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(12) PATENT APPLICATION PUBLICATION

(21) Application No. **202441017406 A**

(19) INDIA

(22) Date of filing of Application :11/03/2024

(43) Publication Date : 29/03/2024

(54) Title of the invention : A NOVEL METHOD FOR DEGRADATION OF ORGANOPHOSPHATES IN EDIBLE FISHES THROUGH ENZYMATIC ACTIVATION

(51) International classification	:A61K0009480000, A62D0003020000, C02F0101320000, A61P0031140000, C12N0009020000
(86) International Application No	:NA
Filing Date	:NA
(87) International Publication No	:NA
(61) Patent of Addition to Application Number	:NA
Filing Date	:NA
(62) Divisional to Application Number	:NA
Filing Date	:NA
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	6)Dr.M.Thulasi Address of Applicant :Assistant Professor Department of Zoology SVA Government College (M), Srikalahasti, AP, India 517644 -----

(57) Abstract :

ABSTRACT A NOVEL METHOD FOR DEGRADATION OF ORGANOPHOSPHATES IN EDIBLE FISHES THROUGH ENZYMATIC ACTIVATION The present invention, describes a method of enhancing induction and activation of certain enzymes that metabolize and degrade organophosphates. Polycyclic aromatic hydrocarbons (PAHs) derived from light charring of organic food material, is mixed with diluted Rifampin, and this mixture is added to the fish fodder. The proportion of Polycyclic aromatic hydrocarbons (PAHs) derived from light charring of organic food material is maintained at proportion of 10PPM in the fish fodder, and the diluted Rifampin is maintained at proportion of 0.0001ppm in the fish fodder. Upon consumption by the fish, the composition of Polycyclic aromatic hydrocarbons (PAHs) derived from light charring of organic food material, and diluted Rifampin enhances the production and activation of Cytochrome P450 enzymes (CYP450 enzymes). Dated this 11th day of March, 2024 SIGNATURE PRIYANKA THOOL [PATENT AGENT-IN-PA-5039]

No. of Pages : 12 No. of Claims : 6



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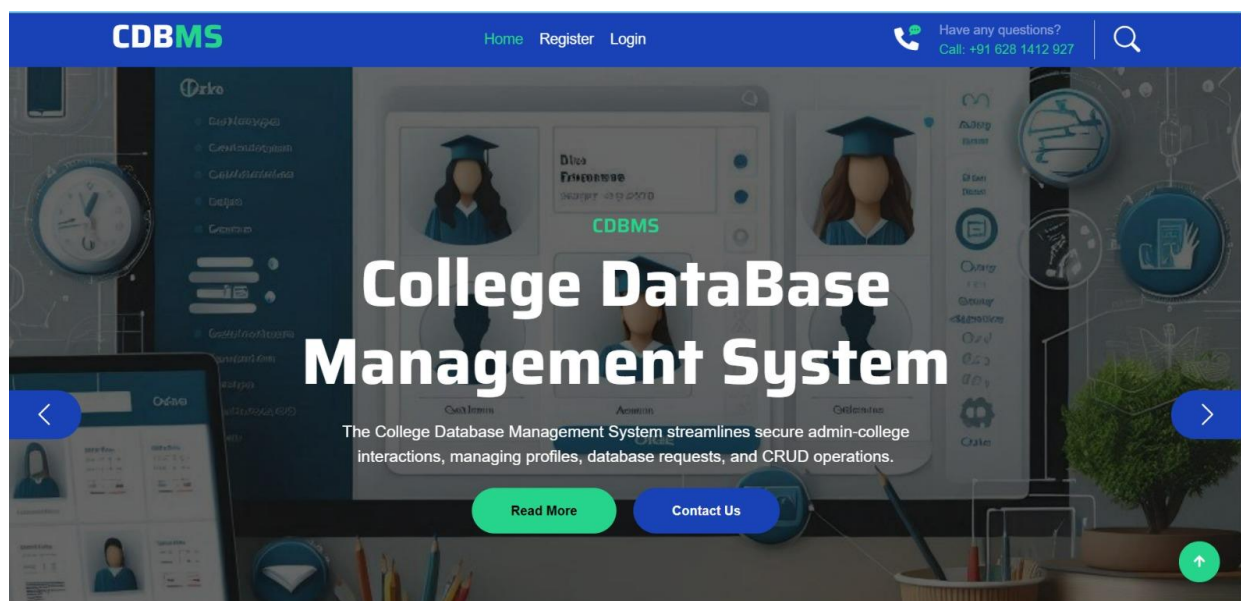
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Research Article

Dynamics of different heat sources and activation energy on the hybrid nanofluid ($EG + MgO + MWCNT$) flow in a microchannel with thermal radiation: An irreversibility analysis

Gadamsetty Revathi, M. Jayachandra Babu , K. S. Srinivasa Babu & C. Bapanayya

Received 07 Oct 2023, Accepted 03 Feb 2024, Published online: 11 Feb 2024

Cite this article <https://doi.org/10.1080/10407782.2024.2316222>



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Abstract

It is very important to study these flows because they are found in the cooling units for micro-

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Results in Chemistry

Volume 6, December 2023, 101227



Zinc oxide nanoparticles as an efficient antioxidant, photocatalyst, and heterogeneous catalyst in C–P bond synthesis

