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**Title:**

Immobilization Efficiency of *Lactobacillus plantarum* ATCC8014 on Palm Kernel Cake Toward Different Microbial Volume and Fiber Particle Size

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**Abstract:**

The effectiveness of probiotic adaptation in delivering higher benefits effects toward users can be measured by their efficiency during the immobilization process. The immobilization process that combines between probiotic strains and its matrix that act as support system are highly highlighted area as the best combination during immobilization resulting in higher efficiency. In this research, the study was conducted to determine the ability of different microbial volumes (7.5, 12.5, and 18.75 ml) and particle size of fiber (<150, 150–250, and 250–355 µm), in effecting the immobilization efficiency between *Lactobacillus plantarum* ATCC8014 and palm kernel cake (PKC). The immobilization efficiency and probiotic viability of 96 ± 3.21% and 9.47 ± 1.00 log CFU/ml, respectively, was obtained by the volume of 12.5 ml. For 7.5 ml and 18.75 ml, the results obtained were 95 ± 4.72%, and 9.26 ± 1.09 log CFU/ml, and 97 ± 0.57%, and 9.34 ± 0.52 log CFU/ml, respectively. Increment of volume used has caused the beads produced to be inconsistent. The particle size of 150–250 µm, with immobilization efficiency and probiotic viability of 99 ± 1.73%, 9.14 ± 0.22 log CFU/ml, respectively. For <150 µm and 250–355 µm, the results obtained were 98 ± 2.31% and 9.09 ± 0.23 log CFU/ml, respectively and 9.10 ± 0.12 log CFU/ml, respectively. High immobilization efficiency range (95–99%) was obtained by the samples. High immobilization efficiency would further impact the application of immobilized microbe in many beneficial purposes and processes.

## 2

**Title:**

Impact of Infill Design on Strength for ABS Material Samples Using Fused Deposition Modelling

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**Abstract:**

The aim of this research is to study the impact of infill design on product strength. To achieve the aim of the research, the objective of this research is to identify and select several types of infill pattern in printing a product, and to find the best parameter in printing a product for this study. The research experiment was designed using the Taguchi method L9 orthogonal array to find the best parameter on printing a strong product. The factors that were selected by referring to journals and articles to print the specimen in this research are infill pattern, infill density, and extrusion temperature. The specimen was printed and underwent impact test to find the specimen that can absorb highest impact energy to determine the best combination of parameter for this research. Minitab software was used to determine the signal to noise (S/N) ratio, main effect plot, and analysis of variance (ANOVA). S/N ratio analysis shows that the infill pattern of grid, infill density of 80%, and extrusion temperature of 240 °C is the best parameter of printing a strong product. This research concludes that infill design did influence the strength of printed material using fused deposition modelling.

**Title:**

Internet of Things Adoption in Manufacturing: An Exploratory of Organizational Antecedents

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**Abstract:**

The Internet of Things (IoT) is one of the most recently emerging supply chain processes in the manufacturing industry. To receive the benefits of the IoT, the organization must be ready to adopt this new technology. Several studies have looked into the perspective of the IoT in the industrial sectors. However, IoT is still in its early stages of adoption across various industries, including manufacturing. Thus, this study aims to identify factors influencing the IoT adoption in the manufacturing industry. By using a systematic literature review on several databases incorporated with summative content analysis, we explore the important factors and propose the research model of IoT adoption for the Malaysian manufacturing industry. These articles will assist businesses in the manufacturing value chain operation in understanding the user experiences of the IoT adoption and will motivate the research community to conduct additional research in IoT adoption.

**Title:**

Is Technology Affecting the Way Our Minds Operate? Digital Psychology of Users in the Era of Digitalization

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**Abstract:**

In recent years, digital media has become pervasive in modern cultures. The number of internet users is at an all-time high, not just because of laptops and PCs, but also because of smartphone penetration, which makes it simpler and more accessible to people of all ages. Digital psychology has recently become an essential tool for organizations and scholars to better understand client psychological behaviour. The current study focuses on the literature on digital psychology since the advent of online goods buying and selling. It's tough to accept abrupt changes in one's manner of doing things. For this purpose, the Scopus database is selected to extract data on digital psychology. The keywords for this study used are digital psychology, and after a detailed screening process, the final of sixty articles is included in the review. In order to gather data on digital psychology, the Scopus database was used. The study keywords included "digital psychology", and the final sixty papers are included in the review following a thorough screening procedure. For data selection and rejection, the methodological element adheres to the PRISMA declaration from 2015. Year basis, journal base, and most referenced part are all discussed in the description section. The writers classify the data based on their results, settings, and processes. Digital environment, psychology, and behaviour are three key areas in which the literature is classified.

**Title:**

Machinery Effectiveness Assessment Study in Warehouse Operation

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**Abstract:**

This research is an assessment study about the effectiveness of machinery in warehouse operation at Armstrong Electronics Sdn Bhd. This research describes the usage of the software in the warehouse to improve the problem regarding inefficiency in warehousing operation of the company. The software that was used to conduct this research was the witness simulation software. The case study was conducted at Armstrong Electronics Sdn Bhd. In this study, the data collected from respondent will be consist of the effectiveness of machinery in their warehouse operation and the data that has been transferred to a software system in the witness simulation software. The interview was conducted with the executive logistics for data collection. Next, several improvement ideas were constructed to increase and improve the level and quality of service for their customer. These improvement ideas were recommended to be implemented for the warehouse operation in the company. In the conclusion, several suggestions have been made to improve the best of quality and recommendation for future research has also been included in the final part of this research.

