Sectional Committee - I

Mathematics

Chair

Prof. C S Rajan, FNA

C S Rajan works in the areas of arithmetic geometry, automorphic forms and representation theory.

INSA Distinguished Lecture

Co-evolution of Vertex Opinions and Edge Dynamics in Dense Random Graphs

Siva Athreya

International Centre for Theoretical Science, TIFR-Bengaluru
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A pressing challenge in network statistics lies in understanding systems with two simultaneous levels of dynamics: randomly evolving processes on randomly evolving networks locked in a feedback loop — a setting termed co-evolution that creates complex bi-directional interactions. We propose a voter model on a dynamically evolving dense coloured graph in which vertices can change opinions and edges can switch between being present or absent in a coupled way. We prove a complete mathematical description of a class of mutually coupled opinion dynamics and graph dynamics in the large-size limit. We show emergence of a form of homogenisation that manifests itself through a collapse of the joint dynamics onto a subset, where the vertex opinions homogenise while edge states evolve via stochastic flows governed by the overall opinion densities. We will also explore when consensus and polarisation may occur in the population. This is joint work with Frank den Hollander and Adrian Roellin.

Speaker's Profile

Siva Athreya is a Professor at International Centre for Theoretical Science, TIFR-Bengaluru. His research interests are in Stochastic Analysis, Random Graphs, Tree-valued Processes, Computational Epidemiology

INSA Distinguished Lecture

On Yau's uniformization conjecture

Ved Datar

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A central theme in differential geometry is that curvature imposes strong topological and analytic rigidity. In two dimensions, this principle is exemplified by the uniformization theorem: every simply connected Riemann surface is conformally equivalent to one of three model geometries — the round sphere, the flat complex plane, or the Poincaré disc. For non-compact surfaces, related theorems of Huber and Cohn–Vossen show that curvature controls the global conformal type. Yau's **Uniformization Conjecture** seeks to extend this geometric rigidity to higher dimensions. It asserts that any complete non-compact Kähler manifold with positive holomorphic bisectional curvature is biholomorphic to the complex Euclidean space $\mathbb{C}^n$. This statement, while superficially similar to the classical uniformization theorem, reflects deep interactions between curvature, complex structure, and global analysis. In this talk, I will present new results toward Yau's conjecture, establishing the conjectured uniformization for Kahler surfaces (complex dimension two) under natural geometric conditions. The main novelty in our approach is the use of complex Monge-Ampere equations to construct appropriate weight functions which are then used to obtain integral estimates on the square of the Ricci form. The main theorem then follows by combing these estimates with earlier work of Chen and Zhu.

Speaker's Profile

Ved Datar is an Associate Professor of Mathematics at the Indian Institute of Science, Bangalore. He works in complex differential geometry and geometric analysis, with contributions to the study of Kähler–Einstein metrics, curvature rigidity, and complex Monge–Ampère equations. After earning his PhD from Rutgers University under Jian Song, he held positions at the University of Notre Dame and UC Berkeley.

INSA Foreign Fellow Lecture

Constructing a Digital Twin for British Cities

Michael Batty

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Email: m.batty@ucl.ac.uk

My talk will outline how we are building a digital twin to simulate the location and growth of British cities so that we can assess the impact of changes in large scale infrastructure on the location of population, employment and new forms of transportation. My expertise lies in the development of simulation models to achieve this**.** Ever faster computers enable us to extend well-established land use transportation interaction (LUTI) models to systems of cities and regions composed of more and more locations and their spatial interactions. Here we build a platform, essentially a digital twin, for over 8000 urban places in Great Britain where we simulate flows between these locations using multi-modal transport models. We first present the model which links locations of employment to population through three transport modes, training and testing the model to reproduce the observed baseline. We then explore variants of the twin, partitioning the country into different spatial configurations at city, regional and national level. We are currently extending active travel in the model while using the platform to generate scenarios for assessing the impacts of new high-speed rail lines.

