

International Conference on Basic Applied Sciences

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Good morning, all! "Thank You" is a prayer that cannot be seen or touched. It must be felt by the heart. I feel honored and privileged to get the opportunity to propose a vote of thanks on this special occasion.

I thank all the honorable delegates who blessed us with their presence. I am also very thankful to all Program Advisory Committee members and the invited speakers. Words are not enough to thank their constant guidance and support in shaping the **International Conference on Basic Applied Sciences**.

I am very thankful for our current and formal faculty colleagues and non-teaching staff members who always stand by and motivate us. I feel proud, and thank you for making this event successful.

President KLEF

Er.Koneru Satyanarayana

It has been our pleasure to host all the participants of the **International Conference on Basic Applied Sciences** at K L E F. The participants were very enthusiastic.

I am thankful to all the participants for coming to KL University to attend the conference. We have been fortunate to have some eminent persons from academia, industry, and utility working in Current Research Areas. I am sure that the participants must have benefitted by attending this conference. I am very much thankful to all the sponsors of this conference. Without their generous financial support, organizing this conference would not have been possible.

Vice-Chancellor

Dr.G.Pardha Saradhi Varma

A splendid evening finally comes to an end. On behalf of K L E F, I feel honored to thank all the dignitaries who have taken valuable time to make the **International Conference on Basic Applied Sciences** a grand success.

I am thankful to the steering committee members for giving us the opportunity.

I take this opportunity to thank all the reviewers and technical committee members for providing their valuable comments in time and helping improve the quality of the papers presented at the conference.

My Best Wishes to the Technical Committee, Publication Chair, HoD, research scholars and faculty, and staff members. I am also thankful to all who have helped us organize the conference.

Registrar(I/C)

Dr.A. Jagadeesh

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Participation Approach-A better way of learning language

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Abstract: While the prolific grammarians are busy in defining, *What is a 'task'?*, a question that has never been answered with a proper justification and trying to attach it with verb forms or prepositions, but an average student is unconcerned with it and imagines it as a gap-fill activity of their language learning process, which requires learners to argue about the possible explanation to an enigma a 'task'? It's impossible to ignore how important task based method has impact on the learners while learning English language in a stress free ambience. Defining 'task' has always been a serious bone of contention among English instructors at various junctures, at staffrooms, at debates, at academic discussions etc. But a question that's less habitually deliberated is what a student considers a task to be, and how far are they aware of being part of one. As mentioned above they think its completing a gap-fill as a 'task'; some may find it as a very challenging 'task' (or not). But many students might consider a 'task' as a discussion and trying to frame out the possible solution to a riddle a diverting (interesting, amusing, etc) pastime, but unfortunately, they fail to realize the significance of language learning aim involved internally within it.

Keywords: Task, Participation, discussions, conversation, interaction, task-based learning



Importance of Learning Technical Vocabulary by the Students of Polytechnics in Andhra Pradesh

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Abstract: Words are of utmost importance in any form of communication in any given language. Mastering English also can be done only by gaining competence over its vocabulary. Indian students in general, students of Technical Education in Andhra Pradesh in particular find it difficult to master English vocabulary. More over there is a lot of difference in English to be learnt by student of general course and a student of technical course. A technical student is expected to prepare a project report, present papers, write for journals and do a lot for which he requires a lot of technical vocabulary. Unfortunately a technical student in Andhra Pradesh is unable to get the required technical vocabulary as it is not given importance in the curriculum. This paper addresses the problems faced by polytechnic students in learning vocabulary, the short comings of materials, methods to follow and the other related issues.

Keywords: Words, Vocabulary, Technical students, Curriculum

Patriarchal Oppression and its Impact on Individual and Society

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Abstract: The patriarchal practice has been prevailed almost the entire world causing the half of the population suffer of it. In spite of many feminist and activists' endeavours there has been less progress in this area. This topic is discussed in many novels of Volga with reference to the world literature. This paper refers the gender bias practices in the patriarchal societies and its impact on female as well as male gender. The researcher provides the incidents how it can be rooted out with the examples of characters from her works. Along with this, the paper discusses the issues of gender with reference to Simon de Beauvoir which are even in relation even today. The paper further discusses the impact of childbearing when one practices patriarchy at certain levels.

Keywords: Feminism, individualism, dependency



Rabindranath Tagore's 'The Victory' and 'The King of The Dark Chamber' - A Comparative study

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Abstract: In this paper an attempt is made to study the features of narrative and characterization in Rabindranath Tagore's The Victory and The King of the Dark Chamber. One can come across several similar aspects in both these novels with respect to spirituality, sentiment, optimism, and a few grey shades of life. While the former is a short story, the latter is a play authored by the same writer. Hence, the study is an analysis of the suitability of the title to the content and names of the characters in the short story 'The Victory' and the play 'The King of the Dark Chamber'.

Keywords: spirituality, aesthetic sense, optimism, pessimism, grey shades

Transgender Literature of India –An Avant-garde Arrow in the Quiver of Postcolonial Literature

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Abstract: Transgenders of India being marginalized and decentered for decades have taken to writing to let their unheard voices echo in the ears of mainstream society. Their writings are impregnated with their ordeals to be recognized as mere human beings let alone to be treated with equal respect in society. However, this was not the fate of Indian transgenders throughout the history. In fact, they enjoyed revered and respectable lives till the advent of the West. Transgender persons have always been part of Indian society. Contrary to the gender binary of the West the ancient religious texts of the land depict multiple stories of three genders. Gender diversity, gender fluidity and queerness are the essence of many stories within the mythology of the country. The blessings and curses of Transgenders in India are believed to come true. All the royal families of the country patronized transgenders and gave positions of great honor. Transgenders played prominent role in the royal courts of the Mughal rulers. But, the Colonizers with their tool of cultural imperialism seized the psyche of Indians and metamorphosed their attitudes towards transgenders by criminalizing the transgender community in the 19th century. The present paper is an attempt made, to consider transgender literature of India as a part of Postcolonial literature produced by the nation. For this purpose, the present paper refers to four available autobiographies of Indian Transgenders Vidya's *I Am Vidya*, A. Revathi's *The Truth About Me*, Laxmi Narayan Tripathi's *Me Hijra, Me Laxmi*, and Manobi Bandopadhyay's *A Gift of Goddess Laxmi*

Keywords: Postcolonial literature, Transgender literature, Queer, Cultural Imperialism, Gender discrimination

Vocabulary acquisition: The Role of English Movies in the Language Labs

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Abstract: Vocabulary plays a pivotal role in the acquisition of a language. Linguists believed that the knowledge of 2000 words in a language helps an individual to communicate in a particular language without any difficulty. Acquiring more words in a language makes one's written and spoken communication precise and effective. Do the engineering students have this minimum range of vocabulary? Are they unable to learn the minimum number of the required words? These questions may not be answered with concrete evidences. But, the fact is, though an engineering student has the capacity to learn many words, due to lack of systematic learning, he could not make use of even the acquired words during communication. This paper proposes to enrich the vocabulary of the students using English movies as learning material in the language lab.

Keywords: Human memory and Vocabulary, contextual learning, learning of pronunciation, learning with enjoyment, development of life skills

Language Learning through Poetic Acquaintance

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Abstract: Poetry is undoubtedly an emotional way of expression to the self or to the loved ones. It can have an unimaginable impact on the readers. The background idea for framing poetry can be anything and everything like love, patriotism, nature, motivational, war, family, emotions etc., the list keeps on going. Learning language through poetry is a new dimension that is being introduced in classroom scenario. Reading a poem outside will help the listener not only to learn the vocabulary but also tone, rhyming, rhythm, alterations, intonations etc., The whole concept of language teaching revolves around the learners because they are the desired outcomes of whatever process happens inside or outside the classroom. The ultimate goal to be obtained is to make the student propagate themselves up to the standards of being recognized as an English communicator. The accomplishments need not be gained only through techniques of language in the classroom but also by giving the focus to literary genres. To start with it reading and discussing poetry with nature imagery with students can make them relate to nature. Taking students for a walk around the premises of their institution, neighbourhood, or community to observe and collect sensory images from direct experience with nature: the sights, sounds, smells, and textures of things outdoors can bring a new imaginative power in their minds and can help them connect to the Mother Nature. Nature relates to everybody, and it just consumes our souls and peace into itself.

Keywords: Language learning, learners desired outcomes, classroom scenarios, imagery, literary genres.

Women a Flux of Tradition, Transition and Transgression-Chitra Banerjee's diasporic Vantage Points

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Abstract: The status of Women in India has seen a long history scarred and rampaged by a series of social aberrations and asocial traumatizing which surfaced in a series of state-supported illegal acts like child marriages, female infanticide, dowry and the taboo on widow remarriage. Measures aiming at amelioration were few and far between and largely unsuccessful as a silent majority always showed a sulking disinclination. But for writers like Chitra Banerjee the proverbial light at the end of the tunnel is at last in sight. It came in the form of a silent realization and a subtle awareness of a generation of women who are rather introspective than evocative. From a diasporic vantage point she looks at the stark reality and derives a new meaningfulness in their existence.

Keywords :rampaged, traumatizing, evocative, diasporic

Graduate employability: The role of Universities

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Abstract: Employers believe that graduates are not job ready and lack some of the most important skills needed for obtaining and retaining employment. The shortage of trained and adequately skilled graduates is emerging as a significant challenge to our nation. This paper makes an attempt to throw light on the responsibility of universities to embed employability skills into the curriculum to make the students job ready. The two major tasks before every graduate are obtaining a suitable job and retaining it with the skills they possess. This paper makes an effort to explore the steps to be taken by universities to transform the graduates developing a liaison between the industries and universities to embed employability skills into the curricula to promote the growth of the nation. It lays emphasis on the steps to be taken by the Indian government to bridge the skills gap and make its rich human resources job ready.

Keywords: Universities, Skills gap, Curriculum, Employers, Employability, Employment

An exploration of Individual Identity of a Black Woman: A select study of Alice Walker

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Abstract: Alice Walker is known for introducing the themes of gender and racial inequality that has been underlined with the concept of individual identity. Her works has maintained a deep concern with woman in particular to black woman identity and her exploration. This article studies her two major works ‘The Color Purple’ and ‘Possessing the secret of Joy’ as a sequel works. The protagonists of the two novels Celie and Tashi (a minor character in ‘The Color Purple) respectively tries to recover a lost and defeated self, a self defeated by people of their own culture, not some outside oppressors. Walker displays the importance of personal identity and the significance of one’s heritage. These subjects are being addressed through Celie and Tashi character. The two characters in their novels search for the ability to express one’s thoughts and feelings that is crucial to develop a sense of self. Initially, Celie and Tashi are completely unable to resist those who abuse them. Later in the course of their struggles free themselves in their own horizons and explore their possibilities.

Keywords: Identity, abuse, racism

Translation Issues and Possible Resolutions for Culture Specific Words

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Abstract: Translation has been in existence since the time immemorial. It may of different forms like from one language to another language, from formal language to informal language like for kids' edition etc., from the source language to cartoon language, from the source language to media version and so on. While translating, the translator undergoes several stages of difficulties like cultural variations, emotions related to the words which is referred as connotations, sound related issues, figures of speech suitability, the system practice in the target language etc. This paper brings the cultural variation problems when translating from English to Telugu which is a native language of Telugu states in India. This paper further presents the scope for various translation methods which can be used effectively even by the amateur translators.

Keywords: Source language, target language, cultural variations, connotation

A Keen Study on Kinesthetic Senses as a Technique of Learning Language –from Perplex to Perfect Professionals

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Abstract: This article deals with the innovative techniques to be adopted by the teachers to enhance English language learning among students by focusing on their kinesthetic senses. This can be achieved by assigning each of the organs of the body to the characteristic of the learning component to make learning effective and easy. The article further explores the various play-way methods that can be adopted to ensure language learning is fun and fulfilling. Techniques like pictorial representation, mnemonic icons, pictography, music and such others. The article elaborates the techniques and the advantages of practicing them. An attempt to compare with the proven teaching techniques used for the learning of the Vedic chants is made.

Keywords: innovations, teaching-techniques, language mnemonics



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Transgender Autobiography as Literature of resistance: A study of Lakshmi Narayan Tripati's *Me Hijra Me Lakshmi*

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Abstract: Transgenders in India are a part of the society since time immemorial. Traditionally known as Hijras they have a rich culture and heritage of their own as a community. There are references to them in the ancient religious texts of India and the Mughals patronized them with respectable positions in their royal courts. But with the advent of colonization, they were labelled as criminals and their position in the society stooped to abyss. Since then they were criminalized, ill-treated, marginalized and alienated from the mainstream. Being removed from the mainstream and placed at the margins of the society, transgenders of India faced decades of oppression and abasement. Begging and Prostitution became their only means of livelihood. Thus, the transgender community of India was systematically segregated from the 'Centre'. Their plight and pleas to end the discrimination fell on deaf ears. A few transgenders of India, in an attempt to resist the empirical exclusion, penned their autobiographies as a form of resistance to the oppressive dominant power and subjugation. The present paper studies Laxmi Narayan Tripati's autobiography *Me Hijra, Me Laxmias* a form of resistance literature. This autobiography aimed to bring a change in existing brutality towards the indigenous community of Hijras by the hegemonic group in both cultural and political space.

Keywords: Transgenders, Resistance Literature, Hijra, Marginalization, Autobiography

Literature and the Film

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Abstract: The Novel was the most preferred form of entertainment in Victorian England and reading a highly respected pastime of the educated class. With the advent of industrialization, urbanization and commercialization there was a total change in life style. A lot of things either got transformed or simply vanished. The media revolution saw the emergence of ‘cinema’ as the leading attraction of the new world --- and for almost a century it took centre stage as all the popular genres of literature and art were relegated to the back stage. Then from the eighties it was the TV which dominated the cultural scene. But somewhere along the line a very healthy amalgamation of all these genres was taking place and is started with the Shakespeare revival at first and then in the sixties it was a grand revival of Maupassant. Around 101 short stories by the French master were adapted to the screen and a majority of them were highly successful. The film writer developed his own language tropes and jargon and a new sub-genre has come to dominate the literary and media world. In the process we have seen some writers turn into directors and some directors write their own stories. Particularly impressive are some great individual talents like Ritwick Ghatak and Guru Dutt from India and the great partnership between Tennessee Williams and Elia Kazan in creating celluloid masterpieces from popular literature. While we debate which genre is reviving which genre let us also take serious note of the outcome ---- which is a splendid amalgamation of two overexposed and hence *clichéd* genres, and ironically , the enormous value addition it is making to both.

Keywords: Victorian England, amalgamation, grand revival, celluloid masterpieces

R.K.Narayan's philosophy in *Waiting for Mahatma*

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Abstract: R K Narayan's novel Waiting for the Mahatma covers in considerable detail the years of political turmoil preceding the Partition of India, taking Mahatma Gandhi as one of its leading characters. The article attempts to analyse how the novel illustrates the role of Gandhi as a political leader and philosophical guide and the influence of his ideology and philosophy on other characters during the Indian independence movement. First, it pinpoints Gandhi's philosophical thoughts as documented in his own writings and activities and then points out how those are integrated into the novel. The article also investigates the attitudes of Gandhi's followers (as the characters of the novel) as well as those of the common people towards his thoughts and activities. Thus, the study aims to offer a textual analysis of the novel by revisiting Gandhian philosophy focusing, especially, on values of ahimsa, Satyagraha and non-violent resistance.

Keywords: South Asian writing in English, Gandhism, Satyagraha, Non-violent resistance, Civil disobedience, Partition of India

Black Female voices: Resistance and Survival in the select Autobiographies of Jacobs Harriet A's 'Incidents in the Life of a Slave girl' and Maya Angelous' 'I know Why the Caged bird Sings'

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Abstract: This paper is a detailed analysis of existence by resistance and surviving by resisting in the life of black abandoned girls in America. The reason for taking the autobiographies of Jacob Harriet (1816 – 1897) and Maya Angelou (1928-2014) is that the conditions and the experiences (race, sexuality, abandonment and identity) of the Black female are much similar though they make a century gap. Harriet Jacobs's *Incidents in the Life of a Slave Girl* tells the autobiographical story of one woman's journey from slavery to emancipation, from resistance to survival. In the course of her memoir, she unfolds her experiences under the pseudonym Linda Brent. Jacob Harriet documents her life as a slave and how she achieves her freedom for herself and for her children. Similarly Maya confronts the subtle effects of racism and segregation in America at a very young age in her first autobiography 'I Know why the Caged Bird Sings'. Maya Angelou describes her coming of age as a precocious but insecure black girl in the American South during the 1930s and subsequently in California during the 1940s. In the course of their lives Jacob and Maya explores the struggles and sexual abuse that female encounter as well as their efforts to practice motherhood and protect their offspring from the hostile conditions in America.

Keywords: Identity, Resistance, Abandoned, survival

Education trends emerged during pandemic

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Abstract: In response to the Coronavirus pandemic, virtually all colleges switched to online education, delivering courses through a range of online tools such web-based learning, LMS, and video conferences via Zoom Meeting, Google Meet, and similar services. Despite extensive investments in technology and a highly qualified faculty, many students nevertheless report dissatisfaction with their online education. Students appeared to be plentiful, especially in English language courses. Consequently, the purpose of this study is to investigate the difficulties that advanced English learners face when attempting to acquire English speaking abilities via the internet, and to offer suggestions for overcoming these obstacles. In order to collect data for this study, a survey questionnaire was administered to 35 incoming freshmen majoring in English at various institutions who were enrolling in a speaking class at a school of advanced studies, and then five diligent students were chosen to participate in in-depth interviews concerning the challenges they faced while learning online and the outcomes they had hoped to achieve during the Covid 19 period. Findings showed that most students expressed a negative attitude toward learning speaking skills online during the Covid 19 pandemic due to the challenges posed by the need to keep up with technological developments, maintain a reliable Wi-Fi connection, master the essential elements of effective public speaking, and develop their sociolinguistic competence. Given the nature of the problems that have been revealed, it was anticipated that more video conferencing and learning activities focused around projects would become standard. To help their pupils become better communicators in English, several contemporary schools have adopted a novel approach to English Language Teaching (ELT). According to provided examples, the director of the language department mandates that all students use English in their everyday interactions and punishes those who fail to do so. Neither a common academic name nor a study examining the strategy's efficacy existed, though. This paper explores the nature of ELT approach and its efficacy in enhancing students' linguistic abilities. It has been discovered that a widespread ELT method is the alteration of student behaviour. Students' use of English in their day-to-day interactions can be increased by the aforementioned alteration of behaviour. Students are able to improve their speech in terms of precision, nuance, and fluency as a result.

