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TABLE OF CONTENT

Sr. No	Name of the teacher	Title of the paper published	UGC Care List Journals/Non-UGC Care List Journals/No. of Citations	ISSN No.
1.	Prashant Thakur	Role of Green Finance in Environmental Protection	JMIR, Yes	E -1936-6264
2.	Poonam Chandel	Gender Disparities in Politics : A Case Study of Himachal Pradesh	Hill Quest: Multidisciplinary NATIONAL journal, yes	2454-3144
3	Dr. Bavita Thakur	S R Harnot : Prakriti Chetna ke Kavi	Himprasth	2454-972X
4	Dr. Arun Sharma	Swasth Khushhal aur Safal Vrid Jeevan Mein Manovigyan ki Bhumika	Aksharvarta International Research journal	2349-7521
5	Dr. Rajinder Singh	A Study on Rural Tourism in Himachal Pradesh : Impact on State Economy, Culture and Biosphere	IJCRT, International	2320-2382
6	Dr. Rajinder Singh	A study on potency challenges and future....	IJCRT International	2320-2382
7	Dr. Kirti Singha	Comparative Study	Scopus	0928-0707

		Electrical and Dielectric Properties of Ho/Y ions Modified Ba -Co-Sr Z type Nano Hexaferrites	indexed, yes CITATION S: 2 International	
8	Dr. Kirti Singha	Effect of Ni And Dy Co-Doping on the Structural, Electrical and Dielectric Properties of Strontium Y-Type Hexaferrites	Scopus indexed, yes CITATION S: 3 International	0928-0707
9	Deepti Gupta	Indigenous traditional practices for the insect-pest and weed management in Bilaspur and Una Districts of Himachal Pradesh (India)	Yes International	ISSN: 2455-4758
10	Dr. Yogesh Kumar	SYNTHESIS AND CHARACTERIZATION OF NOVEL ZIRCONIUM INCORPORATED PECTIN-BASED CITRIC ACID CROSSLINKED NANOPARTICLES	Yes International	2385-2390
11	Yogesh Kumar	EXPLORING THE GREEN SYNTHESIS OF NANOPARTICLES AND THEIR MULTIFACETED IMPACT ON BIOMEDICAL APPLICATIONS AND ENVIRONMENTAL REMEDIATION: A REVIEW PAPER	Yes International	2208-2182
12	Dr. Girish Kapoor	On some lower bounds for cyber functional	Yes International	2454-3195
13	Dr. Anupam Verma	Assessing the Role of Government Schemes in Socio-Economic Development of Rural Society	“Journal of Emerging Technologies and Innovative Research” Volume 11, Issue 6, June 2024, Page Numbers: 643-651	2349-5162
14	Dr. Anupam Verma	Effectiveness in the of Implementation	“Journal of Emerging	2349-5162

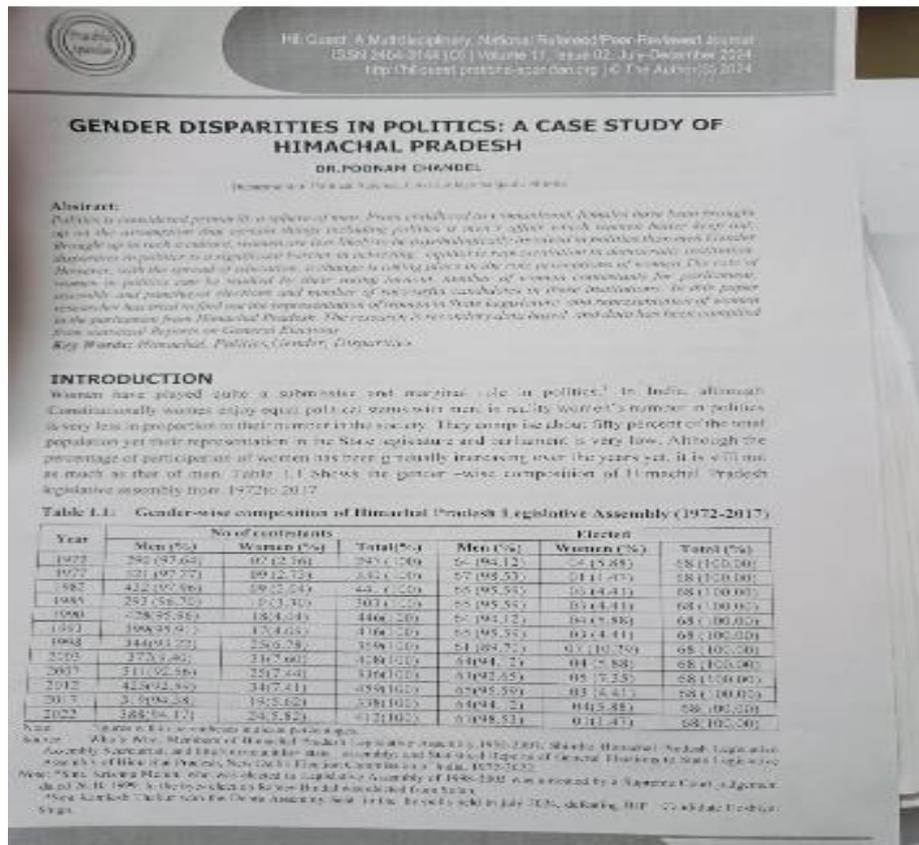
		Development Schemes: A Rural Perspective	Technologies and Innovative Research” Volume 11, Issue 6, June 2024, Page no, 74	
Citations		Dr. Kirti Singha	352	

