



DETECTION, CONSERVATION AND RESPONSIBLE USE OF NATURAL RESOURCES
Aditya Bhawan Auditorium, National Institute of Solar Energy (NISE), Gwal Pahari

<i>Day 1</i>	<i>13th December 2018</i>
08:30 AM – 09:30 AM	REGISTRATION
09:15AM – 09:20 AM	OPENING OF NANOFORAGRI - 2018 Welcome – Dr Alok Adholeya, TERI
09:20 AM – 10:45 AM	Session I – Integrated Nutrient Management and Soil Conservation <i>Chairman – Dr Archana Sinha, Joint Director (Chemistry); Directorate Of Plant Protection, Quarantine & Storage,</i> <i>Rapporteur – Dr Rita Choudhary, TDNBC</i>
<p>Nano agri-inputs such as nanofertilizers and nanocomposites are fast gaining popularity as alternatives to chemical fertilizers as they can provide required benefits in smaller doses and with greater efficiency. This session explores the current trends, challenges and opportunities for nano-interventions in soil conservation and nutrient management strategies which can improve existing agricultural practices.</p>	
09:20 AM – 09:35 AM	Soil nutrient management strategies – Challenges and Opportunities for Nanotechnology interventions <i>Dr Alok Adholeya, TERI, New Delhi</i>
09:35 AM – 09:50 AM	Nano- Inputs for Sustainable Agriculture <i>Dr K S Subhramanian, TNAU, Coimbatore, India</i>
09:50 AM – 10:05 AM	Nanoclays as food packaging materials



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	<i>Dr Anil Kumar Anal, Asian Institute of Technology, Thailand</i>
10:05 AM – 10:15 AM	Delivery of Abscisic Acid to Plants Using Glutathione Responsive Mesoporous Silica Nanoparticles <i>Dr James Rookes, Deakin University, Geelong, Australia</i>
10:15 AM – 10:25 AM	Biological Synthesis and characterization of nanoparticle from <i>Trichoderma</i> sp. and its bioefficacy in tomato plants <i>Dr. Prabhakaran N, T. Stanes & Company Ltd, Coimbatore</i>
10:25 AM – 10:35 AM	Eco-friendly nanomaterial synthesis and fabrication: development of next generation agri-inputs <i>Dr Braj Raj Singh, TDNBC, Gurugram</i>
10:35 AM – 10:45 AM Panel Discussion	Integrated Nutrient Management and Soil Conservation Moderator: Dr Archana Sinha Panelists: Speakers from the session Discussants: Dr P K Patanjali, Dr Vinod Saharan, Dr JC Rajput, Prof N Chandrasekharan, Dr Satish Rai, Dr Rachna Sahney

10:45 AM – 11:45 AM	INAUGURAL SESSION
10:45 AM – 10:48 AM	Arrival of Dignitaries, Felicitation and Lamp Lighting
10:48 AM – 10:52 AM	Welcome Address <i>Dr Ajay Mathur, Director General, TERI</i>
10:52 AM – 10:59 AM	Relevance of the Conference



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	<i>Prof Peter Hodgson, Vice President, Industry Engagement, Innovation & Commercialisation</i>
11:00 AM – 11:05 AM	Special Address <i>Dr Suchita Ninawe, Adviser, DBT</i>
11:06 AM – 11:19 AM	Special Address <i>Dr A Neerja*, Joint Secretary, Integrated Nutrient Management, Ministry of Agriculture</i>
11:20 AM – 11:35 AM	Inaugural Address <i>Shri Om Prakash Dhankar*, Minister of Agriculture, Govt. of Haryana</i>
11:36 AM – 11:40 AM	Launching of Proceedings of NANOFORAGRI 2018 and Felicitation of Dignitaries
11:40 AM – 11:45 AM	Vote of Thanks <i>Dr Alok Adholeya, Programme Director, Sustainable Agriculture, TERI; Director TERI Deakin Nanobiotechnology Centre (TDNBC), Conference President</i>

11:45 AM – 12:15 PM	HIGH TEA
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12:15 PM – 02:00 PM	Session II – Integrated pest management using nanomaterials
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Chairperson: Dr P K Patanjali, IPFT, Gurugram



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Rapporteur : Dr. Alka Pandey, TDNBC

Traditional strategies like integrated pest management used in agriculture are insufficient, and application of routine chemical pesticides have adverse effects on soil microflora and human beings apart from declining soil fertility. Nanotechnology can provide green and efficient alternatives for the management of insect pests in agriculture through the formulations of novel pesticides and insecticides, bio-conjugated nanoparticles (encapsulation) for slow release of pesticides, nanoparticle-mediated DNA transfer in plants for the development of insect pest-resistant varieties which would be useful in precision farming.