Keywords: extensive investments, questionnaire, English language teaching, method, approach

(Dis)-location as a Dystopian Trope: Reading the Dismembered and the Traumatized in Golding's *Pincher Martin* and Mohsin Hamid's *Exit West*

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Abstract: Dystopian literature often registers the fractured, dismembered and (dis)-located nature of human existence and a spirit of questioning current trajectories of living that may bring about this fragmentation. In this paper, I argue that Golding's *Pincher Martin*, long interpreted along the lines of warfare and allegory of salvation and damnation registers the same trajectory of loss, dislocation and trauma. I am keen to show how such tropes in dystopian narratives both conjoin this novel thematically that shows a character trying to make sense of an ontological situation marked by severe conflicts and the dystopian *Exit West* by Mohsin Hamid that also registers the self-same themes of "dis-location, trauma and dis-enfranchisement" in an era of civil warfare and mass-migration. In doing so, I divert my attention more towards how such mental constructs become powerful modes of appending reality that nevertheless garner dystopian echoes in the process. Christopher Martin's attempts to piece together reality, illusion and geography within coherent, spatial dimensions is apparently coterminous with the two characters in Hamid's novel who slip through enigmatic doors the world over and thereby travel through the elusive dimensions of trauma, isolation and a fluid geography as well. While Golding's *Lord of the Flies* depicts aggression that makes it avowedly "dystopian", as Kathleen Woodward points out, this paper would situate *Pincher Martin* and *Exit West* within the same paradigm of trauma narratives and thereby enumerate such tropes as powerful signifiers in their own right that show dystopian leanings.

Keywords: Trauma, Dis-location, Dismemberment, Dystopian, Geography

Contextualized teaching and learning

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Abstract: This study set out to determine whether or not graduate students' academic and classroom performance may be enhanced by employing Contextualized Teaching and Learning (CTL) with Business English Communication as the context. In the "Survey of ESL Areas and Methods" course, the intervention was implemented across three dimensions: the "individual oral report," "class participation," and the "periodic test." The participants were all college upper-level students. After receiving treatment, they were retested on the dependent variable. As students were exposed to the standard course design, their performance serves as the dependent variable, and the treatment represents the implementation of a CTL approach within the framework of business English communication, serving as the independent variable. The intervention's success was measured using a customized Performance Evaluation Rubric. The purpose of this rubric is to provide a more nuanced evaluation of each student's work. The effectiveness of the intervention was determined by comparing the students' pre- and post-test judgments of performance. The descriptive categories on level of performance and the actual numerical ratings both indicated growth or decline in performance. Student performance was also compared between male and female students' own accounts of improvement or decline. These were done to check for gender differences in reaction to the intervention. The study's findings corroborate the students' claims of better performance, as measured by higher mean scores across all three domains. Therefore, it appears that CTL is most effective in enhancing students' performance on periodic tests in addition to other learning activities. When applied to the presentation of an individual oral report, CTL seems to have less of an effect. Throughout a career in business English CTL instruction, teachers' own communication duties and roles in their own organisations take centre stage alongside the content expertise they give to their pupils. Therefore, it is widely acknowledged that graduate-level English as a second language (ESL) courses should focus on business English as one of the most relevant contexts for teaching English as a foreign language. Careful examination of the individual units reveals that teaching ESL in the context of business communication English is theoretically possible. This action research aimed to define and control the practise of contextualizing ESL course material that students take up primarily according to their own choice and whims, whether their goals are actually for the noble examination of the subject being discussed or just want to divert course material discussions to their personal need for self-expression of thoughts related to their employment concerns or issues. As a result, native-speaker publications, teacher trainers, and teacher analysts are being used in classrooms in the Outer-Circle communities to help students acquire native-like and expert work-related competencies in English. In the Expanding-Circle community, textbooks and procedures developed for native speakers are adapted to meet the needs of individual regions.

Keywords: Contextualized Teaching and Learning (CTL), English as a second language (ESL), Outer-Circle communities



Straddling the ‘Sacred’ and the ‘Profane’: Historiography in Ruth P Jhabvala’s *Heat and Dust*

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Abstract: Ruth P. Jhabvala’s *Heat and Dust* (1975) centres around the narrative of Olivia’s grand-daughter who arrives in the tiny, suffocating town of Satipur in the middle of the last century to discover the truth of the scandal between her step grandmother who had developed an affair with the Nawab of Khatm in the 1920s during the British Raj. The novel concerns her sojourn in a foreign land, her own affairs with men here and her retreat into solitude. Thus, this paper would like to concentrate on two major themes that Jhabvala brings into limelight—the problematic nature of crossing the ‘norms’ laid in white society within an oriental setup and the very issue of the ‘fallen’ status that Olivia earned in the town that has nearly become a myth for her step granddaughter to bust, along with the concomitant ‘task’ of archiving India as seen from the lens of a foreigner. Secondly, the protagonist’s affairs in a foreign nation is itself the way history and sexuality repeats itself in the life of the step-granddaughter. Thus, her efforts to know the ultimate truth about this binary of sacrosanct versus profanity literally runs into dust. This paper, thus, is an effort to chart out this aspect of the celebration of newly-discovered sexuality that borders on the ‘profane’ in the lives of two women who are not only outsiders, but who undertake journeys of their own to know an “antique land” and discover that troubled interface between history, sexuality and cultural archiving.

Keywords: Oriental, Cultural, Archiving, Interface

Problematizing Learner Progression and Motivation in ODL Modes of Instruction: A Peep Beyond the ARCS Model

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Abstract: A huge body of literature exists on the learner satisfaction rate and the factors that impede or further this parameter in ODL modes of instructions. Attention has been diverted to the ARCS model and its various ramifications while designing content, especially the SLMs or Self-Instructional materials and its application with recourse to student support and progression. The model has been central to our conception of designing effective pedagogical practices and support mechanisms vis-à-vis a learner-centric environment. However, we may come across occasional cases when even a due consideration of the ideologies advocated by this model may not further positively learning mechanisms. There could be instances when even a proper adherence to this model may see significant drop-out rates and low learner participation compared to the regular modes of instruction. This paper looks at the issues beyond the ARCS Model and teases out the grey areas that need further exploration and commentary.

Keywords: ARCS Model, SLMs, ODL, Learner

Media, Culture and the Post-Truth Scenario in Amiri Baraka's *Somebody Blew Up America and Other Poems*

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Abstract: Amiri Baraka's (formerly LeRoi Jones') volume of poems *Somebody Blew Up America and Other Poems*(2003), especially his poem "Somebody Blew Up America" questions the very viability of approaching 'truth-claims' in history and asserts the basic fact that such "truths" are often fabricated lies of the government that mask the true nature of events. The incident of the bombing of the twin World Trade Centre Towers or the 9/11 incident, widely circulated by the media and believed to be the work of extremist groups, is seen by Baraka, among other incidents in the US history, to be the result of an action that is at divergence with such a common belief. This long poem seeks to present this elaborate 'lie' as a prevailing *culture* of sorts—a post-truth scenario that foregrounds a fact that is an intersection of many competing ideologies, an image in itself and not necessarily part of a coherent fact of sorts that has its firm basis in reality. This paper seeks to point out such competing forces in the representation of truth claims that, *inter alia*. seek to debunk this veritable culture of lies in US society from the viewpoints of an African-American living in the nation during the most turbulent times of its history.

Keywords: Post-Truth, Culture, African-American, Anti-Semitic

From Stevie to Sylvia: On the limits of the ‘Acceptable’ body in Edward Albee’s *‘The Goat or who is Sylvia’*

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Abstract: Following the trends set by poststructuralist theories that have refused to assign a definable ‘centre’ to our various cognitive constructs, or logos, we have now entered into a post-theoretical, post-feminist and post-human era where it is somewhat difficult to demarcate the rational from the irrational, female exploitation from the male (Shiva), the man from the machine (Haraway) and the acceptable from the unacceptable (Foucault). Indeed, everything is a text that can be worked upon by modes of signification that, in turn, are parts of a larger semiotic structure: thus, what we have today are but signifying systems, free-floating signifiers and economic realities. This proposed paper would like to trace this gradual blurring of boundaries in Edward Albee’s play *The Goat* (2002) wherein a middle-aged architect Martin outrages the norms of polite society by falling in love with a goat named Sylvia and using it sexually. While his wife finds this totally unacceptable, Martin is at pains to show that what he does is not ‘bestiality’; he has found love and fulfillment in Sylvia after all and it does not matter whether she is an animal or a human. The play is interesting not only because of its treatment of a novel topic in the typical vein of semi-absurdist humor that is characteristic of Albee, but also because it has apparent similarities with the pattern of a Greek tragedy.

Keywords: Poststructuralist, Greek, Semi-absurdist, Logos

The Effects of Language Diversity on National Development

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Abstract: This research work focuses on the Effect of Language Diversity on National Development. It adopts descriptive and comparative approaches in analyzing the nature of Language and the policy situation in Nigeria, considering in clear terms the complex ethno linguistics setting. Sequel to the look warm attitudes of both governments over the years, the research therefore evaluates the value of an effective language policy and implementation to the development of nations across the globe. On the foregoing, the research identifies the low level of technology and science development in Nigeria as a product of purposelessness approaches in language policy making and implementation. Nigerian languages ought to be central to national development and should occupy an important place in the development discourse. In line with these and many more, the study recommends that urgent attention and responsibilities ought to be given to language experts (linguists) in making language policies and possible implementation strategies for the country. This research further advocates for a national language system, however, calls for the adoption of respective indigenous languages for vocational training at their given speech communities. The Nigerian Pidgin English has the likely majority of speakers and need to be developed to the status of a national language alongside English. These positions can only be achieved if our central policy maker (government) is sincere with the reality on ground and avoid mere political interest and propaganda.

Keywords: Ethno linguistic, Language Policy, indigenous languages, Pidgin comparative approaches

Personality traits and intelligence predict academic school grades

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Abstract: This study examines the extent to which personality traits and intelligence scores predict school level academic performance of (AP), British GCSE: General Certificate of Secondary Education America Grade10 indifferent disciplines. The participants sample consisted of approximately 250 school pupils from three schools in the South East of England. A series of hierarchical regressions were performed with participant discipline-specific subject grades being the criterion variable and demographic, as well and intelligence and personality test scores, the predictor variables. For overall grade intelligence accounted for a fifth of the variance and personality an incremental validity of 8%. Whilst a combination of intelligence, personality and sex accounted for around a quarter of the variance in all four core subjects the pattern was rather different for elected subjects. The results are discussed in terms of the usefulness of psychometric assessments of candidates at selection.

Keywords: personality, core subjects, learning patterns

Cognitive and emotional states detection and visualization in learning Developing learner agency in smart environments educational technology and society

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Abstract: Learner agency is nothing but learning on own and gaining ownership on learning as well. According to Cury, Dlliotm DA Fonsecam Moller, 2006 students who believe that perform better in IQ tests than students who believe intelligence is invariable. This learner agency direct to the learner's own interested goals desires and skills so the expected outcomes are positive as learners are able to direct their own choice based learning. As per the national research council with student agency are positively related to college and career outcomes because students are able to direct their own learning and transfer the knowledge they learned in the class room to new settings. Implementation of Learning Agency in K L deemed to be university the computer based training programs based learning in order to augment the challenging capacity of learners to get succeed, collaborative and communicated and involved in world around them. The teachers who acted as facilitators in a computer based training based programs in order to enrich and empowers with refined strategies to support learner community.

Keywords: smart environments, technology, society.

Impact of Dramatic Devices that were employed in Girish Karnad's *Hayavadana and Nagamandala*

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Abstract: Girish Karnad is one of the prominent writers of Indian Drama in English. He is an outstanding playwright of modern India who much focuses on myth, folklore and culture. The present research paper is intended to focus on the Impact of dramatic devices in which Karnad had been the master in employing. He is successful in involving the audience through these devices.

Keywords: outstanding, device, successful, employ



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Male ascendancy in the select plays of Girish Karnad

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Abstract: Girish Karnad is the most important Indian English dramatist writing in the post-independence era. He has discussed various themes in his plays such as transfer of responsibility, conflict of doomed ruler, man's eternal desire to achieve completeness, marriage from male point of view, problem arising out of mixing of caste and religion, danger of knowledge without wisdom etc. Girish Karnad is often called a Renaissance Man having historic vision and modern interpretation. The present research paper is intended to focus on the theme of male domination in the select plays of Girish Karnad.

Keywords: Conflict, Renaissance, Religion, Doomed Ruler

Politics and Human Relationships in Nayanathara Sehgal's Novel *Storm in Chandigarh*

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Abstract: Nayantara Sahgal is the author of nine Novels, ten works of non-fiction and wide ranging literary and political commentary. She has received the Sahitya Akademi Award, the Sinclair Prize and the Commonwealth Writer's Prize. The Novel "Storm in Chandigarh" demonstrates Nayantara Sahgal's keen understanding of individual relationships and her remarkable ability to tell stories that continue to capture the attention of readers over years. The Novel is about the quarrel over boundaries, water and electric power between Punjab and the newly created Haryana. With the chief minister of Haryana, Harpal Singh, refusing to concede any advantages, the stage is set for a confrontation. The present paper is an attempt to explore the power of bureaucracy and politics with the small dramas and casual betrayals that are a universal feature of human relationships.

Keywords: Individual relationships, quarrel over boundaries, casual betrayals.

A Compelling and Vivid Tapestry of India's past and present in Nayantara Sehgal's *Rich Like Us*

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Abstract: Nayantara Sahgal is the author of nine novels, ten non-fiction works and wide-ranging literary and political commentary. She has received the Sahitya Akademi Award, the Sinclair Prize and the Commonwealth Writer's Prize. She was awarded an honorary Doctorate of Letters by the University of Leeds. The Novel "Rich Like us" mirrors the actualities of life in India – corruption, injustice, apathy after independence of India. The narrator describes the declaration of Emergency, an ironic, tender and exquisitely crafted study of India and its people in the aftermath of independence. Emergency was profit and power for rich, Jail for many and mobile vasectomy clinics for thousands more. The present paper is an attempt to bring out many individual histories, and many voices, in one – a compelling and vivid tapestry of India's past and present.

Keywords: Actualities, apathy, corruption, declaration of Emergency, injustice, tapestry

The Effect of Speakers' Age on Voice Onset Time: Evidence from Maithili Voiceless Stops

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Abstract: The primary focus of the present study is an attempt to explore the potential effect of age on voice

onset time (VOT) in Maithili eight voiceless stops. To investigate the patterns of age-differences between young adult and older adult participants, VOT durations in four unaspirated (/p/, /t/, /ʈ/, /k/) and four aspirated (/ph/, /th/, /ʈh/, /kh/) stops were individually studied. Word-initial stop consonants in a real monosyllabic word (CVC), followed by three vowels (/i/, /a/, /u/) in a carrier speech were elicited from ten male Maithili native speakers. The participants were divided into two age groups: young adult (20-25 yrs.) and older adult (35-40 yrs.). The main objectives of this paper were to examine the effect of speaker's age on VOT in stop types, place of articulation, and following vowel environments. The findings clearly demonstrated that the speaker's age was found to affect significantly VOT and VOT variability. Thus, older adult participants had significantly

longer VOT ($F(1, 224) = 43, p < 0.00001$) than young adult across vowel contexts. The ANOVA results showed a significant effect of speaker's age on VOT of stop types ($F(1, 76) = 23, p < 0.0001$), and on VOT in stops among four places of articulation ($F(3, 112) = 16.49, p < 0.00001$). However, no significant ($F(1, 42) = 1.4, p = 0.25$) effect of age on the vowel contexts, followed the stops was found. The present investigations contributed to the existing literature in terms of the effect of speaker's age on VOT by adding VOT and VOT variability for young adult (boyhood) and older adult (manhood).

Keywords: VOT, Effect of age, Stop type; Place of articulation; Vowel Context, Maithili



The Effect of Speakers' Sex on Voice Onset Time in Maithili Voiceless Stop Consonants: An Empirical Study

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Abstract: The present study mainly investigated the conceivable effect of gender on voice onset time (VOT) of eight word-middle voiceless stop consonants in Maithili. VOT in four unaspirated (/p/, /t/, /ʈ/, /k/) and four aspirated (/ph/, /th/, /ʈh/, /kh/) stops, was separately examined to explore the patterns of sex differences. Word-middle stop consonants in a disyllabic structure (CVCV), followed and preceded by three vowels /i, a, u/ were elicited from five male and five female native speakers, by using a voice recorder and examined by PRAAT in Speech and Language lab at Jawaharlal Nehru University, New Delhi. The main objectives of the present study were to study the effect of gender on VOTs of stop type (aspirated vs. unaspirated), and the place of articulation across three vowel contexts /i, a, u/. The results exhibited male speakers produced longer VOT than their female counterparts in both aspirated and unaspirated stops. Further, no two-way interaction ($F=0.15$, $p=0.697$) between speaker's gender and stop aspiration (unaspirated and aspirated), between speaker's gender and the place of articulation of stops ($F=0.12$, $p=0.95$), and between speaker's gender and the vowel contexts ($F=0.0054$, $p=0.99$) followed stop consonants as phonetic contexts were found. Furthermore, the present findings revealed that male speaker produce VOT higher than the female counterparts which is supported by the previous studies (Reddy et al. 2014; Narasimha and Karunarathne, 2021). Thus, it is suggested that there is a relationship between VOT and speaker's gender in language in which both male and female speakers produce VOT differently.

