

WORKSHOP ON 'ADSORPTION FOR CO₂ CAPTURE, GREEN REFRIGERATION AND ENERGY STORAGE'

BACKGROUND

The ongoing energy crisis and environmental issues are pretty alarming. They are mainly due to the substantial use of fossil fuels, significant emissions of greenhouse gases, and enhanced use of artificial refrigerants. So, the current research requirement is to promote carbon-free fuel like H₂, capture anthropogenic CO₂ emissions, and use natural refrigerants like CO₂, Methanol, etc., for R&AC applications. In this regard, adsorption can be a promising technology for energy storage, CO₂ capture and green refrigeration. Therefore, academicians must train students and working professionals to understand the basic concepts of adsorption-based energy storage and CO₂ capture and use this CO₂ as a refrigerant in compression and adsorption-based chillers and heat pumps. Moreover, students must know the modelling of these adsorption systems and the challenges in developing the high-pressure adsorption unit. Keeping the capture of CO₂ and its utilization in mind, engineers must know the advantages of supercritical CO₂ as a working fluid in solar thermal applications and pumpless circulatory systems.

WHO SHOULD ATTEND

Participation in the workshop is open to Post Doctoral Fellows, Research Scholars/PG/UG students, Faculties, Researchers from research laboratory, Industrial personnel/Engineers/any other interested personnel. The successful participants will be given a participation certificate. The applicants will be provided with a secured meeting code of the web platform one day before the commencement of the course.

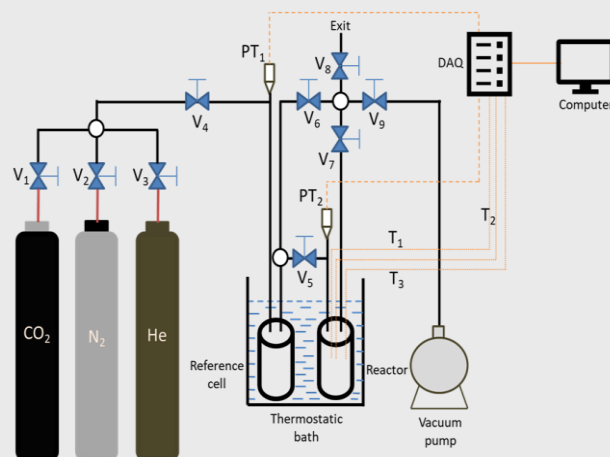
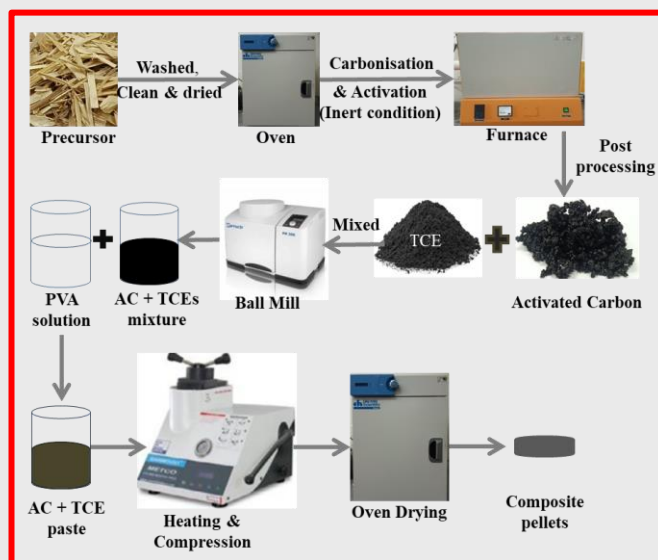
OBJECTIVE

To provide:

- A basic knowledge of various technologies for CO₂ capture and its utilization
- An exposure to adsorption as a promising technology for green refrigeration, CO₂ capture and H₂ storage

COURSE CONTENTS

- Basics of adsorption and its application in the fields of CO₂ capture, energy storage and green refrigeration followed by its mathematical modelling
- R744 Heat Pumps/Chiller unit and its applicability
- Application of R744 in solar thermal systems and NCL
- Heat and mass transfer modelling of adsorption system suitable for energy storage & CO₂ capture using COMSOL Multiphysics.
- Demonstration of experimental facility to develop activated carbon and characterization of its adsorption properties (isotherms and kinetics)



METHODOLOGY

The experienced faculty members of the Department of Mechanical Engineering, IIT(ISM), Dhanbad, IIT Patna, and Post-doctorate researcher at NTNU, Norway, will be delivering lecture on the proposed topics. The step-by-step modelling of adsorption systems for energy storage and CO₂ capture application using COMSOL Multiphysics will be demonstrated.

