सत्यमेव जयते

भारत सरकार
परमाणु ऊर्जा विभाग
राजा रामन्ना प्रगत प्रौद्योगिकी केन्द्र

Government of India
Department of Atomic Energy
Raja Ramanna Centre for Advanced Technology

इंडस सिंक्रोट्रॉन्स: प्रचालन एवं उपयोगिता रिपोर्ट

Indus Synchrotrons:
Operation and Utilization Report



वर्ष 2025

Year 2025

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Editorial team: *Amit Chauhan, Pooja Gupta, Shruti Gupta, Arpit Vishnoi*

Cover page photographs: *Clockwise from top left – (1) 20 MeV Microtron (2) 450/550 MeV Booster ring (3) 2.5 GeV Indus-2 ring with beamline frontends (4) 450 MeV Indus-1 ring*

Message from the Director

It gives me immense pleasure to present the Indus Synchrotrons: Operation and Utilization Report for the year 2025. The report is an account of salient facts and figures of the year-long operation of Indus-1 and Indus-2 synchrotron radiation sources and utilization by the researchers from scientific, academic and industrial community in India. As India's only synchrotron radiation facility, the Raja Ramanna Centre for Advanced Technology (RRCAT) remains deeply committed to providing continued support to Indus user community. Over the past year, our national user base- spanning universities, elite research institutes, and industrial partners- has leveraged the capabilities of Indus-1 and Indus-2 to carry out variety of scientific investigation for fundamental and applied research across diverse disciplines.

This year witnessed the best performance ever recorded for both Indus-1 and Indus-2 in terms of beam availability to the users. By optimizing operating parameters, the lifetime of the electron beam was also significantly enhanced in the low-emittance mode of operation.

During the year, several initiatives have been undertaken to maintain and upgrade the machine and beamline components. The focus was on replacing the components that are nearing the end of their service life or on the verge of obsolescence, and strengthening the capabilities of the beamlines. Collectively, these measures resulted in improving system reliability, maintainability, safety and the overall operational performance, while ensuring the sustained and enhanced utilization of the machine and beamline facilities.

The beamline user's footfall to the facility has mapped 100+ institutes, research labs and industries all across the country from Jammu and Kashmir in the north to Kerala in the south, from Mizoram in the east to Gujarat in the west, reflecting India's rising prowess in diverse fields of science and technology including chemistry, physics and astronomy, energy, structural biology, health, pharmacy, environment and nanotechnology. Through the Indus Beamline User Portal, we have seamlessly accommodated a large number of experimental proposals. It is heartening to know that our user community publish high-impact results in reputed international journals.

Looking ahead, our long-term strategies remain closely aligned with milestones and objectives outlined in the DAE's Amrit Kaal Vision Document. We look forward to enhance academic and industry outreach to further enhance the utilization avenues of Indus beamlines.

I would like to thank user community for their intellectual rigor and partnership in scientific utilization of the beamlines. I am confident that the insights and experiences presented in the report will serve as the source of inspiration and provide a strong foundation for fostering even greater collaboration, innovation and collective achievements in the future. I appreciate the efforts put in by the entire Indus team for excellent performance during the year. Hearty congratulations to Electron Accelerator Group for the initiative to bring out the annual operation and utilization report of Indus synchrotrons.

Viraj P. Bhanage
Director, RRCAT

Preface

The year 2025 marked the 15 years of round-the-clock operation of Indus synchrotrons as the National facility. Over the years, the facility has seen steady enhancements – in terms of the machine capabilities, beamlines, experimental facilities, userbase and the scientific utilization of the facility, aptly reflected in the annual statistics. This has been possible due to consistent efforts put in by the past and present members of the Team Indus. It is, therefore, thought to bring together the salient aspects of machine operation and utilization in the form of an annual activity report.

The report presents an overview of the facility, key performance indices reflecting operational aspects, utilization by the scientific community, a brief account of salient scientific experiments performed on Indus beamlines, significant developments & upgrades and research publications during the year.

During the year 2025, Indus-1 recorded 7603 hours and Indus-2 recorded 6317 hours of user beam time, both of which are highest annual numbers achieved in round-the-clock operation so far. The facility also maintained a consistent level of utilization, with researchers from 112 institutions from all over the country, carrying out 1028 user experiments across the available beamlines. Based on the data obtained at Indus beamlines, 281 papers were published in peer reviewed journals. This number is nearly 16% higher than the one reported during the previous year. Notably, nearly half of these publications appeared in journals having impact factor more than 5.

Round-the-clock operation of the Indus synchrotrons, including upgrade and upkeep of the systems, is an outcome of collaborative efforts of the Team Indus, comprising of a large number of technical and scientific personnel. The operation is now largely shouldered by permanent operating crew, and supported by trained and licensed personnel contributing in the partial mode. The contents of this report is a reflection of their contribution to this National Facility. Bringing the contents in the form of the report needs a lots of efforts, particularly when it is being done for the first issue. I appreciate the efforts of the editorial team.

Finally, I would like to thank the users who have utilized our facility. It has been a great year of scientific association with you and I look forward to more such collaborations in the year to come.

Mangesh B. Borage
Director, Electron Accelerator Group



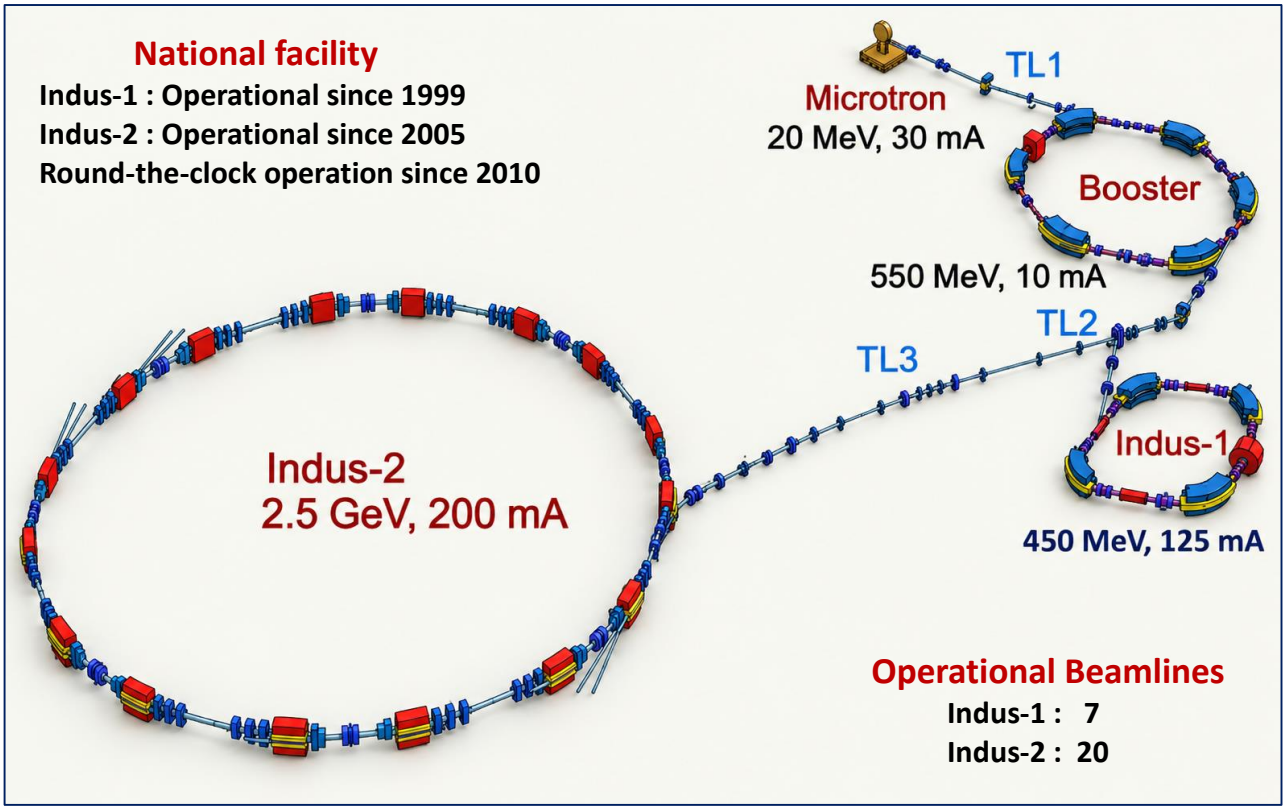
1 INTRODUCTION

Raja Ramanna Centre for Advanced Technology (RRCAT), Indore is a premier unit of the Department of Atomic Energy (DAE), engaged in the frontline areas of accelerator science, technology and applications.

The centre has indigenously designed, developed and commissioned two synchrotron radiation sources: Indus-1 and Indus-2, serving as a national facility. The facility is operational in round-the-clock mode since February 2010.

Indus-1 is a 450 MeV, 125 mA electron storage ring emitting radiation from mid-IR to soft X-ray with a critical wavelength of ~ 61 Å. Indus-2 is a 2.5 GeV, 200 mA electron storage ring emitting synchrotron radiation having broad spectrum covering soft and hard X-ray regions with a critical wavelength of ~2 Å. There is a common injector system for both Indus-1 and Indus-2 comprising of a 20 MeV microtron and a 450/550 MeV booster synchrotron.

Twenty beamlines on Indus-2 and seven beamlines on Indus-1 are being utilized by an increasing number of researchers from universities, academic institutions, national laboratories and industries.

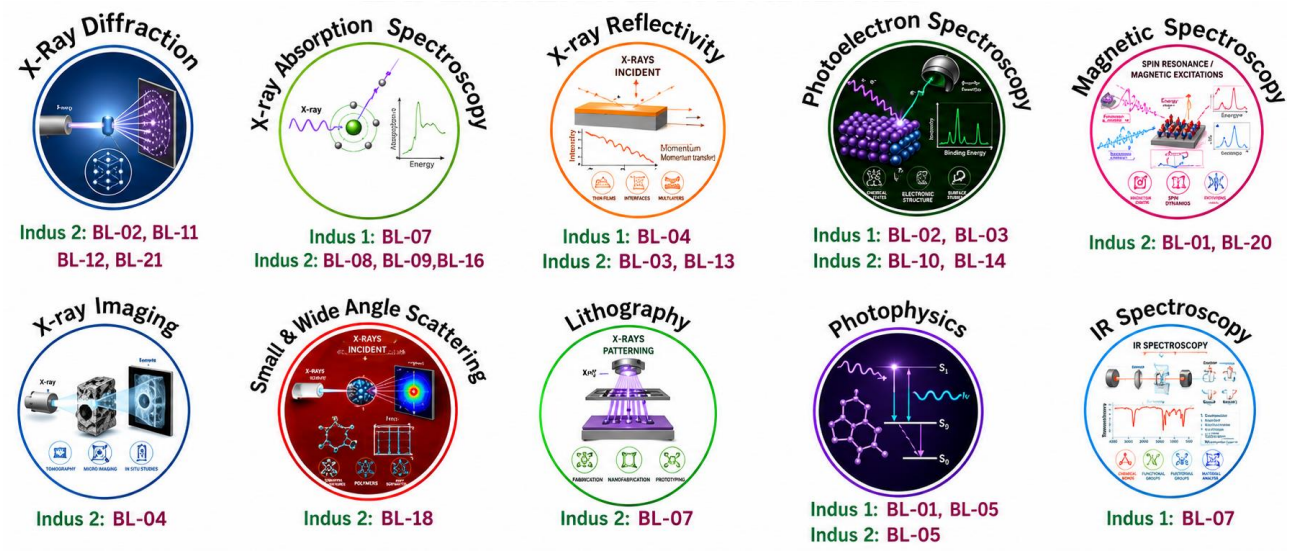


Schematic of Indus Synchrotron Facility

Indus-1 Beamlines		
BL-01	High Resolution Vacuum Ultraviolet (HRVUV) Beamline	BARC
BL-02	Angle Integrated Photoelectron Spectroscopy (AIPES) Beamline	UGC-DAE CSR
BL-03	Angle Resolved Photo Electron Spectroscopy (ARPES) Beamline	BARC
BL-04	Reflectivity Beamline	RRCAT
BL-05	Photophysics Beamline	BARC
BL-06	Infrared Beamline	BARC
BL-07	Photo Absorption Spectroscopic Studies (PASS) Beamline	BARC

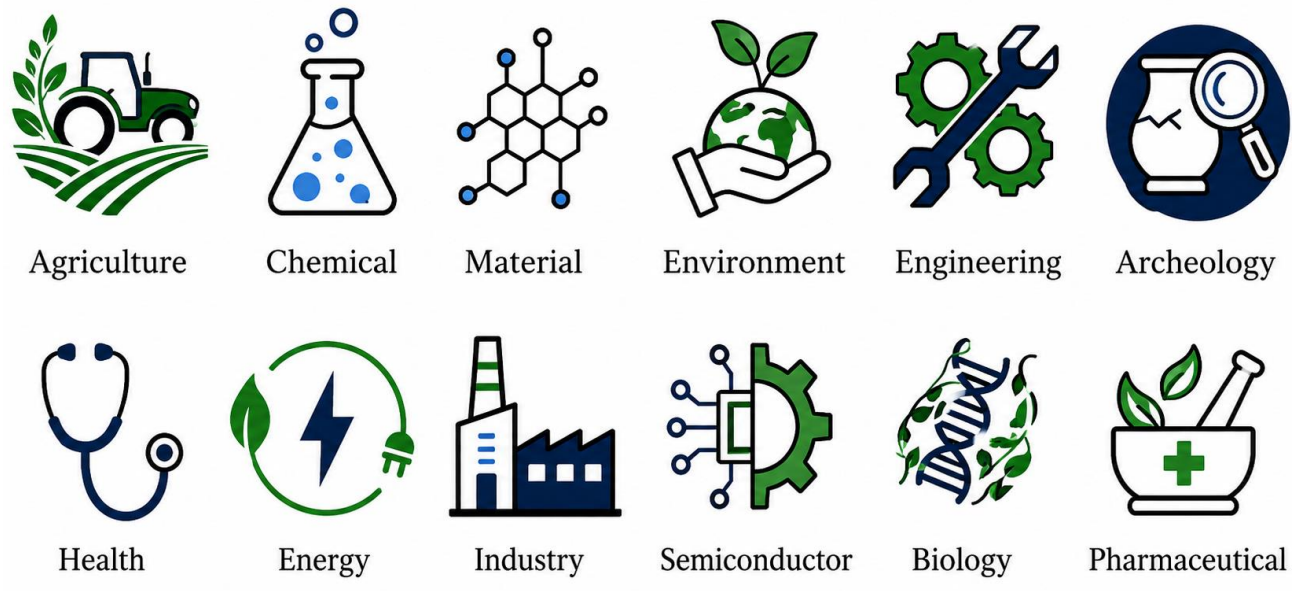
Indus-2 Beamlines		
BL-01	Polarized Light Beamline (Soft X-ray Absorption Spectroscopy)	UGC-DAE CSR
BL-02	Engineering Applications Beamline	RRCAT
BL-03	Soft X-ray Reflectivity (SXR) Beamline	RRCAT
BL-04	Imaging Beamline	BARC
BL-05	Atomic Molecular and Optical Studies (AMOS) Beamline	BARC
BL-07	Soft and Deep X-ray Lithography Beamline	RRCAT
BL-08	Extended X-ray Absorption Fine Structure (EXAFS) Beamline	BARC
BL-09	Scanning Extended X-ray Absorption Fine-Structure (S-EXAFS) Beamline	BARC
BL-10	Angle Resolved Photoelectron Spectroscopy (ARPES) Beamline	RRCAT
BL-11	Energy Dispersive X-ray Diffraction (EDXRD) Beamline (Extreme conditions XRD)	BARC
BL-12	Angle Dispersive X-Ray Diffraction (ADXRD) Beamline	RRCAT
BL-13	Grazing Incidence X-ray Scattering (GIXS) Beamline	UGC-DAE CSR
BL-14	Photo-Electron Spectroscopy (PES) Beamline	BARC
BL-16	X-ray fluorescence Microprobe (XRF-microprobe) Beamline	RRCAT
BL-18	Small and Wide Angle X-ray Scattering (SWAXS) Beamline	BARC
BL-20	X-ray Magnetic Circular Dichroism (XMCD) Beamline	RRCAT
BL-21	Protein Crystallography (PX) Beamline	BARC
BL-22	Photo-Emission Electron Microscopy (PEEM) Beamline	RRCAT
BL-23	Visible Diagnostic Beamline	RRCAT
BL-24	X-ray Diagnostic Beamline	RRCAT

The experimental facilities available at the Indus beamlines cover a wide range of X-ray and spectroscopic techniques, enabling investigations of materials, structures, surfaces, biological systems, and other scientific and technological applications across multiple research disciplines.



Experimental facilities available at Indus beamlines.

The representative fields of synchrotron-based research are illustrated in the figure below. The beamlines cater to multidisciplinary applications including agriculture, materials and chemical sciences, environmental studies, engineering, health, energy, industry, semiconductor research, biology, pharmaceuticals, petrochemicals, quantum materials, and archaeology.



Research areas supported by the Indus synchrotrons

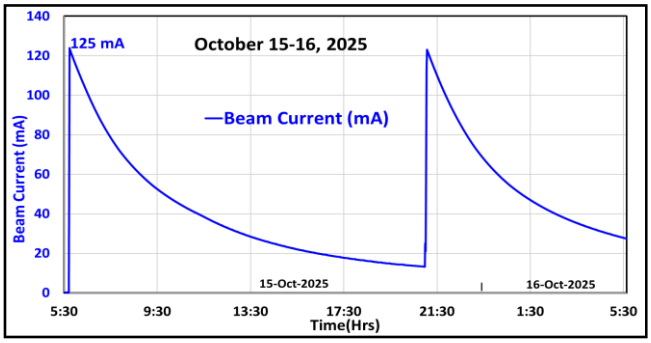
Both Indus-1 and Indus-2, continuing its consistent performance, were operated for 337 days in round-the-clock mode during the year 2025.

2 OPERATION AND UTILIZATION STATISTICS

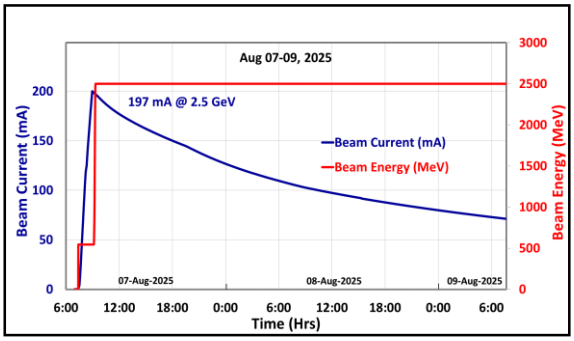
In the user mode, Indus-1 recorded a total beam availability of 7603 hours, corresponding to an average of approximately 22.5 hours per day. Similarly, Indus-2 achieved a user mode beam availability of 6317 hours at full energy, averaging about 18.7 hours per day. Notably, this represents the best performance ever recorded for both Indus-1 and Indus-2 in terms of beam availability to the users.

Since July 2024, Indus-2 has been regularly operated in a low beam emittance mode of ~45 nm·rad, compared to ~135 nm·rad. This transition has significantly improved beam quality and performance. In 2025, this mode of operation was further optimized by the incorporation of skew quadrupoles into regular operation. As a result, the beam lifetime at a current of 100 mA was substantially enhanced from ~55 hours to ~75 hours.

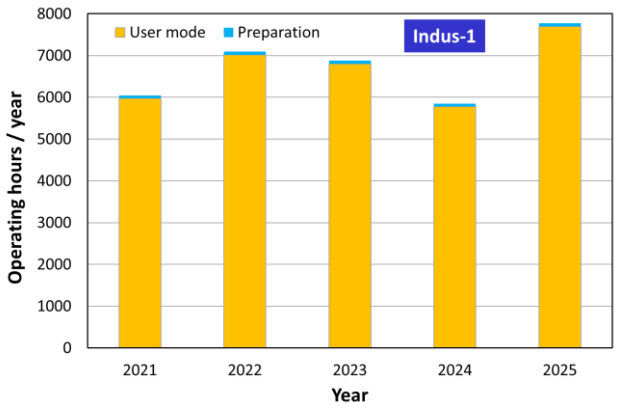
Periodic machine experiments were also carried out related to various studies including the lifetime improvement and beam-based alignments. Five planned shutdowns were taken amounting to 28 days. Activities related to upgrade, upkeep, obsolescence management and preventive maintenance, were undertaken during these shutdowns.



