

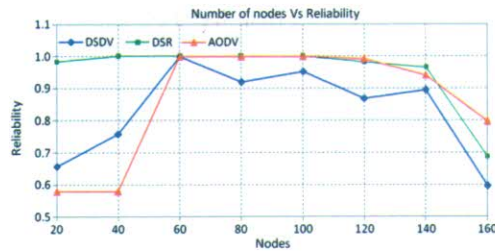
CONTENTS

Management & Information Technology

81 **Logistic Regression Based Reliability Analysis for Mobile Ad Hoc Network with Fixed Maximum Speed and Varying Pause Times**

Mobile Ad-hoc Network (MANET) has become the most important and useful means of communication today. Logistic regression based reliability analysis of MANET is presented in the paper considering fixed maximum speed and varying pause times of mobile nodes. The reliability of MANETs running DSDV, DSR and AODV routing protocols are computed and analyzed using ns-2.35 simulation software. The simulation result shows that the reliability of MANET using DSR protocol is higher than MANETs using AODV and DSDV routing protocols in all scenarios. However, the reliability of MANETs using AODV protocol is higher than that of MANETs using DSR and DSDV routing protocol as the number of nodes deployed in the MANET increases beyond 140.

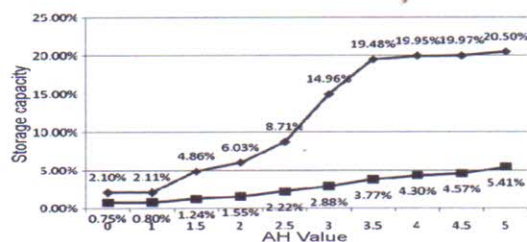
M Marjit Singh & J K Mandal



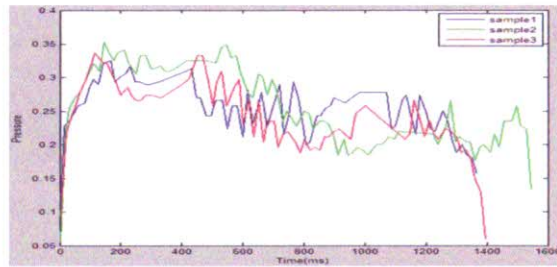
85 **A Novel Information Lifecycle Management Scheme for a Web-Based Database System**

Adaptive Information Lifecycle Management (AILM) is a novel scheme because it simultaneously considers variations in time and data usage. It consists of four main components: data collection, information valuation, information classification, and growth prediction. In this paper, 2255 teaching cases over eight years are managed using the AILM scheme from the life.edu.tw web site. Using AILM, the growth in storage capacity increases by almost 6~7% per year, and the number of teaching cases is projected to increase by almost 160 per year in the next five years. To enhance the performance of the web-based database system, we further classify the data into three groups, namely, Class_1, Class_2 and Class_3. The experiments demonstrate that Class_1 includes approximately 50% of the teaching cases but only uses approximately 40% of the storage capacity. In addition, the hit rate has increased to 75%. Moreover, we can delete the teaching cases with a 2.5% hit rate in Class_3, which contributes to saving approximately 10% of the storage capacity. In other words, the AILM scheme is useful because it not only expedites search time but also improves storage utilization in a web-based database system.

Jui-Pin Yang & Ying-Chin Chen

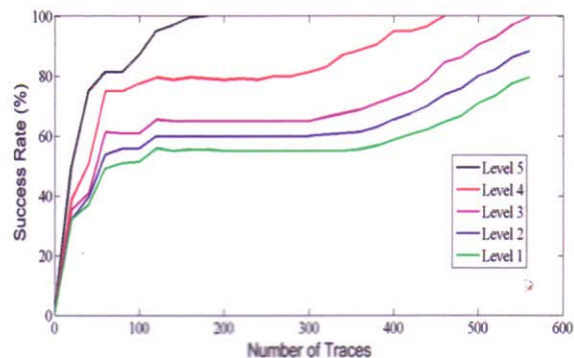


- 90 **Intruder Detection System Based on Behavioral Biometric Security** Getting higher occurrence of cybercrimes by means of hacking, identity theft, and network security violations necessitates a robust system for resolving these issues. For the new era of IT, using conventional user authentication methods like providing login IDs, passwords /PIN and other two-factor authentication methods are fading to offer the required level of security required. Since biometrics come forward as an efficient alternative technique to provide security. Keystroke and typing dynamics uses behavioral characteristics like typing rhythms of a person for authentication. This protection method effortlessly integrates with the existing environment and it could be scaled across the web also. This technology is will be getting promoted in the upcoming years because of its non-invasiveness, unobtrusiveness and low deployment cost. Thereby security of the physical and logical access can be improved. This proposed technique acts as a supplementary security layer besides the traditional user IDs & passwords/PIN, most organizations are making supplementary investments in keystroke and typing dynamics to ensure a more robust user authentication system.