Hari Babu Boppudi ^{a,1}, Y. Subba Rao ^{b,1}, Charan Kuchi ^c, A. Ramesh Babu ^d, Varadhi Govinda ^e, M. Jagadeesh ^f, Mahimaluru Lavanya ^{g,h}

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Volume 13, Issue 2, June 2024, Pages 233-244



Original Article

Entropy generation minimization in the Carreau nanofluid flow over a convectively heated inclined plate with quadratic thermal radiation and chemical reaction: A Stefan blowing application

B. Lavanya ^a, J. Girish Kumar ^b, M. Jayachandra Babu ^b, C.S.K. Raju ^c, Bander Almutairi ^d,
Nehad Ali Shah ^e

- ^a Department of Mathematics, Manipal Institute of Technology, Manipal Academy of Higher Education, Manipal, Karnataka 576104, India
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- ^c Department of Mathematics, GITAM School of Science (GSS), GITAM, Bangalore, Karnataka, India
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Research Article

Influence of shape factor on a chemically reactive hybrid nanofluid flow via a moving plate when Soret and Dufour effects are significant: An irreversibility analysis with Cattaneo-Christov heat flux model

Gadamsetty Revathi, Koteswara Reddy Gujjula & M. Jayachandra Babu

Received 08 May 2023, Accepted 27 Sep 2023, Published online: 11 Oct 2023

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Gadamsetty Revathi, Venkata Subrahmanyam Sajja, M. Jayachandra Babu, K. S. Srinivasa Babu , A. Suneel Kumar, C. S. K. Raju &

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The addition of Al_2O_3 , ZnO , and TiO_2 to DW increases thermal conductivity, which was around $1.14 W/mK$ at $45^\circ C$ for a 0.1 wt% concentration of the ternary hybrid nanofluid

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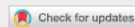
Darcy–Forchheimer flow of power-law (Ostwald-de Waele type) nanofluid over an inclined plate with thermal radiation and activation energy: an irreversibility analysis

Gadamsetty Revathi, Gopinath Veeram, M. Jayachandra Babu, K. S. Srinivasa Babu & A. Suneel Kumar

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Abstract

Darcy–Forchheimer flow model is substantial in the fields where high flow rate effect is a common phenomenon, for instance, in petroleum engineering. Power law is used to describe fluid behaviour, permit mathematical predictions and correlate experimental data. In technical devices and the

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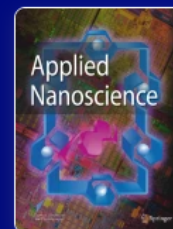
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Abstract

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Performance Analysis of Prophet Routing Protocol Of Delay Tolerant Networking under Random Mobility Model

B Satish Kumar¹, A Sumathi², Sailaja Vishnubhatla³, Rohith Kumar KR⁴

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Received on: 25-12-2023

Accepted on: 28-02-2024

Keyword:

Delay Tolerant Network,
Probability routing,
Network protocol,
Wireless Sensor network.

ABSTRACT

Delay-tolerant networking (DTN) and disruptive-tolerant networking (DTN) are categories of networks that interact with the TCP/IP architecture. DTN can establish communication by enrolling both Stationary and mobile routers mutually. The Delay-Tolerant Network is a communication network that intermittently stores packets within intermediate nodes until a complete end-to-end route can be reconstructed or regenerated. The primary challenge in DTNs lies in assessing the appropriateness of a routing protocol across various situations and contexts. The central objective of this endeavour is to contrast the efficiency of two commonly employed routing protocols, specifically assessing standard prophet routing protocols across a range of placement scenarios. The experimental assessment employs the ONE simulator. Performance is gauged through quality-of-service metrics such as jitter, end-to-end delay, and overhead ratio. The outcomes of the simulation indicate that analyzing the performance of the prophet routing protocol in a random waypoint mobility model is significantly influenced by parameters such as the



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Performance Analysis of Prophet Routing Protocol Of Delay Tolerant Networking under Random Mobility Model

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Delay Tolerant Network,
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ABSTRACT

Delay-tolerant networking (DTN) and disruptive-tolerant networking (DTN) are categories of networks that interact with the TCP/IP architecture. DTN can establish communication by enrolling both Stationary and mobile routers mutually. The Delay-Tolerant Network is a communication network that intermittently stores packets within intermediate nodes until a complete end-to-end route can be reconstructed or regenerated. The primary challenge in DTNs lies in assessing the appropriateness of a routing protocol across various situations and contexts. The central objective of this endeavour is to contrast the efficiency of two commonly employed routing protocols, specifically assessing standard prophet routing protocols across a range of placement scenarios. The experimental assessment employs the ONE simulator. Performance is gauged through quality-of-service metrics such as jitter, end-to-end delay, and overhead ratio. The outcomes of the simulation indicate that analyzing the performance of the prophet routing protocol in a random waypoint mobility model is significantly influenced by parameters such as the number of nodes and transmission range.

