

EFCE confers highest honours at World Congress

The European Federation of Chemical Engineering (EFCE) has awarded three of its highest honours during the World Congress of Chemical Engineering (WCCE): an Honorary Membership, the Dieter Behrens Medal, and a Lifetime Achievement Award.

The awards were made during the 10th World Congress of Chemical Engineering – WCCE10 in Barcelona, Spain on 2 October 2017.

EFCE Honorary Membership



The highest distinction of the Federation is an Honorary Membership. It is awarded only infrequently and to individuals who have made extraordinary contributions to the life and welfare of the EFCE over an extended period of time.

In 2017, the honour was conferred to **Professor**

Richard Darton of Keble College, University of Oxford, United Kingdom.



Richard Darton receiving his EFCE Honorary Membership from Rafiqul Gani, EFCE President

Darton was president of EFCE from 2010-2013, and also spent many years as member and chair of the member and chairman of the Working Party on Fluid Separations and a member of the Section on Sustainability.

Dieter Behrens Medal 2017

Professor Sauro Pierucci of Politecnico di Milano, Italy, has been named as the 2017 winner of EFCE's Dieter Behrens Medal.

The medal recognises people who have made a significant effort to promote chemical engineering in Europe or to the work of EFCE.

Pierucci was chosen for the role he has played for almost fifty years as an active member and committed chairman of the EFCE Working Party on Computer Aided Process Engineering (CAPE), member of the former

Welcome to the fourth issue of the EFCE newsletter this year. If you have any comments on the newsletter please get in touch.

Rafiqul Gani
EFCE President

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(Left to right) Professor Sauro Pierucci receiving his award from Rafiqul Gani, EFCE President

Science Advisory Committee, chairmanship of ECCE-1 and numerous EFCE events, as well as for his substantial contribution to CAPE and Process Systems Engineering in Europe through numerous papers and presentations.

EFCE Lifetime Achievement Award



(Left to right) Professor Luis Puigjaner receiving his award from Rafiqul Gani, EFCE President

Professor Luis Puigjaner of the Universitat Politècnica de Catalunya, Barcelona, Spain, has received an EFCE Lifetime Achievement Award.

He was selected by the EFCE Executive Board in recognition of his sustained and outstanding contribution to the progress of chemical and process systems engineering both in Spain and internationally for more than 50 years.

The award acknowledges in particular his substantial dedication to raising the profile of the field and the Federation through research and teaching, the organisation of conferences and workshops, and his commitment to the Working Party on Computer Aided Process Engineering (CAPE).

Photography of award presentations by Alicia Garcia

About the honours and awards

The EFCE Executive Board may confer the title **Honorary Member** on an individual, who has made extraordinary contributions to the life and welfare of the EFCE over an extended period of time.

Further Honorary Members of the EFCE are:

Prof. Hanns P.K. Hofmann, Germany (†, awarded 2003), Prof. Dr.ir. K. Roel Westerterp, The Netherlands († August 2013, awarded 2003), Dr. Trevor J. Evans, United Kingdom (awarded 2007), Prof. Dr. Gerhard Kreysa, Germany (awarded 2010).



The Dieter Behrens Medal, awarded in memory of EFCE's General Secretary and Chief Executive of DECHEMA e.V., Dieter Behrens (1926-1992), is presented in principle every

four years in recognition of a significant contribution on behalf of the Federation in raising the profile of chemical engineering in Europe or in relation to the organisation, management or development of EFCE's activity base.

The previous laureates of the Dieter Behrens Medal are:

Dr. Jan Novosad, Czech Republic (1999), Prof. Bernhard Delmon, Belgium (2001), Prof. dr.ir. Hans J. Pasma, The Netherlands (2005), Dr.-Ing. Martin Molzahn, Germany (2010), and Prof. Sebastiao Feyo de Azevedo, Portugal (2013).



The EFCE Lifetime Achievement Award was established in 2014. It is given to an individual in recognition on his or her sustained contribution to the progress of chemical

engineering in general and on specific topics covered by the EFCE Working Parties and Section in particular, over a period of at least 20 year. The award acknowledges the candidate's substantial dedication to raising the profile of chemical engineering and EFCE through research and teaching, the organization of conferences and workshops, and commitment to the Working Parties and/ or Sections of EFCE.

The first laureate of the award was Prof. Jirí J. Klemeš, Czech Republic (2015).

