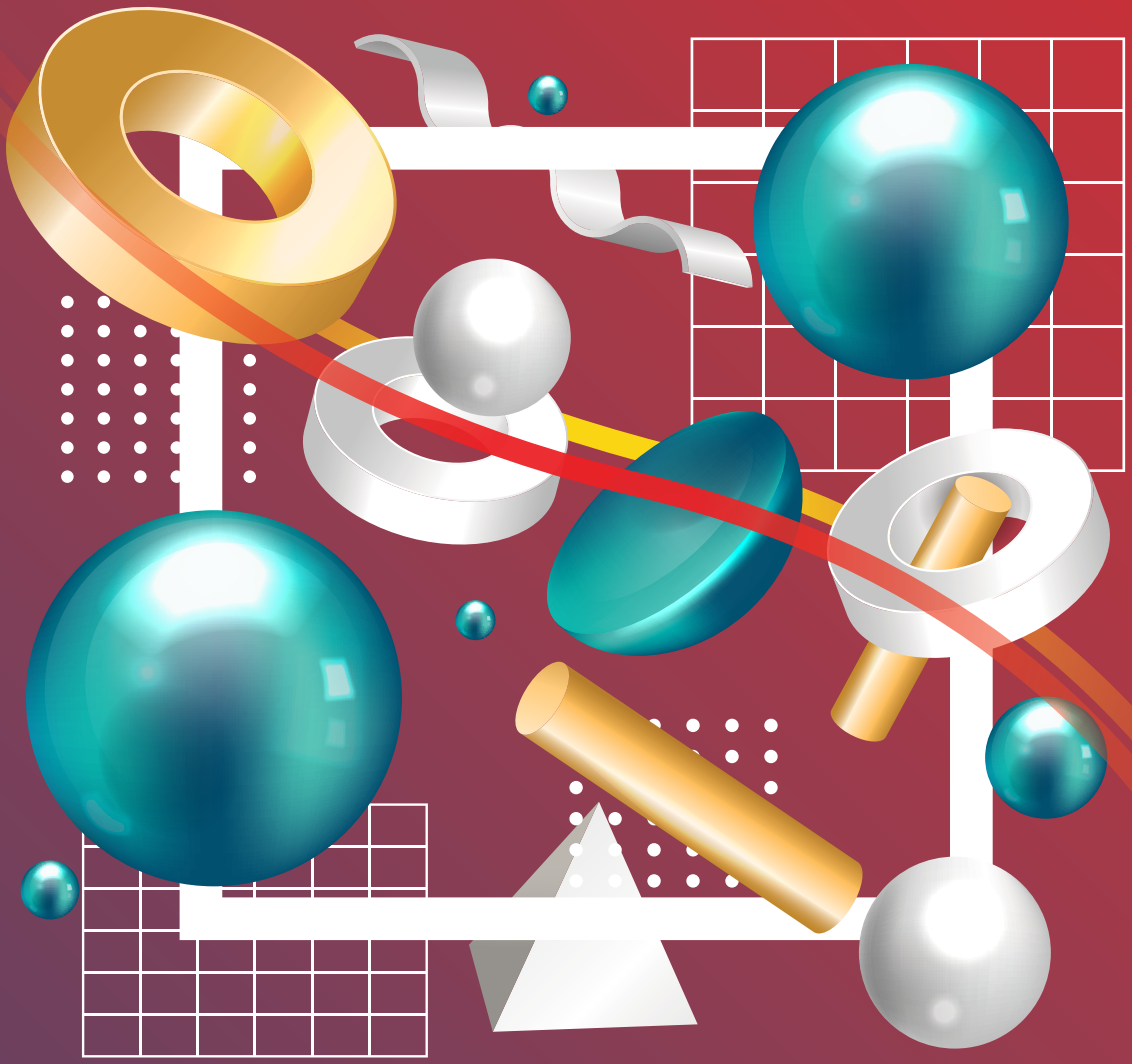
Department of

PHYSICS

Faculty of Basic Science



For More Details Please Visit www.aksuniversity.ac.in

About Department

The Department of Physics, established in 2012 as a fully-fledged, self-financed undergraduate, postgraduate and research department, offers B.Sc., M.Sc. (Physics) and Ph.D. programs. Since its inception, the department has been deeply committed to innovative teaching and cutting-edge research.

