

ARTIFICIAL INTELLIGENCE in CHEMICAL ENGINEERING

13 December 2024
Paris - France

Artificial Intelligence and Machine Learning have had in the recent past a tremendous impact on chemical engineering. On the long run they can radically change the way in which we perform research on chemical processes, we design, scale-up and optimize chemical reactors and pieces of equipment and they can potentially introduce new paradigms on chemical process control and operation.

Many are the challenges ahead for our community that can be addressed by the EFCE and its Working Parties and Sections. These can a successful journey only if the European Chemical Engineering community, both academic and industrial, is fully engaged.

In this meeting we will bring together some visionary speakers to set out the potential and the challenges. There will be the opportunity to discuss the fundamentals of artificial intelligence, deep learning and machine learning, as well as their applications to process modelling, control and the building of digital twins.

Recognized scientists from industry and academia will share their vision in three areas:

- **Overview of AI for Process Engineering**
- **Generative AI and Transformation in Process Engineering**
- **AI applications in Chemical Engineering**

LISTEN
&
INTERACT

Listen to the invited speakers and interact in discussions related the artificial intelligence and chemical engineering

TAKING PART
IN THE ROUND-TABLE

Share your point of view

*What are the industrialists expectations on AI?
How could academia help develop in this direction?
What should be taught at academia?*

CONTACT
ORGANIZER

Martine.Poux@toulouse-inp.fr

EASY
ACCESS
LOCATION

Hôtel MERCURE Montparnasse
40 rue du Commandant Mouchotte
75014 PARIS - France
Metro 4, 6, 12, 13 - Stop : Montparnasse-Bienvenue

Registration fees: 160 €
Registration fees (SFGP members): 120 €
Lunch and breaks included

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Paris
13 December 2024

8:45 am • Welcome and Introduction

Giorgio Veronesi, EFCE President
François Nicol, SFGP President
Boelo Schuur, EFCE Scientific Vice-President

9:00 • Overview of artificial intelligence for process engineering

- ▶ Artificial intelligence & machine learning in the process industry: where we are and where we are going
- ▶ Different ways in which artificial intelligence can be used within the organization to optimize industrial processes
- ▶ Artificial intelligence tools for process modeling and simulation: a critical overview on potentialities and limitations so far

Questions and break

Mattia Vallerio

Syensqo, Milano, Italy

Mathieu Cura

Optimistik, Chambéry, France

Alessandro di Pretoro

*ENSIACET/Laboratoire Génie de
Chimique, Toulouse, France*

11:15 • Generative artificial intelligence and transformation in process engineering

- ▶ Transforming process engineering with generative artificial intelligence
- ▶ Process flowsheet generation by artificial intelligence: motivation & current state

Questions and lunch

Artur Schweidtmann

Delft Univ. Tech, The Netherlands

Thibaut Neveux

EDF Lab, Chatou, France

13:30 • Artificial intelligence applications in chemical engineering

- ▶ Hybrid modelling and digital twin in clinker production
- ▶ Using machine learning for online 3D characterization of crystals in suspension
- ▶ Predicting solubility limits with machine learning
- ▶ Deep-learning methods for the image-based assessment of the physical stability of formulated liquids of industrial interest

Questions

David Robert

Technord – Belgium

Anna Jaeggi

ETH Zurich, Switzerland

Florence Vermeire

KU Leuven, Belgium

Massimiliano Villone

Maurizio De Micco

University of Naples

Federico II, Italy

15:45 • Round table

What are the industrialists expectations on artificial intelligence and how could academia help develop in this direction?
What should be taught at academia?

Moderator

Boelo Schuur

Univ. Twente, The Netherlands

17:00 • Closure

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