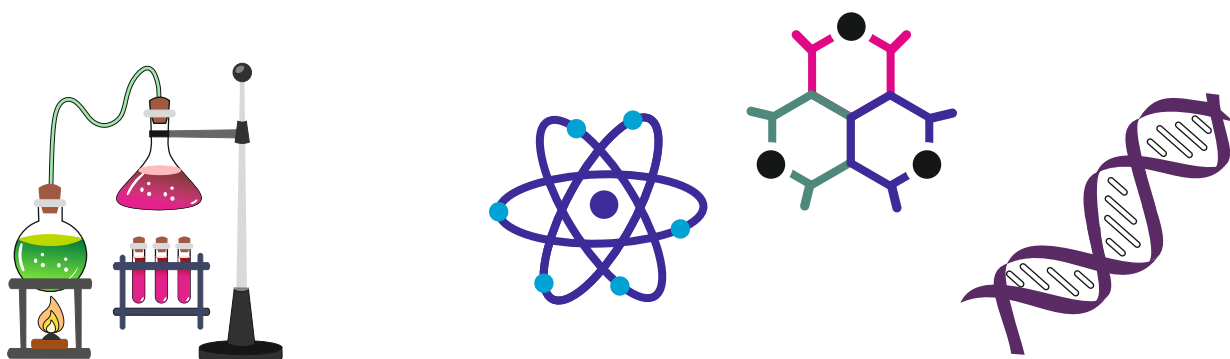




AWARDS & HONORS to BARC R&D Community



Dr. Aradhana K. Shrivastava, Physics Group



Fellow, Indian National Science Academy (FNA) (2026)

Fellow, National Academy of Sciences, India (FNASc) (2025)

Dr. Aradhana K. Shrivastava, Outstanding Scientist, Physics Group, BARC and a senior Professor of HBNI. She has been actively involved in the R&D activity utilizing BARC-TIFR Pelletron-LINAC facility at Mumbai. Her interests are broadly in the area of studying reaction dynamics with stable and weakly bound nuclei, shell effects in fusion-fission reaction and neutrino less double beta decay. Dr. Shrivastava has made significant contribution in identifying the origin of fusion hindrance observed at energies deep below the Coulomb barrier. This work in the area of nuclear physics that has important astrophysical implications related to the production of light-elements in stellar-environments was made possible due to her use of an innovative approach in selecting an asymmetric projectile-target system and a novel off-beam measurement technique. She has indigenously designed and developed a multi-anode Gas-Si hybrid detector for performing accelerator-based mass spectroscopy (AMS) of ^{36}Cl . Her team has developed various state-of-the-art experimental facilities at Pelletron LINAC Facility. She is recipient of DAE Homi Bhabha Science & Technology award, DAE Scientific & Technical Excellence Award and DAE Group Achievement Award. She has served as General Secretary of Indian Physics Association. She was a member of the drafting group for Mega-Science Vision 2035 document, written on initiative by the Office of the Principal Scientific Advisor to the Government of India.

Dr. Jyotirmayee Mohanty, Chemistry Group



Society for Materials Chemistry (SMC) - Distinguished Woman Scientist Award (2024)

Prof. (Mrs.) Archana Sharma Memorial Lecture Award, NASI (2025)

Dr. (Mrs.) Jyotirmayee Mohanty, Scientific Officer, Chemistry Group, has been conferred with the prestigious 'Distinguished Woman Scientist Award' by Society for Materials Chemistry (SMC) for her outstanding contribution to Materials Chemistry. She obtained her M. Sc. in Chemistry from Utkal University, Odisha in 1992 and joined Bhabha Atomic Research Centre, Mumbai, India, as Scientific Officer in 1994 after one-year advanced orientation course conducted by the institute. After her Ph.D. from the University of Mumbai in 2002, she carried out her postdoctoral research at Max-Planck Institute for

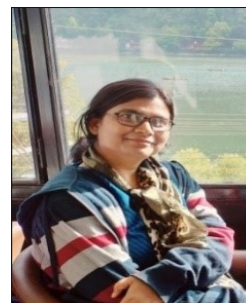
Biophysical Chemistry (MPIBPC), Göttingen and Jacobs University Bremen (JUB), Bremen, Germany, 2002-2004. She was a visiting scientist at JUB, Germany during Nov. 2013-Jan under Humboldt Fellowship for Experienced Researchers from Alexander von Humboldt Foundation. Her current research interests focus on the dynamics of noncovalent supramolecular/biomolecular assemblies and exploring their functional activities towards various applications such as on-off sensors, catalysts for H₂ generation, aqueous dye lasers, ^{99m}Tc generator bed, anti-cancer/anti-amyloidosis/antibacterial agents, etc. Her research contributions have been recognized in various national and international fora, such as IUPAC 2023 Distinguished Women in Chemistry or Chemical Engineering Award, Homi Bhabha Science & Technology Award from DAE (2019), CRSI Bronze medal-2017, SERB POWER Fellowship from ANRF, India, APA Prize for Young Scientist-2010 from the Asian-Oceanian Photochemistry Association (APA), Distinguished Lectureship Award-2009 from the Japan Chemical Society, Samanta Chandra Sekhar Award-2011 from Odisha Bigyan Academy. She is the Fellow of Maharashtra Academy of Sciences, National Academy of Sciences, India and Fellow of Royal Society of Chemistry (FRSC), London.

