b>Mukramah</b> Doctoral School of Engineering Science, University of Syiah Kuala, Banda Aceh, Indonesia</p> <p><b>Abstract</b> Membrane technology have been widely developed and applied in various industries, particularly in the separation technology. This technology has many advantages such as energy saving, high product purity, low operation cost, save in environment, and simple in application. Researcher is now developing the membrane module with the best quality in application for separation industries. The objective of this research is to investigate the effect of three difference solvent such as (N-Methylpyrrolidone, Dimethylformamide, Dimethyl sulfoxide) on the morphology of polyether sulfone membrane. The effect of addition of membrane pore forming agent (nano carbon) was also studied on the structure and filtration performance of resulted membrane. The morphology of fabricated membrane was observed by scanning electron microscopy (SEM). The filtration performance of membrane was designed by single module of dead-end filtration method. The different types of solvent affect on the membrane morphology, where the</p>

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	<p>membrane has a finger from the longest to the shortest row is PES/DMSO, PES/DMF, and PES/NMP. The addition of nano carbon in the polymer solution brought about the increases of water permeability of the membrane. The results showed that, the PES/DMSO+Nano carbon membrane system gave the highest water permeability (<math>L_p= 14,7565 \text{ L/m}^2 \cdot \text{hour} \cdot \text{bar}</math>).</p> <p>Keywords: Membrane structure, pore forming agent, poly(ether sulfone), nano carbon</p>
<p>By Denis Can Teoman GICICRST1710077</p>	<p>The influence of climate change, water and energy in ethnic issues: The case of Mille Lacs Lake in Aitkin County, Minnesota.</p> <p>By Denis Can Teoman Rutgers University, Edward J.Bloustein School of Planning and Public Policy, New Jersey, USA</p> <p>Abstract</p> <p>Aitkin County is a very sparsely populated county, even though it is only a 2-hour drive from the Twin Cities. Aitkin County faces similar issues with other rural counties. The issues that Aitkin County faces might not be visible by only looking at the demographics and economic statistics. The county faces issues regarding the relationship between White Americans and Native American Tribes. The following chapters on Climate Change, Water and Energy will analyze potential consequences of these three factors on the issues between White American and Native Americans and also the implications of climate change and water issues on the economy in Aitkin County. Aitkin County does not have a diversified economy, therefore negative impacts on tourism and recreation can have significant impacts on the economic status of Aitkin County residents. The case Minnesota v. Mille Lacs Band of Chippewa Indians reflects this conflict very clearly. In this case, the Chippewa Indians claimed that they still had certain fishing; hunting and gathering rights on lands that were ceded to the Federal Government in 1837. This paper will further analyze this case and examine its implication for further land use issues in Northern America. This paper also shows, that it is very difficult</p> <p>Keywords: Climate change, Native American, racial tension, rural communities, sustainability</p>
<p>Ralph Evander Idul GICICRST1710078</p>	<p>What's Right And What's Not: An Action Research On Improper Usage Of Punctuation Marks In Constructing AnEssay</p> <p>Ralph Evander Idul College of Teacher Education ,University of Mindanao,Tagum City, Philippines</p> <p>Abstract</p> <p>In four macro skills in teaching of that is writing however, it has a problem due to grammar and structure of a written output. The aim of this qualitative case study is to identify those factors that caused student who has a problem in improper using of punctuation marks in constructing an essay and would discuss further on how to cope up with this kind of specific problem in writing. The researcher used purposive sampling method in order to gather some information from the individual which is related to the researcher. This research aims to identify the different problems that caused the improper using of punctuation marks in constructing an essay. These following factors contributed a ways on how the learners were able to cope up this problem. The result of the study showed that the learners who has a problem in improper using of punctuation marks are caused by lack of knowledge, lack of stimulus and lack of interest. The identified problem proves that a learner</p>