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Impact of *Emblica officinalis* Fruit Extract on ATPases System under AD-induced conditions in Albino Rat

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ABSTRACT: Alzheimer's disease (AD) is the most common neurodegenerative disease, characterized by memory loss, cognitive impairment and personality disorders. There is presently no treatment for this illness despite substantial investigation. However, recent studies have shown therapeutic qualities in *Emblica officinalis*, natural extract. The aim of this study was to evaluate the efficacy of *Emblica officinalis* fruit methanolic extract on ATPase activity in the Cerebral Cortex and Hippocampus regions of AD-induced rat brain. Male albino rats which are, 3 months old disease free and experimental animals weighing between 150±25 grams were utilized in the study. They were divided into three groups as described in the materials and methods section. Rats from different groups were sacrificed by cervical dislocation. Cerebral Cortex and Hippocampus regions were isolated and used for estimation of 3 constituents of the ATPase system at selected time intervals. The results demonstrated that the ATPase levels in both brain regions of the AD-induced rats were inhibited while they were brought back to near control levels upon continuous oral administration of *Emblica officinalis* extract on 60th day of treatment thus demonstrating that EoFM extract had reversal effects on AD induced changes in ATPase system.

Keywords: *Emblica officinalis*, Male Albino rat, D-Galactose, ATPases, Cerebral Cortex and Hippocampus.

INTRODUCTION

Neurodegenerative Disorders (NDDs) result from the specific degeneration of brain neurons, impairing their structure and function, these are, progressive nerve cell degeneration renders NDDs incurable, posing a major global health concern for aging populations. Specific NDD traits, including Alzheimer's, Amyotrophic Lateral Sclerosis, Huntington's, and Parkinson's, hinge

Mitochondrial dynamics are affected in a number of serious neurological disorders such as Parkinson's, Alzheimer's, and Huntington's disease. ATPases play a major role in these Neurological diseases (Song *et al.*, 2020). They use the energy released by the phosphate bond breakage to execute other biological activities. ATPases are enzymes that play critical roles in energy conservation, active transport and pH homeostasis in all known forms of life. Thus, ATPase is a charge-



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Outline

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1. Introduction

2. Formulation

3. Numerical procedure

4. Discussion of the results

5. Conclusions

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Dynamics of lorentz force and cross-diffusion effects on ethylene glycol based hybrid nanofluid flow amidst two parallel plates with variable electrical conductivity: A multiple linear regression analysis

Gadamsetty Revathi ^{a,1}, Srihari Avadapu ^a, C.S.K. Raju ^b, M. Jayachandra Babu ^c, A.M. Zidan ^d, Mohammed Kbiri Alaoui ^d, Nehad Ali Shah ^{e,1}, Jae Dong Chung ^e

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Advancements in Energy-Efficient Virtual Machine Placement Survey for Cloud Computing

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Keyword:

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Load Balancing
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ABSTRACT (9 PT)

In recent years, cloud computing has undergone a profound transformation, reshaping the landscape of online service hosting and delivery. This transformation revolves around virtualization, which enables multiple operating systems and applications to coexist on a single physical server, driving the flexibility and scalability of cloud computing. However, the proliferation of high-performance servers and abundant storage options in cloud data centers has raised concerns about escalating energy consumption and environmental impacts. To address these challenges, this study introduces an integrated framework that combines an energy-conscious load balancer known as "Weighted First-cum-First-Served" with a dynamic virtual machine deployment strategy. These elements work in tandem to enhance the efficiency and sustainability of cloud computing environments, mitigating the environmental concerns associated with excessive energy consumption and the economic implications of operational costs. Through a systematic review of seven energy-efficient virtual machine placement algorithms in cloud computing, we shed light on various strategies and approaches to reduce energy usage, enhance resource utilization, and improve overall system efficiency. These algorithms encompass load balancing, genetic algorithms, queuing-based models, simulation-based approaches, static VM placement, hybrid approaches, and predictive control methods. Each algorithm offers unique benefits and contributes to the sustainability and efficiency of cloud computing infrastructure.



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Performance Analysis of Prophet Routing Protocol in Delay Tolerant Network by using Machine Learning Models

PDF

Author 1: Bonu Satish Kumar | Author 2: Sailaja Vishnubhatla | Author 3: Chevuru Madhu Babu | Author 4: S. Pallam Shetty

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Abstract and Keywords

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Abstract: Delay-Tolerant Networking (DTN) or Disruptive-Tolerant Networking comes under the category of networks that works without infrastructure wireless networks. DTN is one type of computer network that provides solutions for several applications. Delay tolerant network communications are networks that are accomplished by storing packets briefly in intermediate nodes till a certain time an end-to-end route is been re-setup or regenerated. This leads to thought as Delay Tolerant Networks. The paper presents the developed models using Artificial Neural Networks (ANN) and Convolutional Neural Networks (CNN) for predicting the best alpha, beta, and gamma parameters of Probabilistic Routing Protocol for Intermittently Connected Networks (PROPHET) protocol for delay tolerant networks. The first data set is generated using ONE simulator, and the generated data is analyzed using python panda's module. From the above dataset, 80% was used for training and the remaining 20% each has been used for testing and validation. The models were developed and tested using the r2 score for both models to predict alpha, beta, and gamma parameters. Based on the predicted parameters extensive experiments were done and it was found that the ANN model is better than the CNN model. The ANN model can predict optimum alpha, beta, and gamma whereas CNN Model failed to produce accurate prediction.

