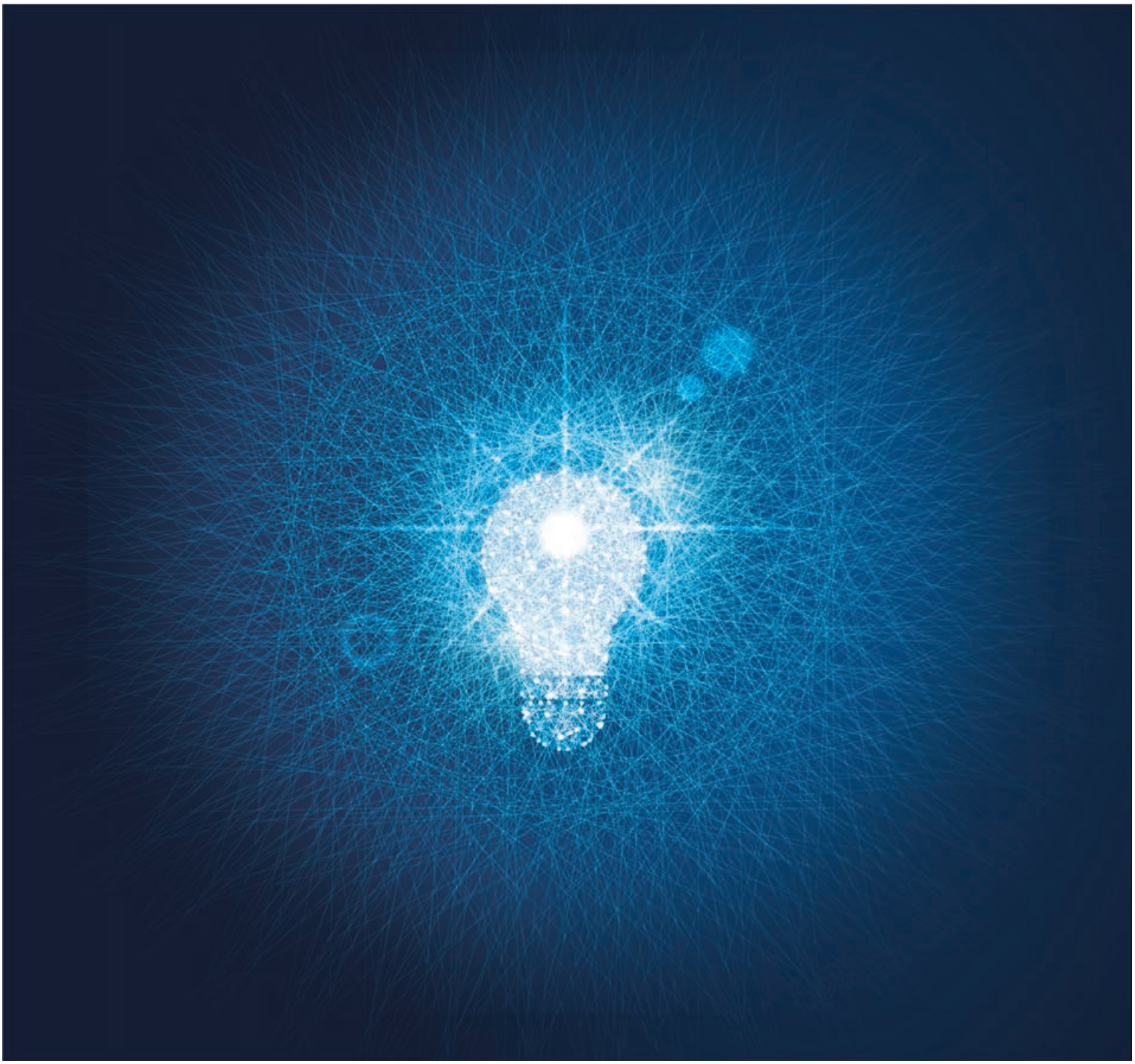
ALLIANCE UNIVERSITY
CENTER FOR RESEARCH

RESEARCH PUBLICATIONS

JANUARY 2024



RESEARCH PUBLICATIONS

JANUARY 2024

" Research is creating new knowledge. "

Neil Armstrong

" If we knew what we were doing, it wouldn't be called research, would it? "

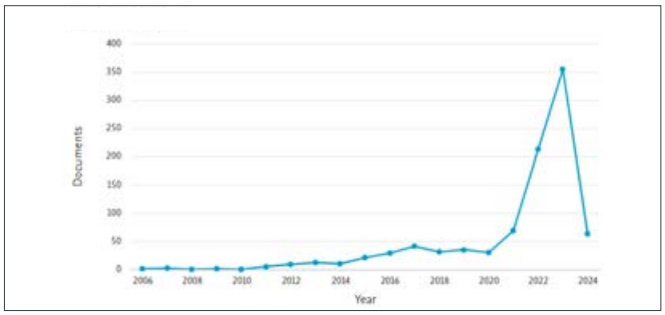
Albert Einstein

" Research is formalized curiosity. It is poking and prying with a purpose. "

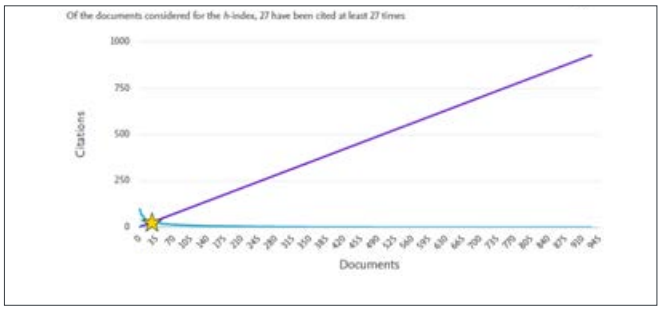
Zora Neale Hurston

928 document results

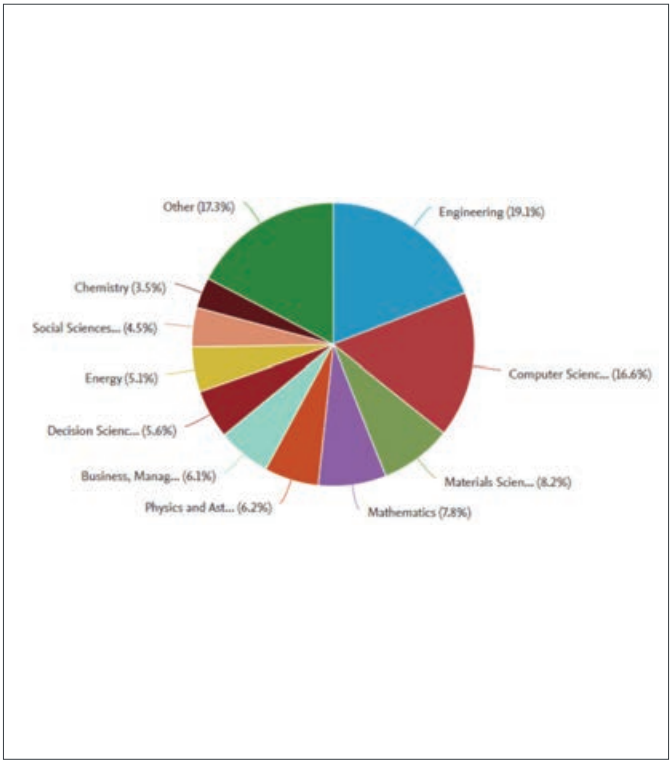
Documents by year



These documents *h*-index



Documents by subject area



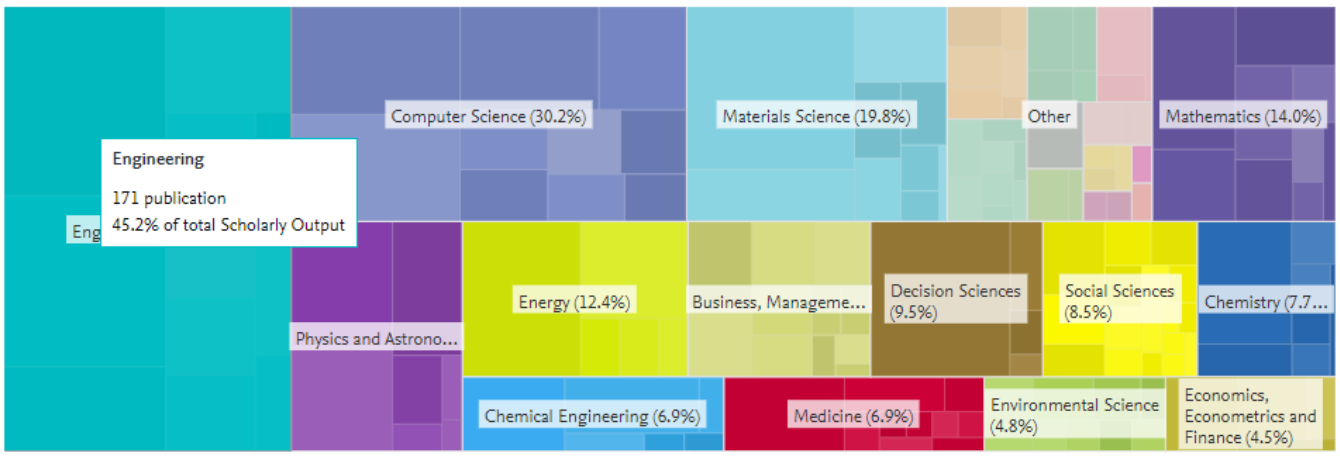
Summary

777	340	2,556	3.3	1.06
Scholarly Output	Authors	Citation Count	Citations per Publication	Field-Weighted Citation Impact