R Senthil Prabha & R Vidhyapriya

- 95 **A Novel Approach to Attack Smartcards Using Machine Learning Method** This paper presents an effective way to enhance the secret key guessing ratio in machine learning based power analysis attack on secure systems such as smartcards. The power supply current traces are obtained by varying the atmospheric temperature for all possible values of key. The collected power supply current traces are then pre-processed by using wavelet transform, data normalization and principal component analysis (PCA) and the featured data samples are used to train the probabilistic neural network (PNN). The network is then tested with a current trace obtained from the device under attack and the correct key is identified. The proposed method achieves 100% success rate in guessing the secret key of the cryptographic algorithm with minimum number of power traces when compared to the existing methods of machine learning technique.

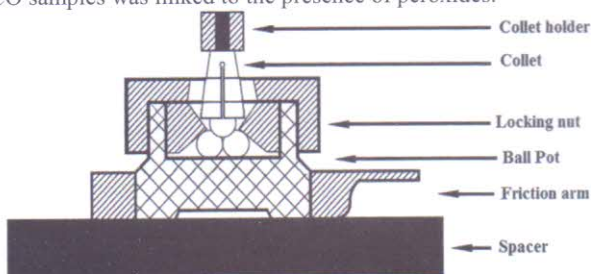


P Saravanan & P Kalpana

S & T and Industrial Research

100 A Study on Chemical and Lubrication Properties of Unrefined, Refined and Virgin Coconut Oil Samples

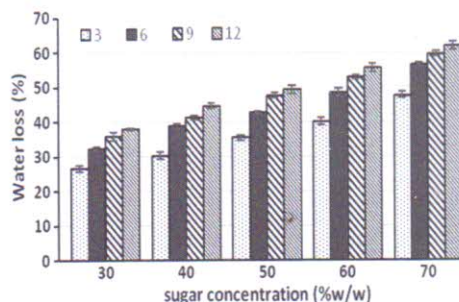
In the present work four samples each of unrefined coconut oil (URCO), refined coconut oil (RCO) and virgin coconut oil (VCO) samples collected from different places were evaluated in terms of physicochemical and lubrication parameters. The physicochemical properties of URCO, RCO and VCO were analyzed in terms of kinematic viscosity, Fatty acid profile, Iodine number, Saponification number, free fatty acid, Peroxide value and flash point. The lubrication properties of the oil samples were compared with the aid of four ball tester. The study revealed that fatty acid profile of VCO samples was slightly different from that of URCO and RCO samples. The saponification and Iodine value of VCO samples was also slightly lower than that of URCO and RCO samples. The four ball test results showed that the average coefficient of friction under tested condition was slightly less for URCO and VCO samples when compared to RCO samples. This difference in frictional property was due to the presence of free acid in the URCO and VCO which acted as boundary lubricant. The increased wear observed with VCO and URCO samples was linked to the presence of peroxides.



J K Mannekote, S V Kailas , K Venkatesh & N Kathyayini

105 Development of Value Added Product from Cashew Apple using Dehydration Processes

In the present study, microalga *Chlorella vulgaris* (PSBDU06) was Cashew apple, rich in Vitamin C is known as unconsumed product because of its astringent and acrid principles. Heavy toll of Cashew apple are being wasted annually because the focus was on nuts alone. This unconsumed product was processed into value added product with improved consumer acceptability by Osmo-dehydration of them in a 50% sucrose solution (fruit: syrup ratio 1:4) fortified with 2% CaCl₂ for 12 hrs at 30°C and drying in a hot air dryer for 48 hrs below 60°C. The dried product packed under vacuum in a nylon packaging, showed shelf life of 6 and 10 months at 30°C±2 and 4°C respectively. Phosphorus, ash, fiber content and total acidity of dried product found to be remained almost the same as the original. Retained ascorbic acid contents were nearly 63%. The estimated medians for color, taste, aroma, crispness and overall acceptability above 6 in 7-point Hedonic scale.



