# Newspaper Clips

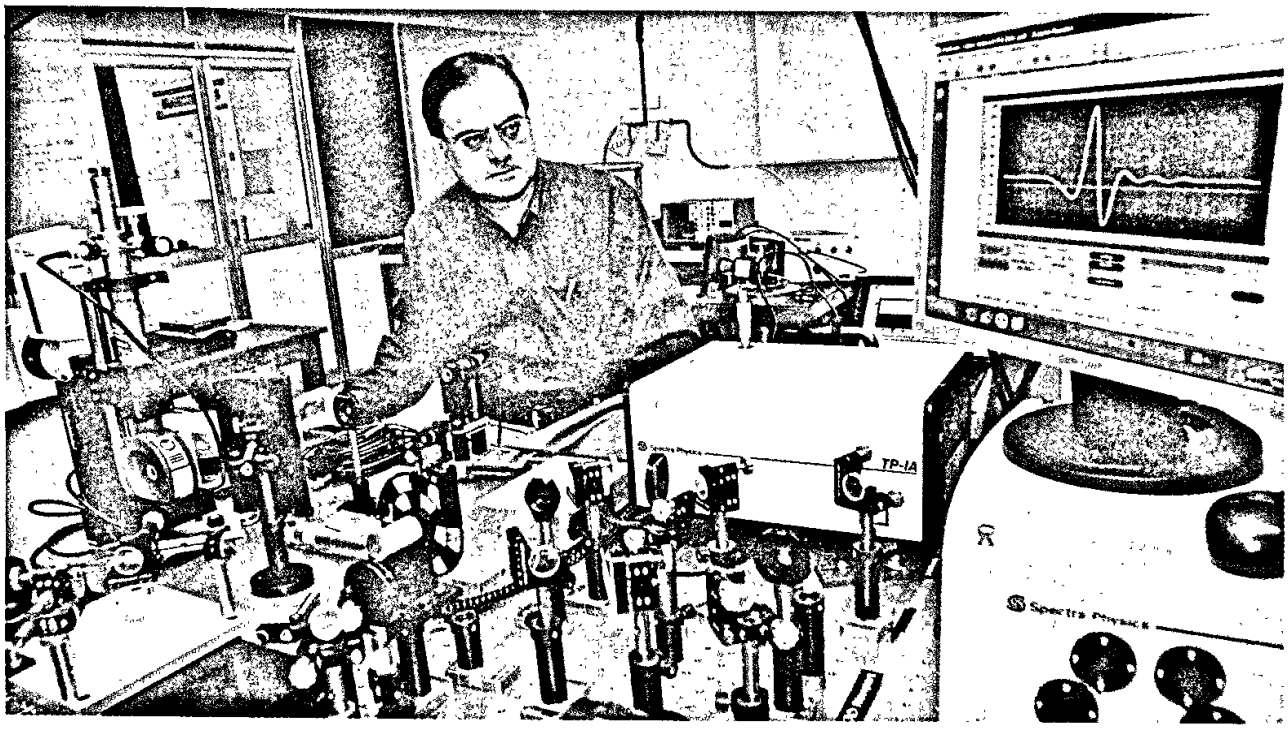
## July 7, 2011

Indian Express
ND 7/07/2011 P-3

## MISSING BIO

DURING the interviews being conducted at the HRD ministry for the post of directors at two IITs — Roorkee and Delhi — the bio-data of one of the short-listed candidates went missing. As the selection committee waited to start the interviews, ministry officials scrambled to locate the missing bio-data. After many anxious minutes, it was with the help of the affected candidate, waiting outside with other contenders, that a fresh copy of the bio-data was printed and included in the file that was sent to the selection committee.

Mail Today ND 07/07/2011 P17



Findings of Prof Ajay K Sood and his colleagues at IISc have contributed to the development of graphene-based transistors

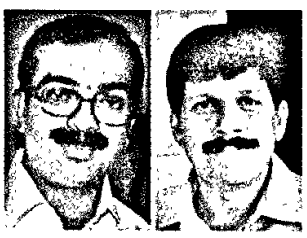
# Heroes of the city's scientific success story

THE road to the Jawaharlal Nehru Centre for Advanced Scientific Research (JNCASR) in Jakkur, an area off the Airport highway seems to lead to some farming village.

Beyond a few bumps and puddles lies a green campus with some marvellous pieces of architecture in line with the global image of the Silicon Plateau that is Bangalore.

If some JNCASR scientists, including honorary president Prof CNR Rao, have their way, silicon that lies at the heart of computer chips could become history in the near future. Maybe future cars that run on hydrogen may not need tanks bigger than them or expensive fuel cells. The name of the game is graphene. In these ultrathin sheets of carbon, atoms are arranged in a flat hexagon lattice like a microscopic chicken mesh. Often just an atom-thick, it is one of the thinnest, strongest and hardest materials around — and it has some magical properties.