Dr. Seemita Banerjee, Chemistry Group

Society for Materials Chemistry (SMC) - Bronze Medal (2024)

Society for Materials Chemistry (SMC) - Bronze Medal (2024)

Dr. (Mrs.) Seemita Banerjee, Scientific Officer, Chemistry Group, has been awarded SMC bronze medal and elected as the member of NASI. She has been recognized for her overall research contributions in the area of hydrogen energy. She started her scientific carrier in the field of hydrogen storage and contributed significantly in this field thereafter. She successfully worked towards the development of magnesium-based materials, transition metal-based alloys, chemical hydrides, as well as carbon-based materials for hydrogen storage application. She has been extensively working on very important issues such as improvement of hydrogen storage capacities of different systems as well as their desorption temperatures and kinetics. She has contributed significantly for the development of different catalysts for in-situ generation of hydrogen from chemical hydrides at ambient temperature. Her work also involves development of material for supercapacitor and sensor applications as well as catalysts development for electrochemical hydrogen evolution reaction. She has published more than 60 peer reviewed papers in international journals of high impact. She has received DAE Young Scientist Award (2015).



Dr. Shilpa N. Sawant, Chemistry Group

Society for Materials Chemistry (SMC) - Silver Medal (2024)

Member, National Academy of Sciences (NASI), India (2024)

Dr. (Mrs.) Shilpa N. Sawant, Scientific Officer, Chemistry Group, has been awarded SMC silver medal and elected as the member of NASI. Dr. Sawant joined BARC in the year 1997, through 40th batch of Training School after completing her MSc (Chemistry) from IIT Bombay. She received her PhD from Tokyo Institute of Technology under the JSPS RONPAKU Fellowship. Dr. Sawant has made significant contributions to the development of electrochemical and colorimetric biosensors for detection of important analytes including metabolites, pathogenic bacteria, cancer biomarkers and cancer cells. Adopting several innovative strategies, she has contributed immensely to the fundamental understanding of various processes involved in development of sensors for medical diagnostic application. She has developed a novel electrochemical device (ECAA) for cancer detection by exploiting the difference in the glycolysis rate of normal and cancer cells. This device was validated using human tissue samples under a MoU with Tata Memorial Hospital. The technology for ECAA has been transferred to five private companies for commercialization. She has also developed a novel electrochemical device (BacSeNSe) consisting of sensor array for rapid microbial identification and antibiotic susceptibility testing in pathology samples. She has been conferred with DAE Scientific and Technical Excellence Award-2015 for her significant contribution in the field of conducting polymer-based biosensors.



Dr. Vinita Grover Gupta, Chemistry Group



Chemical Research Society of India (CRSI) - Bronze medal (2025)
Fellow, Royal Society of Chemistry (2025)

Dr. (Mrs.) Vinita Grover Gupta, Scientific Officer, Chemistry Group, has been awarded CRSI bronze medal and selected as the Fellow of Royal Society of Chemistry (FRSC). She is a materials chemist who works extensively on materials for nuclear and energy applications. Her area of expertise is design of materials for nuclear safety and advanced nuclear technologies that has led to indigenous database on structural, thermophysical and irradiation behavior of oxides and composites of nuclear relevance. She has developed rare earth-based, lead-free novel materials for energy applications such as ferroelectric relaxors, ionic conductors and phosphors based on crystal chemistry concepts. An import-substitute technology for flexible lead-free X-ray shielding formulations has been developed for medical applications. She is the recipient of several awards notable among which are DAE Scientific and Technical Excellence Award, DAE Young Scientist Award, CRSI-Bronze Medal, Young Scientist Awards bestowed by Indian Nuclear Society and Indian Society of Chemists and Biologists, IANCAS Dr. Tarun Dutta Memorial Award and winner of IUPAC Young Chemist Programme. She is also the Fellow of Royal Society of Chemistry and Maharashtra Academy of Sciences India. She is an elected Associate Academician, Asia Pacific Academy of Materials and Member, National Academy of Sciences India.

