



## **D S Kothari Centre for Research and Innovation in Science Education**

**Miranda House**  
University of Delhi



### **Science Conclave: Research on the Frontiers**

Wednesday 10 January to Friday 12 January 2018

Venue: Heritage Hall, Miranda House

Time: 9.00 am to 4.00 pm

#### **Preamble**

These are exciting times. India today is a front ranking country in the field of research in basic science. Indian scientists are respected internationally and are making major contributions to the frontiers of science, participating as equal partners in several multi-nation international projects. The Government recognizes that science is the engine that will drive growth and development, especially in the emerging scenario of competing economies. On one hand the focus is on applying S&T to address national needs; the grand challenges facing communities; and meeting the goals of sustainable development. On the other hand, the thrust is also on pursuit of knowledge and blue sky research on the frontiers that will lead to greater understanding and create transformative technologies of the future.

#### **Science Conclave: Research on the Frontiers**

This three day programme has been carefully crafted to give an opportunity to young students to interact with scientists who are with great passion and dedication working in areas of contemporary interest and are reputed for path breaking research. It includes expositions on areas of research that have been awarded the 2017 Nobel Prize, such as the Laser Interferometric Gravitational Observatory (LIGO) experiments; and Circadian Rythms and Bioclocks. Also covered will be path breaking research in Soft Matter, Nano Bioscience, Human Genetics, Drug Discovery, Medical Imaging, Cognitive Science, Machine Learning, Quantum Computers, *et cetra*. The touchstone of the programme will be talks by the DST Secretary, Director IIT Delhi and Director IGIB. The talks will unravell the complex beauty of the process of science, scientific research, knowledge generation and product development, emphasizing the breaking of boundaries between disciplines, multidisciplinary synergy and intersectionality of ideas.

Sufficient time has been allocated for interaction after each talk to promote deep thinking. The interaction with the distinguished speakers will give not just a panoramic view of the changing landscape of Indian Science but also trigger greater interest and spirit of enquiry for the questioning mind.

## Target

The Science Conclave aims to bring together for the first time the INSPIRE Scholars pursuing science degree programmes at various college of University of Delhi. It will provide the INSPIRE Scholars an opportunity to establish a network with likeminded peers and begin collaborations to learn together and work together. Other motivated science students and faculty members of various colleges are also welcome. Pre-registration is necessary.

## Speakers

The galaxy of eminent scientists are also very distinguished speakers, and the very best in the field, from the best institutes and research facilities in the country. The talks over the three day programme are listed herein:

**Dr. Ashutosh Sharma**, Secretary, Department of Science and Technology  
[Navigating Scientific Complexity by Common Sense](#)

**Dr. Ramgopal Rao**, Director, Indian Institute of Technology, Delhi  
[Bridging Academic R&D with Product Innovation – Few Case Studies and a Way Forward...](#)

**Dr. Archana Pai**, Indian Institute of Technology, Mumbai  
[Gravitational Wave Detection Opens a New Era in Astronomy](#)

**Dr. Sabhyasachi Bhattacharya**, Professor, Ashoka University & Former Director, TIFR  
[Another Kind of Matter: Soft, Athermal, Disordered and Driven](#)

**Dr. S. Ganesh**, Biological Sciences & Bioengineering, Indian Institute of Technology, Kanpur  
[Human Genetics: From Phenotype to Genotype, and Back!](#)

**Dr. Amit Sharma**, International Centre for Genetic Engineering and Biotechnology, Delhi  
[Malaria: A Biomarker for National Development](#)

**Dr. Sheeba Vasu**, Jawaharlal Nehru Centre for Advanced Scientific Research, Bengaluru  
[The Clock that Times us: The Story of How Flies Helped to Solve a Mystery](#)

**Dr. Subhash Khusu**, INMAS, Defence Research and Development Organisation  
[NMR: From Molecules to Human Behaviour](#)

**Dr. Igal Galili**, The Hebrew University of Jerusalem, Israel  
[Discipline-Culture Approach to Physics Education – Implications to Content Knowledge and Epistemology](#)

**Dr. Anurag Agrawal**, Director, CSIR Institute of Genomics & Integrative Biology, Delhi  
[Enjoying a Three Way Marriage – A Story of Maths, Biology, and Medicine](#)

