

Invited Lectures

Plenary speakers

Dr. Joelle Aubin (University of Toulouse)

Keynote speakers

Prof. Erich Windhab (ETH Zurich)

Prof. Omar Matar (Imperial College London)

Prof. Richard Lueptow (Northwestern University)

Prof. Amy Shen (Okinawa Institute of Science and Technology, OIST)

Dr. Tetsu Kamiya (Meiji)

Prof. Alexandra Komrakova (University of Alberta)

Invited speaker in Young researcher's session

Prof. Dan Wang (Beijing University of Chemical Technology)

Oral Presentation

Day2 (30th Nov)

Oral Session 1-1

O-111

Representative Shear Rate for Agglomeration in Mixing Tank: Impeller Type and Particle Concentration
Y. Ochi, Y. Komoda, N. Ohmura
(Kobe University)

O-112

An experimental and numerical study of particle mixing in a specially designed rotating drum
H. P. Kuo^{1,2}, A.N. Huang², X. Wang², T.C. Cheng², W.Y. Hsu²
(¹National Taiwan University, ²Chang Gung University)

O-113

Reconsideration of Metzner and Otto's concept and constant in the field of the mixing engineering
M. Kaminoyama¹, Y. Kawaguchi²
(¹ Yokohama National University, ² Kawaguchi Engineering Consulting Office)

Oral Session 1-2

O-121

Using Electrical Resistance Tomography for the mixing time measurement in a tank stirred with a Maxblend impeller

S. Iwasawa¹, H. Kubo¹, K. Takenaka¹, F. Maluta², G. Montante², A. Paglianti³
(¹ Sumitomo Heavy Industries Process Equipment, ^{2,3} University of Bologna)

O-122

The Effect of Impeller Pumping Direction and Impeller Spacing on Mixing Performance in a Fermenter
R. O. Kehn¹, K. Logsdon², S. Xu³
(^{1,2,3} SPX FLOW (Lightnin Mixers))

O-123

Local Distribution of Oxygen Mass Transfer Coefficient and Interfacial Area in non-Newtonian solutions in Bioreactors Furnished with Different Types of Coaxial Mixers

M. Jamshidzadeh, F. Ein-Mozaffari, A. Lohi
(Ryerson University)

O-124

Heat Transfer Characteristics of Newly Developed Enclosed Induction Heating Mixing Impeller
K. Nakao¹, K. Kashiyama¹, Y. Hirata², N. Ohmura³, N. Nakao⁴, K. Miyabo⁵
(¹ Fukui University of Technology, ² Osaka University, ³ Kobe University, ⁴ Kansai Electric Power, ⁵ Kajiwara Kogyo)

Oral Session 1-3

O-131

Mechanical structure and mixing characteristics of SWINGSTIR® reactor
T. Ogawa¹, N. Yamagami¹, T. Kato¹, S. Yamada², N. Ohmura²
(¹ Kobelco Eco-Solutions, ² Kobe University)

O-132

Experimental study on non-Newtonian mixing in biogas plants
S. Annas^{1,2}, M. Elfering^{1,2}, H.-A. Jantzen¹, J. Scholz¹, U. Janoske²
(¹ FH Münster, ² Bergische Universität Wuppertal)

O-133

Multiscale simulation of a high-shear mixer for food emulsion production

M. Ferrari¹, G. Boccardo¹, A. Buffo¹, M. Vanni¹, J.W. Handgraaf², D. L. Marchisio¹
(¹ Politecnico di Torino, ² Culgi BV)

O-134

Assessment of Different Mixing Scales by PEPT Lagrangian Trajectories

C. Savari, K. Li, M. Barigou
(University of Birmingham)

Oral Session 1-4

O-141

Axial and Radial Mixing Characteristics in a Micro-Scale Oscillatory Baffled Reactor

T. Horie^{1,3}, A. Machida², N. Numata², N. Kumagai², K. Suzuki², Y. Komoda², N. Ohmura²
(¹ Osaka Prefecture University, ^{2,3} Kobe University)

O-142

Mitigation of scale formation in an agitated vessel using via baffle modification