Keywords: VOT; Phonetics; Stop type; Place of articulation; Sex; Maithil

Class, Race & Gender Inequalities as represented in the select novels of Alice Walker and Shange

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Abstract: The causes of the pain experienced by Afro-American women are complex, involving issues of race, class and gender. But these women's struggles continue to be underrepresented. In order to examine the complexities of gender, class, and race in these writers' fiction, this article examines how Afro-American women are portrayed in the works of Alice Walker and Ntozake Shange, two Afro-American female writers. Alice Walker and Shange have undertaken to give voice to the black women who are typically silenced by those around them. Black writers, and women writers in particular, believe they have a special "mission," a responsibility to pass on to future generations the rich heritage they have inherited from their ancestors and provide access to this heritage through their rich works. They merely want to prevent the history of their people from being completely destroyed without any traces. This study highlights the plight of Afro-American women, their search for potential convergence in the juxtaposed characters' emancipated portrayals, injustices, violence, and inequities brought on by European colonisation. The authors highlight some of the most urgent issues of the postcolonial era, such as oppression, rape, racism, and male violence against Black women, through a blend of fiction and fact. Thematic emphasis and protagonist characterization in the chosen works show that black women can confront tyranny, only if they recognize their own strength, which can be found, for example, in the bonds of sisterhood or in the refusal to submit to terrible situations. Writing from the bottom of their hearts, the writers Shange and Alice Walker provide vivid, lively depictions of the painful, hopeless, depressing, and powerless situations that touched the lives of earlier generations and left a lasting impression. Because of their color, class, and gender, their characters experience oppression. These elements come together to create a triangle-shaped cage around the social realities of disadvantaged Afro-American women. Unquestionably, the two works, *The Color Purple* and *Sassafrass, Cypress and Indigo*, both aim for the liberation of women and the expression of identity. Shange and Alice Walker reject the heroic narrative of Western civilization and deconstruct historical truths in order to advance a society in which there are no barriers between white and black.

Keywords: Afro American women, Gender, Race, Liberation, Identity.



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Nihilism in flannery O' Connor's *Good Country People*

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Abstract: Flannery O'Connor is an American author and one of the renowned writers in the domain of Christian Realism. Her writings depicts the modern world void of God and spiritual morality, which according to her, is already leading humanity towards great devastation. This paper tries to explore the element of nihilism through the main character of the story, Hulga. Hulga is a doctorate and professor by profession. She doesn't believe in God or any moral principles. She assumes of herself as an intellectual and as an individual above others. She gets attracted to a boy of half of her age and tries to establish physical connection with him. She tries to indoctrinate him that it was no wrong deed, but at last she was the one fooled, deceived and left lost raising questions on her own beliefs, intellect and wisdom.

Keywords: Nihilism, Spiritual immorality, Humanity, God

Educating women for emancipation and cultural empowerment: A critical study of Sudha Murty's *Three thousand stitches*

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Abstract: Sudha Murty is a prolific Indian women writer and eminent philanthropist whose writings are purposed with creating awareness of social struggles undergone by the destitute, which are accustomed to being overlooked by the self-centered world, and remind the duty of charity to fellow needy. Sudha Murty writes both in English and Kannada. The present story "Three Thousand Stitches" is centered around the miserable lives of women struck in the practice of a social evil called devadasi system and prostitution. The short story further throws light on how education would be a key instrument in the life of those devadasi women which amplified for their liberation and empowerment.

Keywords: Social evils, devadasi system, education, women empowerment.

Ecofeminism in Alice Walker's *The Color Purple*

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Abstract: The term 'ecofeminism' is a new term but the spirit that underpins it has long driven women's attempts to protect their livelihoods and make their community a better place. In the 1970s, ecofeminism emerged as a social and political movement that combined elements of both feminism and ecology. Ecofeminists draw attention to the fact that the patriarchal worldview contributes to nonhuman nature's destruction and exploitation in the male-dominated civilization, as well as to women's suffering. The most important thing in ecofeminism is the phrase "self in relationship to others" which refers to the necessity of acknowledging the integrity of our own inner centre, that includes our own body and consciousness, in order for us to acknowledge and value that of others. Ecofeminist thinkers portray the concept of gender in their work to analyse the relationship between nature and women. Women and nature are indispensable parts of the works of Alice Walker and she has empathetically written about them. Through her novels, Alice Walker has brought into focus the exploitation of women and the environment. The contribution of Alice Walker's novel *The Color Purple* includes discussions about women's images, the link between women's oppression and male dominance's exploitation of nature. Alice Walker infuses her novel with the concept of feminism and natural freedom from control and violence through an ecofeminist viewpoint. Alice Walker envisions a symbiosis in which men are not oppressed and the environment is not exploited. Although her fantasy is beautiful, it is coloured in utopian hues and is yet focused on the future. This indicates that our future generations will still need to put forth significant effort to realise the dream of a peaceful world. In other words, *The Color Purple* gives readers a limitless amount of room to think about reality in addition to a literary and creative shock. As the state of the environment worsens over time, the ecological balance is upset, severe consequences have resulted in an increasing number of extinctions of species, and the survival of humanity is in danger. The present paper is an attempt to explore Ecofeminism in Alice Walker's *The Color Purple*.

Keywords: ecofeminism, male-dominated, symbiosis, extinctions of species



A Freudian perspective in the analysis of Emily Bronte's select novels

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Abstract: Sigmund Freud's psychoanalytical theories can be used with reference to the analysis of literary works. Reading novels, poems and other compositions through the lens of psychoanalysis gives the opportunity to analyse and evaluate the works of literature in their genesis and presentation. Freudian doctrine can be considered as a reading tool that allows the investigation of the enigmatic areas of human experience. The portrayal of characters in both Wuthering Heights and Jane Eyre by Bronte sisters give us a hint of the Freudian aspects in the novels.

Keywords: Psychoanalysis, human, investigation, Compositions, enigmatic etc.

A Study of Peter Carey's *True History of The Kelly Gang*

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Abstract: The literature of Australia is a major body of writings in English language domiciled by authors in Australia. Australian literary history mirrors the history of the nation itself, dealing with the history of the original inhabitants. The important events in Australian history have not only served as catalysts for changes in Australian psyche, they are also landmarks representing a chronological history of Australian literature. The novelists have projected the past history in their works and Peter Carey is no exception. Peter Philip Carey is an Australian novelist and short story writer of highest distinction and stature. Generally acknowledged as the most exciting and prodigiously talented and accomplished writer of Australian fiction, Carey's fictions chronicle his country's history from mid – nineteenth century to the beginning of twenty first century and focus on key issues such as the convict system, the doctrine of terra nullius, and national identity. His themes make the popularizing of Australian history and mythology, an almost inevitable badge of his success. Usually set in Australia, Carey's works address themes of post-colonial nationhood, and History as he satirizes contemporary social values, and explores the illusory nature of reality and self-consciously examines the art of fiction. Peter Carey, a force for justice in world literature, directs the humanist crusade to uplift the humble and downtrodden. His novel *True History of the Kelly Gang* is a fine example of Carey's treatment of myth and the legend of colonial Australia. The novel is the fictional first-person account of Ned Kelly, the notorious nineteenth century bush - ranger and outlaw who is well known to Australians and is as fascinating to them as Robinhood is to the English. The "Kelly Gang" is a real historical phenomenon and the story has fascinated Australians from the beginning. Carey's re-imagination of the Kelly myth which retells the story of marginalized character, outsider and outlaw, in fact in re-invented voice as Carey intervenes into existing texts to re - imagine. So, the objective of this paper is to discuss how the original history of the 'Kelly' myth has been re-visioned by Carey.

Keywords: indigenous, culture, past history, myth and legend, bushranger, revisioning

'Humanism' in Peter Carey's *Bliss*

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Abstract: Peter Carey was born in Bacchus Marsh in Victoria, Australia, in 1943. Bacchus Marsh in Victoria, Australia, in 1943. He studied Science at Monash University, and wrote advertising copy to support himself during the early part of his literary career. Australian identity and historical context play a part in several of his literary works. *Bliss* is the first novel by Peter Carey. Written as a dark, comic fable, the story concerns an advertising executive, Harry Joy, who briefly breathes his last of a heart attack. On being rejuvenated, he realizes that the life he has previously drifted happily is in fact Hell – literally so to Harry. His wife is unfaithful, while his son is selling drugs, and his daughter is a communist selling herself to buy them. In one of the novel's more shocking scenes, glimpsed through a window, incest occurs. Salvation comes in the form of Honey Barbara – a pantheist, healer and prostitute. Together they conquer Hell and retire to the forest where their children inherit the legend of paradise regained." But Harry must die for a second time to be truly saved. Hence the nation's history is artistically rendered and based on models of truth and lies and the value of truth is suspended to debunk narratives of colonial histories. To substantiate his models, Carey considers the history of Australian aborigines. The aborigines are the natives of Australia who possessed a rich cultural past but eventually destroyed by the English colonizers. Carey expresses the truth that Australian cannot evade from the penal past and realization that he (the Aborigine) no longer belongs to or is acceptable, forces, the Aborigine to accept the new landscape and conjures a heaven out of hellish circumstances. Carey is the writer who rose above all the differences of identities and interests. His prophetic voice speaks for the equality of mankind. Carey's novels enlighten people. His literature calls for empathy. For his philosophical visions and art of writing, Carey becomes an unchallenged champion.

Keywords: Australian identity, new landscape, empathy, philosophical visions



Teaching ‘English’ Online during Pandemic-Boon or Bane?

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Abstract: The beginning of the New Year 2020 was replete with a disastrous and deadly pandemic. Paradoxically the year was red letter day in the annals of world history as it marked the tragic commencement of COVID-19. The onslaught of this global crisis led to drastic changes in the arena of education. The entire educational system across the world had come to a standstill. Teaching/learning became topsy-turvy and educational institutions had to face the evil consequences of Corona. The paradigm shifts in teaching from face-to-face/traditional to online/digital mode especially for teachers of English Language called in for immediate changes in their methodology of teaching and the tragic situation demanded the use of digital/online platform. Though the channel was a Herculean task in the beginning because of monetary, technical and other network barriers for the teachers, yet the teaching seemed to have given a wide exposure to the language teachers. Online teaching helped the faculty to consistently pursue work-culture similar to yesteryears and the teachers learnt to update and equip themselves by using technological aids. Thanks to the advent of science and technology for catering to changing needs and demands of teaching English online during COVID-19 and fulfilling the requirements of language education and requirements of students. Nonetheless enormous problems had to be faced by English teachers during pandemic and complete satisfaction of teaching a global language in a classroom ambience could not be met and fulfilled. Hence the researchers aim to make a general study of teaching ‘English’ Online during Pandemic to discuss that virtual approach is both a boon and a bane.

Keywords: Pandemic, paradigm shift, education, technology, traditional teaching, online teaching, work culture, boon, bane.

Intersectionality of Religion and Calamities

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Abstract: In the history of human existence, natural catastrophes and calamities like Pandemics have been unrivalled episodes. These fatal diseases have suspended the normal course of life for years forcing human beings to question their future. Literature has been witnessing these cataclysms and writers have depicted the effects of such disasters in their works. For instance the ‘black death’ of the Middle Ages has affected various aspects of cultural, social and very particularly religious life of the people. Geoffrey Chaucer and Boccaccio are two noteworthy authors who deserve applause for realistically and meaningfully portraying the religious conditions of the medieval era in their works. These poets have exposed the true nature of natural events and their impact on human life. As a consequence, people have lost faith and belief in religion thus questioning the very existence of God. Since medical practitioners were not available in those days, people automatically felt that these natural calamities were the workings of God and hence ‘divine punishment’. To this end, the Jews who were designated as ‘chosen people’ became the targets of punishments picked by God to undergo the penalty of pandemics and other tragic events such as the Plague and Black Death. Thus, Life on earth came to be viewed as a vale of tears, a hardship to endure till the end of life. People also believed Plague to be the judgment of God for their sins. Hence this article attempts to analyze the intersectionality of religion and natural catastrophes with special reference to the Black Death in the Middle Ages.

Keywords: Pandemic, unrivalled, episode, human, history, Black Death, middle ages, Chaucer , Boccaccio, religion, sins, punishment.



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Cross-cultural implications in the *Scarlet Song* by Mariama Ba

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Abstract: Senegalese feminist writer Mariama Bâ's exasperation with the destiny of African women is projected in her novel, *Scarlet Song*. The work is an honest depiction of the injustices meted out to African women in all spheres of life-family, society, and politics. Ba felt that chauvinism and unfairness always reign supreme for men. Women should work hard work round the clock only to accomplish nothingness at the end. So, Ba expressed in her works that women should use literature as a 'non-violent' but 'effective' weapon to overcome their excruciating pain and struggles in the hands of men and society. *Scarlet Song* deals with the dire need for women to construct "empowered" spaces -a space not as the "weaker sex", but the strong one despite being faced with cross cultures. The novel is about a marriage between a European and African. The marriage bonds are rigid because the wife cannot accept the conventions of a strict married life which is full of traditions and customs. Eventually the wife suffers the marriage. The book is criticism of age-old cultural norms and mores, the tyranny of tradition and explores the despair of cross-cultural marriages. Certainly, the book has implications of cross-cultures.

Keywords: Mariama Ba, African, chauvinism, injustice, literature, non- violent, weapon, empowered

Gandhi and Nationalism

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Abstract: Nationalism offered hope to Indians and helped people of all classes, castes, creeds, sexes, religions, and colours to come together and form a country of their own. Colonization in India made Indians second-class citizens and deprived them of their autonomy. Consequently, Gandhi, ‘the Father of India’ and the Nationalist Movement Leader began developing a nation that included everyone regardless of race, socio-economic class, caste or religion. Eventually this motif of the great freedom fighter, Mahatma Gandhi began to take shape in Indian writings and the authors created a distinct Indian identity of India in their literary works. The novels written during the Gandhian Era deals with the idea of “one nation “and “one identity”. The idealism of the Mahatma erased plethora of regional and social injustices. Eventually Indian novelists in English were preoccupied with the representation of India in all its true glory and richness. The significant practitioners of Gandhian ideals were MulkRaj Anand, R. K. Narayan, Raja Rao, Bhabhani Bhattacharya, G.V. Desani, and of course Khushwant Singh. The nationalist vision of Gandhi is represented and emphasized in their novels. Gandhian ideals such as untouchability, uplifting Dalits, religious tolerance, women empowerment, truth and non-violence. Thus, Nationalism in literature played a vital role in the reconstruction of the Indian identity and Indian nationalism assumed a religious denotation during the Gandhian epoch.

Keywords: Nationalism, Gandhi, India, idealism, one-nation, one-identity, reconstruction

Transitional Analysis of Postcolonial Rudiments in Shashi Deshpande's *Small Remedies*

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Abstract: Postcolonial literature is often characterized by the voice of dissent and change. Indian writers focused on the themes of collision between modernisation from the west and tradition from the native culture. They sought a new vision of modern India that is unadulterated by the ways of the coloniser concerning culture, language, and politics. The vision of the nationalist who promised a smooth transition from the conventions of the colonisers has only been partially fulfilled due to the impact of westernisation and modernisation. The articles attempt to explore how the characters in the novels attempt to transform themselves with utmost effort, but end up in accepting hybridism. Further, the concept of nationhood imbibed in the citizens of the nation along with the cultural identity is inquired upon with the theoretical implication of post-colonialism. This paper critiques the notion of 'cultural purity' in the postcolonial nation-state and recommends transnational cultural identity to acknowledge unity in diversity of culture, free of cultural and gender discrimination.

Keywords: Post-colonial, Gender discrimination, Nationhood, Cultural Identity, Hybridity, Biculturalism

The Diary of a Wimpy Kid: A Graded Material for Teaching Phrasal Verbs and Idiomatic Expressions in an ESL Classroom

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Abstract: Brevity is the soul of communication, be it a small talk or a formal business exchange. Phrasal verbs and idiomatic expressions are instrumental in maintaining brevity and accuracy. As these expressions are common in the slang of a native speaker, the second language learners find it difficult to master them. The phrasal verbs often keep mutating with slightest variant inflected to the root word. There is transition happening between phrasal verbs and idiomatic expressions making it still more complicated. In the present world English is not limited to medium of instruction, it started taking strides into communication process leaving no exception. A thoroughly construed pedagogical methods would help to resolve the problems in English language teaching and promote learner friendly ambience an essential quotient in language learning. The acquaintance with abnormalities in the early stages will allow the learners to customize themselves for language learning in a better way. As it is practically impossible to byheart language traits, teachers can use literary works as graded material to accomplish the task of teaching phrasal verbs and idiomatic expressions successfully. As the Young learners are the target group, less serious works will serve the purpose better. The comic text like **Dairy of a Wimpy KidHeffley's Journal** by Jeff Kinney can be a fair recommendation for the purpose. Present paper tries to explore the possible activities that can be designed to teach phrasal verbs and idiomatic expression using **Dairy of a Wimpy Kid Greg** a novel in cartoons.

Key words: small talk, formal business exchange, phrasal verbs, idiomatic expressions, young learners, graded material.

EMI in Multilingual Context - English Taught as a Second Language: A need for a Skill Based Pedagogy

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Abstract: Knowledge when put to practical applicability matures into a skill. The present study aims at understanding the lacunae in transforming English language knowledge into language skill. A cohort of first year graduation students were taken for the study. The students were made to enroll into a course on English Proficiency (EP) that lasted for a period of six months. After the training period the students were tested in LSRW skills. The test results revealed that out of 200 students, only 60 students (30%) were able to execute their skills that stand as a testimony to their linguistic competence. Remaining 140 (70%) students showed listening, speaking, reading, and writing skills at a less satisfactory level. The study thus aims at understanding the reasons for the inefficiency exhibited by the students in acquiring the desired language skills. The paper submits the opinions of the students which help the teachers to rethink about the pedagogical practices and the need to bridge the gap between knowledge and skill.

