

DAY ONE – 27 JUNE 2011

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9.00-9.50	Plenary Lecture "Multiphase Flow in Micro and Mini Reactors –Synthesis of Fine Chemicals and Nanoparticles", Klavs F. Jensen, Department of Chemical Engineering, MIT, USA					
	ROOM 1		ROOM 2		ROOM 3	
10.00-10.20	Layer Inversion and Mixing of Binary Solids in Two- and Three-Phase Fluidized Beds	Byung-Soon Chun, <u>Dong Hyung Lee</u> , Norman Epstein, John R. Grace, Ah-Hyung Alissa Park, Sang Done Kim, and Jea Keun Lee	Predicting inter-phase mass transfer for idealized Taylor flow: A comparison of numerical frameworks	<u>Donaldson, Adam A</u> ; Macchi, Arturo; Kirpalani, Deepak	Investigating Liquid-Solid Mass Transfer Multiplicity in Trickle Bed Reactors	<u>Joubert, Rita</u> ; Nicol, Willie
10.20-10.40	Experimental study of gas-liquid mass transfer coupled with chemical reactions by digital holographic interferometry	<u>Wylock, Christophe Etienne</u> ; Dehaeck, Sam; Cartage, Thierry; Colinet, Pierre; Haut, Benoît	CFD-based compartmental modelling of stirred tank reactors	<u>Bashiri, Hamed</u> ; Chaouki, Jamal; Bertrand, François; Heniche, Mourad	INVESTIGATION OF LIQUID HYDRODYNAMICS IN TWO-DIMENSIONAL AIR-WATER BUBBLE COLUMN WITH RADIOACTIVE PARTICLE TRACKING	<u>Upadhyay, Rajesh</u> ; Roy, Shantanu; Pant, Harish J.
10.40-11.00	Acid-gases removal by electrolytic solutions of amines in packed-column : rigorous modelling and experimental validation	<u>Ahmadi, Aras</u> ; Meyer, Michel; Rouzineau, David; Prevost, Michel; Alix, Pascal; Laloue, Nicolas	Multi-scale analysis of gas-liquid interaction and CFD simulation of gas-liquid flow in bubble columns	<u>Yang, Ning</u> ; Wu, Zongying; Chen, Jianhua; Wang, Yuhua; Li, Jinghai	Catalytic SiC foam applied to Reactive Distillation	<u>Leveque, Julien</u> ; Rouzineau, David; Prevost, Michel; Meyer, Michel
11.00-11.30	Coffee break					
11.30-11.50	2D simulations of partially wetted catalyst particles : a focus on heat transfer limitations	Bazer-Bachi, Frederic; <u>Augier, Frederic</u> ; Santos, Bruno	Investigations on Hydrodynamics and Mass transfer in Gas-Liquid Stirred Tank Reactor using Computational Fluid Dynamics	<u>Sivaraman, Savithri</u> ; Ranganathan, Panneerselvam	Combining Chaos Analysis, Information Entropy Theory and Radioactive Techniques for Flow Regime Identification in Both Bubble Columns and	<u>Nedeltchev, Stoyan Novakov</u> ; Shaikh, Ashfaq; Fadha, Ahmed; Al Dahhan, Muthanna