S. M. Khayry¹, E. Sato², M. Davoody^{1,3}, J. Wu³, N. Ohmura², S. Madapusi¹,
S. Bhattacharya¹, R. Parthasarathy¹
(¹ RMIT University, ² Kobe University, ³ CSIRO Mineral Resources)

O-143

How Coherent Structures Dominate Fluid Motion in Turbulent Flow in Stirred Vessels

K. Li, M. Barigou
(University of Birmingham)

Oral Session 1-5

O-151

Investigation of the mixing process with a large-type impeller in laminar state using mixing tracer particles

K. Nishi, K. Sakata, M. Oishi, R. Takani
(Chiba Institute of Technology)

O-152

Performance of Fine Particles Suspension at High Loadings using Various Impeller Designs in Flat and Dished Base Tanks

N. S. Janurin¹, C. E. Choong¹, Z. Zamzamm², S. Ibrahim³, M. I. I. Z. Abidin⁴
(^{1,3,4} University of Malaya, ² Satake Chemical Equipment Mfg)

O-153

Scale-down methodology to study the effect of fluid dynamic stress and oxygen gradients on filamentous fungal fermentations producing cellulases

F. B. Chaabane¹, T. Goncalves-Roque¹, C. Beal², A. W. Nienow¹, F. Augier⁴
(^{1,4} IFP Energies nouvelles, ² UMR 782 Agroparis Tech Inra, ³ University of Birmingham)

O-154

Dynamic CFD-based compartment models for the assessment of gradients in large-scale fermentation processes with diverse mixing strategies

G. Nadal-Rey^{1,2}, D. D. McClure³, J. M. Kavanagh³, B. Cassells², S. Cornelissen^{2,4},
D. F. Fletcher³, K. V. Gernaey¹

(¹ Technical University of Denmark, ² Novozymes A/S,
³ The University of Sydney, ⁴ Centriant Pharmaceuticals)

Day2 (1st Dec)

Oral Session 2-1

O-211

Effect of Inner Baffle on Mixing Performance with small impellers in shear thinning fluid

H. Furukawa, Y. Mizuno, Y. Kato
(Nagoya Institute of Technology)

O-212

Bubble Plume Induced Mixing

D. Laupsien, C. L. Men, A. Cockx, A. Liné
(University of Toulouse)

O-213

Identification of suspension state and solid particles physical properties using Passive Acoustic Emission and Machine Learning in a solid-liquid mixing system

A. Rossi^{1,2}, F. Alberini², E. Brunazzi¹
(¹ University of Pisa, ² University of Birmingham)

Oral Session 2-2

O-221

De-agglomeration of polyacrylonitrile (PAN) particles aggregate by mixing

T. Yazawa, Y. Murakami, M. Naya, H. Matsukawa, K. Otake, A. Shono
(Tokyo University of Science)

O-222

Efficient numerical methods for multi-objective design optimization of stirred tanks

M. Wu¹, N. Jurtz¹, A. Walle², M. Kraume¹
(¹ TU Berlin, ² Astrid Walle CFDsolutions)

O-223

How to trigger mixing, or demixing in a mixer?

L. Kahouadji¹, O Matar¹, S. Frey², E. Windhab², S. Wang³
(¹ Imperial College, ² ETH Zurich, ³ City University of Hong Kong)

Oral Session 2-3

O-231

Estimation of the just suspended impeller speed for mixed slurries in a stirred tank

M. Aida², H. Kobayashi¹, Y. Murakami¹, H. Matsukawa¹, K. Otake¹, A. Shono¹
(¹ Tokyo University of Science, ² Idemitsu Kosan)

O-232

Improve Agitation Reliability of Minerals Processing Tanks

J. Wu¹, B. Ngyuen¹, M. Hurley¹, L. Graham¹, W. Bruckard¹,
G. Short, D. Harris, J. Kieruj¹, R. Parthasarathy²
(¹ CSIRO Mineral Resources, ² RMIT University)

O-233

Interfacial instabilities and mixing during microchannel displacement with a pure viscoelastic fluid

S. H. Hue, L. Chagot, P. Angeli
(University College London)

O-234

Effect of mixing on the reactive crystallization of NixMnyCo1-x-y(OH)2 hydroxides for battery applications