Dr. Adish Tyagi, Chemistry Group



Member, Indian National Young Academy of Sciences (INYNAS) (2025)
Young Associate, Maharashtra Academy of Sciences (2024)
Society for Materials Chemistry (SMC) - Bronze Medal (2024)

Dr. Adish Tyagi, Scientific Officer, Chemistry Group has been elected as young associate of Maharashtra Academy of Sciences, member of INYNAS and received bronze medal from SMC for his outstanding contributions to materials chemistry, with a particular focus on germanium ultra-purification and the development of materials for energy conversion and storage. Since joining BARC in 2011, he has played a significant role in optimizing zone refining parameters to upgrade commercial 4–5N germanium to ultra-pure levels. In the field of energy materials,

Dr. Tyagi has pioneered the use of single-source precursors for the synthesis of size- and composition-controlled metal chalcogenide and oxide nanomaterials, demonstrating their efficiency as photon absorbers in photoelectrochemical cells. He has also developed metal chalcogenide and porous carbon@metal chalcogenide nanocomposites as high-performance anodes for lithium-ion batteries. Dr. Tyagi's remarkable scientific contributions have been widely recognized through several prestigious awards from national scientific bodies.

Dr. Anup Kumar Bera, Physics Group



AONSA Science Award 2025

Dr. Anup Kumar Bera, Scientific Officer, Physics Group, Assistant Professor in Homi Bhabha National Institute, has been honored with the Asia-Oceania Neutron Scattering Association (AONSA) Science Award 2025 for his exceptional contributions to neutron science; groundbreaking experimental observations, including the realization of “Bethe Strings,” (after ~90 years of its theoretical prediction), and the discovery of novel quasi-particle excitations such as “doublons” and “quartons”, and his commitment to addressing complex scientific challenges.

Dr. Bera joined BARC as a Scientific Officer (D) in 2016. Before that, he earned his PhD in Physics from the University of Mumbai in December 2011, followed by postdoctoral research at Helmholtz-Zentrum Berlin für Materialien und Energie, Germany, from December 2011 to June 2015, and KSKRA at BARC during July 2015 to July 2016.

Dr. Bera's research interest includes strongly entangled quantum spin systems, quantum phenomena in low-dimensional magnetic materials, quantum phase transitions, quantum spin-liquids, and energy materials for future technology. He has authored over 95 research papers in leading international journals, including Nature, Nature Physics, and Nature Communications; along with 20 conference papers and two book chapters.

Dr. Bera's notable achievements include the Young Scientist Award (2018) from the DAE, Govt. of India, and the Young Achiever Award by the DAE-Solid State Physics Symposium. He has been elected as a Young Associate of the Maharashtra Academy of Sciences. He has delivered several invited lectures, including the notable Infosys Condensed Matter Seminar at the TIFR, Mumbai, and has received multiple best presentation awards at various prestigious conferences.

Dr. Balaji P Mandal, Chemistry Group

Silver Medal by Chirantan Rasayan Sanstha, India

Dr. Balaji P Mandal is a Scientific Officer in Chemistry Group, BARC and an Associate Professor in Homi Bhabha National Institute (HBNI), Mumbai. Dr. Mandal developed pyrochlore based ceramics with high radiation stability. He also contributed in multiferroics, high dielectric compounds and composites. He was awarded DAE-Young Scientist award in 2012 and received membership of the National Academy of Science, India. He is also recipient of DAE-SSPS Young Achiever Award in 2017. Dr. Mandal was awarded SMC-Bronze Medal in 2022 for his work in nuclear materials and solid state ionics. He has transferred technologies for electrode materials of lithium ion battery to different private firms in the recent past. He has more than 95 publications to his credit, published in internationally reputed journals. Recently, he has been awarded with Silver Medal by Chirantan Rasayan Sanstha, India in recognition of his notable contribution in materials chemistry and solid state ionics.



Mr. Bhumeshwar Ponagani, Multidisciplinary Research Group

Young Engineer Award, Indian Society for Particle Accelerators (ISPA), 2025

Mr. Bhumeshwar Ponagani made notable contributions to the field of superconducting radio-frequency (SRF) cavity design and accelerator control system development as part of the Indian Institutions and Fermilab Collaboration (IIFC) and the Indian accelerator programme.

He was involved in optimizing the use of circumferential stiffeners, and inclusion of internal stiffening plates on SSR cavities for IIFC. The same analysis framework was applied to optimize the electromechanical design of Medium Energy High Intensity Proton Accelerator (MEHIPA) SSR-B cavities.