Key Words: linguistic competence, Knowledge, skill, LSRW skills, Pedagogical practices

Relooking at Arundhati Roy's *The God of Small Things*

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Abstract: Among debut Indian English novels, few have aroused as much controversy as Arundhati Roy's *The God of Small Things*, whether on theme or style of narration. Perhaps the most striking feature in a novel is the linguistic innovation the novelist makes. Arundhati Roy won the Booker prize of 1997 for the stylistic innovations in her debut novel. An analysis of Roy's narrative style is quite complicated, for its structure implies many levels of reading. She writes in a style markedly different from many of her contemporaries. To express her thoughts Roy invents an almost code-language suffused with cross-references, so that it seems the novel invents the language in which it is written. *The God of Small Things* clearly merits critical study for despite its veneer of simplicity, it is a complex postmodernist and writerly text that invites evaluation from various angles.

Keywords: Angles, various, implies, controversy, narrative, contemporaries etc

Understanding Nature through the eyes of Robert Frost

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Abstract: On Stopping by Woods on a Snowy Evening Robert Frost has become a household name when one talks about poetry; he's lauded as one of America's finest poets and a leading figure in the Modernist movement. As a Modernist, Frost composes his poems using simple language and experiences of his everyday life to convey hidden layers of ambiguities and meanings - the signature of Frost's poetry. However, unlike his colleagues, Robert Frost favored more traditional metrics and forms of poetry. (Cady) "Stopping by Woods on a Snowy Evening," being one of Frost's most iconic poems, perfectly showcases both Frost's Modernist and traditionalist qualities. On the surface, "Stopping by Woods" captures a simplistic, visual snapshot of a man stopping to observe the woods during a snowy night. Frost develops the woods as dark and ominous through imagery and the reactions of the horse. Yet the man – the narrator – still hosts an undeniable attraction towards the woods, as evident in his calm and serene tone. The poem's traditional metric and form of a Rubaiyat stanza further augments this attraction by subtly drawing the reader forwards through the poem, creating a vicarious reflection of how the narrator is drawn towards the woods. Ultimately, by setting the woods as a perilous environment and conveying the narrator's illogical attraction towards it, Frost explores the alluring dangers of irrational obsession as well as the struggle between obsession and obligation.

Keywords: Experience, attraction, traditional, vicarious, traditionalist, serene

Numerical Investigation of Hybrid Nanofluid Flow with Heat Source and Hall Current Effects over a Slender Extending Sheet

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Abstract: The current study described the flow characteristics of a Darcy Forchheimer hybrid nanoliquid across a thin permeable stretching surface. The fluid flow is impacted by magnetic fields, second order exothermic reactions, Hall current, and heat absorption and generation. The model was created as a nonlinear set of PDEs, which were then degraded to a dimensionless system of ODEs via the similarity transformation. The bvp4c package was used to estimate the reduced set of nonlinear ODEs. It has been observed that the energy curve decreases due to thermo-diffusion, Brownian motion, and an increase in the number of nanoparticles, while increasing due to the magnetic field. Furthermore, as a result of the chemical reaction, the concentration outline of hybrid nanoliquid improves.

Keywords: MHD, heat source, hall current, stretching sheet.



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Cattaneo-Christov Heat Flux on Chemically Reacting Nanofluids Flow Past a Stretching Sheet

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Abstract: This paper examined the significance of Cattaneo-Christov theories on the flow of chemically reacting fluid past a stretching surface with thermophysical parameters. The mathematical modeling of the physical problem was represented by partial differential equations. The set of partial differential equations was simplified by employing a suitable similarity variables to obtain system of coupled nonlinear ordinary differential equations. The transformed equations was later solved using the spectral relaxation method. The spectral relaxation method employs the basic concept of the Gauss-Seidel relaxation techniques. The outcome from this method was presented in graphs and tables. The thermal radiation parameter was found to enhance the velocity and temperature distributions. Also, the effect of magnetic field parameter was found to decline the velocity profile. It was found that the Brownian motion parameter greatly influences the velocity as well as temperature profiles.

Keywords: MHD, Cattaneo-Christov flow, Chemical reaction, heat flux, SRM method.

Evaluating and ranking Indian pharmaceutical sector companies: A multi-criteria decision-making approach

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Abstract. In this study, we rank the Indian pharmaceutical companies based on their performance metrics, employing a multi-criteria decision-making technique for this purpose. The information used to evaluate the performance of firms was derived from their annual reports (2021-22). A variety of methodologies, including the MCDM techniques, CRITIC, TOPSIS, and grey relation analysis, are used to analyze the data. The Kendall Correlation Analysis is used to determine the relationship between GRA rank and TOPSIS rank. The Wilcoxon signed-rank test is used to determine a statistically significant difference in the rankings generated by TOPSIS and GRA. According to the findings of the study, Divis laboratories is ranked #1 in the INDIAN pharma sector for both the CRITIC-TOPSIS and CRITIC-GRA procedures used in conjunction with each other.

Keywords: Pharmaceutical companies, MCDM techniques, CRITIC-TOPSIS-GRA, Financial performance.



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Optimal Operating Policy of a Two-Phase Service, N-Policy Markovian Gated Queueing System with State Dependent Arrival Rates and Unreliable Server

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Abstract. In this paper, we investigated the gated M/M/1 queueing system with state-dependent arrival rates using N-policy in this work. Services are delivered in two phases under this model: batch and individual. To acquire various system performance measurements, the model's governing equations are built and solved. The best N value was also determined.

Key words: two-phase, break downs, delayed repair, state dependent arrival rates, gating.

Valuating and ranking Indian pharmaceutical sector companies: a multi-criteria Decision-Making Approach

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Optimal Operating Policy of a Two-Phase Service, N-Policy Markovian Gated Queueing System with State Dependent Arrival Rates and Unreliable Server

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Abstract. In this paper, we investigated the gated M/M/1 queueing system with state-dependent arrival rates using N-policy in this work. Services are delivered in two phases under this model: batch and individual. To acquire various system performance measurements, the model's governing equations are built and solved. The best N value was also determined.

Key words: two-phase, break downs, delayed repair, state dependent arrival rates, gating.

Study on ψ -Conditional Asymptotic Stability of First Order Non-Linear periodic Sylvester Matrix Systems on delta settings

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Abstract: In this paper provided necessary and sufficient conditions for ψ -conditional asymptotic stability of the solution of a linear matrix Lyapunov system and sufficient conditions for ψ -conditional asymptotic stability of the solution of a first order non-linear matrix periodic system $K^\Delta(t) = A(t)K(t) + K(t)B(t) + M(t;K(t))$. The importance of matrix periodic systems, which arise in a number of areas of control engineering problems, dynamical systems, and feedback systems are well known. In 1988, Stefan Hilger introduced on the time scales calculus in his Ph.D. thesis. Binding together the continuous as well as discrete analysis of the system. Thought this paper \mathbb{T} denotes the time scales calculus. We recollection some fundamental definitions, notations and useful lemmas on time scales. The Banach space of all continuous functions $f: I \rightarrow \mathbb{R}^n$ and endowed with the norm $\|f\|_c = \sup_{t \in I} \|f(t)\|$ is denoted by $\|\cdot\|_c$. $C(I, \mathbb{R}^n)$ and let \mathbb{R}^n be the space of n-dimensional column vectors $x(t) = \text{col}(x_1, x_2, \dots, x_n)$. denotes the Banach space of Lebasque integrable functions from I into \mathbb{R}^n is denoted by $L^1(I, \mathbb{R}^n)$. The results of this paper are illustrated with suitable examples.

Keywords: Periodic functions, Fundamental Matrix, ψ -Bounded, ψ -Stable, ψ -Conditional Asymptotic Stable.

**Periodic Volterra Integro- Matrix Sylvester impulsive Dynamic System on time scales
and its On ψ -Conditional Asymptotic Stability**

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Abstract: Mainly focus our attention to study of delta differentiable existence, uniqueness and ψ -Conditional Asymptotic Stability of the periodic Volterra integro-dynamical systems with Sylvester matrix impulsive on time scales. There are numerous physical problems that are characterized by unexpected changes in their states. These unexpected changes are said to be impulsive effects in the system. In the current writing these are two types of impulsive dynamical systems. both linear impulsive dynamical and non-linear dynamical system. In the linear periodic impulsive dynamical system in the span of these unexpected changes is very little in examinations with the term of a whole advancement measure as like shocks and natural disasters and in non-linear impulsive periodic dynamical system is the span of these progressions proceeds over a finite time interval. We provide necessary and sufficient conditions for ψ -conditional asymptotic stability of the solution of Non-Linear Matrix Sylvester matrix periodic impulsive Volterra Integro-Dynamic System on time scales. The results of this paper are illustrated with suitable examples.

Index Terms: Periodic functions, impulsive system, time scale calculus, fixed point theorem ,
 ψ -Conditional Asymptotic Stable.

Epidemic model of covid-19 in terms of finite automata

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Abstract: Epidemics is a critical vicinity of situation for all living beings in the world. If we no longer cope with a pandemic situation in a right manner, it cannot be controlled and it results in a disaster as huge extent of humans is concerned. Here we evolve a non-deterministic finite automaton (NFA) for the Susceptible-Exposed-Infectives-Hospitalized-Recovered-Death (SEIHRD) model for computational purpose. Through this version we could show there will be certain languages which can be regular in epidemic model of automata since it is able to be compared with the languages which are normally regular, for which we are able to have NFA. We made an attempt to expose how the epidemic design could behave in order that we may better broaden our methods that could intercept this epidemic scenario. The objective of this work is to find a computation model in terms of nondeterministic finite automata (NFA) by which we may better infer the pandemic environment. We have proposed SEIHRD epidemic model that fits into the NFA which is one of the basic finite automata model. We have all the properties satisfied for the epidemic model as that of NFA. Moreover, we could also enhance this model by adding another state Vaccine, as we have vaccine for COVID-19 now and we are going to develop the model in fuzzy environment as there will be uncertainty in infection rate in the second wave of COVID-19 in India now.

Keywords: Epidemic, Pandemic, COVID-19, SEIHRD epidemic model, Epidemic NFA.

Rough Fuzzy Ideals in Near-Semirings

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Abstract: In this paper is to introduce the idea of rough fuzzy sets in near semirings. We introduce the notion of rough fuzzy sets with respect to an ideal of a semirings which is an extended notion of an ideal of a ring and we derive some properties of the lower and upper approximations in a semiring. The rough set theory was introduced by Pawlak. Rough set which deals with uncertainty is an extension of set theory, in which a subset of a universe is described by a pair of ordinary sets called the lower and upper approximations. As a generalization of ideals in BCK-algebras, the notion of rough ideals is discussed. The concept of approximations in the theory of algebraic structures and derived a relationship between rough sets and semiring theory and considered a semiring as a universal set and introduced the notion of rough ideals and rough sub semirings with respect to an ideal of a semiring. In this paper we substitute a near semiring instead of the universe in Pawlak approximation space and derive some of the properties of rough fuzzy sets in near semirings.

Keywords: rough sets, Pawlak space, gamma semi near rings.

Analytical Solutions of MHD Casson Fluid Using Chemically Reactive Flow with Epitomized Boundary Conditions

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Abstract: Investigation of magnetic fluids with the merged effect of heat sink and chemical reactions established on their physical properties exhibits powerful shock resistance abilities, like low-frequency response, low energy consumption, and high sensitivity. Consequently, the applied magnetic field always takes diamagnetic, ferromagnetic, and paramagnetic forms. The present survey explores an analytic solution of incompressible and MHD flow of Casson fluid in presence of Darcy's medium exposed to temperature and concentration credence within a porous plate with epitomized boundary conditions. The considerable mathematical method, Laplace transform is imposed in the governing equations. Analytical solution of the phenomena was acquired in terms exponential and error functions. Graphical illustrations of the analytic solutions are discussed and depicted.

Key words: Analytical solution, MHD, Casson fluid, Laplace transform Darcy's medium.

Thermo-diffusion flow of Jeffrey nanofluid past moving surface with time dependent thermal conductivity

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Abstract: Double diffusion of Jeffrey fluid flow in companionship of nanoparticles is analyzed theoretically with time dependent thermal conductivity. The nanoparticles are taken under consideration evaporated over convectively heated surface which moves periodically in its own plane. Suitable dimensionless variables are engaged to obtain the dimensionless forms of governing equations. Numerical solution of non-linear differential equations is acquired by utilizing MATLAB tool BVP4C. The present investigation reveals the impacts of various emerging parameters are depicted graphically.

Key words: Jeffrey nanofluid, time dependent thermal conductivity, double diffusion flow, oscillatory stretching surface.

Williamson fluid flow in a permeable cylinder with MHD effects

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Abstract: This deals with the radiative MHD flow in a permeable cylinder filled with Williamson fluid. It has been observed that the velocity of the fluid drops dramatically as the value of the variable viscosity parameter P is increased. Increasing the variable viscosity parameter P, which causes the particles in the fluid to become thicker and slows the fluid down. There is a large effect on heat transfer from Williamson fluid flows across a cylinder. Recent research has demonstrated that adjusting the characteristics of the magnetic field can decrease the boundary layer thickness and its associated velocity components. Known as skin friction drag, this phenomenon occurs when the amount of friction between an object's surface and the fluid increases with the viscosity of the fluid. If you increase your speed, V, the boundary layer thickens, but if you decrease it, the velocity boundary layer thins. It has been discovered that the heat transfer impact of MHD flow across a stretching cylinder has major consequences for heat exchangers, fiber coatings, and transportation. How a plate with an exponentially increasing inclination reacts to a uniformly permeable porous material that experiences temperature and concentration changes has been investigated. Radiative MHD Flow Levels are found to contribute significantly to both the suggested and the traditional models.

Keywords: MHD flow, Williamson fluid, MHD effects, Prandtl number.

Second grade fluid flow past an inclined porous channel with convection and radiation effects

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Abstract: The phenomena of second grade fluid flow past an inclined porous channel with convection and radiation parameters have been studied in this paper. It has been noticed that, as the visco elasticity rises, the velocity of the fluid decreases. Also, the velocity profiles were found to be parabolic. Furthermore, when the Grashoff number rises, the velocity falls dramatically. With increasing Reynold's number, a rise in velocity is possible for equal levels of viscoelasticity. Increasing the prandtl number causes a noticeable rise in fluid velocity.

Keywords: Visco elasticity, Reynolds Number, Darcy Number, Second grade fluid.

Heat and Mass Transfer on Unsteady MHD Chemically reacting rotating flow of Jeffrey fluid past an inclined plates under the impact of Hall Current, Diffusion thermo and Radiation absorption

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Abstract: This paper presents an analytical solution for the two-dimensional unsteady MHD free convective double diffusive heat and mass transfer rotating flow of viscous incompressible optically thin non-Newtonian fluid (Jeffrey fluid) past a semi-infinite porous plate when Hall current, radiation absorption, and Dufour effects are present. With a first-order chemical reaction, Lorentz force is delivered perpendicularly to the plate. The perturbation technique was used to convert the governing PDEs into ODEs. The impacts of different physical factors, such as Hall current, heat absorption, radiation absorption, Grashof number, modified Grashof number, Dufour effect, magnetic field parameter, inclination angle, chemical reaction parameter, etc., are investigated visually. By increasing the values of the Dufour effect, the radiation absorption parameter, and the reverse effect of the heat absorption parameter, the temperature profile is also increased. Conversely, by increasing the values of the Schmidt number and chemical reaction parameter, the concentration profile distribution is decreased. The usage of MATLAB programmes to analyse the results of the skin friction solution and display the numerical data is another important discovery of the current study. the Dufour effect increasing the rate of heat and mass transmission at the wall. The effects of all relevant factors can be displayed using tables, graphs, and reports.

Keywords: Jeffrey fluid, hall current effect, magnetohydrodynamics, radiation absorption, Dufour effect.

Radiation Absorption Effect on Convective Flow of a Newtonian Fluid Past an Inclined Plate in Conducting Field

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Abstract: The effects of the emission parameter, the addition of heat, and the material reaction on the MHD stream are wonderfully explored. This stream is convective in nature and moves through a tending influencing shield while taking into account permeability features and fluctuating suction. The above problem is formulated using non-similar equations. Additionally, the stream equations are transformed into a system of non-linear ODEs with the use of the perturbation approach. Expressions of hotness and attentiveness are handled by this pace. Achieved physical quantities include skin friction, the Nusselt digit, and the Sherwood digit. Utilizing graphs and tables, the unique consequences of all the variables entangled in the situation are described. An excellent place to start for researchers looking at the impacts of emission incorporation in absorbent mediums.

Keywords: Emission absorption, MHD, Radiation, Heat absorption, Chemical reaction, Porous medium, mixed convection, inclined shield.

Process Capability and Parametric Analysis of Statistical Data Using Design of Experiments

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Abstract: Design of experiments (DOE) extensively used in many fields namely agricultural, petroleum, aerospace, automotive, aircraft industries to seek the optimal solutions. DOE can solve single response and multi response problems through few tests. Taguchi method suggests orthogonal array (OA) and provides the range of estimates. The present paper mainly focused on the process capability index along with the significant effect of the various process parameters on output response. Here we identify the relation between variables and their contributions with the help of Analysis is of variance (ANOVA). The optimum set of parameters obtained by the Taguchi, Response surface methodology and additive law and analysis carried out using R Programming can be compared and noted that the results obtained through additive law are nearer to the test data. A simple optimization procedure is adopted in this article to select a set of optimal GFRP composite process variables for achieving minimum RA, Fm and Fd along with the concept of additive law of Taguchi approach, Response surface methodology with interaction factors. Taguchi approach provides estimated range of the responses for the optimal process variables. Test data on CMC milling machine process is considered for validating the estimates. Empirical relations are presented for the output responses of RA, Fm and FD. Test results are within/close to the RSM and additive laws. Process capability index can be determined with the help of statistical quality control and presented through the graphical representations.

Keywords: Multi response optimization, Design of experiments, Process capability index, Parametric analysis.