M. L. Para, M. Shiea, G. Tronci, M. Alidoost, A. Buffo, G. Boccardo, A. Barresi, D. Marchisio
(Politecnico di Torino)

Day3 (2nd Dec)

Oral Session 3-1

O-311

Role of central slits of a rotationally reciprocating plate on fluid mixing

K. Komoda, T. Date, H. Hirose, T. Horie, N. Ohmura
(Kobe University)

O-312

Shear environment and mass transfer coefficient in aerated coaxial mixing systems containing power-law fluids

A. Rahimzadeh, F. Ein-Mozaffari, A. Lohi
(Ryerson University)

O-313

Single Drop Breakage in Karr Column

J. Y. Z. Zhang¹, J. D. Berry², Y.D. Wang¹, K. A. Mumford², G.W. Stevens², D. J. E. Harvie², W. Y. Fei¹
(¹Tsinghua University, ²The University of Melbourne)

O-314

Mixing enhancement of Taylor-Couette flow reactor with ribbed inner cylinder in continuous starch hydrolysis process

H. Masuda^{1,2}, M. Matsumoto¹, M. Shimoyamada¹, R. Hubacz³, N. Ohmura^{2,4}
(¹University of Shizuoka, ²Complex Fluid and Thermal Engineering Research Center, ³Warsaw University of Technology, ⁴Kobe University)

Oral Session 3-2

O-321

Flow regimes of double emulsion production by a flow focusing technique

R. Hidema, R. Ohashi, H. Suzuki
(Kobe University)

O-322

DEM-VOF simulations on the drawdown mechanism of floating particles in turbulent stirred tanks

Q. Kang¹, X. Feng^{2,3}, J. Wang¹, C. Yang^{2,3}
(¹Tianjin University, ²Chinese Academy of Sciences, ³University of Chinese Academy of Sciences)

O-323

Novel Bach Impeller for Microcarrier Cell Culture in Stirred-Tank Bioreactors

T. A. Wyrobnik¹, S. Oh², A. Ducci³, M. Micheletti¹
(¹University College London, ²A*STAR Bioprocessing Technology Institute, ³Cellmotion, ⁴University College London)

Oral Session 3-3

O-331

Wastewater aeration system with novel conical mixer

A. Grigoreva, R. Abiev
(St. Petersburg State Institute of Technology)

O-332

Pressure drop oscillations during gelation inside mixing systems

A. S. Madhavikutty¹, T. Hozumi¹, S. Ohta², T. Ito^{1,2}
(¹The University of Tokyo, ²The University of Tokyo)

O-333

Toward a 3D description of the flow in a stirred tank using POD

C. Mayorga¹, J. Morchain¹, A. Liné¹
(¹Université Fédérale Toulouse Midi-Pyrénées)

O-334

Numerical and experimental investigation of the flow generated by a flat blade impeller used in perfusion processes

A. D. Charalambidou¹, A. Ducci², M. Micheletti¹
(¹ University College London, ² University College London)

O-335

Development of a scale-up methodology for batch phase separation of stirred liquid-liquid systems

J. Villwock, M. Kraume
(Technische Universität Berlin)

O-336

Volumetric mass transfer coefficient in mechanically agitated vessels. Experimental study

T. Kracik, T. Moucha, A. Žák
(University of Chemistry and Technology, Prague)

Poster session (2nd Dec)

Poster session 1

P-101

Prediction of averaged shear rate in a static mixer using Metzner-Otto type correlation

Y. Konishi¹, T. Horie², T. Toyoda³, N. Ohmura¹

(¹ Kobe University, ² Osaka Prefecture University, ³ Kaneka Corporation)

P-102

Scaleup of inline mixer in 3D printing of concrete

T. Wangler
(ETH Zürich)

P-103

Evaluation of mixing characteristics of a helical pipe type static mixer with Kenics type element using CFD

K. Ikeda, H. Furukawa, Y. Kato

(Nagoya Institute of Technology)

P-104

Incorporation of fine powders into a liquid using an in-line rotor-stator

A. Utomo¹, G. A. Padron¹, N. G. Özcan-Taşkın^{1,2}

(¹ BHR Group, ² Loughborough University)