25.4%
All Open Access

Publication share by Subject Area

Segment size represents relative publication share per Subject Area. Note that a publication can be mapped to multiple Subject Areas. Learn more



Performance indicators

Outputs in Top Citation Percentiles

+ Add to Reporting

Publications in top 10% most cited worldwide

Show as field-weighted

Alliance University: 13.8%

India: 9.8%

> Analyze in more detail

Publications in Top Journal Percentiles

+ Add to Reporting

Publications in top 10% journals by CiteScore Percentile

Alliance University: 10.9%

India: 14.5%

> Analyze in more detail

International Collaboration

+ Add to Reporting

Publications co-authored with Institutions in other countries/regions

Alliance University: 33.9%

India: 20.4%

> Analyze in more detail

Academic-Corporate Collaboration

+ Add to Reporting

Publications with both academic and corporate affiliations

Alliance University: 0.8%

India: 1.3%

> Analyze in more detail

Geographical Collaboration

International, national and institutional collaboration by Alliance University in the selected year range.

Metric		Scholarly Output	Citations	Citations per Publication	Field-Weighted Citation Impact
International collaboration	33.9%	128	1,143	8.9	1.40
Only national collaboration	47.1%	178	760	4.3	0.94
Only institutional collaboration	9.0%	34	112	3.3	1.14
Single authorship (no collaboration)	10.1%	38	121	3.2	0.74

Academic-corporate Collaboration

Academic-corporate collaboration by Alliance University in the selected year range.

Metric		Scholarly Output	Citations	Citations per Publication	Field-Weighted Citation Impact
Academic-corporate collaboration	0.8%	3	10	3.3	0.66
No academic-corporate collaboration	99.2%	375	2,126	5.7	1.10

SDG contributions

GOAL 1
NO POVERTY
9 documents

GOAL 2
ZERO HUNGER
9 documents

GOAL 3
GOOD HEALTH AND WELL-BEING
65 documents

GOAL 4
QUALITY EDUCATION
11 documents

GOAL 5
GENDER EQUALITY
8 documents

GOAL 6
CLEAN WATER AND SANITATION
22 documents

GOAL 7
AFFORDABLE AND CLEAN ENERGY
65 documents

GOAL 8
DECENT WORK AND ECONOMIC GROWTH
34 documents

GOAL 9
INDUSTRY, INNOVATION AND INFRASTRUCTURE
65 documents

GOAL 10
REDUCED INEQUALITIES
16 documents

GOAL 11
SUSTAINABLE CITIES AND COMMUNITIES
17 documents

GOAL 12
RESPONSIBLE CONSUMPTION AND PRODUCTION
31 documents

GOAL 13
CLIMATE ACTION
23 documents

GOAL 14
LIFE BELOW WATER
4 documents

GOAL 15
LIFE ON LAND
1 document

GOAL 16
PEACE, JUSTICE AND STRONG INSTITUTIONS
14 documents

GOAL 17
PARTNERSHIPS FOR THE GOALS
112 documents

ABOUT ALLIANCE UNIVERSITY

Alliance University is a Private University established in Karnataka State by Act No.34 of year 2010 and is jointly recognized by the University Grants Commission (UGC), New Delhi, Bar Council of India (BCI) and the All-India Council for Technical Education (AICTE), New Delhi. Since its inception in 2010, Alliance University has been a forerunner in higher education, calling out to the new generation of scholars, engineers, scientists, artists, people in business, social reformers helping to shape and transform societies and communities through and beyond, around the world. Alliance University with a vibrant and picturesque campus in Bengaluru, one of the fastest growing cities in India, offers more than 20 undergraduate and postgraduate majors to approximately 7000 students of diverse backgrounds. Currently, that trailblazing spirit makes Alliance University, one of the most sought-after universities in the world, featuring top-ranked academic programmes such as Alliance School of Business, Alliance College of Engineering and Design, Alliance School of Law, and Alliance Ascent College, and newly commenced Alliance School of Liberal Arts.

Alliance University is a leader in global education, with world-class infrastructure, state of the art laboratories, international visiting faculty, exchange programmes with leading universities in the US, UK, and European Union, and linkages with Research Labs across the world. Education at Alliance University is designed to inspire our students to become critical thinkers and to lead and change the world.

Quartile – Q1 | **Percentile** – 93rd | **Impact Factor** – 8.3 | SDG : 11 SUSTAINABLE CITIES AND COMMUNITIES

WASTE-DERIVED CARBON NANOSTRUCTURES (WD-CNS): AN INNOVATIVE STEP TOWARD WASTE TO TREASURY.

Omar, R. A., **Talreja, N.**, Chuhan, D., & Ashfaq, M. Environmental Research, (2024).118096.

Dr. Neetu Talreja
Assistant Professor, Department of Sciences,
Alliance University, Bangalore-INDIA

ELSEVIER

Environmental Research
Volume 246, 1 April 2024, 118096

Abstract

With the growing population, the accumulation of waste materials (WMs) (industrial/household waste) in the environment incessantly increases, affecting human health. Additionally, it affects the climate and ecosystem of terrestrial and water habitats, thereby needing effective management technology to control environmental pollution. In this aspect, managing these WMs to develop products that mitigate the associated issues is necessary. Researchers continue to focus on WMs management by adopting a circular economy. These WMs convert into useful/value-added products such as polymers and nanomaterials (NMs), especially carbon nanomaterials (CNs). The conversion/ transformation of waste material into useful products is one of the best solutions for managing waste. Waste-derived CNs (WD-CNs) have established boundless promises for numerous applications like environmental remediation, energy, catalysts, sensors, and biomedical applications. This review paper discusses the several sources of waste material (agricultural, plastic, industrial, biomass, and other) transforming into WD-CNs, such as carbon nanotubes (CNTs), biochar, graphene, carbon nanofibers (CNFs), carbon dots, etc., are extensively elaborated and their application. The impact of metal doping within the WD-CNs is briefly discussed, along with their applicability to end applications.
Author keywords : Biochar; Biomass waste; Carbon nanoproducts; Carbon nanotubes; Waste materials, Reaxys Chemistry database information

Author keywords- Biochar; Biomass waste; Carbon nanoproducts; Carbon nanotubes; Waste materials, Reaxys Chemistry database information

SDG : 09 INDUSTRY, INNOVATION AND INFRASTRUCTURE

Quartile – Q1 | **Percentile** – 91st | **Impact Factor** – 7.2 | SDG :

CONTEMPORARY PROGRESS ON PHOTO-INDUCED GREEN HYDROGEN EVOLUTION: POTENTIAL, CHALLENGES, AND PERSPECTIVES FOR THE HYDROGEN ENERGY BASED ECONOMY -AN UPDATED REVIEW

Phukan, Shankab Jyoti[a];Goswami, Suraj[a]; Bhowmik, Soumalya[b]; Sah, Neeraj Kumar[a]; Sharma, Mukul[c]; Pramanik, Panchanan[d] ; **Pathak, Chandni**[e], Roy, Manas[f]; Pai, Ranjith Krishna[c] .; Garai, Somenath[a] " Fuel 361 (2024): 130654.

Dr. Chandni Pathak

Assistant Professor, Department of Sciences ,
Alliance University- Bangalore- INDIA

Abstract

In the present context of the global energy crisis, green hydrogen is gaining attention as a potent energy carrier. The hydrogen business has experienced a significant upsurge as a result of the worldwide trend towards decarbonization and mitigating the reckless use of fossil fuels. In this review, an outline of current trends, major barriers, and envisaged paths for future advancement of photolysis of hydrogen generation is addressed, with a special emphasis on hydrogen evolution reactions via hybrid photocatalysts that are mostly derived from metal-organic frameworks (MOFs), covalent organic framework (COF), graphitic carbon nitride (g-C3N4), low-dimensional transition metal dichalcogenides, metal oxides and molecular catalytic systems. This paper also presents an in-depth present time assessment of green hydrogen economy, which implement both traditional and renewable sources of energy. Additionally, the paper ruminates on the utilization, storage, transportation and supply of hydrogen, as well as the key barriers and prospects associated with the industrial implementation of such systems.