Performance Analysis of Heat Pipe Using Central Composite Designs

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Abstract: In many sectors, optimal solutions are discovered through a series of tests with the goal of reducing cost and time. In this study, we want to test the adequacy of modified Taguchi and Central Composite methods (CCD) is examined considering the test data of the performance of heat pipes. The optimal parameters obtained through the mentioned methods with the test data. Compare two methods based on the number of trials and their usefulness for predicting the performance indicator. Also, we can determine the range of the output response. It will help us to achieve the desired optimal process parameters of maximum efficiency, minimum thermal resistance & maximum overall heat transfer coefficient also tested the performance of heat pipes using the modified Taguchi approach. The goal is to reduce the number of trials while still obtaining a solution for the entire factorial experiments. Before choosing the right statistical model for your application, it's critical to understand these constraints. Taguchi and the Central Composite Design (CCD) are examined to consider heat pipe data with three output responses. Useful empirical relationships to generate data for CCD test runs. The optimal solution is obtained and compared with the CCD. The optimal resistance achieved through optimal input variables using the Taguchi approach is very close to the test results provided. Similarly, the CCD results show a slight difference.

Keywords: Modified Taguchi designs, central composite design, central composite designs, dummy parameters, efficiency, thermal resistance, general heat transfer coefficient.



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Bilateral Generating Relations Associated with Two Variable Generalized Hypergeometric Polynomials

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Abstract:

In this paper, the authors first prove a theorem on bilateral generating relations for a certain two-variable generalized hypergeometric polynomials $R_n(\beta; \gamma; x, y)$, which is newly defined alongwith certain conditions and particular cases to well known classical [polynomials of mathematical physics, using the group-theoretic technique introduced by Weisner. It is then shown how the main result can be applied to derive a large variety of bilateral generating functions for various special functions, as well as for their various generalizations. Some results given by other researchers are thus observed to follow easily as special cases of the theorem proved in this paper. It is worth noting that special functions play role in the design of filters and approximation theory in communication engineering.

Keywords: Group-Theoretic Method, Bilateral Generating Relations, Hypergeometric Polynomials, Special Functions

Chebyshev polynomials of generating functions by Wiesner method

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Abstract. This paper attempts to obtain generating functions for the polynomials defined by Chebyshev denoted as $T_n(x)$ (Special Ultra Spherical Polynomials of the first kind) using Weisner's group-theoretic method by interpreting 'n' suitably. It is possible to derive at least three generating relations for various special functions of mathematical physics using this method introduced by Louis Weisner. In approximation theory, the roots (nodes) of $T_n(x)$ are used as matching points for optimizing polynomial interpolation. Chebyshev polynomials are also used in many models to study them elegantly, including filters in signal processing distributed networks.

Key Words: Chebyshev Polynomials, Generating Functions, Group-Theoretic Method

Existence Of Ψ -Bounded Solutions for Semi-linear Difference Equations

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ABSTRACT: From last four decades onwards the existence of Ψ -bounded solutions for system linear and nonlinear difference equations was studied by different authors under different approaches. At the same time the existence of Ψ -bounded solutions by using the concept of Eigen values are studied by several authors. But, existence of Ψ -bounded solutions for system of semi linear difference system was not yet studied by using the concept of Banach Contraction principle.. So, for that reason here we studied the develop of Ψ -bounded solution for semi-non linear difference system

$$Y(n+1) = Y(n) + a(n) + g(n, t) \quad (1.1)$$

where $A \in R^{n \times n}$, $g \in R \times R^n$ and $g(n, 0) = 0$, with the concept of Banach contraction principle.

Keywords: Fundamental matrix, difference system, Ψ -bounded solution, Banach Contraction principle,

Classification of class of atoms in lattice sigma-algebra

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Abstract: In this paper, we define a class of null sets, the lattice measure of an atom, and the lattice semi-finite measure. We establish a result that the lattice measure of any two atoms is either disjoint or identical also we prove the class of all atoms in a lattice sigma algebra is countable. Finally, we conform to some elementary characteristics of atoms in a lattice sigma-algebra.

Keywords: Lattice, algebra, atom, measure

Interval-valued intuitionistic fuzzy topological sub algebras (IVIFTS) in BF-algebras

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Abstract: The concept “interval-valued intuitionistic fuzzy sets (IVIFS)” was delivered through Atanassov’s and Gargov [21] in 1989 as a simplification of each IVFS and IFS. Satyanarayana et al. [3, 4] implemented the concept of IVIFSs to BF-subalgebras and fuzzy ideals of BF-algebras. Further, the notion of an IVIFTS of BF-algebras are also discussed in this work.

Keywords: BF-algebras, fuzzy sub-algebras, IVIFS, IVIFTS, IVIF-continuous surjective function (IVIFCSF)

A Hybrid Decision Support System for the Assessment of Solid Waste Treatment Technologies under Uncertain Environment

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Abstract: In most of the developed and developing countries, the treatment of solid wastes is one of the challenging issues for the governments. The improper management of solid wastes can cause the hazard risks to public health and the environment. Due to several sustainability factors and uncertain information, the selection of solid waste treatment technologies can be considered as a multiple criteria decision making (MCDM) problem. For this purpose, this study proposes a novel decision support system based on the stepwise weight assessment ratio analysis (SWARA) and the technique for order of preference by similarity to ideal solution (TOPSIS) methods with intuitionistic fuzzy information. The proposed method uses the intuitionistic fuzzy information-based SWARA model to derive the weights of sustainability criteria. Further, the solid waste treatment technologies can be prioritized using an integrated TOPSIS method. To prove the applicability of the proposed method, an illustrative example of solid waste treatment technologies evaluation problem is presented from intuitionistic fuzzy perspective.

Keywords: Intuitionistic fuzzy sets; Solid waste treatment technology; Sustainability; SWARA; TOPSIS.

CHARACTERIZATION OF LATTICE SIGMA ALGEBRAS

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Abstract: This paper empowers some basic elementary properties of lattice algebra and lattice sigma algebra. Also, it establishes that the countable intersection of lattice sigma algebras is again a lattice sigma-algebra and the lattice sigma-algebra generated by itself contains the collection of all unions of lattice measurable sets. Finally, it ascertains some elementary properties of lattice measurable functions

Keywords: lattice algebra, lattice sigma algebra, lattice measurable sets

Cattaneo–Christov heat and mass transfer flow model of a nanofluid under slip conditions

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Abstract: This report is devoted to the study of the flow of MHD nanofluids through a vertical porous plate with a temperature-dependent surface tension using the Cattaneo–Christov heat flow model. The governing partial differential equations are converted into ordinary differential equations with the help of the similarity transformation. The solution finding process was completed by running the bvp4c code in MATLAB. A quantitative analysis of the influence of some newly occurring parameters on physical quantities was carried out using graphics. Marangoni convection has proven to be one of the most cost-effective tools available that can reduce skin friction

Keywords: Cattaneo–Christov, heat and mass transfer, MHD, skin friction.



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Ohmic Dissipation and Brownian Motion effects on Unsteady Flow of a Thermomagnetic Reactive Maxwell Nanofluid over a Stretching/Shrinking Sheet

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Abstract: The significant goal of this ongoing examination is to look at the unstable progression of a thermomagnetic receptive Maxwell nanofluid stream over an extending/contracting sheet with Ohmic dissemination and Brownian movement. Reasonable likeness changes were utilized to lessen the overseeing non-straight halfway differential conditions into a bunch of coupled conventional differential conditions. The decreased comparability conventional differential conditions were settled mathematically utilizing the BVP4C with the assistance of shooting method. The outcomes were shown in an even structure. Gotten results uncover that the Maxwell boundary and the shakiness boundary decrease the Maxwell nanofluid speed and the liquid temperature is expanded with an expansion in the Eckert number and warm radiation boundary.

Keywords: Maxwell nanofluid; stretching sheet; Ohmic dissipation; Brownian motion;

Impact of external surface temperature & Heat radiation of SiO_2 based nanofluids over a vertical circular cylinder enclosed in porous medium

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Abstract: The current article analyzes the study on “MHD - mixed convective boundary layer flow” SiO_2 -water, SiO_2 -Ethylene glycol & SiO_2 -Engine oil nano fluids “above a vertical circular-cylinder” under the influence of radiant heat and magnetic-field Passing through a porous medium. Similarity variable(s) are used to transform the main PDE (partial differential equations) into the ODE (ordinary differential equations). The governing equations are then solved by the method of R- K –Fehlberg with shooting technique numerically. MATLAB is used for the presentation of results. The impact of pertinent-parameters on factors like velocity and temperatures of assisting flow, convective flow and opposing flow are unyielding and detailed info are presented through various plots. The “coefficient of skin friction (C_f)” and “local Nusselt number (Nu)” for different parameter(s) are computed for the three flows and tabulated.

Keywords: Porous medium, radiant heat, heat source, assisting flow, convective flow and opposing flow.

A Note on Lattice -Vague Prime-Ideal of a Gamma- Near Ring

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Abstract: In this piece of work, we establish and study the concept of a Lattice Vague Prime Ideals of Gamma Near Ring and its properties, taking values in a complete Brouwerian lattice satisfying infinite meet distributive law. We propose and analysis the concepts of a Lattice Vague Prime Ideals of Gamma Near Ring in L. In fact, an Lattice Vague Set, $\eta = (t_\eta, f_\eta)$ where $t_\eta, f_\eta : Q \rightarrow L$ such as $t_\eta(h) \leq 1_L - f_\eta(h)$, $f_\eta(h) \leq 1_L - t_\eta(h)$, $\forall h \in Q$. The function t_η, f_η define the degree of membership and non-membership function. Also, $1_L - f_\eta(h)$ and $1_L - t_\eta(h)$ are elements in Brouwerian lattice L, which are described as $1_L - t_\eta(h) = \inf\{\delta \in L / 1_L \leq t_\eta(h) \vee \delta\}$ and $1_L - f_\eta(h) = \inf\{\delta \in L / 1_L \leq f_\eta(h) \vee \delta\}$. We prove a lemma (3.4), which shows an vital role in the analysis of a Lattice Vague Prime Ideals of Gamma Near Ring and a Lattice Vague Maximal Ideals of Gamma Near Ring. Additionally, we determine all a Lattice Vague Prime Ideals of Gamma Near Ring of a Gamma Near Ring, Q by establishing a one-one correspondence a Lattice Vague Prime Ideals of Gamma Near Ring of Q and the pairs (I, δ) where I is a prime ideal of Q and δ is a prime element in L.

Key Words: L- Vague set, Vague cut, L- Vague ideal Γ - Near ring.

Some Special Properties of Lattice -Fuzzy Cosets of a Gamma- Near Ring

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Abstract: In this section, we define the concept of a Lattice Fuzzy Coset of a Lattice Fuzzy Ideal of a Gamma Near Ring of V where L is a complete lattice satisfying infinite meet distributive law. We have studied the properties of it. Also, we presented the one-one correspondence between Lattice Fuzzy Coset of a Lattice Fuzzy Ideal of a Gamma Near Ring and Crisp Coset of a I-GNR. Later we verify that Every Lattice Fuzzy Coset of a Lattice Fuzzy Ideal of a Gamma Near Ring of V is constant on every Coset of an ideal V_{θ_L} . Furthermore, we discussed about Kernel Homomorphism on Lattice Fuzzy Coset of a Lattice Fuzzy Ideal of a Gamma Near Ring.

Key Words: L-Fuzzy set, L-Fuzzy Coset, L- Fuzzy ideal Γ - Near ring.

Numerical Analysis of linear thermal radiation effects on MHD flow of a nanofluid over an elongating stretching sheet with heat and mass fluxes with viscous dissipation

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Abstract: In this work, we conducted a numerical investigation of thermal emission on a magneto-hydrodynamics (MHD) stream of a viscous in-compressible nano-fluid caused by an exponentially stretched sheet with warm and mass fluxes boundary conditions in the occurrence of viscous dissipation. The governing PDEs are transformed into a system of ODEs using self-similarity, and then numerically solved using the shooting approach and a fourth-order Runge-Kutta method. The results of a wide variety of limitations are shown on the non-dimensional stream, temperature, nano-particle capacity percent, and confined Nusselt and Sherwood figures. Coefficients of friction are calculated mathematically, and limited Nusselt and Sherwood statistics are studied. The present results are compared with the available of the literature and its shows valid of our results. In the paper we observed that the stream profile and frontier layer thickness increase via suction constraint, Hartmann statistics and Eckert statistics.

Keywords: Thermal Emission; MHD; Nanofluid; heat and mass fluxes; Viscous Dissipation.

A study on linear thermal radiation and viscous dissipation effects on bioconvection stream of maxwell nanoliquid over a permeable vertical plate due to gyrotactic microorganisms with magnetic field

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Abstract: This paper discusses how the properties of thermal radiation and viscous dissipation influence the magnetohydrodynamic (MHD) bioconvection flow of a novel type of water called the upper convected Maxwell, Nanoliquid that encapsulates nanoparticles and motile gyrotactic microorganisms, as it moves past an absorptive vertically moving plate. The combination of buoyancy forces and a magnetic field on the interaction of mobile microorganisms and nanoparticles creates nanoliquid bioconvection. Using a similarity transformation and shooting method procedure coupled with a Runge-Kutta-Fehlberg integration pattern, the leading nonlinear partial differential equations of the problem are transformed into a structure of nonlinear ordinary differential equations, and a numerical attempt at solving the exemplary boundary value problem is made. Bioconvection's Lewis number L_b , traditional Lewis number Le , bioconvection's Peclet number Pe , buoyancy quotient's constraint Nr , bioconvection's Rayleigh number R_b , Brownian motion's constraint Nb , thermophoresis's constraint Nt , Hartmann's number Ha , Grashof's number Gr , radiation's constraint R Eckert's number Ec , and the microbes' concens

Keywords: Thermal radiation; Viscous dissipation; MHD; Bioconvection; Maxwell Nano liquid; Microorganonisms.

Vague Bi-Quasi-interior Ideals of a Γ -Semiring

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Abstract: In this paper, we study the concept of vague bi-quasi-interior ideal of a Γ -semiring as a generalization of vague bi-ideal, vague quasi-ideal and vague interior ideal and study the properties of vague bi-quasi-interior ideals of a Γ -semiring.

Keywords: Γ -semiring, bi-quasi-interior ideal, vague Γ -semiring, vague bi-quasi-interior ideal

Operations on Vague Ideals of a Γ -semiring

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Abstract: In this paper, we define the operations sum, product and composition on a left (resp. right) vague ideals of a Γ -semiring and we prove that the set of all vague ideals is a complete lattice.

Keywords: Γ -semiring, left (resp. right) ideal, left (resp. right) vague ideal, vague ideal



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Organization Politics and Organizational Development through Effective Employees

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Abstract: Today's corporate world by and large is influenced with the dissatisfaction, differences and discontent among the employees. They are two dimensions of organization polities i.e., one for positive growth and development and other one is for personal and group gains. Politics is always an informal and unofficial level causing harm and negative growth in the organization. There are n numbers of variables which buy and large influences organizational culture, growth and development. This kind of research is basically based upon qualitative aspects where the researchers need to interact with employees at various levels of different organization with personal interviews, questionnaire to know the ideas of the employees on sensitive issues like organizational politics and organizational development.

Keywords: Politics, Growth, Development, Culture, Motivation.

Forecasting INR/USD Exchange Rates using Hybrid and Neural Network Model

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Abstract: Prediction of exchange rates plays a vital role in international trade, stocks and framing the policies of exports and imports. USD exchange rates used widely for many business areas. In this paper an attempt is made to predict INR/USD exchange rates using Hybrid model that joins the forecasts of ARIMA as well as FFNN. The forecasting accuracy of developed models, were tested used the error measures like MAE, MAPE & RMSE. The results shows hybrid model has greater accuracy compared to ARIMA and FFNN model. The predicted exchange rates would vary between 70.80 and 71.39 for the next one month and this variation in exchange rates would help the business people and also for framing the govt policies within the upcoming future.

Keywords: Exchange Rates, Box Jenkins methods, FFNN, Combined Forecasts, MAE, MAPE, and RMSE.

Squeeze Film Lubrication of Asymmetric Rollers by Bingham Plastic Fluid

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Abstract: An attempt has been made to investigate hydrodynamic lubrication characteristics of asymmetric bearings lubricated by thin fluid film under the operating behavior of line contact for a heavily loaded rigid system for normal squeezing motion with cavitation points. The lubricant follows non-Newtonian incompressible Bingham plastic fluid model where the fluid viscosity is supposed to vary with hydrodynamic pressure. The equations which govern the fluid flow such as continuity and momentum equation are solved first analytically and later numerically using MATLAB. The numerical results are achieved for the velocity, pressure, load, and traction forces by varying different physical parameters like rolling ratio, squeezing parameter, and yield stress parameter. The obtained results are investigated numerically and graphically. Finally, it is concluded that a notable change is observed in velocity, pressure, load and traction with Newtonian and non-Newtonian fluids. Results follow good agreement with available literature

Keywords: Hydrodynamic lubrication, Non-Newtonian, Bingham plastic, Squeezing, Incompressible, Viscosity

Significance of Lorentz Force and Viscous Dissipation on the Dynamics of Propylene Glycol: Water Subject to Joule Heating Conveying Paraffin Wax and Sand Nanoparticles Over an Object with a Variable Thickness

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Abstract: With emphasis on the motion of PG-Water + ParaffinWax + Sand and PG-Water + ParaffinWax on an object with a variable thickness experiencing Joule dissipation and nth order chemical reaction, nothing is known on the increasing Lorentz force, viscous dissipation, Prandtl number, and Schmidt number. The mathematical model that governs the transport phenomenon presented in this report was reduced to a coupled ordinary differential equations, non-dimensionalized, parameterized, and solved numerically using bvp4c solver (MATLAB built-in function). A statistical tool (correlation coefficient) was used to confirm the impact of pertinent parameters on heat and mass transfer rates, and surface drag force. It is worth concluding that magnetic field parameter and Eckert number have significant negative association with heat transfer rate. There is a significant positive association among chemical reaction parameter and mass transfer rate. Fluid temperature ameliorates with larger Eckert number, and surface drag force diminishes with larger magnetic field parameter. Prandtl number minimizes the temperature and escalates the heat transfer rate. Concentration minimizes with larger Schmidt number and chemical reaction parameter. Furthermore, it is detected that the fluid concentration gets ameliorated with the raise in the order of chemical reaction.