P-105

Experimental Analysis of Dispersion of Immiscible Fluids with Large Density Difference

A. Ahmad Bhat¹, S. rinivas Jayanti², B.P. Reddy, B. Muralidharan¹

(¹ Indira Gandhi Centre for Atomic Research, ² Indian Institute of Technology Madras)

P-106

Influence of dispersed phase fraction on droplet sizes and separation time in batch settler

S. Ye, L. Hohl, M. Kraume
(Technische Universität Berlin)

P-107

Prediction of the Bubble Size Distribution and the Mass Transfer Coefficient for an Aerated Stirred Tank

S. Fujioka¹, T. Mashima¹, H. Jansen², Y. Yamamoto¹, K. Terasaka¹, M. Schlüter²

(¹ Keio University, ² Hamburg University of Technology)

P-108

Gas holdup formation and power consumption in mechanically agitated vessel

T. Kracík, T. Moucha
(University of Chemistry and Technology, Prague)

P-109

Modelling of 3D Particle-Liquid Flows Using a Data-Driven Machine Learning Approach

H. A. Sheikh, A. J. Jadhav, M. Barigou
(University of Birmingham)

P-110

Bioinspired synthesis of silica nanoparticles: degree of mixing and mixing time analysis

Y. Baba¹, M. Chiacchia^{1,2}, S. V. Patwardhan¹

(¹ The University of Sheffield, ² Nexxon)

P-111

Polystyrene particle synthesis using ultrasound for preparation of emulsion

D. Kobayashi¹, A. Kawashima¹, R. Hiwatashi², K. Otake², A. Shono²

(¹ Tokyo Denki University, ² Tokyo University of Science)

P-112

Effect of geometrical configuration of baffles on power consumption in a stirred vessel with different impellers

Y. Ochi¹, E. Sato¹, H. Horiguchi², T. Horie³, Y. Komoda¹, N. Ohmura¹
(¹ Kobe University, ² Sumitomo Heavy Industries Process Equipment, ³ Osaka Prefecture University)

P-113

Effect of impeller speed on scale mitigation in an agitated vessel using maxblend impeller

S. M. Khayry¹, E. Sato², M. Davoody^{1,3}, J. Wu³, N. Ohmura²,
S. Madapusi¹, S. Bhattacharya¹, R. Parthasarathy¹
(¹ RMIT University, ² Kobe University, ³ CSIRO Mineral Resources)

P-114

CFD modelling of two-phase particle-liquid flow in a stirred vessel using a Eulerian- Lagrangian approach

A. J. Jadhav, M. Barigou
(University of Birmingham)

P-115

Computational Prediction of the Just-Suspended Speed, N_{js} , in Stirred Vessels Using Lattice Boltzmann Method (LBM) Coupled with Novel a Computation Approach

Chadakarn Sirasitthichoke, Piero M. Armenante
(New Jersey Institute of Technology)

P-116

Mixing assessment of bi-disperse non-cohesive solid particles in a horizontal double paddle blender through experiments and DEM

B. Jadidi, M. Ebrahimi, F. Ein-Mozaffari, A. Lohi
(Ryerson University)

P-117

Investigation of dispersion of solid particles in Newtonian and non-Newtonian fluids with coaxial mixers through tomography and numerical modelling methods

P. Mishra, F. Ein-Mozaffari
(Ryerson University)

P-118

Micromixing time characterisation in continuous oscillatory baffled reactor

M. Avila^{1,2}, D.F. Fletcher³, M. Poux¹, C. Xuereb¹, J. Aubin¹
(¹ Université de Toulouse, ² Université de Toulouse, ³ The University of Sydney)

P-119

Image analysis quantification of additive solution dispersion and mixing in a turbulent stirred tank

D. Asano¹, R. Misumi¹, K. Tsuchioka²
(¹ Yokohama National University, ² Sumitomo Metal Mining)

P-120

Control of microstructure in ice cream by agitation speed during freezing

M. Sawano, H. Masuda, M. Shimoyamada
(University of Shizuoka)

Poster Session 2

P-201

Analysis of vessel bottom type single-shaft composite mixer “MIXILATORTM”