Speaker's Profile

Michael Batty is Bartlett Professor of Planning at University College London and Chair of the Centre for Advanced Spatial Analysis (CASA). He is a graduate of the University of Manchester in Town and Country Planning and of the University of Wales Institute of Science and Technology in Architecture where he was Professor of Town Planning and Dean of the School of Environmental Design in the 1980s. He was Director of the National Center for Geographic Information and Analysis (NCGIA) at SUNY-Buffalo from 1990 to 1995 before he set up CASA at UCL. He is a Fellow of the British Academy (FBA), Royal Society (FRS), Academy of Social Sciences (FAcSS), Royal Town Planning Institute (FRTPI), Chartered Institute of Logistics and Transport (FCILT), Royal Society of Arts (FRSA), and the Royal Geographical Society (FRGS).

INSA New Fellow Lecture

Games, Strategies, and the Complexity of Proofs

Meena Bhaskar Mahajan

The Institute of Mathematical Sciences IMSc, Chennai
(A CI of Homi Bhabha National Institute, Mumbai)
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There is a simple two-player game that captures the ease and the difficulty of computations that are limited to polynomial space. This game is played on a quantified Boolean formula (a QBF), and for any QBF, one of the players has a winning strategy. This talk describes ways to prove the truth-value of the QBF in some easy-to-check formats (proof systems), how this relates to winning strategies for the appropriate player, and how lower bounds can be established.

Speaker's profile

Meena Mahajan is a professor at The Institute of Mathematical Sciences (HBNI), Chennai. An alumna of IIT Bombay (CSE BTech and MTech) and IIT Madras (PhD), her interests span most of theoretical computer science. Her research focusses primarily on understanding the limits of efficient computation, and encompasses many aspects of complexity theory, including Boolean function complexity, algebraic circuits, and proof complexity. Meena is a Fellow of the Indian Academy of Sciences, and of the Indian National Science Academy (w.e.f. 2026), and a recipient of the J C Bose National Fellowship (2024-2029). She served on the ICM Structure Committee during 2023-2024.

INSA New Fellow Lecture

An ergodic perspective on number theory

Anish Ghosh

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Ergodic theory is the mathematical study of chaotic systems. Somewhat surprisingly, it has close connections with number theory. I will illustrate these connections through the example of some recent progress on the study of continued fraction expansions of typical numbers.

Speaker's Profile

Anish Ghosh is a Professor of Mathematics at TIFR and is currently Dean of the School of Mathematics. His research interests are in the ergodic theory of group actions on homogeneous spaces and interactions with number theory and geometry.

INSA Associate Fellow Lecture

On the bilinear Bochner-Riesz problem

Saurabh Kumar Shrivastava

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Email: saurabhk@iiserb.ac.in

The convergence of Fourier series of functions in Lebesgue function spaces is a classical problem in Euclidean harmonic analysis. This problem motivates the study of Fourier multipliers in general. Among the vast class of Fourier multipliers, the Bochner-Riesz multipliers are of particular interest. They provide us with a suitable alternative to the convergence of Fourier series. Despite being one of the central problems in harmonic analysis for the past several decades, the Bochner-Riesz conjecture in dimensions larger or equal to THREE remains one of the most challenging open problems in the subject. This along with some of the recent developments in harmonic analysis in the theory of bilinear multipliers, motivates us to study the bilinear Bochner-Riesz problem. The Fourier analytic methods and their interplay with the geometry of spheres play crucial roles in the study of Bochner-Riesz multipliers. In this lecture, we shall discuss some of the recent developments on the bilinear Bochner-Riesz problem.

Speaker's Profile

I did my Ph.D. from IIT Kanpur. I joined the Department of Mathematics at IISER Bhopal as Assistant Professor in the year 2012. Currently, I am working at the same department as Professor. My research interests fall in the broad areas of Euclidean Harmonic Analysis and Discrete Harmonic Analysis.