In addition, he developed an eight-channel RF power monitoring system integrating it with EPICS for real-time measurement of forward, reflected, and cavity power. This indigenously designed system, based on SoC FPGA and Raspberry Pi, effectively replaces commercial RF power meters while offering enhanced flexibility and data accessibility.

He also designed a feedforward power stabilization system for the klystron driving the RFQ in LEHIPA in BARC, achieving flat power pulses and improved cavity conditioning. His work significantly strengthens India's capabilities in SRF and accelerator technologies.



Dr. Bijaideep Dutta, Chemistry Group



INIAS Best Thesis Award (2025)

Dr. Bijaideep Dutta, Scientific Officer, Chemistry Group has been awarded the 'Best Thesis Award' from INIAS. Dr. Dutta joined BARC in 2015 and has been actively engaged in activities associated with the design and development of innovative materials for affordable and effective cancer therapeutics. His research focuses on three key areas - rational design of biocompatible nanomaterials for targeted cancer therapy, development of integrated theranostic platforms for simultaneous imaging and treatment and formulation of advanced nutraceuticals with enhanced bioavailability. He has developed a cost-effective PEGylated liposomal doxorubicin formulation (BARC-LDOX) using FDA-approved, self-assembling ingredients, which demonstrates superior pharmacokinetics and biodistribution compared to free drug and performance comparable to commercial analogues. Validated in GLP facilities, BARC-LDOX is currently under patent drafting and holds strong translational promise. Dr. Dutta also engineered highly stable, bioavailable curcumin based nano-formulations capable of loading up to 50 mg/mL of curcumin with stability for over five years. This technology has been transferred to four Indian companies. Furthermore, he has pioneered pH-responsive magnetic nanoparticles for chelator-free bimodal (MRI/SPECT-CT) imaging and combinatorial chemo-thermal therapy. A recipient of numerous accolades, including seven best paper awards and honors such as the HBNI Outstanding Doctoral Student Award (2023), CRS Young Scientist Award, and SMC Emerging Young Scientist Award (2023), Dr. Dutta has published 42 peer-reviewed articles in leading journals (RSC Nanoscale, JMC B, ACS' AMI, ACS' Applied Biomaterials, Adv. Colloids Interface Sci.) and authored seven book chapters, establishing himself as a versatile and pioneering researcher in biomedical materials chemistry.

Dr. Brindaban Modak, Chemistry Group



Member, Indian National Young Academy of Sciences (INIAS) (2024)

Dr. Brindaban Modak, Scientific Officer, Chemistry Group, made notable contribution in the area of theoretical chemistry and computational material science of fundamental and practical interests. The major focus of his research activities includes developing novel materials for energy conversion, storage and environmental applications. He has demonstrated efficient strategy to engineer the band structure of the photocatalyst in a controlled manner through doping with a foreign element. The reported results were found to be of great interest and beneficial to the researchers working in the synthesis of new photocatalyst with improved features. Many of his predicted catalysts have already been synthesized by various experimental groups. Dr. Modak also made significant contribution in designing tunable materials for optoelectronics devices and radiation dosimetry. He has employed efficient strategies to tune the emission properties through defect and doping engineering. He has also predicted novel materials by investigating the microscopic origin of host emission, local site occupancy, defect evolution, in the doped and undoped host materials. His studies provide important guidelines for tuning the synthesis conditions to optimize functionalities based on different intrinsic defects. He has investigated different important thermophysical and thermodynamic properties of advanced fuel materials for nuclear reactors. He has also studied temperature dependency on thermal conductivity, heat capacity, and thermal expansion coefficient, which are very much related to heat transport phenomena. He has, to his credit, an impressive number of publications in reputed international journals which have been well cited in popular literature. Dr. Modak was awarded with NASI-Young Scientist Platinum Jubilee Award, DAE Young Scientist Award, NASI-Membership, Young Associate of the Maharashtra Academy of Sciences, Bronze Medal from Society of Material Chemistry, Homi Bhabha Prize and HBNI Outstanding Doctoral Student Award.