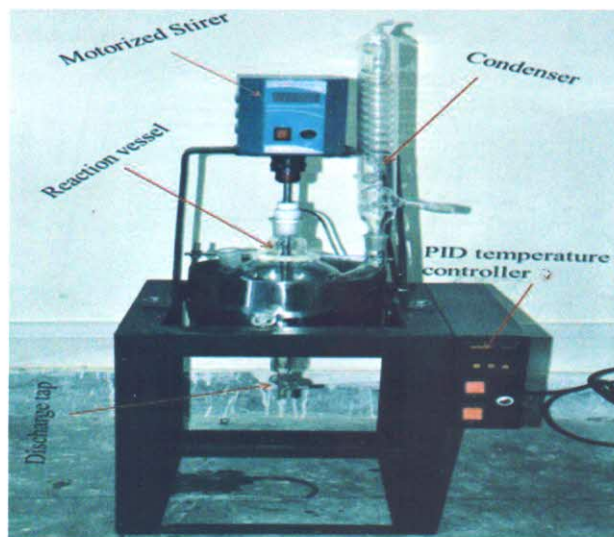
W K D N Kaushalya & M K B Weerasooriya

- 110 **Performance Evaluation, Economic Analysis and Design of Biomass – Based Modified Purti Gasifier Stove** Majority of the population in the rural areas depends on biomass fuels for meeting their cooking needs. This study aims to analyze the performance evaluation of commercially available forced-draft Purti stove using different biomass fuels and determine the limitations in design of the present Purti model. For this, various parameters like thermal efficiency, burning time, cooking power and boiling time are studied using the water boiling test. The fuels used for this study are wood pellets, coconut shell and wood blocks. On the basis of the results and limitations observed, a new improved stove design called the modified Purti stove is proposed as an alternative to the Purti stove. This was followed by an economic analysis for the stoves and the fuels to suggest a financially sustainable combination for use in the rural areas. From these studies, it is recommended to use the modified Purti stove and coconut shells for maximum economy.



P R Sonarkar, E A Mardikar, S Gupta, S S Dhabu & A S Chaurasia

- 115 **Optimization of Reaction Parameters of Transesterification for Castor Oil** Castor oil has gained the interest of researchers for being used as alternative to diesel fuel and characterized by high ricinoleic acid. The predominance of ricinoleic acid possesses an unsaturated bond due to which, oil is soluble in alcohol. In this experimental study, an attempt has been carried out to optimize the various reaction parameters of transesterification of the available castor seed oil with respect to the yield of the biodiesel. The experiments were conducted taking a constant agitating speed and reaction time but varying methanol: oil molar ratio and catalyst concentration. NaOH and KOH were used as catalysts. The results of the study show the optimum reaction conditions for transesterification of castor oil. Various physico-chemical properties were evaluated for castor biodiesel. In spite of the contradicting results regarding reaction parameters of castor biodiesel production, the viscosity of the biodiesel was found to be comparable to other studies.

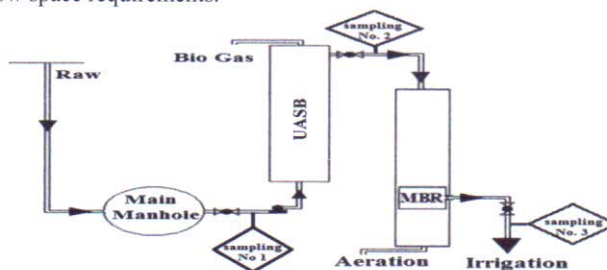


A Deep, S S Sandhu & S Chander

Waste Utilization

119 Treatment of Pharmaceutical Industrial Wastewater via Anaerobic /Aerobic System for Unrestricted Reuse

Great environmental concern is due to disposal of pharmaceutical wastewater without adequate treatment. The present study deals with treatment of industrial pharmaceutical wastewater for an effective removal of pharmaceutical active compounds (PhACs). This wastewater was previously treated by activated sludge through two stage successive treatment process that was inadequate for the removal of the PhACs. The inefficient treated water is used for landscape irrigation that would threat the environment, public health and groundwater. The aim of the present study is employing an adequate treatment system for complete removal of the pharmaceutical residues (PhR's), efficient wastewater handling and safe water reuse. For this purpose an integration of UASB reactor followed by MBR was studied. The examined system proved high efficiency in treating the given wastewater, removal of the PhR's and safe quality for water reuse. The pharmaceuticals were removed from raw wastewater at a rate ranging from 94 to 99.2%. The overall results revealed that employing the integration of UASB followed by MBR is efficient for the treatment of the studied raw mixed wastewater in terms of the pollution parameters as well as eliminating the PhR's. Meanwhile, the examined integrated process is considered a compact system with low space requirements.



Hussein I Abdel-Shafy & Mona S M Mansour

Author-Reader Platform

128 Instructions to contributors