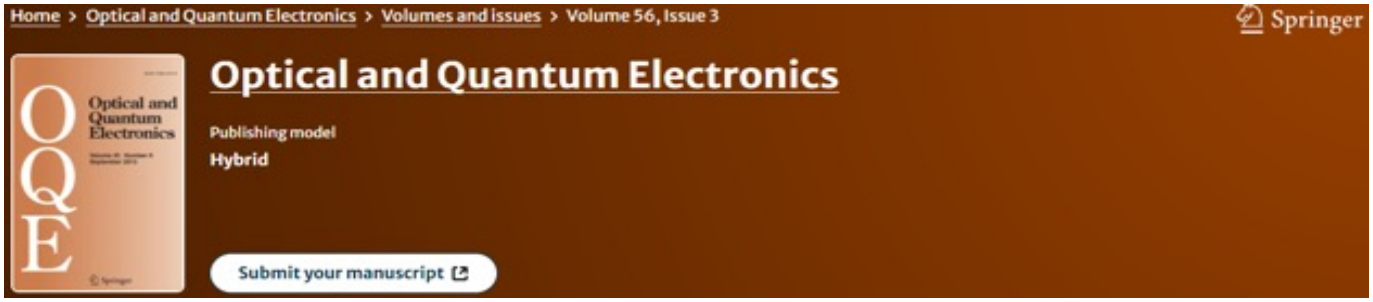
Author keywords- Graphitic Carbon Nitride assisted Hydrogen Production; Hydrogen Economy and Scaling-up Aspects; Metal-Chalcogenides as Photocatalyst; MOF/COF-based HER Photocatalyst; Photo-electrocatalysis; Photocatalytic Green Hydrogen Evolution Reaction (HER)

Quartile – Q2 | **Percentile** – 58th | **Impact Factor** – 3.0 | SDG : 11 SUSTAINABLE CITIES AND COMMUNITIES

THE POWER OF AI, IOT, AND ADVANCED QUANTUM BASED OPTICAL SYSTEMS IN SMART CITIES

Viji C.[a];, Latha, Pandala Madhavi[b]; Vennila, V. Baby[c]; Shanmugam, Sathish Kumar[d]; Pillai, Nataraj Boothalingam[e] Optical and Quantum Electronics, 56(3), 450.

Dr. Rajkumar N
Associate Professor , Department of Computer Science & Engineering,
Alliance College of Engineering and Design,
Alliance University, Karnataka, Bangalore, India



Abstract

This paper explores the transformative fusion of Quantum computing, Artificial Intelligence (AI), the Internet of Things (IoT), and advanced optical systems within smart city development. A significant innovation within this study is the concept of "optical IoT," wherein IoT relies on advanced optical technologies, including high-resolution cameras, LiDAR scanners, meters, sensors, and wearables, strategically distributed throughout urban environments for real-time image data acquisition. Traditional smart city models may rely on conventional data acquisition methods that are not real-time or high-resolution, leading to delayed and less accurate urban management decisions. Existing models might use disparate systems for monitoring and management, which can result in inefficient resource allocation and coordination, especially in critical situations like emergency response. In this research Advanced Smart City Architecture (ASCA) this integration empowers the system to excel in tasks such as semantic segmentation, enabling precise identification and categorization of urban elements. Quantum optical systems are employed in quantum-enhanced sensors, such as quantum-enhanced interferometers and atomic clocks. These sensors offer improved precision for measurements like distance, time, and acceleration. The ASCA approach equips city planners, administrators, and emergency responders with real-time urban monitoring and management capabilities. This dynamic system yields numerous advantages, including optimized resource allocation, enhanced traffic management, improved environmental quality, and swift emergency response capabilities. This

research underscores the immense potential of ASCA in reshaping urban development and sustainability within smart cities. By harmonizing AI, IoT, and advanced optical systems, this paradigm shift enables smart cities to evolve into more efficient and resilient urban environments. These cities become finely attuned to the ever-evolving needs of their residents, ultimately fostering innovation and progress at an unprecedented scale. Proposed ASCA achieves an impressive 91.98% enhancement in sustainable smart city development when compared to these existing techniques

Author keywords- Advanced quantum optical systems; Convolutional neural network; IoT; LSTM; Real-time monitoring; Smart cities; Urban development

09 INDUSTRY, INNOVATION AND INFRASTRUCTURE

Quartile – Q2 | **Percentile** – 63rd | **Impact Factor** – 3.8 | SDG :

HOT-PRESSED MN-DOPED Pb $((Zr_{0.3}Ti_{0.7})_{0.99}Mn_{0.01})O_3$/ POLYSTYRENE COMPOSITES WITH IMPROVED DIELECTRIC AND ENERGY STORAGE PERFORMANCE

Shalu, Saumya[a, b]; Mukherjee, Anindita[a]; **Roy, Sunanda**[c, d], Kar, Pradip[a];Kushvaha, Dhiraj Kumar[e]; Rout, Sanjeeb Kumar[e]; Dasgupta Ghosh, Barnali[a] Materials Today Communications, 38, 107974.

Dr. Sunanda Roy
Associate Professor

Abstract

Polymer composite films are superb dielectrics with high energy storage performance. Accordingly, herein we fabricated thick dumbbell-shaped 0–3 composites by incorporating Pb $((Zr_{0.3}Ti_{0.7})_{0.99}Mn_{0.01})O_3$ (PMZT) as filler (0 –20% by weight) into a polystyrene (PS) matrix, using a two-step, solvent-free method involving melt mixing and subsequent hot pressing. The effects of processing parameters, acceptor doping in the filler, and filler content on the thermal, dielectric, and energy storage properties of the composites were investigated. IR spectroscopy and X-ray diffraction studies confirm the successful integration of the perovskite PMZT ceramic into the PS matrix. Notably, the composite morphology displayed a uniform distribution of filler particles, devoid of voids or agglomerates, indicating effective filler reinforcement. Mn ions acting as acceptor dopants in the ceramic filler, enhance the dielectric constant of the PMZT/PS composites while significantly minimizing the dielectric loss. The hot-pressing method promotes the alignment of dipoles of the filler particles within the composites, leading to stronger polarization and enhanced overall dielectric and ferroelectric response. Remarkably, the 20 wt% PMZT/PS composite exhibits an increased maximum polarization of 0.42 μC/cm2 and an 83% energy storage efficiency, making it a promising candidate for energy storage application.

Author keywords- Acceptor-doped PZT; Dielectric loss; Energy storage; Hot-press; Polymer matrix composites.

Quartile – Q1 | **Percentile** – 93rd | **Impact Factor** – 8 | SDG :

A VARIEGATED GWO ALGORITHM IMPLEMENTATION IN EMERGING POWER SYSTEMS OPTIMIZATION PROBLEMS

Dey, Bishwajit[a, b] Raj, **Saurav[c] Mahapatra, Sheila[d]** García Márquez, Fausto Pedro[e].

Engineering Applications of Artificial Intelligence, 129, 107574.

Dr. Sheila Mahapatra
Professor & Associate Director - Research (Academics),
HOD - Electrical & Electronics Engineering

Abstract

This paper proposes a novel hybrid algorithm which is mathematically modelled by amalgamating the superior features of recently developed Grey Wolf Optimizer (GWO), Sine Cosine Algorithm (SCA), and Crow Search Algorithm (CSA). Researchers have already implemented the aforementioned three algorithms and obtained superior quality results for solving diverse optimization problems. The novel hybrid Variegated GWO Algorithm (VGWO) developed in this proposed research work is initially realized and validated for solving IEEE CEC-C06 2019 benchmark functions. Thereafter, the proposed VGWO is utilized as an optimization tool to solve three emerging and complex power system optimization problems which includes energy management of microgrid systems operated in both islanded and grid-connected mode, dynamic economic emission dispatch and reactive power planning (RPP) problem. A comparative analysis of the proposed VGWO approach with other established metaheuristics is undertaken for each optimization problem. Numerical results show that the novel hybrid VGWO algorithm outperformed an ample number of optimization techniques in providing better quality solutions. The proposed hybrid algorithm yielded a 36.93% reduction in active power loss and 36.80% reduction in operating cost with respect to base case condition for RPP problem. Likewise while solving microgrid energy management problems 9–30% savings was realized in the generation cost compared to the ones mentioned in literature. The capability of handling many complex constraints within a minimum amount of computational time to provide consistently best solutions prioritize the proposed hybrid algorithm among its kinds. Statistical analysis validates the authenticity and viability of the proposed algorithm.

Author keywords- Benchmark functions; Energy management; Fractional programming; Microgrids; Reactive power planning; Variegated GWO

Quartile – Q1 | **Percentile** – 94th | **Impact Factor** – 4.8 | SDG :

TOWARDS ENERGY BALANCING OPTIMIZATION IN WIRELESS SENSOR NETWORKS: A NOVEL QUANTUM INSPIRED GENETIC ALGORITHM BASED SINKS DEPLOYMENT APPROACH

Rathee, Manisha[a]; Kumar, Sushil[a]; **Dilip, Kumar**[a, e]; Dohare, Upasana[b] ,Aanchal[c]; Parveen[a, d], *Ad Hoc Networks, 153,* 103350.

