ISSN: 2319-6564

PROCEEDINGS

NATIONAL CONFERENCE ON SCIENCE & INNOVATIVE ENGINEERING TECHNOLOGY

(NCSIET 2018)

18th-19th August 2018

In Association with: International Journal of Engineering Sciences Paradigms and Researches (IJESPR)

Organized by

KRUPAJAL
Where Tradition Breeds Excellence

Department of BSH, Civil & Mechanical Engineering
Krupajal Engineering College
Prasanti Vihar, Pubasasan, Kausalya Ganga,
Bhubaneswar, Odisha-751002, India

ISSN: 2319-6564

PROCEEDINGS

NATIONAL CONFERENCE

ON

SCIENCE & INNOVATIVE ENGINEERING TECHNOLOGY

(NCSIET 2018)

18th-19th August 2018

In Association with: International Journal of Engineering Sciences Paradigms and Researches (IJESPR)

Organized by

KRUPAJAL
Where Tradition Breeds Excellence

Department of BSH, Civil & Mechanical Engineering
Krupajal Engineering College
Prasanti Vihar, Pubasasan, Kausalya Ganga,
Bhubaneswar, Odisha-751002, India

Our Sponsor

BIRLA TYRES
Unbeatable!
IT'S TIME TO ROLL

BIRLA TYRES,

Balasore, Odisha, India

ABOUT THE CONFERENCE

The Departments of Basic Sciences & Humanities (BSH), Civil and Mechanical Engineering, Krupajal Engineering College, Bhubaneswar are glad to announce the "National Conference on Science & Innovative Engineering Technology (NCSIET-2018)" during 18th-19th August, 2018 at Krupajal Engineering College, Kausalyaganga, Bhubaneswar-751002, Odisha, India. The NCSIET-2018 provides a two-day research extravagance which will be having a perfect blend of keynote addresses and oral presentations through which an ample networking opportunity for collaborations and partnerships that can drive wide recognition and adds value to the enlisted career profiles from the world's brightest minds in science, engineering and technology. This platform will eventually benefit the young research minds to bring forth the ideas and develop it into a solution for future world.

ABOUT THE DEPARTMENT

The Departments of BSH, Civil & Mechanical Engineering at Krupajal Engineering College (KEC) deal with theory, design, development and application of engineering and related technologies. Within a short span of time the departments have carved a niche for itself and demonstrated its credentials in all-round development of its students be it academics, research projects, research paper presentation and publication in peer reviewed journals and conferences. The departments boast of well-balanced industry experienced and well qualified faculty. The Departments are well equipped with state-of-the-art laboratories and one dedicated workshop, which provides exceptional platform for teaching, learning and developing skills of students. In research, all departments have comprehended a wide range of areas, such as structural analysis, composite materials, environmental science, heat transfer, waste heat recovery, nano-fluid, robotics, composite material under the guidance of eminent personalities from the related field. Some of our faculties are currently pursuing research in nano-fluid and formation of crude oil from waste plastics. Seminars, symposiums and conferences are conducted by the department on a regular basis to cope up with the emerging trends in recent developments in Mechanical Engineering. The departments of BSH, Civil & Mechanical Engineering have active members in student and faculty chapters like, The Institute of

Engineers (India), society of Automotive Engineering (SAE), Indian Society for Technical Education (ISTE), Solar Energy Society of India (SESI) and The Combustion Institute India.

ABOUT THE INSTITUTE

Krupajal Engineering College, Bhubaneswar, also called KEC is an engineering institution in the Eastern Zone of Odisha, which was established in 1999 runs under the aegis of Orissa Computer Academy Society. The college is approved by AICTE, New Delhi, affiliated to Biju Patnaik University of Technology, Odisha situated at Kausalya Ganga, Puba Sasan, Bhubaneswar. It has more than 10.56 acres of area across the Bhubaneswar- Puri NH with a built-up area of 90,000 sq. mts. Krupajal was founded as a missionary institution to provide myriad professional education, so as to produce graduates, who can face the challenges of this fast-changing world. Krupajal has grown from strength to strength, establishing top of the line educational institutes in various discipline. Krupajal Engineering College aims to provide the highest-quality education to promising and enthusiastic young minds. With a team of dedicated faculty of scholars distinguished in their respective fields, KEC seeks and adopts innovative methods to improve the quality of education and research on a consistent basis.

Krupajal Engineering College runs various courses, such as M. Tech, B.Tech and has state of the art departments like Civil Engineering, Computer Science & Engineering, Electrical Engineering, Electrical & Electronics Engineering, Electronics & Telecommunication Engineering and Mechanical Engineering. KEC provides conducive environment for learning with accessible teachers and engaged students who participate together in bringing out the best. At KEC students take advantage of opportunities as new fields, and bring up new innovations. The teacher prepares the students to lead lives that are professionally satisfying and successful, personally fulfilling, and enriched by a love of learning.

CONFERENCE PROCEEDINGS

(ORAL & POSTER PRESENTATION)

Krupajal Engineering College
Prasanti Vihar, Pubasasan, Near CIFA, Kausalya Ganga,
Bhubaneswar, Odisha-751002, India.

Prof. (Dr.) Bhabani Charan Rath
Chairman

Message from the Chairman

On behalf of the Krupajal Engineering College (KEC), I extend a very warm welcome to all the delegates and participants to the National Conference on Science & Innovative Engineering Technology (NCSIET-2018). KEC has borne the mantle of excellence, committed to ensuring the students their own space to learn, grow and broaden their horizon of knowledge by indulging into diverse spheres of learning. In our endeavor to raise the standards of discourse, we continue to remain aware to meet the changing needs of our stakeholders.

Last but not the least; we would also like to thank the staff, faculty members, the organizers especially the convener of NCSIET-2018 and the students for their contribution in successfully organizing and managing this event. This event wouldn't have been possible without their guidance and constant support.

We welcome all of you to KEC and hope that, this national conference will act as a medium for all to ponder upon the topic of discussions, challenge us to strive towards it, and inspiring us to go ahead.

Thank you!

Prof. (Dr.) Bhabani Charan Rath

Krupajal Engineering College
Prasanti Vihar, Pubasasan, Near CIFA, Kausalya Ganga,
Bhubaneswar, Odisha-751002, India.

Prof. (Dr.) Dillip Kumar Biswal
Principal

Message from the Principal

The conferences are necessary to bring at the culture of information exchange and feedback on developing trends in technologies. I am delighted to note that the Department of Mechanical Engineering is organizing the National Conference on Science & Innovative Engineering Technology (NCSIET-2018). Certainly, this type of conference not only brings all the researchers, students in one platform, but it also inculcates the research culture among the entire fraternity of Education in the country, thereby contributing to the development of the nation.

I hope that this conference would certainly induce innovative ideas among the participants paving way for new inventions and technologies in the field of application of optimization techniques and sustainable development in engineering sciences.

I Congratulate Dr. Ritanjali Sethi, Professor in Mechanical Engineering and Convener of NCSIET-2018 and the entire organizing team for initiating the conduction of such an important event at our institute.

I wish the conference a grand success.

Prof. (Dr.) Dilip Kumar Biswal

Krupajal Engineering College
Prasanti Vihar, Pubasasan, Near CIFA, Kausalya Ganga,
Bhubaneswar, Odisha-751002, India.

Dr. Rajesh Kumar Behera
Head of the Department
Department of Mechanical Engineering

Message from the Head of Department

It is a moment of great pleasure and honour that the Departments of Basic Sciences, Civil and Mechanical Engineering are organizing the National Conference on Science & Innovative Engineering Technology (NCSIET-2018) at Krupajal Engineering College (KEC), Bhubaneswar, Odisha. I wish that the conference will bring the scientists, researchers, scholars, faculty members, industry personnel and students to a single platform for exchange of their ideas and innovations for development of new technologies and products for future towards betterment of the society and the globe. I am confident that the National Conference NCSIET-2018 will achieve its key objectives with a great glory.

I wish NCSIET-2018 a phenomenal success.

Dr. Rajesh Kumar Behera

Krupajal Engineering College
Prasanti Vihar, Pubasasan, Near CIFA, Kausalya Ganga,
Bhubaneswar, Odisha-751002, India.

Dr. Ritanjali Sethi
Professor in Mechanical Engineering
Convener (NCSIET-2018)

Message from the Convener

It gives me immense pleasure to invite all delegates, industry experts, researchers and students at Krupajal Engineering College (KEC), Bhubaneswar, Odisha, India to the National Conference on Science & Innovative Engineering Technology (NCSIET-2018). New Technologies are introducing every day that will radically transform the future of this fields. The NCSIET-2018 aims to promote excellence in scientific knowledge and innovations in the diversified fields of science, engineering and technology to motivate young researchers and students. The aim of the conference is to provide a forum to researchers around the globe to explore and discuss on various aspects of science, engineering and technology. The conference consists of various sessions and includes keynote and parallel sessions. Each session will be addressed by outstanding experts who will highlight the recent innovations along with applications in the modern fields of science, engineering and technology. It will also offer the budding researchers to offer different opportunities to present their work in front of eminent experts of individual fields.

As the convener of the NCSIET-2018, I extend my gratitude to all Professors, Invited speakers, Chief guests, Guest of honors, Keynote speakers, National delegates, invited faculty members, industry personnel, researchers and students coordinators for their wholehearted participation in the National Conference. I would like to thank National & International advisory committee members, organizing committee members, volunteers and departmental faculty and staff members for their continuing support. Special gratitude is offered to RSB Transmissions, Tangi, Cuttack, Odisha for their collaboration and sponsorship. Finally, I would like to thank all the authors, volunteers and persons who directly or indirectly contributed their helping hand in this conference. Without their cooperation and full support, this conference would not have been possible.

I wish the Conference and the Proceedings a grand success.

Dr. Ritanjali Sethi

Conference Committee

Chief Patron

Prof. (Dr.) B. C. Rath
Chairman
Krupajal Engineering College, Bhubaneswar

Patron

Prof. B. B. Rath
Director
Krupajal Engineering College, Bhubaneswar

General Chair

Prof. (Dr.) D. K. Biswal
Principal
Krupajal Engineering College, Bhubaneswar

Convener

Dr. Ritanjali Sethi
Professor in Mechanical Engineering
Krupajal Engineering College, Bhubaneswar

Coordinator

Dr. B. K. Khamari
Asso. Professor in Mechanical Engineering
Krupajal Engineering College, Bhubaneswar

Treasurer

Prof. D. Mishra
Krupajal Engineering College, Bhubaneswar

Executive Members

Dr. R. K. Behera
Dr. B. P. Pattanaik
Dr. P. Mahana
Dr. M. Padhy
Dr. S. Tripathy
Prof. P. B. Dash
Prof. A. K. Nayak
Prof. P. K. Majhi
Prof. C. Tripathy
Prof. P. M. Padhi
Prof. R. P. Nayak
Prof. A. Priyadarshini

From the Editor's Desk...

I appreciate the precious efforts of the Basic Sciences, Civil & Mechanical Engineering Departments of Krupajal Engineering College, Bhubaneswar towards the conduct of the National Conference on Science & Innovative Engineering Technology (NCSIET-2018) and in bringing out a volume of the Proceedings of NCSIET-2018 with a compilation of valued papers into edited volume for the benefit of academicians, research scholars, Civil & Mechanical professionals, and students. It is not out of place to mention here that knowledge is an ocean and ideas rule the world. The struggle for existence and survival of the fittest became the order of the day. Therefore, I sincerely extrapolate that the proceedings of the conference will stand as testimony and parameters in revamping and fostering the knowledge, skills, abilities, and practical experiences.

With these words, I wish that the National Conference on Science & Innovative Engineering Technology (NCSIET-2018) and in bringing out a volume of the Proceedings of NCSIET-2018 will touch the pinnacle of success and golden memories for the future.

Best wishes!!!

List of Presented Papers

SL. NO.	PAPER ID	TITLE OF THE PAPER	AUTHOR(S)	PAGE NO.
1.	NCSIET-01	The Acoustic Method and How It Can Be Used to Find the Uniaxial Mechanical Stress Profile	Ritanjali Sethy,Achyuta Nayak	11
2.	NCSIET-02	High-density pineapple leaf powder-filled polyethylene's mechanical properties	Amiya Kumar Nayak, Shaik Mozammil	12
3.	NCSIET-03	Execution Assessment of Improved Weld Joints	Subhrassmita Tripathy, Bharati Prasad	13
4.	NCSIET-04	Equation for wire rope based on the mechanics model and elastic thin rod theory	Babata Mehe, Pradyut Kumar swain	14
5.	NCSIET-05	Modeling the thermal expansion behavior of Al/SiC composites with a lot of packing	Pinak Bhusan Dash, Satyakam Acharya	15
6.	NCSIET-06	Sintering Si_3N_4/multilayer graphene composites using spark plasma	Kamalakanta Dash, Sekh Javed Aktar	16
7.	NCSIET-07	Study of the Mechanical and Microstructure Properties of Silt Improved by a Titanium Gypsum-Based Stabilizer	Emmanuel Raja, Dipti Pattnayak	17
8.	NCSIET-08	Composites made of polypropylene that work and are filled with very fine magnesium hydroxide	Ramakotaiah Maddumala, Pradyumn Meher	18
9.	NCSIET-09	For cementitious composites, nonthermal plasma modification of polypropylene fibers	Shaik Maktiar Basha, Ambika Sahu	19
10.	NCSIET-10	Soundness of Stage Connections While Organizing Arm Compasses with Entire Body Movement	Thakur Debasis Mishra, Sandeep Kumar Dash	20
11.	NCSIET-11	Identifying and Reducing Congestion in Multihop Wireless Sensor Networks	Bijaya Kumar Khamari, KumarSuraj kumar Patel	21
12.	NCSIET-12	Using Fuzzy Logic-Powered Ants, Joint Optimization of Interference and Cost in a Cognitive Radio Heterogeneous Network	Bhabani Prasanna Pattanaik, Alok Kumar Mohanty	22
13.	NCSIET-13	Proof Productive Multihop Grouping Directing Plan for Huge Scope Remote Sensor Organizations	Priyadarshan Mahana, Jitendra Biswal	23
14.	NCSIET-14	Sliding Mode Control with PD Sliding Surface for High-Speed Railway Pantograph-Catenary Contact Force in a Stochastic Wind Field with Strong	Chetana Tripathy, Tapan Jena	24
15.	NCSIET-15	Model for Synchronization of Social Media: in Relationship with Growing Little Medium Enterprise's Deals Data Framework	Atul, Shashanka Panda	25
16.	NCSIET-16	Blockage Mindful Shower and Stand by Convention: A Clog control Component for the vehicular Postpone Open minded Organization	Rajendra Prasad Nayak, Matrujit Mohanty	26
17.	NCSIET-17	Gelatin-Based Edible Films Containing Clay Nan particles' Mechanical Properties and Water Vapor Permeability During Plasticization	Rajesh Kumar Behera, Satyajeet Mohanty	27

18.	NCSIET-18	Control and Engineered Contention of Airborne Nano participles: Present Situation	A.K.S Ansari Alias Kedar Meera, Babita Meher	28
19.	NCSIET-19	Thermal conductivity at the carbon nanotube array-silicon contact is dependent on the configuration of the array and the filling fraction	Soma Dalbehera, Alok kumar mohanty	29
20.	NCSIET-20	Effect of cryogenic high-speed milling of compacted graphite iron using in direct spray system	D. Subramani, Suraj Patel	30
21.	NCSIET-21	Internal friction-drilled threads in AZ91 profiles: mechanical characterization	Rakesh Sahu, Smrutishree Aparajita	31
22.	NCSIET-22	Using FEM Simulation, an Analysis of the Mechanical Characteristics of Composite Materials	Priyadarsi Mrutyunjay Padhi, Shashanka Panda	32
23.	NCSIET-23	Utilising waste plastic and human hair as composite materials in cement concrete construction	Kishan Dash, Matrujit Mohanty	33
24.	NCSIET-24	Numerical Simulation of Initial Residual Stress in Thermal Barrier Coatings: Planar geometry model	Nabnit Panigrahi, Satyajeet Mohanty	34
25.	NCSIET-25	Characteristic gradient structures in polyamide 12 parts fabricated by material extrusion additive manufacturing	Girish Chandra Swain, Babita Meher	35
26.	NCSIET-26	Roughness measurements across topographically varied additively manufactured metal surfaces	Prasanta Kumar Mishra, Sekh Javed Aktar	36
27.	NCSIET-27	Heat transfer and nanofluid fluid flow in microchannels with trapezoidal, rectangular, and triangular ribs were investigated.	Rama Chandra Dash, Anil Kumar Sahoo	37
28.	NCSIET-28	New modeling techniques for fractal and fractional derivatives	Ashok Kumar Behera, Preetiraj Maharana	38
29.	NCSIET-29	New techniques and assessments for accurate links between fractals and fractional integrals	Amulya Kumar Mishra, Dipak Kumar Biswal	39
30.	NCSIET-30	Effect of Copper and Nickel Addition on Al-18Si Alloy's Microstructure and Mechanical Properties	Paresh Kumar Majhi, Girish Chandra Swain	40
31.	NCSIET-31	Grid Computing Effective Hierarchical Scheduling Algorithms	P Paulpandian, Bijanananda Mishra	41
32.	NCSIET-32	Using FEM and an FFT analyzer, we can analyse the chassis of a go-kart	Dinesh Kumar V, Bhagyashree Panda	42
33.	NCSIET-33	Strength characteristics of bottom ash-based self-compacting concrete reinforced with glass fibre	Rithes Hoyi, Sanjeet Raj	43
34.	NCSIET-34	Adaptive Beam forming's Impact on Changing Interference Level	Srigangadhar Mande, Suraj kumar Patel	44
35.	NCSIET-35	TiO_2/fly ash is a new substrate for removing heavy metals and surfactants simultaneously.	Girija Prasad Sahoo, Shibasakti Narayan Prasadlenka	45
36.	NCSIET-36	Fly ash surfactant adsorption on unburned carbon and the creation of a standardised foam index test	Sunita Bal, Chakradhar Satapathy	46