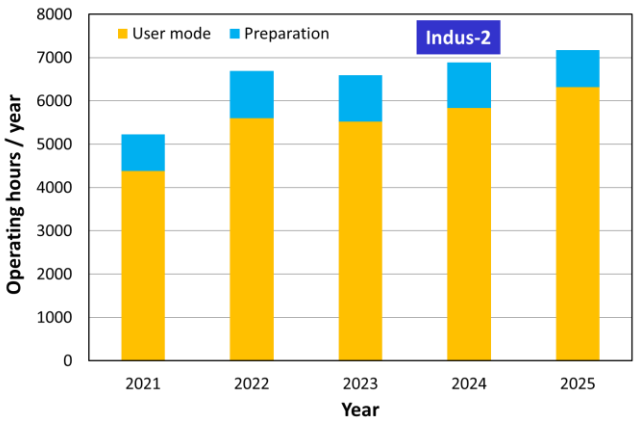
User mode operation of Indus-1



User mode operation of Indus-2

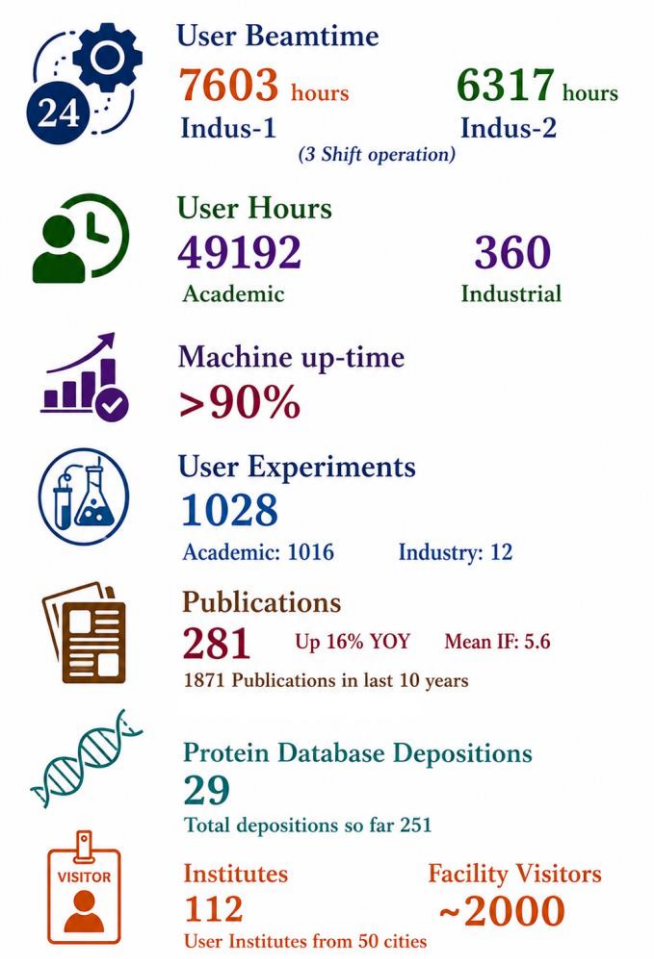


Beam availability in Indus-1



Beam availability in Indus-2

Key Performance Indicators (KPI) for 2025



Key Performance Indicators of Indus synchrotrons for 2025

Training, Qualification and Licensing Programme

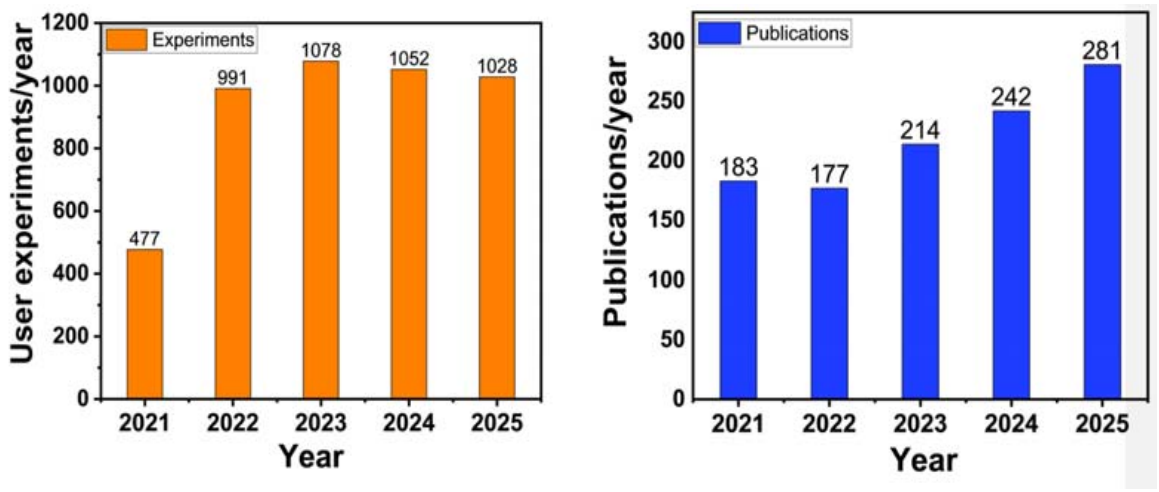
Training, Qualification and Licensing Programme (TQLP) for 6th batch of operation staff was completed in September-2025. Under this programme, 24 personnel have been trained and deployed as permanent operating staff.



TQLP Batch-6 in Indus Control Room

User Experiments and Publications statistics

The scientific utilization of the Indus beamlines has been consistent with the performance in the past years. Typically, annually 1000+ user experiments are being performed on Indus beamlines, resulting in 200+ publications. During the year 2025, 1028 user experiments have been performed. Based on the studies performed at Indus beamlines, in the year 2025, 281 publications appeared in peer reviewed journals - the highest number recorded so far.



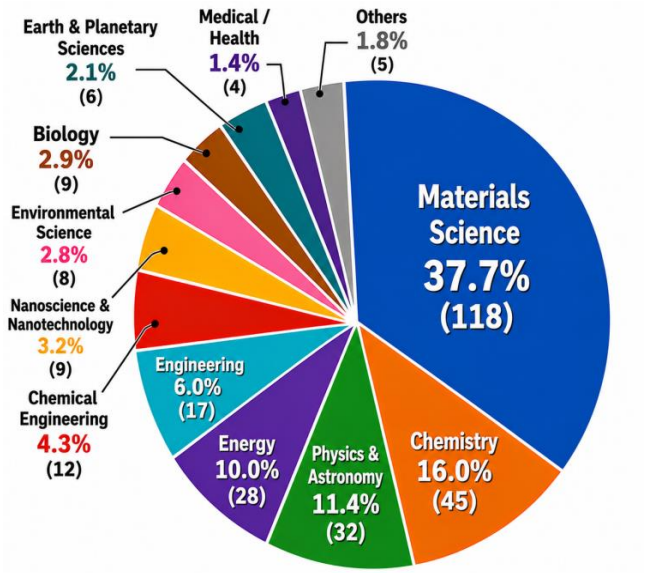
User experiments and publications statistics of Indus synchrotrons.

Researchers from 108 universities, national laboratories, research institutions, and 9 industries from different regions of India utilized Indus beamlines.



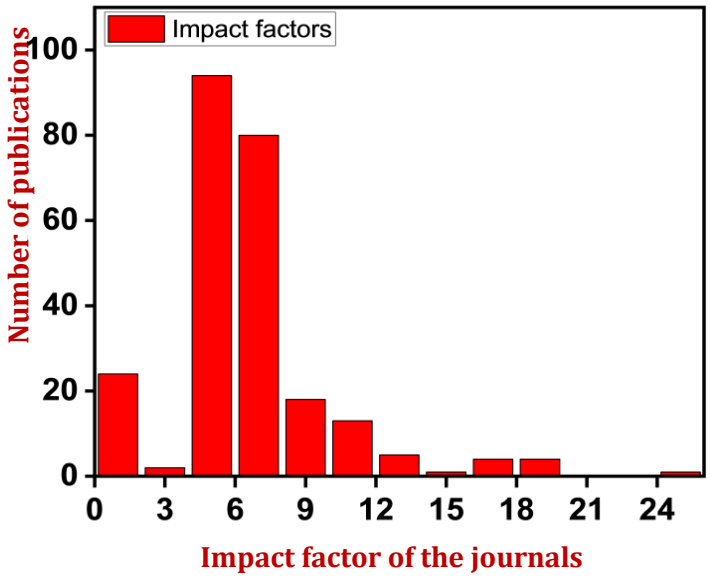
Userbase of Indus-1 and Indus-2 during the year 2025

The detailed list of the publications is given in Section-5. More than 50% of the total publications were published in the journal having impact factor 5 or more.



Subject Area	Materials Science	Chemistry	Physics & Astronomy	Energy	Engineering	Chemical Engineering	Nanoscience & Nanotechnology	Environmental Science	Earth & Planetary Sciences	Medical / Health	Others	Total
No. of Publications	118	45	32	28	17	12	9	8	6	4	5	281

Distribution of publications according to the area of research



A histogram of publications and impact factor of the journals

Industrial Users

During the year 2025, R&D departments of 9 pharmaceutical industries used Indus beamlines for investigations related to product development and characterization.

Serial No.	Industry name	Field/area of work of the industry	Types of experiments performed
BL-04: High resolution at X-ray Imaging beamline			
1.	Sahajanand Medical Technologies (SMT) Ltd, Surat Gujrat India	Design and fabrication of coronary and peripheral stents	Non-destructive X-ray micro-CT with dimensional measurement of stents struts
BL-09: Scanning EXAFS beamline			
1.	Lupin, Pune	Pharma	XAS on liquid samples
2.	Apothecon Pharmaceuticals Pvt. Ltd.	Pharma	XAS on liquid samples
3.	Orbicular Pharma Tech, Hyderabad	Pharma	XAS on liquid samples
BL-12: ADXRD beamline			
1.	Angeel Oak Specialty Chemtech Pvt. Ltd. Indore	Chemical	Powder XRD
2.	Technogreen, Pune	Pharma	Powder XRD
3.	Lupin, Pune	Pharma	Powder XRD
4.	MSN, Telangana	Pharma	Powder XRD
5.	Energon, Hyderabad	Pharma	Powder XRD
6.	Mankind Research Centre, Gurugram	Pharma	Powder XRD
BL-18: SWAXS Beamline			
1.	Lupin, Pune	Pharma	SAXS characterization of iron-sucrose complex
2.	Orbicular Pharmaceutical Technologies Pvt Ltd	Pharma	SAXS characterization of drug product (gel sample)

3 MAJOR UPGRADES AND NEW DEVELOPMENTS

Machine Safety Interlock System (MSIS) for upgraded Indus-1 Storage Ring

New multifunction magnets, having water-cooled sextupole coils and air-cooled corrector and skew-quadrupole coils magnet were installed during the upgradation of Indus-1 storage ring. A comprehensive machine safety and interlock system (MSIS) was integrated. The system takes status of 136 temperature switches mounted on all 52 magnets as system inputs. The system generates trip signals for 29 magnet power converters. VME DAQ station of this system comprises of digital output boards, with self-test feature and redundant power supplies. Supervisory control and data acquisition (SCADA) software, having API manager, GUI panels, data logging and web display, is deployed in the control room.



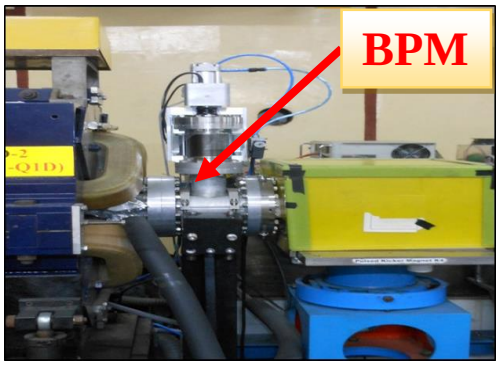
VME based DAQ station



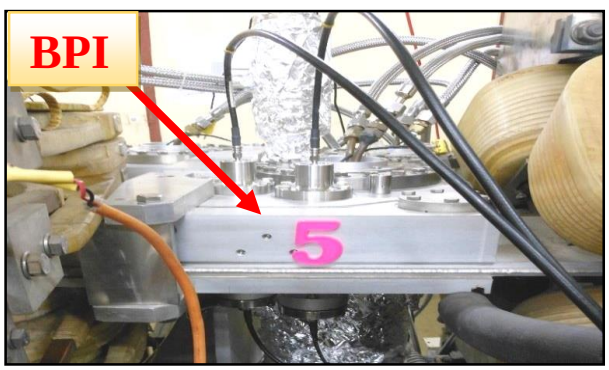
GUI panel showing interlock status

Upgradation of beam diagnostic devices in Indus-2

The edge-welded bellow of Beam Profile Monitor (BPM) installed in VS-1 was approaching its designed operating life, resulting in risk of vacuum failure. It was replaced with an upgraded version. Two Beam Position Indicators (BPIs) were also replaced with their upgraded versions. For this purpose, the vacuum segment VS-1 of length ~17m was vented. After this upgradation, the machine status was restored as planned for normal operation.



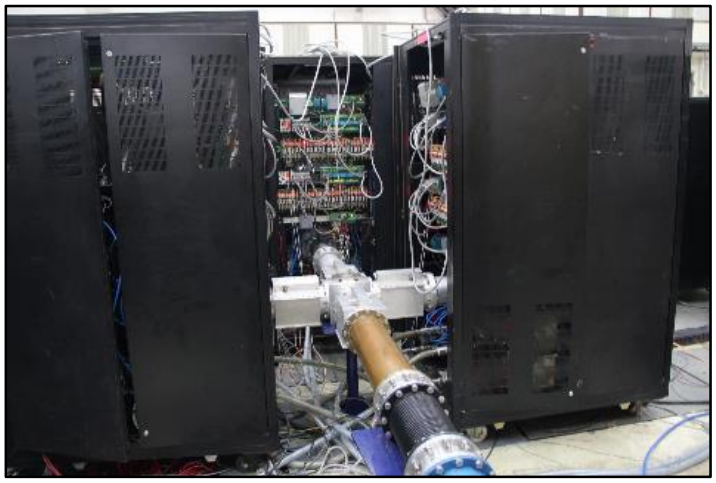
Upgraded BPM installed in VS-1



Upgraded BPI installed in Dipole Chamber-1 of VS-1

Upgradation of Indus-2 RF Amplifier System at RF Station-1

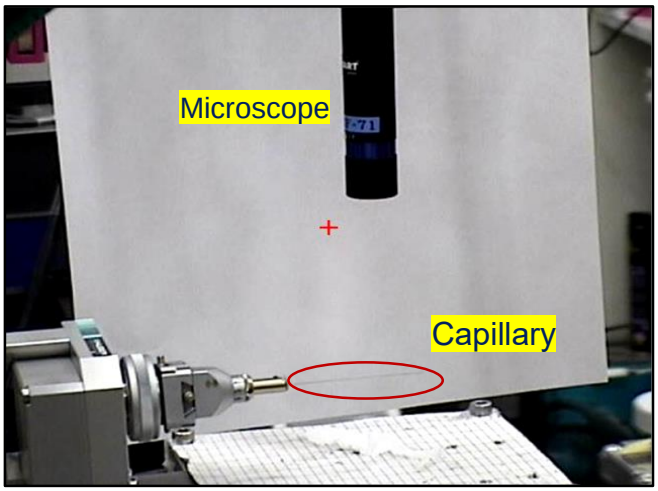
The existing 60 kW Inductive Output Tube (IOT) – based radio frequency (RF) amplifier at RF Station-1 was replaced with solid-state amplifier. The installed power level of this amplifier station was increased to 60 kW. The rated RF output power has been achieved by combining power of three 20 kW solid-state power amplifier (SSPA) racks using a 3-way RF power combiner. Each of the 20 kW SSPA rack has radial 64-way power dividing-power combining architecture.



The 60kW 505.8 MHz SSPA

Optical Microscope–Guided Capillary Alignment System for High Resolution XRD at Engineering Applications Beamline (BL-02) at Indus-2

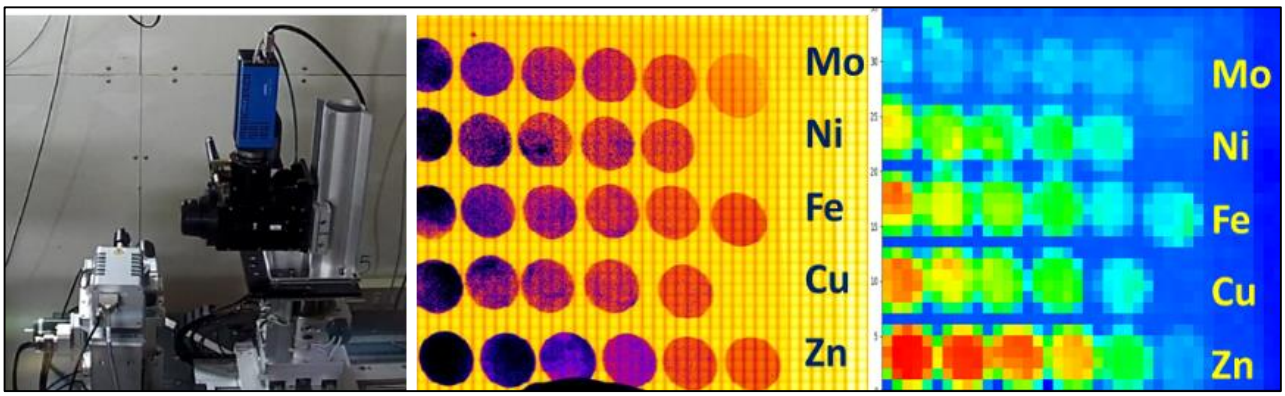
Few micrograms of samples are placed inside a thin glass capillary of 0.1 mm outer diameter. The capillary needs to be kept in path of x-ray beam of 0.1-0.2 mm vertical size. The capillary alignment is therefore a challenging task. To facilitate this, a setup for capillary mounting has been developed at BL-02. For remote alignment of capillary on rotation stage, an optical microscope guided set-up was developed. The performance has been tested by performing x-ray diffraction at 15 keV with standard LaB_6 powder and the resolution better than 0.01° FWHM has been demonstrated.



Setup with capillary & microscope

Combined Transmission and Elemental Mapping at Indus-2 Imaging Beamline (BL-04)

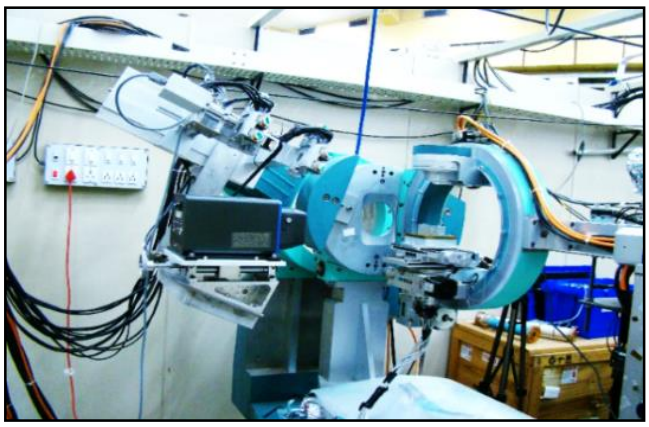
Combined transmission and 2D elemental mapping is performed using in-house developed phantoms with 0.1% concentration difference of elements. The set-up consists of a high resolution transmission-camera and fluorescence detectors at 90°, synchronized to a scanning set-up to raster scan the sample against a pencil beam. The stitching of transmission images and spectroscopic analysis of a series of spectrums provides a 2D elemental map and transmission radiography images to simultaneously provide the structure, density and composition information in the sample.



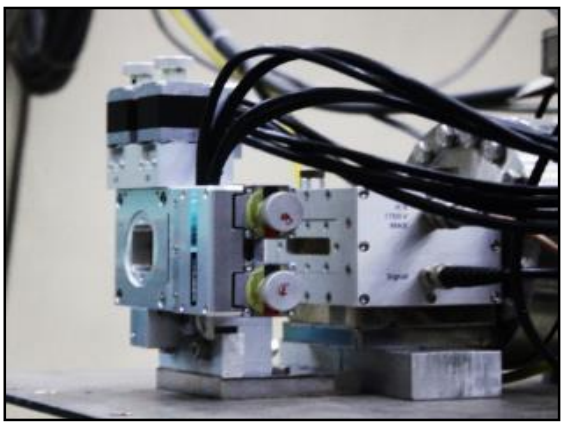
Combined transmission & elemental mapping experimental set-up at BL-04 with transmission image and fluorescence based elemental concentration

Installation of Area & Point Detectors and Entrance Slit at Indus-2 BL-13

A Pilatus 200K 2D detector and a new point detector have been installed on a goniometer at BL-13, Indus-2. This upgrade enables high-resolution, high-throughput powder diffraction, as well as in-operando studies of batteries and electric-field-dependent experiments. An entrance slit has also been installed to ensure the precise beam sizes required for a wide variety of samples. By combining focusing optics with this slit, the beamline can now provide either point or line beams depending on experimental requirements.



