



कृषि एवं किसान कल्याण मंत्रालय (कृषि अनुसंधान एवं शिक्षा विभाग), भारत सरकार

भाकृअनुप - केन्द्रीय कपास प्रौद्योगिकी अनुसंधान संस्थान

(भारतीय कृषि अनुसंधान परिषद) पोस्ट बैग नं.16640, एडनवाला रोड, माटुंगा, मुंबई- 400 019

Ministry of Agriculture and Farmers Welfare (Department of Agricultural Research and Education), GOVERNMENT OF INDIA ICAR - CENTRAL INSTITUTE FOR RESEARCH ON COTTON TECHNOLOGY

डा.पी. जी. पाटील <sub>पम्.टेक.,पी.</sub>एच्.डी., एफ्.टी. ए. निदेशक

Dr. P. G. Patil M. Tech., Ph.D., F.T.A. Director



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(Indian Council of Agricultural Research)

То

Dear Sir / Madam,

Greetings from ICAR-CIRCOT, Mumbai.



The ICAR-Central Institute for Research on Cotton Technology (ICAR-CIRCOT), one of the pramier constituent institutes of the Indian Council of Agricultural Research (ICAR), was established in the year 1924. The Institute is conducting research and development in all aspects of post-harvest technology of cotton and value addition to cotton by-produce. The Institute has been conducting skill development programmes to propagate, encourage and guide entrepreneurs to successfully adopt and market commercially viable technologies and to equip people with best practices in cotton ginning, quality evaluation of cotton fibres and value addition to by-products.

ICAR-CIRCOT has done pioneering work in the field of nanotechnology and has developed a decade of experience and expertise in synthesis & characterization of nanomaterials and its application in textile finishing, development of nanocomposites, agriculture, filtration, high strength paper etc. In 2015, ICAR-CIRCOT has established India's First Pilot Plant and inaugurated at the hands of *Padma Vibhushan Dr. R. A. Mashelkar*. With this background, this training module on 'Advances in applications of Nanotechnology', 10<sup>th</sup> in the series, is designed to impart basic and advanced knowledge of nanotechnology and its applications to students, academicians, industrialists and budding entrepreneurs.

In this context, it is my pleasure to invite nominations from your esteemed organization for participation in the said training programme. The brochure is enclosed herewith for your kind information and complete details are also available at <u>www.circot.res.in</u>

Thanking you, Yours sincerely, Contractor for P. G. Patil Encl.: Nanotechnology Training brochure. र कदम. हर डमर किसानों का हमसप संचना का

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### How to Apply

The interested participants may send their application in the prescribed format which is available on the website www.circot.res.in. The fee in the form of DD drawn/ at par Cheque in favour of "Director, CIRCOT" payable at Mumbai, may be sent to the below mentioned address so as to reach us on or before September 7<sup>th</sup>, 2017. The bank account detail for NEFT transfer is given below;

Account Name	Director, ICAR-CIRCOT
Bank Name	State Bank of India, Commercial Branch, Dadar East, Mumbai – 400014
Account No.	10001710244
NEFT IFSC	SBIN0004114

Near Five Gardens bus stop

: Five Gardens, Matunga

: 10 km

: 12 km

: Dadar (1.7km)

# How to Reach CIRCOT

From Airport (Domestic) From Airport (International) Nearest Railway Station Nearby Bus Stop

Landmark

#### Organizers

Course Director Course Coordinators Dr. P. G. Patil, Director, ICAR-CIRCOT
Dr. N. Vigneshwaran, Sr. Scientist, CBPD
Er. A. K. Bharimalla, Sr. Scientist, Head I/c, TTD Dr. Virendra Prasad, Sr. Scientist, CBPD
Dr. C. Sundaramoorthy, Sr. Scientist, TTD Mr. A. Arputharaj, Scientist, CBPD

: Kapol Nivas, Dr. Ambedkar Rd, Matunga East,

## Address for Correspondence

#### **Er. Ashok Kumar Bharimalla** Head I/C ,TTD, ICAR-CIRCOT, Adenwala Road, Matunga, Mumbai-400019 Website : www.circot.res.in Email : training.circot@icar.gov.in, nvw75@yahoo.com Mobile : +91 9702878249. Telefax : 022-24143718 (Direct) 24127273/76 Ext-467 Fax : 24130835 / 24157239 $\mathbf{M}$ OF BARA







