

EFCE Spotlight Talks

14-22
May
2025

by the Working Parties
and Sections

10 webinars



EFCE

European Federation of Chemical Engineering

Welcome to the eighth spotlight talks series Spring Series 2025

This spring, a total of ten sessions of spotlight talks will be organized with involvement from eleven of the working parties and sections of the EFCE. These sessions offer a valuable opportunity to learn more about very specific topics, without having to travel. We consider these Spotlight Talks as a low-barrier opportunity to get involved or stay involved with EFCE activities.

The Spotlight Talk Sessions complement the in-person activities such as the ECCE-ECAB conference that will be held later this year from 8-10 September in Lisbon, Portugal, and other activities organized by our working parties and sections.

Each session is about two hours with usually three speakers, all specialists in their field, and you can attend for free! (registration is required, but no fee is charged).

Covering a wide range of working parties and sections, there will likely be one or more sessions with topics of your interest.

We hope that between the 14th and 22nd of May you enjoy some of this year's Spotlight Talk Sessions!

- | | |
|-----------------------|--|
| 14 May • 15:00 | Chemical engineering contributions to new materials, technologies and modeling methods with applications in diagnostics, pharmaceuticals and artificial organs |
| 15 May • 9:30 | The European sustainability framework and tools to deploy safe and sustainable by design principles (SSbD) |
| 15 May • 14:00 | High gravity (Higee) technologies for intensified reaction and separation processes |
| 16 May • 9:30 | Circularity for safe & sustainable value chains |
| 19 May • 9:30 | Powder technology for sustainable production of battery electrodes |
| 20 May • 9:30 | Liquid-liquid extraction, an essential technology in our energy and materials transition: from equilibrium measurements to process design |
| 21 May • 9:30 | Solving polymer reaction engineering challenges with modeling approaches |
| 21 May • 14:00 | Electrostatic charging of liquids: Fundamentals, risks and safety measures |
| 22 May • 11:30 | Crystallizing the future: from small (bio)-molecules to monoclonal antibodies |
| 22 May • 15:00 | Navigating diverse industry and research paths: an interactive roundtable with early career chemical engineers |

CEST

EFCE Spotlight Talks

Section on Chemical Engineering
as Applied to Medicine

14
May
2025

15:00-16:45
CEST



Chemical engineering contributions to new materials, technologies and modeling methods with applications in diagnostics, pharmaceuticals and artificial organs

The webinar will present selected activities within the EFCE section "Chemical Engineering as Applied to Medicine" established in 2022. Important topics related to the use of chemical/process engineering methodologies in the development of innovative concepts in therapeutic and pharmaceutical systems will be discussed. Some presentations will demonstrate the role of machine learning as a useful tool for quantitative analysis of selected problems relevant to medicine.

PROGRAM

- 15:00 **Welcome and introduction**
Tomasz Sosnowski, Chair of the Section Chemical Engineering as Applied to Medicine
Boelo Schuur, EFCE Scientific Vice-President
- 15:10 **Supercritical fluids and nanosomes: applications and perspectives in precision nanomedicine**
Lucia Baldino, University of Salerno – Italy
- 15:30 **Mixed matrix membranes, cellulose acetate/silica/metal organic frame work, for protein-bound uremic toxins removal by the artificial kidney**
Maria Norberta de Pinho, University of Lisbon - Portugal
- 15:50 **Big data and machine learning approaches to nutraceutical identification**
Davide Manca, Milan Polytechnic – Italy
- 16:10 **Machine learning-enhanced sensitivity analysis for complex pharmaceutical systems**
Daniele Pessina, Imperial College London - UK
- 16:30 **Concluding remarks**
Tomasz Sosnowski, Chair of the Section Chemical Engineering as Applied to Medicine

[REGISTRATION](#)

free of charge but mandatory

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EFCE Spotlight Talks

Section on Sustainability

15
May
2025

09:30-12:00
CEST



The European sustainability framework and tools to deploy safe and sustainable by design principles (SSbD)

The session explains the means to hedge and extend competitive advantages of the European industry that would ensure world leadership in Smart Systems research and production. Supported by the coordinated action IRISS, the coordinated session explains improvements of the European innovation system in the smart systems sector, new application fields and markets, and the intensification of cooperation in the smart systems value chain and the overcoming of fragmentation in the political landscape.