37.	NCSIET-37	A natural dispersant for stabilising and transporting fly ash-water slurries is Acacia concinna.	Pritijyotsna Mohapatra, Rajib Lochan Paramguru	47
38.	NCSIET-38	Fly ash-water slurry stabilisation and rheological behaviour using a natural dispersant in pipeline transportation	Amit Kumar Jana, R.L Paramguru	48
39.	NCSIET-39	Evaluation of Fly Ash Slurry Flow Characteristics with and Without an Additive at 40% Solid Concentration	Nalin Kumar Sahu, Dalai Minati	49
40.	NCSIET-40	Recent developments and trends in biofuels	Priyabrat Mohapatra, Shashanka Panda	50
41.	NCSIET-41	Damage model for simulating cohesive fracture behavior of multi-phase composite materials	Dillip Kumar Biswal, Dipti Pattnayak	51
42.	NCSIET-42	Models for lifetime estimation: an overview with focus on applications to wind turbines	Saradendu Bhujabal, Sriya Swain	52
43.	NCSIET-43	Generating thermal stress using phase-change substances: empirical results	Manoj Kumar Biswal, Swarupa Mohanty	53
44.	NCSIET-44	Examining the application of phase-shifting substances to enhance performance for portable structures in both warmer and colder regions.	Kamalakannan. S, Pradipta Kumar Bhatta	54
45.	NCSIET-45	Investigations into indoor pollutants and building components	Vijay Kumar M H, Ashutosh Bal	55
46.	NCSIET-46	How should architects and engineers identify resources for sustainable structures?	Sudhansu Sekhar Behera, Nilimashree Niharika	56
47.	NCSIET-47	Analyses of empirical information related to green materials for building utilizing geographical availability	Bishal Das, Osin Patel	57
48.	NCSIET-48	The Mechanical Properties Of Two-way Different Configurations With Axially Loaded Pre-stressed Concrete Components Were Studied	Bidyut Ranjan Rout, Murari Prasad Panda	58
49.	NCSIET-49	Methods For Estimating The Effects Of Creeping And Shrinkage On Reinforced And Pre-stressed Concrete Structures	Bhabani Sankar Jena, Mousumi Puhan	59
50.	NCSIET-50	The Influence Of Strengthening On The Plastic Behavior Of Reinforced Concrete Frames	Bhupesh Kumar Sahoo, Swarupa Mohanty	60
51.	NCSIET-51	Pre-stressed Force's Effects On Recycled Tire Reinforced Concrete	Jyotirmaya Satpathy, Pradipta Kumar Bhatta	61
52.	NCSIET-52	Steel Beam Bridge Automobile Platforms Can Be Replaced With Partial Pre-stressed Concrete Flooring.	Kamalakant Dash, Swarupa Mohanty	62
53.	NCSIET-53	Improvement in the Photocatalytic and Optoelectronic Characteristics of Erbium Oxide by Addition of Ion Zinc Oxide and Molybdenum	Neeha Pradhani, P. K. Sethi	63
54.	NCSIET-54	The Impact of Barium Strontium Titanate (BST) On The Loss Performance and Soft Magnetic Characteristics of MnZn Ferrites	Neela Victor Babu, P. K. Sethi	64
55.	NCSIET-55	AC Impedance Study of Pb $(Zr_{0.35-x}Ce_xTi_{0.65})O_3$ (x = 0.00, 0.05, 0.10, 0.15) Ceramics	S. Lenka, S. Mohapatra	65

56.	NCSIET-56	Metal halide perovskite solar cells' Impedance Spectroscopy: A View from Equivalent Circuits	N. Pradhani, Arat Sethi	66
57.	NCSIET-57	Is it true that FDI spurred economic expansion in China? A Critical Review	Ramesh Chadra Ratha, Sangram Khandi	67
58.	NCSIET-58	Globalization and inequality: A Survey Paper	Mousumi Panda, Abhisek Mohanty	68
59.	NCSIET-59	Maintainable promoting procedures: meeting customer expectations and generating business value	Nirmal Charan Mallick, Gopinath Pradhan	69
60.	NCSIET-60	Orientation Generalizing in Scholarly world: Evidence from the Job Market Rumours Forum in Economics	Tanmaya Kumar Pradhan, Swarum Kumar Rout	70
61.	NCSIET-61	Distinguishing obstructions to huge scope coordination of variable inexhaustible power into the power market: A review of the market design literature	Ajit Kumar Kar, Satya Swain	71
62.	NCSIET-62	Modelling highly heterogeneous traffic flow approaches	Harish Chand Giri, Mousumi Puhan	72
63.	NCSIET-63	Analysis of deceleration action of various types of vehicles	Gandha Valla Madha Rao, Murari Prasad Panda	73
64.	NCSIET-64	A case study on development of an accident prediction model in mixed traffic conditions	Balamurugan R, Osin Patel	74
65.	NCSIET-65	English Skills assessment using digital Technologies	Nityananda Sahoo, Tapan Mohanty	75
66.	NCSIET-66	Pyrolysis: A sustainable method for creating biochar and biofuel from Biomass	Priyabrat Mohapatra, Dipak Biswal	76
67.	NCSIET-67	Analyzing the relation between EFL teachers self-efficacy and acceptance of online teaching in the Chinese setting	Minushree Pattnaik,Umakanta Mohapatra	77
68.	NCSIET-68	Analysis of the Laboratory outcomes of Asphalt blends with various RAS and RAP content	Rabindra Kumar Malla, Nilimashree Niharika	78

Paper ID: NCSIET-01

The Acoustic Method and How It Can Be Used to Find the Uniaxial Mechanical Stress Profile

Ritanjali Sethy[1*], Achyuta Nayak[2]

[1]Krupajal Engineering College, Kausalyaganga, Bhubaneswar-751002, Odisha, India

[2]Aryan Institute of Engineering and Technology Bhubaneswar - 752050, Odisha, India

*Corresponding author e-mail:: ritanjalisethy@krupajal.ac.in

Abstract: The article is given to the issue of deciding the real upsides of mechanical pressure of metal construction segments during the time spent activity without release utilizing acoustic technique. Trial and error with the genuine mechanical pressure in the racks molded profiles of metal developments that are in activity.

Keywords: actual stresses, shaped profiles, and metal constructions.

1. Introduction

The strategy for acoustic diagnostics of stress-strain condition of segments of metal developments, in view of the differential technique for deciding mechanical pressure for the accomplishment of the point of the exploration was proposed. We investigate the existing mechanical stresses in the shaped profiles of metal constructions used in operational industrial installations. There is a set deviation of the measured values from the calculated stresses in the range of 2.5–3.5 percent after a comparative analysis of the actual mechanical stresses in the shaped profiles calculated for the selected control points.

High-density pineapple leaf powder-filled polyethylene's mechanical properties

Amiya Kumar Nayak[1*], Shaik Mozammil[2]

[1]Krupajal Engineering College, Kausalyaganga, Bhubaneswar-751002, Odisha, India

[2]Aryan Institute of Engineering and Technology Bhubaneswar - 752050, Odisha, India

*Corresponding author e-mail: amiyakumarnayak@krupajal.ac.in

Abstract: The mechanical properties of HDPE composites were examined in relation to the effects of pineapple leaf powder (PALP). The injection molding process was used to prepare the HDPE and PALP composites. For each formulation, the investigated filler (PALP) contents were 2, 4, 6, 8, and 10 weight percent. Mechanical tests on HDPE/PALP composites revealed that the composites' tensile strength, tensile modulus, flexural strength, abrasion resistance, and hardness increased with filler content for all investigated filler contents, while the elongation at break (EB) for PALP/HDPE composites decreased with filler content for all investigated filler contents. The rigidity of PALP/HDPE composites was expanded by 6.49% at 2 wt% filler content, and 30.39% at 10 wt% filler content. The findings also revealed that PALP/HDPE composites' elongation at break decreased by 2.40 percent at a filler content of 2 weight percent and by 10.24 percent at a filler content of 10 weight percent. The use of pineapple leaf powder (PALP) as a reinforcing filler in HDPE compounding has been highlighted by this study. It has been demonstrated that pineapple leaf, an agricultural waste, has the potential to be a filler that is less expensive, more easily accessible, and better for the environment.

Keywords: Powder from pineapples, high-density polyethylene, composites, mechanical properties, adhesion, and the method of injection molding

1. Introduction

A paradigm shift toward the design and development of environmentally friendly materials has been sparked by global environmental awareness today. Thusly, normal strands are drawing in more interest as fortifications for both thermoplastic what's more, thermosetting polymer composites [1, 2].

Paper ID: NCSIET-03

Execution Assessment of Improved Weld Joints

Subhrassmita Tripathy[1*], Bharati Prasad[2]

[1]Krupajal Engineering College, Kausalyaganga, Bhubaneswar-751002, Odisha, India

[2]Aryan Institute of Engineering and Technology Bhubaneswar - 752050, Odisha, India

*Corresponding author e-mail: subhrassmitatripathy@krupajal.ac.in

Abstract: This study provides an evaluation of the performance of reworked welded joints with weld imperfections that may affect the structures' strength. The reliability and performance of the reworked joint have been evaluated using tensile, bending, and shear tests. The requirements of the structure in use determine how they affect the quality and performance of the reworked welded joint. Using shielded metal arc welding (SMAW) techniques, this study conducts a comprehensive examination of the carbon steel reworked welded joint's mechanical properties.

Keywords: Metal arc welding with a shield; Carbon steel; properties of the mechanical.

1. Introduction

Welding is one of the most important technological processes used in industrial engineering, shipbuilding, and pipeline fabrication, among other industries. Unfortunately, the mechanical properties are adversely affected when the welding process's thermal effect results in a hard and brittle microstructure. In Safeguarded Metal Bend Welding (SMAW) process, the intensity for welding is produced by a bend laid out between a transition covered consumable cathode and the workpiece. The center wire directs the electric flow to the circular segment and gives filler metal for the joint. The intensity of the circular segment liquefies the center wire and the transition covering at the cathode tip into metal beads. The lighter molten flux floats on the surface and solidifies into a slag layer while the molten metal in the weld pool solidifies into the weld metal. The weld region is safeguarded by a vaporous safeguard got from the burning of the motion. When uncontrolled hand processes are utilized, the unspoken question of the rework's potential impact on product reliability is always present. Designing instinct is that a revised joint will be less solid than one which has not been modified. As a method of joining, welding has the advantages of high joint efficiency, ease of setup, adaptability, and low fabrication costs.

Paper ID: NCSIET-04

Equation for wire rope based on the mechanics model and elastic thin rod theory

Babata Meher[1*], Pradyut Kumar swain[2]

[1]Krupajal Engineering College, Kausalyaganga, Bhubaneswar-751002, Odisha, India

[2]Aryan Institute of Engineering and Technology Bhubaneswar - 752050, Odisha, India

*Corresponding author e-mail: babatameher@krupajal.ac.in

Abstract: Considering the absence of general mechanics model and hypothetical recipe for force-misshapening estimation of wire rope, an original demonstrating strategy for wire rope mechanics model is introduced. The Frenet frame and differential geometry serve as the foundation for the mathematical model of the secondary helix of wire rope. The equivalent elastic modulus and equivalent shear modulus calculation formulas are deduced using an equivalent mechanics model of wire rope and the necessary assumptions and geometrical relationship used to derive the secondary helical line's geometrical parameters. The twisting and prolongation of wire rope under realized pressure can be determined by the recipes. When compared to the finite element simulation and the experimental measurement, the actual wire rope's force-deformation calculation reveals that the maximum deviation of elongation is less than 8%. As a result, the model's accuracy and generality are confirmed, and it has theoretical and practical implications for the analysis and application of wire rope.

Keywords: Equivalent mechanics model, helical line, wire rope, and equivalent elastic modulus.

1. Introduction

A type of metal product with a space helix-like layered structure is wire rope. The main steps in the production of wire rope are: drawing wire, then twisting it into a strand and a rope. As displayed in Fig. 1, a strand is turned by a few wires, and a rope is curved by a few strands. Consequently, side wire in side strand is a unique helical line around a helical line. The term "secondary helical line" is used in this paper to describe the special helical line. Wire rope is widely used in machinery, construction, mining, marine, aerospace, and other fields due to its high strength, softness, and stability.

Paper ID: NCSIET-05

Modeling the thermal expansion behavior of Al/SiC composites with a lot of packing

Pinak Bhusan Dash[1*], Satyakam Acharya[2]

[1]Krupajal Engineering College, Kausalyaganga, Bhubaneswar-751002, Odisha, India

[2]Aryan Institute of Engineering and Technology Bhubaneswar - 752050, Odisha, India

*Corresponding author e-mail: pinakbhusandash@krupajal.ac.in

Abstract: The thermal expansion behavior of densely packed Al/SiC composites is modeled and analyzed using the proposed method for finite element (FE) modeling and analysis in this paper. The coefficient of straight warm development (CTE) is anticipated from 50 °C to 500 °C by thinking about temperature subordinate direct flexible and elastoplastic framework material way of behaving. To represent the microstructures of the composite, representative volume elements (RVEs) in three dimensions are created

Keywords: Metal-framework composites (MMCs), Microstructures, Thermal expansion, Finite component examination (FEA), Plastic twisting.

1. Introduction

Particulate composites with aluminum grid have gotten a lot of acknowledgment in applications requiring electronic bundling and warm administration. Their adaptable creation methods and tailorable thermo-actual properties make these composites reasonable for applications, for example, power module base plates, chip covers and printed wiring board centers (Johnston and Youthful, 2000, Slopes, 1994, Zweben, 1999, Saraswati and Polese,

Sintering Si_3N_4/multilayer graphene composites using spark plasma

Kamalakanta Dash[1*], Sekh Javed Aktar[2]

[1]Krupajal Engineering College, Kausalyaganga, Bhubaneswar-751002, Odisha, India

[2]Aryan Institute of Engineering and Technology Bhubaneswar - 752050, Odisha, India

*Corresponding author e-mail: kamalakantdash@krupajal.ac.in

Abstract: Mulitlayer graphene supported silicon nitride composites were ready by flash plasma sintering to research the impact of the graphene expansion on mechanical properties. The composites contained multi-facet graphene (MLG) in different (0, 1, 3 and 5 wt%) content. At 1% MLG content, the fracture toughness was significantly higher, reaching 8.0 MPa m1/2; however, as the graphene content was increased further, the toughness did not rise to the level of monolithic silicon nitride. At 1% MLG, the maximum hardness of 18.8 MPa was also achieved, but it gradually decreased as the MLG content increased.

Keywords: Multilayer graphene, silicon nitride, and spark plasma sintering

1. Introduction

Due to its unique combination of properties—low density, high strength even at elevated temperatures, good resistance to corrosive environments, excellent wear resistance, etc.—silicon nitride is one of the most well-known advanced structural ceramics. The pottery are utilized in a few cutting edge applications and are supposed to be reasonable substitutes for high-temperature metal combinations in a scope of gas turbine motors [1]. Their susceptibility to sudden fracture is the greatest obstacle to their wider adoption. To find a solution to this issue, a lot of research has been done over the past few decades. The majority of approaches attempted to create a microstructure with evenly distributed reinforcing phases in the matrix. The reinforcing phases included rod-like -Si3N4 [2–3], various particles or carbon structures like carbon fibers, nanotubes [4-5], and most recently graphenes—or more specifically, graphene nanoplatelets (GNP)—[6]. Because of its outstanding mechanical properties, such as its high Young modulus and tensile strength, graphene has great potential as a filler in composite materials [7].

Study of the Mechanical and Microstructure Properties of Silt Improved by a Titanium Gypsum-Based Stabilizer

Emmanuel Raja[1*], Dipti Pattnayak[2]

[1]Krupajal Engineering College, Kausalyaganga, Bhubaneswar-751002, Odisha, India

[2]Aryan Institute of Engineering and Technology Bhubaneswar - 752050, Odisha, India

*Corresponding author e-mail: emmanuelraja@krupajal.ac.in

Abstract: The uniform particle size and high roundness of the silt in the Yellow River alluvial plain make it unsuitable as a subgrade filling material, and titanium gypsum (TG) is an industrial solid waste in Shandong Province that not only takes up land resources but also pollutes water and air. To further develop the designing presentation of residue, decrease the contamination of strong waste titanium gypsum to the climate and diminish the designing expense, taking into account the designing qualities of titanium gypsum, it was consolidated in unambiguous sums with concrete and lime to make a titanium gypsum-based stabilizer (TS) in this review. The impact of relieving conditions and TS content on residue improvement was concentrated on through research center tests. The unconfined compression test (UCT) was used to examine the stabilized silt's mechanical properties, and the scanning electron microscopy (SEM), X-ray diffraction (XRD), and mercury injection pore (MIP) tests were used to examine the mineral composition and pore structure. The results of the tests indicate that TS could effectively increase the silt's unconfined compressive strength.

Keywords: titanium gypsum; stabilized silt; microstructure; unconfined compressive strength

1. Introduction

Silt is widespread in the Yellow River alluvial plain; however, its engineering performance (small and uniform particles, high roundness, low plasticity index, poor cohesion, and high liquefaction susceptibility) make it unsuitable for subgrade filling [1].To improve the engineering performance of such problem soils as silt, scholars added stabilizers to enhance the bonding effect of it. In the previous research, soil stabilization was mainly achieved by adding inorganic cementitious materials such as cement and lime [2,3].

Composites made of polypropylene that work and are filled with very fine magnesium hydroxide

Ramakotaiah Maddumala[1*], Pradyumn Meher[2]

[1]Krupajal Engineering College, Kausalyaganga, Bhubaneswar-751002, Odisha, India

[2]Aryan Institute of Engineering and Technology Bhubaneswar - 752050, Odisha, India

*Corresponding author e-mail: ramakotaiahmaddumala@krupajal.ac.in

Abstract: Aqueous Mg(NO3)2 and NaOH solutions were used to make magnesium hydroxide under controlled conditions. The little, nanoplate-formed molecule size circulation was monomodal from 164 to 459 nm. Utilitarian polypropylene/Mg(OH)2 and polypropylene/polypropylene 1% maleic anhydride/Mg(OH)2 composites were arranged containing 10% or 30% Mg(OH)2. The composites have a Young's modulus that is twice as high as that of polypropylene, similar tensile strength, and less ductility. EDX assessment of the cracked composite surfaces recommended a homogeneous Mg(OH)2 dispersion for composites delivered with the expansion of polypropylene joined with maleic anhydride. The antibacterial properties of the polypropylene/Mg(OH)2 composites were excellent. The effectiveness of the polypropylene/polypropylene 1% maleic anhydride/Mg(OH)2 composites was lower.