Pilatus 200K detector

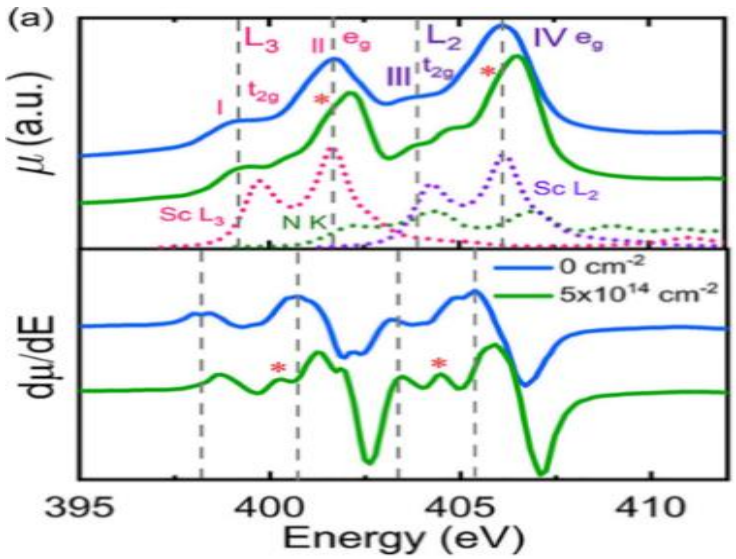


Entrance slit

4 SALIENT SCIENTIFIC EXPERIMENTS AT INDUS BEAMLINES

Carbon ion implantation for electron compensation in epitaxial scandium nitride *(Phys. Rev. B 112, 165302, 2025)*

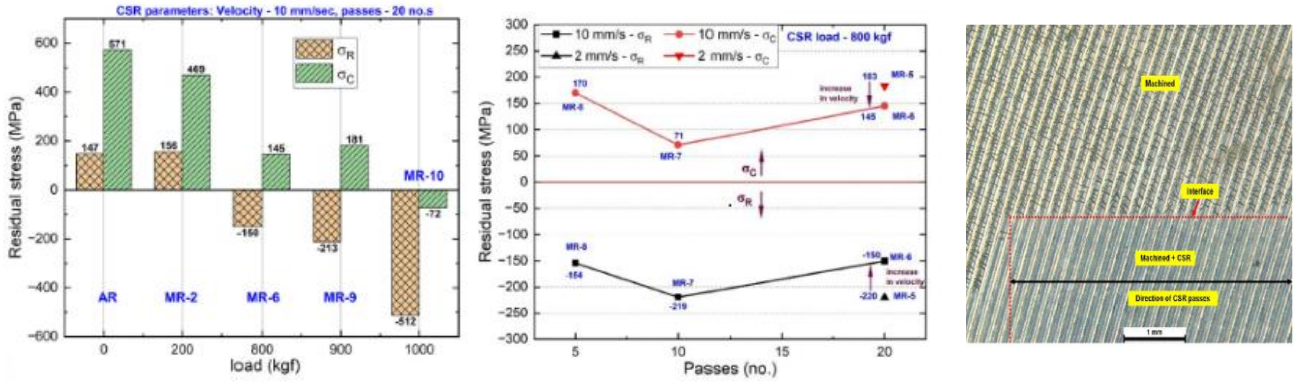
Scandium nitride (ScN), an emerging indirect bandgap semiconductor, has attracted significant interest in the recent times for thermoelectricity, infrared plasmon and phonon-polaritons, neuromorphic computing, and Schottky diode device applications. The work done at Indus-2 BL-09 demonstrated that hole doping in ScN with carbon ion-implantation presents a pathway to tune the electron concentration in ScN for device applications. Measurement of Sc $L_{3,2}$ edges proved to be critical to analyze the electronic structure of C doped ScN thin films.



Sc $L_{3,2}$-edge XANES spectra of pristine ScN and C-implanted ScN thin films along with its derivative.

Controlled surface rolling (CSR) to mitigate stress corrosion cracking in machined SS304L *(J. Mater. Eng. Perform. 34, 11101, 2025)*

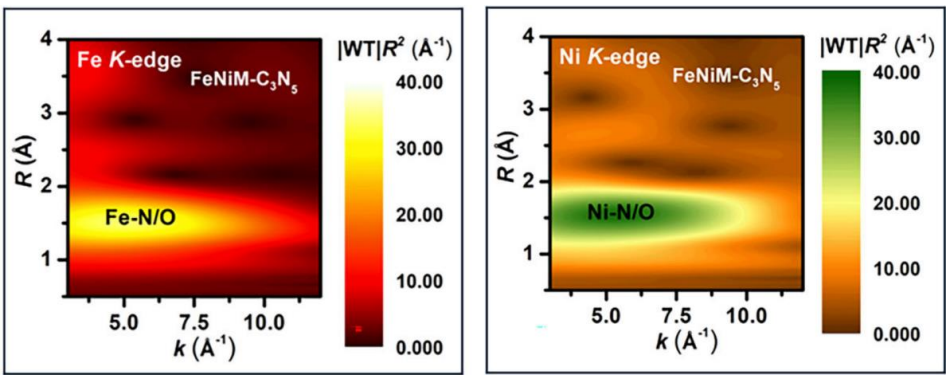
The circumferential and radial (σC and σR) residual stress values, after different CSR operation, were measured at Indus-2 BL-02. High tensile residual stress σC (571 MPa) and σR (147 MPa) were measured in the SS304L plates as-received (AR) and machine rolled (MR) specimens. These parameters were observed to reduce after CSR or were converted to compressive stresses. The effect of rolling load on residual stress is shown in figure below (left). This helped in deciding the optimum load needed to generate compressive residual stress. At a load of 800 kgf, the effect of rolling passes and roller velocity on residual stress is shown in the middle figure. Absence of SCC cracks in machined + CSR region is shown in right figure confirmed that required residual stress has been achieved. This work helped in developing procedure for controlled surface rolling to mitigate stress corrosion cracking.



Effect of CSR operation parameters rolling load (left), roller velocity and passes on residual stresses produced along circumferential and radial directions with respect to machining lines (middle), MR sample after ASTM G36 test for 24 h (right).

Atom-Scale Charge Reorganization for MOF-Driven Electrocatalytic Switching *(Adv. Funct. Mater. 36, e15131, 2026)*

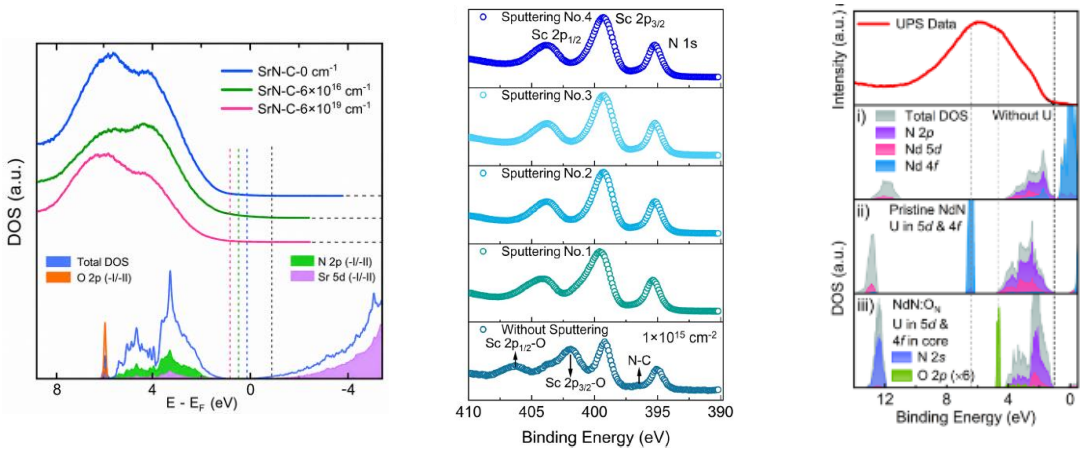
Rechargeable zinc–air batteries could deliver cheap, high-capacity energy storage, but their performance is limited by two sluggish reactions at the air electrode: oxygen reduction (ORR) and oxygen evolution (OER). Metal–organic frameworks (MOFs) are attractive catalysts because their structure and pores can be finely tuned, but most are monofunctional — good at OER, yet poor at ORR, where they often get stuck at a wasteful two-electron step that makes peroxide instead of water. The root cause is that the electronic state of the metal atoms is not naturally suited for both jobs at once. This study, carried out at Indus-2 BL-09, overcame that limit by anchoring a bimetallic Fe–Ni MOF onto a nitrogen-rich C_3N_5 support, forming metal–nitrogen ($M–N_x$) bonds at the interface that pulled electron density between the two metals. X-ray absorption spectroscopy (EXAFS and XANES) was the key tool that proved this: by precisely tracking shifts in the Fe and Ni absorption edges and fitting the local bonding environment around each atom, it directly showed iron becoming electron-rich and nickel becoming electron-poor, while also confirming the new metal–nitrogen bonds — insight no other technique in the study could provide. The resulting bifunctional catalyst gave the zinc–air battery higher power output and longer cycling life than benchmark noble-metal catalysts.



WT-EXAFS maps at Fe and Ni K-edges showing dominant M–N/O coordination and absence of metal–metal scattering, confirming atomic dispersion

Study of electronic properties of "Metal Nitrides" for energy harvesting and thermoelectricity *(Phys. Rev. B 112, 165302, 2025), (ACS Nano 19, 36636, 2025)*

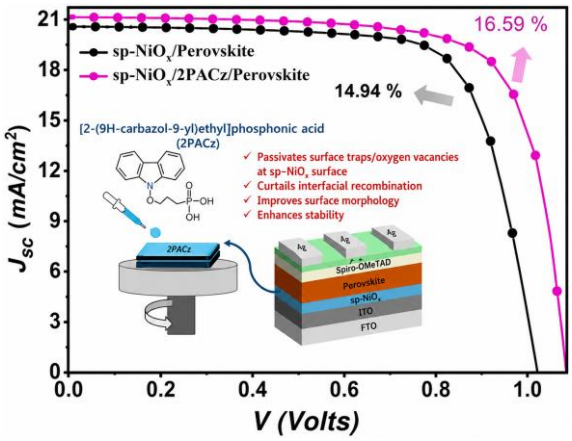
Nitrides are semiconductor materials known for extreme hardness, high-temperature stability, and unique electrical and optical properties with distinct applications in electronics, renewable energy, magnetic sensors, optoelectronic devices etc. Research on nitrides primarily focuses on developing high-performance materials. Hole doped ScN reported to have high thermoelectric power factor and NdN is a unique ferromagnetic semiconductor. Electronic structure studies of ScN and NdN at Indus-2 BL-10 reveal the character of valance electrons near the Fermi level responsible for the origin on novel properties of these materials.



Shift of the valence band maxima in Carbon ion-implanted ScN indicates hole doping (left). The sample surface shows strong oxygen contamination from strong Sc-O bonding, which eventually reduces inside the ScN:C sample with sputtering (middle). Valence band of NdN reveal contribution of occupied 4f states for the orbital driven ferromagnetism (right)

Tailoring sputter grown NiOx layer by synergistic surface passivation for efficient perovskite solar cells *(Sol. Energy 288, 113286, 2025)*

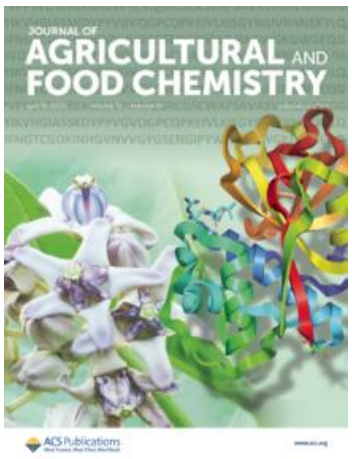
Sputtered nickel oxide (NiOx) serves as an appealing hole-transport layer for effective and stable p-i-n perovskite solar cells due to its ameliorated mobility of hole, outstanding stability, ease of fabrication and favorable fermi level for proficient transfer of holes. However, unfavourable chemical reactions and surface traps at the sputter grown NiOx/perovskite interface hinder its performance. To address these challenges, a novel passivation approach for the sputter grown NiOx/perovskite interface has been demonstrated by utilizing a self-assembled monolayer of [2-(9H-carbazol-9-yl) ethyl] phosphonic acid (2PACz). It was found that the 2PACz based passivation layer not only enhances the morphology of perovskite film with ameliorated domain size, it also diminishes carrier recombination amid sputter grown NiOx/perovskite interface, mitigating surface defects of the sputter grown NiOx film. Synchrotron XRD at Indus-2 BL-12 have verified the degree of crystallinity and phase analysis of the films using surface-sensitive grazing incidence X-ray diffraction (GIXRD) measurements.

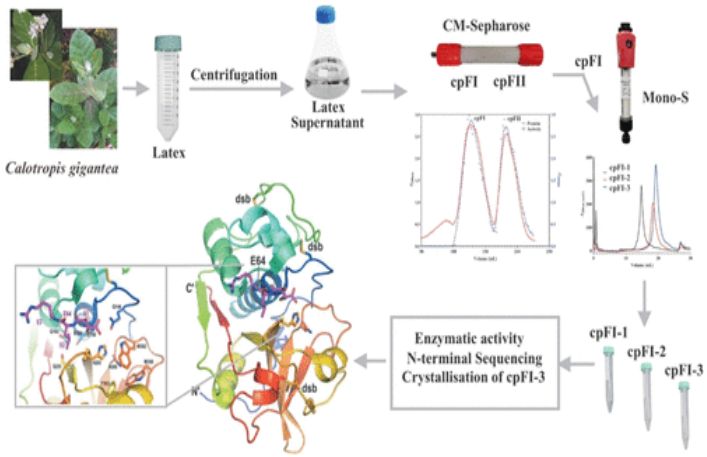


J–V characteristics of perovskite solar cells with and without 2PACz modification

Crystal Structure of Papain-Like Cysteine Protease, Calotropain FI, Purified from the Latex of Calotropis gigantean *(Journal of Agricultural and Food Chemistry, 2025)*

This study reports the high-resolution crystal structure of Calotropain FI, a papain-like cysteine protease isolated from the latex of the medicinal plant *Calotropis gigantea (Aak in Hindi and Rui in Marathi)*. Papain-like proteases are important enzymes widely used in food processing, pharmaceuticals, and biotechnology because of their strong proteolytic activity. The protein was purified and crystallized it in complex with the cysteine-protease inhibitor E64 to stabilize the enzyme and capture its active conformation. Crystal structures were determined at 1.25 Å resolution (at pH 6) and 1.4 Å resolution (at pH 9), providing detailed insight into the enzyme's catalytic architecture. The high-quality electron density maps of structures revealed the primary protein sequence of Calotropain FI which expands understanding of plant cysteine proteases and their catalytic mechanisms. These insights may facilitate biotechnological exploitation of plant proteases, including applications in food processing, pharmaceuticals, and protein hydrolysis. This paper was featured on cover page of a ACS Journal of Agricultural and Food Chemistry.





Cover page of the Journal of Agricultural and Food Chemistry (left). Isolation, biochemical characterization, crystallization and structure determination of Calotropain FI from latex of Calotropis gigantea plant (right).

5 LIST OF PUBLICATIONS

1 Aishwarya Madhuri, Mukul Gupta, Bibhu Prasad Swain, A Study on Surface-Interface Regulation and Tribomechanical Performance: Al1-xCuxN Ternary Nitride Coatings, Surfaces and Interfaces 64, 106407 (2025).DOI: https://doi.org/10.1016/j.surfin.2025.106407

2 S. Jena, M. Gupta, B. P. Swain, Effect of V concentration on X-ray absorption edge, opto-mechanical, and anti-corrosion properties of Ti1-xVxN thin films, Vacuum 240, 114496 (2025). DOI: https://doi.org/10.1016/j.vacuum.2025.114496

3 Hardepinder Singh, Mukul Gupta, Parasmani Rajput, Hardeep Kumar, Unraveling the structural and electronic features of tungsten nitride (WNx) thin films, Journal of Alloys and Compounds 1017, 179122 (2025).DOI: https://doi.org/10.1016/j.jallcom.2025.179122

4 Mandeep Singh, Pooja Gupta, Sanjay Rai, SarathlalKoyilothVayalil, Mukul Gupta, Ilaria Carlomagno, Carlo Meneghini, Ajay Gupta, Structural changes in amorphous Co40Fe40B20 thin film interfaced with tungsten upon thermal annealing: A depth resolved XRD and XAS study, Surfaces and Interfaces 56, 105716 (2025). DOI: https://doi.org/10.1016/j.surfin.2024.105716

5 Manisha, Mukul Gupta, V. Raghavendra Reddy and SeviMurugavel, Effect of strain on the electronic structure and polaronic conductivity of LiFePO4, Physical Chemistry Chemical Physics 27 (2025). DOI: https://doi.org/10.1039/D4CP03106G

6 Vishal Thakur, Sanjeev Gautam, Mukul Gupta, Ramjanay Chaudhary, Chapter 15 - X-ray tools for characterizing nanostructures: computational aspects, Advances in Nanostructures: Processing and Methodology to Grow Nanostructures Micro and Nano Technologies, Pages 405-424 (2025). DOI: https://doi.org/10.1016/B978-0-443-13819-5.00015-X

7 Vijay K., Ali K., Bano N., Ahlawat A., Gupta M., Choudhary R.J., Shukla D.K., Arya A., Banik S., Effect of Fe doping on the electronic properties of CoSn Kagome semimetal, Journal of Physics Condensed Matter 37, 095502 (2025).DOI: https://doi.org./10.1088/1361-648X/ad9a46

8 Khushboo Bukharia, Prasanta Karmakar, Jagrati Dwivedi, Mukul Gupta, V.R. Reddy, Pallavi Pandit, SarathlalKoyilothVayalil, Thomas F. Keller, Andreas Stierle, Stephan V. Roth, Ajay Gupta, Atomic level mechanism of nanoripple formation on silicon by oblique angle irradiation with molecular nitrogen ions, Applied Surface Science 706, 163576 (2025). https://doi.org/10.1016/j.apsusc.2025.163576

9 Sushanta Mandal, Jyoti Sharma, Tirthankar Chakraborty, Sanjoy Kr. Mahatha, Sourav Marik, Structural, magnetic and x-ray absorption spectroscopy studies of new Cr-based low, medium and high-entropy spinel oxides, Journal of Alloys and Compounds 1010, 177993 (2025). DOI: https://doi.org/10.1016/j.jallcom.2024.177993

10 Y. Kumar, S. Kalal, A. Tayal, M. Gupta, Crystal structure of MnN resolved using x-ray absorption fine structure,Journal of Alloys and Compounds 1038, 182507 (2025).DOI: https://doi.org/10.1016/j.jallcom.2025.182507

11 S. Sahu, R.P. Singh, R. Rawat, A. Gloskovskii, Mukul Gupta, Synthesis and Characterization of Single-Phase ReN Thin Films,Phys. Status Solidi RRL 2500288, 1-6 (2025).DOI: https://doi.org/10.1002/pssr.202500288

12 Shivani Sahu, P. Gupta, P. Rajput, A. Gloskovskii, Mukul Gupta, Comprehensive Study of Structural and Electrocatalytic Properties of Ni–N Thin Films, Phys. Status Solidi RRL 202500327, 1-6 (2025).DOI: https://doi.org/10.1002/pssr.202500327

13 S. Rudra, D. Rao, S. Kobri M., A. Dey, R. Karanje, P. Das, S. Manna, M. Baral, B. Yadav, A. I. K. Pillai, M. Garbrecht, M. Gupta, S. Sahoo, T. Ganguli, B. Saha, Carbon ion implantation for electron compensation in epitaxial scandium nitride, Physical Review B 112, 165302 (2025). DOI: https://doi.org/10.1103/b5x8-c1bl

14 H K Singh, A K Kushwaha, B Chittari, M Gupta, P Dobbidi, Site-symmetry-driven Fe *d* -orbital splitting and its influence on optical transitions in SrFe12O19 *M* -type hexaferrite, Physical Review B 112, 155156 (2025). DOI: https://doi.org/10.1103/b61m-nw6m

15 N. Shukla, V. Jain, N. Kumar, S. Pati, M. Gupta, S. Chaudhary, Structural, magnetic, and transport properties of co-sputtered ferrimagnetic Mn2Sb thin films, Journal of Alloys and Compounds 1046, 184720 (2025). DOI: https://doi.org/10.1016/j.jallcom.2025.184720

16 S. Das, S. Anand, P. A. Vishwakarma, R. Singh, S. K. Mukherjee, S. K. Sinha, R. Kumar, D. Shikha, A. Kale, U. Mahtre, S. Ojha, G. R. Umapathy, M. Gupta, Formation of TiN protective layer at 500 °C for enhanced oxidation resistance of IMI 834 titanium alloy in aerospace engine applications, Ceramics International 51 (2025). DOI: https://doi.org/10.1016/j.ceramint.2025.09.098

17 U. Rathod, S. Hajra, S. Jethva, S. Katba, M. Vagadia, R. Urkude, R. J. Choudhary, M. Gupta, A. Ravalia, Role of crystal structure and local electronic structure on the magnetic behaviour of yMn1 −xFexO3 (x = 0.0, 0.3, 0.5, 0.7, and 1.0) system, Journal of Alloys and Compounds 1040, 183667 (2025). DOI: https://doi.org/10.1016/j.jallcom.2025.183667

18 V. Thakur, S. Gautam, P. Rajput, H-G Jee, S. Chakraverty, M. Gupta, K. H. Chae, C.-C. Hwang, Electronic structural investigation of Ni-doped CeO2-y for catalytic hydrogen production: exsitu XRD, XAS, and XPS study, International Journal of Hydrogen Energy 158, 150258 (2025). DOI: https://doi.org/10.1016/j.ijhydene.2025.150258

19 B. K. Mahapatra, P. Barman, D. R. Panigrahi, S. Kochrekar, B. Paul, A. Panghal, A. Kumar U., V. M. Dhavale, M. Gupta, D. Kumar, V. Kumar, S. K. Singh, Acidic and Alkaline pH Controlled Oxygen Reduction Reaction Pathway over Co-N4C Catalyst, Small 20, 2405530 (2025). DOI: https://doi.org/10.1002/smll.202405530

20 Studies on the proximity effect in Bi-based high temperature superconductor/manganite heterostructures, Gayathri V., E. P. Amaladas, A. T. Sathyanarayana, T. Geetha Kumary, R. Pandian, Pooja Gupta, Sanjay K. Rai and Awadhesh Mani, Phys. Chem. Chem. Phys., ,27, 9607-9619 (2025).