Its academic programs are thoughtfully designed to align with the latest advancements in technology, ensuring students are well-equipped to meet modern scientific challenges. The department aspires to evolve into a state-ofthe-art center of excellence for education and interdisciplinary research in Physical Sciences.

The department is strengthened by a team of competent, motivated, and research-driven faculty members, many of whom are young and actively engaged in high-impact research. Their dedication is evident in their consistent publication record, involvement in externally funded projects, and ongoing contributions to the scientific community.

VISION

To be a center of excellence in physics education and research, fostering innovation and contributing to scientific advancements for societal development.

MISSION

- Well-structured curriculum and hands-on laboratory experience.
- To promote research and development in theoretical and applied physics.
- To encourage interdisciplinary collaboration for solving real-world problems.
- To nurture analytical thinking, problem-solving skills, and a scientific temper among students.

Courses Offered

- B.Sc. — 3 Yrs.
- B.Sc. (Hons.) / by Research — 4 Yrs.
- M.Sc. — 2 Yrs.
- Ph.D. (Space Science & Material Science) — 3 Yrs.

Career Opportunity

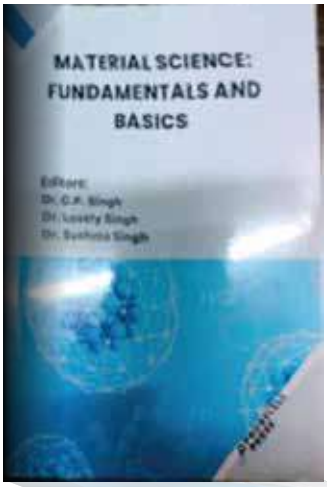
- Research Associate
- Research Assistant
- Project Assistant

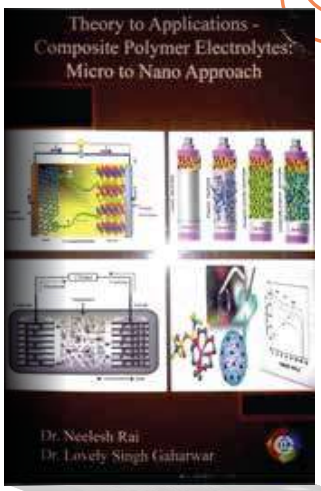
- Assistant Professor / Professor
- Junior Research Fellow (JRF)
- Senior Research Fellow (SRF)

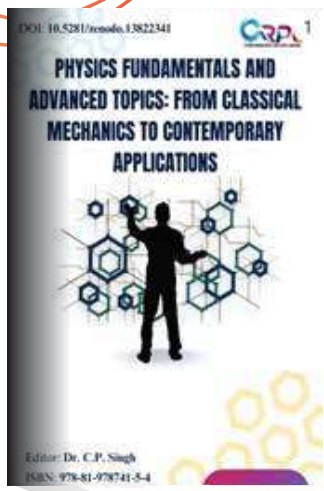
- Scientist
- PO in Bank
- A Grade Officer Job in Civil Services

- Career in Scientific Research & Development Organization Like DRDO, BARC, ISRO etc.
- Career in Energy Plant
- Radiologist, Radiographer & Radiology Assistant