Keywords: magnesium hydroxide, polypropylene composites, flame retardant, mechanical and antibacterial properties

1. Introduction

Magnesium hydroxide has been used to neutralize pollutants [1, 2], in the production of pharmaceuticals [3, 4], in fertilizers [5, 6], as a paper preservative [6], and as a precursor to magnesium oxide [8]. New applications, such as membrane production [9], biomaterials [2], compound detection [10], and modern polymer composites [11-16], have been sparked by its diverse morphology, hydrophilicity, basicity, non-toxicity, and antibacterial activity. Its applications as an antibacterial agent [23–27] and as a flame retardant [15–22] are areas of active research. Non-harmfulness and high warm security make magnesium hydroxide especially appealing in diminishing polymer combustibility.

For cementitious composites, non-thermal plasma modification of polypropylene fibers

Shaik Maktiar Basha[1*], Ambika Sahu[2]

[1]Krupajal Engineering College, Kausalyaganga, Bhubaneswar-751002, Odisha, India

[2]Aryan Institute of Engineering and Technology Bhubaneswar - 752050, Odisha, India

*Corresponding author e-mail: shaikmaktiarbasha@krupajal.ac.in

Abstract : This research paper focuses on the plasma treatment of polypropylene fibers used as concrete admixtures to improve their mechanical properties. In a DCSBD (Diffuse Coplanar Surface Barrier Discharge), a plasma treatment was carried out in a plasma environment with a low temperature and atmospheric pressure. The Washburn method, which is commonly used, measured the rate at which water penetrated the porous media to determine the degree of hydrophilicity brought about by the plasma treatment. The impact of the expansion of PP (polypropylene) strands to the substantial framework was researched utilizing a three point twisting test which decided the flexural strength of substantial examples. Our trials demostrate that plasma works on both the wettability of PP strands and its grip to the substantial grid. The flexural strength tests demonstrate that even a brief plasma treatment of five seconds can have a significant impact on the composite's mechanical properties.

Keywords: DCSBD, plasma, polypropylene fibers, concrete, confocal microsope, and the Washburn method

1. Introduction

Short staples of polypropylene (PP) filaments are turning out to be progressively well known admixture to fiber-supported concrete. Because their presence in the concrete matrix can significantly reduce the cracking of the concrete [1-3], these PP fibers play an essential role during the initial stages of concrete hardening. The tensile forces that concrete alone would not be able to withstand can be replaced by polypropylene fibers. The dispersed fibers improve the system's integrity, increase concrete's ductility, and are able to absorb energy from impacts and vibrations [4].

Soundness of Stage Connections While Organizing Arm Compasses with Entire Body Movement

Thakur Debasis Mishra[1*], Sandeep Kumar Dash[2]

[1]Krupajal Engineering College, Kausalyaganga, Bhubaneswar-751002, Odisha, India

[2]Aryan Institute of Engineering and Technology Bhubaneswar - 752050, Odisha, India

*Corresponding author e-mail: thakurdebasismishra@krupajal.ac.in

Abstract: The smooth coordination of a number of body parts, including arm movements and whole body motion, is a characteristic of the human movement repertoire. Because each body part has distinct kinematic and dynamic properties, the neural control of this coordination is quite complex. By examining the stability of the emerging phase relationship, behavioral inferences about the neural solution to the coordination problem could be made. Results so that cost models that minimize energy expenditure (i.e., net torques) or endpoint variance of the reach cannot fully explain the observed coordination patterns, as shown by computer simulations. The rhythmic coordination of arm reaches and body movement is discussed in light of the possibility that the processes of predictive control and impedance control are significant mechanisms.

Keywords: Soundness, arm compasses, body movement

1. Introduction

Suppose you are standing in a bus that suddenly speeds up. To prevent yourself from falling, you quickly reach for the safety rail and stabilize your body. The ability to reach in such an accelerating environment is neurally quite demanding, requiring an accurate estimate of the position and dynamics of the arm and the body, as well as the location of the rail that is fixed relative to the bus. The objective of the present study is to understand the mechanisms that underlie the estimation and the subsequent action decisions when the body accelerates.

Identifying and Reducing Congestion in Multihop Wireless Sensor Networks

Bijaya Kumar Khamari[1*], Kumar Suraj kumar Patel[2]

[1]Krupajal Engineering College, Kausalyaganga, Bhubaneswar-751002, Odisha, India

[2]Aryan Institute of Engineering and Technology Bhubaneswar - 752050, Odisha, India

*Corresponding author e-mail: bijayakumarkhamari@krupajal.ac.in

Abstract: Congestion of multiple traffic flows in a dense environment of a single-sink wireless sensor network (WSN) results in significant packet loss and excessive energy consumption. A Congestion Detection and Alleviation (CDA) mechanism has been proposed as a solution to this issue. CDA takes advantage of the elements and the qualities of the sensor hubs and the remote connections between them to distinguish and reduce hub and connection level clog. The utilization of the buffer as well as the time between data packets that come in succession can be used as indicators of congestion at the node level. In any case, connect level blockage is recognized through an original methodology by deciding connection use utilizing ease off phase of Transporter Sense Different Access with Crash Evasion (CSMA/CA). The investigation shows that CDA moves along parcel conveyance proportion by 33% when contrasted with CAF and 54% when contrasted with NOCC. Throughput for CDA also rises by 16% when compared to CAF and 36% when compared to NOCC. Additionally, compared to CAF, it reduces End-to-End delay by 17% and NOCC by 38%, respectively.

Keywords: Congestion, Detection, Alleviation, Multihop Wireless Sensor Networks

1. Introduction

The advances in electronic Integrated Circuits (ICs), SystemOn-Chip (SOC), and Microelectromechanical Systems (MEMS) have motivated the development of low power, multifunctional, and low cost tiny microprocessors generally called sensor devices. The emergence of such devices in multihop fashion has introduced a special type of ad hoc networks, known as wireless sensor networks (WSNs) [1]. In WSNs, the sensor nodes are connected through wireless links with limited transmission and broadcast range.

Using Fuzzy Logic-Powered Ants, Joint Optimization of Interference and Cost in a Cognitive Radio Heterogeneous Network

Bhabani Prasanna Pattanaik[1*], Alok Kumar Mohanty[2]

[1]Krupajal Engineering College, Kausalyaganga, Bhubaneswar-751002, Odisha, India

[2]Aryan Institute of Engineering and Technology Bhubaneswar - 752050, Odisha, India

*Corresponding author e-mail: bhabaniprasannapattanaik@krupajal.ac.in

Abstract: The demand for spectrum resources has increased as new wireless technologies have emerged. On the other hand, the way spectrum is assigned right now is fixed and not used enough. Cognitive radio (CR) gives great answer for range shortage issue to oblige new remote applications. The organization choice is a significant system in cognitive radio heterogeneous network (CRHN) to give ideal Quality of Service (QoS) to both Primary Users (PUs) and Secondary Users (SUs). By selecting the right networks and assigning the right channels, this work aims to give SUs the best QoS possible. While simultaneously maximizing data rate, minimizing interference, and minimizing cost, the proposed FLACSA selects the best network. The attractive performance of our proposed algorithm is demonstrated by the simulation results.

Keywords: Cognitive radio (CR), cognitive radio heterogeneous network (CRHN), Quality of Service (QoS), Primary Users (PUs), Secondary Users (SUs), Fuzzy Logic-Powered Ants, Joint Optimization

1. Introduction

Data transmission over wireless channel has been increased exponentially during the last decade. Due to this heavy load, wireless systems are facing problem of spectrum scarcity. To solve this problem, either expand wireless spectrum or use available spectrum efficiently and intelligently. Fifth generation (5G) networks are expected to provide high data rates with good QoS. Thus, in the coming years, demand for high data rates will increase manifolds. There are different views about 5G architecture: how to cope with high data rates such as cognitive radios, small cells, light communication, and MIMO communication systems. The 5G networks are considered as a heterogeneous network that consists of different types of primary networks.

Paper ID: NCSIET-13

Proof Productive Multihop Grouping Directing Plan for Huge Scope Remote Sensor Organizations

Priyadarshan Mahana[1*], Jitendra Biswal[2]

[1]Krupajal Engineering College, Kausalyaganga, Bhubaneswar-751002, Odisha, India

[2]Aryan Institute of Engineering and Technology Bhubaneswar - 752050, Odisha, India

*Corresponding author e-mail: priyadarshanmahana@krupajal.ac.in

Abstract: In wireless sensor networks (WSNs), the most common issues include transmission reliability and energy consumption. The mechanism for guaranteeing reliable transmission is abstracted as the propagation of responsibility and availability by studying the broadcast nature of wireless sensor networks (WSNs). The accumulation of nodes' evidence to support dependable transmission is represented by the responsibility and availability. In light of the created system, a proof effective bunch head pivot procedure and calculation are introduced. In addition, the backbone construction algorithm that is used to create the minimum aggregation tree within the candidate cluster heads is the subject of research. A base collection tree-based multihop directing plan is likewise researched, which permits the chosen bunch heads to pick the ideally principal way to advance information locally and powerfully. As a hybridization of the over, evidence-efficient multihop clustering routing (EEMCR) strategy is proposed. The EEMCR technique is recreated, approved, and contrasted and a few past calculations. According to the findings of the experiments, EEMCR performs better than them in terms of extending the lifespan of the network, increasing transmission reliability, delaying the emergence of death nodes, enhancing coverage preservation, and decreasing energy consumption.

Keywords: Multihop, wireless sensor networks (WSNs), evidence-efficient multihop clustering routing (EEMCR)

1. Introduction

Decreasing energy consumption, improving energy efficiency, and enhancing transmission reliability are still main challenges of wireless sensor networks (WSNs). The related technique-efficient issues, such as clustering routing, topology control, and multihop transmission, are widely used to improve energy efficiency for WSNs [1–20].

Sliding Mode Control with PD Sliding Surface for High-Speed Railway Pantograph-Catenary Contact Force in a Stochastic Wind Field with Strong Staticity

Chetana Tripathy[1*], Tapan Jena[2]

[1]Krupajal Engineering College, Kausalyaganga, Bhubaneswar-751002, Odisha, India

[2]Aryan Institute of Engineering and Technology Bhubaneswar - 752050, Odisha, India

*Corresponding author e-mail: chetanatripathy@krupajal.ac.in

Abstract: As is notable, the outside aggravation (particularly the stochastic breeze load) affects the activity of pantograph-catenary framework, which might cause major areas of strength for the in contact force as well as the expanded event of contact misfortune. To further develop the ongoing assortment nature of a rapid rail route pantograph-catenary framework under a solid stochastic wind field, a sliding mode regulator with a proportional-derivative (PD) sliding surface for a fast dynamic pantograph is proposed. The nonlinear limited component system is utilized to lay out the catenary model. Using empirical spectra, the varying wind speeds along the catenary are simulated. The stochastic wind field along the catenary is constructed by deriving the buffeting forces on contact and messenger wires. A PD sliding surface not set in stone to ensure that the mechanical impedance of pantograph head at the prevailing frequencies of contact force diminishes while the sliding surface methodologies zero. The control performance of two well-known control laws—the proportional switching law and the constant switching law—is evaluated through a number of numerical simulations involving various wind velocities and wind angles.

Keywords: High-Speed Railway, proportional-derivative (PD), pantograph-catenary framework, Stochastic Wind Field

1. Introduction

The recent decades have witnessed a rapid expansion of highspeed electrified railway in many countries around the world. The increase of the driving speed of high-speed trains leads to many new technical issues. One of them is the strong vibration of the pantograph-catenary system resulting in the deterioration of the current collection quality. Figure 1 describes the schematic of a pantograph-catenary system.

Model for Synchronization of Social Media: in Relationship with Growing Little Medium Enterprise's Deals Data Framework

Atul[1*], Shashanka Panda[2]

[1]Krupajal Engineering College, Kausalyaganga, Bhubaneswar-751002, Odisha, India

[2]Aryan Institute of Engineering and Technology Bhubaneswar - 752050, Odisha, India

*Corresponding author e-mail: atul@krupajal.ac.in

Abstract: The advancement of web innovation and shrewd cell phone is trailed by the online entertainment huge development. Presently in getting to facebook, twitter and other well known virtual entertainment are effectively at whenever and anywehere. One might say that the job of virtual entertainment in conveying data stream for new businesses, small medium enterprises (SMEs) and huge measured organizations is becoming urgent than any time in recent memory. Even more so if the business is able to integrate all of its social media platforms into a single, robust platform, this results in additional value for the business. Since they offer productivity and adequacy in term of market its items and administrations penetratrions. The mechanism of disocial media synchronization not only automatically integrates with other social media but also updates the content of one social media. This study aims to develop a Facebook and Twitter synchronization model that can be linked to the development of a sales information system for a specific Small Medium Enterprise (SME) in Indonesia. Results indicating that by lowering the cost of product marketing and enhancing the sales information system, this synchronization unquestionably enhances the advantages of small and medium-sized businesses.

Keywords: Small medium enterprises (SMEs), Data Framework, Disocial Media Synchronization Model , Sales Information System, Small Medium Enterprise.

1. Introduction

Small medium enterprise (SME) in Indonesia has proved resilient at any economy crisis. Indeed, they enormously solid through times. However, even their roles are the key for building fundamental economy, the spreads of knowledge and market information are limited. Whereas these information are needed of decision making, e.q. product lifetime, and supplier reordering.

Blockage Mindful Shower and Stand by Convention: A Clog control Component for the vehicular Postpone Open minded Organization

Rajendra Prasad Nayak[1*], Matrujit Mohanty[2]

[1]Krupajal Engineering College, Kausalyaganga, Bhubaneswar-751002, Odisha, India

[2]Aryan Institute of Engineering and Technology Bhubaneswar - 752050, Odisha, India

*Corresponding author e-mail: rajendraprasadnayak@krupajal.ac.in

Abstract: Over the most recent couple of years, the Vehicular Specially appointed Organization (VANET) has come to be a significant area of research. Huge exploration has been led to work on the presentation of VANETS. The Vehicular Delay Tolerant Network (VDTN) is one result of additional VANET research. It is a use of the mobile DTN in which nodes use a store-carry-forward method to send messages across the network. Because of its high versatility, it experiences regular disengagements and furthermore clogs at hubs which prompts message drops. We propose a congestion control mechanism to reduce the rate of message drops and increase the likelihood of message delivery, making drivers more aware of the road situation: In this work, the Congestion Aware Spray and Wait (CASaW) protocol is used to improve road safety by increasing drivers' awareness of the vehicular environment and optimizing the rate at which messages are delivered to their destinations. In terms of performance measures like the probability of message delivery and the rate of packet drops. The findings have demonstrated that our proposal performed better than other traditional VDTN protocols.

Keywords: VANETS; DTN; VDTN; Routing Protocol; Congestion control; ONE; CaSAW.

1. Introduction

Vehicular Adhoc Networks (VANETs) are a special class of the Mobile Adhoc Networks with some distinguishing characteristics [1]. Unlike the Mobile Adhoc Networks, it is known for its predictive mobility and high mobility which leads to frequent disconnections in areas of low traffic and nodal congestions in regions of high traffic. These factors impact on the network performance and so researchers proposed the extension of the Delay Tolerant Networking (DTN) paradigm to the Vehicular Adhoc Networks to overcome the limitations [2].

Gelatin-Based Edible Films Containing Clay Nan particles' Mechanical Properties and Water Vapor Permeability During Plasticization

Rajesh Kumar Behera[1*], Satyajeet Mohanty[2]

[1]Krupajal Engineering College, Kausalyaganga, Bhubaneswar-751002, Odisha, India

[2]Aryan Institute of Engineering and Technology Bhubaneswar - 752050, Odisha, India

*Corresponding author e-mail: rajeshkumarbehera@krupajal.ac.in

Abstract: This research examined the effects of glycerol and sorbitol as plasticizers on the mechanical properties, water vapor permeability, thermal properties, color, and capability of heat sealing of gelatin films containing clay nanoparticles made from phytophagous fish, bovine gelatin with high gel-forming ability, and bovine gelatin with low gel-forming ability. 6 2 3 factorial experiments with a completely random design and a comparison of the means at a 95% confidence level (= 0.05) were carried out for this purpose. Plasticizer concentrations increased the percentage of elongation to breaking point. The layers' flexibility improved when the concentration of glycerol was increased to more than 20%, but their permeability to water vapor increased. Images captured under an electron microscope revealed that gelatin films containing clay nanoparticles had water vapor permeability and cavities between gelatin chains in samples containing glycerol at concentrations greater than 0.20 g/g gelatin.

Keywords: Gelatin, Clay Nanoparticles, Plasticizer, Mechanical Properties, Water Vapor Permeability

1. Introduction

More than five billion tons of waste from packaging materials is produced annually in the world, 30% of which are plastic compounds. Pollution with synthesized plastics, which is called white pollution, forms a major part of environmental pollution in industrial countries, and also in developing countries like Iran that have weak plastic recovery systems. Concern for environmental pollution caused by synthesized plastics has attracted researchers to studying the possibility of using natural biodegradable polymers in the production of packaging materials [1].