Winners of the EFCE student mobility awards selected



The 2017 Student Mobility Awards were presented to three outstanding young chemical engineers at the 10th World Congress of Chemical Engineering (WCCE 10) to recognise international mobility during their academic studies.

Paulina Murrath – 1st prize

This year's first prize of €2,000 was awarded to Paulina Murrath who is currently working as a Food Safety Manager for products from Central and Northern Europe at Mercadona, Spain's market leader in the supermarket segment.

Paulina Murrath obtained her Bachelor and Master's degree in chemical engineering from the Katholieke Universiteit Leuven, Belgium. The Master studies included a 1-year Erasmus exchange to Polytechnic University of Madrid, Spain. During her studies she completed a three month internship at the University of Vicosa in Brazil and a two month Summer School on Asian Business at the Chinese University of Hong Kong. She conducted the Master's research project at Wageningen University and Research Centre, The Netherlands.

Commenting on her experiences studying abroad, Ms. Murrath said: "Having studied in five different universities across three continents, I not only learned how to approach engineering subjects but also how to communicate and network fluently in nine languages with people from all over the world."

She added: "Recently, at the two-day visit to BASF in Antwerp, I met eight engineers and asked each of them the same question: 'What is the biggest challenge that you face on a daily basis?' All but one answered that the challenge lies in being able to communicate effectively. This made me realize that without the Erasmus programme and international cooperation between universities, I would have never had the chance to improve such skills, which are invaluable for an international chemistry between people, something of great urgency in this very globalized world today."

Jorge Corral Acero – 2nd prize

The second prize (€1,500) was awarded to Jorge Corral Acero. He completed his Bachelor and Master's degree in chemical engineering at the University of Valladolid, Spain with a one-year Erasmus placement at Imperial College London, United Kingdom. Following his studies he conducted postgraduate research stays at the Berkeley University of California and the Harvard Medical School, USA.

He said: "Studying abroad not only brings you



(Left to right): 2nd prize winner, Jorge Corral Acero; Dr. Hermann J. Feise, BASF SE; 1st prize winner, Paulina Murrath; Professor Jean-Marc Le Lann, EFCE Scientific Vice-President; and 3rd prize winner, Frederik Schulze Spüntrup. (photography by Alicia Garcia)

fresh academic knowledge, but it also exposes you to different cultures, enabling the possibility of interaction so that other ways of thinking can be acquired and new personal relationships developed. Therefore, there is a dual personal-professional enrichment which, indeed, results in growth as an individual."

Frederik Schulze Spüntrup – 3rd prize

Third prize (€1,000) was awarded to Frederik Schulze Spüntrup who is currently a PhD student at the Norwegian University of Science and Technology, Trondheim, Norway. Schulze Spüntrup completed her Master's degree in Advanced Chemical Engineering with Process Systems Engineering from Imperial College London, United Kingdom, and the Master's research project at the University of Tokyo, Japan, after completing the Bachelor degree in Chemical Engineering at Hochschule Niederrhein-University of Applied Sciences, Krefeld, Germany.

In his essay he stated: "The experience of living in different countries changed my life. I was an independent person before, but moving to new horizons served as a catalysts for increased maturity and had lasting impact on my world view. I feel equipped to think and work on a global basis. It made me capable to take the initiatives to relocate, adapt to new environment, and learn from new resources."

Presented biannually by the European Federation of Chemical Engineering (EFCE), these awards honour the best European chemical engineering students who have sought professional development and gained cross-cultural experiences by studying outside their home country for one semester or more.

The 2017 Student Mobility Award is generously sponsored by BASF SE.

EFCE names Air Liquide winner of the 2017 Process Intensification Award for Industrial Innovation

A new reactor design that significantly increases the efficiency of hydrogen production has won the 2017 Process Intensification Award for Industrial Innovation, awarded by the European Federation of Chemical Engineering (EFCE).

Developed by an 11-strong team working for the French industrial gases specialist **Air Liquide**, the 3D printed, milli-structured heat exchanger reactor was designed to improve the efficiency of producing hydrogen by steam reforming natural gas. It does so by reusing heat originally used to produce excess steam, and by increasing the heat transfer between the hot process streams. The improved reactor is expected to reduce operating costs up to 20% and CO2 emissions up to 12% compared with existing technology.

EFCE's Working Party on Process Intensification, which judged the award, said: "This reactor is a very interesting example of the use of 3D printing in the manufacture of this new intensified reactor, and has the potential to be a disruptive innovation for industry."

The award was received by the team's

representatives, Matthieu Flin and Raphael Faure.