Published Books

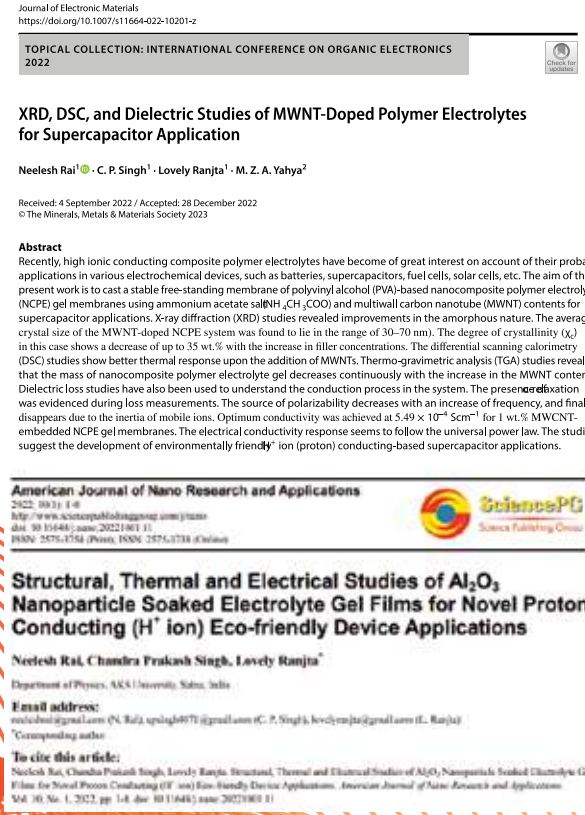






Research

Number of Ph.D. Awarded - 02
Number of Ph.D. Enrolled - 08
Total Number of Research papers - 25+



Journal of Electronic Materials
https://doi.org/10.1007/s11664-022-10201-z

TOPICAL COLLECTION: INTERNATIONAL CONFERENCE ON ORGANIC ELECTRONICS 2022

XRD, DSC, and Dielectric Studies of MWNT-Doped Polymer Electrolytes for Supercapacitor Application

Neelesh Rai[1] · C. P. Singh[1] · Lovely Ranjta[1] · M. Z. A. Yahya[2]

Received: 4 September 2022 / Accepted: 28 December 2022

Abstract
Recently, high ionic conducting composite polymer electrolytes have become of great interest on account of their probable applications in various electrochemical devices, such as batteries, supercapacitors, fuel cells, solar cells, etc. The aim of the present work is to cast a stable free-standing membrane of polyvinyl alcohol (PVA)-based nanocomposite polymer electrolyte (NCPE) gel membranes using ammonium acetate salt(NH_4CH_3COO) and multiwall carbon nanotube (MWNT) contents for supercapacitor applications. X-ray diffraction (XRD) studies revealed improvements in the amorphous nature. The average crystal size of the MWNT-doped NCPE system was found to lie in the range of 30–70 nm). The degree of crystallinity (χ_c) in this case shows a decrease of up to 35 wt.% with the increase in filler concentrations. The differential scanning calorimetry (DSC) studies show better thermal response upon the addition of MWNTs. Thermo-gravimetric analysis (TGA) studies reveal that the mass of nanocomposite polymer electrolyte gel decreases continuously with the increase in the MWNT contents. Dielectric loss studies have also been used to understand the conduction process in the system. The presence of relaxation was evidenced during loss measurements. The source of polarizability decreases with an increase of frequency, and finally disappears due to the inertia of mobile ions. Optimum conductivity was achieved at 5.49×10^{-4} Scm^{-1} for 1 wt.% MWCNT-embedded NCPE gel membranes. The electrical conductivity response seems to follow the universal power law. The studies suggest the development of environmentally friendly H^+ ion (proton) conducting-based supercapacitor applications.

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SciencePG
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Structural, Thermal and Electrical Studies of Al_2O_3 Nanoparticle Soaked Electrolyte Gel Films for Novel Proton Conducting (H^+ ion) Eco-friendly Device Applications

Neelesh Rai, Chandra Prakash Singh, Lovely Ranjta*

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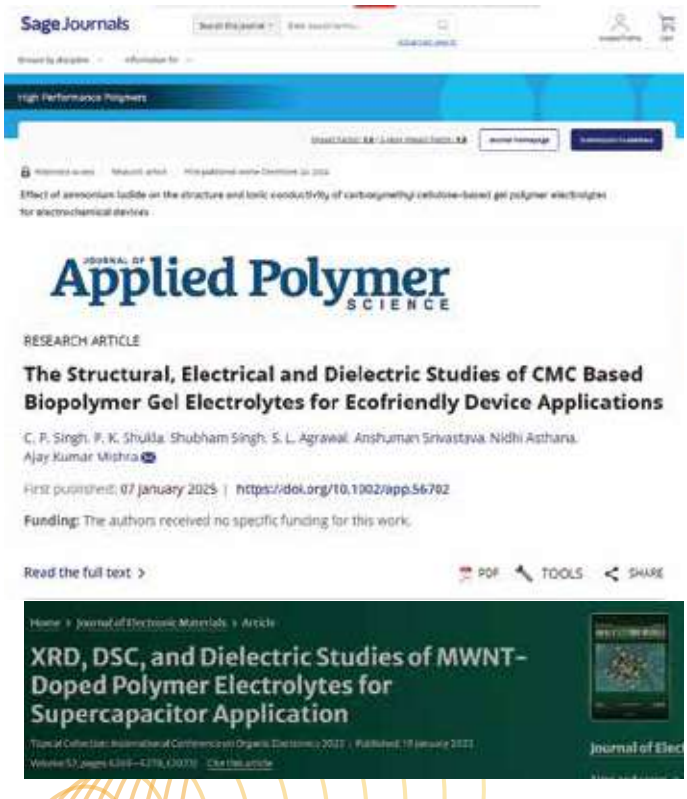