21 Unravelling the subgrain stabilities of microstructures across P91 steel weld joint under creep-fatigue interaction loading waveforms through EBSD and synchrotron based XRD studies, P. Vaishali, Vani Shankar, Ashok Bhakar, Sanjay Rai,, Materials Characterization, Volume 224,115062 (2025).

22 Controlled Surface Rolling: A Novel Low Plasticity Burnishing Technique to Mitigate Stress Corrosion Cracking in Machined SS304L, Saradhi Gumma, M. K. Swami, G. Bharat Reddy, P. Ganesh, H. Donthula, Sanjay Kumar Rai & Supratik Roychowdhury, J. of Materi Eng and Perform 34, 11101(2025).

23 Structure, stress, and optical property correlations in nano-structured Mo/Si and W/B4C multilayer mirrors for hard x-ray applications, F. Mollick, M. Nayak, A. K. Kashyap, J. Kumar, A. Majhi, N. Pothana, P. Rajput, M. K. Tiwari, S. K. Rai, M. N. Singh & A. Sagdeo, J. Appl. Phys. 138, 175303 (2025).

24 Deciphering the role of Nb driven interface engineering on the magneto-structural properties of W/CoFeB Heterostructures, Neha Gupta, Harsh Bhatt, Anirudhha Bose Mukul Gupta, Surendra Singh, S.K. Rai, Pooja Gupta, Journal of Alloys and Compounds,1035, 181571 (2025).

25 Effect of Al doping on structural, electronic, mechanical, and optical properties of VN thin films. A. K. Verma, R. Gupta, Pooja Gupta, S. Rai, S. Prakash, A. Tayal, A. Gloskovskii, R. Ramaseshan, P. Garg, U. Deshpande & M. Gupta, Applied Surface Science Advances 30, 100884 (2025).

26 Studies on magnetron sputtered niobium thin films: influence of deposition angle of sputtered atoms, P. N. Rao, M. K. Swami, Amrit Ghosh, R. Jangir & S. K. Rai, Appl. Phys. A 131, 168 (2025).

27 Exploring Oxygen Vacancies in Sputtered HfO2 Films for Multi-Bit RRAM Applications, Tanmayee Parida, Sonali Patajoshi, Bisweswar Santra, Ummiya Qamar, Aniruddha Bose, P. N. Rao, Sanjay Rai, Santanu Das, Aloke Kanjilal, Adv. Mater. Technol.10, no. 22, e00289 (2025).

28 Glancing Angle Deposition-Induced Asymmetric Growth and Magnetic Anisotropy in Co2FeAl/C60 Thin Films. Sonia Kaushik, Rakhul Raj, Manisha Priyadarsini, Pooja Gupta, Gouranga Manna, Varimalla Raghavendra Reddy, and Dileep KumarACS Applied Electronic Materials,7, 3000 (2025).

29 Growth-induced magnetic anisotropy in Co/C60 bilayers: Insights from a two-grain Stoner-Wohlfarth model, Sonia Kaushik ,Rakhul Raj , Pooja Gupta ,Andrei Chumakov, Matthias Schwartzkopf ,V. Raghavendra Reddy and Dileep Kumar, Phys. Rev. B 111, 184426 (2025).

30 Effect of TIG-arcing speed on the microstructure vis-`a-vis mechanicalbehaviour of surface modified low carbon steel, Sachin Balbande, Sanjay Rai, Gautam Agarwal, Sourav Das, Wear,570, 2059241 (2025).

31 Structural changes in amorphous Co40Fe40B20 thin film interfaced with tungsten upon thermal annealing: A depth resolved XRD and XAS study, Mandeep Singh, Pooja Gupta, Sanjay Rai, Surfaces and Interfaces, 56, 105716 (2025).

32 Does compaction pressure control densification, dislocation density and texture evolution in spark plasma sintered WC? An investigation by SXRD and EBSD,Arun Kumar Panda, R. Mythili, R. Thirumurugesan, Pradyumna Kumar Parida, T. Sreepriya, S. K. Rai & Arup Dasgupta,Philosophical Magazine, 1, (2025).

33 Sharma, A., Agrawal, A.K., Singh, B. et al. Micro-CT based internal morphological analysis of blowfly

(Chrysomya megacephala): a potential tool to age blowfly pupae having forensic implications. Int J Trop Insect Sci (2025). https://doi.org/10.1007/s42690-025-01542-3

34 Balwant Singh, Ashish K. Agrawal, Yogesh Kashyap, Payal Singhai, Mayank Shukla; Development of a novel single absorption grating based versatile multi-contrast imaging facility at the X-ray Imaging beamline, Indus-2. *Rev. Sci. Instrum.* 1 May 2025; 96 (5): 053705. https://doi.org/10.1063/5.0250945

35 Singh, Y.P., Dasgupta, S., Agrawal, A.K. et al. Quantitative analysis of reinforcement of nano-sized monetite particles on chitosan/gelatin 3D porous scaffolds using the micro-CT technique. J Porous Mater (2025). https://doi.org/10.1007/s10934-025-01807-9

36 Pal, A., Kar, S., Debnath, C. et al. Influence of chemical purification methodologies on the Bridgman growth of trans-stilbene (TSB) crystal, and feasibility studies for X-ray imaging and neutron/gamma discrimination applications. J Mater Sci: Mater Electron 36, 793 (2025). https://doi.org/10.1007/s10854-025-14845-5

37 Jairam Raigar, Rajkumar Velu, Ashish Kumar Agrawal, Hadi Bakhshi, Optimization of selective laser sintering process parameters for phenolic thermoset composites using X-ray CT analysis, Materialia,Volume 42,2025, 102451, ISSN 2589-1529, https://doi.org/10.1016/j.mtla.2025.102451.

38 Kashyap, Y., Agrawal, A., Shukla, M. et al. A comparative study of correlation and moment analysis based phase retrieval techniques for unidirectional X-ray speckle interferometry. J Opt (2025). https://doi.org/10.1007/s12596-025-02679-7

39 Yogesh Kashyap, Ashish Agrawal, Mayank Shukla, Hongchang Wang, Kawal Sahwney, A comparative study of sub-sampling methods in X-ray speckle interferometry based phase contrast imaging using synchrotron radiation source,Nuclear Instruments and Methods in Physics Research Section A: Accelerators, Spectrometers, Detectors and Associated Equipment,Volume 1070, Part 1,2025, 170042, ISSN 0168-9002, https://doi.org/10.1016/j.nima.2024.170042.

40 High performance triboelectric nanogenerator by synchrotron X-ray assisted Ru/g-C3N4 nanostructure incorporated into PDMS matrix M. Sonawane, A. B. Phatangare, Balu R. Thombare, A. P. Jadhav, Puspen Mondal, Nitin Khantwal, S. S. Dahiwale, V. N. Bhoraskar, S. D. Dhole J. Appl. Phys. 137, 024901 (2025),doi.org/10.1063/5.0234645

41 Joshi, B.; Tyagi, P.; Dimri, A.; Juyal, A.; Yadav, A. K.; Vempatapu, B. P.; Singh, O.; Sarkar, B. Improved Styrene Yield from Thermocatalytic Disintegration of Waste Styrofoam over Ceria Nanospheres. ACS Sustain. Chem. Eng. 2025, 13 (36), 14928–14938. https://doi.org/10.1021/acssuschemeng.5c05023.

42 Ahmad, A.; Yadav, A. K.; Dewangan, A. K. Synergistic Effect of Various Nanoparticles Infused Biodiesel/Diesel Blends on Combustion, Performance, and Environmental Characteristics of a CI Engine. J. Energy Inst. 2025, 120, 102117. https://doi.org/10.1016/j.joei.2025.102117.

43 Kumar, M.; Rajput, P.; Sharma, A.; Singh, P. K.; Khan, S. A.; Singh, F. Swift Heavy Ion Beam-Induced Oxidation of Eu2+ to Eu3+ and Charge Transfer Processes in Mn-Eu Doped BaMgAl10O17 Nanophosphors. Ceram. Int. 2025, 51 (19), 27998–28009.

44 Pandey, P.; Kaushik, S. D.; Rajput, P.; Singh, M. N.; Sharma, R. K.; Giri, S. Nature of Local Disorder in β-NaYF4-Based, near-Infrared Upconverting Core Nanocrystals Due to Deliberate Incorporation of a Symmetry Perturbing Agent. Nanoscale 2025, 17 (4), 2269–2280.

45 Kumar, P.; Swami, K.; Tripathy, N.; Urkude, R. R.; Dadhich, A.; Sharma, P.; Singh, M.; Subaharan, K.; De Sarkar, A.; Shanmugam, V. Engineering Single Pd Atom in W18O49 Nanowire for Ultra-Sensitive Crop Pest Detection and Remote Data Communication. Chem. Eng. J. 2025, 519, 164854.

46 Balhara, A.; Gupta, S. K.; Ghosh, P. S.; Abraham, M.; Tyagi, M.; Yadav, A. K.; Das, S.; Sudarshan, K.; Sarkar, P. S. Unleashing the Potential of Defect Engineered Persistent Pr3+-Activated Phosphors for Multi-Dimensional Anti-Counterfeiting and X-Ray Imaging Applications. Small 2025, 21 (46), 2501752. https://doi.org/10.1002/smll.202501752.

47 Pahuja, M.; Vishnu, S.; De, I.; Jyothirmai, M. V; Sharangi, S.; Rani, S.; Das, S.; Harini, E. M.; Afshan, M.; Urkude, R.; others. Dual-Action Photocatalyst: MnO2/CuO Decorated 3D Porous Carbonaceous Matrix as Reusable Photocatalyst for Rapid Removal of Industrial Dyes and Antibiotics from Contaminated-Water. J. Environ. Chem. Eng. 2025, 13 (3), 116502.

48 Prakash, A.; Basappa, S.; Urkude, R. R.; Jangir, R.; Dhayal, R. S.; Kumar Bose, S. Zero-Valent Copper Catalysis Enables Regio-and Stereoselective Difunctionalization of Alkynes. Angew. Chemie 2025, 137 (8), e202418901.

49 Ghosh, S.; Bhattacharya, S.; Barick, K. C.; Guleria, A.; Bhattacharyya, K.; Yadav, A. K.; Chakraborty, A.; Rakshit, S.; Patra, S.; Lawande, M.; Chakraborty, S.; Chakravarty, R. Bioinspired Synthesis of Intrinsically

Radiolabeled Dy2O3Nanoparticles as an In Vivo Generator Of 166Dy/166Ho: A Smart Choice for Theranostics Engineering. ACS Appl. Mater. Interfaces 2025, 17 (30), 42767–42780. https://doi.org/10.1021/acsami.5c08153.

50 Dutta, A.; Saha, S.; Urkude, R. R.; Kumar, R.; Bhattacharyya, D.; Das, I. Disorder Induced Modification of Griffiths Phase and Observation of Robust Glassy Magnetic Behavior in Multiferroic GaFeO3 Compound. J. Alloys Compd. 2025, 1021, 179609. https://doi.org/10.1016/j.jallcom.2025.179609.

51 Parveen, R.; Kalita, P.; Shukla, R.; Rajput, P.; Singh, J.; Khan, S. A.; Grover, V.; Dilawar, N.; Avasthi, D. K. Investigating Damage in YSZ-MgO Composites against Low Energy Heavy Ions. Ceram. Int. 2025, 51 (20), 32368–32380.

52 Yadav, A.; Pathak, P. K.; Matsagar, B. M.; Patil, R.; Chen, N. C.-R.; Urkude, R. R.; Ujihara, M.; Wu, K. C.-W.; Salunkhe, R. R.; Dutta, S. Interfacial-Bulk Electrochemistry of Sodium-Ion Storage in Multiwalled Carbon Nanofiber Anode with Incorporated Mn- N4 Single-Atoms. Chem. Eng. J. 2025, 169716.

53 Nithya, K.; Anbarasan, R.; Anbuselvan, N.; Maricherla, H.; AK, A.; Rajput, P.; Rana, R. K.; Vasantha, V. S.; Ravva, M. K.; Suresh, D.; others. Isolated Nickel Atomic Sites on N-Rich Nanoporous Carbon Derived from Covalent Imine Polymer as a Buchwald--Hartwig N-Arylation Catalyst. ACS Catal. 2025, 15 (21), 17779–17789.

54 Vashisht, G.; Roychowdhury, R.; Rajput, P.; Kumar, R.; Trivedi, A.; Balal, M.; Bose, A.; Tiwari, M. K.; Barman, S. R.; Sharma, T. K.; others. Investigations on the Effect of Arsenic and Phosphorus Atomic Exchange on the Origin of Crystal Potential Fluctuations in InAsP/InP Epilayers. Appl. Surf. Sci. 2025, 682, 161627.

55 Bisht, R.; Kumar, A.; Upreti, D.; Kaur, B.; Urkude, R. R.; Bera, C.; Bagchi, V.; others. Unveiling a Cooperative Mechanism for the Alkaline Hydrogen Evolution Reaction: Role of Built-in Electric Field. Adv. Energy Mater. 2025, 15 (14).

56 Singh, H.; Annadata, H. V; Kumar, A.; Puri, S. Unraveling the Chemical Environment and L3 Absorption-Edge Shift in Lead Compounds Using X-Ray Absorption Spectroscopy. X-Ray Spectrom. 2025.

57 Mohanty, B.; Pradhan, L.; Satpati, B.; Rajput, P.; Ghorbani-Asl, M.; Wei, Y. D.; Menezes, P. W.; Krasheninnikov, A. V; Jena, B. K. Structural and Compositional Optimization of Bimetallic NiCo Alloy for of Alkaline Evolution Reaction. 2025.

58 KaniAmuthan, B.; Ponnusamy, R.; Karuppannan, A.; Jethawa, U.; Venkatesan, R.; Urkude, R. R.; Sanghavi, B.; Ghosh, B. B.; Chakraborty, B. Scalable Synthesis of Bi2S3/Se Fused Nanoplatelets with Promising Super-Capacitive Performance. J. Power Sources 2025, 650, 237490.

59 Das, D.; Pal, M.; Sarma, M.; Pathak, A.; Bahadur, J.; Annadata, H. V.; Kharwar, Y.; Kancharlapalli, S.; Dutta, A.; Sudarshan, K. Unraveling the Efficacy of Defect Engineered Mesoporous Ni-Co Spinel Oxide Nanowires as an Energy Efficient Electrocatalyst for the Oxygen Reduction Reaction and Fuel Cell Applications. J. Mater. Chem. A 2025, 13 (13), 9402–9417. https://doi.org/10.1039/d4ta04454a.

60 Pati, D. K.; Mahapatra, S.; Mahapatra, M.; Chakroborty, S.; Malviya, J.; Das, P. R.; Dwivedi, R.; Parida, B. N.; Urkude, R. R.; Padhee, R. Effect of Samarium Doping on Structural Properties and Electronic Structure of Bi0. 5Na0. 5TiO3 Ceramic with Antimicrobial Applications. Ceram. Int. 2025.

61 Gautam, A.; Basu, J.; Ahmad, M. I. Strain-Driven Lattice Distortion in Calcium-Added (Co, Cu, Mg, Ni, Zn)O and Its Electrical Properties. Adv. Eng. Mater. 2025, 27 (23), e202501238. https://doi.org/10.1002/adem.202501238.

62 Saha, S.; Mitra, S.; Kharwar, Y. P.; Annadata, H. V; Roy, S.; Dutta, A. A Molecular Catalyst-Driven Sustainable Zinc-Air Battery Assembly. Small 2025, 21 (7), 2411021.

63 Saha, S.; Kharwar, Y. P.; Ghorai, S.; Annadata, H. V; Karim, S.; Dutta, A. A Heterogenised Molecular Electrocatalyst for Round-the-Clock Green Hydrogen Production by Solar-Electrolyser and Zinc--Air Batteries. Angew. Chemie Int. Ed. 2025.

64 Atif, S.; Bisen, O. Y.; Midya, S.; Yadav, A. K.; Ciatto, G.; Singh, A. K.; Nanda, K. K. Electronic Structure Modulation of AlN4 Single-Atom Catalyst for Oxygen Reduction Reaction. Small 2025, 21 (37), e01869. https://doi.org/10.1002/smll.202501869.

65 Sandeep, P.; Maity, S.; Mishra, S.; Annadata, H. V; Pillai, A. S.; Kumar, A. V. Application of Hydroxyapatite Synthesized from Natural Bio-Waste Materials for the Separation of Sr from Aqueous Samples. Sep. Sci. Technol. 2025.

66 Mishra, S.; Patel, C.; Pandey, D.; Ponvijayakanthan, L.; Annadata, H. V; Jaiswal, N. K.; Mukherjee, S.; Raghuvanshi, A. 2D Ionic Conducting Copper (I) MOF in Chemiresistive Sensing of NO2. Small 2025, 21 (34), 2412633.

67 Rathod, U.; Hajra, S.; Jethva, S.; Katba, S.; Vagadia, M.; Urkude, R.; Choudhary, R. J.; Gupta, M.; Ravalia, A. Role of Crystal Structure and Local Electronic Structure on the Magnetic Behaviour of DyMn1- XFexO3 (X= 0.0, 0.3, 0.5, 0.7, and 1.0) System. J. Alloys Compd. 2025, 183667.

68 Joshi, B.; Singhal, S.; Yadav, A. K.; Vempatapu, B.; Agarwal, A.; Gopinathan, N.; Singh, O.; Sarkar, B. Enrichment of Aromatic Hydrocarbon from Hydrotreated Light Coker Gas Oil over a Bimetallic Zeolite Catalyst. ChemCatChem 2025, 17 (15), e00424. https://doi.org/10.1002/cctc.202500424.

69 Patnaik, M.; Yadav, P.; Yadav, A. K.; Rout, E. Crystallographic Investigation of Scheelite-and Wolframite-Type Molybdates. Ceram. Int. 2025, 51 (21), 33502–33515.

70 Mohanty, B.; Pradhan, L.; Satpati, B.; Rajput, P.; Ghorbani-Asl, M.; Wei, Y.; Menezes, P. W.; Krasheninnikov, A. V; Jena, B. K. Structural and Compositional Optimization of Bimetallic NiCo Alloy Nanoparticles for Promotion of Alkaline Hydrogen Evolution Reaction. J. Power Sources 2025, 625, 235641.

71 Adalder, A.; Mitra, K.; Barman, N.; Thapa, R.; Urkude, R.; Das, S.; Ghorai, U. K. Electrochemical Synthesis of Urea-Ammonium-Nitrate (UAN) Fertilizer via Dual Reduction of CO2 and Nitrate. Small 2025, 21 (33), 2505313. https://doi.org/10.1002/smll.202505313.

72 Balhara, A.; Jeyakumar, B.; Modak, B.; Abraham, M.; Yadav, A. K.; Das, S.; Sudarshan, K.; Gupta, S. K. Achieving Deep Red Emission in Mn4 +-Activated K2MgGeO4 Phosphor with a Tetrahedral Network for Light-Emitting Diodes. Inorg. Chem. 2025, 64 (36), 18080–18090.

73 Sahu, S. K.; Shukla, R.; Parayil, R. T.; Gupta, S. K.; Kancharlapalli, S.; Urkude, R.; Grover, V. Isovalent yet Dissimilar B-Site Occupants in Y2M2O7 Pyrochlore: Repercussions on Structure, Optical Properties, and Response under Extreme Conditions. Inorg. Chem. 2025, 64 (26), 13044–13060.

74 Jena, R.; Kashyap, V.; Jana, R.; Mandal, T.; Das, T. N.; Rahimi, F. A.; Barman, S.; Maity, D.; Kumar, R.; Bhattacharyya, D.; Datta, A.; Maji, T. K. In Situ Tracking of Ni-MOF Reconstruction into Active Ni(OH)2 OER Catalysts. Angew. Chemie - Int. Ed. 2025, 64 (38), e202510741. https://doi.org/10.1002/anie.202510741.

