



27th International Workshop on Industrial Crystallization

BIWIC 2022

31 August – 2 September 2022, Dipoli, Otakaari 24, Espoo

The e-poster exhibition with 9 screens will be organized in Capitolium hall. During the coffee breaks, there is a time slot of 10 min for each e-poster presentation. Please check the presentation time from the time schedule below. During the lunch breaks, e-poster exhibition is also available, and participants can freely load the e-poster by using remote controller or lap top.

Theme 1 Fundamentals of crystallization (Screens 1 & 2)

Screen 1

Title	Authors	Institution	Presentation time
Size and Shape Modification of Plate-like Crystals using a Cyclical 3-Stage Process	<u>D. Biri</u> ¹ , A. Jaeggi ¹ , P. Binel ¹ , A.K. Rajagopalan ² , and M. Mazzotti ^{1*}	1 ETH Zurich, 2 University of Manchester	Thursday, 1 Spetember 10.25-10.35
Investigations of pharmaceutical compounds co-crystallization for application to chiral resolution assisted by supercritical CO ₂	<u>F. Ercicek</u> ^{1,2*} , C. Harscoat-Shiavo ² , M.Marchivie ¹ , S. Marre ² and P. Subra-Paternault ¹	1 CNRS, Univ. Bordeaux, CBMN, UMR 5248, F-33600 Pessac, France 2 CNRS, Univ. Bordeaux, ICMCB, UMR 5026, F-33600 Pessac, France	Thursday, 1 Spetember 10.35-10.45

Isostructurality or Not: A Deep Insight into the Selective Formation of Spironolactone Solvates	Lihong Jia, Ling Zhou and Qiuxiang Yin	School of chemical engineering and technology, Tianjin University	Thursday, 1 Spetember 10.45-10.55
Molecular mechanism of liquid-liquid phase separation in crystallization process	YunHai Huang, Jingkang Wang, Na Wang, Xin Huang, Ting Wang, and Hongxun Hao*	School of Chemical Engineering and Technology, Tianjin University	Thursday, 1 Spetember 15.10-15.20
Revealing the Molecular Mechanism of Cosolvency: The Tolbutamide Case	<u>Xin Li</u> , Na Wang*, Xin Huang, Ting Wang, Lina Zhou and Hongxun Hao*	School of Chemical Engineering and Technology, Tianjin University	Friday, 2 Spetember 10.10-10.20

Screen 2

Title	Authors	Institution	Presentation time
Oiling out in: Are we missing the precursor phase for nonclassical crystallization?	<u>Rajaboopathi Mani</u> ¹ , Marjatta Louhi-Kultanen ^{1*} , Leena Peltonen ² , Clare Strachan ²	1 Aalto University, Espoo, Finland; 2 University of Helsinki, Helsinki, Finland	Thursday, 1 Spetember 10.25-10.35
Description of phase diagrams of pharmaceuticals using PC-SAFT for Solvent Selection	<u>M. Sadeghi</u> ^{1*} , V. Tenberg ¹ , A. Seidel-Morgenstern ¹ and H. Lorenz ¹	Max Planck Institute for Dynamics of Complex Technical Systems, Magdeburg, Germany	Thursday, 1 Spetember 10.35-10.45

Solubility Prediction of Chiral Cocystals for Development of Chiral Resolution Processes	<u>Sarita Songsermsawad</u> ^{1,2} , <u>Oleksii Shemchuk</u> ² , <u>Tom Leyssens</u> ² , <u>Adrian Flood</u> ¹	1 Vidyasirimedhi Institute of Science and Technology, Thailand 2 Catholic University of Louvain, Belgium	Thursday, 1 Spetember 10.45-10.55
Estimation of concentration of lysozyme at a membrane surface using membrane crystallization method	<u>S. Ueda</u> , I. Hirasawa*, F. Kohori	Waseda university, Tokyo, Japan	Thursday, 1 Spetember 15.10-15.20
Crystallization for shape & size	Denes Janke, Zsofia Szalay, Adam Demeter	Gedeon Richter Plc. Budapest, Hungary	Friday, 2 Spetember 10.10-10.20

Theme 2 Advances in industrial crystallization and relevant applications (Screens 3 to 6)