Sage Journals

High Performance Polymers

Effect of ammonium iodide on the structure and ionic conductivity of carboxymethyl cellulose-based gel polymer electrolytes for electrochemical devices

JOURNAL OF Applied Polymer SCIENCE

RESEARCH ARTICLE

The Structural, Electrical and Dielectric Studies of CMC Based Biopolymer Gel Electrolytes for Ecofriendly Device Applications

C. P. Singh, P. K. Shukla, Shubham Singh, S. L. Agrawal, Anshuman Srivastava, Nidhi Asthana, Ajay Kumar Mishra

First published: 07 January 2025 | https://doi.org/10.1002/app.56702

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XRD, DSC, and Dielectric Studies of MWNT-Doped Polymer Electrolytes for Supercapacitor Application

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Journal of Elec

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DEAN
Faculty of Basic Science

Dr. O.P. Tripathi
HEAD
Department of Physics

Dr. Saket Kumar
ASSISTANT PROFESSOR
Department of Physics

Dr. C.P. Singh
ASSOCIATE PROFESSOR
Department of Physics

Dr. Lovely Singh
ASSOCIATE PROFESSOR
Department of Physics

Mr. Manish Agrawal
ASSISTANT PROFESSOR
Department of Physics

Mr. Rajesh Singh
Teaching Associate
Department of Physics

Mr. Omendra Tiwari
Lab Technician
Department of Physics

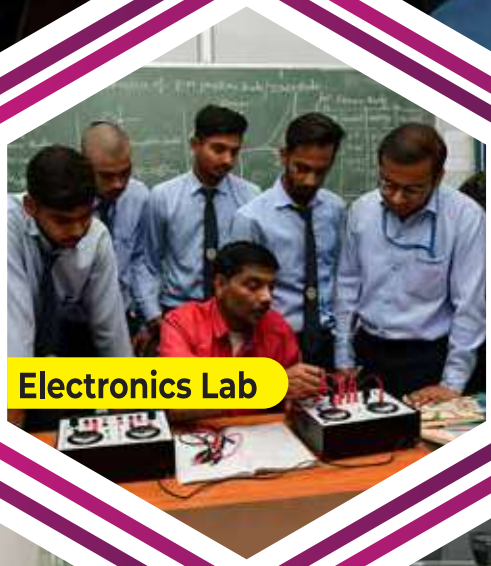
Ms. Swati Kushwaha
Lab Technician
Department of Physics

Mr. Mrityunjay Pandey
Lab Technician
Department of Physics

Laboratories


Optics Lab


General Lab


Electronics Lab


Research Lab


Electronics Lab


Research Lab

Events


SEMESTER VALEDICTION
CEREMONY
Faculty of Engineering & Technology
AKS University, Satna (M.P.)

Achievements

Fellowship

National & International

Ms. Shazia Bi (M.Sc. Student) selected for DST inspire fellowship 2022 with financial assistance 25000 INR per month for two years and 28000 INR per month for third year during her Ph.D. on the basis of her Excellency in academic performance

Ms. Vaishali Pandey (M.Sc. Student) selected for DST inspire fellowship 2023 with financial assistance 25000 INR per month for two years and 28000 INR per month for third year during her Ph.D. on the basis of her Excellency in academic performance

Mr. Shivank Singh (M.Sc. Student) selected for DST inspire fellowship 2023 with financial assistance 25000 INR per month for two years and 28000 INR per month for third year during her Ph.D. on the basis of her Excellency in academic performance