Keywords: DTN, ONE, Prophet, CNN, ANN



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Performance Analysis of Prophet Routing Protocol in Delay Tolerant Network by using Machine Learning Models

Bonu Satish Kumar¹, Sailaja Vishnubhatla², Chevuru Madhu Babu³, Prof. S. Pallam Shetty⁴
Department of Computer Science & Systems Engineering, Andhra University, Visakhapatnam, India^{1,4}
Department of Computer Science, Government Degree College, Ravulapalem, India²
Department of Computer Science, SVSSC Government Degree College, Sullurpet, India³

Abstract—Delay-Tolerant Networking (DTN) or Disruptive-Tolerant Networking comes under the category of networks that works without infrastructure wireless networks. DTN is one type of computer network that provides solutions for several applications. Delay tolerant network communications are networks that are accomplished by storing packets briefly in intermediate nodes till a certain time an end-to-end route is been re-setup or regenerated. This leads to thought as Delay Tolerant Networks. The paper presents the developed models using Artificial Neural Networks (ANN) and Convolutional Neural Networks (CNN) for predicting the best alpha, beta, and gamma parameters of Probabilistic Routing Protocol for Intermittently Connected Networks (PROPHET) protocol for delay tolerant networks. The first data set is generated using ONE simulator, and the generated data is analyzed using python panda's module. From the above dataset, 80% was used for training and the remaining 20% each has been used for testing and validation. The models were developed and tested using the r2 score for both models to predict alpha, beta, and gamma parameters. Based on the predicted parameters extensive experiments were done and it was found that the ANN model is better than the CNN model. The ANN model can predict optimum alpha, beta, and gamma whereas CNN Model failed to produce accurate prediction.

Keywords—DTN; ONE; Prophet; CNN; ANN

I. INTRODUCTION

Wireless Networks are dynamic. Nowadays Wireless Networks have become a part of life to communicate with others. Delay Tolerant Network (DTN) is a type of wireless

throughput of the network [4]. As routing is a tedious task in communication hence DTN networks are chosen. Machine Learning (ML) belongs to a Sub-Category of Artificial Intelligence (AI) which doesn't need to program explicitly and it takes the input as the data samples and creates its insights from the data [5]. Here, the author created models of Deep Learning (DL) which take input as throughput and delay and output alpha, beta, and gamma values without simulation. Deep Learning is a part of Machine Learning where Neural Networks (NN) are used to solve machine learning problems [6]. Neural Networks require high computational power to train the model.

Two neural network models Convolution Neural Networks (CNN) and Artificial Neural Networks (ANN) are defined for prediction. CNN is an architecture that is used for deep learning algorithms, specifically in the processing of pixel data in image processing concepts and pattern recognition in computer-related vision. The CNN also is the feed-forward network that is widely used for routing and multiple communication network tasks [7, 8]. An ANN is formed from a group of linked units or artificial neuron nodes, which are the simple model of the biological brain. ANN is the capability of paralleled processing, working with incomplete data, and memory distribution [9, 10].

In the present work, the author created machine learning models which can predict the required values just by inputting the data without simulation. The proposed paper is arranged as follows: The introduction part introduces the delay tolerant



Application of Machine Learning to Enhance the Performance of the PROPHET Routing Protocol for Delay Tolerant Networks

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²Lecture in Government Degree College, Palasa, India

³Department of CSE, Avanthi's St Theresa Institute of Engineering and Technology, Chepurupally, India

Abstract: Delay Tolerant Network (DTN) is a vital feature required for different real-time applications. Many researchers have comprehensively worked on several parameters and simulations to obtain the capable operations. Present work presents on Probability Routing Protocol using History of Encounters and Transitivity (PROPHET) routing protocol's alpha (predictability initialization constant), beta (delivery predictability transitivity scaling constant) and gamma (predictability ageing constant) parameters to analyze the performance of this protocol behavior under different scenarios. In large communications like space communications, Delay Tolerant Networks (DTN) are designed to operate productively in said complex conditions and it is an important aspect required for several practical applications. Several researchers have extensively worked on various parameters and models to obtain efficient operations. DTNs are constrained devices with limited energy resources, finite bandwidth and less computational capabilities connected in a network. As per IETF draft the de-facto parameters of prophet routing protocol for Delay Tolerant Networks do not support in the real time communication as they are static values. This problem can be solved by using Machine Learning (ML) approach using XGboost model and Random Forest model. After obtaining the results, author concluded that these models are performing well on improving the quality of service values like throughput and delay. This simulation is done using 120 nodes.

Keywords: Alpha DTN, Beta DTN, Gamma DTN, ONE Simulator, PROPHET

1. Introduction

Delay-Tolerant Networking (DTN) or Disruptive -Tolerant Networking comes under the category of networks that works without infrastructure wireless networks. DTN is one type of Computer Networks which provides solutions for several applications. DTN communications network which is accomplished of storing packets



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Authors: M.Thulasi, K. Janardhana, C. Aruna, M. Muniya Naik, A. Govardhan Naik, and V. Uday Kiran

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M.Thulasi¹, K. Janardhana², C. Aruna³, M. Muniya Naik⁴, A. Govardhan Naik⁵, V. Uday Kiran

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Species	Total number of species found (n)
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Diptera	2
Isopoda	1
Hydroptila	1
Crustacea	2
Thysanura	4
Hemiptera	1