Dr. Debasis Sen, Physics Group

Society for Materials Chemistry (SMC) Silver Medal 2024

Dr. Debasis Sen, Scientific Officer, Physics Group has made outstanding contributions by establishing mesoscopic-structure-function correlation in materials through small-angle scattering of neutrons (SANS) and X-rays (SAXS). He has been instrumental in setting up the Small Angle X-ray Scattering beamline (BL-18) at Indus-2 and the MSANS facility at the guide tube laboratory, Dhruva reactor. He worked as a Visiting Scientist at CEA, Saclay in France. Dr. Sen has established a profound understanding of evaporation-induced assembly during drying of spray colloidal-droplet and formation of nano-structured porous micro-granules. He has established the method for tuning sphere to doughnut transformation during formation of these micro-granules. These micro-granules are found to be useful in: i) enhancing water permeability through ultra-filtration membranes, ii) dye sorption iii) microbe filtration, and iv) cementation. He has developed novel formalisms to estimate particle size distribution from scattering data without prior assumption of the form of distribution. He has been conferred with several prestigious awards including DAE-Homi Bhabha Science and Technology Award, DAE Scientific and Technical Excellence award, Young Achiever Award of DAE Solid State Physics Symposium. He is a Fellow of Maharashtra Academy of Sciences.



Dr. Deepak Tyagi, Chemistry Group

Young Associate of Maharashtra Academy of Science (2024)

Dr. Deepak Tyagi, Scientific Officer, Chemistry Group has been elected as a Young Associate of Maharashtra Academy of Science for his contribution in the field of heterogeneous catalysis with emphasis on development of suitable catalysts for the processes relevant to DAE's mandate such as mitigation of hydrogen in nuclear plant under LOCA conditions, catalyst for hydrogen generation from thermochemical cycles, catalysts for degradation of dioxin and furans generated by incineration of polymeric waste and root cause analysis of pressure tube failure at KAPS. For hydrogen production, he has developed platinum-based catalysts for liquid phase HI decomposition reaction, the hydrogen producing step of S-I cycle. He has also contributed to the hydrogen mitigation catalyst, the devices based on the catalyst have been deployed in all nuclear power plants in India. He has also developed a catalyst for U(VI) to U(IV) reduction reaction. The selected catalyst Pt (1 wt. %)/ZrO₂ was deployed in a pilot plant at Nuclear Recycle Group. For dioxin and furan degradation catalyst, he has developed mixed oxide catalysts. For root cause analysis of failures of pressure tube in KAPS, he made significant contributions in setting up an experimental facility at ISOMED, BRIT and Electron Beam Centre Kharghar. He was instrumental in generation and analyzing the radiolysis data for ethylene and other hydrocarbon impurities at 7 MeV LINAC. He is a recipient of Homi Bhabha medal 2009 and DAE Young Applied Scientist Award 2017. He is one of the recipients of DAE group achievement awards in year 2010, 2016 and 2018.



Dr. Gourab Karmakar

Society for Materials Chemistry (SMC) - Emerging Scientist Award (2024)

Dr. Gourab Karmakar, Scientific Officer, Chemistry Group, has been awarded Emerging Scientist Award from SMC for his significant contributions in the area of molecular and materials chemistry. His research focuses on single source molecular precursor-mediated low-temperature synthesis of metal chalcogenide nanostructures and thin films for energy conversion and storage. His work has led to the development of several chalcogen-bearing complexes of both transition and main-group metals featuring in-house developed internally functionalized hemilabile ligands. He has extensively explored these complexes as precursors for the fabrication of nanocrystalline metal chalcogenide semiconductors with tunable physical properties. He has successfully isolated several delicate compositions of copper, indium and tin chalcogenides, employing molecular precursor route. This was achieved mainly by keen selection of



reaction solvent and modulating reaction temperature. Substitution of different functional groups in the molecular precursor have also been explored for their effect on the final material. Dr. Karmakar's innovative idea have enabled the synthesis of mono-dispersed, phase-pure, high quality metal chalcogenides, showcasing the versatility of his approach. His research interest also extends to the scalable production of technologically superior ternary metal-chalcogenide nanostructures. Furthermore, the materials developed by Dr. Karmakar have shown remarkable performance as anode material in lithium-ion batteries (LIBs), with impressive charge-discharge capability accompanied with high cyclability.

Dr. Kaustava Bhattacharyya, Chemistry Group



CRS- Bronze Medal-2025 by Chirantan Rasayan Sanstha (CRS), India

Dr. Kaustava Bhattacharyya, Scientific Officer, Chemistry Group has made excellent contribution in the field of materials science, particularly towards development of heterogeneous catalysts pertaining towards the needs of energy resources and environmental remediation. He has made immense contributions in heterogeneous catalysis with emphasis on programs of relevance to DAE. His work in the field of energy sources has resulted in development of photocatalysts for selective CO₂ reduction to CH₄ and established its mechanism. He has developed several catalysts for the utilization of CO₂ in various forms. He has contributed towards the development for the mechanism of the Bunsen reaction step in S-I cycle of H₂ production. He has synthesised and established the mechanism for decomposition reaction of Cu₂OCl₂ in Cu-Cl cycle of H₂ production.