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1. Prashant Thakur



2. Poonam Chandel



A STUDY ON RURAL TOURISM IN HIMACHAL PRADESH: IMPACT ON STATE ECONOMY, CULTURE AND BIOSPHERE

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Abstract

Rural tourism is a relatively new industry that is constantly improving its business model. As it uses natural resources, cultural wealth, village traditions and customs to strengthen the rural economy, it has become an important choice for local socio-economic development. However, the establishment and operation of rural tourism must be done with reasonable sensitivity to the protection of the rural ecology, environment and indigenous culture. The rural terrain of the Himachal Pradesh province is full of attractive, beautiful natural features as well as a unique cultural history, all of which support and encourage tourism-related activities. This study deals with the main aspects of rural tourism development in Himachal Pradesh besides practical plans, approaches and methods to promote tourism in the hill province.

Rural tourism can contribute to the growth and development of a state's rural communities as it is an industry that complements agriculture and offers many opportunities for economic development. This paper aims to explore how rural tourism can be one of the tourism industries that integrates sustainable development along with the necessary safeguards to protect the environment and preserve the long-term traditions, customs, values and practices of ethnic villages.

Keywords: Rural tourism, village traditions, State economy, Himachal Pradesh, Ecology, Culture and environment.

Introduction

The basis of the growth of tourism in India is a country rich in natural resources, ancient customs and a rich historical and cultural legacy. The motto of the Indian hospitality and tourism industry is the ancient Vedic maxim "Atithi i Devo Bhavah", which translates to "the guest is god". Among the major developing nations, tourism—

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both urban and rural—contributes significantly to a nation's economy and image. However, there is a lot of room for expansion in the Indian tourism industry in terms of sustainable rural development. With more than 74% of the population living in nearly 7 million villages, India is a rapidly developing nation



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Comparative study of electrical and dielectric properties of Ho/Y ions modified Ba-Co-Sr Z-type nanohexaferrites

Kirti Singha¹ · Rohit Jasrotia^{2,3} · Jahangeer Ahmed⁴ · Saad M. Alshehri⁵ · Abhishek Kandwal⁶ · Monika Chandol⁷ · Pankaj Sharma⁸

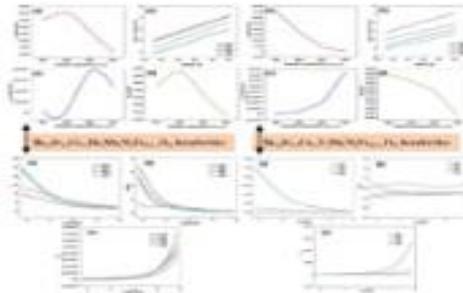
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Abstract

Two different compositions of Ho³⁺ and Y³⁺ doped Ba-Sr Z-type hexaferrite having composition, Ba_{1-x}Sr_{1-x}Co_{2-y}Ho_xMn_yNi_zFe_{20+2x}O₄₁ and Ba_{1-x}Sr_{1-x}Co_{2-y}Y_zMn_yNi_zFe_{20+2x}O₄₁ (x = y = 0.0, 0.25, 0.50, 0.75, z = 0.0, 0.05, 0.10, 0.15) were fabricated through a sol-gel auto-combustion mechanism. Analysis of dielectric and electrical properties of both compositions was undertaken. The dc electrical resistivity of Ba-Sr hexaferrites decreased from 7.09 to 2.41 (×10⁷) Ω-cm as a function of Ho-Mn-Ni doping. A similar trend is followed by Y-Mn-Ni substituted samples with lesser values for each electrical parameter. Both the compositions' activation energy was studied using the dc electrical resistivity data. The ambient temperature dielectric characteristics of the prepared hexaferrites were investigated at varying frequencies between 64 Hz to 734 KHz. With increasing frequency, it was found that both the values of loss tangent (tanδ) and the real part of permittivity (ε') decreased. The ac conductivity (σ_{ac}) remained relatively constant at the lower frequencies but increased at the higher frequencies, especially when the Ho³⁺ and Y³⁺ ions are incorporated. With these excellent electric and dielectric characteristics, the prepared compositions are highly applicable for high-frequency and antenna miniaturization usages.