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	<p>who has a good performance in grammar, it doesn't mean you're good enough in writing. The factors that are being mentioned above, the researcher recommends that the students should attend a seminar in line with writing or workshop that works with your writing skill.</p> <p><b>Keywords: Writing, Punctuation, Marks, Learner, Language, Grammar</b></p>
<p style="text-align: center;"><b>Karlo C. Abenoja</b>  <b>GICICRST1710079</b></p>	<p style="text-align: center;"><b>Blurred Lines: An Action Research on the Problems Encountered by Visually Impaired Learners in Reading</b></p> <p style="text-align: center;"><b>Karlo C. Abenoja</b>  <b>University of Mindanao – Tagum College, Mabini Street, Tagum City</b></p> <p style="text-align: center;"><b>Abstract</b></p> <p>The purpose of this study was to explore reading difficulties and barriers faced by students with visual impairment. The researcher used qualitative study particularly case study which a self-developed and validated questionnaire was employed for data collection from a student with visual impairment. Major findings revealed that students with visual impairment were encountering problems in blurred vision, reading sickness, and print size. To address that problem, different coping mechanisms were used by the students in order to have a better learning in the text and reduced the problems that the learner that have encountered in reading. Based on the data gathered the use of short range, wearing eye glasses, and books with large print were used as coping mechanisms in learning that can help them to answer the problems that they have encountered in understanding the language. The outcomes of the study contribute new information to the field of education and to the education of blind and visually impaired individuals by providing educators with pragmatic tools and strategies to use in their classrooms and schools that will facilitate learning by students with visual impairments. The study recommended that Special Education Teachers should provide material to students with visual impairment.</p> <p><b>Keywords: Barriers, reading difficulties, visual impairment, special education teacher, mechanism</b></p>
<p style="text-align: center;"><b>Shaina D. Galvez</b>  <b>GICICRST1710080</b></p>	<p style="text-align: center;"><b>Oral Reading Fluency: An Action Research Of A Grade-8 English Learner</b></p> <p style="text-align: center;"><b>Shaina D. Galvez</b>  <b>Student, University of Mindanao, Tagum College Mabini Street, Tagum City</b></p> <p style="text-align: center;"><b>Abstract</b></p> <p>The study sought to identify the causes of reading difficulty particularly the oral reading fluency of the learner. It employed the qualitative case study which encompasses discovery to help the researcher to investigate the social phenomenon experienced by the learner. The participant shares the same house with the researcher which assures the availability and confidentiality of the information gathered. The researcher focused on the problems affecting the learner's oral reading fluency. It was found out that the learner's lack of motivation, lack of phonemic awareness and lack of self-study are the identified problems hindering the oral reading fluency of a participant. Nonetheless, the learner finds different ways to overcome the specific difficulty. The result indicated the different ways experienced by the learner, by peer tutoring and by joining co-curricular activities which help the learner to enhance the oral reading fluency. The identified problems prove that they exist not only in this locality but also in other community; however provided solutions for the dilemma were solely experienced by the participant. The research recommends that schools should make resources available to buy supplementary reading materials for use by the learner, and that teachers encourage the learner to borrow books from libraries to practice reading independently.</p>

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<p><b>FiljayLeanith M. Montebon</b> GICICRST1710081</p>	<p><b>Keywords: Reading Difficulty, Oral Reading Fluency, Problems, Solution</b> <b>An Action Research On The Factors Of Poor Reading Comprehension</b></p> <p><b>FiljayLeanith M. Montebon</b> Student, University of Mindanao, Tagum College Mabini Street, Tagum City</p> <p><b>Abstract</b> This study was conducted to the purpose of determining the factors of difficulty in reading comprehension. It employed a qualitative method research particularly a case study design to provide concrete information that is needed for this study. The researcher used a purposive sampling method to gather information from a participant. This study aims to identify the factors as to why learners experience difficulty in comprehending a text. With the information gathered from the participant, it was revealed that learners experienced such dilemma because of lack of motivation, noisy classrooms and lack of vocabulary. The factors mentioned above were overcome through the participant's point of view. The result implied that learners will be able to cope up poor reading comprehension through rereading strategy, staying in quiet learning environment and utilizing the dictionary. The identified problem shows that it exist in the real-life classroom setting where the participant experienced it. This study recommends that learners dealing with this problem should undergo effective interventions for improving reading comprehension.</p> <p><b>Keywords: Comprehension, Rereading Strategy, Decoding, Motivation, Skill</b></p>
<p><b>HilizzaAwalinaZulfa</b> GICICRST1710082</p>	<p><b>The Diversity Of The Fish Species in Porok And Pok Tunggal Beach</b> <b>Gunungkidul, Special Region Of Yogyakarta</b></p> <p><b>HilizzaAwalinaZulfa</b> Faculty Of Biology, Universitas Gadjah Mada, Yogyakarta, Indonesia</p> <p><b>Wildan Ahmad Nabil</b> Faculty Of Biology, Universitas Gadjah Mada, Yogyakarta, Indonesia</p> <p><b>Firda Nabila</b> Faculty Of Biology, Universitas Gadjah Mada, Yogyakarta, Indonesia</p> <p><b>NurFadlyIkram</b> Faculty Of Biology, Universitas Gadjah Mada, Yogyakarta, Indonesia</p> <p><b>Muhammad ZuchriZayda</b> Faculty Of Biology, Universitas Gadjah Mada, Yogyakarta, Indonesia</p> <p><b>AldrinaWidyaLarasati</b> Faculty Of Biology, Universitas Gadjah Mada, Yogyakarta, Indonesia</p> <p><b>Ida AsyariUtomo.</b> Faculty Of Biology, Universitas Gadjah Mada, Yogyakarta, Indonesia</p> <p><b>Abstract</b> Indonesia coastal and marine areas, including the southern coast of the Special Region of Yogyakarta (DIY) has potential and high biodiversity. As one of the natural resources that can be renewed, the potential of the fish in the territorial waters of Gunungkidul, Yogyakarta needs attention. Porok and Pok Tunggal beaches are one of the beaches that are being developed into a tourist attraction in Gunungkidul, Yogyakarta. Both of these beaches are rocky beaches that covered by seagrass and algae, there are many pools so</p>

