Program (18th March, 2019)

The Jnan Chandra Ghosh Memorial Lecture
Speaker: Nobel Laureate Prof. Bernard L. Feringa
Title: Dynamic Molecular Systems; from Switches to Motors
Time: 5.00 – 6.30 pm
Venue: Kalidas Auditorium

Upcoming New Building
Department of Chemistry
IIT Kharagpur

Sir Jnan Chandra Ghosh Memorial Lecture
By
Professor Bernard L. Feringa

Nobel Laureate
Raman Chair Professor, IAS Bangalore

18th March 2019
IIT Kharagpur

THE EVENT

Prof. Bernard L. Feringa (Nobel Prize in Chemistry 2016), as Raman Chair Professor of The Indian Academy of Sciences, Bangalore will be visiting Indian Institute of Technology Kharagpur. As a part of his trip to IIT Kharagpur, Prof. Feringa will deliver the Jnan Chandra Ghosh Memorial Lecture on 18th March, 2019 (5.00 pm, at Kalidas Auditorium) organized by the Department of Chemistry, IIT Kharagpur. Prof. Feringa received the Nobel Prize in Chemistry for his cutting-edge, ground-breaking discovery on the design and synthesis of molecular machines.

THE DEPARTMENT

Sir J.C. Ghosh, the mst Director of IIT Kharagpur inaugurated the Chemistry Department in 1951. Ever since its inception, the department has established a tradition of excellence in teaching and research in various corridors of chemistry. With multifaceted research activities and state-of-the-art facilities, the department offers one of the best academic environments in the country.

The prime focus on the research activities is on basic and traditional areas of chemistry, relevant to the societal needs. In 2011, the department was ranked by DST as one of the top six chemistry departments in the country. Today, the department is served by 34 faculty members, 17 non-teaching staff, with a strength of 150 masters and 170 doctoral students.

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Sir Jnan Chandra Ghosh

and IIT Kharagpur

Sir Jnan Chandra Ghosh
(14 Sep 1894 - 21 Jan 1959)

First Director of IIT Kharagpur
(1951 - 1954)

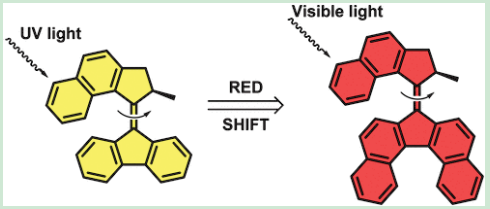
Jnan Chandra Ghosh (14 September 1894 – 21 January 1959) was born in Giridih near Purulia District, British India. Sir JC as he is popularly known, had immense contribution to the development of scientific research, industrial development and technical education in India. He is known for his contribution on the anomalous behavior of strong electrolytes and for the ionization theory. His scientific research drew appreciation from many famous scientists such as Max Planck, William Bragg and Walther Nernst. In 1918, he was awarded D.Sc. for his research on strong electrolytes. Sir J. C. Ghosh's other important contributions include his extensive study on photocatalysts under the influence of polarised light and developments of Fischer–Tropsch reaction for the synthesis of liquid fuel from carbon monoxide and hydrogen. He made contributions in the field of application of Differential Thermal Analysis (DTA) as a tool for systematic study of solid catalysts. He also successfully guided research work on technical problems relating to the production from Indian raw materials of phosphatic fertilisers, ammonium sulphate, formaldehyde, potassium chlorate etc. During his active career, he served as the Head of the Department of Chemistry at Dacca University, the Director of Indian Institute of Science at Bangalore, the Director of Indian Institute of Technology Kharagpur, the Vice Chancellor of Calcutta University, and the Director-general of Industries and Supplies, Government of India.

Main Building: IIT Kharagpur

Nobel Prize in Chemistry (2016)

Prof. Bernard L. Feringa

Prof. Bernard L. Feringa obtained his PhD degree from the University of Groningen in the Netherlands under the guidance of Prof. Hans Wynberg. After working as a research scientist at Shell in the Netherlands and the United Kingdom, he was appointed as lecturer at the University of Groningen and became a full professor in 1988. He was elected as Foreign Honory member of the American Academy of Arts and Sciences and member and vice-president of the Royal Netherlands Academy of Sciences. Prof. Feringa is a member of Council of the RSC. In 2008 he was appointed as Academy Professor and was knighted by Her Majesty the Queen of the Netherlands. Feringa's research has been recognized with a number of awards including the Koerber European Science Award (2003), the Spinoza Award (2004), the Prelog gold medal (2005), the Norrish Award of the ACS (2007), the Paracelsus medal (2008), the Chirality medal (2009), the RSC Organic Stereochemistry Award (2011), Humboldt award (2012), the Nagoya gold medal (2013), ACS Cope Scholar Award 2015, Chemistry for the Future Solvay Prize (2015), the August-Wilhelm-von-Hoffman Medal (2016), The 2016 Nobel prize in Chemistry and the Tetrahedron Prize (2017). Feringa's research interest includes stereochemistry, organic synthesis, asymmetric catalysis, molecular switches and motors, self-assembly, molecular nanosystems and photopharmacology.



Molecular Motor

In 1999 Feringa and his collaborators announced that they had created the first "molecular motor"— a molecule that can be made to spin in one direction. Usually, when molecules rotate, they are as equally likely to spin one way as the other. The molecular motor was made of two "blades," in which one blade would spin 180 degrees when exposed to ultraviolet light. This rotation would set up a "tension" in the bond that connects the two blades that would cause the other blade to rotate. Each blade had a methyl group connected to it that acted as a ratchet so rotation could only happen in one direction. The Feringa group built molecular motors that rotated faster and faster, which culminated in 2013 with the development of one that rotated with a frequency of 12 MHz.

Prof. Bernard L. Feringa
University of Groningen
The Netherlands

Raman Chair Professor
The Indian Academy
of Sciences

Sir Jnan Chandra Ghosh
Memorial Lecture:

Dynamic Molecular Systems; from Switches to Motors

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