



Department of Biotechnology

Technical Workshops Series – 2014

**One and half day Workshop on**  
**Agro based biomass: Availability, processibility and resultant**  
**chemicals/materials/energy**  
 - Organized by Venture Center -

<b>Potential gains</b>	<ul style="list-style-type: none"> <li>• Get an overview of key issues/ challenges and emerging opportunities</li> <li>• Explore national availability of biomass and potential industry needs, Areas for potential technology development and advancement.</li> <li>• Address the issues of reducing the dependence on fossil raw materials, identification- and utilization of residual biomass, lower the costs of bio-energy by coproduction of chemicals and materials that are biodegradable and have a lower carbon footprint than the existing fossil based products.</li> </ul>
<b>Organized by</b>	<ul style="list-style-type: none"> <li>• Bioincubator at Venture Center (Bioincubator at Venture Center is supported by BIRAC, Government of India)</li> <li>• CSIR-National Chemical Laboratory</li> <li>• University of Lund, Sweden</li> </ul>
<b>Sponsored by</b>	<ul style="list-style-type: none"> <li>• Venture Center</li> <li>• Department of Biotechnology, Ministry of Science &amp; Technology, GOI</li> <li>• Swedish International Development Association (SIDA)</li> </ul>
<b>For whom</b>	<ul style="list-style-type: none"> <li>• Industry professionals</li> <li>• Science and Technology development professionals</li> <li>• Start-ups/ companies working in biomass value addition</li> </ul>
<b>When</b>	Friday, 10 <sup>th</sup> January 2014   10:00 - 17:30 hrs Saturday, 11 <sup>th</sup> January 2014   09:30- 13:30 hrs
<b>Where</b>	Training Room, Venture Center, 100 NCL Innovation Park, Dr. Homi Bhabha Road, Pune-411008
<b>Contact</b>	Ms. Lipika Biswas, Venture Center, Dr. Sanjay Nene ( <a href="mailto:sn.nene@ncl.res.in">sn.nene@ncl.res.in</a> ) 100, NCL Innovation Park, Dr. Homi Bhabha Road, Pune - 411008 Phone: +91-20-25865877   Email: <a href="mailto:eventsdesk@venturecenter.co.in">eventsdesk@venturecenter.co.in</a>
<b>Cost</b>	<ul style="list-style-type: none"> <li>• Participation by invitation only   Free but prior registration is required. Attendance only on confirmation of registration</li> <li>• Organizers reserve the right to select participants so as to maximize learning and networking opportunities for the group. Maximum 40 seats</li> <li>• Accommodation and travel will not be provided.</li> </ul>



Department of Biotechnology

## Introduction

Biomass (agro-residues and renewable resources) is an area receiving considerable attention in view of diminishing sources /availability of fossil fuels and the increasing financial burden on our economy due to the escalating fossil fuel costs. There is a need to have a long term plan for use of indigenous biomass and its conversion to energy, chemicals and feed.

Some of the concerns on the issue of biomass are as follows:

- a. Mapping of available/selected renewable resources (agro-residues, plantation crop residues and agricultural processing wastes) in India
- b. Primary costs of collation of material
- c. Primary costs of processing
- d. Secondary costs of processing to give chemicals (including bioplastics), feed and energy

## Workshop Outline

Workshop shall consist of:

- Talks
- Panel discussions
- Networking sessions

## Workshop includes

- Workshop includes tea/ snacks/ lunch and dinner(1<sup>st</sup> day)
- Membership in mailing list to follow-up on workshop
- Participants will receive the workshop White Paper
- No registration fee