Graphical Abstract



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Effect of Ni and Dy co-doping on the structural, electrical, and dielectric properties of Strontium Y-type hexaferrite

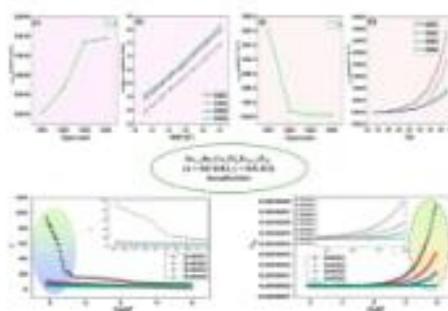
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Abstract

Strontium Y-type hexaferrites, often referred to as Sr-Co₂Y hexaferrites, are widely considered for the microwave applications. The current study describes the synthesis of Ni and Dy-doped Sr Y-type hexagonal ferrites i.e., Sr_{1-x}Dy_xCo₂Ni_yFe_{12-y}O₂₂ (x = 0–0.03 and y = 0–0.3) by utilising the sol-gel (SG) process. The hexaferrite powders were sintered for 4 h at 1150 °C to eliminate impurities and moisture. The room temperature (RT) DC resistivity (ρ) of the Sr hexaferrites increases as the temperature and the Ni²⁺/Dy³⁺ content increase. This shows the semiconducting nature of Sr-Co₂Y hexaferrites. The Ni²⁺ and Dy³⁺ doping reduces the drift mobility (μ_d) but increases the activation energy (E_a). The observed E_a for the Sr hexaferrite materials showed the same trend as that of ρ . The dielectric analysis was performed within the frequency range of 82 Hz–10 MHz. Both the real permittivity (ϵ') and the loss tangent ($\tan\delta$) drop as the applied frequency rises. The dielectric properties also decrease after Ni and Dy substitution. The increase in ρ together with the small dielectric loss makes these hexaferrite materials more effective for devices and applications requiring high resistive and high-frequency materials.

Graphical Abstract



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Indigenous traditional practices for the insect-pest and weed management in Bilaspur and Una Districts of Himachal Pradesh (India)

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Abstract

Modern agriculture cannot sustain itself properly without controlling insect-pests and weeds since they can drastically lower crop quality and productivity. Management of pests and weeds is crucial to both landscaping as well as agriculture. Despite their effectiveness, chemical pesticides and herbicides have caused environmental concerns because of their negative effect on soil health, human safety and non-target organisms. Exploring sustainable options that support ecological preservation and agricultural resilience is imperative. Traditional insecticidal and weed management practices have played a crucial role in preserving sustainable agriculture. This paper advocates the traditional methods of weed and pest management in Bilaspur and Una districts of Himachal Pradesh. Weed management in cropped lands of study area involves traditional methods like mulching, mixed cropping, hand pulling, mowing, and crop rotation. Local inhabitants also use mixtures like sour buttermilk, leaf-based herbal mixtures, citrus-vinegar and herbal weedicides to control weeds. For non-cropped areas, manual removal and community efforts are common, and weeds are often repurposed for various innovative uses. On the other hand, for pest control, local farmers use simple methods like spreading ash, applying cow urine with plants, mixing cow dung for natural pesticides and using butter milk to trap pests. *Azadirachta indica* is particularly valued for its powerful insecticidal and insect repellent properties. Natural insecticidal properties are found in plants such as tobacco, neem and adusa which are effective in repelling and controlling pests. These natural agents are environmentally acceptable substitutes because they show less toxicity to non-target organisms and less environmental persistence. Even with its benefits, organic weed and pest control can be difficult to apply and needs careful planning and observation. The future of natural weed and pest control in agriculture will be greatly influenced by the fusion of traditional knowledge and cutting-edge technologies.