The team notes that key to the development was optimizing the internal design that includes the fluidic and thermomechanical constraints. Other factors were the use of 3D printing to manufacture the reactor, and bespoke catalyst management.

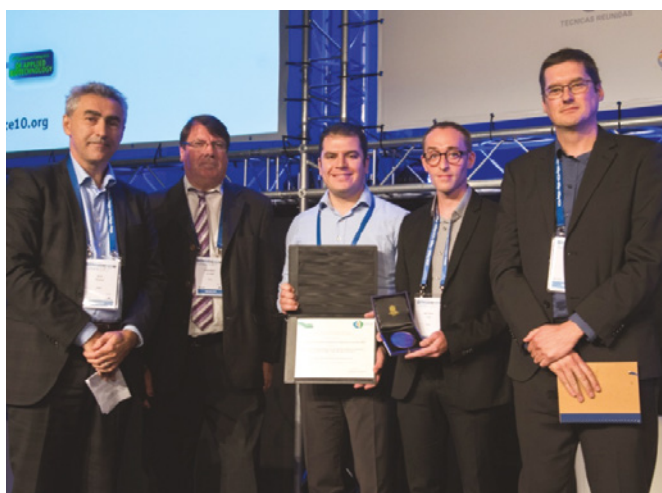
Development work largely took place in 2015, and a lab scale version was successfully operated at Air Liquide's Paris Saclay research centre for more than 4000 hours in 2016. An industrial pilot plant is now under construction and due for start up in late 2018, with first commercial applications expected for 2020.

Air Liquide expects the reactor will be of interest to a wide range of industries requiring hydrogen, ranging from oil and gas production to household hydrogen microgeneration.

The 2017 EFCE Process Intensification Award for Industrial Innovation was presented during the 10th World Congress of Chemical Engineering in Barcelona, Spain, on 2 October 2017.

The EFCE Process Intensification Award for Industrial Innovation is presented to an employee or a team of employees of a company, who have made excellent contributions to industrial application of process intensification.

The 2017 EFCE Process Intensification Award for Industrial Innovation is generously sponsored by Perstorp AB.



(Left to right): Professor Oleg Pajalic, Vice President Process Innovation, Perstorp AB; Professor Jean-Marc Le Lann, EFCE Scientific Vice-President; Mr. Raphael Faure, Air Liquide; Mr. Matthieu Flin, Air Liquide; Professor Tom Van Gerven, Chairman of EFCE Working Party on Process Intensification. (photography by Alicia Garcia)



EFCE Excellence Award Presentations

EFCE recognises research in crystallization process analytical technologies



Dr. Elena Simone has been named the winner of the **2017 EFCE Excellence Award in Crystallization** of the European Federation of Chemical Engineering (EFCE).

The Award recognises her excellent PhD thesis "Application of process analytical technology

(PAT) tools for the better understanding and control of the crystallization of polymorphic and impure systems" completed at the Loughborough University, United Kingdom, under the supervision of Professor Zoltan K. Nagy and her research papers which demonstrated her innovative approaches to crystallization research, which are directly applicable to industry.

Elena Simone obtained her Bachelor and Masters degree in Chemical Engineering from the University of Pisa, Italy, and has had a one year industrial experience working at Unilever, UK, before starting her PhD in the group of Professor Zoltan Nagy at the Chemical Engineering Department of Loughborough University, United Kingdom. After her PhD and one year in a postdoctoral researcher position, she accepted a lecturer position in the School of Food Science and Nutrition at the University of Leeds, United Kingdom, in September 2016. In her new position, she aims to apply her expertise in pharmaceutical crystallization and PAT in the food industries.

Her research interests include understanding the phenomena of polymorphism, nucleation and crystal growth of pharmaceuticals and food crystals (e.g. fats, sugars) using on-line, in situ, analytical techniques as well as off-line solid state characterisation, and developing strategies to effectively control crystal size, shape and polymorphism during crystallization processes, combining experimental and modelling work.

In his nomination, Prof. Nagy stated: "Elena was one of the most outstanding graduate students I have ever had the pleasure to supervise."

"Elena is clearly an exceptional researcher, with a high drive to learn and strong motivation

to perform and produce high quality research, hence I very highly recommend her for this award. Elena has all the right ingredients to become one of the future worldwide research leaders in her field."

The Award jury commented: "Her work has led to pioneering results in the field of crystallization monitoring and process analytical technologies."

