



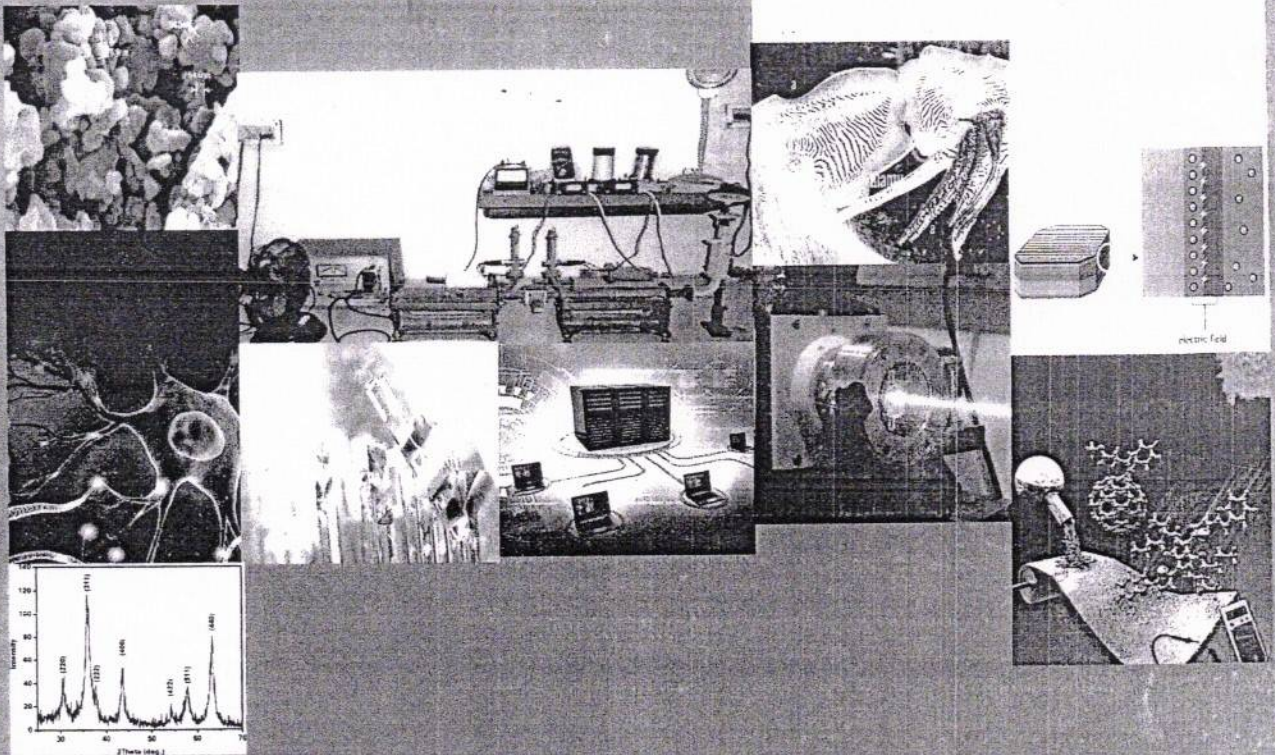
**S. S. P. Mandal's
Bhagwan Mahavidyalaya
(Arts, Commerce and Science) Ashti
Tal- Ashti, Dist- Beed, 414203, Maharashtra**



CRITERION- III: RESEARCH, INNOVATIONS AND EXTENSION

3.3.2 Number of books and chapters in edited volumes/books published and papers published in national/ international conference proceedings per teacher.

2021-22



Innovative Research in Science and Technology

Editor: Dr. C. M. Kale



RUSHI PUBLICATION

National Publisher

Regd. No.: 1641500310731143

E-mail: rushipublication27@gmail.com

Dr. Mrs. Surekha S. Lakkas

M.A., B.Ed., M. Phill., Ph.D.

PUBLISHER

B-115, Gajanan Colony, Gharkheda
Aurangabad. (M. S.). INDIA-431 005

Ref. No. RP/2022/ 40

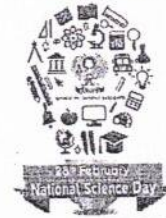
☎: +91 9975080017

Date: 28 Feb. 2022



Innovative Research in Science and Technology

An edited book by Rushi Publication
(A National Publisher)
ISBN No. 978-81-951034-5-4



Letter of Gratitude



Dr. R. B. Kavade
Department of Physics,
Bhagwan Arts, Commerce and Science Mahavidyalaya,
Ashti, Dist. Beed, (M.S.)-India

Sub: Letter of appreciation regarding your contribution as a reviewer.