Keywords: Thin needle, Viscous dissipation, Hybrid nanofluid, Eckert number, Correlation coefficient, Magnetic field

A Fuzzy analysis on causes for the failure of Engineering learners in Engineering Drawing by Combined Disjoint Blocked Fuzzy Cognitive Maps (CDBFCM)

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Abstract: Nowadays, the number of Engineering learners have failed in Engineering Drawing. The fact is lack of basics. Not preparing properly is other cause. The fact is number of engineering learners have no good way of behavior. Now we will identify the facts due to which number of Engineering learners getting failed in Engineering Drawing by using CDBFCM. W.B. Vasantha Kandasamy, A. Victor Devadoss began. The idea is helpful when the views are more in account. Then all ideas will be gathered. Various difficulties will be deliberated by CDBFCM. The final section gives important crucial facts about Engineering learners who failed in Engineering Drawing were identified. We will take the help of a neutrosophic device to do this. The work was divided into 5 parts. In the first section, information about Fuzzy Cognitive Maps and the reasons for the failure of Engineering learners in engineering drawing are given. In the second section preliminaries of Fuzzy Cognitive Maps, Combined Disjoint Block Fuzzy Cognitive Maps are discussed. The way of finding unseen patterns was discussed in the third section. The difficulties are explained in the fourth section. Finally, the important factors are discussed.

Keywords: Combined Disjoint Blocked Fuzzy Cognitive Maps,[8,9] Failing in Engineering Drawing, Engineering learners.

On Finite Double Integrals Involving a General Multivariable Polynomial and Modified Generalized Multivariable I-function of Prasad

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Abstract: In this paper, first we define a new theorem, it's the modified of generalized multivariable I-function defined by Prasad. We evaluate there general finite double integrals involving the product or algebraic and exponential functions, a general multivariable polynomials and this new function. Some new and interesting special cases of our main integrals have been considered briefly. Also these integrals are useful in obtaining the transforms of special functions and have enormous applications in science and engineering.

Keywords: I-function, H-function, hypergeometric function, multivariable polynomials.

[1,2]-Connected domination number for fuzzy graphs

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Abstract: A set $S \subseteq V(G)$ in a fuzzy graph $G:(\sigma,\mu)$ is said to be a [1,2]-connected dominating set, if for every vertex $v \in V - S$, $1 \leq |N(v) \cap S| \leq 2$ and $\langle S \rangle$ is connected. The minimum cardinality of a [1,2]-connected dominating set is called the [1,2]-connected domination labeling number and is denoted by $\gamma_{[1,2]cc}(G: (\sigma, \mu))$. In this paper, we exhibited the results based on [1,2]-connected domination number for fuzzy graph.

Keywords: Fuzzy Domination, connected domination, [1,2]-domination, [1,2]-connected domination.

Certain Class of Eulerian Integrals of Modified Multivariable I-function of Prasad

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Abstract: In this paper we establish a general class of Eulerian integrals involving the modified I-function several variable. The results proved here provided closes form expression for numerous other potentially useful integral. At the end we shall establish several particular cases and remarks. Also these integrals are useful in obtaining the transforms of special functions and have enormous applications in science and engineering.

Keywords: I-function, H-function, multivariable I-function, Contour integral, Eulerian integrals.

Some studies on fuzzy sublattices through intuitionistic fuzzy setting

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Abstract: In this article, author has made an attempt to study more about fuzzy sublattices with special emphasis on their properties in the intuitionistic fuzzy setting. Also deals with the concepts of Intuitionistic fuzzy ideals of an intuitionistic fuzzy sublattice, (ϵ , $\epsilon \vee q$) - intuitionistic fuzzy sublattices and obtained some properties of intuitionistic fuzzy sublattices correspondence between intuitionistic fuzzy ideals and their lattice homomorphism and lattice epimorphism. Inclusion principle is also discussed.

Keywords: intuitionistic fuzzy sublattice, lattice homomorphism, lattice epimorphism.



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Prediction of hypertension using artificial neural network

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Abstract: In Today's daily life people are having different health issues, Hypertension is one of serious health issues. This paper is focusing on prediction of hypertension in various people by means of Machine Learning and Artificial Neural Networks. One of the genetic problems which people are facing is hypertension. Hypertension is a sickness that ends in an excessive at the same time dangerous disease which includes coronary heart failure, inspissation of heart muscle, coronary artery disease, and other extreme situations. This paper is to identify the occurrence of hypertension for various categories of persons, namely people with or without hypertension, pregnant lady with or without hypertension, people with chronic kidney disease, adrenal and thyroid disorders. This is to recognize the best solutions, challenges and chances in detecting hypertension. In upcoming it is used as a primary recognition system. Using Artificial Intelligence one can able to get results for prediction. Machine learning is subclass of Artificial intelligence, which is used as a best prediction algorithm to identify hypertension. Results of the proposed method compared over existing solutions. This intern increases the accuracy of the system. In machine learning genetic algorithms and neural networks plays vital role for predicting various health issues. To predict hypertension logistic regression and boosting classifiers are used. The proposed method results exhibit superior compared to the existing machine learning algorithms. Neurons within the brain bypass the indicators to carry out actions. further, artificial neurons connect in a neural network to carry out duties. The end result can be acquired in two different forms i.e. either patient with hypertension or no hypertension.

Keywords: Machine Learning (ML), Artificial Neural Network (ANN), Hypertension, Keras, Tensor Flow.



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Unsteady MHD Casson hybrid nanofluid liquid film flow through porous media over an exponentially stretching sheet with the influence of radiation, viscous dissipation and chemical reaction

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Abstract: The problem Unsteady MHD Casson hybrid nanofluid liquid film flow through porous media over an exponentially stretching sheet was studied using suitable dimensionless transformations on equations representing the problem. Thin-film film flow and heat mechanism coupled with mass transfer characteristics are governed by the slip velocity, magnetic field, dissipation, and chemical reaction effects. Numerical analysis is carried out by the using Homotopy Aanalysis method. The governing equations are solved with eight dominant parameters for the thin liquid film. Additionally, the skin-friction coefficient and Nusselt and Sherwood numbers were calculated. Enhancement in the parameter of unsteadiness causes an increment in both velocity distribution and concentration distribution in the thin film layer while an increase in the same parameter causes a reduction in the film thickness. Finally, the effects of various parameters are analysed by constructing graphical representations of velocity, temperature and concentration profiles. The present results are observed to be good and in agreement with previously existing results.

Keywords: Casson nanofluid, Liquid film flow, unsteadiness, Stretching sheet, chemical reaction, viscous dissipation, velocity slip parameter, porous media.

Influence of Heat Transfer Flow of MHD Casson Hybrid Nanofluid over Vertical Stretching Plate under Heat Source and thermal radiation.

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Abstract: In this study, MHD heat transfer flow of Casson hybrid nanofluid over a vertical stretching sheet is studied. Thermal radiation and heat source influences are also considered. Copper oxide and TiO_2 are considered as the hybrid nanoparticles. The governing partial differential equations (PDEs) are taken place into non-linear coupled ordinary differential equations (ODEs) by using suitable similarity transformations of dimensionless variables, and solution of these ODEs is performed using Keller Box method. Effects of many involved parameters like magnetic parameter, Casson parameter, the nanoparticles volume fraction and ratio parameter are shown through tables for skin friction and Nusselt number. Temperature and velocity profiles are investigated. Nusselt number, skin friction parameters are calculated. It also is observed that, when the magnetic field and Cason parameter increase, this leads to an increase in the temperature profile and a decrease in the Nusselt number and the velocity profile. A comparison study is also made which compares the present result with existing data is executed and results are good in agreement with them.

Keywords: Casson hybrid nanofluid, MHD, Thermal radiation, Heat Source

Spectroscopic Investigations of Dysprosium ions doped Oxy Chloro Boro Tellurite Glasses for Visible Photonic device Applications

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Abstract: Spectroscopic properties of oxy chloro boro tellurite glasses (OCBT) doped with varying concentration of dysprosium ions were studied using X-ray Diffraction (XRD), Fourier transform infrared (FT-IR), Raman, absorption, excitation and photoluminescence (PL) spectral studies. Judd-Ofelt (J-O) theory has been applied to the recorded absorption spectral features to evaluate various radiative parameters for the prominent fluorescent levels of Dy³⁺ ions doped OCBT glasses. Under 350nm excitation, intense blue and yellow emissions at 483nm ($^4F_{9/2} \rightarrow ^6H_{15/2}$) and 575nm ($^4F_{9/2} \rightarrow ^6H_{13/2}$) were observed respectively and show concentration quenching at 1 mol% of Dy³⁺ ions in OCBT glasses. Dexter theory applied to the PL spectra reveals dipole-dipole interaction responsible for energy transfer between the doped Dy³⁺ ions to show concentration quenching in the prepared glasses. The yellow to blue (Y/B) intensity ratio, CIE Chromaticity coordinates and color correlated temperatures (CCT) have been evaluated from the PL spectra for all the prepared glasses. The emission cross-sections, branching ratios and quantum efficiency evaluated for the OCBT glasses confirm the suitability of Dy³⁺ doped OCBT glasses for visible photonic device applications.

Index Terms: Judd-Ofelt parameters; Dysprosium; Photoluminescence; Lifetime; White-light emitting diode; Oxy chloro boro tellurite glasses

Near-IR Luminescence in Nd³⁺ ions doped Na₂O-BaF₂-CaF₂-B₂O₃-TeO₂ glasses for 1064nm Laser and Fiber Amplifier Applications

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Abstract: In the present research work, Nd³⁺ ions doped Oxy-Fluoro Boro Tellurite (OFBT) glasses were prepared by melt-quench method and their luminescence characteristics were investigated through UV-Vis-NIR absorption, luminescence and decay studies for the NIR laser and optical fiber applications. Judd-Oflet (J-O) theory used to find the key parameters which in turn used to evaluate various radiative parameters from the luminescence spectra. Using the T.S.Lomheim and L.G.DeShazer method, branching ratio's (β_R) were evaluated by incorporating the spectroscopic quality factor (χ). The stimulated emission cross-section (σ_{sec}) was computed and found high for $^4F_{3/2} \rightarrow ^4I_{11/2}$ (1064 nm) transition for OFBTNd10 glass. Using decay curves, the effect of Nd³⁺ ions concentration on the lifetime of the $^4F_{3/2}$ luminescent level was studied. The quantum efficiency (η) for OFBTNd10 glass was calculated and found to be maximum as 88%. From the obtained results, it can be suggested that OFBTNd10 glass can be used as good optical gain material to produce laser at around 1064 nm.

Index Terms: Nd³⁺ ions, borate glasses, tellurite glasses, laser, fiber amplifier

Sensitization of Nd³⁺ by 4f-5d transition of Ce³⁺ in Ba₂Y(BO₃)₂Cl Phosphor for the Prospective NIR Applications

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Abstract: The Ba₂Y(BO₃)₂Cl:Ce³⁺,Nd³⁺ phosphor was synthesized by conventional solid-state reaction method and characterized using XRD, SEM, photoluminescence (PL) excitation, PL emission and PL decay spectral measurements to understand the feasibility of using this phosphor for NIR emission. The XRD patterns recorded for the Ba₂Yb(BO₃)₂Cl phosphor reveals pure crystalline monoclinic (ICDD 79-0967) phase belongs to a space group P2₁/m. The surface morphology of the as prepared phosphor has been investigated using SEM. When excited with UV, the phosphor gives broadband emission at 420 nm, which corresponds to the allowed 5d→4f transition of Ce³⁺ ions and intense NIR emissions in the range 800-1400 nm, which are assigned to the characteristic ⁴I_{9/2,11/2,13/2} transitions of Nd³⁺ ions. The dependence of visible and NIR emissions, decay lifetime and energy transfer efficiency (η_{ETE}) were investigated in detailed. Excitation, emission spectra and decay curves have been measured to prove the energy transfer from Ce³⁺ to Nd³⁺. The fluorescence decay measurements and energy transfer efficiencies have been estimated and the mechanisms for the energy transfer between Ce³⁺ and Nd³⁺ have been proposed. The results indicate that sensitization of Nd³⁺ is possible via 4f-5d transition of Ce³⁺.

Index Terms: Near-infrared; Energy transfer; Ce³⁺-Nd³⁺; Sensitization; Phosphors; Photoluminescence

Structural and Electrochemical Properties of Li(LaAl)_xMn_{2x}O₄ Based Composite Cathodes

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Abstract: Spinel oxides lanthanum (La) and aluminium (Al) doped Li(LaAl)_xMn_{2x}O₄ ($x = 0, 0.01, 0.02, 0.03, 0.04$ and 0.05) compounds were prepared by a sol–gel method. Lanthanum and aluminium showed an influence on the structural, morphological and electrochemical properties. An x-ray diffraction study revealed that all the samples are in the cubic spinel phase. The grain size from the Debye–Scherrer and Williamson–Hall methods is comparable at lower doping concentration. Field emission scanning electron microscopy shows that the particle size of the samples increased with increasing dopant concentration, and the particle sizes were found to be between 50 nm and 200 nm. Cyclic voltammetry studies show two sets of well separated redox peaks due to the formation of Li⁺ extraction/insertion into the spinel framework at a scan rate of 0.5 mV/s in the potential range of 0.2–1.2 V. Electrochemical impedance spectroscopy studies show that (LaAl) 0.01 doping improved charge transfer resistance. Li(LaAl)0.01Mn_{1.98}O₄ showed better discharge capacity (68.2 mAh/g) over other doped derivatives and pristine LiMn₂O₄ in saturated Li₂SO₄ aqueous electrolyte.

Index Terms: Sol–gel method, x-ray diffraction, FE-SEM, cyclic voltammetry, charge–discharge characteristics

Solvothermal synthesis of WO_3 heterostructures and their applicability towards electrochemical water oxidation reactions

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Abstract: Bismuth vanadate (BiVO_4) and its heterostructures with tungstate (WO_3) were prepared by solvothermal technique. Phase purity of these compounds was analysed by collecting powder. X-ray diffraction data revealed the co-existence of both BiVO_4 and WO_3 phases. Transmission electron microscopic measurements on these samples revealed that the average particles sizes of these heterostructures are in the submicron range. Optical band gap is found in the range of 2.30 to 2.45 eV by using UV-visible spectrometer. Optical spectra reveal two distinct absorption edges corresponding to both existing phases. Electrochemical activity of BiVO_4 and $\text{BiVO}_4/\text{WO}_3$ heterostructures was studied using electrochemical workstation for applicability of oxygen evolution reaction (OER). These results indicate that the electrochemical activity was improved by forming heterostructures as compared with pristine compounds. From the Tafel slope analysis, it was found that the second electron transfer step is the rate determining step in OER mechanism in $\text{BiVO}_4/\text{WO}_3$ heterostructures.

Index Terms: Bismuth vanadate, oxygen evolution reaction, X-ray diffraction

Effect of hydrogen annealing on structure and dielectric properties of zinc oxide nanoparticles

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Abstract: In this article, Zinc Oxide (ZnO) samples were synthesized by Co-precipitation method. The influence of hydrogen annealing on the structure and dielectric behavior of zinc oxide nanoparticles was investigated. X-ray diffraction measurements indicate that all the particles possess a typical wurtzite structure without any other impurity phases. The structure and size of these nanoparticles are not influenced by hydrogen annealing but a small change in the peak position and intensity was observed. The low-temperature dielectric study of the samples was studied in the frequency range 20 Hz to 1 MHz between 80 K and 300 K and these measurements show that the ZnO nanoparticles further annealed at hydrogen atmosphere exhibit a high dielectric permittivity and a large increase in ac conductivity compared to that of the corresponding ZnO nanoparticle annealed in air. The hydrogen occupancy of oxygen atoms to play an important role in enhancing dielectric permittivity and conductivity in ZnO nanoparticles.

Index Terms: Hydrogen annealing; ZnO nanoparticles; Electric modulus, Jonscher's power law



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Dysprosium Concentration dependent Fluorescent properties of Antimony Lead Oxyfluoroborate glasses

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Abstract: Different concentrations of dysprosium (Dy^{3+}) ions doped antimony lead oxyfluoroborate (SbPbOFB) glasses were synthesized through Melt Quenching method. These prepared glasses are aimed to explain their possible usage in photonic device applications such as white Light Emitting Diodes (w-LEDs) and visible lasers. Glassy nature and thermal stability features of the undoped SbPbOFB glasses were investigated by XRD and TGA techniques. Spectroscopic features were studied by diverse methods like optical absorption, photoluminescence (PL) excitation, PL emission and PL decay spectra. The Judd-Ofelt (J-O) parameters evaluated from the measured oscillator strengths of the absorption bands are used to understand the asymmetry and bonding nature present in the as prepared glasses. The emission spectra recorded from 400 to 700 nm show three intense bands, one in yellow region (575 nm) corresponds to transition $^4F_{9/2} \rightarrow ^6H_{13/2}$ and the other two transitions at $\lambda = 482$ nm (blue) and $\lambda = 663$ nm (red) and are attributed to $^4F_{9/2} \rightarrow ^6H_{15/2}$ and $^4F_{9/2} \rightarrow ^6H_{11/2}$ respectively. Relatively higher value of emission cross-section (σ_{se}) along with branching ratios and quantum efficiency obtained for 1 mol% of Dy^{3+} ions in SbPbOFB glass for $^4F_{9/2} \rightarrow ^6H_{13/2}$ transition (yellow band) reveals its superiority to act as visible yellow lasers. The CIE color chromaticity coordinates estimated from the PL spectra are in close proximity with the traditional white light coordinates ($x = 0.333$, $y = 0.333$) and speaks the superiority of the as prepared glasses for the fabrication of w-LEDs. Relatively higher values of emission cross-section, branching ratio and quantum efficiency observed for 1 mol% of Dy^{3+} ions in SbPbOFB glass reveals its superiority in its possible usage in fabricating visible yellow lasers.

Index terms: Glasses, White Light Diode, Emission, Excitation, Judd-Ofelt parameter.