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	<p>the fish can be found while the fish caught in these pools. More pools in Porok than in Pok Tunggal beaches. The aim of this research is to know the diversity of fish species in the intertidal zone of Porok and Pok Tunggal beaches as a support for the conservation of the biodiversity in Indonesia. This research utilizes Purposive Sampling method through 500 meters. That fish species derived then preserved on 70% alcohol, took the photos, and identification. Six species of fishes were found at Porok beach; <i>Abudefdufvaigiensis</i>, <i>Bathygobiusfuscus</i>, <i>Blenniellagibbifrons</i>, <i>Blenniellaperiophthalmus</i>, <i>Halioceresargus</i>, and <i>Moolgardaseheli</i>, while five species of fishes were found at Pok Tunggal beach; <i>Abudefdufvaigiensis</i>, <i>Blenniellagibbifrons</i>, <i>Blenniellaperiophthalmus</i>, <i>Grammistessexlineatus</i>, and <i>Istiblenniuslineatus</i>. These were of fish species that found at both research beaches; <i>Blenniellagibbifrons</i>, <i>Blenniellaperiophthalmus</i> and <i>Abudefdufvaigiensis</i>. The conclusions are the highest diversity of fish species in Porok beach and the lowest diversity of fish species in Pok Tunggal beach. Keywords: Diversity, Fish, Porok, Pok Tunggal, Gunungkidul</p>
<p>Sapto Putro GICICRST1710083</p>	<p>Impact Of Ozonated Water Treatment On Growth Rate Of Srikandi Tilapia (<i>Oreochromis Aureus X Niloticus</i>)</p> <p>Sapto Putro Center of Marine Ecology and Biomonitoring for Sustainable Aquaculture (Ce-MEBSA), Integrated Laboratory, Diponegoro University, Tembalang Campus, Semarang, Central Java, Indonesia</p> <p>Devi Adityarini Department of Biology, Faculty of Sciences and Mathematics, Diponegoro University, Tembalang, Semarang, Indonesia</p> <p>R.T. Chiang Energy Engineering Service, San Jose, California, USA</p> <p>Abstract The impact of zonate water treatment on Srikandi tilapia was studied using the ozone produced by ozone reactor with an airflow velocity of 1.5 L / min at a voltage of 10 kV, which leads to that the DO content increases from 0.99 to 11.11 mg / L. The ozonized water treatment was divided into five groups based on the length of treatment period: I) 5 minutes, II) 10 minutes, III) 15 minutes, IV) 20 minutes and V) 0 minute (Reference case). The fish growth rate was measured in terms of length and weight per seven days for 30 days. Our results indicate that the fastest growth rate of Srikandi tilapia occurs at the group III (Its length growth was 7.82 cm and its weight growth was 7.72 gin 30 days.), that the fastest Specific Growth Rate (SGR) occurs at the group II (1.281%), and that the fastest Relative Growth Rate (RGR) of occurs at the group III (4.538%). These results should be very useful to increase the production rate of Srikandi tilapia farming. Keywords : Ozonation, Srikandi, Tilapia, Specific Growth Rate (SGR), and Relative Growth Rate (RGR)</p>
<p>Wahyu Sri Mulyani GICICRST1710084</p>	<p>Decision Support System Of Nutrition Status And Nutritional Assume Using Tsukamoto And Topsis Methods</p> <p>Wahyu Sri Mulyani Computer Science Post Graduate Program, Gajah Mada University, Yogyakarta, Indonesia</p> <p>Azhari Computer Science Post Graduate Program, Gajah Mada University,</p>