75 Singh, H.; Gupta, M.; Rajput, P.; Kumar, H. Unraveling the Structural and Electronic Features of Tungsten Nitride (WNx) Thin Films. J. Alloys Compd. 2025, 1017, 179122.

76 Yadav, J.; Sharma, A. K.; Kumar, M.; Rajput, P.; Mathur, S.; Chaudhary, D. K. Temperature-Mediated Dielectric Relaxation and Charge Transfer Mechanism in Cs3Bi2I9 Single Crystals. Phys. status solidi 2025, 262 (6), 2400593.

77 Agarwal, A.; Kumar, A.; Verma, P.; Singh, M. N.; Rajput, P.; Kumar, S.; Sharma, R. K.; Kamal, C.; Giri, S. Amplification of Self-Sensitization at Nanoscale in NIR-Upconverting NaErF4Core–Shell Crystals: Implications for Energy Applications. ACS Appl. Nano Mater. 2025, 8 (42), 20411–20425. https://doi.org/10.1021/acsanm.5c03605.

78 Thakur, V.; Gautam, S.; Rajput, P.; Jee, H.-G.; Chakraverty, S.; Gupta, M.; Chae, K. H.; Hwang, C.-C. Electronic Structural Investigation of Ni-Doped CeO2for Catalytic Hydrogen Production: Exsitu XRD, XAS, and XPS Study. Int. J. Hydrogen Energy 2025, 158, 150258.

79 Lokanathan, M.; Arulraj, A.; Kakade, B.; Abharana, N.; Jha, S. N.; Bhattacharyya, D.; Herrera, F. D.; Tasca, F.; Mangalaraja, R. V. Highly Active and Stable Ordered Pt2FeNi/C Electrocatalyst for Oxygen Reduction Reaction: A Local Structural Investigation. Surfaces and Interfaces 2025, 108025.

80 Yadav, J.; Sharma, A. K.; Kumar, M.; Rajput, P.; Patel, S. P.; Bhasker, H. P.; Kumar, U.; Dhawan, P. K.; Chaudhary, D. K. Synthesis and Analysis of Temperature-Driven Charge Transport and Dielectric Relaxation in Cs2AgFeCl6 Double Perovskite Single Crystal. Trans. Electr. Electron. Mater. 2025, 26 (3), 345–355.

81 Gautam, A.; Chaubey, S.; Saurabh; Verma, H.; Urkude, R.; Ahmad, M. I. Electrical Properties of Flash-Processed (Mg, Co, Ni, Cu, Zn) O High Entropy Oxide. J. Eur. Ceram. Soc. 2025, 45 (12), 117421. https://doi.org/10.1016/j.jeurceramsoc.2025.117421.

82 Yadav, D. K.; Latiyan, S.; Devan, R. S.; Urkude, R. R.; Rajput, P.; Singh, A.; Deka, S. Breaking Barriers: Synergistic Interactions Between Pt Single Atoms and Nitrogen-Rich g-C3N4 for Maximized Photocatalytic Hydrogen Production. Small 2025, 21 (30), 2503843.

83 Nagappan, S.; Minhas, H.; Urkude, R. R.; Pathak, B.; Kundu, S. Harnessing the Synergistic Effects of Ir Co-Decorated NiMn-LDH: A Multi-Analytical Approach to Boost Electrocatalytic Overall Water Splitting Activity in Alkaline Condition. Small 2025, 21 (14), 2500081.

84 Semwal, S.; Shakir, R.; Urkude, R. R.; Karthikeyan, J.; Sinha, A. S. K.; Ojha, U. Hydrochar-Coated FeCo@ Ni3S2-CeOx Core--Shell Nanorods as Bifunctional Electrocatalysts for Sustainable H2 Production via Seawater Splitting. Chem. Mater. 2025, 37 (21), 8535–8547.

85 Mehta, P. K.; Peter, J. K.; Kumar, A.; Yadav, A. K.; Singh, R. From Nature to Applications: Laccase Immobilization onto Bio-Based Materials for Eco-Conscious Environmental Remediation. Int. J. Biol. Macromol. 2025, 307, 142157.

86 Lim, W. C.; Rai, D. P.; Rajput, P.; Sharma, A.; Lee, S.; Shin, H.-J.; Dang, D. D.; Su'ait, M. S.; Chae, K. H.; Singh, J. P.; others. A Review on Ionic Conductivity Optimization of Lithium Lanthanum Zirconate by Multi-Element Doping Strategies for Solid State/Thin Film Battery. J. Energy Storage 2025, 129, 117309.

87 Latiyan, S.; Yadav, D. K.; Das, M. R.; Singh, A.; Rajput, P.; Deka, S. Maximized Synergistic Interaction of Pd Single Atoms with CuCo2S4 Nanosheets Catalysts for High-Efficiency Photocatalytic H2 Production and O2 Reduction via Enhanced Charge Separation and Transfer. Adv. Funct. Mater. 2025, 35 (42), 2507783.

88 Islam, H.; Jaksani, B.; Iqbal, A.; Varangane, S.; Annadata, H. V.; Ghosh, B.; Sarma, B. B.; Thapa, R.; Pal, U. Atomically Dispersed Cu-Ni Dual-Metal Sites on g-C3N4 for Synergistic Enhancement of Photocatalytic Hydrogen Evolution. ACS Appl. Energy Mater. 2025, 8 (13), 9770–9780. https://doi.org/10.1021/acsaem.5c01346.

89 Patil, S. A.; Jagdale, P. B.; Iqbal, A.; Reza, S.; Jinagi, M.; Rajput, P.; Sfeir, A.; Royer, S.; Thapa, R.; Samal, A. K.; others. Structural Engineering of Bimetallic NiMoO4 for High-Performance Supercapacitors and Efficient Oxygen Evolution Reaction Catalysts. J. Mater. Chem. A 2025, 13 (21), 15782–15797.

90 Yadav, A. K.; Ciatto, G.; Babu, P. D.; Ghosh, S. K.; Jana, S.; Kumar, P.; Bhattacharyya, D. Investigating the Local Coordination and Electronic States of Fe-Doped Graphitic ZnO Using X-Ray Absorption Spectroscopy. J. Phys. Chem. C 2025, 129 (40), 18291–18302.

91 Dmitriev, N. Y.; Mumlyakov, A. M.; Shibalov, M. V.; Filippov, I. A.; Molodtsova, G. V.; Trofimov, I. V.; Brukvina, D. A.; Bilenko, I. A.; Tarkhov, M. A. High-Performance Robust ScNx/Nb/ScNx Heaters for an Integrated Silicon Nitride Low-Loss Photonic Platform. Phys. Rev. Appl. 2025, 24 (5), 54077. https://doi.org/10.1103/wxwn-16s6.

92 Annadata, H. V.; Tripathi, V. M.; Pai, M. R.; Banerjee, A. M.; Ghosh, B. Local Structure of Cr-Doped Hematite: Multiedge EXAFS Analysis Using Evolutionary Algorithm/Reverse Monte Carlo Simulations. J. Phys. Chem. C 2025, 129 (32), 14638–14645. https://doi.org/10.1021/acs.jpcc.5c04306.

93 Sinha, N.; Das, C.; Pal, S.; Urkude, R. R.; Ahmed, T.; Ghosh, B.; Roy, P. Atomically Dispersed Co--Cu Dual Active Sites in Carbon Networks as an Efficient Oxygen Electrocatalyst. Dalt. Trans. 2025, 54 (41), 15500–15511.

94 Fajal, S.; Ghosh, D.; Biswas, K.; Mandal, W.; Sarkar, N.; Dam, G. K.; Roy, A.; Roychowdhury, A.; Majumder, D.; Urkude, R. R.; Shirolkar, M. M.; Ghosh, S. K. Chemically Robust Functionalized Covalent Organic Framework for the Highly Efficient and Selective Separation of Bromine. Mater. Horizons 2024, 12 (3), 802–813. https://doi.org/10.1039/d4mh00780h.

95 Thadhani, C.; Kalita, R.; Rana, B.; Akhtar, N.; Chauhan, M.; Gupta, P.; Ghosh, B.; Manna, K. Cobalt Catalyzed Selective Monoborylation of Methane. ACS Catal. 2025, 15 (16), 13958–13969.

96 Jeevanandham, K.; Annadata, H.; Vinod, K.; Sathyanarayana, A. T.; Pandian, R.; Chakraborty, S.; Goutam, U. K.; Ghosh, B. Investigations of Structural, Magnetic, and Magnetocaloric Properties of La2Ni1-xCuxMnO6 Double Perovskites. Phys. Rev. B 2025, 111 (21), 214402. https://doi.org/10.1103/PhysRevB.111.214402.

97 Prabu, M.; Manikandan, M.; Rengam, B. S. S.; Ramakrishnan, A.; Raja, A.; Urkude, R. R.; Ghosh, B.; Varghese, J. J.; Raja, T. Deciphering the Intricate Mechanisms behind the Selective Oxidation of Methane to C1 and C2 Oxygenates over FeAu/γ-Al2O3 Catalysts. Chem. Eng. J. 2025, 512, 162510.

98 Sahu, S. K.; Shukla, R.; Grover, V.; Dawar, R.; Patro, P. K.; Vazhappilly, T.; Urkude, R.; Ghosh, B. Tuning Thermophysical Properties of Zirconate Pyrochlore Systems: B-Site Driven Non-Stoichiometric Approach. J. Eur. Ceram. Soc. 2025, 45 (6), 117190.

99 Bhowmik, S.; Pakhira, S.; Choudhary, R.; Kumar, R.; Urkude, R.; Ghosh, B.; Bhattacharyya, D.; Avdeev, M.; Mazumdar, C. Al2MnCu: A Magnetically Ordered Member of the Heusler Alloy Family Despite Having a Valence Electron Count of 24. Phys. Rev. B 2025, 111 (17), 174417. https://doi.org/10.1103/PhysRevB.111.174417.

100 Choudhary, N.; Srivastava, N.; Annadata, H. V.; Ghosh, B.; Da Costa, P. The Dual-Active-Site Catalysts Containing Atomically Dispersed Pr3+ with Ni/CeO2 for CO2 Hydrogenation to Methane. Small 2025, 21 (32), 2504707. https://doi.org/10.1002/smll.202504707.

101 Kalita, R.; Kumar, A.; Gupta, P.; Rana, B.; Sardar, B.; Chauhan, M.; Ghosh, B.; Monga, Y.; Manna, K. Regioselective Oxidative Bromination of Arenes by a Metal-Organic Framework-Confined Mono-Bipyridyl Iron (III) Catalyst. Dalt. Trans. 2025, 54 (17), 6812–6821. https://doi.org/10.1039/d5dt00443h.

102 Gupta, P.; Yadav, P.; Rana, B.; Ghosh, B.; Dhaka, R. S.; Manna, K. Ni2MnAl Heusler Alloy Nanoparticles for Chemoselective Hydrogenation of Nitro Compounds. Eur. J. Inorg. Chem. 2024, 27 (22), e202400157.

103 Dhakar, S.; Kumar, R.; Khatua, R.; Mitra, R.; Urkude, R. R.; Ghosh, B.; Mondal, A.; Biswas, K.; Sharma, S. Exclusive Production of Acetone Using a Copper Nanoparticle Anchored LSCO Perovskite Electrocatalyst: Cell Design and Metal-Support Interaction Governed Electrocatalysis. Nanoscale 2025, 17 (33), 19196–19209. https://doi.org/10.1039/d5nr00937e.

104 Rajendran, S.; Saju, S.; Mani, S. S.; Asoka, A. K.; Saha, A.; Arun, P. S.; Ghosh, B.; Mathew, T.; Gopinath, C. S. Multifunctional NiO/Ti3+-TiO2 for Concurrent Water Reduction and Glycerol Oxidation to Value Added Products by Sunlight Driven Photocatalysis. J. Mater. Chem. A 2025, 13 (3), 2105–2120.

105 Waghmaitar, P. P.; Alex, S. B.; Vazhayal, L.; Kad, S.; Urkude, R. R.; Ghosh, B.; Haram, S. K. Rationally Designed PtNi/Ti3C2Tx Bifunctional Electrocatalysts with Improved MOR and HER Performance Leveraged by Alloying and SMSI Effects. ACS Appl. Energy Mater. 2025, 8 (19), 14519–14529.

106 Kumar, H.; Dewan, A.; Dargily, N. C.; Nayak, B.; Sk, M.; Thapa, R.; Annadata, H. V; Mendhe, R. M.; Ghosh, B.; Ottakam Thotiyl, M. Atom-Scale Charge Reorganization for MOF-Driven Electrocatalytic Switching. Adv. Funct. Mater. 2025, e15131.

107 Akhtar, N.; Chauhan, M.; Rana, B.; Thadhani, C.; Kalita, R.; Begum, W.; Ghosh, B.; Manna, K. Selective Reduction of Nitro Compounds by Organosilanes Catalyzed by a Zirconium Metal-Organic Framework Supported Salicylaldimine-Cobalt (II) Complex. Chempluschem 2024, 89 (4), e202300520.

108 Annadata, H. V.; Kamal, C.; Ghosh, B. Combination of X-Ray Absorption Spectroscopy and Atomistic Simulations Reveals Features of Correlated Disorder in Quartz-like Germanium Oxide. J. Phys. Chem. C 2025, 129 (27), 12475–12485. https://doi.org/10.1021/acs.jpcc.5c01485.

109 Saha, R.; Samantaray, K. S.; Maneesha, P.; Baral, S. C.; Sarangi, S. N.; Urkude, R.; Ghosh, B.; Mittal, R.; Gupta, M. K.; Mekki, A.; others. Effect of V5+/V4+ Substitution on Structural and Magnetic Orderings of SrFeO3-δ Ceram. Int. 2025.

110 Agrawal, A.; Mathur, P.; Roy, P.; Urkude, R. R.; Isha; Sharma, P.; Singh, M. N.; Chowdhury, A.; Majumder, S. K.; Yogi, A. K.; Sathe, V. G.; Deshpande, U.; Sarker, D. Oxygen Vacancy Mediated Local Symmetry Breaking Drives Intense Raman Modes in BaZrO3. Phys. Rev. B 2025, 111 (10), 104107. https://doi.org/10.1103/PhysRevB.111.104107.

111 Kumar, S.; Rawat, N.; Parida, S. C.; Bhattacharya, D.; Jeyakumar, S.; Urkude, R.; Agrawal, A.; Ghosh, B.; Ganguli, T.; Haridas, G. Development of a Facility for X-Ray Absorption Fine-Structure Spectroscopy of Radioactive Samples at Indus-2 Synchrotron Radiation Source, India. Nucl. Instruments Methods Phys. Res. Sect. B Beam Interact. with Mater. Atoms 2025, 568, 165857.

112 Ray, D.; Annadata, H. V; Sarkar, S.; Ray, A.; Das, A.; Bhattacharya, S.; Shukla, A. D.; Ghosh, B. Mineralogy, VNIR (Visible Near-Infrared), and Fe XAS (X-Ray Absorption) Spectroscopy of Terrestrial Hematite Analogs: Implications for Iron Speciation on Mars. ACS Earth Sp. Chem. 2025, 9 (12), 2771–2783.

113 Mandal, W.; Fajal, S.; Majumder, D.; Sengupta, A.; Let, S.; Urkude, R. R.; Shirolkar, M. M.; Torris, A.; Ghosh, S. K. A Nanotrap Infused Ultrathin Hybrid Composite Material for Rapid and Highly Selective Entrapment of 99TcO4-. Chem. Sci. 2024, 15 (44), 18463–18475.

114 Choudhary, N.; Srivastava, N.; Annadata, H. V.; Ghosh, B.; Da Costa, P. Strategic Integration of Yttrium Single Atoms on CeO2 Supported Nickel Catalysts for Enhanced CO2 Methanation Catalysis. Appl. Catal. B Environ. 2026, 382, 125918. https://doi.org/10.1016/j.apcatb.2025.125918.

115 Kharabe, G. P.; Verma, T.; Barik, S.; Urkude, R. R.; Ayasha, N.; Ghosh, B.; Krishnamurty, S.; Kurungot, S. Hydrogel Electrolyte-Mediated In Situ Zn-Anode Modification and the Ru-RuO2/NGr-Coated Cathode for High-Performance Solid-State Rechargeable Zn--Air Batteries. ACS Appl. Mater. \& Interfaces 2025, 17 (2), 3188–3204.

116 Kalita, R.; Chauhan, M.; Gupta, P.; Begum, W.; Thadhani, C.; Ghosh, B.; Balendra; Bisht, H.; Manna, K. Selective Monoborylation of Methane by Metal–Organic Framework Confined Mononuclear Pyridylimine-Iridium Hydride. Chem. Commun. 2024, 60 (51), 6504–6507. https://doi.org/10.1039/D4CC01568A.

117 Effect of Fe doping on the electronic properties of CoSn Kagome semimetal. Kritika Vijay, Kawsar Ali, Najnin Bano, Anju Ahlawat, Mukul Gupta, Ram Janay Choudhary, D K Shukla, Ashok Arya and Soma Banik. Journal of Physics: Condensed Matter, 37, 095502 (2025).

Competing MagnetiC Interactions in the Antiferromagnetic Kagome Semimetal $Fe_{1-y}Co_ySn$. Kritika Vijay, K. Kumar, Soma Banik. Journal of Superconductivity and Novel Magnetism 38, 106 (1-6) (2025).

119 Valence fluctuations in Co-doped FeSn antiferromagnetic kagome semimetal. Kritika Vijay, Rajeev Joshi, Kranti Kumar, Sudip Nath, and Soma Banik.Journal of Applied Physics 137, 205104 (2025).

120 Metal-insulator transition in FeSex originating in an anomalous lattice effect. Shubham Purwar, Shinjini Paul, Kritika Vijay, R. Venkatesh, Soma Banik, P. Mahadevan, and S. Thirupathaiah. Physical Review B 111, 085123 (2025).

121 Mitigating parasitic contributions in measured piezoresponse for accurate determination of piezoelectric coefficients in Sc-alloyed-AlN thin films using piezoresponse force microscopy
Ch Kishan Singh, Rajalakshmi K, Balamurugan N, Rakesh Kumar, Mukul Gupta, Ramaseshan R, and Kiran Baraik Journal of Applied Physics 138, 075302 (2025).

122 Structural and interface band alignment investigations on epitaxial β-Ga2O3/α-GaCrO3 type-II transparent heterojunction.Rishav Sharma, Prabhat Kumar Singh, Kiran Baraik, Himanshu Srivastava, Satish Kumar Mandal, Nageswararao Pothana, Salahuddin Khan, Rupesh S. Devan, Tapas Ganguli, Ravindra Jangir.Journal of Applied Physics 138, 065301 (2025).

123 Identification of Surface, Interface, and Bulk States on the Pristine and Passivated InP (001) and (111) Surfaces Using Surface Photovoltage Spectroscopy Deepesh Nimje, Geetanjali Vashisht, Venus, Sanjay Porwal, Soma Banik, Pooja Gupta, Tarun Kumar Sharma, and Vijay Kumar Dixit Physica Status Solidi RRL 1, 2500226 (2025).

124 Orbital Angular Momentum-Driven Ferromagnetism with Magnetic Anisotropy and Electronic Structure of Epitaxial Neodymium Nitride Renuka Karanje, Anupam Bera, Sourav Rudra, Debmalya Mukhopadhyay, Souvik Banerjee, Manisha Bansal, Kiran Baraik, Sourav Chowdhury, Weibin Li, Manuel Valvidares, Tuhin Maity, and Bivas Saha. ACS Nano 19, 36636−36645 (2025).

125 Carbon ion implantation for electron compensation in epitaxial scandium nitride.
Sourav Rudra, Dheemahi Rao, Sneha Kobri M, Aritra Dey, Renuka Karanje, Prasanna Das, Subhajit Manna, Madhusmita Baral, Bhupesh Yadav, Ashalatha Indiradevi Kamalasanan Pillai, Magnus Garbrecht, Mukul Gupta, Satyaprakash Sahoo, Tapas Ganguli, and Bivas Saha.
Physical Review B 112, 165302 (2025).

126 A Combined Theoretical and Experimental Investigation on an Fe Doped Bi2Se3 Topological Insulator.Ravi Kumar, D. S. Sisodiya, Kritika Vijay, Soma Banik, Shashwati Sen, P. D. Babu,
and Dibyendu Bhattacharyya Journal of Physical Chemistry C 129, 19514−19526 (2025).

127 Co doped Bi2Se3 topological insulator: a combined theoretical and experimental study.
Ravi Kumar, D. S. Sisodiya, Kritika Vijay, Soma Banik, Shashwati Sen, P. D. Babu, and Dibyendu Bhattacharyya. Materials Science in Semiconductor Processing 195, 109572 (2025).

128 Pulse Tunable Quantum Conductance States in Oxygen Vacancy Engineered TiO2−Δx Memristor for Artificial Neural Network Applications. Mousam Charan Sahu, Partha Sarathi Padhi, Sameer Kumar Mallik, Suman Roy, Sandhyarani Sahoo, Soma Banik, Rajendra Kumar Sharma, Pankaj Misra, and Satyaprakash Sahoo. ACS Applied Electronic Materials 7, 5271 (2025).