#### **TRAINING ON**



# ADVANCES IN APPLICATIONS OF NANOTECHNOLOGY



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### Introduction

The ICAR-Central Institute for Research on Cotton Technology (ICAR-CIRCOT), one of the premier constituent institutes of the Indian Council of Agricultural Research (ICAR), was established in the year 1924. The Institute is conducting research and development on all aspects of post-harvest technology of cotton and value addition to cotton by-produce with following mandate:

- Basic and strategic research on processing cotton and its ago-residues, • development of value added products and quality assessment
- ٠ Skill development and business incubation services and function as referral laboratory for cotton fibres.

The Institute has been conducting skill development programmes to propagate, encourage and guide entrepreneurs to successfully adopt and market commercially viable technologies and to equip people with best practices in cotton ginning, guality evaluation of cotton fibres and value addition to by-products.

### About the Training Programme

Nanotechnology deals with the manipulation of atoms, molecules, or molecular clusters to create functional materials and devices with enhanced & desirable properties (The first use of the concept of 'nanotechnology' was in "There's Plenty of Room at the Bottom", a talk given by physicist Richard Feynman). Nanotechnology, no longer remain a theoretical science rather it has gained the status of applied science being used in multidisciplinary field. Agriculture and Food Production are no exception to it. This has realized the potential of nanotechnology in each stage starting from crop production to consumption. In India, Department of Science and Technology (DST) has initiated the Nano-Mission to foster the research activities in this field. Indian Council of Agricultural Research (ICAR) in collaboration with state agricultural universities has initiated Consortium Research Project (CRP) on Nanotechnology to boost the research in the field of nanotechnology and its application in agriculture. ICAR-CIRCOT, has done pioneering work in the field of nanotechnology and has developed a decade of experience and expertise in synthesis & characterization of nanomaterials and its application in textile finishing development of nanocomposites etc. In 2015, ICAR-CIRCOT has established India's First Pilot Plant. With this background, advanced trainings are being arranged to share the knowledge with diverse stakeholders. This training module on 'Advances in applications of Nanotechnology' is 10<sup>th</sup> in the series, designed to impart basic and advanced knowledge of nanotechnology and its applications.

#### **Objectives**

- To acquaint participants with the Recent Advances in Nanotechnology
- To impart hands-on training on synthesis & characterization of nanomaterials
- To demonstrate the application of nanomaterials in textiles, composites, filtration, sensors and agriculture & allied sectors

### **Course Contents**

- Basics & Advances in Nanotechnology
- Synthesis of Nanomaterials (Methods: Physical, Chemical, Mechanical & Biological)
- Characterization of Nanomaterials .
- Application of Nanomaterials in Textiles
- Application of Nanomaterials in Composites
- Application of Nanomaterials in Agriculture
- Life cycle analysis of nanomaterials
- Nanotoxicology
- Business Incubation opportunities in Nanotechnology

#### **Facilities Available**

- High pressure homogenizer, Ball Mill
- Nanoparticle size analyzer (DLS)
- Atomic Force Microscope (AFM), Electrospinning
- X-Ray Diffraction (XRD), BET analyzer
- Scanning Electron Microscope (SEM)
- Fast protein liquid chromatograph
- Textile finishing & Characterization
- Composite making & Characterization



Atomic Force Microscope

#### **Date and Venue**

Septemer 11-15, 2017 at ICAR- Central Institute for Research on Cotton Technology (CIRCOT), Adenwala Road, Matunga (East), Near Five Gardens, Mumbai 400019.

#### Accommodation

Guest house accommodation at ICAR-CIRCOT is limited and shall be provided at standard rate on first-come-first-serve basis in sharing basis (A/c) accommodation.

#### Fees

The programme fee is Rs. 25,000 + service tax (as applicable) per person. The charges include course fee, course material, breakfast and working lunch. The fee does not include travel, lodging and conveyance and other personal expense. There is 50% concession for students, academicians and participants from NARS.



Membrane reactor for Enzymatic Preparation of Nanocellulose

Starch Nanocellulose composite