Control and Engineered Contention of Airborne Nano participles: Present Situation

A.K.S Ansari Alias Kedar Meera[1*], Babita Meher[2]

[1]Krupajal Engineering College, Kausalyaganga, Bhubaneswar-751002, Odisha, India

[2]Aryan Institute of Engineering and Technology Bhubaneswar - 752050, Odisha, India

*Corresponding author e-mail: aksansarialiaskedarmeera@krupajal.ac.in

Abstract: Engineered nanoparticles (NPs) have been used in manufacturing and manufacturing processes for many years. In the interim, the subject of the dangers related with nanotechnologies remains unanswered. An integrative approach to achieving this by design is also being recommended by international organizations that monitor these risks. Procedures, for example, electrostatic precipitation, filtration, wet cleaning and mechanical detachment are compelling at containing or separating airborne NPs and in this way limiting laborer openness. There are advantages and disadvantages to each of these methods. This literature review demonstrates that proper engineering of the manufacturing system as a whole would aid in the creation of efficient technologies for NP containment and control.

Keywords: containment; control; engineered nanoparticle; risk management

1. Introduction

Engineered nanoparticles (NPs) have been used in manufacturing and manufacturing processes for many years. In light of the most recent authority world figures, there are around 1814 customer items as of now containing input from nanotechnologies [1]. However, for the time being, only cosmetics and pesticides must include NP content on the product label in Europe. In December 2014, this requirement was expanded to include food products [2]. The dangers related with nanotechnologies remain inadequately characterized and certain individuals track down this agitating. The Transoceanic Purchaser Discourse has embraced to compel specialists and states to give a structure to directing the buyer wellbeing and security parts of nanotechnology-based items [3], while the French public organization for dietary, natural and working environment wellbeing and security (ANSES) wishes to support the nanotechnology administrative structure [4].

Thermal conductivity at the carbon nanotube array-silicon contact is dependent on the configuration of the array and the filling fraction.

Soma Dalbehera[1*], Alok kumar mohanty[2]

[1]Krupajal Engineering College, Kausalyaganga, Bhubaneswar-751002, Odisha, India

[2]Aryan Institute of Engineering and Technology Bhubaneswar - 752050, Odisha, India

*Corresponding author e-mail: somadalbhera@krupajal.ac.in

Abstract: Carbon nanotube (CNT) is a promising candidate of thermal interface material for micro/nano-scale devices due to its ultra-high axial thermal conductivity. However, low interface thermal conductance between CNT and other materials restricts its effectiveness in thermal management. We use the non-equilibrium molecular dynamics (NEMD) method to investigate the factors that possibly influence the interface thermal conductance between vertical CNT array and silicon substrate. The dependence of the interface thermal conductance on the arrangement of CNT (aligned and crossed), filling fraction (0.14–0.70), CNT diameter (6.88–35.75 Å), temperature (200–400 K), and van der Waals force among the CNTs are studied in detail. From the simulation results, the enhancement of the interface thermal conductance difference caused by CNT-array filling fraction in this work reaches to 91%, and that value caused by the arrangement of CNT on silicon is as high as 84%. The mechanism of heat transport across the interface between CNT array and silicon substrate is discussed by comparing the vibrational densities of states (VDOS) of atoms from both sides under different conditions.

Keywords: Thermal conductivity, Carbon nanotube, Simulation

1. Introduction

With its high elastic modulus [1] and axial thermal conductivity [2,3], CNT is a promising candidate of thermal interface material (TIM) for micro/nano-scale devices to enhance the heat dissipation which is vital for the safety and steady of devices operation. EXperiments [4–8] and simulations [9–13] have been widely conducted to investigate the thermal behaviors of CNTs under different surrounding conditions, and the results suggest that low interfacial thermal conductance [14,15] bottles the heat transport through CNT-TIM, despite the high intrinsic thermal conductivity of CNTs.

Effect of cryogenic high-speed milling of compacted graphite iron using indirect spray system

D. Subramani[1*], Suraj Patel[2]

[1]Krupajal Engineering College, Kausalyaganga, Bhubaneswar-751002, Odisha, India

[2]Aryan Institute of Engineering and Technology Bhubaneswar - 752050, Odisha, India

*Corresponding author e-mail: dsubramani@krupajal.ac.in

Abstract: Compacted graphite iron (CGI) is replacing conventional cast iron (CI), especially in the automotive industries for the manu- facture of a high-performance and light-weight diesel engine due to its outstanding mechanical properties as compared to theconventional CI. Nevertheless, the pace of replacement is still slow because of the low machining performance encountered bythe industries during high-speed machining of CGI. Thus, in this study, the effect of various cooling-lubrication strategies in high-speed machining of CGI using uncoated carbide inserts was investigated. Results showed that the combination of indirect cryogenic cooling and minimum quantity lubrication (MQL) improves the tool life by 26% compared to conventional flood coolant strategy. The result has been clarified by monitoring the cutting force and the sound pressure for each cooling/lubrication strategy.

Keywords: Cryogenic high-speed milling, Compacted graphite iron, Indirect spray system Cooling-lubrication strategy

1. Introduction

Compacted graphite iron (CGI) is a type of cast iron which has outstanding mechanical strength and weight-to-strength ratio compared to gray cast iron. The outstanding characteristics of CGI are attributed to the shape of the graphite particles that resembles the compacted vermicular particles. The graphite structure is interconnected at random orientation and round edges which results in higher mechanical strength. As report- ed, graphite in the gray cast iron (CI) presents smooth surface flakes that easily propagate cracks hence resulting in more weak and brittle properties compared to CGI [1, 2].

Internal friction-drilled threads in AZ91 profiles: mechanical characterization

Rakesh Sahu[1*], Smrutishree Aparajita[2]

[1]Capital Engineering College, Bhubaneswar-751013, Odisha, India

[2] Krupajal Engineering College, Kausalyaganga, Bhubaneswar-751002, Odisha, India

*Corresponding author e-mail: smrutishreeaparajita@krupajal.ac.in

Abstract: This study examines the effects of pre-heating the friction drilling tool on the mechanical characteristics of internally created chipless threads in thin-walled AZ91 magnesium casting alloy profiles. The determination of failure mechanisms in this context centres on the impact of manufacturing methods on microstructure and the subsequent fracture behaviour under mechanical loads. A total of two batches were examined, and samples were made both without and with the friction drilling tool preheated. Tensile and fatigue tests in the tensile loading range were used to determine the mechanical properties. In the form of computed tomography studies and hardness mappings, the mechanical results were connected with the profile attributes. To examine the fracture behaviour in cyclic tests, fractured surfaces underwent light and electron microscopic examination. both stress- and process-related

Keywords: Magnesium casting alloy AZ91, Friction drilling, Thread forming, Internal thread, Quasi-static properties, Fatigue properties

1.Introduction

Magnesium alloys provide various application possibilities due to their low density and good casting and machining be- havior. They have been established for saving material, ener- gy, and costs as well as for weight reduction of components and are used in many fields of technical engineering, especial- ly in automotive industry, as mentioned by Kulekci [1] or Muttana [2, 3]. Advantages are, e.g., carriages of relative high cargo loads with low vehicle weights and high maximum velocities with reduced fuel consumption. By reducing the weight of frame-structure elements, the functionality must be obtained. Therefore, magnesium alloys are often used, that ensure high stiffness at minimal weight.

Using FEM Simulation, an Analysis of the Mechanical Characteristics of Composite Materials

Priyadarsi Mrutyunjay Padhi[1*], Shashanka Panda[2]

[1]Krupajal Engineering College, Kausalyaganga, Bhubaneswar-751002, Odisha, India

[2]Aryan Institute of Engineering and Technology Bhubaneswar - 752050, Odisha, India

*Corresponding author e-mail: priyadarsimrutnjaypadhi@krupajal.ac.in

Abstract: A thorough evaluation of the literature has been done in the area of composite vibration. The comparison of experimental and simulation analyses and the improvement of the mechanical characteristics of composite materials such (jute abaca glass fibre) are the subjects of this study. The finite element approach has been computationally applied using ANSYS 15.0, primarily because no analytical model for composite structures in the presence of singularities, such as total deformation and shear stress, has been developed. The dimensions and boundary conditions for the dogbane form structure were taken from the base study [26] and were analysed as follows. (That is, the laminated composite's shear strength that is only supported).

Key words: Composite Material, Finite Element Method (FEM), Total Deformation, Shear Stress

1. Introduction

A composite material is one that combines two or more different materials while still retaining their individual identities. Perhaps the most typical example is fibreglass, which combines glass fibres and a polymeric resin. The answer to such query is undoubtedly "Yes"! The many factors relating to materials that affect the mechanical and physical characteristics of the composite material must first be identified. Second, it is necessary to construct the relevant physical and mathematical models that explain how the properties of the various composite components are combined to form the actual qualities of the composite material. Therefore, the answer is "Yes" it is feasible to create a composite material so that it has the properties required for a particular purpose. These characteristics could be as straightforward as having the desired stiffness and strength, the minimum stiffness at the lowest cost per unit volume, or the desired thermal conductivity.

Utilising waste plastic and human hair as composite materials in cement concrete construction

Kishan Dash[1*], Matrujit Mohanty[2]

[1]Krupajal Engineering College, Kausalyaganga, Bhubaneswar-751002, Odisha, India

[2]Aryan Institute of Engineering and Technology Bhubaneswar - 752050, Odisha, India

*Corresponding author e-mail: kishandash@krupajal.ac.in

Abstract: The purpose of the study is to determine how using waste plastic and human hair as composite fibre reinforcement will affect the compressive strength of concrete. In various ratios (0.1% to 2%) of cement concrete, the aforementioned plastic trash and human hair were combined, and test specimens (cubes and prisms) were cast to examine how the plastic-mixed concrete behaved under axial compression. The study of plastic and human hair is done because of their superior qualities and affordable prices compared to other fibres. The strength of the modified concrete was found to be 1.2 times higher than the unmodified concrete at the 5% ideal modifier concentration. We can use human hair and plastic debris as a modifier to reduce the amount of cement.

Keywords: Waste Plastic, Human Hair, Compressive Strength; Cement Concrete, Fiber Reinforced Concrete

1. Introduction

One of the most frequently utilised building materials worldwide, both in industrialised and developing nations, is concrete. It is commonly known that simple concrete is brittle and weak in strain; the performance of concrete depends on its constituents. Concrete with fibre reinforcement has the main benefit of turning brittle concrete into ductile material. Concrete can stop microcracks that lead to progressive failure by adding fibres. For developing nations like India, using fibres from inexpensive or waste materials to create structural units out of cement mortar composites has significant potential. The high tensile strength of this type of fibre is comparable to that of all tensile materials with the same diameter. Waste and Hair Plastic's use as a fibre-reinforcing material can help to reduce the environmental problem that it is causing because it is a non-degradable substance.

Paper ID: NCSIET-24

Numerical Simulation of Initial Residual Stress in Thermal Barrier Coatings: Planar geometry model

Nabnit Panigrahi[1*], Satyajeet Mohanty[2]

[1]Krupajal Engineering College, Kausalyaganga, Bhubaneswar-751002, Odisha, India

[2]Aryan Institute of Engineering and Technology Bhubaneswar - 752050, Odisha, India

*Corresponding author e-mail: nabnitpanigrahi@krupajal.ac.in

Abstract: Thermal barrier coatings (TBCs) are one of the most important materials used in turbines for propulsion and power generation. A typical TBCs system consists of four layers: the top ceramic coat (TC), the thermally grown oxide (TGO), the bond coat (BC), and the substrate. During the deposition process, the material properties (such as Young's modulus, Poisson's ratio, and thermal expansion coefficient) of each layer will result in a varied cooling velocity of the thermal barrier coatings (TBCs) system. After cooling to ambient temperature, first residual stresses in TBCs occur, which play a key role in evaluating TBC failure and dependability. The initial residual stresses of a planar TBCs model were determined using the finite element approach in this research, as were the impacts of cooling types and TC thickness.

Keywords: Thermal barrier coatings, Initial residual stress, Finite element method.

1. Introduction

The development of initial residual stresses inside a thermal barrier coating system is a complex process, with many elements influencing the ultimate residual stress distribution, including the material composition, thickness, and coating temperature of the substrate and each coating. Although residual stresses in thermal barrier coatings can come from a variety of sources, they are primarily caused by a mismatch in the thermal expansion of the coating and the substrate, which have formed a solid when they cool from a high temperature internal stress-free state to room temperature. The mismatch problem of elastic modulus, Poisson's ratio, thermal expansion coefficient, and thermal conductivity of each layer of the thermal barrier coating system would result in various cooling rates throughout the actual preparation process.

Paper ID: NCSIET-25

Characteristic gradient structures in polyamide 12 parts fabricated by material extrusion additive manufacturing

Girish Chandra Swain[1*], Babita Meher[2]

[1]Krupajal Engineering College, Kausalyaganga, Bhubaneswar-751002, Odisha, India

[2]Aryan Institute of Engineering and Technology Bhubaneswar - 752050, Odisha, India

*Corresponding author e-mail: girishchandraswain@krupajal.ac.in

Abstract: The present investigation used microfocus wide-angle X-ray scattering combined with transmission electron microscopy to investigate the crystalline structures and spatial distributions of polyamide 12 (PA12) parts manufactured by material extrusion additive manufacturing (MEAM). The gradient structures seen in the PA12 components are of two types. One of the gradient structures may be found in the uppermost layer, where total crystallinity gradually decreases from the free surface to the core region and then to the weld region. Furthermore, the coexistence of and crystals can be seen in all areas. The gradient structure in the topmost layer is caused by partial melting and chain relaxation during the welding of neighboring layers' free surfaces.

Keywords: Crystalline Structures, X-ray scattering, Transmission Electron Microscopy

1. Introduction

One of the most common forms of additive manufacturing (AM) is material extrusion, which is regarded as one of the more recent developments in polymer processing. The MEAM technique deposits polymer melt in a layer-by-layer manner to create polymeric objects with the appropriate forms and architectures. MEAM enables the quick and integrated production of polymer products with intricate, topologically optimized, or customized architectures in comparison to conventional polymer processing techniques. As a result, MEAM has been widely used to create rapid prototypes in fields like medicine, electronics, automobile, and aerospace. Polypropylene is one of a growing variety of semi crystalline printing materials with excellent crystallization capacity that have recently been developed.

Paper ID: NCSIET-26

Roughness measurements across topographically varied additively manufactured metal surfaces

Prasanta Kumar Mishra[1*], Sekh Javed Aktar[2]

[1]Krupajal Engineering College, Kausalyaganga, Bhubaneswar-751002, Odisha, India

[2]Aryan Institute of Engineering and Technology Bhubaneswar - 752050, Odisha, India

*Corresponding author e-mail: prasantakumarmishra@krupajal.ac.in

Abstract: Surfaces for additively produced (AM) metals should only be characterised to the degree that they can be accurately associated to performance characteristics and contrasted with other surfaces, including surfaces that have been traditionally created as well as surfaces that have undergone additive manufacturing. Using typical metal additive manufacturing (AM) parts, we want to identify best practises for exact, comparable surface roughness measurements. Coherent scanning interferometry, laser scanning confocal microscopy, structured white light triangulation, and physical profilometry are used to compare the findings across the four devices. Comparisons across various measuring methods show how broadly applicable the specified parameter spaces are. There will be suggestions for qualifying measurements obtained with various instruments not included in this study. Beyond the linear measuring standards established in ISO 21920-3-2021, this will allow comparability of area-based surface topography measurements across the entire community.

Keywords: Additive Manufacturing, Roughness, Arithmetical Mean Height, Optical Microscopy, Physical Profilometry

1. Introduction

Metal additive manufacturing (AM) has the potential to be a game-changing technical development with effects on almost all industrial sectors. When compared to conventional metal manufacturing techniques, the ability to quickly print objects with internal features, complicated geometries, and near-net-shape is advantageous. The corrosivity and surface roughness still need to be significantly improved for AM parts to be certified, though.

Paper ID: NCSIET-27

Heat Transfer and Nanofluid Fluid Flow in Microchannels with Trapezoidal, Rectangular, and Triangular Ribs were Investigated

Rama Chandra Dash[1]*, Anil Kumar Sahoo[2]

[1]Krupajal Engineering College, Kausalyaganga, Bhubaneswar-751002, Odisha, India

[2]Aryan Institute of Engineering and Technology Bhubaneswar - 752050, Odisha, India

*Corresponding author e-mail: ramachandradash@krupajal.ac.in

Abstract: The influence of triangular, rectangular, and trapezoidal ribs on the laminar heat transfer of water-Ag nanofluid in a ribbed triangular channel under constant heat flux was quantitatively investigated in this work using the finite volume approach. In order to evaluate the influence of varied rib shapes, the height and breadth of the ribs were believed to be fixed. Laminar flow (Re=1, 50, and 100) and nanofluid volume fractions of 0, 2%, and 4% were modelled. The findings show that increasing the volume percentage of solid nanoparticles improves the cooling fluid's convectional heat transfer coefficient, whilst raising the Nusselt number decreases friction coefficient and pressure. Along with the increase in fluid velocity, there will be an appropriate proportion of heat and hydrodynamic transfer behaviour that optimises performance evaluation criteria (PEC) behaviour. The rectangular rib shape caused the biggest alterations in the streamlines among all of the tested rib forms, while the triangular form had the best thermal performance assessment criterion values. Heat transfer values for rectangular rib from are the lowest among all examined Reynold numbers. As a result, trapezoidal ribs with high Reynold values are preferred.

Keywords: Friction coefficient; nanofluids; laminar flow ; Nusselt number

1. Introduction

Consumption of energy and fossil fuels to enhance living circumstances and well-being has become unavoidable. Nonetheless, in many countries, this use has a significant impact on the generation of greenhouse gases and air pollution emissions, as well as the depletion of natural resources. Taking effective heat transfer technologies and industrial operations has now averted environmental harm.