Department of Biotechnology

Schedule	Session-2 Biomass leading to energy
<b>Schedule for DAY 1</b>	<b>Session-1 Availability of suitable Biomass for conversion to energy, chemicals and feed</b>
Time	Session title
9:30-10:00	Registration and tea/coffee
10:00 -10.30	Event introduction Quick overview of the key issues
10:30-11:30	Structured discussion: Each participant/organization presenting his/her view for 10 minutes (oral or with slides) * <ul style="list-style-type: none"> <li>• Availability of various agricultural residues - Primary(Non-processed) and secondary (processed) agricultural biomass and selected non-agricultural biomass)</li> </ul>
11:30-11:45	Tea break
11:45-13:00	* Session continues
13:00-13:30	Wrap up session
13.30-14.30	LUNCH
Time	Session title
14.30- 16.00	Structured discussion: Each participant/organization presenting his/her view for 10 minutes (oral or with slides) # <ul style="list-style-type: none"> <li>• Production of methane /biogas from agricultural residues and certain renewable substrates</li> <li>• Conversion of biomass to fuels by briquetting/ thermal treatment</li> <li>• Gasification of biomass to yield energy as heat, syngas and coke.</li> <li>• High-pressure pyrolysis and liquefaction of biomass to yield bio-oil, char and gas.</li> <li>• Chemical treatment/ Enzymatic hydrolysis of starch and cellulose based biomass to give sugars that will be converted to energy/ chemicals</li> </ul>
16:00-16:15	Tea break
16:15-17:00	# Session continues
17.00-17.30	Wrap up session
18.30-21.00	Cocktails followed by dinner

Schedule for DAY 2	Session-1 Biomass leading Chemicals and Feed	
Time	Session title:	Faculty
9.30 -11.30	Structured discussion: Each participant/organization presenting his/her view for 10 minutes (oral or with slides) * <ul style="list-style-type: none"> <li>• Fine Chemicals</li> <li>• Specialty chemicals</li> <li>• Biopolymers and Composites</li> <li>• Feed and feed ingredients</li> </ul>	
11:30-11:45	Tea Break	
11:45-12:30	* Session continues	
12.30-13.30	Overall discussions and conclusions	
13.30-14.30	LUNCH	

### Workshop faculty

	<p><b>Dr. Sanjay Nene</b> has been working with the National Chemical Laboratory (NCL) since 1985, and currently heads the Biochemical Engineering Unit. Dr. Nene holds an M.Tech in Biochemical Engineering (IIT, Delhi), and a PhD in Chemical Engineering from Mumbai University. He has worked as a Research Associate at Hindustan Antibiotics Ltd. and as a Technical Consultant for Millipore Intertech Inc. He has been associated with several industrial projects and has been on the technical review committee of SBIRI and other DBT task forces.</p>
	<p><b>Dr Rajni Hatti- Kaul</b> has a background from India. She obtained her PhD degree in Biochemistry from the University of Bombay in 1984. After a post-doctoral period at Lund University (1985-87) she served as research assistant at Astra Research Centre India in Bangalore 1988-90, where after she returned to Lund University, and became a Associate professor in 1997, and Professor of Biotechnology in 2004.</p> <p>Her research interests are in the fields of integrated bioprocessing for recovery of biomolecules from biotechnological processes, downstream processing of proteins, immobilised biocatalyst technology for bioconversions and bioanalysis, and application of enzymes from extremophilic organisms for utilization of renewable raw materials and food processing.</p>
	<p><b>Dr. V. Premnath</b> Founding Director - Venture Center and Head, NCL Innovations. He holds a B.Tech. from the Indian Institute of Technology - Bombay and a Ph.D. from the Massachusetts Institute of Technology, USA. He has also been a Chevening Technology Enterprise Fellow with the Centre for Scientific Enterprises, London Business School and Cambridge University, UK. He brings with him considerable experience in technology development and commercialization, working with start-up companies (in Cambridge-UK and India) and engaging with large corporations on research and consulting projects as project leader.</p>



Department of Biotechnology



**Dr. Rajnish Kumar** is a Senior Scientist in the Chemical Engineering & Process Development Division, CSIR-National Chemical Laboratory, Pune. He holds a PhD Chemical Engineering from The University Of British Columbia, Vancouver He works in the areas of Methane Recovery from Natural Gas Hydrates, Hydrogen Storage, Utilization of Bio-Mass for Energy and Chemical Feedstock, , Process up-gradation and value addition of long chain fatty acids and Carbon Dioxide Capture, Storage and Utilization