Dr. Kumar Dilip
Associate Professor,
Department of CSE,
Alliance University- Bangalore- INDIA

Abstract

A Wireless Sensor Network (WSN) with multiple sinks alleviates the bottleneck problem of imbalanced energy consumption and leads to improved scalability and convenience in data collection for diverse range of large-scale applications. However, introducing more than one sink also brings a new set of challenges to overcome. To minimize the uneven energy consumption among sensors for longevity of the WSN, it is required to find optimal locations of the sinks that will permit most of the sensors to forward their data using minimum hops and to determine the optimal route for each sink with consistent route length. Routing in large networks is an NP-Hard problem. Previous schemes have solved this problem using multiple sinks deployment either in planned ways or random manner without simultaneously considering the possibilities of network topological changes, edge cases of sensors, and problem of uneven path length. In this context, this paper proposes a quantum inspired genetic algorithm based multiple sinks deployment approach (Q-GEMS) for energy consumption balancing among sensors to extend the network lifetime. Specially, the exiting approaches have focused on either minimizing energy consumption or reducing the path length. In addition to addressing these constraints, the proposed Q-GEMS is designed to be resilient which adapts to any changes in the planned topologies of deployed sinks in anticipation of sensor failures and external influences. Also to achieve greater energy consumption balance among sensors by equalizing the path length and bring down the cost of WSN by minimizing the number of sinks, novel heuristics have been proposed

for positioning the sinks, binding the sensors to sinks, evaluating the quality of solutions and updating the Q-bit population. The experimental results show that the proposed Q-GEMS performs comparatively better than state of the art approaches and achieving network lifetime 5.1%, 21%, and 24% longer than that of EEMS, EESS, and DPSO+PSO respectively.

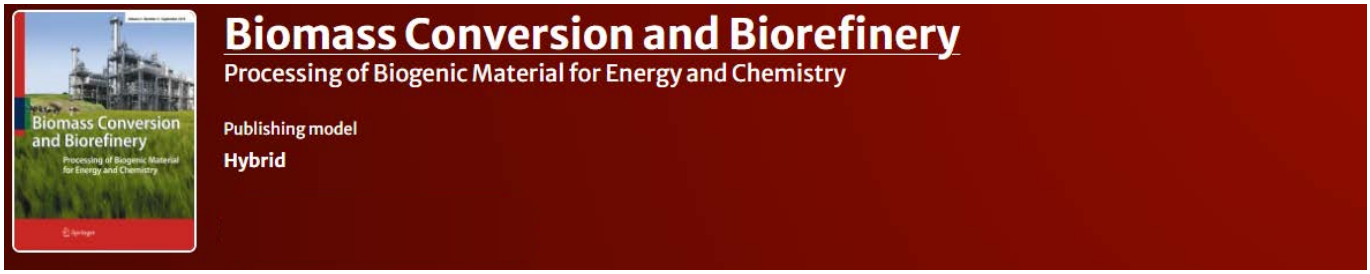
Author keywords- fillers; hybrid composites; machine learning; natural fiber; polymer

Quartile – Q2 | **Percentile** – 64th | **Impact Factor** – 4.0 | SDG : 03 GOOD HEALTH AND WELL-BEING

APPLICATION OF A BIOWASTE OF FISH (LABEO ROHITA) SCALE FOR THE REMOVAL OF METHYL ORANGE FROM AQUEOUS SOLUTIONS: OPTIMIZATION OF SORPTION CONDITIONS BY RESPONSE SURFACE METHOD AND ANALYSIS OF ADSORPTION MECHANISM

Nandi, Debabrata[a]; Pulikkalparambil, Harikrishnan[a]; **Parameswaranpillai, Jyotishkumar[b]**; Siengchin, Suchart[a], [c] *Biomass Conversion and Biorefinery,* 1-12.

Dr. Jyotishkumar Parameswaranpillai
Associate Professor, Department of Sciences,
Alliance University- Bangalore- INDIA



Abstract

Methyl orange, an anionic dye, is injurious to health and the environment which must be treated before discharging. The processed fish (Labeo rohita) scales were characterized by scanning electron microscope (SEM), the attenuated total reflectance (ATR) Fourier transform infrared spectroscopy (FT-IR), and BET surface area analyzer. The BET surface area and pore diameter were observed to be 192 m2 g−1 and 44 nm, respectively. Influences of parameters such as pH, temperature, and concentration of adsorbent were studied by response surface methodology and analysis of variance (ANOVA) to optimize methyl orange dye uptake in adsorption process by fish scale. The influences of factors on adsorption capacity followed the order (initial concentration temperature pH). The fish scale attained a high sorption capacity (Langmuir capacity of 520 mg g−1 at pH 5.3, 283 K) towards methyl orange. The thermodynamics analyses implied that the physisorption was an exothermic and spontaneous process (ΔG 0 = negative, ΔH 0 = −9.17 kJ mol−1 and ΔS 0 = + 0.03 J mol−1 K−1). The interaction of fish scale biosorbent with methyl orange dye was also explored with the assistance of a mechanistic pathway. The results indicate that the fish scale could be employed as an effective biosorbent for the removal of methyl orange dye from aqueous solution.

Author keywords- Adsorption mechanism; Biosorbent; Biowaste; Fish scale; Methyl orange

Quartile – Q1 | **Percentile** – 91st | **Impact Factor** – 5.2 | SDG :

MACHINE LEARNING-BASED PREDICTION OF MECHANICAL AND THERMAL PROPERTIES OF NICKEL/COBALT/FERROUS AND DRIED LEAVES FIBER-REINFORCED POLYMER HYBRID COMPOSITES

Mohit H.[a];Sanjay M.R.[b];Siengchin, Suchart[b];Kanaan, Belal[c];Ali, Vakkar[d];Alarifi, Ibrahim M.[d]El-Bagory, Tarek M. A. A.[d, e] *Polymer Composites,* 45(1), 489-506.

Dr. Mohit Hemanth Kumar
Assistant Professor,
Alliance University- Bangalore- INDIA

POLYMER COMPOSITES

Volume 45, Issue 1
Pages: 1-962
10 January 2024

Abstract

Dried leaves are the outstanding origin of cellulosic plant matter, and it is securing reputation as a renewable resource. Dried leaves fiber is suggested to possess the capability to substitute synthetic fibers in polymer laminates as a reinforcing component. The novelty of the present study reveals the effect of dried leaves fiber, cobalt, nickel, and ferrous reinforcement on the physical, mechanical, and thermal characteristics of epoxy, vinyl-ester, and polyester polymers using artificial neural network (ANN) technique. These composites were fabricated using ultrasonication bath-assisted wet layup method under ambient condition. The outcomes of this research exhibit that the dried leaves-cobalt fillers reinforced in all three polymers possess higher mechanical and thermal stability characteristics when compared with other samples. The reason may be assigned to producing novel hydroxyl functional groups and strong interfacial bonding of fillers within the matrix as observed from Fourier-transform infrared (FTIR) spectra and scanning electron microscope (SEM) micrographs, respectively. Moreover, as observed from the thermogravimetric analysis, the dried leaves-ferrous filler-reinforced polymer hybrid composites provided higher thermal stability. Statistical analysis was performed using the one-way ANOVA technique and found that outcomes were significant statistically under the confidence level of 95%. Hence, this investigation not only emphasize the significance of investigating new polymer composites but also highlight the benefits of engaging advanced modeling to forecast the material characteristics precisely. Highlights: Dried leaves and cobalt/nickel/ferrous are applied reinforcement to polymers. Composites fabricated using ultrasonication bath-assisted wet layup technique. LM Algorithm-based ANN selected for predicting the best composite. Higher mechanical and thermal stability with dried leaves-cobalt filler. One-way ANOVA proved statistically significant within the material properties.

Author keywords- fillers; hybrid composites; machine learning; natural fiber; polymer

Quartile – Q1 | **Percentile** – 91st | **Impact Factor** – 6.0 | SDG : 07 AFFORDABLE AND CLEAN ENERGY

SPIN PUMPING AND INVERSE SPIN HALL EFFECT IN MAGNETRON-SPUTTERED LARGE AREA MOS2/CO40FE40B20 BILAYERS

Mishra, Abhisek[a];Gupta, Pushpendra[a];Thiruvengadam V.[a, b]; Singh, Braj Bhusan[c];Bedanta, Subhankar[a, d] *Journal of Alloys and Compounds, 970,* 172076.

Dr. V. Thiruvengadam
Assistant Professor
Department of Sciences,
Alliance University- Bangalore- INDIA

Abstract

Transition metal dichalcogenides (TMDs) are novel class of quantum materials which show potentials for optoelectronics, valleytronics, opto-valleytronics etc. TMDs are also found to exhibit high spin orbit coupling and therefore, they have been extensively studied for spin to charge conversion or spin pumping phenomena. The robustness of MoS2 and its high availability in nature as molybdenite, have made it a suitable candidate for device applications. Among all the methods designed to fabricate large area TMDs on industrially compatible substrates, the sputtering technique offers advantage to prepare large area films. Here we report the observation of spin to charge conversion in large area magnetron-sputtered MoS2 by inverse spin Hall effect (ISHE) via microwave driven ferromagnetic resonance spectroscopy. In the continuous MoS2/CoFeB thin films, angle dependent measurements of ISHE have been performed to identify various galvanometric rectification effects. The spin diffusion length, real part of spin mixing conductance and the electromotive force (emf) arising due to inverse spin Hall effect are found to be 7.83 ± 0.57 nm, (1.43 ± 0.019) × 1019 m−2 and 4.38 ± 0.12 μV, respectively. These results show that the MoS2 films exhibit high spin orbit coupling for spin to charge conversion physics and their relevance in SOT based applications.