He has developed an analytical technique for measurement of Dioxin and Furan (D&F) and thermal catalysts for complete mineralization of D&F. His deep insight catalysis has led to establishment of primarily the effect of O-vacancies, other point defects and surface oxidation states in photocatalytic efficiency. He has developed various photocatalysts for abatement of different VOC's like para chlorophenol, ethylene, benzene, methane, CO, o-DCB, different toxic dyes and established their catalytic mechanism. His expertise in different surface technique related to XPS, and different operando techniques like in situ FT-IR, in situ EXAFS for mechanistic understanding has resulted in establishment for the mechanistic details for several processes which has prompted in increment in their catalytic efficiency in a positive way. He has special interests in the effects for surface sorption and separation of Uranyl and Plutonium ions in urine bioassays in order to develop a technique for their detection low concentration regime.

Dr. Mahesh Sundararajan, Chemistry Group



IANCAS' Dr. Tarun Datta Memorial Award (2024)

Dr. Sundararajan, Scientific Officer, Chemistry Group has been awarded IANCAS' Dr. Tarun Datta Memorial Award for significant contributions to theoretical and computational chemistry, particularly in the electronic structure calculations of speciation and extraction of heavy metal ions in different environments. Dr. Sundararajan joined BARC in 2010 through KSKRA Fellowship soon after completing his PhD (University of Manchester, UK) and Alexander von Humboldt Postdoctoral Fellowship (University of Bonn, Germany). Dr. Sundararajan was the first to propose the mechanism of uranyl reduction with Ru-nanoparticles through a disproportionation pathway, leading to the formation of U(V)-U(V) species, which has

since been experimentally characterized. His research on geochemical speciation of heavy metal ions such as uranyl, iodine, Cs⁺, and Sr²⁺ provided crucial insights into their mobility, which is largely controlled by humic substances. Using multi-scale models, he predicted their speciation in geochemical environments, revealing that water content and pH significantly dictate their binding behavior. His theoretical predictions have been validated through multiple theory-driven experiments. Dr. Sundararajan has authored 115 research papers, including three book chapters in high-impact peer-reviewed international journals such as JACS and Chemical Reviews. Currently, his h-index is 31, an i10 index of 70, and over 2,500 citations. His theoretical modelling of nuclear waste management processes has been widely recognized, earning him Indian Science Congress Young Scientist Award (2011), DAE Young scientist Award (2015) and SMC Bronze Medal (2023).

Dr. Manoj Kumbhakar, Chemistry Group

Fellow, National Academy of Sciences, India (NASI) (2025)

Dr. Manoj Kumbhakar, Scientific Officer, Chemistry Group, has been elected as a Fellow of the National Academy of Sciences, India (NASI) for his significant contributions in developing new techniques in single molecule spectroscopy and demonstrating their applications in bioimaging and diagnostics. Dr. Kumbhakar joined BARC in 2001 and obtained PhD in 2008 from University of Mumbai. He is an Alexander von Humboldt Fellow for postdoctoral research for the period 2010-2012. His recent research interests include bio-speciation and bio-sequestration of lanthanides and actinides using single molecule fluorescence spectroscopy and super-resolution imaging.



He is a recipient of Homi Bhabha Award in Chemistry for the year 2000–2001, NASI Young Scientist Award-2007, DAE Young Scientist Award-2008 and INSA Young Scientist Award-2010. The major scientific contribution of Dr. Manoj Kumbhakar has dimensions ranging from fundamental research in the field of chemical kinetics to its possible applications in the extremely challenging research area relevant for biochemical uptake, transport and internalization of radioactive metal ions. To execute his research ideas, he has developed a unique and first-of-its-kind fluorescence spectroscopy and multi-dimensional imaging facility in India, which can study molecular interactions over unprecedented broad temporal window of picosecond to seconds, with nano-scale spatial resolution as well as 3D orientation & vibronic information of single fluorophore.

Dr. Manoj Mohapatra, Radiochemistry & Isotope Group

Fellow, Indian Chemical Society (2024)

Dr. Tarun Datta Memorial Medal, IANCAS (2024)

Dr. Manoj Mohapatra is involved in the development of analytical methodologies for the complete CQC of MC, MO_x, BeO and Pu based alloy fuel samples for the past 20 years. He has spearheaded the campaign to prepare the in-house Certified Reference Material (CRM) for PuO₂ through an Inter Laboratory Comparison Experiment (ILCE). Dr. Mohapatra carried out extensive studies to assess the radiation stability of nuclear waste glass, especially designed to vitrify the research reactor nuclear waste at BARC, Trombay through spectroscopic techniques. Dr. Mohapatra has used time resolved Photoluminescence (PL), Electron Paramagnetic Resonance (EPR) and Thermally Stimulated Luminescence (TSL) correlation to address the interplay of structure and property in multi-functional materials. He has carried out speciation studies of actinides such as Uranium, Americium and Curium through the time resolved PL technique in solid host matrices. His work on luminescence properties of lanthanide systems has proved potential application in the areas of health, energy and environment.