PROGRAM

- 09:30 **Welcome and introduction**
Antonis Kokkosis, Chair of the Section on Sustainability
Boelo Schuur, EFCE Scientific Vice-President
- 09:40 **The ecosystem for the implementation of the JRC-SSbD-framework including IRISS, NSC, InnoMatSyn**
Andreas Falk, BioNanoNet Forschungsgesellschaft mbH - Austria
- 10:10 **SSbD - CEFIC Guidelines**
Sophie Wilmet, CEFIC - Belgium
- 10:40 **Next generation chemical risk assessment (PARC)**
Spyros Karakitsios, Aristotle University of Thessaloniki - Greece
- 11:10 **Safe and Sustainable Innovation Approach**
Lya Soeteman-Hernandez, RIVM – The Netherlands
- 11:40 **Concluding remarks**
Antonis Kokkosis, Chair of the Section on Sustainability

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EFCE Spotlight Talks

Working parties on Process
Intensification and Chemical
Reaction Engineering

15
May
2025

14:00-16:15
CEST



High gravity (Higee) technologies for intensified reaction and separation processes

The chemical process industry continually seeks innovations to cut production costs, enhance product quality, and maintain a competitive edge. High Gravity (HiGee) technologies are among such innovations, which can offer significant advantage by producing centrifugal fields multi-fold gravity thereby intensifying micro-mixing and mass and energy transfer rates. This webinar brings together experts in two HiGee technologies - rotating packed beds and turboreactors- who will present operating and design aspects of them along with their potential to intensify reactive and separation processes.

PROGRAM

- 14:00 **Welcome and introduction**
Prof. Georgios Stefanidis, Chair of the Working Party on Process Intensification
Prof. Kevin Van Geem, Chair Working Party on Chemical Reaction Engineering
Giorgio Veronesi, EFCE President
- 14:10 **Process intensification for sustainable chemical industry based on high gravity technology**
Prof. Yong Luo, Beijing University of Chemical Technology (BUCT) - China
- 14:40 **Technological innovations in intensified CO₂ capture**
Prof. Jonathan Lee, University of Newcastle - UK
- 15:10 **Process and mechanical design correlation in rotating packed bed devices**
Dr. Michał Pawłowski, Prospin – Poland
- 15:40 **Electrified turboreactor technology – (re)shaping the chemical industry**
Prof. Kevin Van Geem and Mike Bonheure, University of Gent - Belgium
- 16:10 **Closing remarks**
Prof. Georgios Stefanidis, Chair of the Working Party on Process Intensification
Prof. Kevin Van Geem, Chair of the Working Party on Chemical Reaction Engineering

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EFCE Spotlight Talks

Section on Sustainability

16
May
2025

09:30-11:30
CEST



Circularity for safe & sustainable value chains

The session reviews important supply chains explaining gaps, opportunities and the scope to apply Safe and Sustainable by Design principles. The selected supply chains fall within the upmost priorities of the European Union's economy. The speakers summarize findings of SSbD applications within their R&I activities by means of specific case studies that explained the implementation of the SSbD methodology, apparent benefits and challenges for further research.

PROGRAM

- 09:30 **Welcome and introduction**
Antonis Kokossis, Chair of the Section on Sustainability
Boelo Schuur, EFCE Scientific Vice-President
- 09:40 **The operationalization of the plastics and packaging industry**
Catherine Colin, IPC, Centre Technique Industriel de la Plasturgie et des Composites - France
- 10:10 **Sustainable and competitive fragrances: learnings from the IFRA case study**
Aurelie Perrichet, The International Fragrance Association (IFRA) - Belgium
- 10:40 **Energy materials & value chains**
Anne-Chloe Devic, Safe-and-sustainable by design, SSbD consulting - Spain
- 11:10 **Concluding remarks**
Antonis Kokossis, Chair of the Section on Sustainability

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EFCE Spotlight Talks

Working Parties on Comminution and
Classification and
Mechanics of Particulate
Solids

19
May
2025

09:30-11:30
CEST



Powder technology for sustainable production of battery electrodes

Along the circular battery process chain, particle technology plays a very important role. For the production of lithium-ion battery electrodes, the active material particles have to be mixed, today particularly wet in an appropriate solvent together with a conductive agent and a binder to produce a well dispersed slurry. The electrode slurry is coated on a thin metal foil, is dried to a porous film and is densified (calendered) between two rollers to produce the electrodes. The resulting cell performance is determined by the material itself and very strongly by the electrode structure, which depends very much on the processing of the different particles (material-process-structure-performance relations), which will be highlighted within the spotlight talk. Today, the ecological footprint of cell production is supposed to be enhanced by dry coating including dry mixing and dry powder handling to avoid wet coating and, thus, expensive drying. The dry processing is even more valuable for the production of so-called solid state batteries with particulate electrolytes.

