

## Training on

### Micro Encapsulation Methods for Food and Biotechnological Applications

1. **Training Site:** Agricultural Structures and Environmental Control Division, Central Institute of Post harvest Engineering and Technology (CIPHET), PO- PAU, Ludhiana
2. **Course Director:** Dr. K. Narsaiah, Senior Scientist, AS& EC Division, CIPHET, PO: PAU, Ludhiana
3. **Course Duration:** Three days
4. **Tentative Dates:** 14-02-2012 to 16-02-2012
5. **Course Fee:** Rs. 6,000/- per trainee  
Concessional fee for students: Rs.4,000/- per trainee  
(bonafide certificate from the institute is required)  
The fee **does not include lodging and boarding charges.**
6. **Maximum number of seats available:** 15 (Tentative distribution: 10 working participants + 5 Student participants)
7. **Eligibility:** Under graduate degree in subject areas of Agricultural/Dairy/Chemical Process Engineering / Food Science and Technology/Microbiology/Dairy Technology / Biochemistry/Biotechnology and allied sciences.  
  
Working in the concerned subject under Agricultural University/ICAR Institutes /Industries and anyone interested in the field
8. **Selection:** Selection will be on first comes, first served basis.
9. **The training**

With the growing urbanization and increasing quality consciousness the market for processed foods and functional foods is expected to grow more rapidly. Microencapsulation paves way for development innovative functional foods. Microencapsulation is a process in which tiny particles or droplets are surrounded by a coating to give small capsules many useful properties. A simple and cost effective microencapsulator is designed and developed at CIPHET. This program aims at providing training oriented towards commercial level application of microencapsulation methods which will help in monitoring quality, grading for quality based pricing and quality assurance with following course contents.

10. **Course Content** (highlights of the course):
  - i. Methods of microencapsulation such as twin fluid nozzle encapsulation, membrane emulsification, sonicator, high

- ii. Probiotics and prebiotics in food
- iii. Probiotics in aqua and poultry feed
- iv. Immobilization of enzymes
- v. Immobilization of enzymes and microbes by use of membranes
- vi. Immobilization and controlled release of antimicrobials
- vii. Immobilization of microbes for fermentation
- viii. Production of microcapsules using syringe, paint spray gun, particle size measurement
- ix. Hands on training of optimization of microencapsulation using microencapsulator developed and comparison with other methods
- x. Visits to nearby laboratories/food factories for on the site experiences.

### **Course Director**

**i) Name:** Dr. K. Narsaiah

**Designation:** Senior Scientist (AS&PE), AS&EC Division

**Qualification:** Ph.D. in proposed field of training

**Experience:** More than 12 years, has handled about four projects as Principal Investigator and is pioneer in designing equipment for microencapsulation in India.

**Publications:** About 55 research papers/articles/book/book chapters in relevant field

### **About CIPHET**

**The Central Institute of Post-Harvest Engineering and Technology (CIPHET)** was established on 29 December 1989 at the PAU Campus, Ludhiana, Punjab, India as a nodal institute to undertake lead researches in the area of the post-harvest engineering and technology appropriate to agricultural production catchment and agro-industries. The institute's second campus was established on 19 March 1993 at Abohar, Punjab, India which is primarily responsible for conducting research and development activities on fruits and vegetables, and commercial horticultural crops. CIPHET is also headquarters for two All India Coordinated Research Projects (AICRPs) viz. AICRP on Post-Harvest Technology (PHT) at 38 Centres and AICRP on Applications of Plastics in Agriculture (APA) at 11 Centre's.

CIPHET envisions higher profitability of agricultural production systems ensuring better income to farmers and increased employment opportunities in rural sector through efficient post-harvest engineering and technological interventions for loss reduction and value addition to agricultural produce and byproducts resulting in high quality and safe food and feed at competitive prices for domestic and export markets.

### **CLIMATE & THE CITY**

Ludhiana, popularly known as Manchester of India is on the bank of river Satluj and is centrally located on the map of Punjab. Geographically, it lies between north

latitude 30°-34' and 30°-01' and east longitude 75°-18' and 76°-20'. It covers an area of 3857 km<sup>2</sup>. Being in the centre of Punjab and situated on Grand Trunk Road and the main railway line, it has developed into a main industrial and commercial hub of the state. Ludhiana is famous for its hosiery and textiles, bicycle and sewing machine industry. Punjab being the granary of India, and Ludhiana an industrial city, many food grain stocks and its processing units are located around it.

The winter season starts from middle of November to the early part of March, when it becomes very cold during the night. December & January are the coldest month. If you can stand neither extreme heat nor cold, the best time to visit Ludhiana is from February to mid April. Starting from February to the mid of April, the weather in Ludhiana remains quite pleasant and enjoyable. This is the best time of the year for the people to visit Ludhiana who fails to tolerate any sort of extremities of climatic conditions. Average Temperature will be 21C (High) and 8C (Low) with Precipitation of about 38mm. Some warm clothes are required.

**For admission kindly contact:**

1. Dr. R. K. Gupta  
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For further details, updates on training and other activities of CIPHET, keep visiting [www.ciphet.in](http://www.ciphet.in)

## Application form

### Training on “Micro Encapsulation Methods for Food and Biotechnological Applications”. 14<sup>th</sup> to 16<sup>th</sup> February, 2012.

1. Full name (in block letters) :
2. Designation :
3. Present employer/University(for student) :
4. Mailing address (including e-mail id) :
5. Date of birth :
6. Sex :
7. Teaching/research/professional experience :  
(Mention posts held during last 5 years and  
no of publications) :
8. Mention if you have participated in any  
research seminar/summer or winter school  
/short course etc. during the previous years  
under ICAR/other organization :
9. Academic record (Graduation and above) :

Examination passed	Subjects main/subsidiary	Year of passing	Class, ranks, distinctions etc.	University/Institute

10. Subject matter areas of present work :

Date:

Place:

**Signature of Applicant**

It is certified that information furnished by the applicant verified from office record and was found correct.

Date:

Signature and designation of

Sponsoring Authority with Seal

- Advised to carry some warm cloths considering winter season during training
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