Screen 3

Title	Authors	Institution	Presentation time
Bovine Serum Albumin crystallization by using hanging drop with phyllosilicate	<u>Keigo Chiba</u> I. Hirasawa*, F. Kohori	Waseda university, Tokyo, Japan	Thursday, 1 Spetember 10.25-10.35

Improving productivity of internally seeded cooling crystallization with Direct Nucleation Control	<u>K. Sugita</u> ^{1*} , J. Unno ¹ , I. Hirasawa ¹	Department of Applied Chemistry, Waseda University, Tokyo, Japan	Thursday, 1 Spetember 10.35-10.45
The influence of chiral Glutamic acid additive on chiral resolution of aspartic acid	Thitapond Nulek ^{1,a} and Adrian E. Flood ^{1,b}	Department of Chemical and Biomolecular Engineering, School of Energy Science and Engineering, Vidyasirimedhi Institute of Science and Technology, 555 Moo 1, Payupnai, Wang Chan, 21210 Rayong, Thailand.	Thursday, 1 Spetember 10.45-10.55
A Novel Strategy for Deracemization using Periodic Fluctuations of Concentration	Kritsada Intaraboonrod and Adrian Flood*	Department of Chemical and Biomolecular Engineering, School of Energy Science and Engineering, Vidyasirimedhi Institute of Science and Technology, 555 Moo 1, Payupnai, Wang Chan, 21210 Rayong, Thailand.	Thursday, 1 Spetember 15.10-15.20
Coating of Drug Tablet by Cooling Crystallization	C. Phoumixay and <u>L. Wantha</u> *	School of Chemical Engineering, Institute of Engineering, Suranaree University of Technology, 111 University Avenue, Muang District, Nakhon Ratchasima, 30000, Thailand.	Friday, 2 Spetember 10.10-10.20

Screen 4

Title	Authors	Institution	Presentation time
Process Intensification of Polymorphs Continuous Crystallization	<u>R. Achermann</u> ¹ , B. Bodák ¹ , L. Bosetti ¹ , A. Košir ¹ , D. Biri ¹ , and M. Mazzotti ^{1*}	ETH Zurich, Zurich, Switzerland	Thursday, 1 Spetember 10.25-10.35
On the Role of Mutarotation in Lactose Crystallization-Cedeno	<u>Silvio Trespi</u> ^{1*} , Francesca Breveglieri ¹ and Marco Mazzotti ¹	Institute of Energy and Process Engineering, ETH Zurich, 8092 Zurich, Switzerland	Thursday, 1 Spetember 10.35-10.45
Crystallization process strategies for sustainable soda ash production	<u>S. Ghaffari</u> ^{1*} , P. Schulze ² , M. Gutierrez ¹ , , H. Lorenz ¹	1 Max Planck Institute for Dynamics of Complex Technical Systems, Magdeburg, Germany; 2 SChPrEngCo, Scientific Chemical Engineering Consultancy, Magdeburg, Germany;	Thursday, 1 Spetember 10.45-10.55
Lignin Fractionation: Development Towards a Continuous Precipitation Process	<u>Arulselvan Ponnudurai</u> [*] , Peter Schulze, Andreas Seidel-Morgenstern, and Heike Lorenz	Max Planck Institute for Dynamics of Complex Technical Systems, Magdeburg, Germany;	Thursday, 1 Spetember 15.10-15.20
Solid Phase Behavior and Stability Investigation of an Amino Acid Intermediate Compound Produced via Liquid-Assisted Grinding	<u>V. Tenberg</u> ^{1*} and H. Lorenz ¹	Max Planck Institute for Dynamics of Complex Technical Systems, Magdeburg, Germany	Friday, 2 Spetember 10.10-10.20