Dr. Mayanak K. Gupta, Physics Group

N.S. Satya Murthy Young Scientist Award in Physics (2024)

Bronze Medal of the Society of Materials Chemistry (2024)

Dr. M.K. Gupta, Scientific Officer, Physics Group is a leading researcher in condensed matter physics and materials science, with a specific focus on energy materials and their atomic-scale behaviour. Dr. Gupta's expertise lies in his innovative approach, which combines advanced neutron scattering experiments with state-of-the-art simulations using machine learning techniques. This methodology allows him to investigate energy and charge transport in a variety of energy materials. His research has provided fundamental insights into solid electrolytes, thermoelectrics, and materials with negative thermal expansion, laying the groundwork for next-generation energy technologies. His significant contributions are well-documented in high-impact international journals. Recent publications in Nature Materials, Nature Physics, Energy and Environmental Science, Advanced Energy Materials, and the Journal of Materials Chemistry A, as well as



several noteworthy Physical Review papers, have advanced the understanding of energy and transport in solid electrolytes and thermoelectrics. With more than 100 research papers to his name in reputed journals, his work is widely cited within the fields of condensed matter and energy materials.

Dr. Gupta's scientific achievements have been recognized with prestigious awards, including the most coveted recognition of a young scientist in India, INSA Associate Fellow (2024), D.A.E. Young Achiever Award (2021) at 65th DAE SSPS, Young Scientist Award (2017) by the Department of Atomic Energy, and Best PhD Thesis from the Material Research Society of India (2017). These honours underscore his vital role in advancing India's scientific leadership in nuclear energy research and sustainable energy technologies.

Dr. Prabhat K. Singh, Chemistry Group



Fellow, Royal Society of Biology (2025)

Dr. Prabhat K. Singh, Scientific Officer, Chemistry Group has been selected as a Fellow of the Royal Society of Biology (FRSB). Dr. Singh joined BARC in 2006 after completing a one-year orientation program (49th Batch) of BARC Training School, receiving the Homi Bhabha Gold Medal. His current research interests include ultrafast spectroscopy and use of self-assembled materials for designing optical sensors for bio-sensing and chemo-sensing applications.

Dr. Singh has authored about 140 publications in peer-reviewed international journals, with an H-index of 38 and close to 4000 citations. He is a recipient of Young Scientist Award by DAE, Indian Science Congress Association (ISCA) and National Academy of Science, India (NASI). In recognition of his work, he was selected as a Member of INYAS (2017-2021) and NASI. Dr. Singh also served as a Young Associate of Indian Academy of Sciences (IASc), Bangalore (2017-2020) and Young Affiliate of Maharashtra Academy of Sciences. He also served as a Member of Global Young Academy (GYA), Berlin, Germany. Recently, he has been selected as a Fellow of the Indian Chemical Society, a Fellow of the Maharashtra Academy of Sciences, and an Associate Fellow of the Indian National Science Academy (INSA) in 2023. Recently, Dr. Singh has been awarded with the Fellow of the Royal Society of Chemistry (FRSC) and TWAS Young Affiliate (2023-2028) by World Academy of Sciences. He is also serving as a Member of the National Committee for International Union for Pure and Applied Chemistry (IUPAC)

Dr. Santosh Kumar Gupta, Radiochemistry & Isotope Group



Fellow, Asia Pacific Academy of Materials (FAPAM), Asia-Pacific Regions (2025)

Fellow, Institute of Physics (FInstP), London (2025)

Fellow, Institute of Materials, Minerals and Mining (FIMMM), London (2025)

Materials Research Society of India (MRSI) Medal (2024)

Dr. Santosh Kumar Gupta serves as a Scientific Officer in the Radiochemistry and Isotope Group at BARC, Mumbai, and as an Assistant Professor at the Homi Bhabha National Institute (HBNI), Mumbai. His research lies at the interface of materials science, photophysics, and spectroscopy, focusing on the design and development of advanced lanthanide- and actinide-doped phosphors and scintillators for energy conversion, solid-state lighting, optical sensing, and bioimaging. Dr. Gupta's work

integrates experimental spectroscopy and defect chemistry to uncover fundamental structure-property relationships governing light-matter interactions in luminescent materials. Through comprehensive studies using steady-state and time-resolved photoluminescence, thermoluminescence, and X-ray excited optical luminescence, he has advanced understanding of energy transfer dynamics, defect-mediated emissions, and persistent luminescence mechanisms. His investigations into actinide-doped systems have provided critical insights into f-f electronic transitions, radiation-induced defects, and optical behavior of 5f elements, with direct relevance to nuclear materials and sensor applications.

