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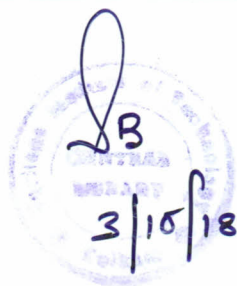
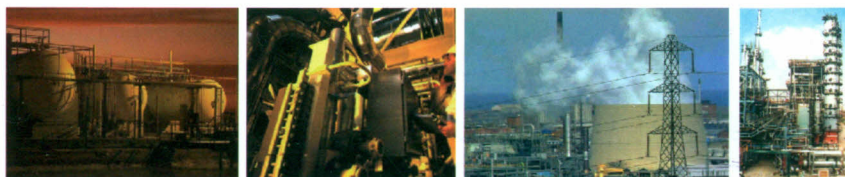
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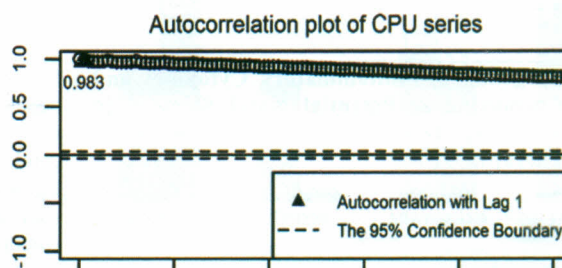
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Management & Information Technology

493 **Investigation and Characterization of MapReduce Applications for Big Data Analytics**

Recently, many organisations have applied Hadoop MapReduce framework for big data analytics. MapReduce applications based on the MapReduce programming model can be developed to process data of large amount. Therefore, understanding a dependency among the resource usage parameters of MapReduce applications is crucially needed from the viewpoint of cloud operators. In this paper, we analyze the inter-dependency of resource usage parameters of MapReduce applications. Autocorrelation of each resource usage parameter and correlation characteristics of each pair of resource usage parameters are investigated. Based on the analysis, we identify several groups of features that can be used to classify MapReduce applications.

Y Li, T B V Lam, T V Van Do, R Chakka & C Rotter

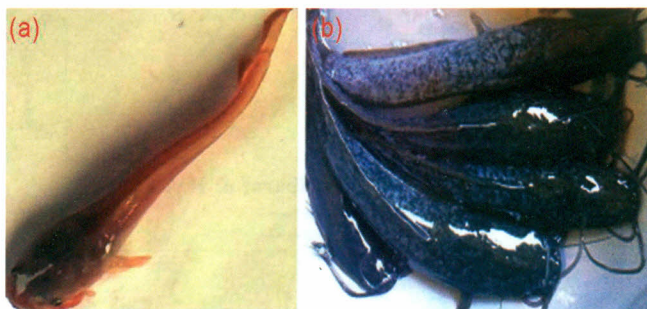


S & T and Industrial Research

499 **Growth Performance of Cultured African Catfish (*C. Gariepinus*) Fingerlings in the Presence of Nano and MacroCuO Feed Supplements**

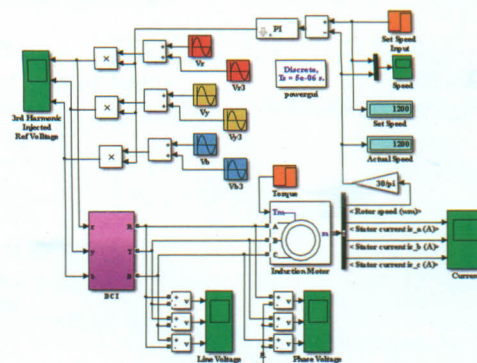
Nanomaterials are having transformational effects on the world of science including animal feeds. The present study investigated the dietary effects of copper-oxide nanoparticles on the growth and general health profiles of African catfish (*Clarias gariepinus*) fingerlings. Conventional catfish feed (initial copper content 0.83 mg Kg^{-1}) was supplemented with nano (n) and macro forms of CuO at levels of 0, 1, 3, 5, 7 and 10 mg Kg^{-1} feed respectively. Fish were fed the diets for 7 weeks., after which significant ($p < 0.05$) weight differences were observed in fish fed 3- $10 \text{ mg nCuO Kg}^{-1}$ feed and those fed 5- $10 \text{ mg CuO Kg}^{-1}$ feed respectively. Highest percent weight gains attained were 620.20% and 491.63% at the supplementation level of $10 \text{ mg (nCuO \& CuO) Kg}^{-1}$ feed respectively, against $322.55 \pm 3.19\%$ for the control, suggesting that nCuO was more effective in impacting the health of *C. gariepinus* than CuO