Author keywords- FMR; ISHE; Spin pumping; Thin films; Transition metal dichalcogenides

Quartile – Q1 | **Percentile** – 91st | **Impact Factor** – 6.0 | SDG : 07 AFFORDABLE AND CLEAN ENERGY

A NEW METAHEURISTIC-BASED MPPT CONTROLLER FOR PHOTOVOLTAIC SYSTEMS UNDER PARTIAL SHADING CONDITIONS AND COMPLEX PARTIAL SHADING CONDITIONS

Kishore, Dokala Janandra Krishna[a, b]; Mohamed, Mohd Rusllim[a] Sudhakar, Kumarasamy[c, d]; Peddakapu, Kurukuri[a] *Neural Computing and Applications,* 1-15.

Janandra Krishna Kishore Dokala
Assistant Professor,ACED ,
Alliance University- Bangalore- INDIA

Abstract

Solar photovoltaic energy is the potential energy in the universe for generating electricity and meeting the required load demand. However, on account of partial shading conditions, the difficult task in the PV system is to track global maxima instead of local maxima and maintain the uninterrupted power supply. To solve this problem, a new metaheuristic algorithm is introduced in this paper such as a heap-based optimizer (HBO). The proposed method is developed in MATLAB/Simulink software. The system is examined under distinct irradiation conditions and compared their performance with other methods. The simulation results reveal that the suggested HBO shows a reliable enhancement as compared to other studied methods with regard to tracking maximum power, convergence time, and settling time. The extracted power efficiencies are 99.85% for case 1, 99.96% for case 2, and 99.92% for case 3. It is found that HBO shows better enrichment than other studied methods.

Author keywords- HBO; Maximum peak power; MPSO; Partial shading conditions; Solar photovoltaic

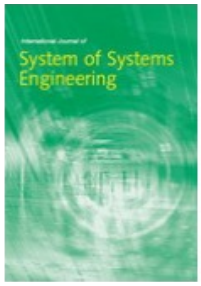
02 ZERO HUNGER

Quartile – Q4 | **Percentile** – 18th | **Impact Factor** – 1.2 | SDG :

PERFORMANCE ANALYSIS OF INTERNET OF THINGS - ENABLED WSN FOR AGRICULTURE

Kumawat, Bhawna, **Korah, Reeba,** *International Journal of System of Systems Engineering, 14*(1), 62-82.

Dr. Reeba Korah
Professor and Interim Dean,
Alliance College of Engineering and Design,
Alliance University- Bangalore- INDIA



Abstract

An increasing number of sensors and other intelligent devices are making the internet of things (IoT) a topic of interest for the simplicity with which information and communication may be obtained. Wireless sensor networks (WSNs) are crucial to the IoT due to their low power consumption and high data interchange capacity. Agricultural precision systems focus on developing effective, economical, and dependable monitoring and actuation technologies. To do this, it makes use of several different technologies, including wireless sensor networks, sensor devices, the IoT, and data analysis. The proposed study incorporates a wide range of technologies to prototype a precision agriculture system for medium and small agricultural plants, focusing on efficient energy management with self-charging capabilities and a low-cost strategy. A cloud-connected autonomous system with multiple sensor nodes is constructed. Smart data processing and analysis can improve forecasting, sensor management, and decision-making. The suggested system monitors soil moisture, humidity, and temperature using wireless sensor networks and the IoT.

Author keywords- energy management; internet of things; IoT; power consumption; precision agriculture; wireless sensor networks; WSNs

Quartile – Q3 | **Percentile** – 91st | **Impact Factor** – 0.74 | SDG :

A NOVEL HYBRID CRYPTOGRAPHIC APPROACH FOR SECURE COMMUNICATION

Arora, Gifty[a];Hirolikar, Deepali S.[b].Deore, Shailesh Shivaji[c].;Bajaj K.K.[d].; **Gupta, Praveen Kumar[e]**.;Jaleel, Uruj[e].;Vidya R. *International Journal of Intelligent Systems and Applications in Engineering, 12*(8s), 271-280.

Dr. Praveen Kumar Gupta
Professor, ACED ,
Alliance University- Bangalore- INDIA

Abstract

This paper introduces a novel hybrid cryptographic system designed to enhance the security and integrity of Device-to-Device (D2D) communication in wireless networks. The system combines Huffman coding and binary encryption to secure data transmission over open public channels. Huffman coding provides efficient block encryption, while binary encryption offers robust key management. The proposed algorithm is tested using Java programming, demonstrating its efficiency in maintaining the integrity of various data types with zero Root Mean Square Error (RMSE) in decryption. The research highlights the importance of secure communication in the modern digital age and offers a solution that addresses the key drawbacks of current communication methods, such as complex network design and high power requirements.

Author keywords- Binary Encryption; Data Transmission Integrity; Device-to-Device (D2D) Communication; Huffman Coding; Hybrid Cryptographic System; Public Channel Encryption; Root Mean Square Error (RMSE); Wireless Network Security

Quartile – Q3 | **Percentile** – 29th | **Impact Factor** – 0.74 | SDG : 08 DECENT WORK AND ECONOMIC GROWTH

A STUDY ON INDIVIDUAL AWARENESS AND PERCEPTION TOWARDS BLOCKCHAIN TECHNOLOGY IN INDIA

Ravichandra, Thangjam[a], Madaan, Vandana[b], Sharma, Anil[c], Deshmukh, Sachin[d], Agrawal, Raju[e], Gumber, Gunjan[f], Khan, Mohammad Ahmar[g] *International Journal of Intelligent Systems and Applications in Engineering, 12*(8s), 239-250.

Dr. Thangjam Ravichandra Singh
Associate Professor,
Alliance School of Business,
Alliance University, Bangalore, India.

Abstract

Blockchain is a decentralized database that records every transaction and digital occurrence. The parties who maintain the blockchain blocks share ownership of these transaction records, which are exchanged between parties and recorded in blocks. The parties who make up the network/system examine, confirm, and store each Block. Each block includes the specifics of a single transaction as well as the hash key from the preceding block. Blockchain serves as the foundation for Bitcoin and other forms of digital currency. Blockchains are very secure by design, and the technology guarantees error-free record keeping. Bitcoin is a decentralized digital money that is used for peer-to-peer transactions. In the Indian banking industry, electronic payments have achieved a significant breakthrough. They also continue to develop as fresh innovations are introduced to the current system. Paper-based transactions are gradually being replaced with electronic payments, saving time and money. More transparency has led to a rise in transaction volume, and the industry is showing good growth. The financial and banking industries have undergone a paradigm shift because of the entry of Bitcoin and other cryptocurrencies into these industries. Blockchain secures fundamental aspects of ownership, trust, and commerce and performs a disruptive intervention on the entire transaction management system. Exploring this technology constructively and critically in the context of India would open new perspectives on how it should be used. This paper will summarize the present level of blockchain adoption in India in addition to highlighting the opportunities and challenges in this field.

Author keywords- Bitcoin; Blockchain; Cryptocurrency; Digital Transaction; Encryption

Quartile – Q3 | **Percentile** – 29th | **Impact Factor** – 0.74 | SDG : 08 DECENT WORK AND ECONOMIC GROWTH

STUDY ON THE BENEFICIAL IMPACTS AND ETHICAL DIMENSIONS OF GENERATIVE AI IN SOFTWARE PRODUCT MANAGEMENT

Gupta, Suneet[a], Sharma, Pragalbh[b], Chaudhary, Shweta[c], Kumar, Vinod[d], Singh, Surinder Pal[e], Lourens, Melanie[f], Beri, Nimisha[g] *International Journal of Intelligent Systems and Applications in Engineering, 12*(8s), 251-264.

Dr. Suneet Gupta
Professor,
Alliance College of Engineering and Design,
Alliance University, Bangalore, India.

Abstract

The field of generative artificial intelligence (GAI) has advanced significantly in recent years, and its effects may be seen across the software product management industry. This comprehensive literature review draws on relevant studies published between 2016 and 2023 and demonstrates the possible uses, advantages, and restrictions of generative AI in this domain. The research demonstrates that technology aids in ideation, market research, consumer insights, spec writing, and product development. By automating tasks like code production and analysing user input, it may cut down on expensive and time-consuming software development. However, there are still concerns about the precision and safety of the technology, as well as ethical implications. Practical applications of generative AI have the potential to greatly enhance software product management processes, leading to more effective use of resources, higher quality product results, and enhanced user experiences.

Author keywords- AI Applications in Product Management; Applications of Generative AI; Ethical Considerations; Generative AI; Generative AI Limitations; Generative AI Tools; Product Management; Product Manager

Quartile – Q2 | **Percentile** – 74th | **Impact Factor** – 3.1 | SDG : 08 DECENT WORK AND ECONOMIC GROWTH

CHARACTERIZATION OF MUNICIPAL SOLID WASTE GENERATION AND SEASONAL CLASSIFICATION FOR VARIOUS SOCIO-DEMOGRAPHIC GROUPS IN GUWAHATI CITY

Singh, Tinka[a], [c],Naik, Abhipsa[b],Uppaluri, Ramagopal V. S. *Journal of Material Cycles and Waste Management,* 1-21.