The Award was presented at the 20th International Symposium on Industrial Crystallization (ISIC 20) in Dublin, Ireland, on 5 September 2017.

EFCE recognises scale-down of hydrogen production processes

The synthesis of hydrogen is of highest relevance for the future energy supply. Currently, hydrogen is being produced in large centralised plants. An efficient scaled-down process for the use of hydrogen as vehicle fuel is a tremendous challenge.

Dr. Michael Shoham Patrascu whose work focused on understanding and developing intensified scaled-down H₂ production processes in Pd-membrane reactors, through modeling, simulations and experimental campaign, is the winner of the **2017 Excellence Award in Process Intensification** of the European Federation of Chemical Engineering (EFCE).



(Left to right): Professor Tom Van Gerven, Chairman of EFCE Working Party on Process Intensification; Professor Jean-Marc Le Lann, EFCE Scientific Vice-President; Dr. Michael Shoham Patrascu (photography by Alicia Garcia)

His excellent PhD thesis "Scaled-down H₂ Production in Pd Membrane Reactors: Process Design and Experimental Investigations", completed at the Chemical Engineering Department, Technion - I.I.T., Haifa, Israel, under the supervision of Prof. Moshe Sheintuch, was recognized by the Jury for its excellent breadth and depth, scientific impact, innovation and industrial relevance.

Michael Shoham Patrascu earned his Bachelor and PhD degrees in Chemical Engineering from Technion - I.I.T., Haifa, Israel. Currently, he holds the position of Postdoctoral Associate at the Process Systems Engineering Laboratory, Massachusetts Institute of Technology - MIT, Cambridge, USA.

His work addresses various challenges, including thermodynamic and separation issues, through the design of a single integrated processing unit using highly selective Pd-membranes. This design is a proof of concept for on-board pure H₂ generators, with flexible fuel sources, and holds a great promise to eliminate the need for expensive H₂ transport and storage technologies for portable or stationary applications.

The Award jury stated: "He has demonstrated in a very impressive manner that his models deliver a significantly improved understanding of the Pd-membrane reactor with a suggestion of a novel mechanistic explanation. His modelling efforts allowed him to successfully build and operate two distinct experimental systems solving the key problems like hot spot formation. He was able to translate the simulation results into practical solutions in the experimental systems. These outstanding results have been converted to excellent publications. This dual command of modelling and experimentation capabilities makes his skillset quite unique and has generated scientific results which has been converted in practical designs."

His supervisor said: "Michael is a smart, creative, curious, industrious researcher. He showed a logical approach in his PhD work that combines theory and experiments. He is independent in his work and shows creative approaches in the design, construction and analysis of the experimental systems, in the choice of membrane and catalysts. He is also a good teacher and is very much in demand for recitation classes in various topics."

The award, which comprised of a €1,500 cash prize and certificate, was presented to Michael Shoham Patrascu at IPIC1/EPIC6/APSPIS3, which was held as a joint event of the 10th World Congress of Chemical Engineering (WCCE10) Barcelona, Spain, from 1 to 5 October 2017.

EFCE Excellence Award in Product Design and Engineering presented

Assistant Professor Arab Belkadi has been awarded the **2017 Excellence Award in Product Design and Engineering** of the European Federation of Chemical Engineering (EFCE) for his outstanding PhD thesis on "Experimental study of liquid-liquid fractionation in microchannels for the continuous production of emulsified biodiesel".

Arab Belkadi, who obtained his Master's degree in energy and sustainable development from the École des Mines de Nantes, France, and the Université M'hamed Bougara, Algeria, completed his PhD thesis at the LTeN and GEPEA Laboratories, University of Nantes, France, under the supervision of Prof. Jérôme Belletire, Prof. Agnès Montillet and Assistant Prof. Dominique Tarle.

Since December 2016, he holds the position of Assistant Professor at the Department of Mechanical Engineering, Mouloud Mammeri University, Tizi-Ouzou, Algeria.

Arab Belkadi designed a micro-fluidic mixer which continuously emulsifies water in liquid biofuel and integrated this system in the combustion process. The dispersed water phase helps to optimize combustion, which reduces the number of emitted particles. Also water reduces combustion temperature and therefore minimises NOx-emissions. The developed mixer acts as an impact and elbow jet micro-system. The microchannels are specifically



(Left to right): Professor Jean-Marc Le Lann, EFCE Scientific Vice-President; Dr. Stefan Kaufmann, Beiersdorf AG; Assistant Professor Arab Belkadi; Dr. Jens Uhlemann, Chairman of EFCE Section on Product Design and Engineering. (photography by Alicia Garcia)

designed depending on the flow rates of the components and the physical properties of the disperse and continuous phase. Arab Belkadi compared various micro-channels under controlled experimental conditions and used a high frequency visualization technique to demonstrate the hydrodynamic structure of the flow for further optimization.