**Dr. Sangita Kasture** holds a PhD in Chemical Engineering from Institute of Chemical Technology, Mumbai. She has had postdoctoral experience in Univ. of Lund, Sweden, Polish Academy of Sciences and NCL, Pune. . Currently she is a senior scientist in the Department of Biotechnology. She is strongly involved in the development of the Biofuels program in DBT. She also is responsible for promotion of Centres of excellence in the area of Bioenergy and Biomass in the country. Currently she coordinates the Joint Clean Energy R&D Centre (JCERDC) program which is a joint Indo-US venture.

### About the Organizers



#### About Venture Center

Entrepreneurship Development Center (Venture Center) – a CSIR initiative – is a Section 25 company hosted by the National Chemical Laboratory, Pune. Venture Center strives to nucleate and nurture technology and knowledge-based enterprises by leveraging the scientific and engineering competencies of the institutions in the Pune region in India. The Venture Center is a technology business incubator supported by the Department of Science & Technology’s National Science & Technology Entrepreneurship Development Board (DST-NSTEDB). Venture Center’s focuses on technology enterprises offering products and services exploiting scientific expertise in the areas of materials, chemicals and biological sciences & engineering.

For more information, visit [www.venturecenter.co.in](http://www.venturecenter.co.in)



#### About Bioincubator

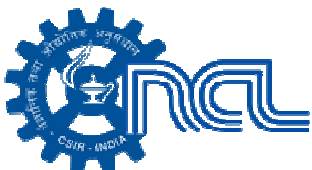

The BioIncubator at Venture Center aims to nucleate and nurture technology and knowledge-based enterprises leveraging knowledge in the areas of biotechnology (biopharma, agrobiotech, industrial biotech, clean technology), biomedical engineering/ devices/ diagnostics, biomass value addition/ renewable fuels/chemicals/materials, bioinformatics, bio/ medical services and related disciplines.



Created with support from DBT-BIRAC under the Bioincubator Support Scheme.

For more information, visit [www.bioincubator.venturecenter.co.in/](http://www.bioincubator.venturecenter.co.in/)



Department of Biotechnology

	<p><b>National Chemical Laboratory (CSIR-NCL)</b>, Pune, established in 1950, is a constituent laboratory of Council of Scientific and Industrial Research (CSIR). CSIR-NCL is a science and knowledge based research, development and consulting organization. It is internationally known for its excellence in scientific research in chemistry and chemical engineering as well as for its outstanding track record of industrial research involving partnerships with industry from concept to commercialization. For more information visit: <a href="http://www.ncl-india.org/Default.aspx">http://www.ncl-india.org/Default.aspx</a></p>
	<p><b>Lund University</b> is one of Europe's oldest universities and one of Scandinavia's largest institutions for education and research consistently ranked among the world's top 100 universities. The university, located in the city of Lund in the province of Scania, Sweden, traces its roots back to 1425, when a Franciscan studium generale was founded in Lund next to the Lund Cathedral, arguably making it the oldest institution of higher education in Scandinavia. For more information visit: <a href="http://www.lunduniversity.lu.se/">http://www.lunduniversity.lu.se/</a></p>

Sponsors	
	<p><b>Swedish International Development Agency (SIDA)</b> SIDA is a government organization under the Swedish Foreign Ministry. It administers approximately half of Sweden's budget for development aid. The head quarter is in Stockholm with many offices in countries where they have ongoing activities</p>
 <b>Department of Biotechnology</b>	<p><b>Department of Biotechnology (DBT)</b> The Department of Biotechnology (DBT) is an <a href="#">Indian government</a> department, under the <a href="#">Ministry of Science and Technology</a> responsible for administrating development and commercialization in the field of modern biology and <a href="#">biotechnology</a> in India.</p>