DURATION

2 days (13th and 14th of April 2024), Hybrid mode

COURSE COORDINATOR AND CONTACT ADDRESS

All nominations should be addressed to:

Dr. Satyabrata Sahoo

Assistant Professor

Dept. of Mechanical Engineering

IIT(ISM) Dhanbad

Jharkhand- 826004

Mob: +91 8280251192

Email: satya@iitism.ac.in

FOR FURTHER ASSISTANCE

Kindly reach out to us on: -

satya@iitism.ac.in

FOR PROGRAM RELATED QUERIES

Student coordinators

Anupam Chaudhary (+91 9118837338)

Aditya Singh (+91 9910859117)

- A basic knowledge on CO₂ as a working fluid in solar thermal systems, NCLs and refrigerants in modern-day heat pumps and chillers
- An exposure to modelling adsorption systems suitable for energy storage and CO₂ capture applications using COMSOL Multiphysics
- Exposure to the experimental facility for the development of adsorbent and determination of its adsorption characteristics

COURSE FEE

For Online mode:

Students: Rs. 600/-

Academic Faculties: Rs. 1000/-

Industry Professional: Rs. 2000/-

For Offline (Physical) mode

Students: Rs. 1500/-

Academic Faculties: Rs. 2000/-

Industry Professional: Rs. 3000/-

Inclusive of GST

Note

- No TA/DA will be provided to the participants
- Accommodation inside the campus may be provided on payment basis based on the availability.

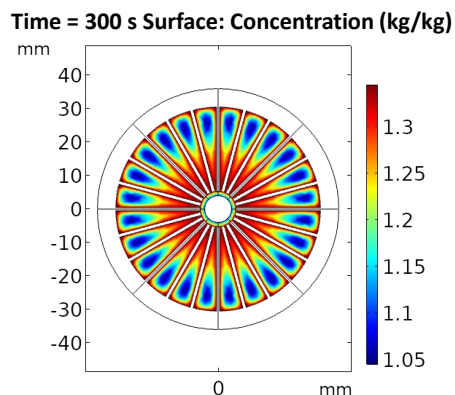
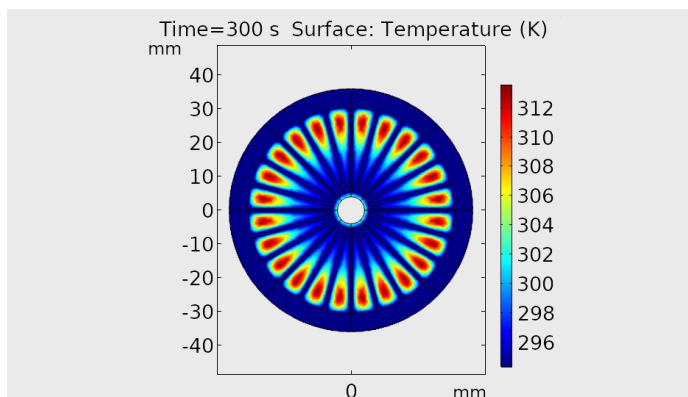
REGISTRATION FORM

Link: <https://forms.gle/K17fcktGzpnXNRmx8>

REGISTRATION

Please transfer the registration fee amount to the following bank account (details given below) and attach the payment receipt along with the Google form for registration.

Account Number : 0986101009746
Bank Name : Canara Bank
Branch : Saraidhela, Dhanbad
IFSC Code : CNRB0000986
MICR Code : 826015003
GSTIN : 20AAAAI0686DIZA
PAN : AAAI0686D
LEGAL NAME : INDIAN INSTITUTE OF TECHNOLOGY (INDIAN SCHOOL OF MINES)



OTHER DETAILS

IIT(ISM) Dhanbad is an institute of national importance situated at the heart of the country's coking coal belt, 260 kms from Kolkata, with a campus spread over 393 acres. The Mechanical Engineering Department of IIT(ISM) comprises design, manufacturing, and thermal engineering divisions. The department is known for research in a variety of fields that include Vibrations, Mechanical Design, Heat Transfer, Fluid Surface Interaction, Microfluidics, Aeroacoustics, Refrigeration & Air Conditioning, CO₂ Capture, Energy Storage, Robotics, CAD/CAM, Manufacturing, CFD, Aerodynamics, Turbulence modelling, Tribology, Water jet machining, Fluid Power etc.

INDIAN INSTITUTE OF TECHNOLOGY (INDIAN SCHOOL OF MINES)

DEPARTMENT OF MECHANICAL ENGINEERING

Announces

**TWO DAYS WORKSHOP
ON**

**ADSORPTION FOR CO₂ CAPTURE, GREEN
REFRIGERATION AND ENERGY STORAGE
(13TH & 14TH APRIL 2024)**



AT

**INDIAN INSTITUTE OF TECHNOLOGY
(INDIAN SCHOOL OF MINES) – DHANBAD**