Paper ID: NCSIET-28

New Modeling Techniques For Fractal And Fractional Derivatives

Ashok Kumar Behera[1]*, Preetiraj Maharana[2]

[1]Krupajal Engineering College, Kausalyaganga, Bhubaneswar-751002, Odisha, India

[2]Modern Institute of Technology& Management, Bhubaneswar, Odisha, India - 752054, Odisha, India

*Corresponding author e-mail: ashokkumarbehera@krupajal.ac.in

Abstract: This work summarises the first author's group's most recent advancements in three novel approaches of fractional and fractal derivatives modelling to address the expanding and complex demands in the scientific and engineering fields. First, as a generalisation of the Euclidean distance, the structural fractal was suggested. To address the puzzling modelling challenges, the structural derivative technique was developed using the structural metric as a considerable expansion of the global fractional calculus and the local fractional derivative approaches. The classical derivative defines the rate of change of a physical variable with respect to time or space, but it seldom takes into account the major effect of a complex system's mesoscopic time-space metric on its physical behaviours. As a kernel transform of the underlying time-space structural metric of physical systems, the structural function is key to this novel technique. To do numerical simulation, the basic solution or potential function of calculus governing equation and accompanying boundary conditions are necessary.

Keywords: fractional calculus; mesoscopic time-space; Euclidean distance ; global fractional calculus

1. Introduction

In recent decades, there has been an increase in the amount of complicated scientific and engineering issues that are difficult to represent using traditional calculus modelling technique. In theoretical study and engineering practise, a range of phenomenological partial differential equation models with many empirical parameters have been developed to address this difficult challenge.

Paper ID: NCSIET-29

New Techniques and Assessments for Accurate Links Between Fractals and Fractional Integrals

Amulya Kumar Mishra[1]*, Dipak Kumar Biswal[2]

[1]Krupajal Engineering College, Kausalyaganga, Bhubaneswar-751002, Odisha, India

[2]Modern Institute of Technology& Management, Bhubaneswar, Odisha, India - 752054, Odisha, India

*Corresponding author e-mail: amulyakumarmishra@krupajal.ac.in

Abstract: In this study, precise correlations are established between the averaging technique of a smooth function over 1D-fractal sets and the fractional integral of the RL-type. The numerical verifications are carried out to corroborate the analytical conclusions, and the physical significance of the formulae found is addressed. Furthermore, findings for a combination of fractal circuits with a distinct set of fractal dimensions were found. We believe that these new findings will help us better comprehend the intricate relationships between fractals and fractional integrals of various forms. These findings may be used to several disciplines of multidisciplinary physics, where distinct equations describing various physical processes and having fractional derivatives and integrals are employed.

Keyword: Fuzzy smooth function; Mobility-related uncertainties; Electric energy

1. Introduction

The abbreviation FDA (Fractional Derivative and its Application) has now spread widely. The "hot spot" formed at the end of the 1980s, when many researchers working in various application fields realised that this new tool suggested by fractional calculus mathematics could open up new features and generalisations of previously studied phenomena associated with fractal geometry. For novices, various monographs and reviews with extensive ancient and contemporary historical surveys that explain the roots of this "hot spot" are recommended. The fascination in the connection between fractals and fractional mathematics has been reignited.

Effect of Copper and Nickel Addition on Al-18Si Alloy's Microstructure and Mechanical Properties

Paresh Kumar Majhi[1*], Girish Chandra Swain[2]

[1]Krupajal Engineering College, Kausalyaganga, Bhubaneswar-751002, Odisha, India

[2]Aryan Institute of Engineering and Technology Bhubaneswar - 752050, Odisha, India

*Corresponding author e-mail: pareshkumarmajhi@krupajal.ac.in

Abstract: To maximize efficiency and minimize emissions, modern car engines must run at higher pressure and temperatures. These demanding requirements must be met by engine components like pistons and cylinder liners. Additionally, there is a huge demand for materials that are lightweight and have acceptable mechanical and tribological qualities as these industries see rapid expansion. The main goal of the study is to create an alloy utilizing the stir casting technique. To further examine the impact of copper and nickel addition on the morphological, mechanical, and tribological characteristics of Al-18Si alloy. Later, specimens made in accordance with standards underwent tests for microstructure, tensile, hardness, and wear qualities. These studies revealed the impact of strengthening by the addition of copper is very prominent compared to effect of addition of nickel to base alloy.

Keywords: Piston, Cylinder liner; stir casting; Al-18Si, Al- 18Si-2Cu, Al-18Si-2Ni and Al-18si-2Cu-2Ni.

1. Introduction

Aluminum is one of the most used metals in automotive sector now a days because it is abundantly available metal in earth crust. I.e. 8% of the earth crust in pure form of it is soft and ductile. By adding alloying elements to it a specific property can be alter. The engine components are working in such conditions where the temperature and stress levels are high. Materials from which the components are made should sustain these challenges. Aluminum to which the alloying elements are added to meet these challenging conditions. Al- Si based alloy are very well known with higher wear resistance, low thermal expansion coefficient, excellent cast ability with their low weight, good corrosion resistance and having enhanced mechanical properties.

Grid Computing Effective Hierarchical Scheduling Algorithms

P Paulpandian[1*], Bijanananda Mishra[2]

[1]Krupajal Engineering College, Kausalyaganga, Bhubaneswar-751002, Odisha, India

[2]Aryan Institute of Engineering and Technology Bhubaneswar - 752050, Odisha, India

*Corresponding author e-mail: ppaulpandian@krupajal.ac.in

Abstract: The exploratory methodology of several scheduling algorithms in a grid setting is represented in this article. In order to handle large-scale and resource-intensive applications, such as those discovered in science and engineering, grid computing has evolved into a crucial technology. It enables effective exploitation of various distributed computing reserves.

Keywords: Batch, Grid, Scheduling

1. Introduction

Execution of huge parallel jobs in dispersed computational environments requires co-distribution of significant resources mutually shared with their possessors. The scheduling plus resource selection complications in Grid remain NP-hard because of their combinatorial environment. Various algorithms, depending on heuristic solutions, or their groupings have been implemented for similar jobs with dependences in disseminated environment. Task schedulers target to improve the whole performance of a segment, e.g., decreasing the average work response time and increasing the number of tasks accomplished in certain point of time. A 'Network' is an arrangement for resource allocation. This is used in large- scale files processing, numerous of the solicitations being scientific ones. Grid scheduling is an important constituent of a Network infrastructure. Reliability, proficiency (in terms of time utilization) and usefulness in resource employment are the required features of Grid scheduling segments. Grid computing allows distribution, assortment and accumulation of sources to resolve the difficult big scale complications in art, engineering and business. Scientific applications generally comprise of numerous jobs that practice and produce huge datasets. Processing difficult scientific applications of a Grid enforces various challenges owing to the huge number of tasks, file distributions and the memory required to perform them.

Using FEM and an FFT analyzer, we can analyse the chassis of a go-kart

Dinesh Kumar V[1*], Bhagyashree Panda[2]

[1]Krupajal Engineering College, Kausalyaganga, Bhubaneswar-751002, Odisha, India

[2]Aryan Institute of Engineering and Technology Bhubaneswar - 752050, Odisha, India

*Corresponding author e-mail: dineshkumarv@krupajal.ac.in

Abstract: Vibrations are those mechanical oscillations which originate about an equilibrium position. Vibrations can be desirable as well as undesirable. In mechanical term, vibration analysis is one of the most important technique. It totally relies on the highly valued content provided by the machine vibration signals that indicates the condition of the machine, used for the analysis of faults. Vibration analysis are fundamentally used in predictive maintenance program being widely used for detection and monitoring severe faults in machinery parts, such as bearings, shafts, couplings, motors etc. Some problems that are generally detected byvibration analysis are: unbalancing, misalignment, bent shaft, rolling bearing faults, resonance, looseness, rotor rub, fluid- film bearing instabilities, belt/sheave problems. In case of automobiles, vibration analysis can be very effective to increase the performance of the vehicle. Proper validation of the design with the aspects of desirable and undesirable vibrations can lead to more optimized, safer design. In this project the same analysis is completed for the case of a Go- kart chassis i.e. a small race car. In relation to safety and the achievement of the best possible achievable ride comfort, it is very important to test and analyze the design under all vibrating conditions.

Keywords: FEM, FFT analyzer, chassis, go-kart

1. Introduction

Vibrations are those mechanical oscillations which can originate about an equilibrium position. There are many cases when vibrations are advantageous, like in certain types of machine tools or production lines. Most of the time, the vibration of mechanical systems is not required as it wastes energy, reduces efficiency and may be harmful or even fatal. For example, passenger ride comfort in automobiles is hugely affected by the vibrations that are caused by outside disturbances, such as aero-elastic effects or rough road conditions. In other cases, eliminating vibrations may save many human lives.

Paper ID: NCSIET-33

Strength characteristics of bottom ash-based self-compacting concrete reinforced with glass fibre

Rithes Hoyi[1*], Sanjeet Raj[2]

[1]Krupajal Engineering College, Kausalyaganga, Bhubaneswar-751002, Odisha, India

[2]Aryan Institute of Engineering and Technology Bhubaneswar - 752050, Odisha, India

*Corresponding author e-mail: ritheshoyi@krupajal.ac.in

Abstract: Self-compacting concrete (SCC) is a type of concrete that has excellent flow characteristics and does not segregate. Utilizing SCC will get around the challenging casting circumstances and need fewer personnel. A potentially dangerous byproduct of thermal power plants using coal is bottom ash. Wastes and by-products have been used into the concrete industry to save the environment and natural resources while also bringing down the price of concrete. In this project, bottom ash was used in place of fine aggregate in the SCC mix, and glass fibre was added as well to improve the mix's strength properties. The mixture is made by substituting M sand with various amounts of bottom ash (0%, 5%, 10%, 15%, 20%, 25%), and glass fibre is added in optimal amounts of 0.2%, 0.4%, 0.6%, and 0.8% by weight of cement.

Keywords: S elf compacting concrete; bottom ash; glass fiber; compressive strength; flexural strength; splitting tensile strength

1. Introduction

Self-compacting concrete (SCC) is that concrete which has high flowing ability with no segregation. It is considered to be one of the revolutionary developments in concrete technology in recent times. It reduces noise at sites, precast factory and neighborhood.

The mix proportions for self-compacting concrete werearrived at by performing mix design and then fine-tuning using EFNARC guidelines. It was first developed in 1988 by Professor Okamura in Japan.

Paper ID: NCSIET-34

Adaptive Beam forming's Impact on Changing Interference Level

Srigangadhar Mande[1*], Suraj kumar Patel[2]

[1]Krupajal Engineering College, Kausalyaganga, Bhubaneswar-751002, Odisha, India

[2]Aryan Institute of Engineering and Technology Bhubaneswar - 752050, Odisha, India

*Corresponding author e-mail: srigangadharmande@krupajal.ac.in

Abstract: High data speeds and constant connectivity are now more in demand than ever before. A hybrid system that makes use of satellite networks for users in rural areas and existing terrestrial networks for consumers in urban areas is needed to meet these demands. Both networks might make use of the same spectrum. The system is subjected to Co-Channel Interference as a result of this spectrum reuse, which can be mitigated by adaptive beam forming. The number of antenna elements and interference level are changed in a Mat lab simulation of an OFDM-based system in order to see the effects.

Keywords: Beam forming, Co-Channel Interference Level,Quadrature Phase Shift Keying, Orthogonal Frequency Division Multiplexing Etc

1. Introduction

In today's period the requirement for wide-reaching connectivity and an elevated system aptitude has amplified to a greater stage in order to meet the requirements of higher data ratesthe existing networks are not adequate enough. A hybrid system is the answer to these issues. In a hybrid communication system the users positioned in the rural areas are served by the already deployed satellite networks and the users positioned in the urban areas are provided services by the existing terrestrial networks. This sharing of spectrum introduces Co- Channel interference. In order to reduce this interference adaptive beam forming is applied at both the receiver and sender end [. Pre-FFT beam forming based on OFDM is incorporated. The system's performance is checked by passing the data with varying interference levels and number of antenna elements. At the receiver the original data is recovered by applying complex weights to the signal. LeastMean Square algorithm is used for weight updating.

Paper ID: NCSIET-35

Tio_2/Fly Ash is a New Substrate for Removing Heavy Metals and Surfactants Simultaneously

Girija Prasad Sahoo[1*], Shibasakti Narayan Prasadlenka[2]

[1]Krupajal Engineering College, Kausalyaganga, Bhubaneswar-751002, Odisha, India

[2]Modern Institute of Technology& Management, Bhubaneswar, Odisha, India - 752054, Odisha, India

*Corresponding author e-mail: girijaprasadsahoo@krupajal.ac.in

Abstract: Hydrothermally processing fly ash (CPH - Brasov, Romania) that has been covered with a wide band gap semiconductor, TiO2, a novel, affordable substrate is produced. The new substrate is used to remove two and three pollutants (two heavy metals + one surfactant) from synthetic wastewaters, specifically heavy metals (Cd2+ and Cu2+) and surfactants (1-hexadecyltrimetylammonium bromide - HTAB and dodecyl benenesulfonate - SDBS). The fly ash particle support substrate reveals to be quite effective in adsorbing heavy metals, and the TiO2 layer on top of it shows strong photo-degradation activity for surfactants. Further discussion is made of the adsorption kinetics, mechanisms, and substrate capacities in relation to surface structure (XRD), composition (EDS, FTIR), and morphology (SEM, AFM). The findings reveal that heavy metals and surfactants may be effectively removed simultaneously from mixed solutions by adsorption onto the fly ash-TiO2 substrate, producing waters that comply with discharge requirements.

Keywords: Cost-effective; Photo-degradation; Dodecylbenenesulfonate; Surfactants

1. Introduction

Because of their detergency, foaming, emulsification, dispersion, and solubilization properties, industrial surfactants are synthetic materials used in the production of a wide range of products, including textiles, fibres, food, paints, polymers, cosmetics, cements, pharmaceuticals, and microelectronics. The production of surfactants worldwide expanded from 1.7 million tonnes in 1984 to over 13 million tonnes in 2008, and new surfactants are added to the manufacturing cycle every year to enhance the characteristics of the end products and production methods.

Paper ID: NCSIET-36

Fly Ash Surfactant Adsorption on Unburned Carbon and the Creation of Standardized Foam Index Test

Sunita Bal[1], Chakradhar Satapathy[2]

[1]Krupajal Engineering College, Kausalyaganga, Bhubaneswar-751002, Odisha, India

[2]Modern Institute of Technology& Management, Bhubaneswar, Odisha, India - 752054, Odisha, India

*Corresponding author e-mail: sunitabal@krupajal.ac.in

Abstract: For a fast assessment of pozzolanic additives' appropriateness for concrete with regard to air entrainment, the "foam index" test is frequently employed. There are several commonly used foam index test methods, making it challenging to compare lab findings. The prospect of standardising the test for usage with coal fly ash pozzolans is investigated in the current article. It does this by showing that, when tested using the same protocol on a suite of 29 fly ash samples (both class F and class C) obtained from utilities across the United States, a variety of commercial air-entraining admixtures (AEAs) and pure anionic surfactants all behave in a well-correlated manner. It is possible to use a pure, reagent-grade surfactant as the foundation for a standardised test; dodecyl benzene sulfonate (DBS) seems to be a viable candidate substance for such testing. The current findings further support the theory that the primary sink for AEA adsorption in concrete mixes containing considerable quantities of ash is the carbon in coal fly ash. It is crucial to consider the solution chemistry in the test combination, and using cement is highly advised. The relative proportions of the various components in the combination under test must also be carefully considered.

Keywords: Pozzolanic, dodecyl, reagent-grade, suitability

1. Introduction

Currently, a significant amount of coal fly ash is added to concrete all over the world. This use not only resolves the issue of ash disposal but also enhances the qualities of the concrete product (the additives used for this are known as pozzolans). But the usefulness of a specific fly ash as a pozzolanic addition to concrete depends on a number of variables connected to the fly ash's unburned carbon content.

Paper ID: NCSIET-37

A Natural Dispersant for Stabilising and Transporting Fly Ash-Water Slurries is Acacia Concinna

Pritijyotsna Mohapatra[1*], Rajib Lochan Paramguru[2]

[1]Krupajal Engineering College, Kausalyaganga, Bhubaneswar-751002, Odisha, India

[2]Modern Institute of Technology& Management, Bhubaneswar, Odisha, India - 752054, Odisha, India

*Corresponding author e-mail: pritijyotsnamohapatra@krupajal.ac.in

Abstract: The stabilisation and rheological behaviour of fly ash samples in the presence of a naturally occurring, inexpensive dispersant saponin isolated from the shrub Acacia concinna are the subjects of the current investigation. The surfactant's critical micellar concentration was calculated and determined to be 0.019g per cc. By adjusting the temperature, ash content, and saponin concentration, the rheological properties of the slurry were examined. In the investigated concentration ranges of 50–65%, the Bingham plastic model provided the best fit to the data. The fly ash particles became more wettable and there was less particle-particle contact when the surfactant was added to the slurry. This action decreased the surface tension of the water in the dispersion medium. Zeta potential measurements that decreased confirmed that the steric component is primarily responsible for stabilising fly ash slurry.

Keywords: Surfactant; Micellar; Wettability; Rheological

1. Introduction

As the fifth-largest coal-rich country, India's power capacity has been supported by coal-based thermal power generation. Due to the low quality of Indian coal, which has an ash concentration of between 30 and 45 percent, India's coal-fired thermal power plants produce around 170 million tonnes of coal ash annually. Large amounts of ash not only demand a lot of valuable land for disposal, but they are also a major cause of air and water pollution. Pipelines are used to dispose of this coal fly ash in ash ponds or landfills. Fly ash transfer through slurry pipes is essential for effective disposal

Paper ID: NCSIET-38

Fly Ash-Water Slurry Stabilisation and Rheological Behaviour using a Natural Dispersant in Pipeline Transportation

Amit Kumar Jana[1*], R.L Paramguru[2]

[1]Krupajal Engineering College, Kausalyaganga, Bhubaneswar-751002, Odisha, India

[2]Modern Institute of Technology& Management, Bhubaneswar, Odisha, India - 752054, Odisha, India

*Corresponding author e-mail: amitkumarjana@krupajal.ac.in

Abstract: A natural dispersant derived from Sapindus laurifolia was studied to replace commercial surfactants like cetyl trimethyl ammonium bromide and sodium dodecyl sulphate in the effective transportation of fly ash-water slurry through a pipeline from its generation site, a power plant, to a storage site. The fly ash slurry's rheological characteristics, dispersant concentration, and stabilisation mechanism were used to assess its stability. The critical micelle concentration of the dispersant was determined to be 0.017 g/cc using surface tensiometric measurements. By varying the temperature, the amount of the dispersant, and the concentration of the ash, it has been possible to study the stabilisation of high-concentration fly ash slurry through its rheological behaviour. The Bingham plastic model provided the greatest justification for the rheological outcome for fly ash concentrations in the range of 50–65% slurry. The aggregation of fly ash particles reduces air pollution at its destination location, which is supported by the SEM microphotograph.