Dr. Tinka Singh
Assistant Professor,
Alliance College of Engineering and Design,
Alliance University, Bangalore, India.

Abstract

Municipal solid waste management (MSWM) is a pressing environmental issue in rapidly urbanizing cities, including Guwahati, India. Finding sustainable solutions to handle the increasing waste generation while minimizing environmental impact is challenging. This article focuses on Guwahati as a model city and presents a survey-based quantification of municipal solid waste, considering seasonal variations and socio-demographic groups. The study utilizes statistical analysis to identify dominant waste constituents and their correlation with population, household characteristics, and income levels. The results depict that across all socioeconomic categories, an average of 0.201 kg of waste is generated per person daily. In addition, it is observed that higher income levels are associated with increased solid waste generation. For sub-areas A1 (middle income), A2 (high income), and A3 (low income), the respective per capita waste generation rates are 0.18 kg/capita/day, 0.23 kg/capita/day, and 0.17 kg/capita/day. These findings provide crucial insights for developing a sustainable solid waste management plan in Guwahati, aiding policymakers and waste management authorities in designing tailored strategies for waste collection, treatment, reuse, and disposal. By implementing targeted measures such as waste reduction campaigns and promoting recycling, the city can work towards effective waste management and sustainable development.

Author keywords- Characterization; Municipal solid waste (MSW); Principal component analysis (PCA); Socioeconomic groups; Waste management

Quartile – Scopus | **Percentile** – | **Impact Factor** – | SDG :

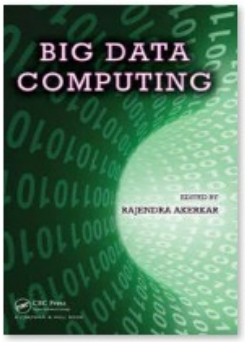
09 INDUSTRY, INNOVATION AND INFRASTRUCTURE

12 RESPONSIBLE CONSUMPTION AND PRODUCTION

RESEARCH ON VARIOUS PLASTIC ARTS IN INTERIOR DECORATION DESIGN BASED ON BIG DATA UNDER THE ENVIRONMENT OF SUSTAINABLE DEVELOPMENT

Menon, Satish, *In Big Data Computing* (pp. 298-310). CRC Press.

Dr. Satish Menon
Professor,
Alliance School of Business



Book

Big Data Computing

Edited By Rajendra Akerkar

Edition	1st Edition
First Published	2013

Abstract

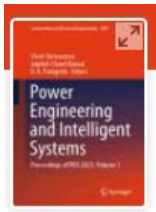
The goal of the research is to apply and develop computer technologies such as artificial intelligence, 3D modeling, and others in the context of contemporary big data technology. Bring the development of our nation's design industry from two-dimensional to three-dimensional; Although the development of the design field has more innovative elements, it also provides a new channel through the inheritance and development of our folk culture and art by combining the traditional folk plastic arts and cultural background of our nation and integrating national art into the current interior decoration design. To comprehend the benefits of big data technology application and the effects of passing down folk art, this paper will examine and study the integration of big data technology in indoor decoration and the modeling of folk art from the perspective of sustainable development. It is evident that the analysis and research in the environment of sustainable development are superior to the previous ordinary environment based on the overall impact of folk modeling art in interior decoration under sustainable development environment and ordinary environment, as well as its performance analysis and coupling under different technologies. Interior design is based on big data in the context of sustainable development. Data and design are combined with the aid of computer-assisted information technology integration, which disrupts the traditional design's ingrained thought pattern. The ideal effect of interior decoration design can be substantially attained through the combination of network communication technology, as well as the virtual scene of VR technology, which can realize three-dimensional dynamic images and allow people to observe all corners of the space in an all-around manner, helping them better understand the decorative design style.

Quartile – Q4 | **Percentile** – 17th | **Impact Factor** – | SDG : 08 DECENT WORK AND ECONOMIC GROWTH

A COMPREHENSIVE REVIEW OF SENSOR-BASED SMART PACKAGING TECHNOLOGY

Aniruddha Prabhu B.P.[a], Dani, Rakesh[b], Abdullah, Khairul Hafezad[c], Sharma, Tushar[d], Bhatt, Chandradeep[d], Chauhan, Rahul[d] *International Conference on Power Engineering and Intelligent Systems (PEIS)* (pp. 39-52). Singapore: Springer Nature Singapore.

Mr. Aniruddha Prabhu B P
Assistant Professor,
Alliance College of Engineering and Design,
Alliance University, Bangalore, India.



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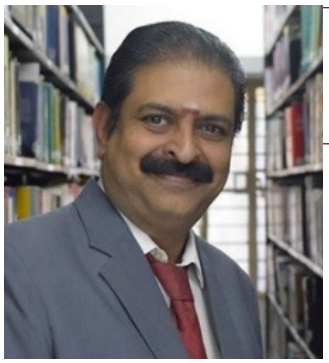
Power Engineering and Intelligent Systems
Proceedings of PEIS 2023, Volume 1

Abstract

Economic growth for good quality food contributed to packaging advancements. The topic of discussion in this research paper is intelligent packaging technologies, their applications in food packaging, as well as research and breakthroughs in the packaging industry. Food products with more intelligent and active packaging are both healthier and of higher quality. Active packaging makes use of additives to maintain or extend the quality and freshness of the food inside. During the entire process of storage and transportation, intelligent systems check packed foods for correct information. These advances satisfy the demand for foods that are healthier and can be stored for longer. It is anticipated that the market would expand as a result of the incorporation of active and intelligent packaging technologies.

Author keywords- Active packaging; Food; Intelligent packaging

Quartile – Q4 | **Percentile** – 19th | **Impact Factor** – 0.62 | SDG :



A STUDY ON THE 'FUTURISTIC ASPECT' OF TRANSFORMING THE ORGANISATIONS TOWARDS 'SUSTAINABLE PRACTISES'

Aravamudhan, Varadaraj, Sengodan, Ananth, Raj, M. Prasanna Mohan, *International Journal of Intelligent Enterprise, 11*(1), 85-102.

Dr. A Varadaraj
Professor, Alliance Ascent College,
Alliance University, Bangalore, India.

International Journal of Intelligent Enterprise
2024 Vol.11 No.1

Abstract

Sustainability is already becoming progressively crucial in modern organisations, and it could help businesses succeed now and in the future. Incorporating environmental, societal, and policy interests within company choices is a critical component of sustainable construction. Because sustainable development is a continual process instead of a single action, decision-makers should be able to assess the present status of an organisation. To do the same, we will show how businesses might shape the area of activity for something like the transition to sustainability. In addition, the researcher has developed a selection tool to estimate whether sustainability activities should indeed be carried out in compliance with the valuation strategic management function, that is, considering their financial ramifications. This is crucial to note, nevertheless, that sustainable performance can be achieved by such a single company (or, for just that point, the whole corporate sector) acting alone. If we are to satisfy today's modern demands while jeopardising future generations' infrastructure to accommodate their requirements, ecological sustainability is a widespread idea where just about every actor in the international economy (especially governments and companies) must agree.

Author keywords- organisation; transformation of organization

Quartile – Q3 | **Percentile** – 29th | **Impact Factor** – 0.74 | SDG : 12 RESPONSIBLE CONSUMPTION AND PRODUCTION

A BRIEF STUDY ON BENEFITS OF CLOUD COMPUTING FOR BUSINESS ENTERPRISES

Rajeyyagari, Sivaram[a];, Malik, Chirag[b];, Arora, Kapil[c], Reddy, B. Madhusudhan[d];, Alahmari, Saad Ali[e];, Marar, Sudheer S.[f];, Chahal, Deepak[g] *International Journal of Intelligent Systems and Applications in Engineering, 12*(5s), 207-212.

Dr. Kapil Arora
Professor,
Alliance School of Business,
Alliance University, Bangalore, India.

Abstract

Cloud computing has brought about a significant transformation in the way businesses function, presenting a wide array of advantages for enterprises regardless of their size. This technology, involving the storage and access of data and applications over the internet instead of on physical hardware, has become a fundamental element of contemporary business strategies. In this paper, we will delve into the various benefits that cloud computing offers to business enterprises.

Author keywords- business; Cloud computing; IT in-fracture; technology

12 RESPONSIBLE CONSUMPTION AND PRODUCTION

Quartile – Q2 | **Percentile** – 58th | **Impact Factor** – 1.3 | SDG :

NANOSTRUCTURE-BASED SMART FERTILIZERS AND THEIR INTERACTION WITH PLANTS

Omar, Rishabh Anand[a]; **Talreja, Neetu[b]**; Ashfaq, Mohammad[c]; Chauhan, Divya[d] In *Nanofertilizers for Sustainable Agroecosystems: Recent Advances and Future Trends* (pp. 399-430). Cham: Springer Nature Switzerland.