Structural and Spectroscopic properties of Antimony-Lead-Oxy-Fluoro-Borate

Europium glasses bright red light emission applications

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Abstract: Antimony-Lead-Oxy-Fluoro-Borate (BPbSbNaF) glasses were doped together with the various concentrations of the trivalent Europium (Eu^{3+}) ions were produced through rapid melt quenching technique and the prepared glasses were characterized for their luminescence activity at room temperature via different spectroscopic methods like; Optical Absorption, Excitation, Photoluminescence (PL) & lifetime decay. The Raman spectrum was employed for identifying the various functional groups that were existing in prepared BPbSbNaF glass. The optical absorption spectra obtained for Eu^{3+} ions doped BPbSbNaF glasses shown five bands correlated to their five different transitions, i.e., $^7\text{F}_0 \rightarrow ^5\text{L}_6$, $^7\text{F}_0 \rightarrow ^5\text{D}_2$, $^7\text{F}_1 \rightarrow ^5\text{D}_1$, $^7\text{F}_0 \rightarrow ^7\text{F}_6$, $^7\text{F}_1 \rightarrow ^7\text{F}_6$. The photoluminescence spectrum measured at 394 nm excitation exhibited five peaks associated to their respective transitions, i.e., $^5\text{D}_0 \rightarrow ^7\text{F}_0$, $^5\text{D}_0 \rightarrow ^7\text{F}_1$, $^5\text{D}_0 \rightarrow ^7\text{F}_2$, $^5\text{D}_0 \rightarrow ^7\text{F}_3$ and $^5\text{D}_0 \rightarrow ^7\text{F}_4$ at 578, 592, 613, 652 and 701 nm respectively, among which transition $^5\text{D}_0 \rightarrow ^7\text{F}_2$ appearing at 613 nm in visible red region has highest intensity. Utilizing, Judd-Ofelt parameters (J-O) acquired from an individual emission spectrum, several radiative properties of glasses had been estimated like, Transition Probabilities (A_R), Branching Ratios (β_R) and Emission-Cross Sections (σ_{se}) considering the notable emission transitions like, $^5\text{D}_0 \rightarrow ^7\text{F}_1$, $^5\text{D}_0 \rightarrow ^7\text{F}_2$ and $^5\text{D}_0 \rightarrow ^7\text{F}_4$ at 592, 613 and 701 nm correspondingly. From PL spectra, experimental decay lifetimes (LT) were calculated which were further used for evaluation of quantum efficiencies ($\eta\%$) of prepared glass samples. The Measured Branching ratios (β_R), Stimulated Emission Cross-Sections (σ_{se}), Quantum Efficiencies ($\eta\%$) and the color coordinates (x, y) of prepared glasses revealed their suitability for visible red light emitting device applications.

Index terms:: Europium; BPbSbNaFEu³⁺ glass; Raman spectrum; J-O parameters; Photoluminescence (PL); PL decay



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A Review of Medical Image Segmentation Algorithms

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Abstract: Image segmentation in medical physics plays a vital role in image analysis to identify the affected tumour. Numerous image segmentation techniques have been developed, and these techniques conquer different restrictions on conventional medical segmentation techniques. This paper presents a review of medical image segmentation techniques and statistical mechanics based on the novel method named as Lattice Boltzmann method (LBM). The beauty of LBM is to augment the computational speed in the process of medical image segmentation with an accuracy and specificity of more than 95% compared to traditional methods. As there is not much information on LBM in medical physics, it is intended to present a review of the research progress of LBM. **METHODS:** This paper in attendance a short review of medical image segmentation techniques based on Thresholding, Region-based, Clustering, Edge detection, Model-based and the novel method Lattice Boltzmann method (LBM). **CONCLUSION:** In this paper, we outlined various segmentation techniques applied to medical images, emphasize that none of these problem areas has been acceptably settled, and all of the algorithms depicted are available for broad improvement. Since LBM has the benefits of speed and adaptability of modelling to guarantee excellent image processing quality with a reasonable amount of computer resources, we predict that this method will become a new research hotspot in image processing.

Index terms: : Segmentation, Medical Physics, Radiation Therapy, Computed Tomography (CT), Magnetic Resonance Imaging (MRI), Radiotherapy treatment planning systems (RTPS), Image processing, Image analysis, Thresholding, Edge detection, Clustering, lattice Boltzmann method (LBM).

Photocatalytic Degradation of Methylene Blue via Cobalt Doped Fe₃O₄ Nanoparticles

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Abstract: Cobalt doped Fe₃O₄ i.e., CoFe₃O₄ nanoparticles of different concentrations (0, 0.5, 1.0, 1.5, 2.0, 2.5 mol% were represented as Fe₃O₄, CF1, CF2, CF3, CF4, CF5, respectively) were synthesized using a chemical co-precipitation technique. The XRD patterns and FTIR spectra of Co doped Fe₃O₄ revealed the formation of spinel structure indicating the successful incorporation of cobalt ions with the Fe₃O₄ structure of the iron ions at octahedral sites. Scanning electron micrographs showed a fine uniform spherical particles. UV spectroscopic analysis showed that cobalt doping in CoFe₃O₄ nanocomposites influenced the band gap values. These band gap values decreased in the range of 2.76-1.61 eV (direct), 2.53-0.97 eV (indirect) with increase of cobalt content. The activity of CoFe₃O₄ in photocatalysis was investigated using methylene blue azo dye under visible light. These results depicted that for 1% cobalt doped Fe₃O₄ novel material photocatalytic activity was enhanced than all other prepared nanomaterials

Index Terms: Fe₃O₄ nanoparticles, CoFe₃O₄ nanoparticles, Chemical co-precipitation method, Photocatalysis.

PMMA Complexed With CH₃COOLi and Incorporated Along EMIMTFSI For EDLC Application

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Abstract: Polymer electrolytes based on PMMA (60 wt %): CH₃COOLi (40 wt %) : EMIMTFSI (0,0.5,1 wt %) are developed using technique called solution casting. Effect of ionic liquid EMIMTFSI (0, 0.5, 1 wt %) on PMMA (60 wt %): CH₃COOLi (40 wt %) polymer electrolytes confirmed through XRD studies, where peaks are totally suppressed and broadened due to complexation between the materials. FTIR showed the arising of new peaks and shifting of peaks due to molecular interaction of various functional groups. A.C impedance analysis revealed highest conductivity for PMMA (60 wt %): CH₃COOLi (40 wt %) : MIMTFSI (1 wt %) as 3.4×10^{-4} S/cm. The presence of double layer found from CV analysis Cspec value attained as 7 F/g, power density value is obtained as 750 W kg⁻¹ and Energy density value is 0.8 W h kg⁻¹. Present work revealed that by incorporating EMIMTFSI (1-ethyl-methylimidazolium bis(trifluoromethylsulfonyl)imide in polymer electrolyte complexes given best results and could be best promising candidate for fabrication of EDLC application.

Index Terms: Polymer electrolyte, Ionic liquid, conductivity, super capacitor.

Effect Of Nickel Dopant On Structural, Morphological And Optical Characteristics Of Fe₃O₄ Nanoparticles

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Abstract: In this current work, the effect of different concentrations of nickel (Ni) dopant on the structural, morphological and optical properties of undoped Fe₃O₄ nanoparticles (NPs) are analyzed. Nickel doped Fe₃O₄ (NiFe₃O₄) NPs of five concentrations can be represented as 0.5% as NF1, 1.0 % as NF2, 1.5 % as NF3, 2 % as NF4 and 2.5 % as NF5. Undoped Fe₃O₄ and NiFe₃O₄ NPs are prepared by Chemical co-precipitation method from a mixture of FeCl₂·4H₂O and FeCl₃·6H₂O salts. Structural, morphological and optical properties of the synthesized undoped Fe₃O₄ and NiFe₃O₄ NPs were deliberated by a choice of characterization techniques such as XRD, FTIR, FE-SEM and UV-VIS. XRD established the characteristic structure, phase and purity of the synthesized undoped Fe₃O₄ and NiFe₃O₄ NPs; Average crystallite size is found to decrease with increasing Ni concentration. Surface morphology of undoped Fe₃O₄ and NiFe₃O₄ NPs was studied by scanning electron microscopy (SEM). The existence of FTIR peaks at 563.2 cm⁻¹ and 433.5 cm⁻¹ confirmed the formation of Fe₃O₄ NPs. It is due to the stretching vibrations of the Fe-O bond. The optical absorption of the synthesized nanomaterials was studied by DR UV-Vis spectrometer. Band gap measurements revealed that the indirect band gap values for synthesized Ni-doped nanomaterials (1.25 eV) are higher than the determinant value for the undoped Fe₃O₄ NPs (0.75 eV) due to a decrease in lattice constant. The results indicated that the Ni-doped Fe₃O₄ NPs strongly influences the microstructure, crystal structure and energy band gap.

Index Terms: Nickel doped Fe₃O₄ nanomaterials, FTIR, FE-SEM, DR-UV-Visible, XRD analysis.

Fabrication of Samarium (Sm) substituted Bismuth Ferrite Nanofibers for Organic Pollutant Degradation Applications

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Abstract: Photocatalysis is one of the eco-friendly approached to clean polluted water. In this context, we have developed bismuth ferrite ($\text{BiFeO}_3/\text{BFO}$) Nanofibers and employed for the polluted water treatment through their photocatalytic properties. BFO is fundamentally known as multiferroic material that shows simultaneous magnetic and ferroelectric properties at room temperature. In addition to this, BFO is also renowned for their visible light driven photocatalytic properties due to adequate life time of the excited carries and narrow band gap energy. In this study, we have synthesized bare BFO fibers and Samarium (Sm) substituted BFO fibers by Electrospinning method. The fabricated bismuth ferrite nanostructures were studied for their crystal phase structure, morphology, elemental, optical, and photocatalytic properties using XRD, SEM, PL and UV-Visible diffuse reflectance and absorption spectroscopy techniques respectively. The photocatalytic studies under direct solar light irradiation revealed that the Sm substituted BFO possesses enhanced photocatalytic properties as compared to the bare BFO fibers. This could be due to the enhanced life time, recombination resistance and reduced band gap energy of the Sm substituted bismuthferrite fibers (BPFO).The obtained results will be presented in detail.

Index Terms: Multiferroics, Samarium, fibers nanostructures, degradation.

Investigation on the Structural and Optical Properties of Lanthanum substituted Bismuth Ferrite Nanostructures for Photocatalytic Degradation of Organic Pollutant
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Abstract: Bismuth ferrite (BFO) is one of the well identified multiferroic materials and is recently considered as a promising photo-catalytic material due to its smaller band gap energy (~2.2 eV) which is capable of driven by the visible light. Bismuth ferrite (BFO) and Lanthanum substituted bismuth ferrite (La:BFO) nanostructures were fabricated through Electro-spinning technique. The structural analysis of the prepared BFO nanostructures exposed single phase. The optical analysis displays the substituted La ions reduces the band gap value. The existence of Fe-O stretching vibrations is confirmed by Fourier transform infrared (FTIR) spectroscopic analysis. The magnetic hysteresis (M-H) analysis shows a weak ferromagnetic nature for the prepared BFO samples and the value of saturation magnetization (M_s) increases with an increase in the La concentration. It was observed that the La substituted BFO nanostructures exhibit superior photocatalytic degradation toward organic pollutant under sunlight irradiation. The formation of trap levels due to La 4f state and the role of superoxide anion (O_2^-) and OH^o radicals toward the degradation of Organic pollutant were investigated.

Index Terms: Bismuth ferrite, Lanthanum, Organic pollutant, Photocatalyst.

Synthesis of Bismuth Ferrite Nanostructures for the Pollutant Degradation Applications

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Abstract: Bismuth ferrite ($\text{BiFeO}_3/\text{BFO}$) is an emerging multiferroic photocatalytic material, where it gains significance as parallel as the widely used TiO_2 -based photocatalytic materials. The narrow band gap energy (2.3 eV) of BFO makes it a visible-light driven photocatalyst. Towards further enhancements in its photocatalytic properties, BFO has been modified with the morphology. Accordingly, in this study, the photocatalytic activities of the BFO nanostructures were evaluated on the degradation of Methylene Blue (MB) dye molecules under simulated and natural sunlight irradiation. The various morphologies of bismuth ferrite nanostructures photocatalysts, were prepared via a sol gel, template assisted sol gel method and electrospinning method. The fabricated bismuth ferrite nanostructures were studied for their crystal phase structure, morphology, elemental, optical, and photocatalytic properties using XRD, SEM, PL and UV-Visible diffuse reflectance and absorption spectroscopy techniques respectively. The photocatalytic studies under direct solar light irradiation revealed that the BFO nanofiber possesses enhanced photocatalytic properties as compared to the BFO particles and Sphere. This could be due to the enhanced life time, recombination resistance of the bismuth ferrite fibres the obtained results will be presented in detail.

Keywords: Multiferroics, bismuth ferrite, nanostructures, photocatalyst.



Design and development of metal organic frameworks-based nanocomposites for air purification applications

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Abstract: Air purification has received widespread attention due to its injurious effects on living organisms. The adverse effects of volatile organic compounds (VOCs) on human health include not only acute irritation to the eyes and lungs but also chronic diseases. Natural processes like plant and animal respiration and organic decomposition also release VOCs into the atmosphere. Ground-level ozone can have many impacts on human health, and is the key pollutant that causes smog. To overcome the devastating effects of VOCs, several efficient purification techniques of VOCs have been developed. In this direction, photocatalysis can be one of the potential and cost-effective processes. Photocatalytic degradation of VOCs is originated via the formation of electron-hole pairs upon the excitation of electrons from the valance band to the conduction band of the photocatalytic-semiconductor. Among the various material systems for photocatalytic applications, the metal-organic frameworks and their composite with mixed metal oxides could be interesting to construct the multifunctional photocatalytic systems for VOCs degradation. Thus making MOFs behave as inorganic semiconductors. The compositions and structures of MOFs can be facile tuned by adjusting the well-designed organic and inorganic building blocks or changing the synthetic conditions, and their morphologies can be carefully tailored to display ultra-high surface area and porosity, high intensity and desirable chemical activity. Therefore, the design and development of new materials by integrating the mixed metal oxides in the metal organic framework nanostructures can overcome the limitations and facilitate for an efficient pollutant degradation, which can work under visible light with a good enhancement in charge transfer property and effective in environmental related activities due to their eco-friendly nature. These composite systems can be considered as ‘smart’ materials for photocatalytic degradation of VOCs in air.

Index Terms: Metal organic framework, Nanocomposites, VOCs degradation.



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Development of high-performance gas sensor using Al-doped ZnO nanoparticles

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Abstract: The room temperature operating, excellent sensing capabilities and novel gas sensors are more attractive due to low power usage, better security, and long-term consistency. The zinc oxide (ZnO) and aluminum-doped zinc oxide (A-ZO) nanoparticles were developed by the wet chemical route and calcining at 300° C. The Al content in ZnO was 1–4% w/w, respectively. The samples were characterized by XRD, EDX, and FTIR spectra. The present study explores the influence of aluminum doping on structural, morphological, optical, surface roughness, surface area, and impact on sensing properties. In addition, Scanning Electron Microscopy (SEM), Ultraviolet-visible diffusion reflectance spectroscopy (UV-DRS), Atomic Force Microscopy (AFM), and Brunauer–Emmett–Teller (BET) techniques were used. As doping increased, the crystallite size increased, and the optical bandgap decreased. AFM investigated the surface roughness and the topographical information. The BET analysis confirmed the formation of a mesoporous ZnO with a high surface area and lower mean pore diameter. A-ZO1 exhibited a fast response and recovery time compared to other samples.

Index Terms: AZO nanoparticles, XRD, SEM, UV-DRS, AFM, BET, gas sensor.



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An Approach of Renewable Energy Based On Spatial Patterns of Radiation Flux For Solar Thermal Applications

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Abstract: The paper investigates about the aerosol index (AI) parameter obtained from the satellite-based sensor (OMI) for the period 2002-2016 over East China. It is revealed from the derived results that a strong spatial heterogeneity in AI values over the East China for the period of study. We observed significant change in spatial AI from increasing from the South to North of study domain attributed to impact of dust particles transported from Desert regions located in the Northwest of China. The spatial relative tendencies showed that the AI is the highest in most provinces of domain. We elaborately discussed the spatial patterns of AI on seasonal also for the period over East China and strong results were established over the domain. Further, the short-wave cloud radiative forcing (SWCRF) distribution revealed the highest (-180 W m^{-2}) and lowest (-110 W m^{-2}) values during JJA and DJF, respectively. While the long-wave CRF (LWCRF) values were seen prominent in almost the entire study area, with the high (60 W m^{-2}) in JJA and low during MAM over the southeastern sites of study domain. Also, the East parts of the study region showed the lowest contribution of all types of CRFs.

Index Terms: Solar radiation flux; Aerosol Index; Solar renewable energy; Satellite data; East China

Review on: Methods of Physical Vapour Deposition Techniques for synthesis of Thin Film and their Applications

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Abstract: The synthesis process differs from one material to another. In Nanotechnology various procedures are adopted for the synthesis of materials to bring to the Nanoscale range, in this process synthesis output are in form of powder, gel, sheets, thin films, etc, and the structural morphologies like 2D, 3D are good enough for their applications, due to the high surface area and dimensionality film and sheet-like structural morphologies holding good in many applications, these morphologies are analyzed through SEM, TEM characterization. The basic preparation of thin films is dependent on the source of vaporization, in the present situation various deposition techniques are used to fabricate thin films, among these techniques Physical Vapour Deposition technique is widely used for the preparation of thin films. A small attempt was made to explain the deposition techniques, advantages and disadvantages and applications as per the knowledge and from collected data.

Index Terms: thin film, PVD, applications.