12:15 PM – 12:35 PM	Role of nano-biopesticide in crop protection; <i>Dr Appa Rao Podile, University of Hyderabad, Hyderabad</i>
12:35 PM – 12:50 PM	Nanoparticles as next generation carrier vehicles for the sustainable and efficient delivery of agrochemicals; <i>Prof David Cahill, Deakin University, Geelong, Australia</i>
12:50 PM – 01:05 PM	Plant diagnostics: opportunities and challenges; <i>Dr Gopaljee Jha, NIPGR, New Delhi</i>
01:05 PM – 01:20 PM	Nanopesticides: A possible solution for an integrated pest management; <i>Dr N Chandrasekharan, VIT University, Chennai</i>
01:20 PM – 01:35 PM	Influence of Nanopesticides on the biochemistry of phytopathogens; <i>Dr Robin Gogoi, IARI, New Delhi</i>
01:35 PM – 01:45 PM	Polymeric nanofungicides for management of fungal diseases in crops



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	<i>Dr Pawan Kaur, TDNBC, Gurguram</i>
01:45 PM – 02:10 PM Panel Discussion	Integrated pest management using nanomaterials Moderator: Dr. PK Patanjali, IPFT Gurugram Panelist:s <i>Speakers from the Session</i> Discussants: Dr Sapna Grewal, Dr PK Patanjali, Dr PK Agarwal, Dr Tinku Basu, Dr Satish Rai

02:10 PM – 03:00 PM	LUNCH
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03:00 PM – 03:20 PM Special Talk	Environmental fate of nano-enabled agrochemicals <i>Dr Melanie Kah, CSIRO Land/Water, Adelaide, Australia (via Video/SKYPE)</i>
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03:00 PM – 04:30 PM	Session III : Nanoimaging for Diagnosis and Detection
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A wide range of nanoscale imaging tools are being used in current research which includes sophisticated microscopic methods such as scanning probe microscopy, electron microscopy, high resolution optical microscopy as well as different types of spectroscopy. Advances in nanoscale materials such as carbon nanomaterials and nano formulations have led to advances in the techniques required to examine and manipulate them. This session will focus on how such advanced strategies allow greater understanding and applications of nanomaterials, making nanoscale imaging a crucial part of biotechnological interventions.



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<p>Chairperson: <i>Prof R K Sharma, DU</i></p> <p>Rapporteur : <i>Mr Chandrakant Tripathi, TDNBC</i></p>	
03:00 PM – 03:20 PM	<p>Smart probes for non-invasive imaging; <i>Dr Anil K Mishra, DRDO, INMAS</i></p>
03:20 PM – 03:35 PM	<p>Microfluidic and analytical technology application towards agriculture, veterinary and biotechnology problems; <i>Dr Xavier Conlan, Deakin University, Australia</i></p>
03:35 PM – 03:50 PM	<p>High Resolution Subcellular Imaging to Understand Biological Mechanisms; <i>Dr. Sivaram V S Mylavarapu, RCB, Gurugram</i></p>
03:50 PM – 04:05 PM	<p>Tracing the ¹⁵N stable isotope with metabolomics to study nitrogen metabolism; <i>Dr Damien Callahan, Deakin University, Geelong, Australia</i></p>
04:05 PM – 04:45PM Panel Discussion	<p>Nanoimaging for Diagnosis and Detection Moderator: Prof RK Sharma, DU Panelist:s <i>Speakers from the Session</i> Discussants: Prof Renu Deswal, Prof SV Eswaran, Dr Sharmishtha Sinha</p>

04:45 PM – 05:00 PM	TEA
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05:05 PM – 06:45 PM	NANOAGRI SCHOOL (in parallel at TD NBC, TERI Gram) <i>Lab Exposure Workshop for students</i> <i>(Co-ordinator : Dr Nupur Bahadur, TDNBC)</i>
05:10 PM – 06:45 PM	E-POSTER SESSION (TERI Retreat / TDNBC)