Dear Sir,

With reference to the subject cited above, I kindly state to you that a valuable book in the faculty of science entitled, "Innovative Research in Science and Technology" bearing ISBN No. 978-81-951034-5-4; reviewed by you. The book is published on 28 Feb. 2022 on the occasion of National Science Day. So, I am thankful to accept my invitation and play the role of a reviewer.

So, I express my sincere gratitude for your invaluable contribution to this academic enterprise.

Thanks with warm regards

Surekha S. Lakkas
Dr. Surekha S. Lakkas
PUBLISHER
RUSHI PUBLICATION
Aurangabad (M.S.)-INDIA-431005

Innovative Research in
Science and Technology
 An Edited Book (ISBN: 978-81-951034-5-4)

INDEX

Sr. No.	Title of Chapter	Page Nos.
1.	Modulation of Lactic acid and Vitamin-C Productivity by <i>Saccharomyces Cerevisiae</i> Fermentation on Leafy Whey Broth Dr. Rajesh K. Jadhav	01-07
2.	Effect of Actinomycin and 5-fluorouracil on Acid Phosphatase activity of gill, gonad, digestive gland, and foot tissues of freshwater bivalve, <i>Lamellidens Marginalis</i> (Lamarck) Dr. P. A. Bhosale	08-12
3.	Assessment of Water Quality and Biological Contamination in Drinking Water of Jafraabad city, Dist. Jalna Pradip J. Misal	13-16
4.	Histopathological Observations on the Intestinal Lesions induced by a Ptychobothriidan Tapeworm <i>Senga shindei</i> sp.nov. (Dollfus 1934) in Spiny eel <i>Mastacembelus armatus</i> (Lecepede, 1800) Dr. Sushil Shahaji Jawale	17-19
5.	Floral and Faunal diversity surrounding to the freshwater snail <i>Lymnaea acuminata</i> from Nalganga River at Malkapur Tehsil. (M.S.) Dr. K. R. Nagare	20-24
6.	Gross Anatomy of the Central Nervous System of Freshwater Crab <i>Barytelphusa Cunicularis</i> : Ganglia and their Nerves Dr. Usha D. Sherkhane	25-29
7.	Data Analysis of Existing Implemented Supervisory Control and Data Acquisition (SCADA) Water Distribution Projects Binnaser Aziz Abdullah	30-34
8.	Analysis of Characteristic Ranking and Characteristic Subset Selection Algorithm for Epileptic Seizure Prediction Dr. Mukta Dhopeswarkar	35-38
9.	Recognition for Emotion Intensity Detection Mr. Pratik S. Jaiswal	39-42
10.	<i>Citrus limetta</i> Peel Aqueous Extract Catalyzed an Efficient Synthesis of 3, 4-dihydropyrimidin-2(1H)-ones Jaysing Mahavirsing Dinore	43-46
11.	Ternary Complex Formation Equilibria of Tetradentate Schiff base Ligand with Cu(II) and Dipeptides Dr. Vinod. A. Shelke	47-51
12.	NMPyTs: An Efficient and Green Catalyst for the Synthesis of bis(pyrazol-5-ol)s Derivatives Under Solvent Free Condition Amol. V. Sapkal	52-55
13.	MSG is an Efficient Catalyst for the Synthesis Thiazolidine-4-one Derivatives of Isoniazide Manoj P. Plave	56-60
14.	Investigation of Dielectric Behaviour of Allylamine (AA) and 2-Methoxy Ethanol (2-ME) with their Binary Mixtures Dr. R. B. Bhise	61-66
15.	Ultrasonic Investigation of <i>Officinale Zingiber</i> with ZnCl ₂ as a Function of Concentration and Temperature Dr. Pallavi Nalle	67-71