Long-term (2005-2018) trends of aerosol index and seasonal hotspot analysis from dust emissions using OMI data in India

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Abstract: In the present paper, the hotspot analysis of absorbing aerosol index (AAI) was conducted using the spatial autocorrelation technique for different seasons during 2005-2018. The results showed significant spatial and temporal variability in the observed AAI. During pre-monsoon, the hotspot region is widely distributed, though with noticed spatially varying intensities, from the Thar Desert to West Bengal through the Indo Gangetic Plain (IGP) region. It is revealed from the back trajectory analysis that the airmasses were originated from the arid desert regions located in the West of India transporting the dust particles during the pre-monsoon over the IGP regions. Further, the trend analysis of AAI during the pre-monsoon over selected metropolitan in India was done using the Mann–Kendall (MK) test and Sen's robust slope estimator. The results showed a significant increasing (0.02 yr^{-1}) and decreasing (-0.01 yr^{-1}) trend in AAI at Patna and Hyderabad, respectively, while it is noticed stable or no trend at other cities. MERRA-2 Dust aerosol optical thickness was found to be very well correlated with AAI and shows decreasing and increasing trends at Nagpur (0.0005 yr^{-1}) and Jaisalmer (0.004 yr^{-1}), respectively. A negative correlation is observed between rainfall and AAI, indicating the reduction of AAI with increasing rainfall.

Index Terms: Absorbing aerosol index, Precipitation, OMI and MODIS, Mineral dust,



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Seasonal changes in the recent decline of combined high PM_{2.5} and O₃ pollution in the NCP over BTH region, China

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Abstract: China suffers from the combined air pollution (CAP) comprising dual high O₃ and PM_{2.5}, particularly in the Beijing–Tianjin–Hebei (BTH) region, which is an urban agglomeration in the North China Plain. To characterize the seasonal changes in regional CAP, 82 CAP days were identified during the study period from 2015 to 2019 with the co-occurring pollution of O₃ and PM_{2.5} in the BTH. It is found that CAP seasonality has undergone distinct changes with a declining trend in the interannual variations in CAP over recent years. It is also revealed that the monthly CAP peaks have recently shifted from summer to early spring (March and April), indicating seasonal changes in CAP in the BTH. Furthermore, the role of chemical and meteorological roles in CAP changes was investigated using environmental and meteorological observation data. The recent reduction in PM_{2.5} and O₃ concentrations had enhanced O₃ production and atmospheric oxidizability, thereby causing increments in secondary PM_{2.5} proportion. The interaction between O₃ and PM_{2.5} was responsible for changing the CAP of dual high O₃ and PM_{2.5} to the transition/spring season in the context of mitigation of air pollutant emissions. Furthermore, principal component analysis in the T-mode (T-PCA) was applied to identify four synoptic circulation patterns that regulate CAP occurrence. The results show that the CAP occurrence was regulated by the dominant patterns of synoptic circulation in the BTH. Warm temperature and strong downward ultraviolet radiation anomalies were observed in the BTH, indicating the importance of meteorological drivers in O₃ photochemical production on the CAP. The frequency of key synoptic circulation patterns during the spring season increased annually, thereby inducing seasonal changes in the atmospheric environment with CAP in the BTH in recent years.

Index Terms: Combined air pollution, particulate matter, synoptic circulation, meteorology



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Identification and classification mechanisms of column aerosols over urban Beijing,
China

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Abstract: In this study aerosol optical characteristics and associated radiative forcing in Beijing during 2001-2018 were derived from the AERONET's (CE-318) ground-based sun/sky radiometer and DIScrete Ordinate Radiative Transfer (DISORT) model. The annual mean of AOD_{440} , $AE_{440-870}$, and SSA_{440} estimated at Beijing during the study period were 0.84 ± 0.34 , 1.11 ± 0.15 , and 0.91 ± 0.03 , respectively. AOD_{440} and $AE_{440-870}$ retained high in summer, suggests that the atmosphere in Beijing contained a large number of anthropogenic fine mode particles. However, $AE_{440-870}$ and SSA_{440} appeared relatively lower values in spring and winter seasons, respectively indicates that dust coarse particles mainly dominated in spring while absorption aerosol played a great role in winter. Further, according to the $AOD-AE$ relationship, Beijing is controlled by mixed type (MT) aerosol, followed by an urban/industrial and biomass burning (BU) type and polluted continental (PC) aerosols. Also, the $SSA-AE$ relationship confirms that winter was mainly contaminated with the abundance of high absorption (HA) and medium absorption (MA) type of aerosols attributed to the increase of black carbon and organic carbon in the atmosphere during the heating period in Beijing. Also, the volume size distribution showed that there are more fine particles in summer relative to the coarse is likely related to the hygroscopic growth of particles under high temperature and humidity conditions in summer. Whereas, the dominance of coarse particles in spring resulted from the frequent dust weather events and long-distance transport of coarse dust particles. The ARF at the top and bottom of the atmosphere was found negative but the value of ARF in the atmosphere retained positive, which indicates that aerosol has a strong cooling effect on the surface and a heating effect on the atmosphere. There is an obvious positive correlation between AOD_{440} and the absolute value of ARF in each layer, indicating that the increase of AOD_{440} has a positive contribution to cooling the surface and heating the atmosphere.

Index Terms: Aerosol optical depth, Single scattering albedo, Radiative forcing, Beijing,



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Studies of Superparamagnetic properties $\text{La}_{0.67}\text{Sr}_{0.33-x}\text{K}_x\text{MnO}_3$ nanoparticles

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Abstract: This paper reports the study of the structural, morphological and magnetic properties of $\text{La}_{0.67}\text{Sr}_{0.33-x}\text{K}_x\text{MnO}_3$ ($x = 0 - 0.15$) nanoparticles (NPs), prepared by sol-gel method. The Rietveld analysis of the X-ray diffraction data was carried out for crystal structure refinement, confirming the rhombohedral structure with $R\bar{3}c$ space group for all samples. The transmission electron microscopy results show that the samples, sintered at 800 and 1100 °C, have grain sizes in the range of 20 to 35 and 30 to 50 nm, respectively. While studying the magnetization as a function of an applied magnetic field, it is observed that most of these NPs show nearly superparamagnetic behaviour at room temperature and a good fit of these data with the Langevin function is obtained. The varying temperature field-cooled magnetization data show that the saturation magnetization (M_s) as well as Curie temperature (T_C) increases because of the incorporation of K in La/Sr-site upto $x = 0.1$; above this doping both M_s and T_C decrease. The studied NPs can have wide applications in the field of targeted drug delivery and hyperthermia treatments.

Index Terms: Rietveld refinement; Magnetization; Superparamagnetic behaviour; Langevin function

Drug loading and release studies of LSMO nanoparticles embedded polymer

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Abstract: In this paper, we present the drug loading and release works of $\text{La}_{0.67}\text{Sr}_{0.33}\text{MnO}_3$ (LSMO) manganite nanoparticles (NPs). The LSMO NPs, grown using sol-gel method, were embedded in an acrylic interpenetrating polymer network to make the sample application for biomedical purposes. The results of scanning electron microscopy showed that these NPs were well dispersed in the polymer. The grain size of these NPs lies in the range of 25–45 nm, as confirmed by transmission electron microscopy. The measurements of DC magnetization and hysteresis loops reveal that the basic magnetic behaviour of the LSMO NPs remained almost unaltered even after embedding in polymer but with a lower saturation value of magnetization. The grown sample's drug loading and release studies were carried out using an antibiotic, ciprofloxacin. The minimum inhibitory effect of the sample loaded with this drug has exhibited high activity against different strains of bacteria, comparable to the pure ciprofloxacin.

Index Terms: Manganite; Nanoparticles; Magnetization; Biomedical applications.

Magnetoimpedance properties of $\text{La}_{0.67}\text{Sr}_{0.33-x}\text{Pb}_x\text{MnO}_3$ ($x=0\text{--}0.33$) manganites nanomaterials

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Abstract: The present paper is focused on the study of different physical properties, especially magnetoimpedance (MI) of $\text{La}_{0.67}\text{Sr}_{0.33-x}\text{Pb}_x\text{MnO}_3$ ($x=0\text{--}0.33$) manganites of rhombohedral structure. From the transmission electron microscopy results, it is evident that the average grain size lies in the range of 35–50 nm. MI measurements were carried out at room temperature for the frequency range of 100 Hz – 10 MHz in the presence of a dc magnetic field of 50 Oe – 9 kOe. The experimental results show that MI increases with the increase in grain size; the maximum MI (−75%) and a large ac MR (−90.5%) have been obtained for $x = 0.15$ sample under a 9 kOe at a frequency of 100 kHz. However, the same sample shows very low dc MR (−4.8%) under the same field. The MI results can be explained well in the light of skin depth effect and variation of transverse permeability with frequency.

Index Terms: Magnetoimpedance; Magnetoresistance; Skin depth; Transverse permeability.



Study of Molecular interactions in binary mixtures of 2-ethyl-1-hexanol with propan1-ol, 2- propen-1-ol, 2- propyn-1-ol at various temperatures

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Abstract: The densities (ρ), viscosities (η), and speeds of sound (u) are reported for binary mixtures of 2-ethyl-1-hexanol with aliphatic primary alcohols (propan-1-ol, 2-propen-1-ol , 2-propyn-1-ol) over the entire composition range from 303.15 K to 313.15 K and at atmospheric pressure 0.1 MPa. The excess parameters (V^E , κ_s^E), deviation in viscosity, excess partial molar volumes, ($\bar{V}_{m,1}^E$ and $\bar{V}_{m,2}^E$) excess partial molar isentropic compressibilities ($\bar{K}_{s,m,1}^E$ and $\bar{K}_{s,m,2}^E$) of the components at infinite dilution were calculated from the densities, speeds of sound, and viscosities at experimental temperatures. The variation of these properties with composition of the mixtures suggests hydrogen bond and charge-transfer complex formation between 2-ethyl-1-hexanol and self-associated primary alcohols. The V^E results have been analyzed in the light of Prigogine-Flory-Patterson theory. An analysis of each of the three contributions viz. interactional, free volume and P^* to V^E shows that interactional contribution is positive for all binary systems. The free volume effect and P^* contribution are negative for all the mixtures. Furthermore, the FTIR spectra have been recorded at 298.15 K and found to be useful for understanding the presence of hydrogen bonding between dissimilar molecules in the liquid mixtures. A good agreement is obtained between excess quantities and spectroscopic data.

Index Terms: Density, speed of sound, 2-ethyl-1-hexanol, primary alcohols, PFP theory and FTIR spectra

Spectral Studies (FTIR) of some Binary Liquid Mixtures and correlation with the Jouyban–Acree model at various temperatures

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Abstract: Densities, speeds of sound and viscosities of binary mixtures of morpholine with isopropylacetate, N-methylformamide and 2-propanol including those of pure liquids, over the entire composition range were measured at various temperatures (303.15, 308.15 and 313.15) K and 0.1MPa. Using the experimental data, the excess volume, excess isentropic compressibility, deviation in viscosity, excess partial properties of the components at infinite dilution were calculated. Finally, the Prigogine-Flory-Patterson (PFP) Theory is applied to identify the most predominant molecular interaction. Jouyban Acree model was used to correlate the experimental values of density, speed of sound and viscosity. Further binary mixing and FT-IR spectra were studied at equimolar concentration. From these results, the nature of interaction has been discussed in terms of intermolecular interaction between the mixing components

Index terms: Prigogine-Flory-Patterson theory, Jouyban Acree model, FTIR spectra



Studies on associated solutions: Thermodynamic parameters of binary liquid mixtures of propiophenone and o- substituted aniline

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Abstract: The densities (ρ) speeds of sound (u) and viscosities (η) are reported for binary mixtures of Propiophenone with ortho-substituted aniline (2-chloroaniline, 2-methylaniline and 2-methoxyaniline) over the entire composition range from 303.15 K to 318.15 K and at atmospheric pressure 0.1 MPa. The excess / deviation functions (V^E , κ_s^E and $\Delta\eta$) are calculated from the measured densities, speeds of sound and viscosities at experimental temperatures. The excess properties have been analysed through molecular interactions. The FT-IR data indicate that the formation of intermolecular hydrogen bonding (N-H...O-H) between hydrogen atom of amine group of o-substituted aniline and oxygen atom of carbonyl of propiophenone in the binary liquid mixtures.

Index terms: Density; speed of sound; propiophenone; ortho-substituent anilines; FT-IR spectra

Binary mixtures of 2-methoxyaniline with cyclic ketones-Thermodynamic, transport and spectroscopic properties

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Abstract: In the binary mixtures of 2-methoxy aniline with substituted cyclohexanone (2-methylcyclohexanone and 2,6-dimethylcyclohexanone), the densities, speeds of sound and viscosities including those of pure liquids, were measured over the entire composition range at different temperatures (303.15, 30.18 and 313.15) K and atmospheric pressure 0.1 MPa. Using this experimentally determined data, the excess values of molar volume, isentropic compressibility, partial molar volumes, partial molar isentropic compressibilities and deviation in viscosity of these components at infinite dilution were calculated.

Index Terms: Binary Mixtures, Thermodynamics, Spectroscopic

Binary mixtures of 2-methyl cyclohexanone with various functional groups

(m-cresol, phenol and ortho-chlorophenol)

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Abstract: In the binary mixtures of 2-methyl cyclohexanone with various functional groups (m-cresol, p-cresol, and orthochlorophenol) the densities, speeds of sound and viscosities including those of pure liquids, were measured over the entire composition range at different temperatures (303.15-,318.15) K and atmospheric pressure 0.1MPa. Using this experimentally determined data, the excess values of molar volume, deviation in isentropic compressibility, partial molar volumes, partial molar isentropic compressibilities and deviation in viscosity of these components at infinite dilution were calculated. The results are discussed both in terms of acid-base interactions and the formation of $\pi-\pi$ complexes between the, unlike molecules.

Index Terms: Binary Mixtures, Functional groups, Viscosity.

Thermal Potential porous materials and challenges of improving solar still using **TiO₂/Jackfruit peel - enhanced energy storage material**

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Abstract: In this work, first introduced substitute blends were functional active heat transfer increase with below the performance on single slope single basin solar still. An eco-friendly bleaching agent to pursue Jackfruit peel with greener nanoscale research has been investigated to prepare green TiO₂ nanoparticles. We are reported in various concentrations with and without coating a solar still have been discussed in Jackfruit peel/TiO₂ (JPT). The solar still was fabricated and established in comprises of JPT the concentration ratio of about 0.1%, 0.2%, and 0.3% analysis of experimental studies. The JPT materials analysis of surface morphology, functional energy absorption additives, and conducted in chemical structures. Jackfruit peel an average particle size and zeta potential value is (0.116 μ m) and (-19.3mV). SEM image showed a porous structure and XRD values of 85% crystallinity, FTIR spectroscopy showed the various functional groups with strong absorption bands. Thermal analyses revealed that the degradation arises at a minimum value. Since experimental results focus on 0.1%, 0.2%, and 0.3% with and without coating yields of 4.07, 4.54, and 4.96 L/m² and 4.9, 5.47, and 6.12 L/m², respectively. An experimental performance on the everyday growth with productivity around 62.25%, 81.12% and 102.64% by focus on 0.1%, 0.2% and 0.3%. The first time, we are introduced to the JPT can further manipulate solar desalination ingredient applications.

Index Terms: Jackfruit peel, Nano-composition, Absorption Additive, Solar Still

Experimental investigation on the performance of a solar still using SiO₂ nanoparticles

/*Jatropha curcas L.*

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Abstract: Now, enticing systematic civic since everywhere the world is used in green synthesis and benefit of the simple is eco-friendly with an emergent method of producing nanoparticles (NPs). The aim of a single slope single basin solar still (SBSS) have been synthesized using Silicon dioxide (SiO₂) nanoparticles (NPs)/leaf extract of *Jatropha curcas L.* (JCL) and the productivity enhancement to an evaluation for the photocatalytic treatment of the system. The synthesized of SiO₂ NPs/JCL have been characterized by XRD (X-ray Diffraction), SEM (Scanning Electron Microscopy) prepared through EDS (X-ray Energy Dispersive Spectroscopy), studied FT-IR (Fourier Transform Infrared) spectroscopy, UV-Vis (UV-Visible spectrophotometer) was verified. The SiO₂ NPs/JGL was established to explain in anatase then phase phytochemicals the synthesis of leaf extracts, the NPs involved in stabilization, and was applied for the first time to testify its potential in the SBSS process. An effect of SBSS is 82.26% during the treatment with synthesizing SiO₂ NPs/JCL successfully active for the solar still process. The SBSS has been produced the total summer distillate yield of 8.79 L/day (SiO₂ NPs /JCL), winter is 6.49, L/day (SiO₂ NPs) to over all of the system at 24 h cycle in the local climatic condition at Vijayawada, Andhra Pradesh, India. The yield of the SBSS is enhanced due to the increased absorption of solar radiation by the SiO₂ NPs/JCL, and the thermal energy is absorbed by utilization during nighttime for distillation. This is due to the convection of absorbed thermal energy to the saline water and established in a clean-green treatment solution.

Index Terms: Solar Still; Green Plants; Nanoparticles; Thermal performance

Investigations on Growth and Characterization of CHNO doped ZnSO₄-(NH₄)SO₄ Single Crystals: The properties of NLO material

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Abstract: The topical work, investigations on glycine (CHNO) doped in Zinc Sulphate (ZnSO₄) -ammonium sulphate ((NH₄)SO₄) (GZA) have been synthesized and characterized to improve the crystalline by slow solvent evaporation technique for a new semi-organic nonlinear optical material. The Zinc Sulphate/ammonium sulphate's higher molar ratio constrains the glycine to establish by GZA single-crystal for the lattice parameters studies XRD. The GZA crystals have been inductively coupled optical emission spectrometry quantify the Zinc Sulphate-ammonium sulphate element in the grown a new material. An element presence of grown GZA crystal is 0.75 ppm. The new materials are verified that of UV–Visible–NIR transmittance spectra and well recorded for the samples to analyses valued the transparency invisible for the infrared region. An optical band gap (Eg) was suitable material. Also, FTIR is analyzed for the functional groups as well as an active process. The efficiency of a GZA crystal is used in Kurtz, Perry, and it is concluded that of 3.67 times greater than inorganic materials for KDP. The novel samples are established for antibacterial activity by agar disk diffusion technique. The conclusion illustrations moral inhibition productivity in contradiction of microbial straining and enhanced that GAZ crystal used in pharmacological applications.

Index Terms: NLO; single Crystal; antibacterial activity; Optical studies; Thermal analysis;