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Species of Bacteria	Gram positive	Gram negative	Susceptible	Resistant
Staphylococcus aureus	100%	100%	0	0
Escherichia coli	100%	100%	0	0
Pseudomonas aeruginosa	100%	100%	0	0

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Impact of *Emblica officinalis* Fruit Extract on ATPases System under AD-induced conditions in Albino Rat

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(Received: 16 March 2023; Revised: 14 April 2023; Accepted: 29 April 2023; Published: 20 May 2023)

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Role on Experimental and ethical issues with using animal models in Pathological and Medicinal plant research-A Review

V.Uday Kiran, M.Thulasi, M. Sreekanth Reddy, Dr.H.Ramasubba Reddy, Dr.C.Aruna, P. Ramesh Kumar, R.Reddemma, Dr.D.Veera Nagendra Kumar, Dr.M.Muniya Naik, K.Janardhana
DOI: 10.48047/NQ.2022.20.1.NQ22400

Abstract

Animals have been utilised in human studies for millennia, including by Aristotle in ancient Greece. Animal models expanded over the 18th and 19th centuries, with scientists such as Van Helmont, Redi, Needham, Spallanzani, Lavoisier, and Pasteur performing research to investigate life beginnings, anatomy, physiology, disease and pharmacology. This paper examines the use of animal models in pathological and medicinal plant health research, focusing on the ethical concerns associated with their use and the role of the National Council for the Control of Animal Experimentation (NCCAE) in promoting ethical considerations in research and teaching. Researchers and scientists that prioritise integrity- and ethics-based research practices when employing animals, as well as the creation of regulatory frameworks that facilitate quicker learning and expedite the use of animals in experiments. This paper outlines animal-based health research as well as the existing framework for regulating laboratory animal science, with the goal of



Nonlinear Convective Flow of Maxwell Fluid over a Slendering Stretching Sheet with Heat Source/Sink

Document Type : Research Paper

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[10.22055/JACM.2019.31394.1868](https://doi.org/10.22055/JACM.2019.31394.1868)

Abstract

In this study, the features of Maxwell fluid flow through a stretching sheet (variable thickness) with heat source/sink and melting heat transfer are analyzed. Leading equations of the course are transmuted with suitable similarity transmutations and resolved the subsequent equations mathematically with shooting technique. The effects of the valid parameters on the regular profiles (velocity, concentration, temperature) are elucidated through graphs in two cases (presence and absence of melting). And also, friction factor, transfer rates (mass, heat) are examined with the same parameters and the outcomes are presented in tabular form. A few of the findings are (a) the elastic parameter upsurges the velocity (b) heat source parameter raises the temperature (c) mass transfer rate is lowered by chemical reaction.



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Avula Venkateswarlu, Sangapatnam Suneetha, Macherla Jayachandra Babu, Jorige Girish Kumar, Chakravarthula Siva Krishnam Raju and Qasem Al-Mdallal

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Simulation of Dissipative Hybrid Nanofluid (PEG-Water + ZrO_2 + MgO) Flow by a Curved Shrinking Sheet with Thermal Radiation and Higher Order Chemical Reaction

by Gopinath Veeram ^{1,†} , Pasam Poojitha ¹ , Harika Katta ¹ , Sanakkayala Hemalatha ² , Macherla Jayachandra Babu ³ , Chakravarthula S. K. Raju ⁴ , Nehad Ali Shah ^{5,†} and Se-Jin Yook ^{4,*}

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Squeezed flow of polyethylene glycol and water based hybrid nanofluid over a magnetized sensor surface: A statistical approach

M. Jayachandra Babu ^{a,1}, Y. Sreenivasa Rao ^b, A. Suneel Kumar ^c, C.S.K. Raju ^d,
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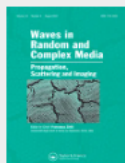
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A. Al-Zubaidi, Venkata Subrahmanyam Sajja, Revathi Gadamsetty, G.V. Ramana Reddy, M. Jayachandra Babu & I. L. Animasaun

Received 16 Nov 2021, Accepted 07 Jun 2022, Published online: 22 Jun 2022

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Gadamsetty Revathi, Isaac Lare Animasaun , Venkata Subrahmanyam Sajja, Macherla Jayachandra Babu, Naresh Boora and Chakravarthula S. K. Raju

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Abstract

With the emphasis on the properties of titanium dioxide nanoparticles and numerous applications of chemical reactive distilled water due to bioconvection in the industries, nothing is known about the significance of adding titanium dioxide nanoparticles to an existing distilled water conveying aluminum oxide and zinc oxide nanoparticles when viscous dissipation, heat source, and higher buoyancy forces and thermal radiation are substantial. The governing partial

<https://www.degruyter.com/document/doi/10.1515/nleng-2022-0031/pdf?licenseType=open-access> transport phenomena mentioned earlier were transformed into

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Irreversibility Analysis in the Ethylene Glycol Based Hybrid Nanofluid Flow amongst Expanding/Contracting Walls When Quadratic Thermal Radiation and Arrhenius Activation Energy Are Significant

by Bommana Lavanya ^{1,†}, Jorige Girish Kumar ², Macherla Jayachandra Babu ², Chakravarthula Sivakrishnam Raju ^{3,4}, Nehad Ali Shah ^{5,†} and Prem Junsawang ^{6,*}

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† These authors contributed equally to this work and are co-first authors.