INSA Young Associate Lecture

On the isotropicity of rationally convex immersions

Purvi Gupta

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A compact set $\mathbb{C}^n$is said to be rationally convex if its complement in $\mathbb{C}^n$is a union of complex hypersurfaces. Rational convexity endows a compact set with a Runge-type approximation property. A wider interest in rational convexity stems from some known symplectic characterizations of rational convexity for certain kinds of compact sets. For instance, a result by Duval--Sibony (1995) says that a compact totally real submanifold of $\mathbb{C}^n$is rationally convex if and only if it is isotropic with respect to a Kähler form on $\mathbb{C}^n$. Such a characterization is lacking in the case of totally real immersions in $\mathbb{C}^n$. In this talk, we will survey the known results in this setting. Eventually, we will focus on the case of maximally totally real (i.e., *n*-dimensional) immersions that admit only transverse double points.

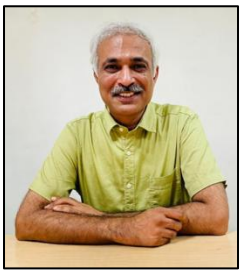
Speaker's Profile

Purvi Gupta is an Assistant Professor at the Indian Institute of Science, Bangalore. She obtained her Ph.D. from the University of Michigan, Ann Arbor, and spent her postdoctoral years at the University of Western Ontario, Canada, and Rutgers University, New Jersey. Her primary area of research is several complex variables, within which she studies convexity properties of real submanifolds, polyhedral approximations of convex-type domains, and holomorphic function spaces with reproducing kernels.

Sectional Committee -VI

General Biology

Chair
Prof. N.G. Prasad, FNA



Prof. Prasad is a Professor of Biology at IISER Mohali. My research is in evolutionary genetics, with particular focus on sexual selection and genomic conflict between the sexes, life-history evolution, and evolutionary ecology of immunity. He is a Fellow of the Indian National Science Academy (INSA) and the Indian Academy of Sciences (IAS), and a recipient of the Sastra-Obaid Siddiqi Award for Life Sciences (2025). At IISER Mohali, he teaches and mentors at all levels and have supervised several Ph.D., master's, and undergraduate theses. He has served in various academic and administrative roles, including Dean of Students, Dean of International Relations and Outreach, and Chairperson of the Joint Admissions Committee of IISERs. He currently chairs the National Committee for the International Union of Biological Sciences at INSA, was also a founding member and Secretary of the Indian Society of Evolutionary Biologists.

INSA Distinguished Lecture

Timing shapes survival: seasonal strategies in latitudinal migrants

Vinod Kumar

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Timed biological processes are the product of internal timers operating at circadian (Latin: *circa* = about; *dies* = day) and circannual (Latin: *circa* = about; *annum* = year) bases and interacting with the external *Zeitgebers* (*zeit* = time, *geber* = giver; or time cue), e.g. photoperiod, temperature, and/ or food availability. For a seasonal events like the reproduction and migration, for example, the circannual timer sets the temporal window for the seasonal life-history state (LHS) during the year, and the circadian timer regulates the physiological preparedness for exhibition of appropriate biological response characteristics. This seems challenging for millions of songbirds that follow rigid seasonal schedules, with migrations in spring and autumn placed before and after the reproductive period, respectively, and differing in several aspects including the context, the direction of changes in photoperiod and temperature. I aim to highlight clock-controlled adaptive strategies that migrants possibly employ during their non-migratory and migratory LHSs twice-a-year. This brief presentation will be based on research in my laboratory on two Palearctic-Indian migratory songbirds, the blackheaded bunting (*Emberiza melanocephala*) and redheaded bunting (*Emberiza bruniceps*).