Ms. Pooja Pandey (M.Sc. Student) recieved the financial assistance (50000 INR) during (2019-2020) by HDFC bank on the basis of her Excellency in academic performance

Mr. Amit Kumar Soni (M.Sc. Student) Qualified CSIR-NET Examination 2020

Placements

Sandeep Chaturvedi
Tax Inspector (MPPSC-2025)

Sachin Pandey
FCI

Dheerendra Singh
M.P. Police

Richa Dubey
SBI PO

Monish Raza
Flight Lt.
Indian Air FORCE

Amar Singh
Relationship Manager
Federal Bank

Anish Kumar Tiwari
PGT Teacher
Birla

Amit Kumar Soni
Physics Faculty
PW

Bhupendra Kurochi
SSB

Department in NEWS

स्किल डेवलपमेंट पर व्याख्यान

राष्ट्रीय सेमिनार में पहुंचे एकेएस के 6 विद्यार्थी

द्वितीय संस्करण के लिए आए प्रतिभागियों में उत्साह चरम पर

सौर गतिविधि और अंतरिक्ष-मौसम पर की गई चर्चा

डिस्टिंग्यूस सर्विस अवार्ड इंडियन आर्मी द्वारा

डिग्री कॉलेज में भौतिकी के नए आयामों पर हुई चर्चा

एकेएस के विद्यार्थियों को डोमिनो इफेक्ट में प्रथम पुरस्कार, अन्य में बेहतर प्रदर्शन

स्टूडेंट्स ने मनाया राष्ट्रीय विज्ञान दिवस

सिटी रिपोर्टर, सतना। राष्ट्रीय विज्ञान दिवस हर साल 28 फरवरी को मनाया जाता है। इस साल की थीम वूमेन इन साइंस है। वैज्ञानिक सीवी रमन ने रमन प्रभाव का अविष्कार किया था। पारदर्शी पदार्थ से गुजरने पर प्रकाश कि किरणों में ... के क्षेत्र में नोबेल पुरस्कार प्राप्त करने वाले भारत ही नहीं बल्कि एशिया के पहले वैज्ञानिक थे। इस कार्यक्रम के मुख्य अतिथि रूप में डॉ. जीके प्रधान, विशिष्ट अतिथि डॉ. हर्षवर्धन श्रीवास्तव डीन बेसिक साइंस प्रो. आर...

सतना

एकेएस के डॉ.सीपी व डॉ.लवली सिंह स्कोपस अनुक्रमित शोध लेख प्रकाशित

शासकीय स्वशासी महाविद्यालय में भौतिकी के नए आयामों पर चर्चा

जैनो पदार्थ तथा उनके गुण, व्यवहार व अनुप्रयोगों पर विस्तार से प्रकाश डाला

सौर गतिविधि और अंतरिक्ष-मौसम पर की गई चर्चा

एकेएस में खगोल भौतिकी पर व्याख्यान

डॉ.सीपी सिंह और डॉ.लवली सिंह का सुयश

सतना. एकेएस विश्वविद्यालय के डॉ.सी.पी.सिंह और डॉ.लवली सिंह विषय पर सराहनीय कार्य किया है। उनका लेखन स्कोपस अनुक्रमित शोध लेख में प्रकाशित हुआ है डॉ.सी.पी.सिंह और डॉ.लवली सिंह ने दिनांक 24 दिसंबर 2024 को हाई परफॉर्मेंस पॉलिमर में एक और स्कोपस अनुक्रमित शोध लेख प्रकाशित किया है जिसका शीर्षक है इलेक्ट्रोकेमिकल उपकरणों के लिए कार्बोक्जलेट सेलुलोज-आधारित जेल पॉलिमर इलेक्ट्रोलाइट्स की संरचना और आयनिक चालकता पर अमोनियम आयोडाइड का प्रभाव 1.8 के प्रभाव कारक के साथ है। उन्हें उनके सहकर्मियों ने उनके कार्य के लिए बधाई दी है।

एकेएस की प्रो. डॉ. लवली और डॉ. सिंह की पुस्तकें प्रकाशित

एकेएस के डॉ सीपी सिंह और डॉ लवली सिंह का सुयश स्कोपस अनुक्रमित शोध लेख प्रकाशित

Department of PHYSICS

Faculty of Basic Science

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