The Award jury stated: "Dr. Belkadi's contribution to the important field of alternative fuels, sustainability and emission reduction considers the emulsification of water in various fuels such as conventional diesel, heavy fuel oil or lipid waste.

The scientific quality of the work is demonstrated by two high impact publications, three papers and presentations in important conferences. It includes a detailed

understanding of emulsification technology and the development of a microsystem for continuous emulsification of fuel substitutes (biofuels)."

The award, which comprised of a €1,500 cash prize and certificate, was presented to Arab Belkadi at the sixth European Symposium on Product Design and Engineering, which was held as a joint event of the 10th World Congress of Chemical Engineering (WCCE10) Barcelona, Spain, from 1 to 5 October 2017.

The 2017 Excellence Award in Product Design and Engineering is generously sponsored by Beiersdorf AG.

Beiersdorf

EFCE Event Report

The SFGP XVIth Congress in a nutshell "Process Engineering at the Service of Mankind" Nancy, France, 11-13 July 2017 (EFCE No. 742)

GP 2017, the National Congress of the French chemical engineering association SFGP, was held in the brand new Congress Center located at a walking distance from the Nancy main railway station.

Laurent Falk, Director of LRGP (Reaction and Process Engineering Laboratory) was the Project Director of GP 2017 under the auspices of CNRS.

It can be considered as a major success in the wake of preceding SFGP congresses in terms of scientific interest and organisation.

The congress was attended by over 600 people coming from ten countries, with 18% industrialists, 52% academic and 30% students. It received about 250 oral communications, the same number of posters and fifteen booths. Of particular note are the three plenaries:

- "The Man on Planet Mars"; a perfect example of Circular Economy", by Christophe Lasseur, European Space Agency;
- "Biotechnologies/Bioprocesses at the service of Mankind" by Pierre Monsan, President of FF BIOTECH,
- "i4.0 – a formula for a revolution?" by Professor Ulrich Trägner, from Hochschule Mannheim.

This last Plenary opened The German-French Day which encompassed a Round Table on "The plant of the future" with speakers from Air Liquide,

Evonik, Sanofi and SFGP.

Dr Franck Stenger from Evonik gave a presentation on "Modular Plants concept," an excerpt from a ProcessNet White Paper (ProcessNet is an initiative from DECHEMA and VDI-GVC).

A new type of presentation at the event were the "Tutoriels" (Tutorial), which were warmly welcomed as an innovative form of event. A Tutoriel was a two hours joint presentation by an academic and an industrialist on a specific chemical engineering subject. Thirteen Tutoriels covered "State of the Art", R&D, industrial significance, prospective aspects on very diversified items like product engineering, CFD, innovation, LCA, recycling, cells culture and cell therapy.

Lively engagement with the audience confirmed the success of the "Tutoriel" concept.

Last but not least, GP 2017 celebrated the 30th anniversary of the foundation of SFGP by Jacques Villiermaux (1935-1997) and others. Jacques Villiermaux' legacy was highly remembered.

GP 2017, an EFCE event, will be remembered for its perfect organisation, innovation and friendly spirit. It confirmed the chemical engineering community has a major role to play in academia, industry and society.

Jean Pierre DAL PONT
SFGP President

Calls for Nominations

EFCE calls for nominations in the field of Mixing

The European Federation of Chemical Engineering (EFCE) and its Working Party on Mixing are pleased to present the calls for nominations for the 2017 Young Researcher Award in Mixing. The Young Researcher Award was established in 2000 to recognise the work of a young researcher in his/her early career, which demonstrates an outstanding contribution to research and/or practice in mixing.

Previous Award winners are Giorgio Micale, Italy (2000), Joëlle Aubin, France (2003), Giuseppina Montante, Italy (2006), Andrea Ducci, UK (2009), Sebastian Maaß, Germany (2012), and Claudio Antonio Pereira da Fonte, Portugal (2015).

The award consists of a certificate, a cash prize of €1,500 and an invitation to attend the 16th European Conference on Mixing in Toulouse, France, on 9-12 September 2018, where the Award will be presented.