**Title:**

Maize Plant Monitoring System Based on IoT Application

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**Abstract:**

Agriculture sectors, especially maize plant farming have been widely used in our country for decades due to revolution of agriculture technologies which evolved aggressively. Thus, the production of maize plants is continuously increased in recent years. In line with the current state of technology, the internet of things (IoT) is one of the pillars outlined in the industrial revolution (IR 4.0) which potentially could be used to enhance the quality and volume of corn's production. This technology can offer various improvements and minimize the labor's work and to make it easier for farmers to monitor their crops online besides it could increase the corn production in each season. Thus, the purpose of this study is to develop an automated system that can monitor and control the maize plant's essential needs using the IoT application. Parameters such as soil moisture, temperature, humidity, and the environmental issues are rigorously investigated to monitor the condition of the plant. For the prototype, hardware such as Arduino has been used as the main controller to monitor the condition of the plants and interfaced with sensors. The system is designed based on a real-time monitoring where the data sensed by the sensors will produce a feedback to the controller which is known as feedback control. The controller displays the data received from the sensors using a software known as the Blynk application that is available in smartphones. Besides, the system also enables automated features such as irrigation and roofing to protect the plants from an excessive humidity and water drop. From the hardware and software testing, it is found that the prototype operated smoothly for irrigation and roofing systems.

**Title:**

Mechanical and Microstructural Characterization of Electroless Deposition Nickel-Phosphorus on Carbon Steel

**Journal:**

Advanced Structured Materials, Volume 174, 2022.

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**Abstract:**

Pipelines in thermoelectric power plants run under extreme mechanical and chemical conditions that can result in catastrophic failure. Electroless nickel-phosphorus (Ni-P) coatings surpass other commercially available coatings in terms of corrosion resistance and hardness for power plant pipelines. Electroless coating deposition does not require any electricity for its operation and having a uniform coating. In the present work, Ni-P was successfully deposited on carbon steel using the electroless deposition method. Effect of coating parameters on microstructure evolution and mechanical properties were investigated by scanning electron microscope (SEM) and micro Vickers hardness test. The corrosion behavior was evaluated by hot corrosion test in Na<sub>2</sub>SO<sub>4</sub>. The results showed a noticeable improvement in the workability of the coated sample immersed in 80 °C temperature electroless deposition and 5.0 pH of Ni-P with a constant of speed, 200 rpm throughout the experiment. These findings confirm that Ni-P coating successfully coated on carbon steel, could significantly reduce the porosity percentage, increased the hardness, and lead to improvement in corrosion resistance of Ni-P coatings as compared to uncoated samples.

**Title:**

Numerical Investigation of Mixed Convection of Cu/Al<sub>2</sub>O<sub>3</sub>—Sodium CMC Nanofluids Past a Circular Cylinder

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**Abstract:**

Using several types of nanofluids, such as aluminium oxide (Al<sub>2</sub>O<sub>3</sub>) and copper, this study proposes to explore the heat and mass transfer phenomena through a cylinder. To demonstrate the flow, the viscoelastic nanofluid model is combined with the energy equation. The modified main equations with specific conditions were used in this work, and model of Tiwari and Das was used. The acquired findings are numerically computed using the Keller-box approach and graphically shown to investigate the physics of relevant flow parameters. In comparison to aluminium oxide, the highest nanofluid performance was reported at copper, which significantly improved thermal conductivity and heat transfer.

**Title:**

Performance of Graphene Oxide Doped Polyaniline Composite Electrodes for Energy Storage: Effects of In-Situ Synthesis

**Journal:**

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**Abstract:**

Two different synthesis processes, in-situ polymerization and ex-situ polymerization process, were implied to identify the impact of these processes on the properties of the graphene oxide (GO) doped conductive polyaniline (PANi)-based electrode materials. This study focused on the improvement of various properties of PANi/GO composite materials produced through the in-situ polymerization process instead of the ex-situ polymerization process. To compare the performance of electrochemical and physical properties PANi/GO electrode materials produced via in-situ and ex-situ polymerization process, several characterization techniques were used. Scanning electron microscopy (SEM), Fourier transform infrared spectroscopy (FTIR), and X-ray diffraction (XRD) were performed to observe structural properties. Cyclic voltammetry and galvanostatic Charge–Discharge analysis were conducted to investigate the electrochemical properties of electrodes. Specific capacitance of PANi/GO electrodes was found 63.6% higher for in-situ polymerization compared to the electrodes prepared using ex-situ polymerization process. This high performance was governed by the proper alignment of GO into polyaniline. In the in-situ polymerization process, the interaction of polyaniline is strong with the surface functional groups of GO sheets which results in a good physical mixture between polyaniline and GO particles. In-situ polymerization technique can be effective to develop polymer-based electrode materials for high performance supercapacitors.

**Title:**

Physical and Mechanical Properties of Waste Red-Gypsum Based Concrete Composites

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**Abstract:**

Red gypsum (RG) was used as a cement replacement material for brick in order to evaluate the performance of this waste material as a filler. A constant quantity of cement (10%) and w/c ratio of 0.45 was used in order to study the effect of replacement of sand by RG. The increase of compressive strength with replacement of sand by RG up to 25% and later showing a decreasing trend of compressive strength when further increase of replacement percentage was related to the particle size modification of the solid mix. Sieve analysis showed between 0 to 25% replacement, the percentage of fineness increases in the same grading zone. Within this region, the hardness value of the solid mix was altered, resulting in an increase in the compression and consolidation index. The increase in the compression and consolidation index is reflected from the thickness of the bricks produced from the solid mix pressing, in which the thickness of the 25% onwards sand replacement showed slightly thinner bricks with denser appearance. The findings were further strengthened with the results from the UPV analysis showing a higher velocity of doppler wave passing through the dense RG cement bricks.