



Centurion
UNIVERSITY
*Shaping Lives...
Empowering Communities...*

SDG 7 | **Research on Clean and Affordable Energy**

SDG 7 **REPORT 2021**



THE CONTEXT

Centurion University conducts research in the area of “Affordable and Clean Energy” through its various schools and research centres. Faculty and students are engaged in and publish many research articles striving towards the standalone topic and others which are cross disciplinary. the University's production units, industry sponsored action learning laboratories and community engagement provide an excellent basis for research in this area.

In the year 2020, there were 24 research papers published in journals of national and international repute which increased to 27 in the year 2021. There were 18 published papers in the year 2022 excluding the papers under review and in-process. The following section serves as a link to last three-year research endeavour in SDG 7.

Jaggannath Padhi

Director,
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Research Articles

1. Understanding the impact of Gd³⁺ substitutions on the enhancement of dielectric and electrical behaviour of lead-free Ba_{0.85}Ca_{0.15}Zr_{0.1}Ti_{0.9}O₃ ceramics
2. Agronomic responses and molecular breeding approaches towards elevated ozone in rice
3. The recently emerged BA.4 and BA.5 lineages of Omicron and their global health concerns amid the ongoing wave of COVID-19 pandemic – Correspondence
4. Unexpected sudden rise of human monkeypox cases in multiple non-endemic countries amid COVID-19 pandemic and salient counteracting strategies: Another potential global threat?
5. Computational studies on potential new anti-Covid-19 agents with a multi-target mode of action
6. 1,2-Difunctionalizations of alkynes entailing concomitant C–C and C–N bond-forming carboamination reactions
7. Breeding More Crops in Less Time: A Perspective on Speed Breeding
8. Trends and Variability of Rainfall in Tripura State of India in 1986–2019 and Key Drivers
9. Modeling and forecasting metrological factors using BATS and TBATS models for the Keonjhar district of Orissa
10. Diversity of flowering crops (Bee flora) in MS Swaminathan School of Agriculture Paralakhemundi, Odisha
11. Plasma processing of Fe-P/rGO powder for making robust wear resistance and anticorrosion coating over mild steel
12. An Optimized PI Controller-Based SEPIC Converter for Microgrid-Interactive Hybrid Renewable Power Sources
13. Biomass carbon and soil nutrient status in urban green sites at foothills of eastern Himalayas: Implication for carbon management
14. Implication of A4 modular symmetry on neutrino mass and mixing and leptogenesis with linear seesaw
15. Scalar dark matter and radiative neutrino mass in a U(1)B-L model
16. High Dimensional Model Approach for Stochastic Response of Multi-Span Box-girder Bridge
17. New Movement Strategy of Cuckoo Search for achieving higher profit rate in milling operation
18. Omicron (B.1.1.529 variant of SARS-CoV-2); an emerging threat: current global scenario
19. Cardiac signal acquisition and processing on Android smart phones
20. Molecular Interaction of Novel Polymer Dextran with 1(N) Sodium Hydroxide Solution: Ultrasonic Studies
21. Characterization of Pure Rutile Titania Nanoparticle Prepared by Feasible Method for Coatings and Visible Light-Driven Dye Removal Application
22. Harmonic Profile Enhancement of Grid Connected Fuel Cell through Cascaded H-Bridge Multi-Level Inverter and Improved Squirrel Search Optimization Technique. Energies
23. WRAPPER-Based Metaheuristic Optimization Algorithms for Android Malware Detection: A Correlative Analysis of Firefly, BAT & WHALE Optimization
24. In silico studies on phytochemicals to combat the emerging COVID-19 infection