A prolific and highly cited materials chemist, Dr. Gupta has co-authored more than 285 peer-reviewed Journal publications, accumulating more than 8500 citations, with an h-index of 56 and an i10-index of 182. His pioneering contributions in spectroscopy-driven luminescent materials research in 2024-25 have been recognized through election as Fellow of the Asia Pacific Academy of Materials (FAPAM, Asia-

Pacific Region, 2025), Fellow of the Institute of Physics (FInstP, London, 2025), Fellow of the Institute of Materials, Minerals and Mining (FIMMM, London, 2025), and the award of the Materials Research Society of India (MRSI) Medal in 2024. These honors reflect his outstanding and sustained contributions to lanthanide- and actinide-based phosphors and scintillators, establishing him as a leading scientist in functional luminescent materials research in India and the Asia-Pacific region.

Dr. Srungarpu Nagabhusan Achary, Chemistry Group

Fellow, National Academy of Sciences, India (NASI) (2025)

Dr. S.N. Achary, Scientific Officer, Chemistry Group, has been elected as a Fellow of National Academy of Science, India in the year 2025. He joined BARC Mumbai after passing out successfully from the 38th Batch of BARC Training School program and is presently heading Nuclear and Energy Materials Section of Chemistry Division in BARC. Dr. Achary is an acclaimed solid-state chemist who has contributed immensely to materials chemistry, preparative solid-state chemistry, crystal chemistry of materials at high temperatures and high pressures, and structure–property correlations in materials. His studies have led to discovery of a number of metastable materials and novel functional materials such as negative and low thermal expansion materials, ionic conductors, high temperature ceramics, dielectrics and multiferroic materials and ion exchangers. He has extensively worked on crystal chemistry and stability of pyrochlore, zirconolite and hollandite-based titanates for possible matrices for nuclear waste immobilization. He has also worked on complex phosphates for ion exchanger or immobilization matrices. Dr. Achary has studied structural systematics for a number of zircon type materials with composition, temperature and pressure. He has authored over 250 articles in reputed international journals and contributed approximately 10 chapters to books. He has received the CRS Silver Medal (2024), DAE Homi Bhabha Science and Technology Award (2020) and DAE Scientific and Technical Excellence Award (2012) for his studies on hex-gas reduction. He was a member of the team that received the DAE Group Achievement Awards for their work on the development of hex-gas conversion technology (2012) and burnable neutron poison (2018). He was elected as a Fellow of Maharashtra Academy of Science in 2012.



Dr. Veerendra K. Sharma, Physics Group

Fellow of Maharashtra Academy of Science (2024)

Dr. Veerendra K. Sharma joined Physics Group, BARC in 2007 after securing first position in the 50th batch of the BARC Training School. He has since been actively involved in the neutron scattering-based R&D program, focusing on molecular motions in advanced functional materials, a field in which he was honored with the DAE Young Scientist Award (2013). He earned his PhD in Physics (2013) from the HBNI, where his thesis received the Outstanding Doctoral Thesis Award, and subsequently carried out postdoctoral research at the Oak Ridge National Laboratory, USA (2014-16).

Dr. Sharma's research spans soft matter, biophysics and energy materials, with seminal contributions to phase transitions and diffusion mechanisms in biomembranes, complex fluids, and hybrid perovskites. His key contributions include: Revealing new action mechanisms of antimicrobial peptides and ionic liquids in combating drug-resistant pathogens [JPCL 15 (2024) 7075; JPCL 7 (2016) 2394]; Introducing the non-Gaussian fractional Brownian motion model for glass formers [Phys. Rev. Lett. 132 (2024) 058202]; Demonstrating the role of halides and cations in stability and photovoltaic properties of hybrid perovskites [Small 21 (2025) 2504054; JPCL 11 (2020) 9669], and Elucidating diffusion mechanisms in lithium-based electrolytes [JPCL 14 (2023) 9766] and confined fluids [Rep. Prog. Phys. 84 (2021) 066501]

His contributions have earned him prestigious honors, including the INSA Distinguished Lecture Fellowship (2024), NASI-Young Scientist Award (2019), Associate, IASc (2020-23), IPA-Buti Foundation Award (2022), SMC Bronze Medal (2023), Best Young Physicist Award (2018), member of INYAS-INSA and NASI. Dr. Sharma has published over 100 research articles in leading international journals.