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A Significant Role of Activation Energy and Fourier Flux on the Quadratically Radiated Sphere in Low and High Conductivity of Hybrid Nanoparticles

by Avula Venkateswarlu ¹, Nimer Murshid ^{2,*} , Hasan Mulki ² , Mahmoud Abu-samha ², Sangapatnam Suneetha ¹, Macherla Jayachandra Babu ³, Chakravarthula Siva Krishnam Raju ⁴ , Raad Z. Homod ⁵ and Wael Al-Kouz ^{2,*}

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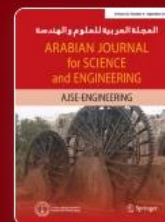
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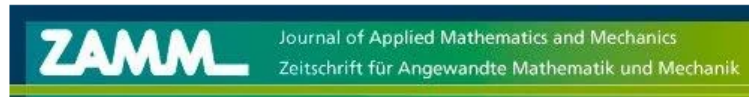
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Suresh Babu Ramakrishna, Sreevallabha Reddy Avula, Mamatha Upadhyaya Sadananda, Jayachandra Babu Macherla, S. K. Raju Chakravarthula ✉

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This study compares the dynamics of dissipative water–alumina–zinc oxide–iron (II, III) oxide ternary hybrid nanofluid (THNF) and water–alumina–zinc oxide binary hybrid nanofluid flows across an inclined surface when quadratic thermal radiation and chemical reaction are important. This report presents the governing equations for the transportation of both dynamics using the thermo-physical properties of water (base fluid), alumina nanoparticles, zinc oxide nanoparticles and iron (II, III) oxide nanoparticles. To analyse heat transmission phenomena, the Cattaneo–Christov heat flux model was added into the energy equation. With proper similarity transformations, flow-driven equations are transformed into nonlinear ordinary differential equations and then solved



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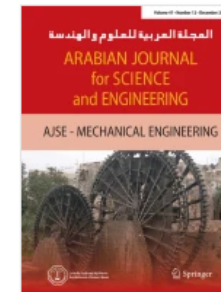
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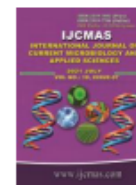
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Application of Arima Models in Millet Production in Andhra Pradesh

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ABSTRACT

The study was intended to check and identify the best prediction model of Millet production in Andhra Pradesh through Auto Regressive Integrated Moving Average (ARIMA). Time series data on production of Millet for a period of 56 years (1963-2019) was used. The ARIMA (1 1 1) model was identified as the appropriate procedure for the Millet production up to 2024. It was observed that there was a growing production.

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Significance of non-Fourier heat flux and radiation on PEG – Water based hybrid Nanofluid flow among revolving disks with chemical reaction and entropy generation optimization

A. Mahesh ^a, S.V.K. Varma ^a, C.S.K. Raju ^b, M.J. Babu ^c, K. Vajravelu ^d, Wael Al-Kouz ^e

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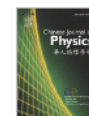
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Irreversibility analysis in hybrid nanofluid flow between two rotating disks with activation energy and cross-diffusion effects

S. Suresh Kumar Raju ^a, M. Jayachandra Babu ^b, C.S.K. Raju ^c

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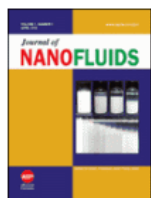
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This paper theoretically clarifies the impact of pertinent parameters, including viscous dissipation on the flow of Carreau fluid through a permeable arched elongating sheet. Flow describing equations are metamorphosed as ODEs and executed using the combination of shooting and Runge-Kutta strategies. Consequences are elucidated using tables and graphs. We discovered that (a) an appreciable decline in the concentration against temperature difference and reaction rate parameters (b) curvature parameter and porosity parameters registered opposite behaviour to each other on velocity profile (c) there is a reduction in the heat transfer rate with larger Eckert number and curvature parameters (d) Biot number ameliorates the temperature and local Nusselt number (e) Schmidt number and activation energy parameters are showing different behaviours on local Sherwood number. And also, magnetic field and porosity parameters minimize the velocity and surface drag force and Biot number ameliorates the temperature. Further, present results are validated with the earlier outcomes and perceived an acceptable agreement.

Keywords: Activation Energy Parameter; Carreau Fluid; Curvature Parameter; Curved Stretching Sheet; Porosity Parameter; Shooting Procedure

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Significance of Reynolds number, lower and upper rotating disks on the dynamics of water conveying graphene and silver nanoparticles between rotating disks

A Mahesh¹, S V K Varma¹, C S K Raju² , M Jayachandra Babu³ , I L Animasaun⁴ and Nehad Ali Shah^{6,5}

Published 18 February 2021 • © 2021 IOP Publishing Ltd

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Multiple Slips and Chemical Reaction Effects on unsteady MHD Heat and Mass Transfer Flow over a Permeable Stretching Sheet with Radiation

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Abstract: This paper presents the results of several slips and chemical reactions on MHD unstable heat and mass transmission flow over permeable stretching layer that moves with non-uniform velocity, suction/injection, Soret effect, thermal radiation, taking into account the time-dependent magnetic field applied. The controlling partial differential equations are translated into a system of coupled nonlinear differential equations with the assistance of appropriate transformations of similarity. With the help of bvp4c with the shooting process, the corresponding equations are numerically solved. Different parameter effects on velocity, temperature, and concentration profiles are addressed with the help of graphs. The rates of skin coefficient of friction, heat and mass transfer are often concerned with the aid of tables. The study already conducted is contrasted and considered to be in substantial alignment with this analysis.