Department of Biotechnology

Attendees List	
<b>Dr.A.V. Umakanth</b> Directorate of Sorghum Research, Hyderabad,	<b>Dr. Karuna D. Kulkarni</b> Sr. Vice President- Food R&D Jain Irrigation Systems Limited, Jain Agri park,
<b>Dr. C.N. Manoj</b> Pelican Biotech & Chemical Labs.	<b>Dr. Santosh Vyas</b> R&D Manager DSM India Private Ltd.
<b>Dr. Sudhakar Mhaskar +1</b> EVP and Head-Technology CPB Marico Limited	<b>Beena Patel</b> Abellon Cleanenergy Limited
<b>Mr. Saibaba</b> TMT (India) Ltd.	<b>Dr. Pankaj Karwande +1</b> Polchem Innovative Solutions
<b>Dr. Shriram Joshi</b> Technology Scout Evonik India Pvt. Ltd.	<b>Dr. Shrikumar Suryanarayan</b> Sea6energy
<b>Mr. Sydney Lobo/ Dr. Avinash N.Patkar</b> The Tata Power Co. Ltd.	<b>Mr. Darshan Mehta</b> Anil Limited
<b>Dr. Ravi Kumar Rao, Mr. Tushar Patil and Mr. Prasanna Pai +2</b> Praj Industries Limited	<b>Dr. Sanjay Charati +1</b> Director, Solvay Research Centre
<b>Prof. Arvind M. Lali</b> Professor, Dept of Chemical Engineering Coordinator DBT-ICT Centre for Energy Biosciences, Institute of Chemical Technology	<b>Dr. R.S. Sangwan</b> <i>Chief Executive Officer, Bio Processing Unit (BPU)</i>
<b>Dr. Sudheer Sane + 2</b> Consultant	<b>Dr. Sangeeta Srivastava +1</b> Corporate Manager, Godavari Biorefineries Ltd.
<b>Dr. Makarand Phadke, Dr. Swaroop Sarangan</b> Senior Vice President Innovation, Reliance industries Ltd.	<b>Dr. Sunil Dhingra</b> Senior Fellow & Internal Resource Adviser Biomass Energy Technology Applications Energy Environment Technology Development The Energy and Resource Institute
<b>Dr. Amulya Panda</b> Staff Scientist VII National Institute of Immunology	<b>Dr. R.R.N.Sailaja Bhattacharya</b> Fellow, The Energy and Resources Institute (TERI)
<b>Dr. H. Chanakya</b> Chief Research Scientist, Centre for Sustainable	<b>Prof. S. Dasappa</b> CGPL, Aerospace Department, Indian Institute of



Technologies. Division of Earth & Environmental Sciences Indian Institute of Science	Science
<b>Dr. Stan D'Souza</b> 'Outstanding Scientist' / Ex Associate Director , Bio-Medical Group & Head Nuclear Agriculture & Biotechnology Division	<b>Prof. Rajni Hatti-Kaul</b> Department of Biotechnology
<b>Dr. Sanjay Nene</b> Head, Biochemical Engineering Unit, Chemical Engineering & Process Development Division, National Chemical Laboratory	<b>Dr. Prashant Barve</b> Head, Process Development Chemical Engineering & Process Development Division, National Chemical Laboratory
<b>Dr. V. Premnath</b> Director Venture Centre &Head NCL Innovations, Venture Centre, Homi Bhabha Road, Pune 411 008	<b>Dr. K. Rajnish</b> Senior Scientist, Chemical Engineering & Process Development Division,National Chemical Laboratory,
<b>Dr. Sangita Kasture</b> Principal Scientific Officer Department of Biotechnology Ministry of Science & Technology	<b>Mr Anshuman Lath</b> Gram Oorja Venture Center Incubatee
<b>Mr Arkajit Mandal</b> Supply Chain First Energy	