Screen 5

Title	Authors	Institution	Presentation time
Application of ultrasound tomography in reactive crystallization processing of calcium carbonate	<u>S. Aghajanian</u> ^{1*} , M. Soleimani ² , P. Koulountzios ² , T. Rymarczyk ³ and T. Koironen ¹	1 LUT University, Lappeenranta, Finland. 2 University of Bath, Bath, United Kingdom. 3 Research & Development Centre Netrix S.A, Lublin, Poland.	Thursday, 1 Spetember 10.25-10.35
Recovery of magnesium hydroxide from real bitterns	<u>G. Battaglia</u> ^{1,*} , M. A. Domina ¹ , R. Lo Brutto ³ , J. L. Rodriguez ² , M. Fernandez de Labastida ² , J. L. Cortina ² , A. Pettignano ³ , A. Cipollina ¹ , A. Tamburini ¹ , G. Micale ¹	Dip. Ingegneria, UNIPA, V.le delle Scienze, 90128 Palermo, Italy 2 UPC-BarcelonaTECH, Barcelona, 08930, Spain 3 Dip. Fisica e Chimica-Emilio Segrè, UNIPA, V.le delle Scienze,90128 Palermo, Italy	Thursday, 1 Spetember 10.35-10.45
Control of crystal shape in the batch crystallization process	J. Prlić Kardum ^{1*} , Martina Hrkovac ² , Matija Gretić ³	1 Faculty of Chemical Engineering and Technology, Zagreb, Croatia; 2 GenePlanet Ltd., Zagred, Croatia; 3 Genera, Inc., Part of Dechra Pharmaceuticals PLC Group, Rakov Potok, Croatia	Thursday, 1 Spetember 10.45-10.55
Solvent and additive selection for controlling the particle size distribution of cinnarizine in anti-solvent crystallization	R. Holm ¹ and <u>H. Qu</u> ^{2*}	1 Department of Physics, Chemistry and Pharmacy 2 Department of Green Technology, University of Southern Denmark, Odense, Denmark	Thursday, 1 Spetember 15.10-15.20

Crystallization for phosphorus recovery from wastewater: Evaluation of the processes with different phosphate products	<u>Salman Amjad, Haiyan Qu</u>	Department of Green Technology, University of Southern Denmark, Odense, Denmark	Friday, 2 Spetember 10.10-10.20
Antisolvent crystallization of rare earth sulfate hydrates	<u>Nitin Pawar</u> , Meher Geetika Sanku, Kerstin Forsberg and Michael Svärd*	Department of Chemical Engineering, KTH Royal Institute of Technology, Stockholm, Sweden	Friday, 2 Spetember 10.20-10.30

Screen 6

Title	Authors	Institution	Presentation time
Operational analysis of a novel reactive crystallizer for the production of Magnesium Hydroxide from waste brines	<u>C. Morgante</u> ¹ , F. Vassallo ¹ , G. Battaglia ¹ , F. Vicari ² , A. Cipollina ^{1*} , A. Tamburini ¹ and G. Micale ¹	1 Università degli Studi di Palermo, ResourSEAs SrL, Palermo, Italy 2 ResourSEAs SrL, viale delle Scienze Ed.16, Palermo, Italy	Thursday, 1 Spetember 10.25-10.35
Effective magnesium recovery via seawater brines mining	<u>F. Vassallo</u> ¹ , C. Morgante ¹ , A. Cipollina ^{1*} , A. Tamburini ^{1,2} and G. Micale ¹	1 Dipartimento di Ingegneria, Università degli Studi di Palermo - viale delle Scienze Ed.6, 90128 Palermo, Italy; 2 ResourSEAs SrL, viale delle Scienze Ed.16, 90128 Palermo, Italy	Thursday, 1 Spetember 10.35-10.45

Influence of Aspartic Acid and Glutamic Acid Additives on Calcium Pyrophosphate Crystallization	<u>S.Polat, Q. An, H.B.Eral</u>	Process&Energy Department,3ME, Delft University of Technology, The Netherlands	Thursday, 1 Spetember 10.45-10.55
Chiral Amplification through the Interplay of Racemization and Crystal Growth	S.W. van Dongen ¹ , I. Alhal ¹ , I. Baglai ^{1,2} , M. Leeman ³ , R.M. Kellog ³ , B. Kaptein ⁴ and W.L. Noorduin ^{1,5*}	1 AMOLF, Amsterdam, The Netherlands; 2 Ardena Amsterdam BV, Amsterdam, The Netherlands; 3 Symeres, Groningen, The Netherlands; 4 InnoSyn BV, Geleen, The Netherlands; 5 Van 't Hoff Institute for Molecular Sciences, University of Amsterdam, Amsterdam, The Netherlands	Thursday, 1 Spetember 15.10-15.20
Batch cooling crystallization process for the food-grade phytosterols	<u>Rantamäki P.</u> ^{1,2} , Kavakka J. ² , Oinas P. ¹ and Louhi-Kultanen M. ¹	1 Aalto University, Espoo, Finland 2 Stora Enso Oyj, Biomaterials division, Finland/Sweden	Friday, 2 Spetember 10.10-10.20
Effect of viscosity on batch crystallization of α -D-galactose from an industrial side-stream	Anna Zaykovskaya, Marjatta Louhi-Kultanen	Aalto University, Espoo, Finland	Friday, 2 Spetember 10.20-10.30