JNCASR scientists and their counterparts working in the Indian Institute of Science (IISc) elsewhere in the city are making graphene work. Its future uses could cover computing, communication, transport, drug delivery and more. "It has opened huge possibilities in electronic device fabrication and has also shown much promise in replacing silicon-based electronics," noted the three editors of a new book called *Graphene* and its fascinating attributes. Professors Swapan K Pati of JNCASR, Toshiaki Enoki of the Tokyo Institute of Technology Japan and Rao have compiled the work of scientists on graphene — rolled up as nanotubes or balls, stripped down as ribbons or doped with other materials to change its properties for advanced device applications.



Prof Umesh V Waghmare (L) and Prof Swapan K Pati

Though rare now, in the coming years graphene could compete not only with silicon, but also work in sensors, display boards and in helping scientists understand how materials work fundamentally, sometimes in a weird manner.

Last year's Nobel Prize for Physics went to two Russian-born physicists at Manchester University, UK, for finding some remarkable properties of graphene. In a flat world such work is often influenced by Bangalore research. Findings of Prof Ajay K Sood and colleagues at IISc have contributed to the development of graphene-based transistors that are smaller, faster, and more energy-efficient than today's silicon-based ones. They don't heat up. The IISc team has demonstrated that an electro-chemically 'doped' graphene transistor works more efficiently than ever reported.

While scientists highlight the future potential of graphene on molecular biomarkers and biosensors, JNCASR researchers are trying wrap strands of DNA around graphene nanotubes. The idea is to tune them to work in electronics, optics and magnetic applications. Stand-alone graphene can't work like silicon switching on and off transistors.

Rao's team has made news worldwide by developing graphene analogues — materials that look and behave like graphene, but are far more affordable. Research by Rao and his colleagues including Prof Umesh V Waghmare, have also shown how hydrogen could effectively stored in two or more sheets of graphene stacked together. Such a mechanism, can hold hydrogen up to five per cent their weight, closer to realistic estimates for use in vehicles.

Rao and Sood and other scientists have called for better investments in nanotechnology initiatives in the coming years.

Hindustan ND 7/07/2011 P-12

# जन शिक्षण संस्थानों को योजना आयोग की हरी झंडी

नई दिल्ली | मदन जैड़ा

लंबे इंतजार के बाद आखिरकार योजना आयोग मानव संसाधन विकास मंत्रालय को 150 नए जन शिक्षण संस्थान खोलने की इजाजत देने को तैयार हो गया। पिछले दो सालों के दौरान मंत्रालय ने कई मर्तबा इस मुद्दे को योजना आयोग के समक्ष उठाया था। लेकिन मंजूरी के बावजूद चालू वित्तीय वर्ष में इन्हें नहीं खोला जा सकता है। इन्हें 12वीं पंचवर्षीय योजना में शामिल किया जा रहा है।

जन शिक्षण संस्थानों में वोकेशनल शिक्षा दी जाती है। श्रमिक विद्यापीठ के पैटर्न पर इनकी शुरुआत 1997-98 के दौरान हुई थी। बाद में इनके परिणाम अच्छे रहे और ग्यारहवीं योजना के शुरू में यह फैसला हुआ कि हर पंचवर्षीय योजना में डेढ़ सौ जन शिक्षण संस्थान खोले जाएंगे। यानी हर साल 30 संस्थान स्वीकृत होंगे। 11वीं योजना की शुरुआत 2007 में हुई थी और अर्जुन सिंह अपने कार्यकाल में पूरी योजना के सभी 150 संस्थानों का आवंटन कर गए। सिब्बल ने जब मंत्रालय का कार्यभार संभाला तब तक पंचवर्षीय योजना के सभी जन शिक्षण संस्थान बंट चुके थे।

## हर साल 30

- श्रमिक विद्यापीठ के पैटर्न पर इनकी शुरुआत 1997-98 के दौरान हुई थी
- 11वीं योजना में तय हुआ कि हर पंचवर्षीय योजना में 150 संस्थान खुलेंगे
- अपने कार्यकाल में ही पूरी 11वीं योजना के पूरे संस्थान बाट गए अर्जुन सिंह
- देश में 271 संस्थान चल रहे, सब अर्जुन सिंह के जमाने में दिए गए थे

अब जब 12वीं योजना की योजनाएं बन रही हैं, ऐसे में आयोग ने संस्थान की सहमति दे दी है। देश के हर जिले में एक जन शिक्षण संस्थान खुलना है। अभी तक 271 जिलों में ऐसे संस्थान खुल चुके हैं।

इन संस्थानों के संचालन के लिए मंत्रालय, गैर सरकारी संगठनों को प्रतिवर्ष 40 लाख रुपये की सहायता देता है। संस्थानों को जिले में कम शुल्क पर वोकेशनल कोर्स चलाने होते हैं।