Keywords: Wettability; Tensiometric; Steric; Stabilization

1. Introduction

The majority of India's energy needs are met by burning fossil fuels. Fly ash, a fine-grained particulate substance, is created when coal is burned in a coal-fired boiler in a power plant and is expelled in the flue gas in more than 60% of India's thermal power plants. By employing particle air pollution control equipment, the fly ash is removed from the flue gas before it is discharged into the atmosphere and pollutes the air.

Evaluation of Fly Ash Slurry Flow Characteristics with and Without an Additive at 40% Solid Concentration

Nalin Kumar Sahu[1*], Dalai Minati[2]

[1]Krupajal Engineering College, Kausalyaganga, Bhubaneswar-751002, Odisha, India

[2]Modern Institute of Technology& Management, Bhubaneswar, Odisha, India - 752054, Odisha, India

*Corresponding author e-mail: nalinkumarsahu@krupajal.ac.in

Abstract: Thermal power plants in India provide roughly 75% of the nation's total electrical energy, and they also emit around 130 million tonnes of fly ash as solid waste each year. The power plants' biggest issue is how to transport and dispose of such a large volume of fly ash. Currently, fly ash is transported in pipe lines as a lean slurry, requiring between 80 and 85 percent water and more energy. In order to enable the smooth flow of materials in the pipeline, the current study aimed to assess the rheological properties of fly ash slurry with and without an additive at various temperature environments. Six fly ash slurry samples were made using fly ash that was received from a power plant in southern India in order to accomplish the goals. Fly ash, water, a cationic surfactant, and a counterion made up the majority of the slurry's ingredients. Using a cylindrical co-axial rotating rheometer, detailed rheological characteristics were assessed for a 40% solid concentration at shear speeds ranging from 100 to 1000 s-1. For all of the examined shear rates, temperature ranged from 200C to 400C.

Keywords: Rheology, Fly ash, Shear stress, Viscosity, Shear rate

1. Introduction

India's thermal power plants, which are dispersed throughout the nation, create 130 million tonnes of fly ash annually. 1 There are several examples of fly ash being successfully used, either on its own or in combination with lime, gypsum, or both. 2 Despite efforts made by government organisations and fly ash manufacturers, only approximately 40 to 45 percent of fly ash has been utilised. There are efforts being undertaken to transfer fly ash through pipelines as its generation grows.

Recent Developments and Trends in Biofuels

Priyabrat Mohapatra[1]*, Shashanka Panda[2]

[1]Krupajal Engineering College, Kausalyaganga, Bhubaneswar-751002, Odisha, India

[2]Modern Institute of Technology& Management, Bhubaneswar, Odisha, India - 752054, Odisha, India

*Corresponding author e-mail: priyabratmohapatra@krupajal.ac.in

Abstract: The fossil fuel resources are diminishing day-by-day. Biofuels are getting more and more attention all over the world as blending components or direct diesel fuel substitutes for automobile engines. Biofuel regularly includes lower alkyl unsaturated fat (chain length C14-C22), esters of short-chain alcohols, principally, methanol or ethanol. Different techniques have been accounted for the development of biofuel from biomass, vegetable oil, like direct use and mixing, microemulsification, pyrolysis, and transesterification. Compared to other new-renewable and clean engine fuel alternatives, methyl esters of vegetable oils offer a number of outstanding advantages. Biofuel is an inexhaustible substitute fuel for oil diesel or petrodiesel fuel produced using vegetable or creature fats; It is compatible with any mixture with petrodiesel fuel due to its very similar properties and lower emissions. Biofuel is renewable, biodegradable, safe, and basically devoid of aromatics and sulfur. It appears that biofuel is a viable fuel for the future; Because of its positive effects on the environment, it has recently gained popularity.

Keywords: Biofuel, petrodiesel, transesterification, microemulsification

1. Introduction

The term bio-fuel is referred to as liquid or gaseous fuels for the transport sector that are predominantly produced from biomass. Bio-fuels are generally considered as offering many priorities, including sustainability, reduction of greenhouse gas emissions, regional development, social structure and agriculture, security of supply. Worldwide energy consumption has increased 17 fold in the last century and emissions of CO_2, SO_2 and NOx from fossil-fuel combustion are primary causes of atmospheric pollution.

Damage model for simulating cohesive fracture behavior of multi-phase composite materials

Dillip Kumar Biswal[1*], Dipti Pattnayak[2]

[1]Krupajal Engineering College, Kausalyaganga, Bhubaneswar-751002, Odisha, India

[2]Aryan Institute of Engineering and Technology Bhubaneswar - 752050, Odisha, India

*Corresponding author mail id: dillipkumarbiswal@krupajal.ac.in

Abstract: For the purpose of simulating the cohesive fracture behavior of multi-phase composite materials like concrete, we propose a brand-new damage model. The proposed model can assess the harm of the lattice work in composite materials utilizing the volume part of the lattice inside a component containing the grid and different materials. The equivalent strain based on the modified von-Mises criterion was used to extend the damage model to two-dimensional (2D) and three-dimensional (3D) problems after it was initially developed for 1D problems. The damage model was used to simulate 3D cohesive crack growth in a heterogeneous solid with a large number of spherical inclusions, proving its validity for 1D and 2D problems. The findings confirm that cohesive fracturing in composite materials can be analyzed using a meshless finite element model.

Keywords: Damage model, Multi-phase composite, Cohesive fracture, Concrete, Meshless analysis

1. Introduction

Concrete is a common building material in civil engineering structures. It can be thought of as a heterogeneous material with coarse aggregate inclusions and a mortar matrix on the mesoscale, which is equivalent to the centimeter scale. Concrete with aggregates and mortar without aggregates typically have distinct fracture behaviors, resulting in distinct material toughness and strength. Concrete has higher strength than mortar inferable from the presence of coarse totals, which entangles the substantial's break conduct and results in breaks producing and spreading dispersedly at different areas inside the substantial. This suggests that concrete's deformation and fracture behavior is influenced by coarse aggregates in a mechanically significant way. In standard cement, breaks seldom enter coarse totals. Cracks frequently spread inside the mortar and around the coarse aggregates.

Models for lifetime estimation: an overview with focus on applications to wind turbines

Saradendu Bhujabal[1*], Sriya Swain[2]

[1]Capital Engineering College, Bhubaneswar-751013, Odisha, India

[2]Krupajal Engineering College, Kausalyaganga, Bhubaneswar-751002, Odisha, India

*Corresponding author email: sriyaswain@krupajal.ac.in

Abstract: An overview of models and approaches for estimating the lifetime of technical components is provided in this paper. Even though the applications of wind turbines are the primary focus of this paper, the majority of the content is general. As a result, the majority of the content of the paper is also applicable to other technical systems' lifetime models. Model classes of varying types are used to classify the models that are the subject of this paper's discussion and presentation. The fundamental characterization utilized in this paper isolates the models in the accompanying classes: stochastic models, data-driven models, models driven by artificial intelligence, and combined models The paper gives an outline of various models for the various classes. The estimation of model parameters is also briefly described, as are the models' advantages and disadvantages. At long last, various writing models are given in this paper, giving an outline of uses of various models on wind turbines.

Keywords: Lifetime estimation, Model Classification, Wind Turbine

1. Introduction

The question of how long they will last is crucial to the design and operation of technical components. The assessment of helpful life is significant for planners and producers for plan enhancements and advertising purposes, as well as item clients (clients, administrators) for settling on choices on which item to purchase. In addition, when making decisions regarding maintenance, repair, reinvestment, and new investments, the estimation of the product's remaining useful life (RUL) is essential. The RUL assessment isn't just significant for the clients/administrators yet in addition for the producers, particularly in ensure periods and when there are administration arrangements between clients/administrators and makers.

Paper ID: NCSIET-43

Generating Thermal Stress using Phase-Change Substances: Empirical Results

Manoj Kumar Biswal[1*], Swarupa Mohanty[2]

[1]Krupajal Engineering College, Kausalyaganga, Bhubaneswar-751002, Odisha, India

[2]Aryan Institute of Engineering and Technology, Bhubaneswar, Odisha-752050, India

[*] Corresponding author email: manojkumarbiswal@krupajal.ac.in

Abstract: Due to the enormous energy used by construction industry, policies are currently encourage environmentally friendly structures. Building deployment of phase change materials (PCM) as a passive system to minimise energy consumption has been researched. Using the knowledge gained from experimental setup, This study makes the claim that it will conduct a laboratory evaluation of PCM performance under conditions with internal thermal gains. Three separate rooms with the same interior dimensions were used for the studies. The authors of this paper can assess the effects of adopting PCM in a typical Coastal building thanks to their choice of the architectural components utilised in the aforementioned cubicles. The pleasant degree as well as the building's movement and functioning. The PCM cubicle's cooling and heating system uses greater stamina throughout the cooling phase than the HVAC systems of the other cubicles, which disperse thermal loads in accordance with the resistance to temperature of their surroundings.

Keywords: Conservation of thermal power, Passive method, Thermal stress, Phase-change substances

1. Introduction

It is well knowledge that adjustments in building envelopes can significantly reduce energy consumption and, as a result, result in energy savings. The modifications must concentrate on both the thermal inertia and the thermal resistance. The thermal energy has grown thanks to many researchers. Phase-change substances (PCM), which are latent heat storage materials and may offer a promising solution to meet low energy consumption norms can increase the storage capacity of the envelopes. The use of this method has been researched for both active and passive systems, including household heated water , heating of space , and air conditioning for spaces .

Paper ID: NCSIET-44

Examining the Application of Phase-Shifting Substances to Enhance Performance for Portable Structures in both Warmer and Colder Regions

Kamalakannan. S[1*], Pradipta Kumar Bhatta[2]

[1]Krupajal Engineering College, Kausalyaganga, Bhubaneswar-751002, Odisha, India

[2]Aryan Institute of Engineering and Technology, Bhubaneswar, Odisha-752050, India

[**] Corresponding author email: kamalakannans@krupajal.ac.in

Abstract: The findings of a study conducted to evaluate the thermally endurance of walls incorporated in portable structures are summarized in the present article. To increase the system's overall energy efficiency, materials with phase changes have been used in place of hefty thermal storage mass. Five cities (representing a total of five geographical zones) have been taken into consideration for the evaluation of the device's sensitivity to environmental factors affecting the environment. In order to determine the best approach for each climate zone, variations in PCM location within the outermost shell and its melting conditions have also been taken into consideration. Technology for architecture is increasingly attempting to address issues related to the restoration of old, energy-intensive buildings with lightweight ones, generating a double ecological benefit: on the one hand, and a notable reduction in overall energy expenses for consumption and, on the contrary hand, the reduction of greenhouse gas emissions.

Keywords: Portable structures, Storing heat, Phase-shifting substances

1. Introduction

Due to the lack of heat storage mass, the introduction of PCMs into lightweight construction parts can significantly reduce temperature fluctuations (both greenhouse gas and operative). If the heat flow is driven by radiation from the sun, which is an excellent source of energy, these advantageous effects become much more obvious. Heat source that is exceedingly changeable. However, a combined parametrical evaluation was required to determine the effects of material's attributes and integration strategies in various meteorological areas.

Paper ID: NCSIET-45

Investigations into Indoor Pollutants and Building Components

Vijay Kumar M H[1*], Ashutosh Bal[2]

[1]Krupajal Engineering College, Kausalyaganga, Bhubaneswar-751002, Odisha, India

[2]Aryan Institute of Engineering and Technology, Bhubaneswar, Odisha-752050, India

[*] Corresponding author email: vijaykumarmh@krupajal.ac.in

Abstract: The majority of lives of individuals are spent within the house, hence the well-being of those people is correlated with the quality of the indoor environment. The major focus of this article is an analysis of the principles of interior design and how one can avoid contamination of building materials and interior decorative components from the outset while adhering to rules for safeguarding the environment, health, and safety. Most of the time, people's lives are spent inside. Statistics indicate that 80 to 90 percent of a person's waking hours are spent sleeping. As a result, the indoor climate becomes the main thing individuals understandably pay close attention to in their daily lives. Plenty of individuals in today's society have poor health. And this may be attributed to the stress of people's everyday jobs and the speeding up of life. How to make sure a safe, poison-free, and clean surroundings becoming the standard part of our everyday lives.

Keywords: Green polluting substances, Interior design, Indoor pollutants

1. Introduction

Modern the discipline's results indicate that the primary sources of pollutants in homes are substances used in construction and decoration. And the damage caused by these factors shows up in the following ways. The first is radioactive pollution, which comes from the materials used in construction and decoration. Such as a radioactive material called radon that is found in building materials, concrete, and stone. Leukaemia will result from it. The second danger is the emission of airborne hazardous compounds from volatile decorative materials such fabric carpeting, colours, pigments, and adhesives. Cancer is easily caused by them.

Paper ID: NCSIET-46

How should Architects and Engineers Identify Resources for Sustainable Structures?

Sudhansu Sekhar Behera[1*], Nilimashree Niharika[2]

[1]Krupajal Engineering College, Kausalyaganga, Bhubaneswar-751002, Odisha, India

[2]Aryan Institute of Engineering and Technology, Bhubaneswar, Odisha-752050, India

[*] Corresponding author email: sudhansusekharbehera@krupajal.ac.in

Abstract: The selection of building materials is essential for achieving the goal of "Green Constructions" and is decided at both stages in the planning phase, when broad terms and tactical choices about the construction process are being taken, and at the time of construction plan, if supplies on the market place are being chosen. The second factor is essential in the same way as the first one for really meeting "greenness" specifications, but the architects and engineers in charge of this option frequently lack the instruments for assessment necessary to support their choice of components. Following an in-depth examination of the key elements of the meaning of "green architectural materials," the current tools for selecting of building components are reviewed and addressed in the current article. In the meantime, the pre-use stage prior to the building, or the negative environmental effects of building supplies (raw resources removal, the production procedure, and delivery to the development site), was receiving greater attention.

Keywords: Environmental effects, Product information, Sustainable structures

1. Introduction

Embedded energy often refers to the energy required in the extraction, manufacture, and delivery of substances to the constructing site, but numerous authors [2, 6, 8] contend that it should also include the' recurrent' embedded energy used in maintenance of buildings and renovation activities. The supplies, parts, and destructive energy required for building disassembly and material disposal.After a brief review of the key elements in the definition of "green constructing materials," the current tools for the selection of building materials are surveyed and addressed in the present study. At the construction planning stage, when architects and engineers must select products from the market, special focus is placed on the selection of materials, which can lead to many problems.

Paper ID: NCSIET-47

Analysis of Empirical Information Related to Green Materials for Building Utilizing Geographical Availability

Bishal Das[1*], Osin Patel[2]

[1]Krupajal Engineering College, Kausalyaganga, Bhubaneswar-751002, Odisha, India

[2]Aryan Institute of Engineering and Technology, Bhubaneswar, Odisha-752050, India

[*] Corresponding author email: bishaldas@krupajal.ac.in

Abstract: Green materials for construction, biomaterials, which and ecofriendly components theory are all applications of the building materials theory. It develops strategies and offers an academic basis for the economic growth of the region. nevertheless are still a number of issues that need to be addressed, such as: the overemphasis on interregional the three forces supporting the progress of real estate building: inherent laws of growth in the economy, market processes, and administration treatment; the optimum limit; disregarding the beneficial effects of harmonious growth, the absence of a development of instability a good representation theoretical discrepancies. [6]. contemporary regional oppositional belief in economic equilibrium is predicated on a number of presumptions, including the emergence of regional economies and the function of the market mechanism. The buildup of financial assets in the vicinity and interregional circulation fulfil the requirements of the hypothesis.

Keywords: Green construction practices, Assessment, Geographical availability

1. Introduction

The growth of the regional economy is guided by the use of the instability growth theory. Particularly, the usage of building materials must be matched with financial traits of the local area. Eastern coastal regions ought to keep taking the lead. The Central-exclusive preferential practices remain largely the same as well. In other words, there is a direct connection between the use of building materials and local resource endowments. The concentrations of geographical resources vary significantly.

Paper ID: NCSIET-48

The Mechanical Properties of Two-way Different Configurations with Axially Loaded Pre-stressed Concrete Components were Studied

Bidyut Ranjan Rout[1*], Murari Prasad Panda[2]

[1]Krupajal Engineering College, Kausalyaganga, Bhubaneswar-751002, Odisha, India

[2]Aryan Institute of Engineering and Technology, Bhubaneswar, Odisha-752050, India

[*] Corresponding author email: bidyutranjanrout@krupajal.ac.in

Abstract: A finite element model based on nuclear power plant containments is used to investigate the mechanical properties of two-way varied configurations of prestressed concrete components subjected to axial loading. This model considers the effects of various major stress directions, uniaxial or biaxial loading, and biaxial overloading ratio. The stress strain response is obtained by applying a displacement-controlled load. The simulated results show that changes in primary stress axes have a significant impact on the stress strain response under uniaxial loading. When biaxial loading is applied to the specimens, the stress change trend with increasing loading ratio is plainly distinct along different layout directions. Furthermore, correlation experiments and finite element analysis were performed to validate the validity.

Keywords: Finite element analysis, Mechanical characteristic, Nuclear power station

1. Introduction

Radioactive structures for containment are one-of-a-kind constructions that are constantly subjected to difficult conditions in the environment such as high temperature, high pressure, and radioactive radiation [1]. The arrangements of prestressed tendons and reinforced steel in the containment are complex under these conditions, and the concrete damaged property and ultimate capacity are often difficult to evaluate [2-4]. Furthermore, in harsh situations, the confinement is subjected to biaxial loading [5-6].