**Dr. Subhashish Bannerjee**, Indian Institute of Technology, Delhi  
[Using Machine Learning and Satellite Images to Monitor Economic Development?](#)

**Dr. Rajamani Vijayraghavan**, Tata Institute of Fundamental Research (TIFR), Mumbai  
[Computing with Quantum Mechanics](#)

## Highlights

The Science Conclave aims to

- bring together for the first time the INSPIRE Scholars pursuing science degree programmes at various college of University of Delhi
- provide a panoramic view of the changing landscape of Indian Science and research on the frontiers through interactive talks by distinguished scientists
- promote interaction with distinguished scientists to trigger greater interest and spirit of enquiry for the questioning mind
- illustrate the multidisciplinary nature of knowledge and research on the frontiers
- provide an opportunity to science students to establish a network with likeminded peers
- encourage learning together and working together

## INSPIRE

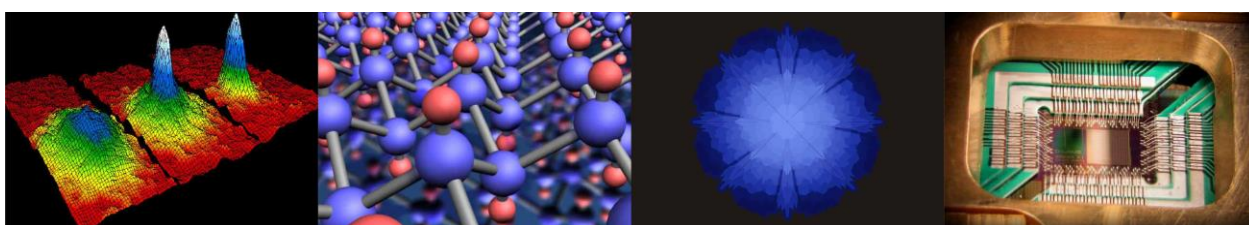
“Innovation in Science pursuit for inspired research (INSPIRE)” is an initiative by the Department of Science & Technology to prepare the nation for a possible leadership in 2020. INSPIRE aims to attract talent to the study of science at an early stage and build a strong foundation for strengthening the science and technology system and R&D base of INDIA. It aims to make India a source of immense knowledge and global power. Major initiatives have been launched to attract the young to careers in science, and physics in particular the presence of speakers from the very best research institutions and national facilities will provide the participants an opportunity to interact personally and explore possible educational goals. INSPIRE Scheme includes three components.

**Scheme for Early Attraction of Talent for Science (SEATS)** aims to attract talented youth to study science by providing INSPIRE sward of Rs. 5000 to one million young learners of the age group 10 to 15 years during 5 years

**Scholarship for Higher Education (SHE)** aims to enhance rates of Attachment of talented youth to undertake higher education in Science intensive programmes by providing scholarships and mentoring through summer attachment to performing researchers.

**Assured opportunity for Research Careers (AORC)** aims to attract, attach, retain and nourish talented young scientific human resource for strengthening the R&D foundation by offering doctoral INSPIRE fellowship in the age group of 22-27 years in the both basic and applied sciences including engineering and medicine