K. Kanazawa¹, S. Nii², H. Nishikawa²
(¹ PRIMIX PLUS, ² PRIMIX Corporation)

P-202

Development of a High Performance Digest Reactor

K. Ago¹, T. Nemoto¹, Y. Kato¹, T. Kurinami², K. Igarashi², S. Inoue²
(¹ Satake Chemical Equipment Mfg, ² Metawater)

P-203

Effect of geometry of a stirring rod rotating agitator SWINGSTIR® on mixing performance

S. Yamada¹, N. Yamagami², T. Kato², T. Ogawa², N. Ohmura¹
(¹ Kobe University, ² Kobelco Eco-Solutions)

P-204

Effect of rheological properties on the mixing pattern induced by a rotationally reciprocating anchor impeller

H. Hirose, Y. Komoda, T. Horie, N. Ohmura
(Kobe University)

P-205

Influence of impeller projection area on heat transfer performance of mixing equipment

S. Kamakura, K. Takata
(Kure National College of Technology)

P-206

Mixing Time, Power Consumption, and Flow Dynamics in a 1 L Allegro™ STR Bioreactor Mimic

J. Delbridge¹, T. Barret², A. Ducci³, M. Micheletti¹
(^{1,3} University College London, ² Pall Corporation)

P-207

Influence of impeller geometry on hydromechanical stress in aerated stirred tank bioreactors

C. Bliatsiou, P. Waldherr, L. Böhm, M. Kraume
(Technische Universität Berlin)

P-208

Fluid flow and mixing in an intermittently rotating vertical cylinder used for T-cell culture

G. Atanasova, A. Ducci, M. Micheletti
(University College London)

P-209

A two-layer PDMS microfluidic device for plant roots growth observation

D. Kralik¹, Z. Slouka¹, M. Fendrych²
(¹ University of Chemistry and Technology, Prague, ² Charles University)

P-210

Fluid dynamics investigation of a single phase tank stirred by close-clearance impellers based on 3D-PIV measurements

H. Kubo¹, S. Iwasawa¹, K. Takenaka¹, F. Maluta², G. Montante², A. Paglianti³
(¹ Sumitomo Heavy Industries Process Equipment, ^{2,3} University of Bologna)

P-211

Flow Pattern and Velocity Characteristics of Radial and Axial Impellers and the Effects on Mixing Time over a Range of Operating Conditions

Nor. Abdullahi¹, S. Ibrahim², C. E. Choong¹, N. S. Mohd¹, M. I. I. Z. Abidin³
(^{1,2,3} University of Malaya)

- P-212
CFD evaluation of impeller shape on the discharge performance in turbulent mixing
K. Morita, K. Takata
(Kure National College of Technology)
- P-213
Shear rate in the stirred tank reactor
A. Žák¹, T. Moucha¹, A. Paglianti²
(¹ University of Chemistry and Technology, Prague, ² University of Bologna)
- P-214
CFD simulation of high-viscosity fluid in a stirred tank and verification by PIV measurement
N. Ogawa, R. Misumi
(Yokohama National University)
- P-215
Data driven reconstruction of 3D large-scale structures inside a stirred tank from limited velocity measurements
K. Mikhaylov¹, S. Rigopoulos², G. Papadakis¹
(^{1,2} Imperial College London)
- P-216
Gas dispersion in yield-pseudoplastic fluids with coaxial mixers
P. L. Barros, F. Ein-Mozaffari, A. Lohi
(Ryerson University)
- P-217
Mixing viscoelastic fluids with side-entering impellers – Control and optimized agitator designs
M. Kolano, M. Kraume
(Technical University of Berlin)
- P-218
Scaling of compartment sizes in stirred viscoelastic fluids
A. Maywurm, M. Kolano, M. Kraume
(Technical University Berlin)
- P-219
Using Alternating High-and-Low-Shear Environments to Examine the Build-up of Localized Yield Stress in Mineral Slurries of Nickel Laterite
Mohie A. Chaaban, Suzanne M. Kresta
(University of Saskatchewan)