Paper ID: NCSIET-49

Methods for Estimating the Effects of Creeping and Shrinkage on Reinforced and Pre-stressed Concrete Structures

Bhabani Sankar Jena[1*], Mousumi Puhan[2]

[1]Krupajal Engineering College, Kausalyaganga, Bhubaneswar-751002, Odisha, India

[2]Aryan Institute of Engineering and Technology, Bhubaneswar, Odisha-752050, India

[*] Corresponding author email: bhabanisankarjena@krupajal.ac.in

Abstract: 'Precise' approaches for analyzing so-called slow deformations, based on the absence of neglect, are not adequate for practical estimations due to their requirement for appropriate studies. As a result, there is a need to employ approximate procedures and methods of analysis that produce acceptable results while remaining based on oversimplified mathematical equations. The explanation includes three such procedures: the condensed differential equation approach, the modified Trost method, and the idealistic modulus of elasticity method, as well as they are applicable on the actual case of the reinforced and precast concrete element.

Keywords: Shrinkage, creep, relaxation, approximation approaches, centrally loaded pillar

1. Introduction

There are two distinguishing characteristics of concrete as a material that can be used to understand the behavior of a structure in the stadium of exploitation and the limit equilibrium state, as well as lay the groundwork for their studies. The structural material, which must be considered, is determined by its strength and deformation ability. For an accurate evaluation of the joint work between concrete and iron in reinforced and prestressed concrete structural elements, it is necessary to first examine their deformations, because concrete deformations have a significant impact on construction deformations and strains, as well as the stability and safety of constructions.

The Influence of Strengthening on the Plastic Behavior of Reinforced Concrete Frames

Bhupesh Kumar Sahoo[1*], Swarupa Mohanty[2]

[1]Krupajal Engineering College, Kausalyaganga, Bhubaneswar-751002, Odisha, India

[2]Aryan Institute of Engineering and Technology, Bhubaneswar, Odisha-752050, India

[*] Corresponding author email: bhupeshkumarsahoo@krupajal.ac.in

Abstract: The purpose of this work is to investigate the influence of prestressing on the plastic behavior of a reinforced concrete structure. A one-story reinforced concrete building with a span of 15m was designed as well as a precast concrete structure. A nonlinear modelling was built for each frame, and a nonlinear time-history analysis was performed using seven ground motion data chosen in accordance with EN 1998-1. The results of nonlinear analysis for both frames were evaluated and evaluated, and findings on the influence of prestressing techniques on reinforced structure plastic nature are reported in this work.

Keywords: Prestressing, reinforced concrete frame, nonlinear time-history analysis

1. Introduction

The purpose of this study is to investigate the effects of prestressing on the plastic behavior of a reinforced concrete frame. The frame is designated for this purpose, and it is constructed in two variants: reinforced concrete (RC) and prestressed frame (PS). Nonlinear models for both frames are created, and nonlinear time-history analysis is undertaken. The results of nonlinear analyses for both frames are studied and compared in order to estimate the impact of prestressing on the plastic behavior of reinforced concrete frames. The geometry of the considered frame is as shown in the The frame is single-bay with a span of 15.0m. The height of the frame is 8.0m. The frame beam has a rectangular cross-section and measures 40/100cm.

Pre-stressed Force's Effects on Recycled Tire Reinforced Concrete

Jyotirmaya Satpathy[1*], Pradipta Kumar Bhatta[2]

[1]Krupajal Engineering College, Kausalyaganga, Bhubaneswar-751002, Odisha, India

[2]Aryan Institute of Engineering and Technology, Bhubaneswar, Odisha-752050, India

[*] Corresponding author email: jyotirmayasatapathy@krupajal.ac.in

Abstract: The purpose of this study is to look into the feasibility of using discarded tires as reinforcement material for concrete through experimentation and finite element simulation. Both are carried out in non-prestressed and prestressed waste tire reinforced concrete in typical flexural testing techniques using concrete as the matrix. The bending capacity is investigated using two concrete beam specimens with reinforcement and one instance without reinforcement. All specimens are 150 mm x 150 mm x 1000 mm in size. The waste tire reinforced materials in the prestressed specimens have tension with 0% and 17% of their strain before concrete casting. After the concrete has hardened, it is jacked at the end of the concrete structure with anchoring clamps.

Keywords: flexural rigidity; concrete; anchoring; prestressed force; recycled tires

1. Introduction

With the expansion of the national economy, the usage of automobiles rose substantially. The number of cars on the road has increased dramatically after the Indonesian government issued regulations for low-cost green cars (LCGC). Each year, around 20 million tires are sold for domestic consumption [2]. Based on this reality, it is reasonable to estimate that waste tires amount to 20 million tons per year. This amount will continue to rise as the number of automobiles in the country increases. When waste tires are dumped in certain regions, new issues arise. There are certain advantages to using discarded tires in reinforced concrete due to their high durability and elasticity. Some academics have already looked into the use of discarded tires in concrete. Tire powder was recycled and used to substitute sand in concrete [3].

Paper ID: NCSIET-52

Steel Beam Bridge Automobile Platforms Can Be Replaced with Partial Prestressed Concrete Flooring

Kamalakant Dash[1*], Swarupa Mohanty[2]

[1]Krupajal Engineering College, Kausalyaganga, Bhubaneswar-751002, Odisha, India

[2]Aryan Institute of Engineering and Technology, Bhubaneswar, Odisha-752050, India

[*] Corresponding author email: kamalakantdash@krupajal.ac.in

Abstract: steel bridges made of with continuously reinforced concrete slabs as automobile platforms are common. The usage of continuous reinforced concrete slabs along steel truss bridges continues to have some issues in the field, such as cracking. Cracks in the concrete slab must be fixed, which is usually done with the the grouting method. However, the approach is still ineffective in addition to being costly. A study was conducted on partly prestressed concrete slabs as car decks of steel truss bridges. The system employed was a partially prestressed concrete segmental slab put transversely across the bridge. Two concrete slab examples with lengths of 7000 mm, widths of 1000 mm, and heights of 250 mm were cast. On the top and bottom sides of the slab, symmetrical reinforcement consists of four non-prestressed steel bars and three strands. The steel bars are 18 mm in diameter, while the strands are 0.5 inch in diameter.

Keywords: Concrete, slab, automobile platforms, partly prestressed

1. Introduction

Steel truss bridges having a continuous reinforced concrete slab for the vehicle slab. The usage of a continuous reinforced concrete slab along a steel truss bridge still has certain issues in the field, such as cracking. Repairing cracks in vehicle concrete slabs is often accomplished by grouting the concrete with certain materials. However, the strategy had failed in addition to being expensive. This study proposes a vehicle slab constructed of partially prestressed concrete one-way segmental slabs that is installed transversely to the bridge. Researchers have developed some formulae for forecasting the fracture width of one-way partial prestressed concrete beams or slabs.

Paper ID: NCSIET-53

Improvement in the Photocatalytic and Optoelectronic Characteristics of Erbium Oxide by Addition of Ion Zinc Oxide and Molybdenum

Neeha Pradhani[1*], P. K. Sethi[2]

[1]Krupajal Engineering College, Kausalyaganga, Bhubaneswar-751002, Odisha, India

[2]Modern Institute of Technology& Management, Bhubaneswar, Odisha, India - 752054, Odisha, India

*Corresponding author email: neehapradhani@krupajal.ac.in

Abstract: Erbium oxide (Er_2O_3), a rare earth metal, exhibits exceptional photocatalytic capabilities. Its performance is nevertheless constrained by its high recombination rate and small surface area. As a result, it has been observed that adding Er_2O_3 to a variety of metal oxide composites can increase their photocatalytic and optoelectronic capabilities. In order to increase the surface area of an Er_2O_3 and zinc oxide (ZnO) composite, the sol-gel combustion process was used. Molybdenum (Mo) was also placed into the matrix to prevent charge recombination. ZnO and Mo were added, increasing the surface area from SBET = 29.07 m2/g to SBET = 45.71 m2/g, according to BET analysis. The addition of ZnO and Mo increased Er_2O_3 efficiency by up to 80%. The Hall Effect demonstrated that the composite of Er_2O_3 with ZnO and loading of Mo not only enhanced the photocatalytic properties but also enhanced the electrical properties of the Er_2O_3 ($\sigma = 4.4x10^{-4}$ Sm^{-1} to $\sigma = 5.1\ x10^{-4}$ Sm^{-1}). The proposed material can be one of the best alternatives for optoelectronic applications due to improvements in its characteristics.

Keywords: Photocatalyst, SEM, Hall effect, RAMAN, UV.

1. Introduction

In recent decades, water pollution, particularly that caused by dyes and pigments, has become a significant issue on a global scale [1]. It is challenging to remove dyes and pigments from contaminated water because they are resistant to many conventional water treatment techniques [2]. These contaminants can harm the environment and human health when present in water [3]. Finding efficient and effective ways to remove these toxins from water is crucial. There are many ways to treat wastewater, including electrochemical, flotation, absorption, ozonation, electro-flotation, photodegradation, and filtration [4].

The Impact of Barium Strontium Titanate (BST) On The Loss Performance and Soft Magnetic Characteristics of Mnzn Ferrites

Neela Victor Babu*, P. K. Sethi[2]

[1]Krupajal Engineering College, Kausalyaganga, Bhubaneswar-751002, Odisha, India

[2]Modern Institute of Technology& Management, Bhubaneswar, Odisha, India - 752054, Odisha, India

*Corresponding author email: neelavictorbabu@krupajal.ac.in

Abstract: Higher efficiency from the magnetic core, where the MnZn ferrites are frequently used, is necessary due to the increased power density of switched mode power supplies (SMPS) currently being developed. But the relatively high working temperature of the SMPS frequently leads to decreased MnZn resistivity, which raises eddy current loss. Donor-doped barium strontium titanate (BST) with a positive temperature coefficient of resistivity (PTCR) is synthesised and doped in the MnZn ferrite to increase the resistivity of MnZn ferrite at high temperature ranges (>100 °C). Over a broad temperature range of 25 °C to 140 °C, the effect of BST addition from 0.000 wt% to 0.020 wt% on the MnZn ferrite is examined. Ionic exchange between the spinel phase and the XRD result is indicated. The XRD results point to an ionic exchange between the perovskite and spinel phases. The microstructure of MnZn ferrite as seen by the SEM is more homogeneous and refined as a result of the BST addition. The BST addition has essentially no effect on density and saturation magnetic induction at a maximum of 0.020 wt%. The microstructural change brought on by the BST addition, however, marginally decreases the original permeability.

Keywords: Sputtering, c-lattice contraction, Ferromagnetism, Piezoelectricity.

1. Introduction

The introduction of third generation semiconductors like GaN has significantly increased the power-density of switched mode power supply (SMPS) in recent years [1]. MnZn ferrites, which make up the main part of the SMPS, are well recognised for having high saturation magnetic induction (Bs), low noise, and high initial magnetic permeability (i) [[2], [3], [4], [5], [6], [7], [8]]. The MnZn ferrites naturally minimise the SMPS component size due to their high i and Bs, enabling a highly integrated system with less weight.

Paper ID: NCSIET-55

AC Impedance Study of $Pb(Zr_{0.35-x}Ce_xTi_{0.65})O_3$ (x = 0.00, 0.05, 0.10, 0.15) Ceramics

Sagarika Lenka[1*], S. Mohapatra[2]

[1]Krupajal Engineering College, Kausalyaganga, Bhubaneswar-751002, Odisha, India

[2]Aryan Institute of Engineering and Technology Bhubaneswar - 752050, Odisha, India.

*Corresponding author email: sagarikalenka@krupajal.ac.in

Abstract: The $Pb(Zr_{0.35-x}Ce_xTi_{0.65})O_3$ samples with x = 0.00, 0.05, 0.10, and 0.15 were created using the conventional solid state method of mixing (calcination at 950 °C and sintering at 1100 °C). Using complex electrical impedance spectroscopy (CIS), the electrical characteristics of lead zirconate titanate (PZCT) ceramics doped with the rare earth element cerium (Ce) were examined. The electrical properties of the produced ceramics are mostly dominated by the bulk effect, according to the results of Nyquist plots. The influence of grain boundary and interface polarisation components on the electrical characteristics are insignificant. Due to their negative coefficient of resistance response, these ceramics behave as semiconductors at higher temperatures. The analysis of the modulus formalism confirmed the occurrence of non-Debye kind of electrical relaxation phenomenon in the material; furthermore, the relaxation mechanism is found to be dependent on both temperature and Ce concentration. The magnitude of ac conductivity of the ceramics is very much reduced with the Ce substitution; consequently, PZT shows relatively a large value of impedance making it a useful material for the electronic applications.

Keywords: Ferroelectric, Electroceramics, Impedance spectroscopy, Nyquist plot.

1. Introduction

Oxide electroceramics are inorganic polycrystalline solids that can be processed and shaped by being subjected to sufficiently high temperatures and pressure. These ceramics' electrical, magnetic, optical, and magneto-electrical properties make them useful for devices like antennas, speakers, RADARs, electronic circuit substrates, computer components, etc. [[1], [2], [3]].The grains—small groups of crystallites that make up an electroceramic—are composed of crystallites. The regions known as the grain boundaries, which are part of these grains and have electrical properties different from grains, make up these grains.

Paper ID: NCSIET-56

Metal Halide Perovskite Solar Cells' Impedance Spectroscopy: A View from Equivalent Circuits

N. Pradhani[1*], Arat Sethi[2]

[1]Krupajal Engineering College, Kausalyaganga, Bhubaneswar-751002, Odisha, India

[2]Modern Institute of Technology& Management, Bhubaneswar, Odisha, India - 752054, Odisha, India

*Corresponding author email: neehapradhani@krupajal.ac.in

Abstract: The ceramics (NBBT1, NBBT2, and NBBT3), also known as $Na_{0.5}Bi_{0.5(1-x)}Ba_xTiO_3$ (x = 0.05, 0.1, and 0.15), are produced using a standard ceramic manufacturing method. According to Rietveld refinement's examination of the generated ceramic's X-ray diffraction pattern, NBBT1 has a rhombohedral crystal structure, NBBT3 is tetragonal, and NBBT2 has a phase boundary. The electrical characteristics of these ceramics have been investigated using impedance spectroscopy in the frequency range of 10 Hz to 5 MHz and in the temperature range of 303 K-723 K. Conductivity, impedance, and electric modulus formalisms are used to analyze frequency and temperature-dependent electrical data. Two distinct dispersion zones show that the NBBT1 conductivity spectrum follows the double power law. While only one power rule is seen for NBBT2 and NBBT3. It is discovered that the relaxation frequency of impedance obeys the Arrhenius law and increases with temperature.

Keywords: Perovskite, Ferroelectric, Impedance spectroscopy, XRD, Multilayer capacitors

1. Introduction

Due to their dielectric, relaxor, ferroelectric, semi-conducting, electromechanical, pyroelectric, and piezoelectric capabilities, ferroelectric materials of the perovskite family with the general formula ABO3 and numerous ions occupying the lattice positions A and B have been the focus of extensive research. These materials are widely employed in a wide range of solid-state devices, including pyroelectric and piezoelectric sensors, transducers, actuators, micro-electromechanical systems, multilayer capacitors, and microwave tunable devices.

Paper ID: NCSIET-57

Is it true that FDI spurred economic expansion in China? A Critical Review

Ramesh Chadra Ratha[1*], Sangram Khandi[2]

[1]Krupajal Engineering College, Kausalyaganga, Bhubaneswar-751002, Odisha, India

[2]Aryan Institute of Engineering and Technology Bhubaneswar - 752050, Odisha, India.

*Corresponding author email: rameshchadraratha@ krupajal.ac.in

Abstract: Unfamiliar direct speculation (FDI) has been connected to monetary development in various nations. Firm-level productivity spill overs have been identified as an essential component of the process by which FDI promotes economic expansion. In addition, China has evidence of productivity spill overs caused by FDI. However, the empirical question is whether these spill overs have been large enough to affect growth overall. To answer, we apply meta-analysis to the relevant empirical literature. Our main finding is that FDI has a much smaller impact on Chinese economic growth than a naive aggregation of existing estimates would suggest. The observed estimates have been inflated by publication bias and an abundance of estimates based on less preferred study and sample characteristics. When these impacts are represented, the assessed impact of FDI on Chinese financial development is decreased to measurable unimportance. This suggests that the Chinese "economic miracle" probably came from somewhere else.

Keywords: Chinese monetary development, FDI

1. Introduction

FDI has been connected to financial development in a number of nations. Firm-level productivity spill overs have been identified as an essential component of the process by which FDI promotes economic expansion. In addition, China has evidence of productivity spill overs caused by FDI. Whether these overflows have been of adequate size to influence development at the total level, nonetheless, is an exact inquiry. To answer, we apply meta-analysis to the relevant empirical literature. Our fundamental finding is that the impact of FDI on Chinese monetary development is a lot more modest than one would anticipate from a naive collection of existing evaluations.

Globalization and inequality: A Survey Paper

Mousumi Panda[1*], Abhisek Mohanty[2]

[1]Krupajal Engineering College, Kausalyaganga, Bhubaneswar-751002, Odisha, India

[2]Aryan Institute of Engineering and Technology Bhubaneswar - 752050, Odisha, India.

*Corresponding author email: mousumipanda@ krupajal.ac.in

Abstract: "Global inequality," as it is typically measured, is the relative inequality of incomes among all people worldwide, regardless of where they live. In their insightful and timely books on global inequality, Francois Bourguignon and Branko Milanovic emphasize the significance of globalization. The books complement one another: With some intriguing hypotheses regarding the processes that are in play, Milano Vic paints an ambitious and comprehensive picture; an in-depth and appropriately qualified economic analysis is provided by Bourguignon. This paper questions the proposition of the two books — that globalization has been a significant main impetus of disparity between or inside nations. In addition, the paper raises concerns regarding the robustness of the evidence for decreasing global inequality and identifies some conceptual limitations of standard measures in capturing the concerns of numerous observers in the ongoing globalization and policy responses debates.

