

6-day string workshop begins today

HT Correspondent
Kanpur, October 9

INDIAN INSTITUTE of Technology (IIT-K) officiating director Kripa Shankar will inaugurate a six-day National String Theory Workshop 2005 on October 10, at the Pioneer Block Conference Complex, Visitors Hostel, IIT Kanpur.

The workshop is being co-sponsored by Harish Chandra Research Institute (HRI) Allahabad, Institute of Physics (IOP) Bhubaneswar, Institute of Mathematical Sciences (IMSC) Chennai and Tata Institute of Fundamental Research, (TIFR) Mumbai. The workshop website is at the URL <http://home.iitk.ac.in/~tapo>.

Workshop convenors are Tapobrata Sarkar, Gautam Sengupta and Pankaj Jain.

Prominent participants include Prof Atish Dabholkar (TIFR), Justin David (HRI), Rajesh Gopakumar (HRI), Alok Kumar (IOP), Sunil Mukhi (TIFR), Bala Sathiapalan (IMSC), Ashoke Sen (HRI), Sandip Trivedi (TIFR), Spenta Wadia (TIFR).

The workshop is one among the series of ongoing National and International Workshops organised every alternate year since 1992 by the Indian String Theory community. The objective of the workshop is to review the emerging frontline areas in String Theory and enhance national and international collaborations amongst the community as well as with Indian scientists working abroad.

According to Prof Sarkar the subject

String theory

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of String Theory deals with the unification of the four fundamental forces namely Gravitation, Electromagnetism and the Weak and Strong Nuclear Forces, into a single theoretical framework.

He said String Theory was also expected to provide us with a theory of Quantum Gravity, which has been an outstanding open problem in the physics of fundamental forces. The emerging themes of this year's workshop are towards an understanding of the nature of our visible universe and the choice of our universe from a framework involving a multi-universe scenario.

He said this problem was termed String Landscape. Another emerging theme is to correctly explain the nature of Black Holes and their Entropy from string theory. A further unsolved problem is to correctly predict the cosmological properties of our universe. These will constitute the main focus of this year's workshop, he added.

IIT-K scientists design acrylate-based polymer

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SCIENTISTS AT the Indian Institute of Technology (IIT-K) have designed a simple acrylate-based polymer, which can be used for several purposes.

The design is based on the knowledge that crown ethers have specific interaction capabilities with Alkali metals ion.

According to a senior research scientist at the Institute, Dr V Chandrasekhar, "Our design involves the synthesis of a methacrylate polymer and poly methoxy ethoxy ethyl methacrylate.

Another design that we have carried out is based on the inorganic polymer, polyphosphazene.

Unlike organic polymers this organic polymer has a backbone made up of phosphorus and nitrogen atoms placed alternately.

The backbone of this polymer is highly flexible. Since polymers are also being utilised, as precursors for ceramics, the advantage of this

methodology over conventional approaches to ceramic is that the polymer precursors can be processed into a desired shape prior to its conversion to the ceramic."

Dr Chandrasekhar told the *Hindustan Times*: "This methodology allowed the preparation of ceramics in complex forms. Because of the technological importance of silicon carbide fibers we have tried to develop appropriate silicon polymers that can be decomposed to afford silicon carbides."

He said polymers have come a long way since their original uses as adhesive, thermoplastics materials, thermo sets and fibers.

Polymers would now be looked upon increasingly as the new smart materials that would find applications in electronics, optics catalysis and luminescent materials.

Polymers in fact are undergoing a paradigm shift from being bulk commodity materials to advanced materials with specialised niche applications.