Any researcher under the age of 35 who has completed his or her PhD in the field of mixing at a European university and is currently active in the mixing research is eligible for nomination.

The closing date for nominations is Friday, 20 March 2018

For further information about the nomination procedure, eligibility, supporting documentation, etc., please refer to the EFCE website at www.efce.info/YoungResearcherAward_Mixing or the Working Party website at <http://wp-mixing.inp-toulouse.fr/>

The following calls for nominations are still open:

EFCE Excellence Award in Recognition of an Outstanding PhD Thesis on CAPE 2018

This biennial award has been instituted to recognise a PhD thesis which demonstrates an outstanding contribution to research and/or practice in computer-aided process engineering (CAPE) or process systems engineering (PSE).

The closing date for nominations is 31 December 2017.



The Award is generously sponsored by Process Systems Enterprise Inc.

Further information about the nomination procedure, eligibility, supporting documentation, etc., can be obtained from the EFCE website at <http://www.efce.info/ExcellenceAwardCAPE.html>

EFCE Excellence Award in Chemical Reaction Engineering 2018

This award has been instituted to recognise an outstanding PhD thesis in the field of chemical reaction engineering.

Deadline for nominations: extended to 30 November 2017.



The 2018 EFCE Excellence Award in Chemical Reaction Engineering is generously sponsored by BP International Limited.

Further information about the nomination procedure, eligibility, and supporting documentation can be

obtained from the EFCE website: <http://www.efce.info/ExcellenceAwardCRE>.

EFCE YouTube channel

Subscribe to the official EFCE YouTube channel for latest news, updates and information about the member societies.

www.youtube.com/channel/UCxuvfbb5ST3DMHLAwZ6326w



EFCE Working Party and Section News

Impression from the EFCE WP ChoPS Workshop on Particle System Characterization at WCCE10 in Barcelona



(Left to right): Rainer Friehmelt, Steve Ward Smith, Richard Tweedie, Sebastian Maass, Martin Morgeneyer, Maria Rasteiro and Christophe Bressot

ECS 2017 Class of Fellows

Professor Mario Ferreira was recognized as Fellow of The Electrochemical Society. This award was established in 1989 for advanced individual technological contributions in the fields of electrochemistry and solid state science and technology.

Mario Ferreira has been active in the field of corrosion for 40 years, making contributions in a number of areas. He is a full professor and head of the Department of Materials and Ceramic Engineering at University of Aveiro. Ferreira's work appears in top journals, earning him an h-index of 65, which is an extremely high number for the corrosion area and reflects the impact of his work. In his career, he has trained a considerable number of MS and PhD students and postdocs, many of whom are now making major contributions on their own.

He has been extremely active in scientific societies, representing Portugal in the International Corrosion Council, participating in different working parties of the European Federation of Corrosion, and as a two-year member of its board of administrators. He is also member of the Steel Advisory Group of the Research Steel and Coal Fund of the European Union. He is a Member of the Working Party on

Electrochemical Engineering of the European Federation of Chemical Engineering.

Mario Ferreira was also the 2017 winner of the European Corrosion Medal attributed by the European Federation of Corrosion. Before, he received the "H.H. Uhlig Award" of Corrosion Division of The Electrochemical Society (2013), the CAVALLARO Medal, Univ. Ferrara / EFC (2014), the Portuguese Engineers Association Award as Senior Adviser Member, (2015) and Fellowship of the International Society of Electrochemistry (2017).

8th summer school on the electrochemical engineering – ESSEE2018

Toulouse, France, 27-31 August 2018

The 8th ESSEE is organised by the EFCE Working Party on Electrochemical Engineering and the l'Université Toulouse III - Paul Sabatier. It promotes the sharing of knowledge and the networking in the field of electrochemical engineering and applied electrochemistry, specifically the application of chemical engineering concepts and methodologies to electrochemical processes and related technologies. The scientific programme of the summer school is structured into 10 sessions and contains more than fifteen lessons or lectures, given by European scientists from both academic and industrial areas. During the devoted period, scientific discussions and exchanges are encouraged, to help you to elucidate difficulties encountered in yours activities in relation with electrochemistry.