16.	Optical Studies of Cobalt Ferrite Thin Film Prepared by SPD Technique Dr. M. K. Babrekar	72-74
17.	Investigation of Physical and Dielectric Properties of Indium Substituted Yttrium Iron Garnet Dr. R. G. Vidhate	75-77
18.	Renewable Energy Sources and its Applications Dr. R. B. Kavade	78-81
19.	A Review on Transistor Technology and its Applications Dr. Sayed Mujeeb	82-84
20.	Role of Synthesis Method in the Preparation of Magnetic Oxides V. V. Gaikwad	85-87
21.	Thermal Study of Ferritization Temperature of Nickel-Zinc Ferrites: STA (TG/DTG/DTA) Studies Dr. N. D. Chaudhari	88-92
22.	Initial Permeability Studies of Copper Substituted Nickel Ferrite Dr. J. M. Bhandari	93-96
23.	Mini-Review: Importance of Ferrite Materials for High-Frequency Applications Dr. M. S. Patil	97-100
24.	Mini-review: Endeavour Applications of the Biomedical Nanoparticles and their Technological Context Dr. A. P. Keche	101-105
25.	Study of Ferrite Preparation Experimental Techniques Dr. Shaikh Asif Karim	106-108
26.	Effect of LASER Irradiation on Soybean Seeds Dr. R. R. Mistry	109-112
27.	Major Advances in Synthesis and Applications of Spinel ferrite Nanoparticles Ramesh. T. Ubale	113-116
28.	Sol-gel Synthesis and Liquid Nitrogen Assisted Immediate Quenching Effect on the Morphological, Electrical Properties of Copper Ferrite Nanoparticles Dr. Vishnu. K. Surase	117-120
29.	Electrical Properties of Mn ⁴⁺ ions Doped in Ni-Ferrite Dr. C. M. Kale	121-123
30.	Role of Nanoparticles and Nano-devices in Cancer Drug Delivery Kiran H. Katke	124-127
31.	Nanomaterials: A Brief Study Quadri F. B.	128-134
32.	Chalcopyrite Thin Film Structural and Optical Characteristics for Solar Cells Dr. Surekha B. Jaiswal	135-137
33.	Variability of Active Galactic Nuclei B. T. Tate	138-140
34.	Synthesis and Identification of (Pb _{1-x} La _x) (Zr _{1-y} Ti _y) _{1-0.25x} O ₃ (PLZT) System. Dr. Vijendra A. Chaudhari	141-143
35.	Dissociation Energy of Ground State of GaCl Molecule Dr. Suchita Deshmukh	144-147
36.	Novel Application of Nanotechnology for Detecting the Effect of Pollution Dr. Sangita Shinde	148-151
37.	Characterization of Zeolite ZSM-5 Dr. V. P. Deshpande	152-155



Renewable Energy Sources and its Applications

Dr. R. B. Kavade

Department of Physics, Bhagwan Arts, Commerce and Science Mahavidyalaya, Ashti, Dist. Bee

Email: kavade.ramdas@gmail.com

ABSTRACT

Energy is that the basic requirement for human life. Actually agriculture, industry, transport communication and every one other economic activity consume an outsized amount of energy. Over development of a nation is judged from the quantity of energy it produces and consumes in reference to size & population. Most of the world's energy sources are derived from conventional sources-fossil fuels like coal, oil, and natural gases. These fuels are often termed non-renewable energy sources. The available quantities of those fuels are extremely large but finite then within the future renewable energy sources should be used. Renewable energy sources also called non-conventional energy are sources that continuously replenished by natural processes. for instance, solar power, wind energy, bio-energy fuels, hydropower etc., are a number of the samples of renewable energy sources. A renewable energy system converts the energy found in sunlight, wind, falling-water, sea waves, geothermal heat, or biomass into a form, we'll use like heat or electricity. Most of the renewable energy comes either directly or indirectly from sun and wind and should never be exhausted, and thus they're called renewable.

Keywords: *Renewable Energy, Solar, Wind, Hydro, Bio-power.*

1. INTRODUCTION

Present energy consumption patterns are unsustainable leading to a large scale destruction of environment and natural capital resources of earth. At present most of the energy needs are met through fossil fuels and oil. Therefore developing countries are dependent on oil imports for their energy needs. The Electricity supply in rural areas of India is abysmal. Though the government succeeded in providing electricity to large groups of Indian villages through Grid based electricity, the availability has its limitations. Indian villages suffer with rampant power cuts and illegal power usages. At present there are about two billion people without access to electricity. Therefore there is an urgent need all over world to tap renewable energy sources.

2. RESULTS AND DISCUSSION

i) Solar Energy

Solar energy is that the most readily available and free source of energy. Solar energy is often utilized through two different routes, as solar thermal route and solar electric (solar photovoltaic) routes. Solar thermal route uses the sun's heat to supply predicament or air, cooking, food, drying materials etc. Solar photovoltaic uses sun's heat to supply electricity for lighting home and building, running motors, pumps, electric appliances.

Solar Thermal Energy Application: In solar thermal route, solar power is often converted into thermal energy with the assistance of solar collectors and receivers referred to as solar thermal devices. The Solar-Thermal devices are often classified into three categories: Low-Grade Heating Devices-up to the temperature of 100°C. Medium-Grade Heating Devices-up to the temperature of 100°-300°C High-Grade Heating Devices -above temperature of 300°C. Low-grade solar thermal devices are utilized in solar water heaters, air-heaters, solar cookers and solar dryers for domestic and industrial applications. Most solar water heating systems have two main parts: a solar collector and a tank. The most common collector is named a flat-plate collector. It consists of a skinny, rectangular box with a transparent cover that faces the sun, mounted on the roof of building or home. Small tubes run through the box and carry the fluid-either water or other fluid, like antifreeze solution - to be heated. The tubes are attached to an absorber plate, which is painted