Keywords: Global inequality, globalization, economic analysis

1. Introduction

The theoretical and empirical literature on the factors that influence university students' success is organized and discussed in this survey. The theoretical framework says that the decision to invest in tertiary education is made in stages with decreasing levels of uncertainty about the cost of education and future returns. Using a "learning by doing" method, students update their information set each year and revise the benefits and costs of tertiary education. As needs be, they choose whether to proceed with college concentrates on to earn an education or to pull out. This college decisional process is talked about by bunching the determinants of college results into four principal classifications - understudies' qualities, capacities and conduct; parental foundation furthermore, family organizations; characteristics of the institutions and tertiary education system; work market execution - which are drawn from the exact proof.

Maintainable promoting procedures: meeting customer expectations and generating business value

Nirmal Charan Mallick[1], Gopinath Pradhan[2]

[1]Krupajal Engineering College, Kausalyaganga, Bhubaneswar-751002, Odisha, India

[2]Modern Institute of Technology & Management, Bhubaneswar, Odisha, India.

*Corresponding author email: nirmalcharanmallick@ krupajal.ac.in

Abstract: Businesses in the 21st century cannot avoid employing sustainable marketing strategies. Organizations have begun money management colossal sum on these exercises. Buyers truly do anticipate that organizations should embrace supportable procedures yet understanding one's need is the main drive for any purchaser. Along these lines, there is hole between business supportability practices and shoppers' assumptions. To address this hole, the paper proposes a calculated system for maintainability methodologies that organizations should embrace. Businesses can use the proposed framework to help them meet customer expectations without sacrificing business value. The paper recognized four significant reasonable advertising methodologies to be incorporated into strategic approaches.

Keywords: Sustainable marketing strategies, consumer expectations, modern marketing

1. Introduction

As per World Bank Report, monetary development of recent many years has lifted more than 660 million individuals out of destitution and has raised the pay levels of millions more. The size and expansion of the affluent class in emerging markets have increased in tandem with this development. Notwithstanding, the improvement comes at a cost of climate and unfortunate networks. People have been left behind by growth patterns by the hundreds of millions: There are still 1.2 billion people without electricity, 870 million people are undernourished, and 780 million people do not have access to clean, safe water for drinking. This disproportionate advancement has contributed an excessive number of natural and social difficulties. The economic, social, and environmental infrastructure and systems of the emerging nations, which are new industrial economies, are not prepared to face these challenges. As a result, we can assert that development is not on track to meet the demands of a growing population and limited resources.

Paper ID: NCSIET-60

Orientation Generalizing in Scholarly world: Evidence from the Job Market Rumours Forum in Economics

Tanmaya Kumar Pradhan[1*], Swarum Kumar Rout[2]

[1] Krupajal Engineering College, Kausalyaganga, Bhubaneswar-751002, Odisha, India

[2]Modern Institute of Technology & Management, Bhubaneswar, Odisha, India.

*Corresponding author email: tanmayakumarpradhan@ krupajal.ac.in

Abstract: This paper investigates whether academics portray and judge men and women differently in online "conversations" on a daily basis. I consolidate strategies from text mining, AI and econometrics to concentrate on the presence and degree of orientation generalizing on financial matters Occupation Market Tales discussion. Through a subject examination, I track down that the talk will in general turn out to be fundamentally less scholar or expert situated, and more about private data and actual appearance when ladies are referenced. The words with the most grounded prescient power on orientation, chose by the Tether strategic model, give an immediate investigate the orientation generalizing language on this discussion. Additionally, the state dependence between the content of thread posts is revealed by panel data analysis. Particularly, if women are mentioned earlier in a thread, the discussion will likely shift from academic to personal. Last but not least, I limit the analysis to specific discussions of economists. I find that high-profile female economists typically receive more attention on EJMR than their male counterparts.

Keywords: Conversations, Tether strategic model, Scholarly world

1. Introduction

Women are still underrepresented in math-intensive fields like economics, engineering, and computer science, despite significant advancements in educational attainment over the past few decades. This persistent underrepresentation, according to some analysts, is the result of subtle interactions that convey the message that women do not "belong" in science, technology, engineering, and mathematics. The widespread nature of such gender stereotypes is demonstrated by the recent controversy surrounding the sexist culture in Silicon Valley.

Distinguishing obstructions to huge scope coordination of variable inexhaustible power into the power market: A review of the market design literature

Ajit Kumar Kar[1*], Satya Swain[2]

[1] Krupajal Engineering College, Bhubaneswar, Odisha,India

[2] Modern Institute of Technology and Management, Bhubaneswar,Odisha,India.

*Corresponding author email: ajitkumarkar@ krupajal.ac.in

Abstract: For arriving at the 2 °C environment focus on, the vigorous development of power age from variable environmentally friendly power sources (VRE) in the power area is supposed to proceed. Integration costs result from adapting the power system to the VRE's variable, uncertain, and location-dependent outputs. Coordinating VRE into a well-working power market can limit joining expenses and drive interests in VRE and reciprocal adaptable assets. However, it appears that the electricity market in the European Union (EU) cannot achieve this goal in its current form. The purpose of this paper is to provide a comprehensive literature review of the obstacles to VRE's widespread market integration in the EU electricity market. A framework was developed to incorporate the most pertinent market integration barriers and market inefficiencies based on the EU electricity market's structure.

Keywords: Market integration, Barrier Integration costs, Electricity market, Variable renewable electricity

1. Introduction

The Paris Understanding expects to restrict the increment of the worldwide typical surface temperature to 1.5-2 °C above pre-modern level to stay away from the most obviously terrible effects of environmental change. The power sector, which accounted for 38% of global energy-related CO2 emissions in 2013 must be decarbonized if cost-effective strategies are to keep the temperature rise well below 2 °C. Variable renewable electricity, or VRE, is electricity produced by stochastic energy flows like wind and solar. It is essential for replacing fossil-fired electricity production, which, in addition to causing climate change, also causes air pollution and energy insecurity.

Paper ID: NCSIET-62

Modelling Highly Heterogeneous Traffic Flow Approaches

Harish Chand Giri[1*], Mousumi Puhan[2]

[1]Krupajal Engineering College, Bhubaneswar, Odisha-751002, India

[2]Aryan Institute of Engineering and Technology, Bhubaneswar, Odisha-752050, India

*Corresponding author email: harishchandgiri@krupajal.ac.in

Abstract: The modelling approach used to simulate the movement of heterogeneous traffic with vehicles having a wide range of static and dynamic characteristics is described in this study. The lack of lane discipline in mixed traffic flow conditions is taken into account in the simulation framework for the traffic-flow model. The suggested model's structure is presented in great depth. In the context of diverse traffic conditions, common problems with traffic simulation, such as vehicle generation, logics for vehicular movement, etc., are described in detail. The methods used to validate the suggested model are also covered in the study, along with their results. Finally, specifics of how the model was used to research the characteristics of traffic flow on urban roads are also provided.

Keywords: Heterogeneous traffic flow, Traffic-flow model, Vehicular movement

1. Introduction

Study of the various characteristics of road traffic is necessary for planning, design, and operation of roadway facilities, in addition to regulation and control of traffic. Study of these characteristics by observing various aspects of traffic flow in the field, is difficult and time consuming. Also, it is not possible to carry out such experiments in the field covering a wide range of traffic volume and composition on a given roadway due to practical difficulties. Hence, it is necessary to model road–traffic flow for in depth study of the related aspects. The traffic in most developing countries such as India is heterogeneous, comprising vehicles of wide ranging physical dimensions, weight, and dynamic characteristics, moving on any available part of road space without lane discipline. In India, the "keep left" traffic rule is followed, and both the motorized and non-motorized vehicles share the same road space without any segregation.

Analysis of Deceleration Action of Various Types of Vehicle

Gandha Valla Madha Rao[1*], Murari Prasad Panda[2]

[1]Krupajal Engineering College, Bhubaneswar, Odisha-751002, India

[2]Aryan Institute of Engineering and Technology, Bhubaneswar, Odisha-752050, India

*Corresponding author email:: gandhavallamadharao@krupajal.ac.in

Abstract: For intersection design, deceleration lane design, traffic simulation modelling, vehicle emission and fuel consumption modelling, among other things, vehicle deceleration characteristics are crucial. Vehicles in a heterogeneous traffic stream have a wide range of physical features, such as weight to power ratio and dynamic characteristics, which affect how they decelerate. The majority of earlier research were only concerned with the deceleration behaviour of vehicles and trucks in uniform traffic. The current study's objective is to analyse how various vehicle types (such as trucks, cars, motorised two- and three-wheelers) decelerate on the Cuttack-Sambalpur Highway in Odisha, India. Global Positioning System data was gathered on drivers' speed profiles as they slowed down their cars from top speed to zero in the least amount of time. Keywords: Speed, Dual regime model, Global positioning system.

Keywords: Deceleration, traffic simulation modelling, deceleration lane design

1. Introduction

Understanding of the deceleration characteristics of vehicle is important for various traffic engineering applications like intersection design, deceleration lane design, traffic simulation modeling, vehicular emission modeling, instantaneous fuel consumption rate modeling, etc. Traffic simulation or emission modeling requires deceleration characteristics of all types of vehicles with wide variation in their physical dimensions, weight to power ratio and dynamic characteristics. Majority studies carried out in the past are restricted to study of deceleration behaviour of passenger car or truck [1]. Deceleration rates of passenger car reported in previous studies are presented in Table 1. Study of Deceleration Behaviour of Different Vehicle Types [2] show that vehicles employ higher deceleration rate while decelerating from higher desired speed.

A Case Study on the Development of an Accident Prediction Model in Mixed Traffic Conditions

Balamurugan R[1*], Osin Patel[2]

[1]Krupajal Engineering College, Bhubaneswar, Odisha-751002, India

[2]Aryan Institute of Engineering and Technology, Bhubaneswar, Odisha-752050, India

*Email: balamuruganr@krupajal.ac.in

Abstract: Models for predicting accidents are created in mixed-traffic environments. There have been two models created. A city-based traffic accident prediction model makes up the first model. The two parameters utilised to create the model are the city's population and automobile ownership. Surat, a city in Gujarat, is used as a case study. The number of accidents that happened overall in the city declines with population and automobile ownership. The urban-arterial-based accident prediction model is the second model. There are eight distinct spots on a 10 kilometre length of the Surat city ring road where accidents have historically occurred, according to accident records. These places are chosen as accident hotspots. A thorough examination of road safety is necessary because there are several contributing variables and causes of traffic accidents. Therefore, using the same geometric standards, these models can be used to forecast the amount of accidents in the future. The district authorities can implement improvement initiatives with this in mind.

Keywords: Accident prediction model, Mixed traffic conditions

1. Introduction

In both industrialised and emerging cultures in the second part of the 20th century, road traffic accidents and the human casualties they cause have been the greatest scourge. According to [5], one of the main societal issues harming the wellbeing and development of developing nations is traffic accidents. Worldwide, the frequency of road traffic accidents (RTA) is increasing [8]. Due to rapid growth of urbanization, there is a significant growth in number of vehicles.

English Skills Assessment Using Digital Technologies

Nityananda Sahoo[1*], Tapan Mohanty[2]

[1]Krupajal Engineering College, Kausalyaganga, Bhubaneswar-751002, Odisha, India

[2]Aryan Institute of Engineering and Technology Bhubaneswar - 752050, Odisha, India.

*Corresponding author email: nityanandasahoo@krupajal.ac.in

Abstract: When learning a new language, it's critical to measure oral proficiency in order to encourage these abilities to grow. Moreover, computerized instruments can be helpful for making this assignment simpler for instructors and advancing their coordinated effort in view of expert web-based networks. The AROSE platform, a new digital tool made to help teachers of secondary education assess their students' oral English as a foreign language skills, is presented in this article. In a project funded by the Erasmus+ program, we promoted an international online community of secondary education teachers to evaluate this platform. A design-based research approach was used to develop the study. The process of designing the platform went through three distinct iterations. We used a combination of focus groups with teachers and experts, observation forms, and teacher questionnaires. The main findings show that teachers must incorporate technology into the evaluation process to make it better. The substantial data on usage and user satisfaction demonstrates that the AROSE platform successfully meets this requirement.

Keywords: foreign language skills, EFL

1. Introduction

Numerous schooling systems worldwide take on an English capability test (EPT) as a compelling component to assess English as an Unknown dialect (EFL) speakers' cognizance levels. The Military Online English Proficiency Test (MOEPT) was also developed by Taiwan's military academy to evaluate the comprehension levels of EFL cadets. However, the MOEPT difficulty level has not been determined in order to facilitate future test bank updates and enhance EFL pedagogy and learning. Besides, it is remarkably difficult to complete any examination actually utilizing past corpus-based approaches.

Paper ID: NCSIET-66

Pyrolysis: A Sustainable Method for Creating Biochar and Biofuels from Biomass

Priyabrat Mohapatra[1]*, Dipak Biswal[2]

[1]Krupajal Engineering College, Kausalyaganga, Bhubaneswar-751002, Odisha, India

[2] Modern Institute of Technology and Management, Bhubaneswar, Odisha, India.

*Corresponding author e-mail: priyabratmohapatra@krupajal.ac.in

Abstract: This study provides a brief assessment of current biomass-based transportation fuels, including fuels from the Fischer-Tropsch synthesis, bioethanol, fatty acid (m)ethylester, biomethanol, and biohydrogen. The word "biofuel" in this context refers to liquid or gaseous fuels for the transportation industry that are primarily made from biomass. Biofuels are seen as significant technology by both industrialised and developing nations for a number of reasons. They include concerns about the environment, saving money on foreign exchange, and socioeconomic problems specific to the rural sector. The phrase "modern biomass" is typically used to refer to the continued use of conventional biomass resources to generate competitive fuels with low environmental impact, heat, and electricity utilising contemporary conversion methods.

Keywords: Pyrolysis; Fischer–Tropsch; Hydrolysis; Biofuel

1. Introduction

The word "biofuel" refers to liquid or gaseous transportation fuels that are mostly made from biomass. The widespread consensus is that biofuels offer a wide range of benefits, including supply security, regional development, social structure and agriculture, sustainability, and the reduction of greenhouse gas emissions. The previous century has seen a 17-fold rise in global energy use, and the main contributors to air pollution are CO2, SO2, and NOx emissions from the burning of fossil fuels.

Paper ID: NCSIET-67

Analyzing the Relationship Between EFL Teachers' Self-Efficacy and Acceptance of Online Teaching in the Chinese Setting

Minushree Pattnaik[1*],Umakanta Mohapatra[2]

[1]Krupajal Engineering College, Kausalyaganga, Bhubaneswar-751002, Odisha, India

[2]Aryan Institute of Engineering and Technology, Bhubaneswar, Odisha-752050, India

*Corresponding author email: minushreepattnaik@gmail.com

Abstract: The self-efficacy of EFL teachers and their acceptance of online teaching in the Chinese context were the subjects of this quantitative study. 293 university-level EFL teachers in China completed a single online questionnaire that included a self-efficacy and behavioral intention scale. The clear outcomes showed that EFL educators at Chinese colleges had a positive aim to take on web based instructing and moderately high self-viability in embracing internet educating. EFL teachers' intention to teach online was predicted by the results of multiple linear regression analyses regarding their effectiveness in instructional strategies and student engagement. Acceptance of online teaching among EFL teachers was not influenced by self-efficacy in classroom management or computer proficiency. Teachers and educators can improve their self-confidence, engage in online teaching on a pedagogical level, and identify patterns in teacher efficiency with respect to language with a theoretical understanding of the between self-efficacy and EFL teachers' behavior and intentions.

Keywords: EFL teachers; self-efficiency; online teaching; technology acceptance; China

1. Introduction

By maintaining the viability of teaching activities through secure and timely means, online education significantly contributed to efforts to address educational disruption during COVID-19. ICT-based online teaching was not an option for providing excellent instruction during the epidemic, but rather a necessity. Notwithstanding, this sudden change from customary, in-person guidance to online guidance has affected college educators' convictions and their specialized capacity, since they see snags and difficulties concerning the web and innovation based internet based guidance.

Analysis of the Laboratory Outcomes of Asphalt Blends with Various RAS and RAP Content

Rabindra Kumar Malla[1*], Nilimashree Niharika[2]

[1]Krupajal Engineering College, Bhubaneswar, Odisha-751002, India

[2]Aryan Institute of Engineering and Technology, Bhubaneswar, Odisha-752050, India

*Corresponding author email: rabindrakumarmalla@krupajal.ac.in

Abstract: Although using recycled asphalt shingles (RAS) and recovered asphalt pavement (RAP) in hot-mix asphalt (HMA) has benefits for the environment and the economy, concerns centre on the wear and low-temperature cracking potential of these pavements. This study was conducted to assess the impacts of RAS and RAP on fatigue, low-temperature cracking, and stiffness of HMA as well as to highlight the research topics that require further investigation through a national survey of transportation agencies. Results of a national study showed that while fatigue cracking is the main issue when RAS and/or RAP are employed in mixes, no particular test is advised for the evaluation of these mixes' fatigue resistance at the mix design stage.

Keywords: Recovered asphalt pavement (RAP), Recycled asphalt shingles (RAS)

1. Introduction

Recent studies have reported that incorporating recycled asphalt shingle (RAS) and reclaimed asphalt pavement (RAP) in asphalt mixes may result in an improvement in rutting performance and a better resistance to moisture damage [1-4]. However, despite their advantages, several researchers expressed concerns on premature failure of asphalt pavements containing high amounts of RAS and/or RAP due to fatigue and low-temperature cracking [4-5]. The effect of RAS and RAP on mix properties depends on their amounts, chemical and rheological properties, and sources [6]. In some cases using a softer PG grade binder is suggested to balance the stiffer nature of RAS and/or RAP. The AASHTO PP 53 and MP 15 standards [7] recommend further evaluation of the asphalt binder blend in the mix if the recycled binder replacement exceeds 30 percent of total binder (by weight).