Keywords: Traditional practices, pest control, weed management, sustainable agriculture

Introduction

Major crops experience approximately 35% yield loss worldwide due to the impact of arthropods, weeds and diseases. In developing regions with limited pest control options, such losses can surpass 50%. Damage caused by pests, especially arthropods can result in significant losses or even complete crop failure (Fig. 1). This emphasizes the crucial importance of crop protection in preserving yields



Synthesis and Characterization of Novel Zirconium Incorporated Pectin-Based Citric Acid Crosslinked Nanoparticles

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Abstract

Nanoparticles are the most versatile tools in the hands of the modern-day researchers. These entities with high surface area are excellent candidates for use in biomedical and other applications. The present work focuses on synthesis of novel Zirconium incorporated pectin-based citric acid crosslinked nanoparticles following sol-gel method under ultrasonication at 75°C. The synthesized pale-yellow nanoparticles were characterized by Fourier transform infrared spectroscopy, particle size analysis and FESEM. The results supported the synthesis of particles of size below 100nm and successful Zirconium incorporation into the polymer matrix. These nanoparticles are potential candidates for antimicrobial and heavy metal sorption studies.

Keywords: Antimicrobial action, Citric acid, Pectin, Zirconium, Nanoparticle, Water purification.

1. Introduction

Nanoparticles are increasingly being employed for biomedical applications [1] and metal ion sorption studies [2]. The biopolymer incorporated nanoparticles act as an excellent biocompatible matrix for site specific drug delivery too [3].

resistance, making it an ideal component in various alloys used in applications like surgical instruments, explosive primers, and vacuum tube components. Zirconium finds use not only in the production of inorganic and organic compounds

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EXPLORING THE GREEN SYNTHESIS OF NANOPARTICLES AND THEIR MULTIFACETED IMPACT ON BIOMEDICAL APPLICATIONS AND ENVIRONMENTAL REMEDIATION: A REVIEW PAPER

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Abstract

Nanoparticles have attracted significant interest in recent years due to their distinctive characteristics and wide-ranging uses in different domains. Nanoparticle production using environmentally friendly technologies has become a sustainable and eco-friendly alternative to traditional chemical processes. This review comprehensively explores the various green synthesis techniques employed for the production of nanoparticles, including those utilizing plant extracts, microorganisms, enzymes, and agricultural waste. Additionally, the multifaceted impact of green-synthesized nanoparticles on biomedical and environmental applications is elucidated. In biomedicine, these eco-friendly nanoparticles exhibit promising potential in drug delivery, diagnostics, and targeted delivery capabilities. Furthermore, their applications in environmental remediation, including pollutant degradation, heavy metal ion removal, and wastewater treatment, highlight their significance in addressing contemporary environmental challenges. The review also discusses the key properties and mechanisms underlying the enhanced performance of green-synthesized nanoparticles in biomedical and environmental applications, emphasizing their sustainable nature and reduced environmental footprint. Moreover, challenges and future perspectives in the synthesis and utilization of green nanoparticles are critically examined, aiming to pave the way for the development of innovative and sustainable nanotechnologies.

Keywords: Green synthesis, nanoparticles, biomedical applications, environmental impact, sustainable nanotechnologies.

12. Dr. Girish Kapoor



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Assessing the Role of Government Schemes in Socio-Economic Development of Rural Society

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Abstract: This study evaluates the impact of rural development schemes on the socio-economic upliftment of rural populations in Himachal Pradesh, with a specific focus on the districts of Shimla and Sirmaur. Himachal Pradesh, characterized by its diverse topography and predominantly agrarian economy, has seen a significant push towards rural development through various government initiatives. Despite these efforts, around 90% of the state's population resides in rural areas, where access to basic amenities and economic opportunities often remains limited. The study highlights that the literacy rate in rural Himachal Pradesh is approximately 82%, while the dependency on agriculture for livelihood exceeds 70%, indicating a substantial need for effective development interventions. This research aims to assess the awareness levels among rural residents regarding various governmental programs such as the Mahatma Gandhi National Rural Employment Guarantee Act (MGNREGA), National Rural Livelihood Mission (NRLM), and Pradhan Mantri Awas Yojana (PMAY), and their perceived effectiveness in enhancing economic, social, and technological development. Additionally, it explores the role of these schemes in preserving cultural traditions and promoting political participation. Using a combination of quantitative and qualitative methods, including structured surveys and in-depth interviews with local residents, government officials, and experts, the study identifies key factors influencing the success and challenges of these schemes. The findings reveal significant improvements in income levels, education, and healthcare access, alongside increased community engagement and empowerment, particularly among women. For instance, beneficiaries of MGNREGA reported an average increase in household income by 25%, while NRLM initiatives have fostered entrepreneurial activities among rural women, leading to enhanced social status and economic independence. However, the study also highlights persistent gaps in awareness and execution, with only 60% of respondents being fully aware of all available schemes, which hinders the full potential of these initiatives.