06:45 PM onwards	Networking and Banquet Dinner at Retreat Lawns (TERI Gram)
<u>Dinner Notes –</u> 0700 PM – 0720 PM:	Translation of ideas and policies to support nanotechnology interventions for agriculture – <i>Dr Dhananjay K Tiwary, DBT, GoI</i>
07:30 PM onwards	Cultural Evening followed by Dinner

Day 2	14th December 2018
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09:00 AM – 10:45 AM	Session IV – Bionanocatalysis Chairperson: Prof. S V Easwaran, DU Rapporteur : Dr. Sapna Johnson, TDNBC
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This session deals with the fascinating concept of nanocatalysis. Dominated by surfaces and interfaces, nanomaterials display surprising reactivity, physical, electronic, or mechanical properties. Biomimetic methods are being studied for reactivity, and the examination of the effects of the biointerfaces on the catalytic functionality have been initiated. Novel catalytic nanomaterials and conjugated materials are being prepared using biotemplates such as peptides and viral templates for a range of important,



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energy intensive catalytic processes.

09:05 AM – 09:20 AM	New Gold Nanostructures for Biosensor Applications; <i>Dr Wenrong Yang, Deakin University, Geelong, Australia</i>
09:20 AM – 09:35 AM	Nanoimmobilisation of enzymes aid sustainable production of high-value algal bioactives; <i>Dr Munish Puri, Flinders University, Adelaide, Australia</i>
09:35 AM – 09:50 AM	Bacterial Microcompartments as Paradigms for Hybrid Organic-Inorganic Catalysts; <i>Dr Sharmishtha Sinha, INST, Mohali</i>
09:50 AM – 10:05 AM	Catalytic amyloids and functional polymers as esterase mimick; <i>Dr Asish Pal, INST, Mohali</i>
10:05 AM – 10:20 AM	Nanostructured materials for point of care diagnosis; <i>Dr Pratima Solanki, JNU, New Delhi, India</i>
10:20 AM – 10:45 AM Panel Discussion	Bionanocatalysis Moderator: Prof S V Easwaran, DU Panelists: <i>Speakers from the Session</i> Discussants: Prof Amit Dinda, Dr. Anil Mishra, Prof RK Sharma, Dr Damien Callahan, Dr Anil Kumar Anal, Dr Xavier Conlan
10:45 AM – 11:15 AM	Tea



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11:15 AM – 01:00 PM	<p>Session V – Fate of Nanomaterials including transformation and toxicity, risk assessments</p>
<p>Chairperson: <i>Prof. Y K Gupta, President ISNM</i> Rapporteur: <i>Dr Pushplata Singh, TDNBC</i></p>	
<p>Unique properties of engineered nanomaterials are beneficial to a range of industries and hence have tremendous applications. However, uncertainties in assessing their potential health and environmental risks could hinder their safe use. Assessment of the risk posed by engineered nanomaterials is based on both the hazard that they present and the level of exposure. As the diversity of nanomaterials makes it difficult to generalise their risks, this session will highlight some of these issues.</p>	
11:15 AM – 11:35 AM	<p><i>Role of regulatory science in development of safe Nanotechnology based product for agriculture :</i> <i>Dr Amit K Dinda, AIIMS, New Delhi</i></p>
11:35 AM – 11:50 PM	<p><i>Understanding implications of nanoparticles percolation in soil :</i> <i>Dr Arun Kumar, IITD, New Delhi</i></p>
11:50 PM – 12:05 PM	<p><i>Trouble relaxing? Polyacrylic acid coated nanoparticles inhibit blood vessel relaxation in cane toad (<i>Rhinella marina</i>) iliac artery;</i></p>



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	<i>Dr Aaron Schulz, Deakin University, Geelong, Australia</i>
12:05 PM – 12:20 PM	<i>Understanding The Fate And Transport Of Nanopesticides In The Riverine Environment;</i> <i>Dr Gopala Krishna Darbha, IISER Kolkata</i>
12:20 PM – 01:00 PM Panel Discussion	Fate of Nanomaterials including transformation and toxicity, risk assessments Moderator: <i>Prof Y K Gupta, President ISNM</i> Panelists: <i>Speakers from the session</i> Discussants: Dr Asish Pal, Dr Pratima Solanki, Dr Madhusudan Bhat, Dr Wenrong Yang