Speaker's Profile

Professor Vinod Kumar with over four decades of research and teaching experience, including 7 years in institution abroad, superannuated as Senior Professor from University of Delhi. Currently, he is an INSA Senior Scientist in King George's Medical University, Lucknow. He received several recognitions, including Fellowships from Indian National Science Academy (FNA), Royal Society of Biology (FRSB), International Ornithology Union (FIOU). A recipient of Aschoff Ruler Prize, highest distinctions in Chronobiology, he has published >230 research publications, edited/ authored books, guest edited journal issues, established state-of-art research facilities, and trained a generation of scientists serving in institutions in India and abroad.

Natural History of Himalayan Ants

Himender Bharti

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The natural history of an organism serves as a window into its life history, ecological interactions, and broader evolutionary context. Unfortunately, natural history observations have declined in prominence within contemporary scientific research. As a result, we are losing a significant body of information that cannot be replicated through laboratory-centric approaches. The Himalayan mountain, one of the most biodiverse and ecologically complex mountain systems in the world, harbors a remarkable diversity of ants. Himalayan ants exhibit extraordinary ecological adaptability and life history patterns. Understanding their natural history is crucial, as it provides insights into their ecological and evolutionary responses to extreme environments, their roles in ecosystem functioning, and their interactions among themselves and other organisms as well. These ants occupy distinct elevational zones across Himalaya, adapting to a wide range of envirinmental conditions. Adaptation to high-altitude stress has led to the evolution of diverse strategies and traits, including parasitic interactions, polygyny, polydomy, and heterodynamic life cycles. The Himalayan ant lineages represent relic forms with plesiomorphic features, differing considerably from their Palaearctic counterparts. The biogeography, degree of endemism, and evolutionary relationships suggest that the diversification of these ants is closely linked to the geological uplift and origin of the Himalayan mountain system. Thus, understanding the natural history of Himalayan ants is vital to uncovering how life evolves and adapts under extreme environmental pressures. These findings stand as a reminder that field biology remains indispensable for unraveling the intricate patterns and processes that shape the natural world.

Speaker's Profile

Dr. Bharti pioneered the work on Ant systematics in India, combining molecular with classical methods, has extended the scope of systematics research beyond traditional taxonomy to life-history, ecology, and evolutionary interpretations. He discovered more than 100 new species. Expounded the Natural history of high-altitude Himalayan ants, life history patterns, details of immature stages and morphological adaptations. Elucidated the phylogeographic patterns of lineages, defining lineage splitting and evolutionary relationships using molecular phylogenetic methods. The holistic approach for species delineation includes morphology, ecology and molecular markers. He established Natural History Collection of Indian Ants, which includes about 1000 ant species from India and other countries: a treasure trove for future naturalists/scientists.

Connecting the Conservation Science and Conservation: A tale of lion-tails from the Western Ghats

H. N. Kumara

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The evergreen forests between the Sharavathi and Aghanashini River were found to be home to one of the largest populations of lion-tailed macaque *Macaca silenus* – the northernmost population of its range, which was notified as the "Aghanashini Lion-tailed Macaque Conservation Reserve" encompassing 298.93 km². In the last two decades, population size remained the same, but group size got reduced while the number of groups increased and expanded their range. The food resource list, especially of plant resources and their preference, provided a list of plants for the restoration of the degrading habitat in the landscape. Local people's livelihood also depends on the Non-timber Forest Products, which are also part of the macaque's diet, leading to high overlap in resource use by macaque and people, affecting the availability of resources for macaques and their diet. The expansion of agriculture and the exploitation of firewood from these forests led to the degradation of evergreen forests into lesser forest types. Although the primates are not hunted here, but high hunting pressure on other mammals is prevalent in the entire Sharavathi River valley and adjoining lion-tailed macaque habitat. Now, the Conservation Reserve has been merged with the existing sanctuary at south of the river and notified as the 'Sharavathi Lion-tailed Macaque Sanctuary' for better management, and many initiatives have been taken for the conservation of lion-tailed macaques.