The paper concludes with recommendations for policy enhancements to ensure more inclusive and effective rural development strategies. These recommendations include improving information dissemination, enhancing the implementation framework, and increasing community participation to better align these programs with the actual needs of



Effectiveness in the Implementation of Development Schemes: A Rural Perspective

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Abstract

This study evaluates the effectiveness of rural development schemes in fostering socio-economic upliftment in Himachal Pradesh, with a particular focus on Shimla and Sirmaur districts. By examining respondents' perceptions of various government initiatives, this research aims to uncover the strengths in the implementation of these schemes. The analysis covers multiple dimensions, including awareness spread, mobilization of rural masses, social audits, advertisement effectiveness, and transparency in execution.

Using a combination of structured surveys and detailed statistical analysis, including factor analysis and ANOVA, the study provides a comprehensive overview of the effectiveness of development schemes in rural areas. Key findings reveal significant improvements in income levels, education, healthcare access, and community empowerment, particularly among women beneficiaries. Critical components such as active participation in social audits and the use of geo-tagging for completed works were identified as essential for enhancing transparency and accountability in the implementation process. The study highlights the importance of these elements in fostering a more inclusive and effective approach to rural development. The research highlights the positive impacts of these schemes across different administrative blocks and demographic segments. Areas with high levels of satisfaction and effectiveness underscore the success of these initiatives. The Cronbach's Alpha reliability test confirmed the internal consistency of the survey items, ensuring robust data analysis.


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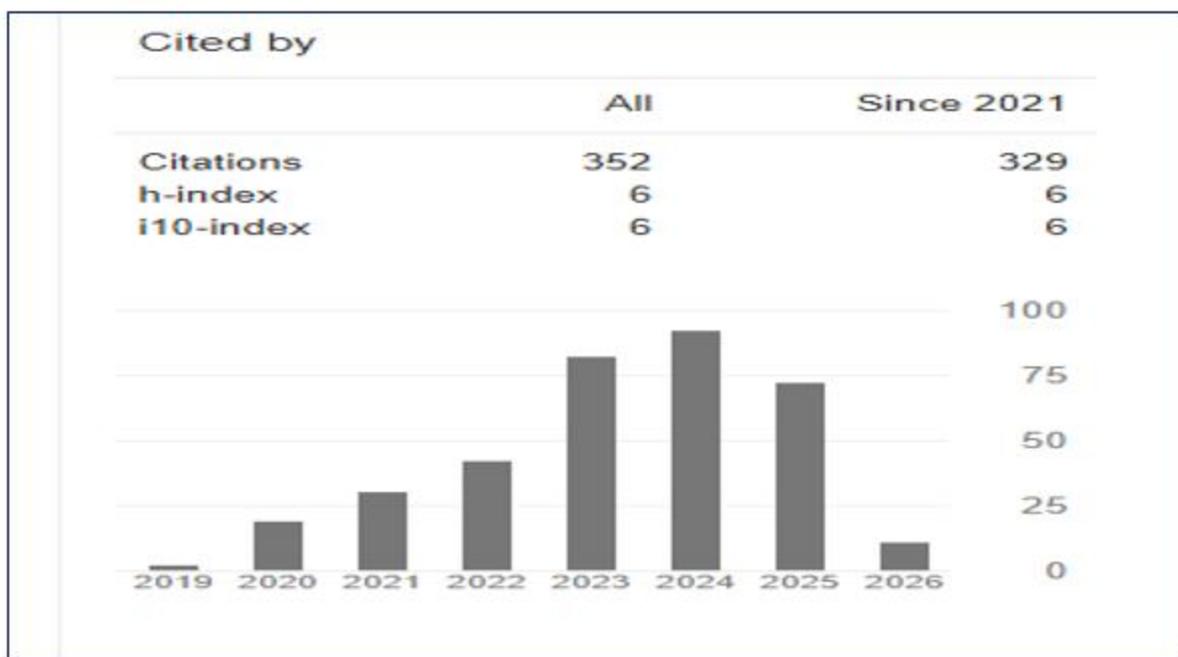


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Material science



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