25. Repurposing benzimidazole and benzothiazole derivatives as potential inhibitors of SARS-CoV-2: DFT, QSAR, molecular docking, molecular dynamics simulation, and in-silico pharmacokinetic and toxicity studies
26. The Consecutive Hits of COVID-19 in India - The Mystery of Plummeting Cases and Current Scenario
27. Transition Metal-Catalyzed Carboamination of Alkenes and Allenes: Recent Progress
28. Metal-Free Intramolecular Hydroalkoxylation of Alkyne: Recent Advances
29. Rice husk and Rice straw-based materials for toxic metals and dyes removal: a comprehensive and critical review
30. Quality Assessment of Groundwater in the Western Parts of Chhattisgarh (Rajnandgaon District), India
31. Flow and Heat Transfer Analysis of H₂O-Al₂O₃ Nanofluid Over A Stretching Surface with Electrified Nanoparticles and Viscous Dissipation
32. Electrochemical Mass Transfer in Bubble Columns with Conical Entry in the Presence of Displaced Devices
33. Experimental Investigation of EDM Process Parameters by Using Pongamia Pinnata Oil blends as Dielectric Medium
34. Genome Editing Strategies towards Enhancement of Rice Disease Resistance
35. Next generation sequencing technologies towards exploration of medicinal plants
36. Medicinal uses of few edible tuber crops by “Dongria Kandha” tribes of Kandhamal district of Odisha, India
37. Potential natural polymer-based nanofibres for the development of facemasks in countering viral outbreak
38. Fire behavior of 3D printed polymeric composites
39. Assessment of Energy Budgeting and Its Indicator for Sustainable Nutrient and Weed Management in a Rice-Maize-Green Gram Cropping System.
40. Nutritional evaluation of protein isolate from neem seed cake in Labeo rohita (Hamilton, 1822) fingerlings concomitant with oil extraction processing industry
41. Consequences and Mitigation Strategies of Abiotic Stresses in Wheat (*Triticum aestivum* L.) under the Changing Climate
42. Selenium Biofortification: Roles, Mechanisms, Responses and Pro-spects
43. Zeolites Enhance Soil Health, Crop Productivity and Environmental Safety
44. Effect of Particle Size on Properties of Industrial and Agro Waste-Reinforced Aluminum-Matrix Composite
45. Synthesis, characterization of Uranyl(VI), Th(IV), Zr(IV) mixed-ligand complexes with S-methyl-2-(4-methoxybenzylidene) dithiocarbamate and N-donor co-ligand, and their evaluation as antimicrobial agent
46. Synthesis and Spectral Characterizations of Nano-Sized Lithium Niobate (LiNbO₃) Ceramic
47. Kinetics of esterification of propionic acid and cyclohexanol
48. Antibacterial and Photocatalytic Properties of Wet Chemically Fabricated CuS/Graphene Nanocomposite
49. De-Inking of ONP Paper by using Different Surfactants: In Dissolved Air Flotation Process
50. Physico-mechanical and thermal Performances of Palm Leaf Fiber Reinforced Epoxy Composites Filled with Pulverized Fuel Ash
51. Prediction of Ferromagnetism in Zn_{0.99}Cu_{0.01}O nanorods

52. A novel chemical approach towards CdS Nanoparticles and Study of its Photocatalytic Activity
53. A novel chemical approach towards CdS Nanoparticles and its graphene composite and Study of its Photocatalytic Activity
54. ZnO Nanosheets Exhibiting High UV Blocking Efficiency for Effective Application in Sunscreen
55. Analysis of Different Dye Removal Techniques Applicable for Waste Water Purification
56. Experimental work on cold starting emission of CI engine using waste heat energy.
57. Development of a Solar Operated Blower for Forging Operation: An Initiative for Sustainable Livelihood of Rural Area
58. Effect of Pouring Temperature on Mechanical Properties of Semisolid Cast A319 Aluminum Alloy
59. A Novel IIoT Based ERP-PLM System for MSME of Indian Market
60. Design of a Metamaterial Absorber
61. A Hand Written Digit Recognition Based Learning Android Application
62. India's Evolving Structure: Miles to go before 2025
63. Performance Comparison of PCA and LDA with Linear Regression and Random Forest for IRIS Flower Classification
64. Efficacy of Solar Powered Water Pumps for Rural Farmers in Odisha; India
65. Encephalon Disease Detection and Classification Using Discrete Orthonormal S-Transform and Sine Cosine Algorithm Based Deep Convolutional Network
66. Wavelet Transform and WCA Based Deep Convolutional Network for Brain Tumor Detection and Classification from Magnetic Resonance Images
67. Epliptic Seizure Detection and Classification Using Cumulative Sum Average filter TT-Transform and Harmony Search Algorithm Based LLRBFN model
68. Investigation of Structural, Optical and Antibacterial Activity of ZnS Nanoparticles
69. Design of a Rectangular Microstrip Patch Antenna Using Resonant Circuit Approach