Dr. Neetu Talreja
Assistant Professor, Department of Sciences,
Alliance University, Bangalore-INDIA

Book | © 2024

Nanofertilizers for Sustainable Agroecosystems

Recent Advances and Future Trends

Abstract

The rapid growth of the population enhances the global food demand which creates pressure on the global food system and agriculture. Therefore, it is necessary to fulfill the requirement for food by improving crop production. Researchers significantly improved crop production by incorporating phytohormones and fertilizers (biological and chemical). Interestingly, there is a lot of reason for the use of chemical fertilizers that significantly improve the translocation ability, water uptake capacity, germination rate, and nutritional values, subsequently production of crops. However, continuous uses of chemical fertilizers decrease soil fertility because accumulation on the soil is one of the greatest challenges. In this aspect, nanostructure (NS)-based smart fertilizers might resolve issues associated with the fertilizers without any adverse effect. The use of NS-based smart fertilizers in agriculture can revolutionize crop production. This includes the synthesis of smart fertilizers with slow- or controlled-release of nutrients and enzymes, nanostructure-based smart fertilizers, and their benefits to the plants. This chapter provides information about the current and future status of global food demand, smart fertilizers, types of smart fertilizers, involvement of nanotechnology in the formulation of NS-based smart fertilizers, synthesis methods, their impact on agriculture, and the interaction of these fertilizers with plants.

Author keywords- Agriculture; Carbon; Controlled release; Micronutrients; Nanofertilizers; NMs

12 RESPONSIBLE CONSUMPTION AND PRODUCTION

Quartile – Q2 | **Percentile** – 63rd | **Impact Factor** – 2.7 | SDG :

CORRECTION: MICROSTRUCTURING OF COBALT (CO) THIN FILMS BY UV LASER IRRADIATION (APPLIED PHYSICS A, (2023), 129, 12, (864), 10.1007/S00339-023-07147-2)

Itapu, Srikanth, Borra, Vamsi[b];Selvendran S, Applied Physics A, 129(12), 864.

Dr. Srikanth Itapu

Acting Head of Department - Electronics and Communication Engineering,
Alliance College of Engineering and Design,
Alliance University, Bangalore, India.

Abstract

In this article the affiliation details for Author Selvendran S. were incorrectly given as 'School of Electronics Engineering (SENSE), Vellore Institute of Technology, Chennai-600127, India' but should have been 'Centre for Healthcare Advancement, Innovation and Research (CHAIR), School of Electronics Engineering (SENSE), Vellore Institute of Technology, Chennai-600127, India'. The original article has been corrected.

Quartile – Q2 | **Percentile** – 58th | **Impact Factor** – 3.0 | SDG :

PHOTOVOLTAIC FUZZY BASED MODELLING ON DEFINING ENERGY EFFICIENT SOLAR DEVICES IN INDUSTRY 4.0

Pavan Kumar T.V.V.[a], **Taranath N.L.**[b], Rahul R.[c], Chandra Shekara G.[c], Sapra, Pooja[d], Thandaiah Prabu R.[e], Metwally, Ahmed Sayed M.[f], Kalam M.A, *Optical and Quantum Electronics, 56*(1), 62.

Dr. Taranath N. L.
Associate Professor,
Alliance College of Engineering and Design,
Alliance University, Bangalore, India.

Abstract

The Internet of Things (IoT) is a phenomenon that connects all physical objects to one another and makes it possible for them to interact and collaborate via the web and other technologies. This phenomenon is also known as the internet of things. It is necessary for the devices to be self-sufficient, easily locateable, and unobtrusive to the human eye. A streamlined mathematical model that contains a variety of distinct laws serves as a metaphor for our whole body of information. This photovoltaic model represents our knowledge in its totality. This all-encompassing comprehension is built on top of a compilation of statutes, which serves as the framework. Depending on the goal of the user, it is possible that the rules will need to be altered in order to either maximize the benefits or minimize the amount of money spent on electricity. This will depend on how the rules are changed.

Author keywords- Energy efficient; Fuzzy; Industry 4.0; Solar devices

Quartile – Q1 | **Percentile** – 94th | **Impact Factor** – 8.0 | SDG :

FACILE FABRICATION OF ARECANUT PALM SHEATH BASED ROBUST HYDROPHOBIC CELLULOSE NANOPAPERS VIA SELF-ASSEMBLY OF ZNO NANOFLAKES AND ITS SHELF-LIFE PREDICTION FOR SUSTAINABLE PACKAGING APPLICATIONS

Poulose, Aiswarya[a];, Mathew, Ajith[a], Uthaman, Arya[b];, Lal, Hiran Mayookh[b], **Parameswaranpillai, Jyotishkumar[c]**, Mathiazhagan A.[d], Saheed, Mohame[d] Mohamedb, Grohens, Yves[e], Pasquini, Daniel[f], Gopakumar, Deepu A., George, Jinu Jacob, *International Journal of Biological Macromolecules,* 255, 128004.

Dr. Jyotishkumar Parameswaranpillai
Associate Professor,
Department of Sciences,
Alliance University, Bangalore-India.

Abstract

Cellulose nanofibers have been extracted from arecanut palm sheath fibers via mild oxalic acid hydrolysis coupled with steam explosion technique. Cellulose nanofibers with a diameter of 20.23 nm were obtained from arecanut palm sheath fibers. A series of robust hydrophobic cellulose nanopapers were fabricated by combining the synergistic effect of surface roughness induced by the successful deposition of zinc oxide (ZnO) nanoflakes and stearic acid modification via a simple and cost-effective method. In this work, agro-waste arecanut palm sheath was employed as a novel source for the extraction of cellulose nanofibers. 2 wt% of ZnO nanoflakes and 1 M concentration of stearic acid were used to fabricate mechanically robust hydrophobic cellulose nanopapers with a water contact angle (WCA) of 134°. During the deposition of zinc oxide nanoflakes on the CNP for inducing roughness surface surface, a hydrogen bonding interaction is formed between the hydroxyl groups of cellulose nanofibers and the zinc oxide nanoflakes. When this surface roughened CNP was dipped in stearic acid solution. The hydroxyl groups in zinc oxide nanoflakes undergoes esterification reaction with carboxyl groups in stearic acid solution forming an insoluble stearate layer and thus inducing hydrophobicity on CNP. The fabricated hydrophobic cellulose nanopaper displayed a tensile strength of 22.4 MPa and better UV blocking ability which is highly desirable for the sustainable packaging material in the current scenario. Furthermore, the service life of the pristine and modified cellulose nanopapers was predicted using the Arrhenius equation based on the tensile properties obtained during the accelerated ageing studies. The outcome of this study would be to broaden the potential applications of hydrophobic and mechanically robust cellulose nanopapers in sustainable packaging applications.

Author keywords- Cellulose nanofibers; Cellulose nanopaper; Hydrophobicity; Service life prediction; Sustainable packaging

Quartile – Q2 | **Percentile** – 54th | **Impact Factor** – 2.13 | SDG :

EXPLORING THE POTENTIAL OF BORON CARBIDE IN ENHANCING ENERGY OUTPUT OF SOLID FUELS FOR SFRJ AND HYBRID ROCKET PROPULSION SYSTEMS

Nithya Mahottamananda, Sri[a], Pal, Yash[b], ***Alay Hashim, Syed***[c]; Dinesh, Mengu[d];, Trache, Djalal", *Propellants, Explosives, Pyrotechnics, 49*(1), e202300173.

Dr. Syed Alay Hashim
Associate Professor,
Alliance College of Engineering and Design,
Alliance University, Bangalore - India.

Volume 49, Issue 3
March 2024

Abstract

Boron carbide (B4C) is known for its exceptional hardness and high energy release during combustion, despite its ignition processes presents considerable challenges. This study focuses on exploring the potential of B4C as an enhancer for the energy output of solid fuels designed for hybrid rocket engines (HRE) or solid fuel ramjets (SFRJ). This study presents the successful incorporation of B4C and fluorinated PTFE (polytetrafluoroethylene) polymer into the HTPB (hydroxyl-terminated polybutadiene) fuel matrix, aiming to enhance the ignition, combustion, and regression rate performance of solid fuel. Five different fuel compositions were formulated with varying mass ratios of B4C, and their post-combustion products were characterized using XRD (X-ray diffraction), HRSEM (high-resolution scanning electron microscopy), and EDS (energy-dispersive X-ray spectroscopy) techniques. The HRSEM-EDS analysis confirmed a uniform dispersion of B4C/PTFE additives throughout the HTPB matrix. To evaluate the combustion behavior of the B4C/PTFE additives, an opposite flow burner was employed with a gaseous oxygen oxidizer. The F4 fuel sample, loaded with B4C/PTFE (10/20), exhibited an average regression rate increase ranging from 0.61 to 1.15 mm/s when evaluated within the oxidizer flux range of 36–77 kg/m2s, in comparison to that of pure HTPB (0.4 mm/s to 0.76 mm/s). The ignition delay time was investigated as a key parameter affected by the B4C concentration in the solid fuel formulations. Furthermore, a comprehensive combustion mechanism is proposed and discussed for B4C/PTFE loaded in the HTPB matrix under an oxygen environment.