**DST INSPIRE Website:** [www.inspire-dst.gov.in](http://www.inspire-dst.gov.in)



## About Miranda House

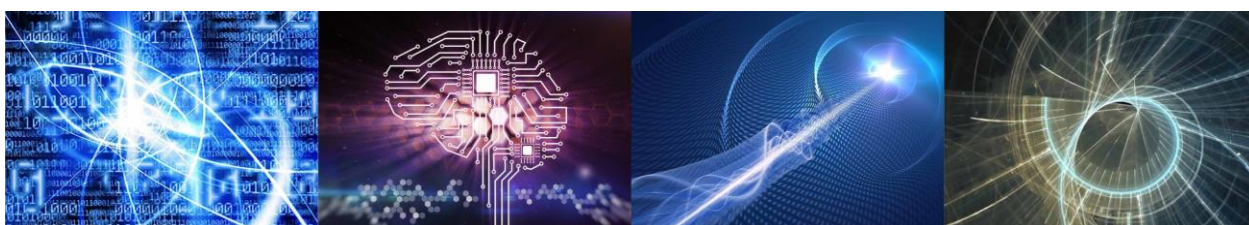
Miranda House, College for Women at University of Delhi, is amongst the premiere institutions of the country. It was awarded All India Rank One amongst colleges under the National Institutional Ranking Framework (NIRF) 2017. Department of Biotechnology, Government of India, has given it the Star College status. The National Assessment and Accreditation Council (NAAC) has accredited the college with Grade A+. Established on 07 March 1948 by the then Vice Chancellor of University of Delhi Sir Maurice Gwyer, it chronicles the history of women's education in India. Since its inception it has carved a unique niche for itself as a globally recognized premiere institution of higher learning. Miranda House has a rich legacy. The extremely distinguished list of alumnae imparts a sense of confidence and pride in students.

## D S Kothari Centre for Research & Innovation in Science Education

The D S Kothari Centre for Research and Innovation in Science Education is devoted to promoting creativity and excellence in science with special focus on attracting young students to careers in science and nurturing their innate talent. It provides easy access to resources for undertaking innovative and inspiring science activities designed to give an early exposure to the scientific process and the joys of discovery. The programs are informed by rigorous science education research, results of cognitive studies on students learning and pedagogic tools established to be effective. Special emphasis is on adopting multi-representational and multidisciplinary approach to science learning in contemporary contexts and integrating the use of cutting-edge educational tools and technologies to provide the best possible environment for exploratory work. The Centre promotes undergraduate research and project based learning in a big way. The six-week summer camp *Flavours of Research* is an immensely popular programme that draws nearly 150 undergraduate students each year, several from outside Delhi. Large number of undergraduate volunteer to mentor school students at the five-day INSPIRE Internship camp held annually, assisting in nearly twenty innovative workshops that have been specially designed to engage the participants in hands-on activities.

While providing a facility outside of the formal classroom to engage creatively in scientific pursuits, the focus of DSKC is on developing educational resources, innovative curricular materials and pedagogic instruments which can be introduced into the formal system. For large scale adoption of best practices, the Centre frequently organizes research-based programs for providing the highest quality Continuing Professional Development opportunities to those involved in science education, at all levels. These programs aim to alter the perception of the process of teaching-learning per se, develop crucial skills for effective communication by imparting pedagogical knowledge in addition to domain knowledge; and train teachers to be action researchers in their own classroom and contribute to the process of large-scale educational change.

Activities engage undergraduate science teachers and the undergraduate student population of the University of Delhi. Although Miranda House is a college for women, the Centre is open to all. Working towards the fulfilment of its stated objectives, the Centre has established linkages with stakeholders of education at all levels.





## Convenor

Dr. Pratibha Jolly Principal & PI, DSKC

## Co-Convenors

Dr. Bani Roy Department of Chemistry  
Dr. Mallika Verma Department of Physics  
Dr. Janaki Subramanyan Department of Botany  
Dr. Sadhna Sharma Department of Zoology

## Local Organizing Committee

Dr. Amrita Sheikh Tripathi Department of Chemistry  
Dr. Mallika Pathak Department of Chemistry  
Dr. Monika Tomar Department of Physics  
Dr. Bilasini D. Naorem Department of Physics  
Dr. Madhu Bajaj Department of Botany  
Dr. Saloni Bahri Department of Botany  
Dr. Rekha Kumari Department of Zoology  
Dr. Monika Sharma Department of Zoology

## Secretarial Assistance

Sandeep Anand  
Shelly Jeena

## Registration Fee

Student Registration Fee: Rs. 500

Faculty Registration Fee: Rs. 1000

Online Fee Payment: <https://goo.gl/z32koc>

## Registration Form

Students: <http://soft.mirandahouse.in/registrationnew.html>

Faculty: <http://soft.mirandahouse.in/facregistrationnew.html>

Duly filled appended/linked form may be emailed to [science.conclave@mirandahouse.ac.in](mailto:science.conclave@mirandahouse.ac.in)

## Further details

Website: [www.mirandahouse.ac.in/](http://www.mirandahouse.ac.in/)