129 Photoemission spectroscopy and ab-initio simulation of CrFeVGa and CoFeVSb: a comparative study.J. Nag, Kritika Vijay, B. Bandyopadhyay, Soma Banik, A. Alam, K. G. Suresh.Journal of Physics: Condensed Matter 37, 155901 (2025).

130 High pressure investigation of structural and electronic behavior of β-ZnMoO4., Siddhi Garg, Ashok K Verma, HK Poswal, TCN Nicacio, Daniel Errandonea, Nandini Garg Journal of Alloys and Compounds 1010 (2025) 177515.

131 Elevating the Concentration of Na Ions to 1 in P2 Type Layered Oxide Cathodes., Hari Narayanan Vasavan, Samriddhi Saxena, Velaga Srihari, Asish Kumar Das, Pratiksha Gami, Neha Dagar, Sonia Deswal, Pradeep Kumar, Himanshu Kumar Poswal, and Sunil Kumar, Adv. Funct. Mater. 2025, 2421733.

132 Interplay of irradiation stress and phase stabilizer in determining the direction of martensitic transformation in SS316. Sarita Ahlawat, Nandini Garg, K.K. Pandey, Velaga Srihari, Debdulal Kabiraj, Manju Bala, Sonu Hooda, Niharendu Choudhury, Aniruddha Biswas., Radiation Physics and Chemistry 229 (2025) 112546.

133 Aging-Induced Microstructural and Property Changes in Direct Laser Energy Deposited NiCrFeSiBC Hardfacing Alloy Bushes., S. Haribabu, C. Sudha, C. P. Paul, and V. Srihari. Journal of Materials Engineering and Performance 34 (2025) 1.

134 Enhanced thermal stability of magnetic properties in cobalt thin films via zigzag nanostructuring Sharanjeet Singh, Arun Singh Dev, Manisha Priyadarsini, Pooja Gupta, Sarathlal Koyiloth Vayalil, Benedikt

Sochor, Velaga Srihari, Dileep Kumar., Applied Surface Science 695 (2025) 162857.

135 Probing the Compositional and Structural Effects on the Electrochemical Performance of Na(Mn-Fe-Ni) O2 Cathodes in Sodium-Ion Batteries., Saxena, S., Vasavan, H.N., Dagar, N., Chinnathambi, K., Srihari, V., Das, A.K., Gami, P., Deswal, S., Kumar, P., Poswal, H.K. and Kumar, S. (2025), . Battery Energy e70018. https://doi.org/10.1002/bte2.20240083

136 Higher coordinated Erbium in Er2Ti2O7 under high-pressure M. Modak, Rahul Kaiwart, Santosh K. Gupta, Abhilash Dwivedi, K. K. Pandey, A. K. Poswal, and H. K. Poswal., Acta Materialia 291 (2025) 120958.

137 High pressure structural phase transition in wolframite NiWO4 Siddhi Garg, K.K. Pandey, Velaga Srihari, Daniel Errandonea, Nandini Garg., Journal of Alloys and Compounds 1025 (2025) 180273.

138 Microstructural constituents in compositionally graded NiCrFeSiBC hardfacing alloy/316L SS additive manufactured deposits S. Haribabu, C. P. Paul, V. Srihari, C. Sudha., Welding international 2025, Vol. 39, no. 3, 175–181.

139 Strategic phase modulation in Na0.8(Mn-Fe-Ni)O2 system delivers high energy density and structural stability., Samriddhi Saxena, Hari Narayanan Vasavan, Neha Dagar, Velaga Srihari, Asish Kumar Das, Pratiksha Gami, Sonia Deswal, Pradeep Kumar, Himanshu Kumar Poswal, Sunil Kumar., Journal of Power Sources 644 (2025) 237115.

140 High-performance piezoelectric nanogenerator based on TiO_2/ P(VDF-TrFE) nanocomposite films for Biomechanical motion sensing applications., Bhumika Sharma, Vishal Bhardwaj, Srinibas Satapathy, Sonali Pradhan, Pratik Deshmukh, Rashmi Singh, Velaga Srihari, Ramovatar, Shovan Kumar Majumder, Emergent Materials 2025, https://doi.org/10.1007/s42247-025-01113-9.

141 Boosting the Structural Stability of High-Voltage SodiumLayered Cathodes via Site-Selective La/Ti Co-Doping., Sreelakshmy Thekkekara, Pragyan Tripathi, Jahnavi M. Sudharma, Phalguni Anurag,Velaga Srihari, Himanshu Poswal, Abhishek K. Singh, and Manikoth M. Shaijumon., Small 21 (2025) 2502341.

142 Behaviour of molybdenum diphosphide at high pressure Arpita Aparajita A. N, G. Shwetha, N. R. Sanjay Kumar, V. Srihari, Awadhesh Mani., Materials Chemistry and Physics 345 (2025) 131258.

143 Unveiling the Dissociation Mechanism of Diglycine PerchlorateHarsha Kumawat, Himal Bhatt, Shivkumar R Vishwakarma, Lata Panicker, Babu Ramchandra Gonde, and Thyagarajan Sakuntala., Inorg. Chem., 64, (2025) 892−902.

144 Structural stability of the robust GdYTi2O7 pyrochloreunder high pressure., Yogendar Singh, Vivek Kumar, Tijo Vazhappilly, Himanshu Kumar Poswal, K. K. Pandey, Pawan Kumar Kulriya., J Am Ceram Soc. 108 (2025) e20444.

145 Fe2O3 solubility and structural investigation in simulated high-level liquid waste vitrified Na2O-TiO2-Fe2O3 -B2O3-SiO2 glass system Sourav Maity, Chanchal Ghosh, Velaga Srihari, Sourav Pan, J. Selvakumar, G. Suneel, S. Srinivasan, G. Srinivas Rao, Hrudananda Jena., https://doi.org/10.1016/j.ceramint.2025.04.294.

146 Compressibility behavior of NixB: Experiment and computation., P. Anand Kumar, N.R. Sanjay Kumar, Gurpreet Kaur, N.V. Chandra Shekar., Materials Chemistry and Physics 335 (2025) 130514.

147 Sputtering current driven growth and transport characteristics of superconducting Ti40V60 alloy thin films., Shekhar Chandra Pandey, Shilpam Sharma, K. K. Pandey, Pooja Gupta, Sanjay Rai, Rashmi Singh, M. K. Chattopadhyay., J. Appl. Phys. 137, 113902 (2025).

148 Mesoporous Boron Subphosphide: Intrinsic Electron DeficiencyEnabling Selective Low-ppm of Chemiresistive CO Detection in Harsh Environments., Pratyasha Rudra, Mamunoor Rahaman, Srihari Velaga, Swastik Mondal., ACS Appl. Mater. Interfaces 2025, 17, 21347−21356.

149 An Iron-Based Fluorophosphate Cathode Material for K-IonBatteries., Dipannita Saha, Parth Desai, Ankur Sharma, V. Raghavendra Reddy, Velaga Srihari, Himanshu K. Poswal, Arpita Das, Amartya Mukhopadhyay., ChemSusChem 2025, 18, e202401935 (1 of 11).

150 Local atomic structure of amorphous Fe81−xCoxNb7B12 alloys using synchrotron radiation x-ray diffraction and pairdistribution function analysis K. Pussi, P. Gupta, B. Barbiellini, V. Srihari, P. Svec, A. Bansil, A. Gupta, S. Kamali. Appl. Phys. Lett. 127, 012401 (2025).

151 Charge transfer induced phase transition in Li2MnO3 at high pressure., Ajinkya P Khangal, Nishant N Patel and Ajay K Mishra., *J. Phys.: Condens. Matter* 37 (2025) 045402.

152 Nanostructured carbon-doped α-Al2O3 microspheres: Scalable synthesis and luminescence properties., Pankaj Singh, Jitendra Bahadur, Shiv Govind Singh, Durgesh Singh Sisodiya, Ras Bihari Rakesh, Debasis Sen, Shashwati Sen., Next Materials 8 (2025) 100781.

153 Study of structural and magnetic properties of laser-irradiated zinc ferrite material., Jayant K. Jogi, S.K. Singhal, Rajan Mishra, Ashish R. Tanna, Ravindra Jangir, Amarjeet Singh, Madan Singh and T. Balaganapathi., RADIATION EFFECTS & DEFECTS IN SOLIDS, 180, (2025), 447–462.

154 Role of 4f-Orbitals on the Magnetodielectric Properties and Spin-Phonon Coupling in Orthorhombic Sm0.50M0.50MnO3 (M = Ho and Eu)., Mohit Chandra, Satish Yadav, Vaidehi Deshmukh, Rajeev Rawat, V. G. Sathe, R. J. Choudhary and Kiran Singh., ACS Appl. Electron. Mater., 7, (2025) 4231–4241.

155 Investigations of structural, magnetic, and magnetocaloric properties of La2Ni1−xCuxMnO6 double perovskites K. Jeevanandham, Harshini Annadata, K. Vinod, A. T. Sathyanarayana,Ramanathaswamy Pandian, Soumee Chakraborty, Uttam Kumar Goutam and Biplab Ghosh., PHYSICAL REVIEW B 111, 214402 (2025).

156 Synthesis of ZnO nanoparticles through green route and its application in methylene blue dye degradation., Jayant K. Jogi, S. K. Singhal, Ravindra Jangir, Ashish Tanna, Sangita Chavda, Nikesh Shah, Madan Singh and Divya N. Panchotia., CURRENT SCIENCE, VOL. 128, NO. 11, 10 JUNE 2025.

157 Behaviour of molybdenum diphosphide at high pressure., A.N. Arpita Aparajita, G. Shwetha, N.R. Sanjay Kumar, V. Srihari, Awadhesh Mani., Materials Chemistry and Physics 345 (2025) 131258.

158 Compositional tuning of Fe/Mn and Fe/Ni ratios in P3-type cathodes enables high energy density sodium-ion batteries., Samriddhi Saxena, Neha Dagar, Velaga Srihari, Karthik Chinnathambi, Asish Kumar Das, Pratiksha Gami, Sonia Deswal, Pradeep Kumar, Himanshu Kumar Poswal, Sunil Kumar., Materials Today Energy 53 (2025) 102048.

159 Optimizing Synthesis Parameters to Achieve Phase-pure Superparamagnetic Fe3O4 Nanoparticles for Magnetic Hyperthermia., Sawan Kumar Bhakar, Bhumika Sharma, Srinibas Satapathy, Pratik Deshmukh, Velaga Srihari, Rashmi Singh, S. K. Majumder.BioNanoScience 15(2025)508.

160 Synthesis of Phase-Pure n-Type TiNiSn Half-Heusler Thermoelectric Material Using Reactive Hot Pressing., Rahul, Bhagwati Sharma, Soupitak Pal, and Nisha Verma., ACS Appl. Energy Mater. 2025, 8, 10037−10049.

161 The effect of Ti-doping on the electrochemical activity of the Li0.44MnO2 cathode material for Li-ion batteries Jaya Yadav, Sai Pranav Vanam, Shubham K. Parate, Nikhil Doddi, Velaga Srihari, Vale´rie Pralong, Maximilian Fichtner and Prabeer Barpanda., Materials Advances Mater. Adv., 2025, 6, 6508.

162 Local Structure of Cr-Doped Hematite: Multiedge EXAFS Analysis Using Evolutionary Algorithm/Reverse Monte Carlo Simulations., Harshini V Annadata, V. M. Tripathi, Mrinal R. Pai, Atindra Mohan Banerjee and Biplab Ghosh., J. Phys. Chem. C 129 (2025) 14638−14645.

163 Biphasic P3/O3 driven excellent electrochemical behavior and structural stability in a dual pillar-ions sodium layered oxide cathode., Neha Dagar, Samriddhi Saxena, Velaga Srihari, Himanshu Kumar Poswal, Sonia Deswal, Pradeep Kumar, Sunil Kumar., Journal of Power Sources 658 (2025) 238380.

164 Local chemical disorder as the origin of anomalous thermal expansion in TiFe2 Laves phase alloys M. Azavedo, E. T. Dias, V. Srihari, Robert Dankelman, I. Dhiman and K. R. Priolkar., Phys. Chem. Chem. Phys., 2025, 27, 24467–24476, http://dx.doi.org/10.1039/D5CP03136B.

165 Structural, Dielectric, and Mechanical Properties of ErFeO3 Single Crystal Grown Using Optical Floating Zone Method., Ved Krishna, R. M. Sarguna, K. Ganesan, R. Ramaseshan, C. Kamal, S. Ganesamoorthy., Applied Physics A (2025) 131:995.

166 Microstructure-thermal transport property correlation after cold/cryo rolling deformation of alloy D9., R. Sundar, P. K. Parida, V. Srihari, T. N. Prasanthi, R. Mythili, N. Deepak & C. Sudha., Advances in materials and processing technologies 11(2025)2102.

167 Thermally activated damage recovery in ion-irradiated Gd2Ti2-yZryO7 pyrochlore. Yogendar Singh, Ajay Kumar, Vivek Kumar, Ananya Chattaraj, Krishan K. Pandey, Pawan Kumar Kulriya., J Am Ceram Soc. 108 (2025) e20124.

168 An anomalous high-pressure phase and decompression-induced amorphization in dinitrotoluene., Ashutosh Mohan, Krishan K. Pandey, Ajay K. Mishra, Alka B. Garg, T. Sakuntala., J. Chem. Phys. 163, 224506 (2025).

169 Effect of Ba substitution on dielectric and magnetic properties in La2MnNiO6 double perovskite Rahul Kumar Sahu, Ajay Singh and Oroosa Subohi Journal of Physics and Chemistry of Solids, 196 (2025), 112339.

170 Thermal and structural analysis of binary mixtures of pyrimidine liquid crystals using Modulated Differential Calorimetry and Synchrotron X-ray Diffraction measurements Smriti Mitra, Akhileshwar Prasad, Malay Kumar Das, Banani Adhikari Das, Anuj Upadhyay, Archna Sagdeo and A. Yogi *J. Phys.: Condens.*

Matter 37 (2025) 055402.

171 Optical Biosensor for Bacteremia detection from human blood samples at a label-free Liquid Crystal-Aqueous Interface: A Rapid and Point-of-Care approach Sayani Das, Partha Barman, Ranadhir Chakraborty, Anuj Upadhyay, Archna Sagdeo, Przemysław Kula, Malay Kumar Das, Susanta Sinha Roy Journal of collide and Interface Science 683 (2025) 79-89.

172 Tuning the Physical Properties of V-Ti-Ce Alloy Superconductors Through Successive Cold-Working and Annealing at 650 °C Asi Khandelwal, Nida Mirza, L. S. Sharath Chandra, Rashmi Singh, Archna Sagdeo, M. K. Chattopadhyay Journal of Superconductivity and Novel Magnetism 38 (2025) 34

173 Elucidating the absence of ferroelectricity in methyl ammonium lead bromide single crystal, MAPbBr3 Shankar Dutt and Archna Sagdeo J Mater Sci: Mater Electron 36 (2025) 83J.

174 Arresting of efflorescence in ceramic tiles developed using caustic alumina industry waste (red mud) Varsha Agrawal, Rini Paulose, Rahul Arya, Gaurav Rajak, Abhijit Bijanu, Sunil K. Sanghi, Deepti Mishra, Mohammed Akram Khan, Abhay Bhisikar, Shabi Thankaraj Salammal Science of the Total Environment 962 (2025) 178404

175 Revealing Plasmonic TiN Films with Low Power Radio-Frequency Magnetron Sputtering Technique Atanu Samanta, Ananya Chattaraj, Sachin Srivastava, Lukasz Walczak, Archna Sagdeo, Aloke Kanjilal Thin Solid Films 811, (2025) 140603

176 Superior charge storage performance of optimized nickel cobalt carbonate hydroxide hydrate nanostructures for supercapacitor application Mohit Bhatt, Bhavana Gupta & A. K. Sinha Scientific Reports 15 (2025) 2192

177 Effect of strain on the electronic structure and polaronic conductivity of LiFePO4 Manisha, Mukul Gupta, V. Raghavendra Reddy, Sevi Murugavel Phys. Chem. Chem. Phys., 27 (2025) 2692-2703

178 Advanced α-phase transition metal hydroxide nanostructures and their composites for energy storage electrode materials Rajkamal Arya, Tanya Dagar, A. K. Sinha Ionics 31 (2025):2577

179 Tailoring sputter grown NiOx layer by synergistic surface passivation for efficient perovskite solar cells Kajal Yadav, Atanu Samanta, Ankita, Tarun, Santanu Das, Aloke Kanjilal, Upendra Kumar Pandey Solar Energy 288 (2025) 113286

180 Investigating spin states, oxygen vacancies, and hybridization in bimetallic α-FeCo2(OH)6 electrode material Rajkamal Arya, Tanya Dagar and A K Sinha Phys. Scr. 100 (2025) 035927

181 Characterizing pyroelectric detectors for quantitative synchrotron radiation measurements S. R. Kane, R. W. Whatmore, M. N. Singh, S. Satapathy, P. K. Jha, P. K. MehtaSensors and Actuators A: Physical Volume 387 (2025) 116406

182 Oxygen vacancy mediated local symmetry breaking drives intense Raman modes in BaZrO3 Ankita Agrawal, Poonam Mathur, Priti Roy, Rajashri R. Urkude, Isha, Pragati Sharma, Manvendra Narayan Singh, Aniket Chowdhury, Shovan K. Majumder, Arvind Kumar Yogi, V. G. Sathe, U.Deshpande,and Debalaya SarkerPhys. Rev. B 111, (2025) 104107

183 Existence of structural, electronic and magnetic correlations in Sm2NiMnO6 double perovskite Supriyo Majumder, Malvika Tripathi, D O de Souza, A Sagdeo, L Olivi, M N Singh, S Pal, D M Phase and R J Choudhary J. Phys.: Condens. Matter 37 (2025)145802

184 Eutectic microstructure and its effect on electrical and magnetic properties of V-Ti-Si alloy superconductors Asi Khandelwal, L.S. Sharath Chandra, Archna Sagdeo, Rashmi Singh, Mohan Gangrade, R. Venkatesh, M.K. Chattopadhyay Materials Science & Engineering B 317 (2025) 118158

185 Structural Complexity and Ionic Conductivity in Gadolinium and Tungsten Co-Doped $La_2Mo_2O_9$: A Potential Electrolyte for IT-SOFCs Saurabh S. Shiwankar, Smita A. Acharya, Arpit B. Mendhe, Shraddha M. Shirbhate, Manavendra Singh, Archna Sagdeo Electrochemica Acta 524 (2025) 145944

186 Electronic, magnetic and thermal behavior near the Invar compositions of Fe-Ni alloys Ananya Sahoo, Ayusa Aparupa Biswal, S.K. Parida, V.R.R. Medicherla, Soumya Shephalika Bahera, M N Singh, A Sagdeo, Sawani Datta, Abhishek Singh, Kalobaran Maiti Journal of Electron Spectroscopy and Related Phenomena 280 (2025) 147540

187 Narrow and Intense Photoluminescence Emission: Manifestation of Cu Vacancies in CuGaS2/ZnS Quantum Dots Amruta Lohar, Mohammed Abdul Haque, Yogesh Jadhav, Archna Sagdeo, Sunit Rane, Sandesh Jadkar, Shrikrishna Sartale, Yesh D. Kolekar, and Shailaja Mahamuni J. Phys. Chem. C, 129 (2025)10539−10549

188 Exploring oxygen vacancies and electronic structure in delafossite CuCoO2 Using XAS and XANES

Measurements Tanya Dagar , Rajkamal Arya and Anil Kumar Sinha Phys. Scr. 100 (2025) 065929

189 Inherent role of density on the gamma ray attenuation characteristics of red mud based shield Rahul Arya, Rini Paulose, Abhijit Bijanu, Varsha Agrawal, Rahitashya Shil, Deepti Mishra, Kaushik Banerjee, Sujoy Chatterjee, Sarmishtha Bhattacharyya, Abhay Bhisikar, Paparao Mondi, Upendra Singh, Jyoti Pendam, Shabi Thankaraj Salamma Radiation Physics and Chemistry 234 (2025) 112757

190 Below 1% Reflectance for Black GaAs Surface Prepared by Facile Two-Step Wet Chemical Treatment: Hydrogen Peroxide and Water
Zahra Jahanshah Rad, Johanna Laaksonen, Valtteri Alitupa, Mikko Miettinen, Kari Iltanen, Juha-Pekka Lehtiö, Sari Granroth, Ilari Angervo, Marko Punkkinen, Risto Punkkinen, Mikhail Kuzmin, Ermei Mäkilä, Pekka Laukkanen, Petriina Paturi, Kalevi Kokko, Sami Vuori, Mika Lastusaari, Harishchandra Singh, Marko Huttula, Manvedra Narayan Singh, Antti Tukiainen, Heidi Tuorila, Helmer Piirilä, Jukka Viheriälä, Mircea Guina, Jekaterina Kozlova, Mihkel Rähn, Aile Tamm Adv. Photonics Res. 2025, 2400200

