

Nina Saxena Excellence in Technology Award, 2009 was presented to Department of Mechanical Engineering, IIT Bombay and Department of Textile Technology, IIT New Delhi

Award-winning research focuses on pioneering work in Tube-Tube Heat Exchanges and plasma reaction technology for functionalization of textile substrates

Mumbai, August 18, 2009: The Nina Saxena Excellence in Technology Award is a first of its kind India - wide technical innovation Award instituted by IIT Kharagpur in 2007, was presented jointly today to Professor. Milind V Rane, Department of Mechanical Engineering, IIT Bombay and Mr. Kartick Kumar Samanta, , Mr. Prateek Sabharwal and Mr. Rohit Lohani, Dr. Ashwini K. Agrawal Dr. Manjeet Jassal Associate Professor, Department of Textile Technology, Indian Institute of Technology, New Delhi. Their innovations comprises of pioneering work in Tube-Tube Heat Exchanges and revolutionary work in the field of atmospheric pressure glow discharge plasma reaction technology for functionalization of textile substrates respectively.

Commemorating the spirit of its illustrious alumna Dr. Nina Saxena, the pioneering award encourages and promotes technical innovation with a focus on social development.

A 12-member jury of international experts adjudged the nominations on the basis of innovativeness, applicability, and most importantly the potential of the application for social development with specific reference to backward areas in India.

Speaking on the occasion Professor Amit Patra, Dean, Alumni Affairs IIT Kharagpur said" Dr. Nina Saxena was an illustrious alumna of this Institute. She was dedicated towards alleviating poverty and boosting overall economic growth in India. This Award has kept her vision and philosophy of life intact by aptly recognizing the innovation of Prof. Milind V Rane Dept. of Mechanical Engineering, IIT Bombay and Mr. Kartick Kumar Samanta, Mr. Prateek Sabharwal, Mr. Rohit Lohani, Dr. Ashwini K. Agrawal and Dr. Manjeet Jassal, Department of Textile Technology, IIT New Delhi,"

Professor Milind V Rane's research at Department of Mechanical Engineering, IIT Bombay is aimed at developing a versatile vented-double-wall Tube-Tube Heat Exchanger (TT-HE) and various refrigeration and air conditioning systems have been integrated with it. This has opened-up new possibility of conserving energy from refrigeration and air conditioning systems while co-generating hot and cold utilities. Application engineering support has been provided to enable integration of in Dairy, Hotel, Automobile Industries and Fast Food Outlets. It can also be used in large number industrial applications as process heat exchanger to exchange heat between multiple streams to better achieve pinch-analysis targets and save energy. The TT\_HE leads to 90% saving in fuel or electricity with higher reliability and low downtime.

The team at IIT Delhi's Research is for the first time aimed at developing a process technology and a plasma reactor that can be used to chemically modify a substrate in a continuous manner. The technology developed by the team is a stable glow type cold plasma reactor suitable for carrying out chemical reactions with substrates at the atmospheric pressure. Till date, the atmospheric pressure plasma has not been used successfully to carry out chemical reactions between reactant gasses and substrates. The attempts till date have resulted in self condensation of reactant gases and deposition of resultant compounds on substrates (in form of coatings). On the other hand, the present innovation, for the first time, demonstrated a direct reaction (covalent bonding) of reactant gases to organic substrates such as cotton, viscose, nylon, etc. This could become possible by developing a novel plasma technology, where a stable glow plasma could be generated over a large surface area (also in a large volume), in the presence of a reactant gas, and for a long period of time. Also, the new reactor design generated plasma flow profile that allowed intimate contact of the plasma with substrate before these species are quenched. Based on these technological innovations a laboratory scale prototype of a continuous plasma reactor was designed and fabricated to demonstrate continuous modification of textile and other organic substrates in a continuous manner. This technology is cheaper, will lead to significant saving of national resources such as water and energy as compared to wet chemical technologies and leads to substantially lesser pollution. The technology is currently being pursued for patenting by IIT

Delhi. The technology is also being currently evaluated by three large Indian industries like RIL, Mumbai; Aditya Birla Science and Technology Co. Ltd.; SRF Ltd., Chennai etc. Aditya Birla has an MOU with IIT Delhi for transfer of technology and joint IPR on this technology.

Presenting the award to the winner, Chief Guest Professor Kiran Seth, said: "The award-winning research exemplify the best of scientific research and how technology can be used for maximum impact across sectors. This prestigious award is given every year in recognition of those individuals and institutes doing innovative work of "the greatest likely long-term significance" in their respective fields. I am proud to present the Nina Saxena Excellence in Technology Award jointly to Milind V Rane, Professor, Dept. of Mechanical Engineering, IIT Bombay, and Mr. Kartick Kumar Samanta, Mr. Prateek Sabharwal, Mr. Rohit Lohani Dr. Ashwini K. Agrawal and Dr. Manjeet Jassal, IIT Delhi for their revolutionary research."

#### About the Nina Saxena Excellence in Technology Award

A first of its kind, the Nina Saxena Excellence in Technology Award was instituted by IIT Kharagpur in 2006 to commemorate the memory of Nina Saxena, an alumna of IIT Kharagpur. It celebrates the spirit and memory of Dr. Nina Saxena, B.Tech (Hons.), ECE 1992, who passed away tragically in 2005. Nominations for the Award was open to all scientists of Indian origin. For more details visit <http://www.ninasaxena.com>

The Award is funded through an endowment of the Nina Saxena Memorial Fund. The fund is being collected through IIT Foundation (a non-profit organization and a US 501(c) organization).

#### About IIT Kharagpur

The oldest of the seven IITs, Indian Institute of Technology has always led the way in research and diversification of education. The Institute houses the maximum number of departments, schools and centres and some of these are unique to only IIT Kharagpur. This premiere education and research Institute is spread over a sprawling 2100 acres and is one of the greenest campuses in the nation. The Institute also has two other smaller campuses at Bhubaneswar and Kolkata. IIT Kharagpur strives to provide an environment of research and innovation and stresses on practical application of science and technology. The Institute also believes in maintaining a strong family bond with its alumni spread all over the globe. Nina Saxena was also a very distinguished alumna of the Institute. On the 57th Foundation Day, IIT Kharagpur salutes its founding fathers, students, faculty and staff, for making Pt. Jawaharlal Nehru's dream a reality. For further details visit <http://www.iitkgp.ac.in>