National Chemical Laboratory

(Council of Scientific & Industrial Research)

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Publication and Science Communication Unit

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Workshop on Accelerating innovation: Strategies for collaboration and commercialization

A one-day Indo-Canadian joint workshop on Accelerating innovation: Strategies for collaboration and commercialization was held at the National Chemical Laboratory (NCL), Pune on December 10, 2009. The University of Toronto (UoT) team comprising eight members was lead by Dr. Lorna Jean Edmonds, Assistant Vice President, International Relations. About thirty participants attended the workshop. The workshop was funded by the Department of Science and Technology, New Delhi.

Dr. S. Sivaram, Director, NCL welcomed the participants, and briefed them on the genesis of the workshop and the crucial role of the UoT participants in making it happen. Dr. Lorna Jean Edmonds, Assistant Vice President, International Relations, UoT in her welcome remarks elaborated on the role of collaborations and how such interactions can be used to further innovation.

Prof. Cynthia Goh, Professor, Department of Chemistry and Associate Director, Institute for Optical Sciences, UoT and Co-Founder of Alexa Inc. and Vive Nano Inc. delivered the keynote address on “Creating innovators in science: Technopreneurship”: She narrated her experience in creating innovators in science at UoT. She drew lessons and examples from various spin-offs resulting from the scientific research done in the Chemistry Dept. at UoT. She presented her experiences in training graduate level students to turn entrepreneurs and how that program has succeeded in kindling students’ interest in technopreneurship. Dr. Darren Anderson, Chief Technology Officer, Vive Nano Inc. presented a case study on technology startup of Vive Nano at UoT. Vive Nano provides solutions based on nanoparticles. He profiled his company’s experience and how various partners contributed and benefitted from it.

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In the first panel discussion chaired by Dr. A. J. Varma, NCL on “Innovation in clean technology”, Prof. Mohini Sain and Prof. Sanjeev Chandra (both from UoT) presented the Canadian perspective on “Biorefinery, biomaterials and bioenergy”. Prof. Sain presented the work done in the Center for Biocomposites and Biomaterials Processing at UoT, with details on wheat straw microfiber reinforced plastics, and how biomaterials can be utilised eventually to replace hydrocarbons in producing plastics. Prof. Chandra described the process of thermal spray painting and its use in creating metal foams.

The second panel consisting of Dr. A.J. Varma, Dr. P.P. Wadgaonkar (NCL), Dr. Sangeeta Srivastava (The Godavari Biorefineries Ltd.), Dr. Balu Sarma, (Praj Matrix, Pune), and Dr. Rajiv Kumar (Tata Chemicals, Pune) presented the Indian perspective on bioenergy and biochemicals. NCL’s work along with Godavari Biorefineries Ltd. in commercializing baggasse to cellulose was discussed, along with the NCL’s technology to extract commercial products out of cashew nut shell liquid. Both academic and industry participants shared their views on the current status of biomaterials and bioenergy research in India. Dr. Rajiv Kumar and Dr. Balu Sarma elaborated on their corporate’s plans to exploit the growing interest in these areas.

The post-lunch session had two parallel group discussions. Mr. Sanjay Nene, NCL chaired the group discussion on “Automotive, energy and biomaterials innovation”. There was strong interest from both the Canadian and Indian participants for joint teaching programs for undergraduate student for courses consisting of students and faculty from both countries. Representatives of Tata Groups showed an interest in the organization of training courses by Indo-Canadian faculty for their new recruits in various sectors associated with their manufacturing activities. Research interests in the area of biorefinery were expressed. Some of the chemicals identified included biopolymers, specialty chemicals and biochemicals, cellulose nano-crystalline material, and nano-fibers, besides replacements for existing fossil fuel polymers. Utilization of biofuels in combustion engines and boilers, blowing agents (carbon dioxide) in the preparation of polymer foams, etc. were discussed.

The other group, lead by Dr. V. Premnath, NCL discussed a variety of issues related to nanotechnology and technopreneurship. The group discussed various issues in starting a technology start-up, the funding requirements, funding mechanisms, technology transfer mechanisms etc. Evolving a technology from the underlying science and the need and processes to do this was also discussed. The innovation propagation mechanism in private firms was also discussed with insights from managers from Tata Group.

In plenary session Prof. K.N. Ganesh, Director, Indian Institute of Science Education and Research (IISER), Pune delivered the keynote address on “Genomic medicines and peptide nucleic Acids”. Following this, Prof. David Macmillen, Dept. of Chemistry, UoT delivered the keynote address on “System and synthetic biology” and elaborated on how the systems biology fits into the post-genomic scientific landscape and what roles synthetic and systems biology have in understanding the basics of the functioning of the cell and its constituents.

In the concluding session, Prof. Mohini Sain captured all the salient points discussed throughout the day and stressed on the need for establishing collaborative research relationships between UoT and CSIR. He also emphasized the need for running joint technopreneurship courses to CSIR students to sensitize them to the innovation potential. He also highlighted the benefits of having student exchanges and the need to establish programs to accomplish these goals. Dr. Premnath underlined the productive nature of the event. He also highlighted how India’s changing economic landscape and the need to innovate requires India to partner with other knowledge and innovation leaders in the world to chart new models to create an innovation-based economy in India. The workshop ended with Dr. Sivaram highlighting the need for such collaborations, and how ideas can be turned into reality by the work of committed partners.

Organisation of workshop culminated in exploring and identifying a few areas where concrete projects could be defined and possibility of pursuing them further.

- Building-up of a hands-on scientist-led science entrepreneurship course targeting students in the Pune area.
- Collaborative research projects in the areas such as fuels, chemicals and materials from bioresources, nano-materials, systems and synthetic biology
- Technology development and commercialization for low resource settings diagnostic tools for viral diseases, advanced coatings
- Faculty and student exchange programs

	
Dr. Sivaram addressing the gathering	Dr. Edmonds welcoming the participants

	
Prof. Goh delivering the keynote address	Dr. Anderson delivering the keynote address
	
Prof. Ganesh delivering the keynote address	Dr. McMillen delivering the keynote address
	
Dr. Premnath giving the closing remarks	Audience view

Notes to Editor:

National Chemical Laboratory (NCL) (www.ncl-india.org), Pune, India is a research, development and consulting organisation with a focus on chemistry and chemical engineering. It has a successful record of research partnership with industry. NCL is a flagship laboratory of the Council of Scientific & Industrial Research (CSIR, www.csir.res.in) which is the largest network of publicly funded research institutes in India.

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