Email: [science.conclave@mirandahouse.ac.in](mailto:science.conclave@mirandahouse.ac.in)

## Secretariat

### Science Conclave: Research on the Frontiers

D S Kothari Centre for Research and Innovation in Science Education

Miranda House, University of Delhi, Delhi 110 007

Phone: +91-11-27666201, +91-11-27666983



## Programme Schedule

<b>DAY 1</b>	<b>Wednesday, 10 January 2018</b>
09.00 am to 09.30 am	Registration
09.30 am to 09.45 am	Invocation Welcome and Introduction: Dr. Pratibha Jolly Principal, Miranda House and PI, D S Kothari Centre
09.45 am to 11.00 am	Inaugural Keynote: <i>Navigating Scientific Complexity by Common Sense</i> Dr. Ashutosh Sharma Secretary, Department of Science and Technology
11.00 am to 11.30 am	Tea Break
11.30 am to 12.45 pm	Interactive Talk: <i>Bridging Academic R&amp;D with Product Innovation – Few Case Studies and a Way Forward...</i> Dr. Ramgopal Rao Director, Indian Institute of Technology, Delhi
12.45 pm to 01.30 pm	Lunch
01.30 pm to 02.45 pm	Interactive Talk: <i>Gravitational Wave Detection Opens a New Era in Astronomy</i> Dr. Archana Pai Indian Institute of Technology, Mumbai
02.45 pm to 04.00 pm	Interactive Talk: <i>Another kind of Matter: soft, athermal, disordered and driven</i> Dr. Sabhyasachi Bhattacharya Professor, Ashoka University & Former Director, TIFR
04.00 pm	Tea

<b>DAY 2</b>	<b>Thursday, 11 January 2018</b>
09.30 am to 10.45 am	Interactive Talk: <i>Human Genetics: From Phenotype to Genotype, and Back!</i> Dr. S. Ganesh Biological Sciences & Bioengineering Indian Institute of Technology, Kanpur
10.45 am to 11.15 am	Tea
11.15 am to 12.30 pm	Interactive Talk: Dr. Amit Sharma <i>Malaria: A Biomarker for National Development</i> International Centre for Genetic Engineering and Biotechnology (ICGEB), Delhi
12.30 pm to 01.15 pm	Lunch
01.15 pm to 02.30 pm	Interactive Talk: <i>The Clock that Times us: The Story of How Flies Helped to Solve a Mystery</i> Dr. Sheeba Vasu Jawaharlal Nehru Centre for Advanced Scientific Research, Bengaluru
02.30 pm to 03.45 pm	Interactive Talk: <i>NMR: From Molecules to Human Behaviour</i> Dr. Subhash Khusu INMAS, DRDO
03.45pm	Tea

<b>DAY 3</b>	<b>Friday, 12 January 2018</b>
09.15 am to 10.30 am	Interactive Talk: <i>Discipline-culture approach to physics education - implications to content knowledge and epistemology</i> Dr. Igal Galili The Hebrew University of Jerusalem, Israel
10.30 am to 11.00 am	Tea
11.00 am to 12.15 pm	Interactive Talk: <i>Enjoying a Three Way Marriage – A Story of Maths, Biology, and Medicine</i> Dr. Anurag Agrawal Director, CSIR Institute of Genomics & Integrative Biology (IGIB), Delhi
12.15 am to 01.30 pm	Interactive Talk: <i>Using Machine Learning and Satellite Images to Monitor Economic Development?</i> Dr. Subhashish Bannerjee Indian Institute of Technology, Delhi
01.30 pm to 02.15 pm	Lunch
02.15 pm to 03.30 pm	Interactive Talk: <i>Computing with Quantum Mechanics</i> Dr. Rajamani Vijayraghavan Tata Institute of Fundamental Research (TIFR), Mumbai
03.30pm	Tea



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Name	
Course	
College	
E-mail	
Mobile	
If INSPIRE Scholar: Yes/No	
Registration Fee Receipt No., if paid	

Registration Fee: Rs 500

Payment link: <https://goo.gl/z32koc>

Contact us at: [science.conclave@mirandahouse.ac.in](mailto:science.conclave@mirandahouse.ac.in)

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