



A ONEWEEK
Integrated FDP and fractal course (Hybrid Mode) on
“Looping Technologies for sustainable Power and Hydrogen
Production”

(12th February – 16th February, 2024)

Sponsored by:
Scheme for Promotion of
Academic and Research
Collaboration (SPARC), MHRD,
GOI

Organized by:
Department of Chemical
Engineering,
NIT Warangal,
India

Collaboration with:
Chalmers University of
Technology, Sweden
NC State University, USA

Preamble:

Scheme for Promotion of Academic and Research Collaboration (SPARC) is a Ministry of Human Resource Development (MHRD), Government of India initiative to improve research ecosystem in India. It supports national premier educational institutions by facilitating academic and research collaborations between Indian institutions and the best and selected institutions across the world's 28 nations. The collaborative educational networks will work on common issues of national or international relevance. It encourages international faculty, Indian institution visits and long-term stays to teach courses and conduct workshops for the benefit of Indian researchers and students in the selected research area. Also, it funds Indian students to visit and access the premier laboratories worldwide for training and experimentation. As an outcome patents, monographs, and world-class publications will be produced.

About NIT Warangal and Department:

The National Institute of Technology (NIT), Warangal is the first in the chain of 31 NITs, Institutes of National Importance established by Act of Parliament. Late Pandit Jawaharlal Nehru laid the foundation stone for this institute on October 10, 1959. The institute is well-known for its R&D, Industrial Consultancy, Continuing Education and Training programs. The institute celebrated Diamond Jubilee during 2018.

Warangal is known for its rich historical and cultural heritage. It is situated at a distance of 190 km from Hyderabad airport. Warangal is well connected by rail and road. National Institute of Technology, Warangal campus is 2 km away from Kazipet railway station and 12 km away from Warangal railway station.

The Department of Chemical Engineering was established in the year 1964 and celebrated Golden Jubilee in the year 2014. The Department offers B.Tech in Chemical Engineering, M.Tech in Chemical Engineering, Systems and Control Engineering and Ph.D programs. Currently, the Department has 20 faculty members with expertise in diverse research areas. The Department has good research facilities for both experimental and simulation-based research.

Overview of the Program: Global climate change is a major concern in most of the developed countries and also in developing countries such as India. Most of the current day energy needs are met by burning fossil fuels, which release CO₂ into the atmosphere. CO₂ is one of the greenhouse gases that leads to global warming; hence, it is vital to capture and store/utilize it. Chemical looping combustion (CLC) is an inherent CO₂ capture technology, in which a metal oxide is used to supply oxygen to the fuel to be burnt. The system consists of two reactors - fuel reactor, where oxidation of fuel occurs with the help of oxygen available in the metal oxides, and air reactor, where the reduced metal oxides are regenerated by the inflow of air. This process results in combustion of fuel and production of two gas streams - one being rich in carbon dioxide and the other rich in nitrogen. CLC is a very promising technology and holds the key to the future of low-cost CO₂ capture technologies. This concept has also been applied for hydrogen and chemical production with reduced CO₂ emissions. This workshop is aimed at giving fundamentals as well as current research trends in the area of chemical looping combustion, chemical looping hydrogen and chemical production and the oxygen carrier design and selection.

Program Contents:

The program is well organized in terms of the lectures covering the Principles and Thermodynamic aspects of CLC, Properties and preparation of oxygen carriers, Chemical looping gasification, Chemical looping hydrogen and chemical production, Design and operation of CLC units, and CLC integrated plant simulations. This program is organized in the form of fifteen hours of lectures and three tutorials/hands on sessions spread over five days. The participants will learn these topics through lectures, tutorials and assignments. A graded examination will be conducted on the last day of the program. Candidates will be issued satisfactory certificates on successful completion of the program.

Who can Participate?

- Faculty member/ research scientist/ industry professional working or interested in CO₂ Capture and Utilization (CCU).
- Professional working in thermal power plants.
- Post graduate student or research scholar interested / working in CCU technologies

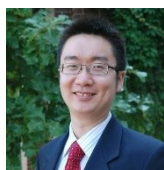
Resource Persons:



Prof. Anders Lyngfelt
Dept. of Space, Earth and Environment
Div. Energy Technology
Chalmers University of Technology
Gothenburg, Sweden.



Prof. Henrik Leion,
Energy and Materials, Chemistry and
Chemical Engineering
Head of Energy and Materials Unit,
Chalmers University of Technology,
Gothenburg, Sweden.



Prof. Fanxing Li,
Alcoa Professor & University Faculty
Scholar,
Department of Chemical and Biomolecular
Engineering,
NC State University, USA



Dr. V. Ramsagar,
Associate Professor,
Chemical Engineering Dept.,
NIT Warangal, Telangana State, India



Prof. P. V. Suresh
Chemical Engineering Dept.,
NIT Warangal, Telangana State, India

Registration:

Selection Criteria:

Selection will be done based on first-come-first-serve basis. Participants are requested to fill the online registration form using the following link: <https://forms.gle/SiqeYGCGiGYPwg4q6>. The registration confirmation will be notified within 24 hrs. Upon receiving the confirmation email from us, pay the registration fee and send the payment receipt by email to ramsagar@nitw.ac.in. The maximum number of participants will be 50 (Fifty). Additionally, 10 participants from industry are allowed to participate.

Important Dates:

Last date for fee Payment: 05th February 2024

Fee Particulars (Includes 18% GST)

Faculty members	Rs. 590 /-
Research Scholars/ PG Students	Rs. 354 /-
Industry Participants	Rs. 1180/-
Internal Faculty/PhD/PG Students	Rs. 354/-

For registration, please pay the requisite registration fee and send the receipt by email.

Registration fee may be remitted through On-line / NEFT to the following Bank Account.

Account Name: Convener - INCEEE-2023
Account No. : 41837136593
Bank : SBI (NITW)
IFSC : SBIN0020149

Program registration fee includes kit, material, lunch, dinner, tea/coffee and snacks. It does not include accommodation.

Limited accommodation is available for participants in the Visitors Block on twin sharing on payment basis of Rs.1000/- per participant per day. On prior request, they may be provided accommodation based on the availability.

Coordinators:

Dr. V. Ramsagar, Associate Professor, Chemical Engg. Dept.

Prof. P. V. Suresh, Chemical Engineering Dept.

For any enquiries please contact:
Mobile: 8332969406 / 0870 2462632