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	<p style="text-align: center;">Yogyakarta, Indonesia</p> <p style="text-align: center;"><b>Abstract</b></p> <p>A good nutrient intake in toddlers will play an important role in achieving optimal body growth. It has an effect on the growth of the brain that determines one's intelligence. Intake of nutrients in infants needs to be controlled to maintain growth and prevent the occurrence of metabolic diseases. The importance to know the appropriate dosage of nutrition for her toddler makes the author base to do research of decision support system of nutritional needs in toddlers.</p> <p>The algorithm used in system development is Tsukamoto algorithm for supporting the decision of nutritional status and Topsis algorithm for support of nutritional intake of toddlers. The results showed that method of Topsis 70% data obtained from anthropometry has appropriate nutritional status, 30% of the other data have a shift to the left of anthropometry table. In addition Topsis method can be applied in decision support of proper nutrition selection; it is seen from the input weight given with given output. The system can run normally in smartphones with android operating system.</p> <p><b>Keywords:</b> Under-five Nutritional Status, Infant Nutrition Intake, Tsukamoto, Topsis, Decision Support System</p>
<p style="text-align: center;"><b>Mohini M Sain</b> GICICRST1710065</p>	<p style="text-align: center;"><b>Innovation and Research Commercialization : A North American Perspective</b></p> <p style="text-align: center;"><b>Mohini M Sain</b> Founding Director and Professor, Centre for Bio composites and Bioprocessing University of Toronto</p> <p style="text-align: center;"><b>Abstract</b></p> <p>Paper will broadly present a North American commercialization platform of university based research and their relation to IP ownership, spin-off companies and seed capital investment. There is a perception in public domain that universities are primarily designed for education and dissemination of research knowledge in the form of peer reviewed publications. This perceived agenda became a launching platform for many governments and other funding organization to focus on promoting research commercialization. When North America led the way by spearheading a number of innovative funding program to promote university led research to commercialization, other countries follow suit. One of the most recent ones is the China's new talent search under innovation and commercialization protocol.</p> <p>This paper will discuss the IP protocol of university based research, best practices in IP protection, ownership and research based innovation commercialization. Paper will also present case studies highlighting successes and challenges associated with the programs and recommend a global platform for investment to overcome of the shortcoming of the existing programs.</p>
	<p style="text-align: center;"><b>Living Tower Construction as Fish Apartment with Glass Powder/PET Composite Basic Technology</b></p> <p style="text-align: center;"><b>Mudzakkir Dioktyanto</b> Department of Materials Engineering, Faculty of Industrial Technology, Institute Teknologi Sepuluh Nopember (ITS), Surabaya, Indonesia</p> <p style="text-align: center;"><b>Yordan Fanani</b> Department of Materials Engineering, Faculty of Industrial Technology, Institute Teknologi Sepuluh Nopember (ITS), Surabaya, Indonesia</p>

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**Abstract**

Indonesia is the country with the 4th largest population in the world that is 225 million that every day produce waste both organic and inorganic. Total waste produced by Indonesia each year is 1.29 million tons, making Indonesia the second largest contributor of waste in the world. Inorganic waste can not decompose easily in the wild, plastic bottles just take 50-100 years to decompose while the glass bottle itself takes 1 million years. The duration of this decomposition process causes waste to contaminate only soil, water, or air if not treated properly. In addition, Indonesia has an area of coral reefs reaching 50,875 square kilometers, or about 18% of the total world. In coral reefs live fish populations and other marine biota recorded 2,200 or 31% species of reef fish in the world are in Indonesian waters. However, illegal fishing and water pollution account for about 70% of dead and damaged coral reefs. As a result, species of marine biota that exist increasingly extinct. These two things are a big problem and should be resolved soon. The Tower of Life as a fish apartment made from glass and plastic bottle waste can overcome the amount of garbage that accumulates and provides a home for the existing marine fish population. The Tower of Life design has a unique shape, in which this life tower has 4 structural building poles around it made from glass powder/ PET composite technology arranged so as to suit marine conditions, and has a main pole as a gathering place for fish made from natural fibers As a place to attach fish eggs. Making Tower of Life is able to reduce the waste of glass bottles, and plastic bottles as much as 6.6 kg for every 1 unit produced. Moreover the Tower of Life can preserve the marine ecosystem by replacing the function of coral reefs so as to increase fish populations.

**Keywords:** Composite, Glass powder, Living Tower, PET



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**Influence of Silver Nanoparticles Newcastle Disease Virus Replication in Embrocated Chicken Eggs**

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**Abstract:**

**This research was conducted to find out the influence of silver nanoparticles solution inhibiting replication Newcastle Disease Virus in embrocated chicken eggs (9 days old) using two different procedures (procedure 1: mixing silver nanoparticles with ND virus pre inoculation until 2 hours and procedure 2: embrocated chicken eggs were infected ND virus and then giving silver nanoparticles treatment after 48 hours incubation period). Silver nanoparticles was made by chemical reduction using silver nitrate as precursor and tri sodium sitar as redactor and stabilization. The doses silver nanoparticles given in embrocated chicken eggs in all procedures were 0 ppm (control), 10 ppm, 20 ppm, and 50 ppm. The result showed there was significant different in the first procedure (control, 10 ppm, 20 ppm and 50 ppm) but in the second procedure only (control, 10 ppm and 20 ppm) had significant different. Both of these procedures showed similar effectiveness inhibit virus replication.**

**Key words: Silver nanoparticles, Newcastle Disease Virus, HA titer**

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