01:00 PM – 01:45 PM	Lunch
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01:45 PM – 02:45 PM	Session VI – Nanotechnology Ideas from Young Minds (Youngster’s Forum)
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This session aims at bringing centre stage young researchers and their research projects. It will provide an interactive platform for discussion with established research professionals. This will help in growth of the Young Researcher’s scientific temperament and develop an outlook towards solving global challenges in agriculture with emerging and promising technologies.

Chairperson: *Dr Luis Afonso, Deakin University, Australia*
Rapporteur: *Dr. Doyeli Sanyal, TDNBC*



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01:45 PM – 01:52 PM	<u>Ms. Shraddha Shahane, IIT Delhi:</u> <i>Compiling information for understanding water treatment requirements during use of nanopesticides in agriculture sector</i>
01:53 PM – 02:00 PM	<u>Mr Ovais Manzoor, JMI, New Delhi :</u> <i>Live cell detection and measurement of vitamin b1 levels through a fret based nanosensor</i>
02:01 PM – 02:08 PM	<u>Mr Devendra Sillu, TIET, Patala :</u> <i>Immobilization of Glucose Isomerase over Magnetic Nanotubes with Improved Stability and Biocatalytic activity</i>
02:09 PM – 02:16 PM	<u>Mr Satya Prakash, DU, New Delhi :</u> <i>Analysis of Brassica juncea leaf protein corona formed on the surface of gold nanoparticles in vitro</i>
02:17 PM – 02:24 PM	<u>Ms Shalini Nagabooshanam, AINt, Noida :</u> <i>Bio-conjugated polyaniline decorated MWCNT nano-composite for sensitive detection of organophosphate pesticides in food chain</i>
02:25 PM – 02:32 PM	<u>Ms CC Sheeja, CU, Kerala :</u> <i>An evaluation of the biochemical effects of MoS2 nanoparticles on the Asian weaver ant, Oecophylla smaragdina</i>
02:33 PM – 02:40 PM	<u>Mr Pramod K. Gupta, JNU, New Delhi :</u> <i>Hybrid nanocomposites based electrochemical immunosensors for effective detection of food toxin</i>



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03:00 PM – 05:00 PM Session VII – Moving Forward for Commercialization of Nano Agri-Inputs : Stakeholder’s Perspective

This brain-storming session focuses on the perspectives of policy makers, innovators and end-users. It will highlight challenges in commercialization and policy facilitation, the vision of regulators in seeking key national/global interventions, the views of industries relating to challenges and opportunities in commercialization and adopting new technology solutions. This will further help the research fraternity to facilitate mechanisms for farmers and solve challenges by them. Discussions would be aimed at achieving effective end-use applications of the technologies and innovations at the end-user’s level.

Chairperson: *Dr Alok Adholeya, TDNBC*

Rapporteur: *Dr Ankita Bedi, TDNBC*

PANELISTS	<i>Dr A Neerja * , Joint Secretary, Integrated Nutrient Management, Ministry of Agriculture</i>
	<i>Mr. Birendra Bahadur Singh, Vice President –SCM & Corp Affairs IRC Agrochemicals Private Limited</i>
	<i>Dr. Manish Patel, Executive Director Incotec India Pvt. Ltd.</i>
	<i>Mr. Sarah Abhiranjan * , CEO, Indogulf</i>
	<i>Mr. Mahesh G. Shetty, MD, Multiplex</i>
	<i>Dr Harish Chandra, Joint Director, Entomology, Directorate Of</i>



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	<i>Plant Protection, Quarantine & Storage</i>
	<i>Dr J C Rajput, Director, Nirmal Seeds</i>
Discussion	Moderator: Dr Alok Adholeya, TDNBC Discussants: Panelists of the session

05:00 PM – 05:15 PM	VALEDICTORY SESSION
	Summary
	Presentation of Awards for Best Oral and Poster presentation
	Vote of Thanks

05:15 PM – 05:45 PM	High Tea
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* to be confirmed