Early registration rates will be available until 30 June 2018

For further information, please visit: <https://8essee2018.sciencesconf.org/>

EFCE Events organised by/on behalf of EFCE

6th International Conference on Population Balance Modelling - PBM2018

**Ghent Belgium, 7-9 May 2018
(EFCE Event No. 749)**

This 6th International Conference on Population Balance Modelling - PBM2018 aims at bringing together researchers and practitioners with diverse backgrounds to allow exchange of ideas across various sub-fields that use population balances, and to provide opportunities for researchers to identify new domains to expand into and new tools to use. Ghent University and the Technical University of Denmark - DTU are joining forces to make PBM 2018 an open platform to share population balance model research with a high scientific quality, interesting applications and new significant developments. To achieve all this, they are providing flexible registration fees and incentives for young researchers, aiming for an attractive scientific programme, world-wide participation and high industrial participation.

PBM themes: Formulation and solution of PB Models; Identification and uncertainty of PB Models (Validation); Optimization and control using PB Models; Novel applications of PB Models (e.g. biological systems); PB Models and spatial heterogeneities

Silver Sponsor: Dr. M. Wulkow Computing in Technology GmbH (CiT); Conference partner: Processes Open Access Journal

The call for papers is open. The deadline for abstract submission has been extended to 1 December 2017.

Website: <http://www.pbm2018.ugent.be/>

ISCRE 25 – 25th International Symposium on Chemical Reaction Engineering

**Florence, Italy, 20-23 May 2018
(EFCE Event No. 743)**

Theme: Engineering the chemical transformation by bridging science and technology

The Conference will cover both the latest methodological developments as well as the many emerging applications of CRE to crucial technologies for energy conversion, environmental protection and sustainable chemicals production. The 2018 EFCE Excellence Award in Chemical Reaction Engineering is

planned to be presented (for further information and submission of nominations, see <http://www.efce.info/ExcellenceAwardCRE>)

Conference topics: Chemical Kinetics (a. Heterogeneous & homogeneous catalytic reactions; b. Homogeneous & heterogeneous non-catalytic reactions; c. Biotech reaction systems); Advances in Chemical Reactor Engineering and Design (a. Multiphase reactors; b. Multifunctional & non-conventional reactors; c. Structured catalysts & reactors; d. Safe operation of chemical reactors); Multiscale Approaches to Chemical Reaction Engineering (a. Homogeneous and multiphase CFD modeling; b. Analysis & design of porous media; b. Integration of the chemical reactor in plant layout); 4) Novel Materials in Reaction Engineering (a. Catalysts, sorbents; b. Novel porous materials; c. Membranes); 5) Gianni Astarita Young Investigator Award.

Plenary Speakers: Dr. Domenico Elefante, Eni; Prof. Micheal P. Harold, University of Houston, USA; Prof. Guy Marin, Universiteit Gent, Belgium; Prof. Katharina Kohse-Höinghaus, niversität Bielefeld, Germany; Prof. Ning Yang, Chinese Academy of Sciences, PR China; Dr. Ted Calverley, Dow Chemicals, USA.

Registration opens in January 2018. Deadline for early registration: end of March 2018

Website: <http://www.aidic.it/iscre25/>

28th European Symposium on Computer Aided Process Engineering - ESCAPE-28

**Graz, Austria, 10-13 June 2018
(EFCE Event No. 745)**

Practitioners and academics working in the field of Computer Aided Process Engineering are invited to present up-to-date original research and developments to the 28th Edition of the European Symposium on Computer Aided Process Engineering (ESCAPE-28). The ESCAPE series is organised every year by the EFCE Working Party on Computer Aided Process Engineering (CAPE). During ESCAPE-28, the biennial EFCE Excellence Award to recognise outstanding PhDs will be presented (for further information and submission of nominations, see <http://www.efce.info/ExcellenceAwardCAPE.html>).

Conference themes: Model Development and Simulation; Methods, Software and Tools; Open Science Movement and Education; Process Synthesis, Process Design and Life Cycle Modelling; Process Operation and Control; Bioresources, Bioprocesses and Biomedical Systems; Environment and Energy; Food, (Bio-) Pharma, and Fine Chemicals.

The call for abstracts is closed! Full paper submission deadline: 12 December 2017

Website: <https://www.tugraz.at/events/escape28/>

16th European Conference on Mixing Toulouse, France 9-12 September 2018 (EFCE Event No. 746)

The successful series of European Conferences on Mixing, which is organised by the EFCE Working Party on Mixing, has been running since 1974 and attracts academics and industrialists from all over the world to discuss progress on mixing technology, research and applications in the process industries.