PROGRAM

- 09:30 **Welcome and introduction**
Arno Kwade, Chair of the Working Party on Comminution and Classification
Diego Barletta, Chair of the Working Party Mechanics of Particulate Solids
Giorgio Veronesi, EFCE President
- 09:40 **Powder Technology based Innovations of modern battery electrode production**
Arno Kwade, Institute for Particle Technology, TU Braunschweig - Germany
- 10:20 **Linking process, structure and performance for lithium ion battery electrodes**
Rachel Smith, School of Chemical and Biological Engineering, University of Sheffield - UK
- 10:50 **Key processing steps in dry battery electrode production - dry mixing and powder handling for film formation**
Hans Schneider, Zeppelin Systems GmbH, Friedrichshafen - Germany
- 11:20 **Concluding remarks**
Arno Kwade, Chair Working party on Comminution and Classification
Diego Barletta, Chair of the Working Party Mechanics of Particulate Solids

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EFCE Spotlight Talks

Working Party on
Fluid Separations

20
May
2025

09:30-12:00
CEST



Liquid-liquid extraction, an essential technology in our energy and materials transition: from equilibrium measurements to process design

The climate change as well as the political changes have led to a rethinking of current process routes. Liquid-liquid extraction (LLE) is thereby a cornerstone technology in the transition toward sustainable energy and materials. From chemical separations to resource recovery, LLE enables efficient purification and recycling processes across various industries. It plays a crucial role in critical material recovery, such as extracting lithium, cobalt, and nickel from spent batteries, supporting the circular economy. In the energy transition and green chemistry, LLE is used for rare earth element separation, essential for wind turbines and electric vehicles. It is also widely applied in petrochemical refining, pharmaceuticals, hydrometallurgy, and industrial wastewater treatment, offering energy-efficient and selective separations.

This webinar will provide a comprehensive overview, starting with solvent screening, essential for accelerating extraction process development. We will then highlight the role of solvent extraction in lithium-ion battery recycling, a crucial step in securing critical materials for the energy transition. Finally, we will examine industrial extraction applications and take a closer look towards the procedure of process development. By connecting fundamental principles with real-world applications, this session will offer valuable insights into how LLE drives innovation in modern process industries.

PROGRAM

- 09:30 **Welcome and introduction**
Prof. Mark Hlawitschka, Austrian Delegate of Working Party Fluid Separations,
Institute of Process Engineering, Johannes Kepler University Linz - Austria
Prof. Boelo Schuur, EFCE Scientific Vice-President
- 09:40 **Accelerating extraction process development - holistic solvent screening covering fluid dynamics**
Lukas Polte, Prof. Andreas Jupke, Fluid Process Eng., RWTH Aachen University - Germany
- 10:10 **The use of solvent extraction for the recycling of lithium-ion batteries**
Dr.-Ing. Alexander Keller, Johannes Kepler University Linz - Austria
- 10:40 **Conceptual approach for process development of liquid/liquid-extraction**
Daniel Borchardt, Raschig GmbH, Weißenburg - Germany
- 11:10 **Discussion - Future perspectives and final remarks**
Prof. Mark Hlawitschka, Austrian Delegate of Working Party Fluid Separations

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EFCE Spotlight Talks

Working Party on
Polymer Reaction Engineering

21
May
2025

9:30-12:00
CEST



Solving polymer reaction engineering (PRE) challenges with modeling approaches

With increasing computational power and more recently the advancement of machine learning techniques and artificial intelligence, modeling approaches have become increasingly important in the context of polymer reaction engineering. Modeling can help to unravel fundamental questions, optimize polymerization processes or design new products. It can even accelerate the realization of circularity for polymers. Within this Spotlight Talk Series an overview of these applications will be given from academic as well as industrial points of view.

PROGRAM

- 09:30 **Welcome and introduction**
Kristina Zentel, Secretary WP on Polymer Reaction Engineering, TU Darmstadt - Germany
Jarka Glassey, EFCE Executive Vice-President
- 09:40 **Machine learning models in the world of PRE**
Nicholas Ballard, POLYMAT - University of the Basque Country UPV/EHU - Spain
- 10:10 **Bridging the Scale – concepts for transferring from lab to large-scale application**
Markus Busch, TU Darmstadt - Germany
- 10:40 **Insights into radical formation and efficiency in emulsion polymerization from a modeling perspective**
Felix Warnecke, Wacker Chemie AG - Germany
- 11:10 **Consequences of heat transfer limitations on plastic waste pyrolysis reactor scale-up**
Sabriye Fredriksson, SABIC - Netherlands
- 11:40 **Panel discussion and final remarks**
Markus Busch, Chair WP on Polymer Reaction Engineering, TU Darmstadt - Germany
Kristina Zentel, Secretary WP on Polymer Reaction Engineering, TU Darmstadt - Germany

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EFCE Spotlight Talks

Working Party on
Static Electricity in Industry

21
May
2025

14:00-15:45
CEST



Electrostatic charging of liquids: Fundamentals, risks and safety measures

Electrostatic charging of liquids is a major concern in many industrial processes. It occurs in numerous situations, often going unnoticed until undesired effects arise. The electrostatic charging of liquids results from complex interactions between materials and is highly dependent on various physical variables such as temperature, flow rate, and more. In many cases, the process is not fully understood, which can lead to incorrect decisions.