Quartile – Q2 | **Percentile** – 54th | **Impact Factor** – 2.13 | SDG :

CARBON NANOTUBES AND FULLERENES: PROMISING MATERIALS FOR BIOSENSOR TECHNOLOGY

Sharma, Nidhi[a], **Talreja, Neetu**[b], Chauhan, Divya[c], Ashfaq, Mohammad, In *Tailored Functional Materials for Clean and Sustainable Development* (pp. 3-20). Apple Academic Press.

Dr. Neetu Talreja
Assistant Professor, Department of Sciences,
Alliance University, Bangalore-INDIA

Abstract

Biosensor technology is one of the leading technologies to detect environmental pollutants, drug molecules, proteins, enzymes, and diseases. Conventional technology is used to detect diseases with high precision. However, these technologies are ineffective in early-stage detection of diseases. Therefore, newer biosensor technology is required for early detection of various diseases, including cancer. With the help of nanomaterials/nanotechnology (NMs) and materials engineering, researchers continue to focus on developing novel biosensor technologies. Carbon-based materials like carbon nanotubes (CNTs) and fullerenes are the most promising materials for developing biosensors. The extraordinary characteristics of the CNTs and fullerenes, such as high surface area, high electrical and mechanical properties, and easy functionalization, make them an appropriate candidate for the development of biosensors. In this chapter, our focus is mainly on synthesizing CNTs and fullerenes, surface functionalization, and its application in cancer and microorganism detection.

Author keywords- iosensor; cancer; CNTs; fullerenes; infectious diseases

Quartile – Q3 | **Percentile** – 34th | **Impact Factor** – 1.0 | SDG : 07 AFFORDABLE AND CLEAN ENERGY | 09 INDUSTRY, INNOVATION AND INFRASTRUCTURE

ENSEMBLE DIFFERENTIAL EVOLUTION WITH SIMULATION-BASED HYBRIDIZATION AND SELF-ADAPTATION FOR INVENTORY MANAGEMENT UNDER UNCERTAINTY

Maitra, Sarit, Mishra, Vivek, Kundu, Sukanya, Das, Maitreyee, In Asia Simulation Conference (pp. 232-246). Singapore: Springer Nature Singapore.

Dr. Sarit Maitra
Professor,
Alliance School of Business,
Alliance University, Bangalore, India.

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Methods and Applications for Modeling and Simulation of Complex Systems
22nd Asia Simulation Conference, AsiaSim 2023, Langkawi, Malaysia, October 25–26, 2023, Proceedings, Part II

Abstract

This study proposes an Ensemble Differential Evolution with Simulation-Based Hybridization and Self-Adaptation (EDESH-SA) approach for inventory management (IM) under uncertainty. In this study, DE with multiple runs is combined with a simulation-based hybridization method that includes a self-adaptive mechanism that dynamically alters mutation and crossover rates based on the success or failure of each iteration. Due to its adaptability, the algorithm is able to handle the complexity and uncertainty present in IM. Utilizing Monte Carlo Simulation (MCS), the continuous review (CR) inventory strategy is examined while accounting for stochasticity and various demand scenarios. This simulation-based approach enables a realistic assessment of the proposed algorithm's applicability in resolving the challenges faced by IM in practical settings. The empirical findings demonstrate the potential of the proposed method to improve the financial performance of IM and optimize large search spaces. The study makes use of performance testing with the Ackley function and Sensitivity Analysis with Perturbations to investigate how changes in variables affect the objective value. This analysis provides valuable insights into the behavior and robustness of the algorithm.

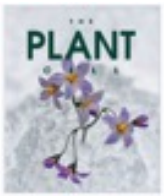
Author keywords- Ackley Function; Differential Evolution; Ensemble Optimization; Evolutionary Algorithm; Inventory Management; Self-Adaptive

Quartile – Q1 | **Percentile** – 94th | **Impact Factor** – 7.3 | SDG :

BIOTECHNOLOGY AND URBAN AGRICULTURE: A PARTNERSHIP FOR THE FUTURE SUSTAINABILITY

Aggarwal, Bharti[a], Rajora, Nitika[a], Raturi, Gaurav[a], Dhar, Hena[b], Kadam, Swapnil B.[c];, Mundada, Pankaj S.[d], **Shivaraj S.M.**[a, g], Varshney, Vishal[e], Deshmukh, Rupesh[f], Barvkar, Vitthal T.[c], Salvi, Prafull[a], Sonah, Humira, *Plant Science*, 111903.

Dr. Shivaraj S.M.
Assistant Professor,
Alliance College of Engineering and Design,
Alliance University, Bangalore, India.



Volume 9, Issue 11
November 1997

JOURNAL ARTICLE

Fundamental Concepts in the Embryogenesis of Dicotyledons: A Morphological Interpretation of Embryo Mutants.

D. R. Kaplan, T. J. Cooke

The Plant Cell, Volume 9, Issue 11, November 1997, Pages 1903–1919,
https://doi.org/10.1105/tpc.9.11.1903

Abstract

The global population is growing rapidly, and with it, the demand for food. In the coming decades, more and more people will be living in urban areas, where land for traditional agriculture is scarce. Urban agriculture can help to meet this growing demand for food in a sustainable way. Urban agriculture is the practice of growing food in urban areas. It can be done on rooftops, balconies, vacant lots, and even in alleyways. Urban agriculture can produce a variety of crops, including fruits, vegetables, and herbs. It can also help to improve air quality, reduce stormwater runoff, and create jobs. Biotechnology can be used to improve the efficiency and sustainability of urban agriculture. Biotechnological tools can be used to develop crops that are resistant to pests and diseases, that are more tolerant of drought and heat, and that have higher yields. Biotechnology can also be used to improve the nutritional value of crops. This review article discusses the need for and importance of urban agriculture, biotechnology, and genome editing in meeting the growing demand for food in urban areas. It also discusses the potential of biotechnology to improve the sustainability of urban agriculture.

Author keywords- Biofortification; Biotechnology; Genome Editing; Plant Morphology; Sustainable agriculture; Urban agriculture

Quartile – Q1 | **Percentile** – 98th | **Impact Factor** – 7.3 | SDG :

INFLUENCE OF CARBON NANOTUBES ON STABILITY AND VIBRATION CHARACTERISTICS OF PLATES AND PANELS IN THERMAL ENVIRONMENT: A REVIEW

Chakraborty, S., Singh, V., Dey, T., Kumar, R, *Archives of Computational Methods in Engineering*, 31(1), 147-178.

Dr.Sumeet Chakraborthy
Assistant Professor,
Alliance College of Engineering and Design,
Alliance University, Bangalore, India.

Abstract

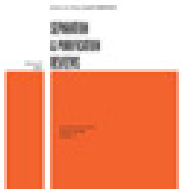
Laminated composites became a cutting-edge material in the twentieth century due to their extensive use in engineering, owing to their high strength and lightweight characteristics. Composites are manufactured with polymers and reinforced with fibers such as glass fiber, carbon fiber, Kevlar fiber, and many more. Delamination has been found to be a significant problem in composite materials, and it has the potential to cause catastrophic failure through brittle failure. To delay such events in polymer composites, carbon-based nanoparticles have been widely added to reinforce the polymer, resulting in an improvement in the strength of composites. After 1991, the development of carbon nanotubes (CNTs) revolutionized the plastic composite industry due to its versatile characteristics. CNT, whose strength is 100 times higher than that of steel, can reinforce polymers and enhance the mechanical strength of composites. The present study focuses on reviewing the published literature to provide an insight view for readers to predict the stability and vibration characteristics of CNT-reinforced composite panels. It also discusses the influence of temperature rise, functional gradation, volume fraction, and agglomeration effect in case of randomly distributed CNTs in composite plates/ panels. The research gaps are identified at the end that may help readers understand the voids in this field of research.

Quartile – Q1 | **Percentile** – 93rd | **Impact Factor** – 8.6 | SDG :

DEVELOPMENT AND CURRENT TRENDS ON ION EXCHANGE MATERIALS

Vijayan P, Poornima[a], Chithra P.G[a], Krishna S V, Anjanaa, Ansar E.Bb, **Parameswaranpillai, Jyotishkumar**, *Separation & Purification Reviews, 53*(1), 40-60.

Dr. Jyotishkumar Parameswaranpillai
Associate Professor,
Department of Sciences,
Alliance University, Bangalore-India.



Abstract

Ion-exchange materials are ubiquitous in the separation and purification industry. This historically important preparative technique is still flourishing with numerous modifications and possibilities so as to fulfill the needs of modern society in desalination, clean energy, bone tissue engineering, synthetic adhesives, sensors and actuators. The efficacy of ion exchangers has already been proven and this review analyzes the developments and latest trends in various kinds of ion-exchange materials. The review starts with a discussion on fundamental concepts of ion exchangers and their classifications. It further develops with the remarkable contributions and combined efforts of researchers made to date. This review primarily focuses on major research on composite and nanocomposite ion exchangers, which are believed to be the future ion exchangers in separation to next-generation clean energy technologies. Later, it concludes with the scope and challenges of ion-exchanges for sustainable development.

Author keywords- composite and nanocomposite ion exchangers; inorganic-organic hybrid; Ion exchange materials

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Alliance University, Chikkahagade Cross; PO: Anekal;
Dist. Bengaluru; Karnataka, India; Pin Code: 562106