Topics: The conference covers mixing in batch, semi-batch and continuous flows, as well as in novel equipment types, including those used for process intensification. It welcomes works employing experimental and/or numerical techniques (e.g. CFD) to explore challenges in the following mixing topics: Single phase mixing, from turbulent to laminar flow; Analysis of mixing using advanced measurement techniques; Gas-liquid mixing applications; Solid-liquid mixing; Liquid-liquid mixing; Mixing of products high viscosity and complex rheology; Mixing in reactive flows; Mixing in novel equipment type; Simulations and Computational Fluid Dynamics; Heat transfer and mixing.

Keynote speakers: Prof. Giuseppina Montante, University of Bologna, Italy; Dr. Andrea Ducci, University College London, UK; Dr. Richard Grenville, Philadelphia Mixing Solutions Ltd., USA; Prof. Matthias Kraume, Technical University

of Berlin, Germany; Prof. François Bertrand, École Polytechnique de Montréal.

Save the date! The call for papers will open on 8 January 2018; Deadline for abstract submission: 1 April 2018

Website: <http://inpact.inp-toulouse.fr/MIXING16/>

Distillation & Absorption 2018 Florence, Italy, 16-19 September 2018 (EFCE Event No. 737)

The international conference Distillation & Absorption 2018, to be held in Florence, Italy, will showcase the newest and best in distillation & absorption technology and will cover a broad range of fundamental and applied aspects. The conference series is the leading international forum for research, development, standards and applications related to this domain. The event is organised by AIDIC, in close collaboration with the EFCE Working Party on Fluid Separations. The conference will include plenary contributions by outstanding speakers from both industry and academia, oral and poster presentations. Other special events include vendor exhibits, the DA2018 poster award and the presentation of the EFCE Fluid Separations Excellence Award.

Topics: Basic data and fundamental principles; Carbon capture and absorption; Conceptual process design and Life Cycle Analysis; Modelling and simulation; Control, operation, troubleshooting and manufacturing excellence; Reactive and hybrid separations; Emerging separations and technologies; Fine chemicals, pharma and bio based processes; Equipment design; Energy efficiency and technology.

Plenary speakers: Dr. Regina Benfer, BASF SE, Germany; Dr. Izak Nieuwoudt, Koch-Glitsch, USA; - Dr. Michele Viglianisi, ENI, Italy; Prof. Andrzej Gorak, University of Dortmund, Germany; Prof. Hanna Knuutila, NTNU, Norway.

Website: <http://www.aidic.it/da2018/>

EFCE Events in 2019/20

An extended list of events is available at <http://www.efce.info/events.html>

Loss Prevention 2019

Delft, The Netherlands, 16-19 June 2019 (EFCE Event No. 750)

Welcome to the Loss Prevention 2019! After 45 years, this most prestigious conference in the world in the field of risk and safety related to the chemical and process industries, organised by the EFCE Working Party on Loss Prevention, has returned to the Delft University of Technology in the Netherlands.

We are experiencing challenging times due to exciting technological advances and fast-developing societal developments which will require further research and applications for improvement in order to adequately cope with them. Exchanging information, disseminating data and stimulating the development of new methods to reduce the risk of incidents/accidents in the process industries, is indeed a must and a need. To foster new ideas, the fourth "EFCE Excellence Award in Process Safety" for outstanding PhD research work will be presented at this conference. Transfer to practice is as important as development of know-how, and many challenges are still to be addressed in order to make further progress in safety, and process safety in particular.

Let us therefore take the opportunity of this 16th Loss Prevention Symposium, to learn from each other and exchange best practices, to transfer experience by presenting new scientific results and concepts, learn from case studies, and to preserve existing know-how for the benefit of the process industries at large, as well as the safety and security of employees and the public.

Topics: Risk assessment and safety management; Human and organisational factors of risk and safety; Process safety engineering and technological innovations; Fires, explosions, and toxic releases; Simulation and modelling for safer processes; Physical security and cyber security in process plants; Learning from accidents and process safety education; Communication of risk and process safety information; Leadership, risk governance, and regulatory issues.

The call for papers is open. Deadline for abstract submission: 27 March 2018

Website: <http://www.lp2019.org>

ECCE12/ECAB5 - 12th European Congress of Chemical Engineering & 5th European Congress on Applied Biotechnology

Florence, Italy, 15-19 September 2019 (EFCE Event No. 744)

Save the date!

21st International Symposium on Industrial Crystallization - ISIC21
Potsdam, Germany, 8-11 September 2020 (EFCE Event No. 751)

Website: http://www.dechema.de/ISIC_21
Save the date!

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