U C Onuegbu, A Agarwal & N B Singh



504 FPGA Implementation of Carrier Disposition PWM for Closed Loop Seven Level Diode Clamped Multilevel Inverter in Speed Control of Induction Motor

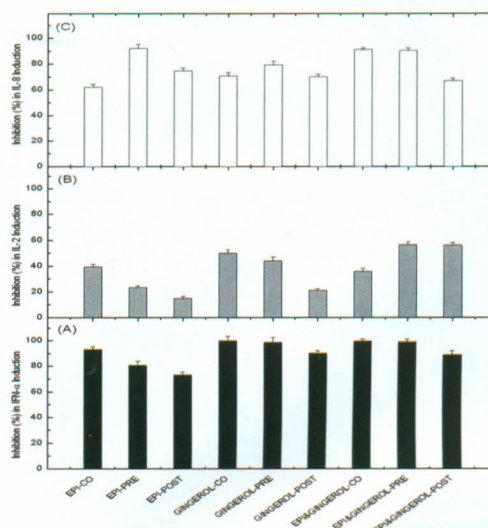
This work proposes FPGA implementation of Carrier Disposition PWM for closed loop seven level diode clamped multilevel inverter in speed control of induction motor. VLSI architecture for carrier Disposition have been introduced through which PWM signals are fed to the neutral point seven level diode clamped multilevel using which the speed of the induction motor is controlled. This proposed VLSI architecture makes the power circuit to work better with reduced stresses across the switches and a very low voltage and current total harmonic distortion (THD). The output voltages, currents, torque & speed characteristics for seven level neutral point diode clamped multilevel inverter for AC drive was studied. It has observed the proposed scheme introduces less distortion and harmonics. The results were validated using real time THD meters.



C L Kuppaswamy & T A Raghavendiran

510 Targeting Pro-inflammatory Cytokines and Chemokine as Potential Novel Strategy in Adjuvant Development for Anti- HCV Therapy

Hepatitis C virus (HCV) is the main cause of chronic liver disease, cirrhosis and hepatocellular carcinoma (HCC) worldwide. The risk for the development of HCC increases with the severity of liver inflammation and fibrosis. Inflammatory cytokines are critical components of the immune system and influence cellular signaling. In this study, we demonstrated that TNF- α , IL-2 & IL-8 levels were significantly elevated in PBMC- HCV in-vitro model. We tested the hypothesis whether Epicatechin (EC) and/or 6-gingerol (GING) could inhibit such elevation in those cytokines or not. We found that both compound could significantly inhibit the inflammatory cytokines and the use of combined treatment is more effective than single treatment (EC or GING), assuming a possible synergistic effect. In conclusion, the use of anti-inflammatory compounds such as EC and GING as combined treatment may offer a pharmacological approach of targeting TNF- α , IL-2 and IL-8 production, which may provide a potential novel strategy for the development of anti-HCV therapy.



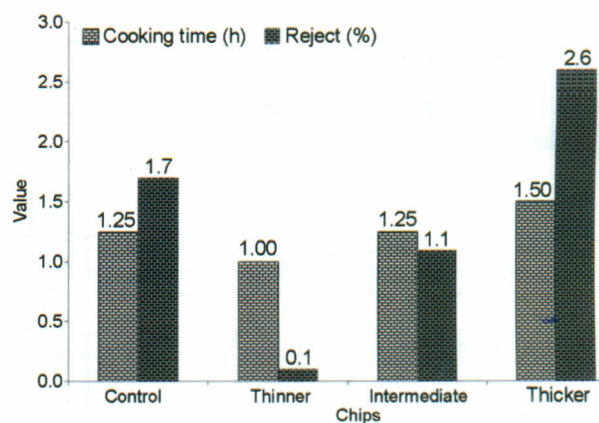
N El-Deeb, H El-Adawi, M Sharaf & H A El Enshasy

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516 Effect of Mixed Hardwood Chips Thickness on Unbleached and Bleached Pulp Quality