Theme 3 Monitoring and control of crystallization processes

Screen 7

Title	Authors	Institution	Presentation time
Using advanced image analysis methods to unravel the effect of rotation-induced shear on nucleation of paracetamol	<u>C. Devos</u> ¹ , C. Xiouras ² , T. Van Gerven ¹ , and S. Kuhn ^{1*}	1 KU Leuven, 2 Chemical Process R&D, Crystallization Technology Unit, Janssen R&D	Thursday, 1 Spetember 10.25-10.35
In situ monitoring of crystallization by SRS using unsupervised multivariate approach	<u>R. Kersaudy</u> ^{1*} , E. Gagnière ¹ , S. Labouret ¹ , D. Colson ¹ , N.Caillol ² , D. Mangin ¹	1 Université Claude Bernard Lyon 1, LAGEPP, Villeurbanne, France 2 Axel'One, Solaize, France	Thursday, 1 Spetember 10.35-10.45
Particle Design Through Combined Continuous Slug Flow Crystallization and Particle Isolation	<u>A.C. Kufner</u> , C. Steenweg, J. Habicht, and K. Wohlgemuth*	TU Dortmund University, Laboratory of Plant and Process Design, Dortmund, Germany;	Thursday, 1 Spetember 15.10-15.20
Screening for a Conglomerate Co-crystal of the Racemic Compound Praziquantel	Peerapon Rapeenun ^{1,2} , Charline Gerard ² , Clement Pinetre ² , Yohann Cartigny ² , Paul Tinnemans ³ , Rene de Gelder ³ , Adrian Evan Flood ¹ , Joop H. ter Horst ²	1 Vidyasirimedhi Institute of Science and Technology, 555 Moo 1, Payupnai, Wang Chan, 21210 Rayong, Thailand 2 SMS Laboratoire Sciences et Methodes Separatives, Universite de Rouen Normandie, France	Friday, 2 Spetember 10.10-10.20

		3 Institute for Molecules and Materials, Radboud University, The Netherlands	
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Theme 4 Purification and separation by crystallization & Contributions from University of Leeds

Screen 8

Title	Authors	Institution	Presentation time
IMPRESS H2020 project: Towards higher purities of biochemicals by crystallization	Mitra Ila ^{1*} , Anna Zaykovskaya ^{1*} , Marjatta Louhi-Kultanen ¹ , Erik Temmel ² , Manfred Stepanski ² , Michael Ginter ³ , Ben McKay ⁴ , Siu-Ha Soo-Tang ⁴ , Ed de Jong ⁴	1 Department of Chemical and Metallurgical Engineering, School of Chemical Engineering, Aalto University, Espoo, Finland	Thursday, 1 Spetember 10.25-10.35
Towards enhanced wastewater treatment by IC High-pressure Desalination technology	M. Kankaanpää ^{1*} , W. Ljapidevskij ¹ , T. Albrecht ¹ , M. Linjama ² , and <u>M. Louhi-Kultanen</u> ³	1 Oy Infraconsulting Ab Ltd, Helsinki, Finland; 2 Tampere University, Tampere, Finland; 3 Aalto University, Espoo, Finland;	Thursday, 1 Spetember 10.35-10.45
Best practices in automating and optimizing the collection and analysis of large turbidity-temperature datasets from polythermal crystallization	<u>A. S. M. Jackson</u> ¹ , D. Goberdhan ² , P. J. Dowding ² , and K. J. Roberts ^{1*}	1 Centre for Doctoral Training in Complex Particulate Products and Processes, School of Chemical and Process Engineering, University of Leeds, Leeds, United Kingdom;	Thursday, 1 Spetember 10.45-10.55