191 Combination of X-ray Absorption Spectroscopy and Atomistic Simulations Reveals Features of Correlated Disorder in Quartz-like Germanium Oxide Harshini Venkata Annadata, Chinnathambi Kamal, and Biplab Ghosh *The Journal of Physical Chemistry C 129* (27) 2025, 12475-12485

192 Amorphous solid water prevails inside spherical nano-pores of MIL-101(Cr) framework below 200K: PALS, XRD and BDS studies Vivek Sudhir, Debarati Das, P Utpalla, Siddhartha Kolay, M N Singh and Dhandeep Dutta Phys. Chem. Chem. Phys., 27 (2025), 18222-18233

193 Green synthesis of Aloe vera-assisted Co3O4 nanostructures: structural, electronic, optical, and electrochemical insights for supercapattery applications Mohit Bhatt, Kajal Gautam, Payal Dhyanic and A. K. Sinha RSC Adv., 15 (2025), 28626

194 Structural evolution and compressibility trends in Ce-doped UO2 Balmukund Shukla, Dasarath Maji, N.R. Sanjay Kumar, S. Balakrishnan, Anuj Upadhyay J. nuclear Materials, 616 (2025) 156040

195 Exploration of pH-Driven Morphology and Defect Evolution in Nickel Cobalt Carbonate Hydroxide Nanomaterial for Supercapacitor Applications Mohit Bhatt, Kajal Gautam, Archna Sagdeo, and Anil Kumar Sinha Chem Sus Chem: 18, (2025) e202501348

196 Investigation of microstructural and magnetic property evolution in mechanically milled Co–Zr metallic ribbon Sanjay Saini, A. P. Srivastava, P. S. Ghosh, Archana Sagdeo4 , A. Ghosh, D. Arvindha Babu, S. V. Madge and S. Neogy J Mater Sci 60 (2025):16480–16496

197 Structure, Stress and Optical Property Correlations in Nano-structured Mo/Si and W/B_4C Multilayer Mirrors for Hard X-ray Applications Faiyaz Mollick, Maheswar Nayak, Ajay Kumar Kashyap, Jitendra Kumar,Arindam Majhi, Nageswararao Pothana, Parasmani Rajput, Manoj Kumar Tiwari, Sanjay Kumar Rai, Manvendra Narayan Singh, Archna Sagdeo Journal of Applied Physics 138 (2025) 175303

198 Amplification of Self-Sensitization at Nanoscale in NIR-Upconverting NaErF4 Core–Shell Crystals: Implications for Energy Applications Ayushi Agarwal, Amrendra Kumar, Preeti Verma, Manvendra N. Singh, Parasmani Rajput, Subham Kumar, Rajendra K. Sharma, Chinnathambi Kamal, and Supratim Giri ACS Appl. Nano Mater. 8 (2025) 20411–20425

199 Aloe Vera-Assisted Synthesis of MnCo2O4 as a Battery-Type Material for Hybrid Supercapacitor Applications Mohit Bhatt, Kajal Gautam, Anil Kumar Sinha Mater. Adv. 6 (2025) 8686–8700

200 Geometry-Dependent Nature of Microstrain in Single-Phase NIR-Upconverting Crystals Preeti Verma, Amreeta Swain, Ayushi Agarwal, Swarnaprava Mohanty, Subham Kumar, Panchanan Pandey, Manvendra N. Singh and Supratim Giri Cryst. Growth Des. 25, 22, (2025) 9865–9875

201 Investigation of microstructural and magnetic property evolution in mechanically milled Co–Zr metallic ribbon Sanjay Saini, A. P. Srivastava, P.S.Ghosh, Archana Sagdeo, A. Ghosh, D. Arvindha Babu, S. V. Madge and S. Neogy J Mater Sci 60 (2025)16480–16496.

202 Orbital-resolved spin-exchange interactions and spin-phonon coupling in CrVO4
Ganesh Bera, Sourav Dey, José J. Baldoví, Josep Mas-Garcia, Alejandro Molina-Sánchez, David Santamaria-Perez, Daniel Errandonea, Archna Sagdeo, G. R. Turpu, V. G. Sathe, V. Raghavendra Reddy, and Carlo Meneghini PHYSICAL REVIEW RESEARCH 7(2025) 043189

203 Optimizing pyroelectric x-ray detectors for synchrotron applications S. R. Kane, R. W. Whatmore, P. K. Jha, P. K. Mehta AIP Advances 15 (2025) 125309

204 Tuning the Structural, Electronic, and Magnetic Properties of $CoFe_2O_4$ Thin Films via Swift Heavy Ion Irradiation Sagar Sen, Ambrish Dwivedi, Vinay Shrivastava, Yksh Gupta, Mohd Rehan Ansari, Sourav Chowdhury, Jayjit Kumar Dey, Moritz Hoesch, Sanjay Kumar Upadhyay, Keval Gadani, Anil Gome, Ratnesh

Gupta Ceramics International 52 (2026) 1096–1105

205 A. Mishra, R. Roychowdhury, M. Tagawa, S. Srivastava, Structural Morphology of Nanoclay Films at Air-Water Interface under Varying Ionic Composition of Subphase Medium, Nanoscale Adv. 2025,https://doi.org/10.1039/D5NA00689A(IF 4.7)

206 P. Parida, J. Patra, V R Singh, R Roychowdhury, S Bhunia, B Iqbal, K. Sarkar, A. Kandasami, V K Verma, Origin of ferromagnetism in Mn and Cr co-doped CdTe thin films: An experimental and theoretical study J. Appl. Phys.138, 163901 (2025), https://doi.org/10.1063/5.0291634(IF 2.7)

207 M Priyadarsini, S Singh, S Kaushik, A S Dev, R Roychowdhury, P Gupta, P Pandit, R Venkatesh, G Verma, S K Vayalil, M Schwartzkopf, D Kumar, Columnar nanostructure and morphology driven magnetic anisotropy crossover in obliquely deposited Co/Alq3 “metal–organic” bilayers, Surf. Interfaces74, 107703 (2025).https://doi.org/10.1016/j.surfin.2025.107703(IF 6.3)

208 R. Sharma, P. Kumar Singh, K. Baraik, H. Srivastava, S. K. Mandal, N. Pothana, S. Khan, R. S. Devan, T. Ganguli, R. Jangir, Structural and interface band alignment investigations on epitaxial β-Ga2O3/α-GaCrO3 type-II transparent heterojunction J. Appl. Phys. 138, 065301 (2025) https://doi.org/10.1063/5.0284059

209 A Pal, S Kar, C Debnath, S R Mohan, R Roychowdhury, A K Agrawal, Sonu, M Tyagi, S Verma, Influence of chemical purification methodologies on the Bridgman growth of trans-stilbene (TSB) crystal, and feasibility studies for X-ray imaging and neutron/gamma discrimination applications, J Mater Sci: Mater Electron36, 793 (2025). https://doi.org/10.1007/s10854-025-14845-5(IF 2.8)

210 Srija Madduri, Hemant S. Sodaye, A. K. Debnath, A. K. Adak, T. L. Prasad, Behaviour of Polyamide Brackish Water Reverse Osmosis Membranes in Acidic NaOCl Environment, Journal of Applied Polymer Science, 142, e56940 (2025) https://doi.org/10.1002/app.56940(IF 2.8)

211 Understanding the Mechanism and Ascertaining the Sorption Sites for the Highly Efficient and Selective Sorption of U(VI) and Th(IV) byGraphene/Zeolitic Imidazolate Framework-90 Composites: AnExperimental and Theoretical Approach; Jaideep Mor, Nidhi Ludbe, Sandeep Kumar Sharma, Ravi Kumar, Srinivasu Kancharlapalli, Uttam Kumar Goutam, Jitendra Bahadur, and Arijit Sengupta; ACS Appl. Mater. Interfaces 17, (2025), 25312–25326.

212 MoS2 Films from few Layers to Monolayer: Scalable Synthesis and Their Band Alignments with Al2O3 Interfaces; U. K. Goutam, Jagannath, Jyoti Prakash, S. Khan, Pabitra Sahu, D. Bhattacharyya and L. M. Pant; J. Appl. Phys.;137, 144303 (2025).

213 Tuning of electrical properties and persistent photoconductivity of SnO2 thin films via La doping for optical memory applications; P. Asha Hind, Pawan Kumar, U.K. Goutam, B.V. Rajendra, Materials Science in Semiconductor Processing, 186 (2025) 109073.

214 Solar Assisted Mitigation of Chloramphenicol and H2 Evolution Using CuNi Alloy Nanoparticles on h-BN Doped g-C3N4: A Comprehensive Approach Combining Synchrotron and DFT Analysis; Vishal Rout, Banalata Maji, Harshini V. Annadata, Rajat Rajiv Maharana, Deepak Kumar Panda, Jyotiraditya Samantaray, Uttam K. Goutam, Kousik Samanta, Monalisa Mishra, and Priyabrat Dash; ACS Applied Materials & Interfaces Article ASAP; DOI: 10.1021/acsami.4c15233

215 The effects of Substrates on the Structural, Morphological, Magnetic and Electronic Properties of V 2 O 5 Thin Films; R. S. Gupta, Sachin Pandey, A. Ghosh, S. K. Sahoo, A. Rahman, U. K. Goutam, Sudhanshu Pandey and V. R. Singh; Journal of Sol-Gel Science and Technology;113, 837–844, (2025).

216 A Cost-Effective Approach to Fabricate (1-x) KBiFe2O5-(x) CoFe2O4 Multiferroic Composites Prepared via citric-assisted sol-gel method; D.P. Sahu, A. Mohanty, G. Palai, K. Chandrakanta, R. Jena, N. Mohapatra, S.D. Kaushik, U.K. Goutam, A.K. Singh; Materials Research Bulletin; 190 (2025) 1134952025.

217 Magnetic and Corrosion Properties of Co35Cr5Fe10Ni30Ti5Al7.5Mn7.5 High EntropyAlloy; Priyanka Kumari, Shashi Kant Mohapatra, U. K. Goutam, Rohit R Shahi; Journal of Alloys and Metallurgical Systems; 10 (2025) 100189.

218 Investigations of structural, magnetic, and magnetocaloric propertiesof La2Ni1-xCuxMnO6 double perovskites;K. Jeevanandham, Harshini Annadata, K. Vinod, A. T. Sathyanarayana, Ramanathaswamy Pandian, Soumee Chakraborty, Uttam Kumar Goutam, and Biplab Ghosh; Phys. Rev. B; 111, 214402 (2025).

219 Dual-Site Cation Codoping Strategies Mitigating H2–H3Phase Transition for Cycle Stable Nickel-Rich LayeredOxide Cathodes in Lithium Batteries; Abhishek Kumar, Uttam Kumar Goutam, Ranabrata Mazumder and Partha Saha; Batteries &Supercaps, 2025, 00, e202500262

220 Magnetic ground state of the new perovskite variant Ba3CoSn2O9; Santanu De, Supratik Mukherjee,Rahul Singh, S. Karmakar, Shipra Das, U.K. Goutam, R. Rawat, G. Vaitheeswaran and P.N. Santhosh; Journal of

Magnetism and Magnetic Materials; 629 (2025) 173241.

221 Tailoring Ferromagnetic Properties of Nanocomposites of Ti3C2-based MXene and NiFe2O4 for Electromagnetic Shielding Applications; A. Kumar, S.K. Reddy, V.K. Verma, P. Patel, S.K. Sahoo, U.K. Goutam, K. Amemiya, A. Kandasami, V.R. Singh; Colloids and Surfaces A: Physicochemical and Engineering Aspects 725 (2025) 137547

222 Supercycle-Modulated Transparent Conductive Hf-Doped ZnOThinFilms by Thermal ALD for Photovoltaic Applications; Meenakshi, Abhishek Kumar, Meenakshi Devi, Rinki, Paras, Anil, Mrinal Dutta, Sanjay K. Srivastava,Thomas Fix, Uttam Kumar Goutam, G. Hema Chandra, and Prathap Pathi; ACS Appl. Energy Mater.; 2025

223 Investigation of oxygen defects in Eu doped NKBT by XPS & conductivity: Evidence of amphoteric nature; Pinki Yadav; Ankur Sharma; U. K. Goutam; Indranil Bhaumik; Gurvinderjit Singh

224 Two Orders of Magnitude Enhancement in Oxide Ion Conductivity in $Cu_2P_2O_7$ via Vanadium Substitution: A Pathway Toward SOFC Electrolytes; Ghanta, Bibhas; Chikara, Kuldeep Singh ; Goutam, Uttam Kumar; Bera, Anup Kumar; Yusuf, Seikh

225 Investigation of optical and thermochromic properties of reactively sputtered multiphase vanadium oxide thin films; Chinmaya Kar∗, R De, C Prathap, S R Polaki, A Rath, P K Sahoo, U K Goutam, S Maidul Haque, S Jena, S Pradhan and D V Udupa; Phys. Scr. 100 (2025) 115956

226 "Spectroscopic Insights into Structural and Electronic Modifications in Ce0.8Zr0.2O2 Under Low-Energy Ion Irradiation, Vivek Kumar, Yogendar Singh, Avaneesh Pandey, Saurabh Sharma, R. K. Sharma, Vinita Grover, and Pawan Kulriya, J. Appl. Phys. 138, 135903 (2025).

227 Amplification of Self-Sensitization at Nanoscale in NIR-Upconverting NaErF4 Core−Shell Crystals: Implications for Energy Applications, Ayushi Agarwal, Amrendra Kumar, Preeti Verma, Manvendra N. Singh, Parasmani Rajput, Subham Kumar, Rajendra K. Sharma, Chinnathambi Kamal, and Supratim Giri, ACS Appl. Nano Mater. 2025, 8, 20411−20425.

228 Comparative Study on Corrosion Behavior and Performance Evaluation of Metal/Alloy Membranes for Hydrogen Recovery in Bio-Jet Fuel Production; Ritu Parashar, Bipin Chandra Nailwal, Nitesh Goswami, RajaKishora Lenka, Jaspreet Singh, Vijay Karki, Asis Kumar Adak, Suresh Chandra Parida, Soumitra Kar, Sulekha Mukhopadhyay; Journal of Alloys and Compounds; 18 (2025) 183874.

229 One-Step Synthesis of Self-Assembled Flower Shape CuNi-MOF-Based Nanocomposite for Non-Enzymatic Electrochemical Sensing of Atrazine in Real Sample; S Jyotsna Sahoo, Bhismadev Mahananda, Jyotiraditya Samantaray, Jaspreet Singh, Priyabrat Dash; Applied Organometallic Chemistry; 39(9) (2025).

230 Ni2+ induced High Ferromagnetic Ordering and Dielectric Relaxation Phenomena in KBiFe2O5 Brownmillerite; Payala Sahoo, Sujata KumariIRay, Anupama Pati, Alok Kumar Sahoo, Jaspreet Singh and Suryanarayan Dash; Phys. Chem. Chem. Phys., 2025,27, 14526-14539.

231 Cs6W11O36/MIL-88B(Fe)–NH2 Binary Nanohybrid Photocatalysts for Selective Oxidation of the C(sp3)–H Bond of Toluene to Benzaldehyde; Saumyaranjan Panda, Yagna Prakash Bhoi, Sibun Kumar Pradhan, Swagat Kumar Nayak, Nutan Prabharani Gouda, Ramavath Babu, Ranjit Bariki, Jaspreet Singh and Braja Gopal Mishra; ACS Appl. Nano Mater. 2025, 8, 17, 8772–8788.

232 “Mapping of Micronutrient Elements Distribution in Different Varieties of Indian Wheat Grains Using Synchrotron Assisted Microprobe X-ray Fluorescence Analysis” AjayKhooha, Ayushi Trivedi, M. K. Tiwari, Vijay Kumar Garg, Ajay Sharma, Ajit Kumar Singh Analytical Letters (2025). DOI: 10.1080/00032719.2025.2527257.

233 “Structure, stress, and optical property correlations in nano-structured Mo/Si and W/B4C multilayer mirrors for hard x-ray applications” Faiyaz Mollick, M. Nayak, Ajay Kumar Kashyap, Jitendra Kumar, Arindam Majhi, Nageswararao Pothana, Parasmani Rajput, M. K. Tiwari, Sanjay Kumar Rai, Manvendra Narayan Singh, Archna Sagdeo Journal of Applied Physics 138(17) (2025). DOI: 10.1063/5.0291236

234 “Identification of transition metals and their alloys using a synchrotron X-ray source and a MOVPE grown GaAs p-i-n detector” Geetanjali Vashisht, Payal Taya,Ravi Kumar, Ayushi Trivedi, M. K. Tiwari, Tarun Sharma, Vijay Kumar DixitNuclear Instruments and Methods in Physics Research Section A, 1084:171184 (2025).DOI: 10.1016/j.nima.2025.171184

235 "Analysis of TiO_2 and Ti Nanolayers Irradiated with Highly Charged Xe q^+ Ions Using Synchrotron Radiation Based GIXRF Method" Regina Stachura, Dariusz Banaś, Aldona Kubala-Kukuś, Paweł Jagodziński, Paweł Jagodziński, M. Pajek, Karol Szary, Ilona Stabrawa, Weronika Biela, Giuliana Aquilanti, Iva Božičević Mihalić, Mohammad Akhlak Alam, M. K. Tiwari, M. Teodorczyk X-Ray Spectrometry, 55 (1), (2025). DOI: 10.1002/xrs.70029

236 "Enhancing the photocatalytic water electrolysis performance of Zn_2 SnO_4 nanostructures via post-synthesis nitrogen doping" Lokanath Mohapatra, Akshay Kumar Sonwane, Sonali Samal, Tushar Chauhan, Parveen Garg, Uday Deshpande, M. K. Tiwari, Ajay Kumar KushwahaNanoscale 17 (32), (2025). DOI: 10.1039/D5NR01576F

237 Probing interparticle interaction and ordering in silica-Pluronic based solutions and emulsions by small angle scattering techniques RajibGanguly*, Sugam Kumar, Ashwani Kumar, Debasis Sen*, Honecker, Dirk, Shelar, Sandeep Balu; Vinod Aswal, J. Phys. Chem. B 2025, 129, 3, 1135–1143.

238 Unlocking Actinide Pre-concentration Potential and Unique α--Scintillation Properties of Inorganic Nanotubes - Polyethersulfone Membrane Composite: A Viable Sensing Platform for Environmental Nuclear Forensics SabyasachiPatra, Satyam Kumar, Jitendra Bahadur, Debasis Sen, Rahul TripathiEnviron. Sci.: Nano, 2025,12, 2750-2766.

239 Role of different drying techniques on the morphology of carbon aerogel: A combinatorial analysis using gas adsorption and small-angle scattering, Ashish Singh, IndranilBhaumik, Satish Kumar Mandal, SushmitaBhartiya, Rashmi Singh, DK Kohli, Sunil Verma, Debasis Sen, Journal Carbon Trends 2025, 19, 100468.

240 Diverse pore ordering in porous silica: synthesis and quantitative structural insights based on combining scattering and imaging techniques, Avik Das, Satish K Mandal, Nitesh Kumar, NayanMaity, Ashwani Kumar, Swarnshikha Sinha, Jitendra Bahadur, Biswajit Chowdhury, Debasis Sen, Physical Chemistry Chemical Physics 2025, 27, 5505-5519.

241 Dependence of Phase Boundary and Interfacial Characteristics of Liquid Crystalline Structures on Surfactant–Cosurfactant Composition, S Sharma, KK Kaushik, K Bisht, SK Mandal, D Sen, S Tiwari, Langmuir 2025, 41, 18221−18228.

242 Scalable Synthesis of a Plasmonic Copper–Silver Bimetallic Catalyst by Spray-Drying for Nitrophenol and Dye Degradation, Debashish Sarkar, Jagannath, J Bahadur, Debasis Sen, SM Yusuf, Langmuir 2025, 41 (20), 12655-12663.

243 Structural and Functional Investigation of Putative Peptidase from Mycolicibacteriumphlei: An Exclusive Endopeptidase among S9C Subfamily KhileshwariChandravanshi, Sahayog N. Jamdar,Rahul Singh, Ashwani Kumar, AlokMahato, Richa Agrawal, SanjuktaA.Kumar, Amit Kumar, andRavindra D. Makde, Biochemistry 2025, 64, 12, 2596–2610.

244 Recombinant expression and purification of Plasmodium heme detoxification protein in E. coli: Challenges and discoveries Rahul Singh, Ravindra D. Makde,Protein Expression and Purification 2025, 236, 106789.

245 Neha Gupta, Sudip Nath, Gnana Spoorthy Komma, Nageshwara Rao Pothana, Deepak Garg, Shreyashkar Dev Singh, Varimalla Raghavendra Reddy, Dileep Kumar, Sanjay Kumar Rai, and Pooja Gupta. Unraveling Microscopic Origin of Nb 4d Transition-Metal-Induced Magnetic Anisotropy Evolution in W/CoFeB Heterostructures. ACS Applied Electronic Materials 7, 3599 (2025)

246 Kritika Vijay, Rajeev Joshi, Kranti Kumar, Sudip Nath, Soma Banik Valance Fluctuations in Co-doped FeSn anti-ferromagnetic Kagome Semi-metal. J. Appl. Phys. 137, 205104 (2025).