Keywords: Magneto hydrodynamics, Thermal Radiation, Soret number, Chemical reaction, Multiple slips, Stretching sheet

1. Introduction

On a no-slip state, the core principle of the theory of Navier-Stokes is established. Numerically and analytically, numerous authors have obtained solutions by taking no-slip boundary conditions to analyze the profile of velocity, temperature, and concentration outline. The flow of the boundary layer corresponding to the stretching surface was analyzed by Ali et al. (1994). In porous media, the impact of chemical reaction on free convective heat and mass transfer flow along the stretching surface was studied by Chakma et al. (2010). SwathyMukhopadhyay (2012) examined the variant of heat transmission on the boundary layer flow over a porous exponential stretching sheet by considering the existence of magnetic field velocity slip and thermal slip. The thermal radiation heat transfer and slip effects on unstable MHD flow over the stretching surface were studied by Anjali Devi et al. (2014). The partial slip and heat generation/absorption effects on hydrodynamic boundary layer flow in a porous medium over stretching surface were investigated by Abdul Hakeem et al. (2014) considering thermal radiation and wall mass



Soft Computing approach to enhance the Performance of AODV (Ad-hoc On-Demand Distance Vector) Routing Protocol using Active Route TimeOut (ART) Parameter in MANETs

Bonu Satish Kumar ¹, Saritha Bisai ², Palo Sangeetha ³, Sagiraju SrinadhRaju ⁴, Bosubabu Sambana ⁵, TataRao Vana ⁶, Krishnardula Pavankumar ⁷

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Abstract: While its advancement inside MANETs, the AODV routing protocol convention has been and stays a powerful and gainful examination protocol, with association with its course Active Route Timeout (ART), AODV utilizes a predictable worth that demonstrates the time and the course which may stay dynamic in the directing table. A long period of the course might be chosen powerfully, dependably through the estimation, as opposed to reliable worth. For this reason, a Fuzzy rationale framework is utilized to procure the versatile qualities for ART dependent on the trans mitter conditions and interceding hubs. As indicated by the pre-essentials of the International Engineering Task Force (IETF), we shouldn't be taking stil qualities in the powerful atmosphere. Subsequently, ART's tweaking of turncoat esteems is accomplished by applies fluffy principles on the info factors hop-count, Sent Control Packet, and Nodes Number. AODV convention yield is assessed after the utilization of Fuzzy based methodology. The proficiency of AODV and FBARTAODV Routing Protocols for Mobile Ad Hoc Networks will be examined with results. In this paper we give outcome show so as to the FBARTAODV perform enhanced compared to the in progress AODV.

Keywords: AODV ART FBARTAODV Routing protocols



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Present article is devoted to the work on two-dimensional EMHD flow of Carreau fluid across a stretching sheet within the sight of thermal radiation, electric field parameter. We assumed convective boundary condition for this problem. Leading equations (partial differential equations) of this problem have been transmuted as ordinary differential equations (nonlinear) by using similarity transmutations and then solved mathematically by expending shooting technique. Plots are used to



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This article reveals the influences of different kinds of chemical reactions such as homogeneous-heterogeneous with heat generation/absorption including non-linear radiation on a two-dimensional steady Newtonian laws obeyed hydromagnetic nanofluid flow through a stretching sheet. In this investigation we consider the magnetic field in the normal direction to the flow. The base fluids are water (H_2O) and ethylene glycol ($C_2H_6O_2$) which contains the nanoparticles of silver (Ag). The



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Article

Design, Synthesis, and Biological Evaluation of Benzothiazole Chalcone Conjugates as Antitumor Agents

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ABSTRACT

A series of novel benzothiazole chalcone conjugates (12a-j) have been designed and synthesized by a simple, six-step synthetic procedure. Benzothiazole chalcone conjugates were synthesized by the Claisen-Schmidt condensation of various substituted acetophenones with substituted benzothiazole aldehydes. The structures of final compounds were characterized by infrared, nuclear magnetic resonance, and electrospray ionization mass spectrometers. Furthermore, all the benzothiazole chalcone conjugates have been evaluated at the National Cancer Institute USA for their antitumor activity at a single dose (1×10^{-5} M), on a panel of 60 human tumor cell lines. From the screening result, it has been observed that compound **12e** exhibited promising antitumor activity.

Key words: Benzothiazole, Chalcone, Antitumor activity, Anticancer activity.