The webinar on "Electrostatic Charging of Liquids" will be presented by two renowned experts in the field. We will first examine the fundamental physical phenomena of liquid charging before exploring the associated risks in industrial processes.

The first invited speaker, Prof. Thierry Paillat, will explain the underlying physical phenomena of electrostatic charging in liquids: what happens inside a duct or during container filling, how the double layer is formed, how to measure electrostatic charge, its distribution, and other fundamental aspects.

The second invited speaker, Dr. Jeremy Smallwood, will provide an overview of the implications of electrostatic charging in practical applications, incorporating real case studies, some standard recommendations, and insights from technical literature.

PROGRAM

- | | |
|-------|---|
| 14:00 | Welcome and introduction
Prof. Pedro Llovera, Chair of the WP on Static Electricity, Energy Technological Institute, Polytechnic University of Valencia - Spain
Giorgio Veronesi, EFCE President |
| 14:10 | Charging of liquids: fundamentals, materials properties and measurements
Prof. Thierry Paillat, University of Poitiers - France |
| 14:55 | Overview on risks and standards recommendations. Some examples and cases
Dr. Jeremy Smallwood. Electrostatic Solutions, UK |
| 15:35 | Concluding remarks
Prof. Pedro Llovera-Segovia, Chair of WP Static Electricity in Industry |

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EFCE Spotlight Talks

Working Party on
Crystallization

22
May
2025

11:30-13:30
CEST



Crystallizing the future: from small (bio)-molecules to monoclonal antibodies

Join leading experts from academia and industry as they unveil cutting-edge advancements in crystallization for pharmaceutical applications. From formulation strategies to crystal characterization and process development, this webinar will explore how small and large molecules, including peptides, crystallize in complex (bio)media—bridging fundamental science with real-world challenges.

Don't miss this deep dive into the future of pharmaceutical crystallization!

PROGRAM

- | | |
|-------|---|
| 11:30 | Welcome and introduction
Elena Simone, Polytechnico di Torino - Italy
Jarka Glassey, EFCE Executive Vice-President |
| 11:40 | Crystallization of complex pharmaceutical compounds: peptide crystallization
Jerry Heng, Dep. of Chemical Engineering, Imperial College London - UK |
| 12:10 | Protein crystallization in 4D: size, scale, methodology, and analysis
Joana Ferreira, Dep. Chemical Engineering, Massachusetts Institute of Technology - US |
| 12:40 | Pharmaceutical crystallization in multicomponent media
Fredrik Nordstrom, Material & Analytical Sciences, Boehringer-Ingelheim - US |
| 13:10 | Concluding remarks
Burak Eral, Delft University of Technology - The Netherlands |

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EFCE Spotlight Talks

Section on
Early Career Chemical Engineers

22
May
2025

15:00-17:00
CEST



Navigating diverse industry and research paths: an interactive roundtable with early career chemical engineers

Join us for an engaging roundtable discussion with four dynamic early career chemical engineers as they share their unique journeys through diverse industry and research paths. Gain valuable insights into the various opportunities and the challenges faced in pursuing different career directions. Engage with our expert panelists, ask questions, and learn from their experiences to empower your future in the field of chemical engineering.

Don't miss this chance to expand your knowledge, build your professional network, and take the next step toward a successful and fulfilling career!

PROGRAM

- 15:00 **Welcome and introduction**
Sofia Garcia Fracaro, Chair Section on Early Career Chemical Engineers, Merck - Germany
Jarka Glassey, EFCE Executive Vice-President
- 15:10 **From theoretical simulations to practical challenges: a journey of a chemical engineer**
Maria Sofia Palagonia, Covestro - Germany
- 15:25 **On the interface between industry and academia: a chemical engineering pathway**
Stavros-Alexandros Theofanidis, AristEng Sarl - Luxembourg
- 15:40 **From lab to leadership: a chemical engineer's journey through research, consulting and entrepreneurship**
Alexandra Antunes, Accenture - Portugal
- 15:55 **Walking the line between goals and exploration**
Eleonora Ricci, University of Edinburgh - UK
- 16:10 **Round Table**
Sofia Garcia Fracaro, Chair Section on Early Career Chemical Engineers, Merck - Germany
- 16:40 **Closure**
Sofia Garcia Fracaro, Chair Section on Early Career Chemical Engineers, Merck - Germany

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