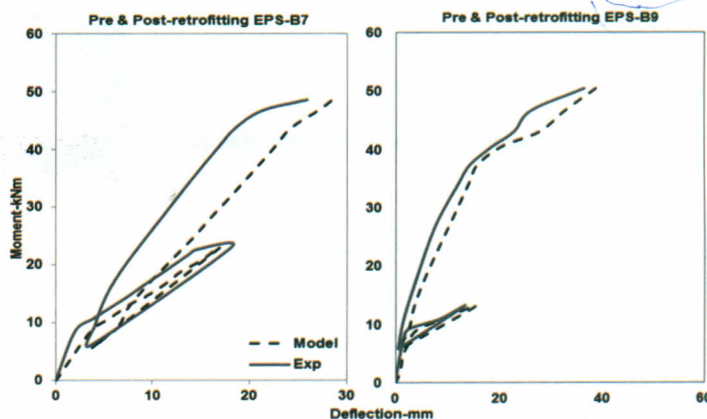
This paper describes the effect of chips thickness on pulping process and unbleached and bleached pulp quality including pulp yield. Mill chipped mixed hardwood chips were manually classified based on their thickness in three segments thinner chips, intermediate chips and thicker chips with an average thickness of 3.5 mm, 5.0 mm and 7.0 mm, respectively. The response of these manually classified chips during kraft pulping and subsequent ECF bleaching was compared with that of mixed control chips. Thinner chips required less cooking chemical as well as time compared to control and thicker chips to get unbleached pulp having similar kappa number. Reject content of the unbleached pulp was in the order thinner chips (0.1%) < intermediate chips (1.1%), < control chips (1.7%) < thicker chips (2.6%). Screened pulp yield of 49.2% was the highest for intermediate chips (followed by 48.8% for thinner chips and 46.8% for thicker chips). Results showed that higher kappa pulp can also be produced with less reject content from thinner chips. Bleached pulp of superior viscosity and physical strength properties was produced from intermediate chips compared to thicker and control chips.

S K Tripathi, O P Mishra & N K Bhardwaj


520 Behaviour of Distressed RC Beams Retrofitted By External Prestressing Using Trapezoidal Tendons

Rectangular RC beams were tested before and after retrofitting by external Prestressing. RC beams of 150 mm x 275 mm section and 4 m length were subjected to monotonically increasing static two-point load and the cracks were induced to a limit such that the strain in reinforcing steel was around 85 % of the yield strain. Retrofitting by external Prestressing using trapezoidal tendons was done while the member was subjected to superimposed dead weight of a bridge girder, equivalent to 25 % of the ultimate load of the beam. Retrofitted beams were tested by monotonically increasing two-point load. It was observed that ultimate flexural capacity of the beam is increased by 59 %. Around 10 % of loss was observed due to the friction between tendon and deviators. An analytical model is developed and compared with experimental results

R Manisekar, P Sivakumar & K N Lakshmikandhan

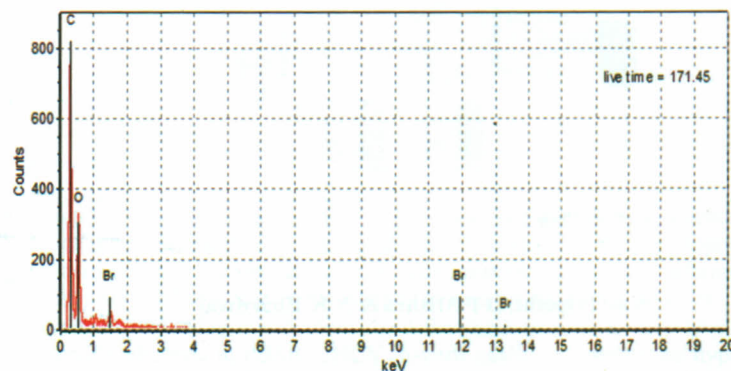


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525 Properties of White Roselle (*Hibiscus sabdariffa*) Fibers