Speaker's Profile

H. N. Kumara obtained his PhD from the University of Mysore for his study "An Ecological Assessment of Mammals in Non-sanctuary Areas of Karnataka". He identified the potential populations for many lesser-known species and played a role in strengthening the Protected Area network. He studied the adaptation of lion-tailed macaque to the changing habitat, documented the male influx, infanticide, and female transfer in bonnet macaque, distribution of lorises, elephants in South Bengal, impact of windmills on animals in Karnataka, animals of the burrows, and macaques of the islands. He has over 150 publications. After his PhD, he was in NIAS as a Young Scientist, joined SACON in 2010 and is currently Principal Scientist.

INSA New Fellow Lecture

Application of Snake Venom-Inspired Custom Peptides against Pesticide-Induced Neurodegeneration

Ashis Kumar Mukherjee[1,2,3*]

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[2]*Microbial Biotechnology and Protein Research Laboratory, Department of Molecular Biology and Biotechnology, School of Sciences, Tezpur University, Tezpur, Assam, India*
[3]*Faculty of Science, Academy of Scientific and Innovative Research (AcSIR), Ghaziabad, UP, India*
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Neurodegenerative disorders (ND) pose significant challenges due to the progressive loss of neurons, which is influenced by oxidative stress and mitochondrial dysfunction. This study presents a computational analysis of two novel synthetic peptides, Tribeca-neuropeptide (TNP) and Heptadeca-neuropeptide (HNP), which are derived from snake venom nerve growth factors. Silico studies indicated a substantial interaction with the human TrkA receptor, which is essential for neuronal growth and survival. In vitro validation subsequently confirmed the binding affinity of the compound to TrkA receptors in rat pheochromocytoma PC-12 cells, promoting neuritogenesis and reducing paraquat-induced cellular toxicity. The peptides demonstrated no adverse reactions in both in vitro and in vivo assessments. Functional proteomic analyses identified metabolic pathways regulated by these peptides, which provide neuroprotection against paraquat (PT)-induced neuronal damage. Transcriptomic and qRT-PCR analyses demonstrated a reversal in the expression patterns of oxidative stress-related genes in PC-12 cells that were pre-treated with TNP and HNP. The in vivo protective mechanisms of these custom peptides against paraquat-induced neurodegeneration in the *Caenorhabditis elegans* model were elucidated. CPs inhibit PT binding to the CAM-1 receptor, thereby preventing increased ROS production and mitochondrial dysfunction. They significantly inhibit PT-induced degeneration of dopaminergic neurons and aggregation of alpha-synuclein, characteristic features of Parkinson's disease, in transgenic *C. elegans* strains. Transcriptomic and functional proteomics reveal that CPs can inhibit gene expression alterations linked to oxidative stress and apoptosis. In a murine model, CPs effectively repair PT-induced damage without eliciting toxicity or inflammatory responses. These findings highlight the neuroprotective potential of CPs.

Speaker's Profile

Prof. Mukherjee is the Director of the DST Institute of Advanced Study in Science and Technology, Guwahati. His research interests include the proteomic analysis of snake venom, the pharmacological reassessment of medicinal plants used in snakebite treatment, the quality assessment of commercial antivenoms, and the discovery of new drugs from snake venom. He has received the Visitor's Award for Research in Basic and Applied Sciences from the Honorable President of India in 2018. He is a fellow of the IAS, Bangalore; NAS, Prayagraj; INSA, NAMS, New Delhi; Royal Society of Biology, UK; Royal Society of Chemistry, UK; and West Bengal Academy of Science and Technology, Kolkata. He has guided 20 PhD students, published more than 190 peer-reviewed research articles. He is also a member of the DBT, ICMR, and WHO task force on preventing and treating snakebite envenoming.

