



**18th June  
2021**



# OPENDAY 2021

NATIONAL INSTITUTE OF SCIENCE  
EDUCATION AND RESEARCH,  
BHUBANESWAR

# ABOUT NISER

An autonomous institute affiliated to the Homi Bhabha National Institute (HBNI), Mumbai, under the aegis of Department of Atomic Energy (DAE), Government of India, National Institute of Science Education and Research (NISER) is a centre for excellence in education and research in basic sciences and related areas. With its establishment proposed by Dr Manmohan Singh in 2006 and its academic program inaugurated by Sri Naveen Patnaik in 2007 NISER, NISER was formally inaugurated in its permanent campus on 7th February 2016 by Sri Narendra Modi. Established with the aim of embedding scientific rigour within larger pedagogical practices in our country, NISER presently has a five-year Integrated Masters program in Life Sciences, Chemical Sciences, Mathematical Sciences and Physical Sciences. NISER has also initiated the schools of Earth and Planetary Sciences and Computer Sciences and all these schools have a very vibrant Doctoral program along with Humanities and Social Sciences. An Integrated MSc-PhD program in Physical Sciences has also been initiated and will be extended to other schools in near future. The extremely talented faculty members drawn from the most reputed institutes and universities across the globe are committed to nurturing world-class scientists and preparing the students to take up cutting edge research in academics, R&D labs and industries with a substantial part of the curriculum being taken up by laboratory courses. Institute talks, workshops, seminars and colloquia are indispensable parts of the academic structure at NISER and students actively participate in such events. NISER organizes a nationwide entrance exam, National Entrance Screening Test (NEST) along with CEBS, Mumbai to select Master's students. The objective is to glean motivated students with an exceptional aptitude for science from the available talent pool. Students are encouraged to take responsibility for knowledge acquisition and to think in terms of making a difference in their learning outcomes rather than merely attending classes. The institute wishes to cultivate in students a strong commitment to the spirit of scientific enquiry, ideation, creativity, and innovation.



# RESEARCH AT NISER

## **SCHOOL OF BIOLOGICAL SCIENCES:**

Cell and developmental biology, cancer, drug designing, infectious diseases, neuroscience, plant biology, biochemistry, genetics, molecular and structural biology among others.

## **SCHOOL OF CHEMICAL SCIENCES:**

Synthetic chemistry, catalysis, bioorganic and inorganic chemistry, supramolecular chemistry, fluorescence and nmr Spectroscopy, materials and nano-chemistry, theoretical and Computational chemistry, to name a few.

## **SCHOOL OF MATHEMATICAL SCIENCES:**

Algebraic geometry and number theory, topology, and Manifolds, differential equations, harmonic analysis, probability, cryptography, etc.

## **SCHOOL OF PHYSICAL SCIENCES:**

Experimental nuclear and particle physics, experimental condensed matter physics, atomic and molecular physics, theoretical high energy physics, statistical physics, Theoretical condensed matter physics, quantum information etc.

## **SCHOOL OF COMPUTER SCIENCES:**

Complexity theory, Graph theory, Cryptography, Computational Geometry, Unconditionally Secure Multi-Party Computation, Computational Number Theory

## **SCHOOL OF EARTH AND PLANETARY SCIENCES:**

Planetary sciences, earth sciences, Atmospheric-ocean sciences



# PROGRAM SCHEDULE



**3.30 PM-  
3.40 PM**      **Welcome address**

**3.40 PM-  
4.40 PM**      **Talk by Dr. Aniruddha Datta Roy**

**4.40 PM-  
5.40 PM**      **Talk by Dr. Subhankar Bedanta**

**5.40PM-  
5.50 PM**      **Vote of thanks**



# EVOLUTION OF A PERSPECTIVE CALLED THE PERSPECTIVE OF EVOLUTION

**DR. ANIRUDDHA DATTA ROY**

The talk will throw light upon how "evolutionary thought" has evolved, starting from the pre-Darwinian era. It will illustrate how evolutionary thought and evolution as a subject are essential in any student's formative years. Dr. Roy will briefly touch upon some of the hurdles that evolutionary biologists, or biologists in general, face in current times and will end the talk with a brief description of some of the exciting research projects that his lab group has taken up!



# FUN WITH NANOMAGNETISM AND SPINTRONICS

**DR. SUBHANKAR BEDANTA**

Magnetism is a very old subject. However, in the last few decades, much progress has been made to explore and understand magnetism at the nanoscale. In this talk, he will give an overview of magnetic properties obtained on ensembles of single-domain magnetic nanoparticles (NPs). The ability to control the magnetism in these types of particles makes them very attractive for applications, e.g. in information storage. Moreover, the research on magnetic nanoparticles has raised hopes for applications in the fields of biology and medicine, e.g. drug-targeting, cancer therapy etc. In the later part of the lecture, he will discuss other nanomagnetic systems such as magnetic antidot array lattices (MALs), inter-layer coupling in magnetic/non-magnetic multilayers, Further, he will discuss how magnetic interface can be engineered at the interface between magnetic and non-magnetic (organic) thin films. In this regard, he will review our recent results on creating magnetic fullerene (interface) in Fe/C<sub>60</sub> bilayers. The applications of these various types of nanomagnetic systems will be discussed.

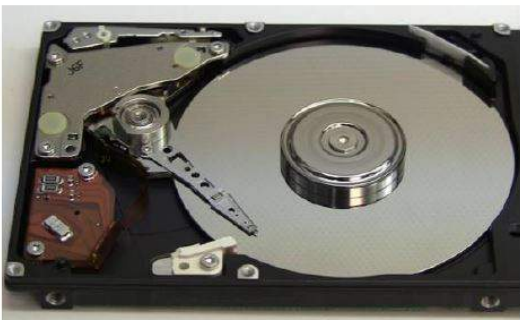


Figure 1: Read-write head of a hard disk drive

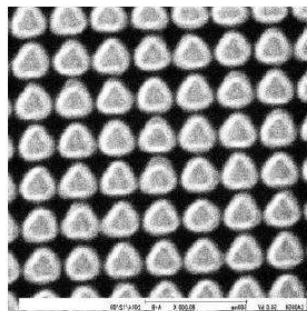


Figure 2: Magnetic nanostructure



Figure 3: A schematic of Fullerene molecule.

It is non-magnetic, however, with some tricks it is possible to make it magnetic.

# PREVIOUS OPEN DAYS



# CONTACT DETAILS

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**Link to access the event:**

**[https://youtu.be/BevP5oIL\\_7M](https://youtu.be/BevP5oIL_7M)**





NISER  
BHUBANESWAR

## TALKS:

- **EVOLUTION OF A PERSPECTIVE CALLED THE PERSPECTIVE OF EVOLUTION**

| **DR. ANIRUDDHA DATTA ROY**

- **FUN WITH NANOMAGNETISM AND SPRINTONICS**

| **DR. SUBHANKAR BEDANTA**

**JUNE 18, 2021**

**FRIDAY**

**3:30 PM**

Scan/Link to register:

[bit.ly/2021NISER](https://bit.ly/2021NISER)



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Akshay Priyadarshi

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