		2 Infineum UK Ltd, Abingdon, United Kingdom	
The Nucleation Mechanism of a Model Diesel Fuel within Fractionation Driven Crystallization and the Impact of Additives	<u>A. S. M. Jackson</u> ¹ , D. Goberdhan ² , P. J. Dowding ² , and K. J. Roberts ^{1*}	1 Centre for Doctoral Training in Complex Particulate Products and Processes, School of Chemical and Process Engineering, University of Leeds, Leeds, United Kingdom; 2 Infineum UK Ltd, Abingdon, United Kingdom	Thursday, 1 September 15.10-15.20
Solubility and Nucleation Kinetics of a Series of Representative Single and Mixed Diesel n-Alkanes in Dodecane and Toluene	<u>A. S. M. Jackson</u> ¹ , D. Goberdhan ² , P. J. Dowding ² , and K. J. Roberts ^{1*}	1 Centre for Doctoral Training in Complex Particulate Products and Processes, School of Chemical and Process Engineering, University of Leeds, Leeds, United Kingdom; 2 Infineum UK Ltd, Abingdon, United Kingdom	Friday, 2 September 10.10-10.20

Contributions from University of Leeds

Screen 9

Title	Authors	Institution	Presentation time
Imaging and Image Processing for 3D Crystal Facetted Growth Measurement and Crystal Shape Characterisation of L-Glutamic Acid	<u>A. S. M. Jackson</u> ¹ , Cai Y Ma ¹ , David C. Hogg, ² K. J. Roberts ¹	1 Centre for Doctoral Training in Complex Particulate Products and Processes, School of Chemical and Process Engineering, University of Leeds, Leeds, United Kingdom; 2 School of Computing, University of Leeds, Leeds, United Kingdom	Thursday, 1 September 10.25-10.35
Inter-relationship between Intermolecular Interactions and Lattice Energetics in the Crystal Structures of Pharmaceutical Materials	Cai Y Ma, Alexandru Moldovan, Andrew G P Maloney, and Kevin J Roberts	University of Leeds, The Cambridge Crystallographic Data Centre	Thursday, 1 September 10.35-10.45
Understanding the Impact of Crystal Chemistry on the Comparative Crystallisation of Entacapone Polymorphic Forms and their Directed Nucleation on Gold Templates	Cai Y Ma ¹ , Ana Kwokal ² , Dawn Geatches ³ , Ya-Wen Hsiao ³ , and <u>Kevin J Roberts</u> ^{1,*}	1 Centre for the Digital Design of Drug Products, School of Chemical and Process Engineering, University of Leeds, Leeds, LS2 9JT, UK; 2 Syngenta, Jealott's Hill International Research Centre, Bracknell, RG42 6EY, UK; 3 Science and Technologies Facilities Council, Daresbury Laboratory, Sci-Tech Daresbury, Warrington WA4 4AD, UK	Thursday, 1 September 10.45-10.55

Machine Learning, Imaging and Image Processing for 3D Crystal Shape Characterisation	Cai Y Ma ¹ , David C Hogg ² , Robert B Hammond ¹ , and <u>Kevin J Roberts^{1,*}</u>	1 Centre for the Digital Design of Drug Products, School of Chemical and Process Engineering, University of Leeds, Leeds LS2 9JT, UK; 2 School of Computing, University of Leeds, Leeds LS2 9JT, UK	Thursday, 1 September 15.10-15.20
Modelling of Batch Cooling Crystallisation Processes: Effect of Crystallisation Kinetics on Crystal Size Distribution	S.Mohd Noor, C.Y.Ma, T.Mahmud, R.Y. Penchev and K.J.Roberts	Centre for Doctoral Training in Complex Particulate Products and Processes, School of Chemical and Process Engineering, University of Leeds, Leeds, United Kingdom;	Friday, 2 September 10.10-10.20
John Neil Sherwood (1933-2020): An Appreciation	Kevin J Roberts	Centre for the Digital Design of Drug Products, School of Chemical and Process Engineering, University of Leeds, Leeds LS2 9JT, UK	Friday, 2 September 10.20-10.30

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