INSA New Fellow Lecture

Long-term ecological research for biodiversity conservation and sustainable resource use

N. Parthasarathy

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Large-scale plant diversity inventories in Western and Eastern Ghats, Coromandel Coast tropical dry evergreen forest and Andamans generated metadata on tree and liana diversity. Plot sizes ranged from 0.1 to 30ha, while most of them were one-hectare plots. Tree diversity totaled 680 species and 47,500 individuals in 96ha. Re-inventory of these plots revealed the cumulative impact of natural and anthropogenic disturbances in three to thirty-year interval in different sites. Tree density declined by 30 to 46 per cent over decades in sites experiencing forest disturbance, whereas in undisturbed forests density increased marginally. Tree turnover rates were faster in dry evergreen than in wet evergreen forests. Liana diversity totaled 237 species and 61,789 stems in 110ha of various peninsular Indian forests. Interestingly, in contrast to declining tree density, liana density increased over decades in many tropical dry evergreen forests, a trend similar to many other global tropical forests. The metadata of tree and liana diversity were contributed to Global Tree Database (GTD) and Global Liana Database (GLD), to analyze patterns of plant diversity and carbon stocks and address them in relation to various environmental drivers. Notably, metadata analysis revealed the extent of continental-level high endemism and how native diversity maintenance buffers against the severity of tree invasions. Research on plant functional traits and plant-animal interactions provides insight into forest functional ecology of endangering tropical dry evergreen forest. Long-term plant species abundance data and changes over decades provide valuable information on species recruitment, guiding effective biodiversity conservation and sustainable utilization of bioresources.

Speaker's Profile

Dr. N. Parthasarathy, served as professor over three decades in Department of Ecology and Environmental Sciences, Pondicherry University and retired in June 2024. He obtained his M.Sc. and Ph.D. from University of Madras. Served as HOD and Dean, School of Life Sciences. Guided 19 Ph.Ds. He was awarded FNASc. in 2013. Published 142 research papers and published four books. He is Life Member of 6 professional societies, Served as associated editor in Tropical Conservation Science and Tropical Ecology. He was an invitee of American and European government for Global biodiversity research programs at University of California and ETH, Zurich, Switzerland.

An Evolutionary Battle of the Sexes: Arms Race or Arm Wrestle?

Adam Chippindale

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Females and males are caught in an evolutionary battle that cannot be won; famously "there's just too much fraternizing with the enemy". The conflict is played out in two distinct dynamics. First, adaptations by one sex to assert control over reproduction may illicit counter-adaptations in the other; an evolutionary "chase" or "arms race". Second, shared traits may be pulled in different directions by selection; an "arm wrestle" created by genetic constraints. In this talk, I will focus on examples from nature and results from three decades of experimental investigation of sexual conflict with laboratory evolution in the fruit fly, *Drosophila*, showing evidence for both processes. I will argue that sexual conflict has profound implications for topics as diverse as the origin of species and human psychosocial disorders.

Speaker's Profile

Adam Chippindale is a professor of Evolutionary Genetics at Queen's University in Canada whose research is focused on the evolution of development, reproduction and ageing. A special interest is sex differences and the kinds of evolutionary processes that can create them or leave them mired in conflict within the genome.

INSA Associate Fellow Lecture

Restoring degraded lands for the UN Sustainable Development Goals

P. C. Abhilash

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Restoring degraded land is essential for human development because land is a vital life-support system that helps achieve several UN Sustainable Development Goals (UN-SDGs). However, over 33% of the global land is degraded, impacting the livelihoods of billions worldwide. According to the Food and Agriculture Organization of the United Nations, over 30% of India's land is degraded, which negatively impacts biodiversity and agricultural production. Therefore, restoring marginal and degraded land is crucial for regaining ecosystem services and fulfilling international commitments, such as the Bonn Challenge and the UN Decade of Ecosystem Restoration. The present work describes innovative strategies, including the use of multi-purpose plant species, bio-residues, and bioinoculants, as a low-input approach for restoring marginal and degraded land in India. The study also highlights the importance of various biophysical indicators for ecological profiling and sustainability analysis of degraded or polluted land, along with adaptive, climate-resilient, and sustainable agricultural practices to improve soil, crop health, and productivity in the drylands of eastern UP, thereby supporting the achievement of the UN-SDGs at the local level.