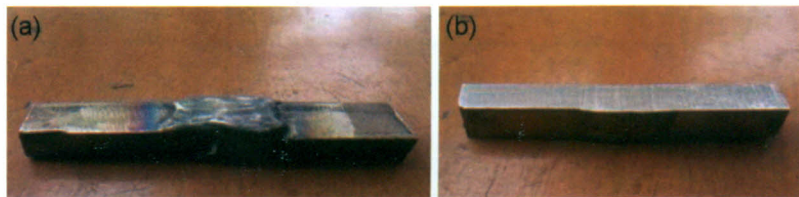
T O Azeez & D O Onukwuli

The chemical composition, physical (aspect ratio, density and water absorption) and tensile properties are determinant factors of fibers quality, effectiveness and dictate its usefulness in composite applications. Fiber physical and tensile properties of white *Hibiscus sabdariffa* (*H. sabdariffa*) fibers modified with sodium hydroxide (NaOH) and sodium lauryl sulphate (SLS) was aimed to be investigated for effective and quality use in polymer composite applications. The chemical compositions of white *H. sabdariffa* bast and fibers were analyzed using gravimetric method after retting extraction. Tensile properties, aspect ratio, density, water absorption behaviour using Peleg's model and Power law expression, scanning electron microscope (SEM) with X-Ray energy dispersive microscope (EDS) analysis were determined and studied. NaOH and SLS treatments, respectively, improved the tensile strength and modulus of *H. sabdariffa* fibers by 282.31 and 182.07 %, and 49.38 and 2448.28 % with increased aspect ratio at reduced density and water absorption. SEM with EDS results corroborate the improvement in tensile properties. The water absorption of *H. sabdariffa* fibers exhibit less Fickian behaviour. Properties of white *H. sabdariffa* fibers modified with NaOH and SLS can be used in polymer composite applications.


533 Material Characterization on Dissimilar Weldments of Aisi 316L/317L Austenitic Stainless Steels with Inconel 825 Alloy

M V N Srujan Manohar, Y S Rama Rao & N Sandilya

The micro structure and mechanical properties of AISI 316L/317L austenitic stainless steels with in conel 825 alloy were investigated in this work. Two types of filler materials 316L and ERNiCrMo-3 were used to obtain dissimilar weldments using TIG welding. The comparative evaluation initially studied on cutting parameters using unconventional machining process (hereby Water jet machining is considered for cutting process) and impact test is carried on all machined specimens. The impact test results for all specimens exhibits ductile fracture. A detailed micro structural observation was made on all dissimilar joints using SEM analysis. At last it was concluded that ERNiCrMo-3 filler material was the best choice for the joint AISI 317L austenitic stainless steel and Inconel 825 alloy.

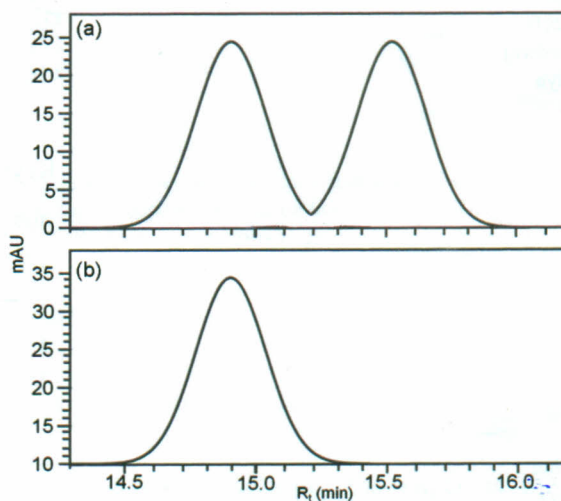


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537 **Scaling up Asymmetric Biocatalysis with Cofactor Regeneration by Heterologous Expression of a Supra-active Carbonyl Reductase from *Candida glabrata***

A carbonyl reductase (cr) gene from *Candida glabrata* CBS138 has been cloned, over-expressed, characterised and subsequently employed in biotransformation of a prochiral keto ester (COBE) to a chiral alcohol (ethyl-4-chloro-3-hydroxybutanoate or CHBE). Using NADPH as cofactor and as substrate, the isolated enzyme (CR) exhibited a towering specific activity of 173.49 ± 6.08 Umin⁻¹mg⁻¹ with K_m and K_{cat} as 0.45 ± 0.02 mM and 112.77 ± 3.95 s⁻¹ respectively. Unlike other proteins of this class which usually show substrate inhibition at high substrate concentration (≥ 230 mM), the CR enzyme exhibited marked velocity at substrate concentration as high as 363 mM with highest turnover number (112.77 ± 3.95 s⁻¹). This advocated utility of the enzyme in a batch reactor where maximum COBE conversion has been achieved (161.04 g.L⁻¹ CHBE per g of dry cell weight) compared to the reported so far (1.51~149 g.L⁻¹ CHBE per g of dry cell weight). The reaction yielded sparingly available yet greatly important (R) isomer in over 99% enantiomeric excess (e.e) with 88.30% molar bioconversion. Although numerous proteins have been investigated to accomplish the prochiral COBE to chiral CHBE bioconversion, we present our finding as a highly efficient choice for conversion of COBE into CHBE through an efficient batch reaction system.

Souvik Basaka



Author- Reader Platform

542 **Instructions to contributors (Extended)**