Prof. M. S. Sinha Colloquium 2025

February 10, 2025 (10:45 AM-12:45 PM)

A tribute to Late Prof. Mriganka Sekhar Sinha, *who was the Founder Head of the Department of Physics (REC, Durgapur) and also an eminent Nuclear Physicist of the country*

Organized by:
Department of Physics
NIT Durgapur
M G Avenue, Durgapur – 713 209

Free on-line Registration

Last date of online Registration: February 8, 2025 (05:00 PM, IST)
Registration Form (Google Form) is available at the following link:
https://forms.gle/ZqiYYrDTp7wrrsBL9

Joint Coordinators:
Dr. Arghya Chatterjee & Dr. Karthikeyan J
Assistant Professor
Physics Department
NIT Durgapur
achatterjee.phy@nitdgp.ac.in
kjeyakumar.phy@nitdgp.ac.in

Eminent Speaker

Dr. Sangram Bagh
Associate Professor-F
Division of Biophysics and Structural Genomics
Saha Institte of Nuclear Physics, Kolkata-700064

Patron

Prof. Arvind Choubey
Director
NIT Durgapur
Durgapur-713209

Title of the Talk

"Building Computer and AI with Genetically Engineered Cells"

Venue: D M Sen Hall, NIT Durgapur

Details of the Colloquium Talk:

Time	Event
10:45 am -11:00 am	Registration
Inauguration Program	
11:00 am – 11:05 am	Theme of the Event by Dr. Arghya Chatterjee, Joint Coordinator of "Prof. M. S. Sinha Colloquium" and Assistant Professor, Physics Department, NIT Durgapur
11:05 am – 11:10 am	Welcome address by Dr. Mrinal Kanti Mandal, HoD Physics
11:10 am – 11:15 am	*Tribute to Late Prof. M. S. Sinha by Garlanding/Lighting lamp on his Portrait*
11:15 am – 11:20 am	Inaugural Speech by Prof. Arvind Choubey, Director, NIT Durgapur
11:20 am – 11:25 am	Speech about Prof. M. S. Sinha by Prof. P. Kumbhakar, Department of Physics, NIT Durgapur
11:25 am – 11:30 am	Honoring dignitaries on the dias with a bouquet
11:30 am – 11:35 am	Speech by Prof. M. S. Sinha Family members
11:35 am – 11:40 am	Introduction about the Speaker by Dr. Hirok Chaudhuri
Prof. M. S. Sinha Colloquium 2025 Lecture on "Building Computer and AI with Genetically Engineered Cells"	
11:40 am - 12:30 pm	Speech by Chief Guest Dr. Sangram Bagh, Associate Professor-F, Saha Institute of Nuclear Physics, Kolkata- 700064, India.
12:30 pm - 12:40 pm	Interaction with participants
Felicitation and Vote of Thanks	
12:40 pm - 12:45 pm	Vote of Thanks by Dr. Karthikeyan J, Joint Coordinator of "Prof. M. S. Sinha Colloquium" and Assistant Professor, Physics Department, NIT Durgapur

Title: Building Computer and AI with Genetically Engineered Cells

Abstract:

Performing cellular computations with engineered bacteria has enormous importance in biocomputer technology development at the micron scale, where microprocessor-based computers have limitations due to energy, cost and technological constraints. Here, we designed and built artificial neural networks with molecular engineered bacteria that can identify prime numbers, vowels, and even determine the maximum number of pieces of pizza or pie that can be obtained from a given number of straight cuts. In addition, the 'intelligent' bacteria can answer mathematical questions such as whether a number n's factorial is divisible by $n \times (n + 1)/2$ OR whether a number n's square can be expressed as the sum of three factorials. All those problems are classic abstract computational problems and are solved by a computer by writing codes in Python or C. Introducing such abstract computational capability in living cells, will be a step forward in biocomputer technology development and may help understanding the biochemical nature of 'intelligence'.

Short Bio-data of Dr. S. Bagh:

Dr. Sangram Bagh from the Saha Institute of Nuclear Physics. He completed his PhD at the University of Toronto and a postdoc at MIT. After a brief tenure at Presidency University, he joined Saha Institute of Nuclear Physics and started his synthetic biology lab. He has published many research articles in reputed international journals such as Nature Chemical Biology, Chemical Sciences, and ACS Synthetic Biology. His works are highlighted in Nature India. He has received numerous research and academic awards, honors, and research grants from India and abroad. He has recently been inducted as a Fellow of the Royal Society of Chemistry (UK). He is popularly known for his science talks. His research interests include Neural cell engineering for building and understanding 'brain-like' neural microcircuits, biological computing and artificial intelligence (AI) with synthetically engineered cells, and creating smart therapeutics and novel cellular sensors with synthetic genetic circuits. He has delivered keynote speeches and invited talks in reputed institutions. Today he will talk about how one can create ‘intelligent’ cells that can answer mathematical questions.