

# CHEMICAL ENGINEERING as APPLIED to MEDICINE

5 December 2022  
Paris - France

## LISTEN & INTERACT

Listen to the invited speakers and interact in discussions related to the contribution of chemical engineering in medicine

Attend the EFCE Forum on New Technologies and learn how Chemical Engineers are bringing their skill set to physiology and medicine. Experts in the field will show us some current approaches and toolkits. They are known to Chemical Engineers but mostly unknown to medical professionals. Presenters will show how modelling and systems engineering techniques are being used to tackle the complexity of physiology, using transport and reaction engineering to model medical instruments such as dialysis, designing artificial organs, developing devices controlling drug and nutrient feeds, and exploring the effects of particulates on human health and more. Chemical Engineers have been developing engineering design and analysis approaches to modelling biological systems across multiple levels - cell signaling networks, gene, protein and metabolic networks, the movement of molecules and fluids in physiological flows through to exploring whole physiological systems.

Don't miss this opportunity and come to Paris in December!!!

## REGISTER on line

Registration fees: 180 €  
Registration fees (SFGP members): 150 €  
Lunch and breaks included  
[Click here to register](#)

## CONTACT ORGANIZER

Martine.Poux@toulouse-inp.fr

## EASY ACCESS LOCATION

FIAP – Jean Monet  
30 rue Cabanis  
75014 Paris - France  
RER B - stop: Denfert Rochereau  
Metro 6 - stop: Glacière

# CHEMICAL ENGINEERING as APPLIED to MEDICINE

Paris  
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8:45 **Welcome**  
Giorgio Veronesi, EFCE President  
François Nicol, SFGP President

8:55 **Introduction**  
David Bogle, IChemE President, University College London - UK  
Tomasz R. Sosnowski, Warsaw University of Technology - Poland

## A - Physiology and chemical engineering - the obvious link

9:10 **A nature-inspired chemical engineering approach for innovation in biomedical and healthcare technology**  
Marc-Olivier Coppens, Dept of Chem. Eng. Centre for Nature-Inspired Eng., Univ. College London - UK

9:30 **Electric fields and electron transfers at the core of cell life**  
Alain Bergel, Lab Chem Eng, Univ Toulouse - France

9:50 **Different approaches to epidemic modeling - the Covid-19 case study**  
Davide Manca, Politecnico di Milano - Italy

10:10 **Discussion on Physiology and chemical engineering**

10:30 *Coffee break*

## B - Chemical Engineering in the specific challenges of medicine

11:00 **A new perspective in oncology: the tumor as a chemical reactor. Developing catalysts capable of working within the tumor microenvironment**  
Jesus Santamaria, University of Zaragoza - Spain

11:20 **Challenges in accurate aerosol inhalation dosimetry predictions: interplay of chemistry, physics and biology**  
Arkadiusz Kuczaj, PMI R&D, Philip Morris Products S.A., Switzerland/University of Twente - The Netherlands

11:40 **A chemical engineering approach to the wearable artificial kidney: molecular design and experimental development of membrane adsorbers for dialysate regeneration**  
Grazia de Angelis, Edinburgh Univ. - UK

12:00 **Supercritical fluid technology applied to sustainable drug processing and medical device development**  
Christelle Crampon, Yasmine Masmoudi, Aix-Marseille Univ - France

12:20 **Discussion on Chemical Engineering in the specific challenges of medicine**

12:45 *Lunch*

## C - Advancements of medical technologies and products via Chemical Engineering approach

14:15 **An optimized perfusion process paves the way for the industrial production of cultured red blood cells**  
Guillaume Rousseau, ERYPHARM, Paris - France

14:35 **From process systems engineering to systems pharmacology: how chemical engineering approaches are impacting drug development**  
Roberto Abbiati, Boehringer Ingelheim, Translational Medicine and Clinical Pharmacology - Germany

14:55 **Applications of systems pharmacology in model-informed drug development**  
Cesar Pichardo, Astra Zeneca - UK

15:15 **Inhaler development using ChemE approach**  
Tomasz R. Sosnowski, Warsaw Univ. Technology - Poland

15:35 **Discussion on Advancements of medical technologies and products via Chemical Engineering approach**

16:00 *Coffee break*

16:30 **New EFCE section on Chemical Engineering as applied to medicine: strategic targets, set-up...**  
David Bogle, University College London - UK  
Davide Manca, Politecnico di Milano - Italy  
Tomasz R. Sosnowski, Warsaw Univ. Technology - Poland

17:30 **Conclusion**

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or on [www.efce.info](http://www.efce.info)