247 Yadav B, Gaikwad SS, Kumar A, Gupta GD, Kumar A, Makde RD. Crystal structure and nucleic acid binding activity of the conserved UPF0235 family protein PF1765 from Pyrococcus furiosus. Biochem Biophys Res Commun. 2025;782: 152568. doi:10.1016/j.bbrc.2025.152568

248 Das P, Noronha S, Bhaumik P. Structural insights and rational design of Pseudomonasputida KT2440 omega transaminases for enhanced biotransformation of (R)-PAC to (1R, 2S)-Norephedrine. J Biol Chem. 2025;301(7):110289. doi:10.1016/j.jbc.2025.110289

249 Gaikwad SS, Yadav B, Sharma S, Kumar A, Kumar A, Makde RD. Crystal structures of PF1765 from Pyrococcus furiosus from several different crystallization conditions with varied pH, salt and precipitant. Acta Crystallogr F Struct Biol Commun. 2025;81(Pt 12):505-516. doi:10.1107/S2053230X25009318

250 Zeenat Khakerwala, Sujay Gaikwad, Shweta Kumari, Gagan Deep Gupta, Ravindra D. Makde, Recombinant production of de novo designed miniprotein using various fusion protein tags, International Journal of

Biological Macromolecules, Volume 319, Part 2, 2025, 145041, https://doi.org/10.1016/j.ijbiomac.2025.145041.

251 Chandravanshi K, Jamdar SN, Singh R, et al. Structural and Functional Investigation of Putative Peptidase from Mycolicibacterium phlei: An Exclusive Endopeptidase among S9C Subfamily. Biochemistry. 2025;64(12):2596-2610. doi:10.1021/acs.biochem.5c00047

252 Jamdar SN, Kumar A, Srivastava G, Makde RD. Crystal Structure of Papain-Like Cysteine Protease, Calotropain FI, Purified from the Latex of Calotropis gigantea. J Agric Food Chem. 2025;73(15):9398-9407. doi:10.1021/acs.jafc.4c10898

253 Das T, Mukhopadhyay S, Das AK, Ganguly A. Efficient coordination between the winged helix domain and the aromatic-rich loop restructures the ATPase domain and facilitates DNA unwinding by human RECQ1. Nucleic Acids Res. 2025;53(11).

254 Godsora BKJ, Das P, Mishra PK, et al. Conformational flexibility associated with remote residues regulates the kinetic properties of glutamate dehydrogenase. Protein Sci. 2025;34(3).

255 Rahul Singh, Ravindra D. Makde, Recombinant expression and purification of Plasmodium heme detoxification protein in E. coli: Challenges and discoveries,Protein Expression and Purification, Volume 236, 2025, 106789, https://doi.org/10.1016/j.pep.2025.106789.

256 Patel, S.N., Sonani, R.R., Gupta, G.D., Singh, N.K., Upadhyaya, C., Sonavane, B., Amin, S., Kumar, V. and Madamwar, D. (2025), Structure and stability of phycocyanin from thermotolerant Oscillatoria. FEBS Lett, 599: 1420-1432. https://doi.org/10.1002/1873-3468.70048

257 Upadhyay S, Bhardwaj M, Kumar SP, Khan S, Kumar A, Hassan MI. Impact of Cancer-Associated PKM2 Mutations on Enzyme Activity and Allosteric Regulation: Structural and Functional Insights into Metabolic Reprogramming. Biochemistry. 2025;64(7):1463-1475. doi:10.1021/acs.biochem.5c00009

258 Vacuum ultraviolet spectra of gas phase organophosphorus solvent for nuclear fuel applications: Di-(2-ethyl-hexyl) phosphoric acid, Tamaghna Maitra, Param Jeet Singh, Atanu Bhattacharya, Suman Das, K.K. Gorai, D.V. Udupa, Chemical Physics 599,112875 (2025).

259 Probing photo-assisted charge storage mechanism using Bi-Fe perovskite oxide electrode for solar supercapacitor. Manopriya Samtham, Ajay Patil, Ekta Choudhary, Himanshu Srivastava, Ravindra Jangir, R.J. Choudhary*, and Rupesh S Devan. Small Methods 9 2401441 (2025).

260 Revealing the Role of Fe and Ti in the Quest for Different Magnetic Ordering in Double Perovskite Sr2FeTiO6. Divya Kumari, Digvijay Narayan Singh, Sourav Chowdhury, R. J. Choudhary*, and Seema Sharma*. Mater. Chem. Phys. 334 130411 (2025).

261 Synthesis and Spectroscopic Investigations of Sm3+ Activated ZrO2 and Na2ZrO3 as Warm Light Phosphors. P Khajuria, VD Sharma, A Khajuria, R Prakash, and R.J. Choudhary. J. Fluoresc. 35 2023 (2025).

262 Synthesis, structure and magnetic properties of Pr3Ni2NbO9 double perovskite. R. Athira, Yogesh Kumar, D.P. Sahu, A.K. Singh, R.J. Choudhary and S.D. Kaushik. Ceram. Int. 51 8758 (2025).

263 Anti-site Disorder Driven Unusual Magnetic Properties in Sm2NiMnO6 Double Perovskite. S. Majumder, S. Saha, Malvika Tripathi, P. Rajput, SN Jha, R. J. Choudhary, and D. M. Phase. J. Supercond. Nov. Magn. 38 29 (2025).

264 Structural and magnetic evolution in Ga+3-doped DyMnO3: Impact on Jahn-Teller distortion and spin glass behaviour. Paresh Siddhpura, Tanvi Dudharejiya, Nirali Udani, Sandhya Dodia, Gaurav Jadav, D.K. Dhruv, Sergei A. Sharko, J.H. Markana, R.J. Choudhary, and Bharat Kataria. Cer. Int. 51 38448 (2025).

265 Optoelectronic properties of Na2ZrO3: Eu3+ phosphor: Judd-Ofelt insights and applications in solid-state lighting and latent fingerprinting. Pooja Khajuria, Vishav Deep Sharma, Ishant Kumar, Arti Khajuria, Ram Prakash, RJ Choudhary. J. Alloys Compds. 1025 180268 (2025).

266 Role of crystal structure and local electronic structure on the magnetic behaviour of DyMn1− xFexO3 (x= 0.0, 0.3, 0.5, 0.7, and 1.0) system. Urjitsinh Rathod, Sumana Hajra, Sadaf Jethva, Savan Katba, Megha Vagadia, Rajashri Urkude, RJ Choudhary, M Gupta, Ashish Ravalia. J. Alloys Compds. 183667 (2025).

267 Probing half-metallicity in Mn2CoSi/Si (100) thin film structures using electrical transport measurements towards spintronic applications. Anadi Krishna Atul, Indra Sulania, R. J. Choudhary*, and Neelabh Srivastava. J. Phys. Chem. Solids. 196 112391 (2025).

268 Effect of Fe doping on the electronic properties of CoSn Kagome semimetal. Kritika Vijay, Kawsar Ali, Najnin Bano, Anju Ahlawat, Mukul Gupta, R.J. Choudhary, D K Shukla, Ashok K Arya and Soma Banik. J. Phys. Cond

Matt. 37 095502 (2025).

269 Unveiling the role of temperature on structural, compositional, morphological, thermal and optical properties of hydrothermally synthesized SnS2 nanostructures. Sawini, K. Singh, A. Kumar, D. Kumar, A. Kumar, A. Kumar, S. K. Mahatha, S. Praveenkumar, Inorganic Chemistry Communications, 171, 113548 (2025).

270 Impact of Cr doping on Hall resistivity and magnetic anisotropy in SrRuO3 thin films. Pooja Kesarwani, Santosh K Khetan, B Ojha, R J Choudhary, V R Reddy, Subhankar Bedanta, P S Anil Kumar and Chanchal Sow. J. Phys. Cond Matt. 37 065803 (2025).

271 Effect of phase transition on structural, dielectric, and electrical properties of pulsed laser deposited Y doped high k HfO2 thin films, M. Nand, P. S. Padhi, S. Tripathi, Y. Kumar, P. Sahu, M. Kumar, A. Dawar, S. Ojha, P. Misra, H. Srivastava, S. K. Rai, J. Vac. Sci. Technol. A 43 (2025) 023411.

272 Structural, electrical, and magnetic properties of $_{(1-x)}$ $ZnFe_2O_{4-(x)}$ $BaTiO_3$ (x = 0,0.05,0.10,1) system, H. Cheema, P. A. Al, J. Tanwar, P. Kushwaha, S. N. Jha, S. Tripathi, U. Kumar, J. Australian Ceramic Society (2025). https://doi.org/10.1007/s41779-025-01219-7.

273 N rich a-SiNx:H as a prospective material for EUV/soft x-ray mirror: A soft x-ray reflectivity analysis near Si $L_{2,3}$ absorption edge Harsh Gupta, Mohammed H. Modi, Pariksha Malik, R. K. Bommali, Pankaj Srivastava, Santanu Ghosh. J. Appl. Phys. 138, 035302 (2025), https://doi.org/10.1063/5.0265559.

274 Investigation of SnO_2/B_4C multilayer for application near the boron K-absorption edge P. N. Rao, Himanshu Srivastava, R. K. Gupta, S. K. Rai. J. Appl. Phys. 137, 145302 (2025) https://doi.org/10.1063/5.0256977.

275 Experimental and theoretical investigations on the vibrational and electronic spectra of 1,3-dibromobenzene", Kiran Kumar Gorai, Asim Kumar Das, Mohammad Jane Alam and Aparna Shastri, *The Journal of Chemical Physics 162, 214303 (2025)*

276 "UV-VUV absorption spectroscopy and photodissociation dynamics of n-propylamine", Neha Sharma, Aparna Shastri, Asim Kumar Das, Vandana Rawat and Balabhadrapatruni Naga Rajasekhar, *Physical Chemistry Chemical Physics 27, 18609 (2025)*

277 Unveiling the Dissociation Mechanism of Diglycine Perchlorate; H. Kumawat, H Bhatt, S.R. Vishwakarma, L. Panicker, T. Sakuntala; ACS Inorg. Chem. 64(2025)892

278 Vibrational Spectroscopy of interstellar PAHs: 1-cyanonaphthalene and 2-cyanonaphthalene; V. Rawat, A. Shastri, A.K. Das, N. Sharma, H Bhatt, B.N. Rajasekhar; SpectrochimicaActa A 324(2025)124971

279 Metal-Organic Open-Framework Molecular Magnet Based on Vanadium Hexacyanoferrate Prussian Blue Analogues as Cathode Material for Advanced Potassium Ion Aqueous Battery; NilashaMaiti, Pramod Bhatt, Mayuresh D. Mukadam, Manoj K. Sharma,Sher Singh Meena, Himal Bhatt, Katsuya Inoue, Kenya Shimada, Masahiro Sawada,Frank M. F. de Groot, Seikh Mohammad Yusuf; Advanced Energy and Sustainability Research 2500065(2025)1-19

280 Br I Spectral Line Measurements in infrared region –C.Ashok, H Bhatt, S.R. Vishwakarma, A.Sharma, M.N. Deo; J. Quant. Spectrosc. Rad. Trans. 330(2025)109232

281 Ag-SiO2/graphene oxide solid-substrate for SERS based vapor detection and plasmon mediated photo-catalytic transformation of p-amino-thiophenol; N. Kumar, H. Bhatt, J. Bahadur, S. Sahoo, A. Shastri; Applied Surface Science, 721 (2026) 165431

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BL-01 Polarized Light Beamline (SXAS)



Energy Range: 100–1200 eV

Key Experiments
- XAS, XMCD
- Soft X-ray spectroscopy

Research Areas
- Chemical & Material Sciences
- Thin films, Biology

BL-02 Engineering Applications

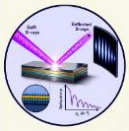


Energy Range: 5-25 keV

Key Experiments
- XRD, GIXRD, Reflectivity
- Residual Stress Measurement
- PDF Analysis

Research Areas
- Engineering Applications, Thin films
- Materials, Additive Manufacturing

BL-03 Soft X-Ray Reflectivity



Energy Range: 100-1500 eV

Key Experiments
- Reflectivity, Absorption
- Fluorescence

Research Areas
- Thin films, Surfaces and interfaces
- X-ray devices: Mirrors and detectors

BL-04 IMAGING



Energy Range: 8–35 keV

Key Experiments
- Imaging: Absorption Contrast, Phase contrast, Micro-tomography
- 3D Elemental and Density mapping
- In-situ CT under mechanical load

Research Areas
- Biomedical and Materials
- Geology, Archaeology

BL-05 Atomic, Molecular and Optical Studies



Energy Range: 6-800 eV

Key Experiments
- Photoionisation
- Photochemistry, photoabsorption
- XAS of low Z elements

Research Areas
- Atmospheric Sciences
- Astrochemistry

BL-07 Soft and Deep X-ray Lithography



Energy Range: 3-20 keV

Key Experiments
- Soft and Deep X-ray lithography

Research Areas
- X-ray optics fabrication
- MEMS devices
- Micro-fluidic device

BL-08 EXAFS

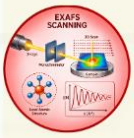


Energy Range: 5 - 20 keV

Key Experiments
- X-ray absorption spectroscopy in the transmission mode
- XANES

Research Areas
- Materials
- Environmental Sciences

BL-09 Scanning EXAFS

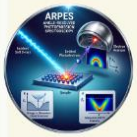


Energy Range: 5 - 25 keV

Key Experiments
- EXAFS, XANES,
- In-situ/operando studies
- Temperature dependent EXAFS

Research Areas
- Pharmaceuticals, Catalysis
- Materials, Chemistry, Biomaterials
- Environment, Energy, Industrial R&D

BL-10 ARPES

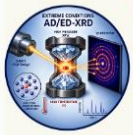


Energy Range: 30-1000 eV

Key Experiments
- Angle-resolved photoelectron spectroscopy
- Synchrotron photoemission

Research Areas
- Surface Sciences, Spintronics
- Band Structure, Correlated Electron Systems, Quantum materials

BL-11 EDXRD/ECXRD

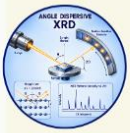


Energy Range: 10-40 keV

Key Experiments
- ADXRD (High pressure & High temperature)
- PDF analysis

Research Areas
- Materials Science,
- Advanced Materials

BL-12 ADXRD

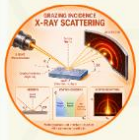


Energy Range: 5-25 keV

Key Experiments
- XRD, XRR, GIXRD
- LT/HT XRD

Research Areas
- Pharmaceutical
- Material Sciences
- Microstructural Characterization

BL-13 GIXS



Energy Range: 5-20 keV

Key Experiments
- Single crystal diffraction, RSM
- XRR & Diffuse scattering
- In-plane and out-of-plane diffraction

Research Areas
- Materials Science, Semiconductors
- Nanoparticles

BL-14 Photo-electron spectroscopy



Energy Range: 2-15 keV

Key Experiments
- High-resolution photoelectron spectroscopy

Research Areas
- Chemical Sciences
- Surface Chemistry

BL-16 XRF-Microprobe



Energy Range: 5-20 keV

Key Experiments
- XRF, TXRF, μ-XRF, XRR and GIXRF

Research Areas
- Nano-materials, Thin films, Pharmaceuticals, Food, Environment, Life science
- Forensic applications, Agricultural

BL-18 SWAXS



Energy Range: 5-20 keV

Key Experiments
- Small angle X-ray scattering
- Wide angle X-ray scattering

Research Areas
- Material Sciences
- Nanoparticles, Soft-matter

BL-20 XMCD



Energy Range: 300- 2000 eV

Key Experiments
- XMCD, Polarized X-ray absorption
- Temperature dependent magnetic transitions

Research Areas
- Magnetic materials, Spintronics
- 2D and van der Waals magnets
- Energy and Quantum materials

BL-21 Protein Crystallography



Energy Range: 5- 20 keV

Key Experiments
- Macromolecular crystallography
- Single and Multi-wavelength anomalous dispersion

Research Areas
- Drug discovery, Structural biology
- High resolution proteins structure

BL-22 Photo-Emission Electron Microscopy (PEEM)



Energy Range: 100 eV – 8 keV

Key Experiments
- XRF

Research Areas
- Nanomaterials
- Catalysis, Surface & interfaces

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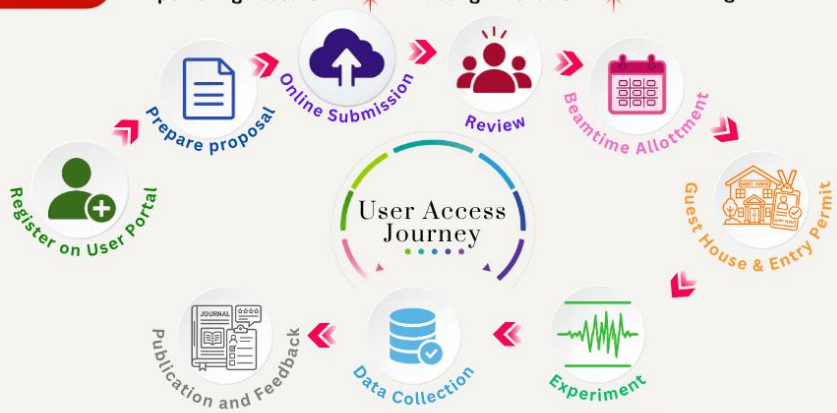
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- X-ray Fluorescence **(XRF)**
- X-ray Magnetic Circular Dichroism **(XMCD)**
- **IR & VUV** Spectroscopy

Diffraction

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- Single Crystal X-ray Diffraction **(SCXRD)**
- Grazing Incidence X-ray Diffraction **(GIXRD)**
- Macromolecular Crystallography **(MX)**

Electron Spectroscopy

- X-ray Photoelectron Spectroscopy **(XPS)**
- Angle-Resolved Photoemission Spectroscopy **(ARPES)**

Imaging

- X-ray Phase Contrast Imaging
- X-ray Computed tomography

Scattering

- X-ray Reflectivity **(XRR)**
- Small Angle X-ray Scattering **(SAXS)**
- Wide Angle X-ray Scattering **(WAXS)**

X-ray Lithography

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- Accommodation at RRCAT Guest House on chargeable basis upon request.
- RRCAT entry permits will be issued after proposal approval and can be collected from the Guard House.



https://www.rrcat.gov.in | 0731-244-2101/2140 | https://info.rrcat.gov.in/beamline/

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GOVERNMENT OF INDIA
DEPARTMENT OF ATOMIC ENERGY
RAJA RAMANNA CENTRE FOR ADVANCED TECHNOLOGY, INDORE

INDUS SYNCHROTRONS

INDUSTRY LIAISON CELL (ILC)

YOUR GATEWAY TO ADVANCED SYNCHROTRON-BASED SOLUTIONS

ABOUT INDUSTRY LIAISON CELL

The Industry Liaison Cell acts as a single point of contact for industries seeking access to the Indus Synchrotron Facility. We provide dedicated support for technical consultation, feasibility assessment, beamtime coordination, and data delivery with complete confidentiality.

Confidential industrial projects are handled with utmost care. NDAs can be executed whenever required.

MODES OF ACCESS

MODE 1: IN PERSON VISIT

- Industrial user visit RRCAT
- Experiments conducted with the beamline team
- Real-time interaction and immediate discussions

MODE 2: SAMPLE SUBMISSION

- Samples sent to RRCAT
- Experiments performed by experts
- Data processing and report delivery
- Saves travel time

INDUSTRIAL ACCESS PROCEDURE

1. **Industry Enquiry** — Share your requirement with us
2. **Discussion with Liaison Cell** — Technical consultation & clarification
3. **Feasibility Review** — Assessment by beamline scientists
4. **Quotation & Cost Estimate** — Detailed estimate of beamtime and services
5. **Beamtime Booking** — Confirmation of schedule based on availability
6. **Experiment** — Experiments performed as per plan
7. **Billing** — Invoice raised as per utilization
8. **Payment** — Payment as per invoice
9. **Data Delivery** — Processed data, analysis & report

Current industrial beamtime charges: ₹ 7,500 per beamline per hour*.

*Subject to revision as per applicable policies

Please follow all safety, security and radiation protection rules during your stay at Indus Complex.

- Valid photo ID proof
- Prior permission required for permitted items.
- Security protocols for samples.
- Safety protocols.

WHY INDUSTRIES CHOOSE INDUS?

- World-class synchrotron facility
- Advanced techniques & instruments
- Expert scientific support
- Flexible access modes
- High sensitivity & resolution
- Rapid turnaround
- Confidentiality
- Notional charges



Ph: 0731-244-2101/2140

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https://www.rrcat.gov.in

https://www.rrcat.gov.in/technology/accel/isrf_index.html

https://info.rrcat.gov.in/beamline/

https://www.rrcat.gov.in/technology/accel/indus/ind_lias_cell_indus.html

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