1. INTRODUCTION

Cancer, the uncontrolled growth of cells, has become one of the major causes of death throughout the world. Every year more than 20% of the population is affected by cancer, and the mortality rate is increasing annually, making it a major area of focus for researchers [1,2]. Benzothiazole, a privileged bicyclic ring system, demonstrated broad spectrum of interesting biological activities such as anti-allergic [3], anti-inflammatory [3,4], and antitumor [5-8] activity. Over the past two decades, various substituted benzothiazole molecules have been extensively studied for their anticancer activity. Among them, compound **1** 2-(4-aminophenyl)-benzothiazole (CJM 126) (Figure 1) has been shown remarkable antitumor activity in *in vitro* assays against MCF-7 and MDA-MB-468 cell lines of breast cancer [9].

polymerization [22]. Recently, potential hybrid conjugates have been synthesized as novel anticancer agents by the combination of different pharmacophores [23,24]. The remarkable anticancer activity exhibited by these conjugates encouraged us to explore some newer conjugates by linking two pharmacophores such as benzothiazole and chalcone scaffolds to enhance the anticancer activity. In this context, we have designed and synthesized benzothiazole chalcone conjugates (**12a-j**), and these conjugates were evaluated for their anticancer potential by the National Cancer Institute (NCI) USA at a single dose (1×10^{-5} M), on a panel of 60 human tumor cell line. Some of the conjugates such as compounds **12b**, **12d**, **12e**, and **12f**, showed considerable GI₅₀ percentage against different human cancer cell lines (Table 1).

2. RESULTS AND DISCUSSION

2.1. Chemistry



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Nonlinear Convective Flow of Maxwell Fluid over a Slendering Stretching Sheet with Heat Source/Sink

Document Type : Research Paper

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Abstract

In this study, the features of Maxwell fluid flow through a stretching sheet (variable thickness) with heat source/sink and melting heat transfer are analyzed. Leading equations of the course are transmuted with suitable similarity transmutations and resolved the subsequent equations mathematically with shooting technique. The effects of the valid parameters on the regular profiles (velocity, concentration, temperature) are elucidated through graphs in two cases (presence and absence of melting). And also, friction factor, transfer rates (mass, heat) are examined with the same parameters and the outcomes are presented in tabular form. A few of the findings are (a) the elastic parameter upsurges the velocity (b) heat source parameter raises the temperature (c) mass transfer rate is lowered by chemical reaction.



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Chemical Reaction Effect on Nonlinear Radiative MHD Nanofluid Flow over Cone and Wedge

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Keywords: MHD, Non-linear Radiation, Nano fluid, Chemical Reaction, heat generation

Abstract. The awareness of heat and mass transfer in nanofluid flows with magnetohydrodynamic conditions over cone and wedge is very significant for design of heat exchangers, transpiration, fiber coating, etc. With this initiation, we construct a mathematical model to investigate the chemical reaction effects on electrically conducting magnetohydrodynamic nanofluid flow over a cone and a wedge. For this purpose, we also consider a nonlinear thermal radiation, viscous dissipation, Joule heating with non-uniform heat source/sink. The transformed equations are solved by using shooting technique based on RK fourth order method. Effects of pertinent parameters of concern on the common profiles are conversed (in two cases). It is perceived that the momentum, temperature and concentration boundary layers are non-uniform for the flow over a wedge and a cone

Introduction

Nanotechnology is considered by many to be one of the significant forces that drive the next major industrial revaluation of this century. It represents the most relevant technological cutting edge currently being explored. Nano fluid heat transfer is an innovative technology which can be used to enhance heat transfer. So from the past few years the researchers of fluid dynamics are showing a keen interest in the study of nano fluids due to their applications in different fields like solar energy, nuclear reactors, polymer processing, furnace design, furnace design, gas cooled, glass production, and space technology etc. It imposed the requirement to mix both the fluid and nano sized metals for increasing the heat transfer capacity of the fluids. The nano fluid concept was first introduced by Choi (1) while an examination of cooling technologies in Argonne National lab. Later Choi et al. (2) found that the thermal conductivity will be increased if some amount of nano particles is mixed to the base fluid. Many of the researchers were interested to investigate these influences (3-12)

Magnetic nanofluid is a magnetic colloidal suspension of carrier liquid and magnetic nanoparticles. The assistance of magnetic nanofluid is that fluid flow and heat transfer can be managed with the aid of external source, which makes it pertinent to several areas like aerospace, electronic packing and thermal engineering. In other words, flow behavior is heavily affected by the intensity and orientation of the applied magnetic field. Srinivasacharya et al. (13) have analyzed the magnetohydrodynamic boundary layer flow of a nano fluid past a wedge. Alok Kumar Pandey and Manoj Kumar (14) have investigated the effects of viscous dissipation and suction/injection on MHD nanofluid flow over a wedge with porous medium and slip. Raju et al. (15) have examined



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Multiple Slips and Chemical Reaction Effects on unsteady MHD Heat and Mass Transfer Flow over a Permeable Stretching Sheet with Radiation

pdf

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Keywords:

Magneto hydrodynamics, Thermal Radiation, Soret number, Chemical reaction, Multiple slips, Stretching sheet

R.MohanaRamana, K.VenkateswaraRaju, J.GirishKumar

Abstract

This paper presents the results of several slips and chemical reactions on MHD unstable heat and mass transmission flow over permeable stretching layer that moves with non-uniform velocity, suction/injection, Soret effect, thermal radiation, taking into account the time-dependent magnetic field applied. The controlling partial differential equations are translated into a system of coupled nonlinear differential equations with the assistance of appropriate transformations of similarity. With the help of bvp4c with the shooting process, the corresponding equations are numerically solved. Different parameter effects on velocity, temperature, and concentration profiles are addressed with the help of graphs. The rates of skin coefficient of friction, heat and mass transfer are often concerned with the aid of tables. The study already conducted is contrasted and considered to be in

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