Speaker's Profile

P.C. Abhilash is an Associate Professor of Sustainability Science at the Institute of Environment and Sustainable Development, BHU. He was the founding Chair of the Agroecosystem Specialist Group of the IUCN. His research focuses on exploring ecological solutions to achieve the UN-SDGs at the local level. He is the founding Editor-in-Chief of Anthropocene Science and Executive Editor of Tropical Ecology. He has received prestigious awards, including the INSA Medal for Young Scientists, the NASI-Platinum Jubilee Young Scientist, the ICAR-Lal Bahadur Shastri Young Scientist Award, and the HIYOSHI Young Ecologist Award. He is an elected Fellow of NASI and NAAS, India

INSA Associate Fellow Lecture

The Art and Science of Commercialisation: Bridging Science, Academia, Industry and Society

Suphiya Khan

Deputy Director, Shriram Institute for Industrial Research, Gurugram, Prof at Banasthali (On lien); Founder and Director Drumlins Water Technologies Pvt Ltd.
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The journey from scientific discovery to societal impact is rarely linear. While universities serve as engines of discovery, and startups or spinouts as vehicles of innovation, the transition from laboratory breakthroughs to market-ready products is fraught with obstacles. Academic spinouts, in particular, face unique challenges distinct from traditional startups — ranging from technology transfer, funding, and regulatory barriers to cultural gaps between academia and industry. This talk will reflect on the landscape of Academic entrepreneurship by giving case study of Drumlins Water Technologies Pvt Ltd— the challenges of founding and scaling a startup, the barriers faced by women in STEM and female founders, and the critical importance of mentorship, leadership, and inclusivity in shaping sustainable innovation. It will also highlight the successful scale-up of Zinc Removal and Recovery Technology from bench experiments to industrial deployment, demonstrating how scientific precision, materials innovation, and cross-sector collaboration can deliver tangible environmental and economic impact. Today, **Drumlins Water Technologies' solutions are undergoing validation across multiple sites in different states**, addressing critical challenges of **fluoride, zinc, and heavy metal contamination** in drinking water. The company's evolution from a university research initiative at **Banasthali Vidyapith** to a **recognised deep-tech startup** exemplifies how academia-driven ventures can translate rigorous scientific innovation into scalable, real-world impact. Equally, it will emphasise how successful commercialisation requires an alignment between science, academia, industry, business, and society, ensuring that innovations are not only technically sound but also economically viable and socially relevant. By bridging these domains, commercialisation emerges not only as an economic driver but also as a powerful Science-to-Society missions

Speaker's Profile

Prof. Khan is an accomplished scientist, academic leader, and bioentrepreneur with over 23 years of experience in teaching, research, and innovation. She serves as the Deputy Director at the Shriram Institute for Industrial Research, and as Professor at Banasthali Vidyapith, where she established the Centre for Excellence on Water and Energy. A CRISP Oxford Fellow, INSA Associate Fellow, and SERB POWER Fellow, Prof. Khan is widely recognised for her pioneering work in nanobiotechnology, fluoride remediation, and sustainable water purification technologies. She is the Founder of Drumlins Water Technologies Pvt. Ltd., a startup dedicated to developing affordable and energy-efficient water treatment solutions that have been patented and successfully commercialised. Her leadership has attracted significant funding from DST, DBT, MHRD, and UGC for cutting-edge projects in water innovation. She is a recipient of the NASI-Reliance Platinum Jubilee Award, the Women Transforming India Award by NITI Aayog, and the Wonder Women in STEM Award. Her vision integrates research, innovation, and entrepreneurship, bridging science, industry, and society to drive sustainable development and transformative impact.