					Fluidized Beds	
11.50-12.10	Pressure Drop and Mass Transfer Studies in Structured Catalytic Packings	Zhigang, Lei; Chengna, Dai; Biaohua, Chen	Contact Line Motion Without Slip in Lattice Boltzmann Simulations	Kamali, M.R.; Gillissen, J.J.J.; Sundaresan, S.; van den Akker, H.E.A.	Can we control the hydrodynamics of slurry bubble columns?	Hooshyar, Nasim; Hamersma, Peter J.; Mudde, Robert F.; van Ommen, J. Ruud
12.10-12.30	Hydrodynamics of gas liquid flow in minichannels bounded with permeable walls	Bi, Xiaotao Tony; Zhang, Lifeng; Wilkinson, David; Stumper, Jurgen; Wang, Haijiang	High-order simulation of a bubble column using Population Balance	Sporleder, Federico; Dorao, Carlos Alberto; Jakobsen, Hugo Atle	Effect of spent grains on flow regime transition in Bubble Column	Mota, André Manuel; Vicente, António A.; Teixeira, José A.
12.30-14.00	Lunch					
14.00-14.50	Plenary Lecture - "Advanced Eulerian models for multiphase flows", Rodney O. Fox, Department of Chemical and Biological Engineering, Iowa State University, USA					
15.00-15.20	Particle Fluctuations and Dispersion in Three-phase Fluidized Beds with Viscous and Low Surface Tension Media*	Lim, Hyun-Oh; Seo, Myung-Jae; Kang, Yong; Jun, Ki-Won	CFD simulation and experimental measurement of gas holdup and liquid interstitial velocity in internal loop airlift reactor	Simcik, Miroslav; Mota, Andre; Ruzicka, Marek; Vicente, Antonio; Teixeira, Jose; Drahoš, Jiří	Mass Transfer in Bubble Columns with Organic Liquids	Jordan, Uwe; Nedeltchew, Stoyan; Schumpe, Adrian
15.20-15.40	Direct numerical simulation of mass transfer between a gas and a turbulent falling liquid film	Gelbgras, Valérie; Drugmand, Jean-Christophe; Haut, Benoît	Single-phase flow model development for macroscopic liquid flow evaluation in gas-liquid reactors by computational fluid dynamics	L. Martinelli, S.Talvy, S.Liégeois, A.VandenBerghe, E. Chauveheid, B.Haut	Analysis of bubble populations obtained in full-scale aeration tanks in clean water	Fayolle, Yannick; Cockx, Arnaud; Legendre, Dominique; Gillot, Sylvie
15.40-16.00	Hydrodynamics and performance of a novel slurry bubble column – Column flotation	Shukla, Satish Chandra; Mukherjee, Dibyendu; Kundu, Gautam	Development of a tool using CFD for the assessment of the disinfection process by ozonation in industrial scale drinking water treatment plants .	S. Talvy, F.Debaste, L.Martinelli, E.Chauveheid, B.Haut	Effects of viscosity and relaxation time on the hydrodynamics of gas-liquid systems	Olivieri, Giuseppe; Marzocchella, Antonio; Salatino, Piero
16.00-16.30	Coffee break					

16.30-16.50	The Influence of Operational Conditions on the Meniscus Dynamics in Bubble Formation	Stanovsky, Petr; Ruzicka, Marek C.; Drahoš, Jiří	CFD Simulation of air lift reactors: Design Optimization	Deshpande, Sagar S.; Dhotre, Mahesh T.	Development of closure laws for eulerian two-fluid models for packed beds dedicated to CO2 absorption.	Fourati, Manel; Raynal, Ludovic; Roig, Veronique
16.50-17.10	Effect of a dispersed immiscible liquid phase on the hydrodynamics of a bubble column and ebullated bed	Pjontek, Dominic; Landry, Jérôme; McKnight, Craig; Hackman, Larry; Macchi, Arturo	Numerical Simulation of Bubble Interactions Using an Adaptive Lattice Boltzmann Method	Yu, Zhao; Yang, Hui; Fan, L-S	Application of Information Entropy Theory to Differential Pressure Fluctuations in a Bubble Column*	<u>Nedeltchev, Stoyan</u> <u>Novakov</u>
17.10-17.30	Droplet detachment and Co-Jet Phenomenon in confined geometry of an Advanced Flow Reactor	Remacha, Maria Jose Nieves; Kulkarni, Amol A.; Jensen, Klavs F.	A CFD-based approach to the interfacial mass transfer at free gas-liquid interfaces	Ganguli, Arijit; <u>Kenig,</u> <u>Eugeny</u>	Evaluation of droplet size and mass flux using PDA and shadowgraphy for large scale facilities: An experimental study	<u>Deshpande, Sagar S.</u>

17.30-19.30

POSTER SESSION

9.00-9.50 Plenary Lecture - "Hybrid Simulation of Gas-Liquid and Gas-Liquid-Solid Bubbly Flows in Bubble Columns", Akio Tomiyama, Kobe University, Japan

	ROOM 1	ROOM 2	ROOM 3
10.00-10.20	Microfluidic Gas-Liquid Segmented Flow: Generation, Stability and Experimental Mixing Evaluation	<u>Boskovic, Dusan;</u> <u>Panic, Slobodan;</u> <u>Loebbecke, Stefan</u>	CFD and experimental studies of reactive pulsing flow in environmentally-based trickle-bed reactors
		<u>Lopes, Rodrigo JG;</u> Quinta-Ferreira, Rosa M	Potential of ionic liquids for VOC biodegradation in a two-liquid phase system
10.20-10.40	The Evaluation of Scale-up Procedures in GL and GLS Mechanically Agitated Vessels	<u>Jafari, Rouzbeh;</u> Chaouki, Jamal; Tanguy, Philippe	Numerical investigation of the drag force on bubbles in bubble swarms
		<u>Roghair, Ivo;</u> van Sint Annaland, Martin; Kuipers, Hans	Development of Microbubble Aerator for Waste Water Treatment Using Aerobic Activated Sludge
10.40-11.00	Quantifying SGS Turbulent dispersion force and its effect using One-equation sub-grid scale (SGS) Euler-Euler large eddy simulation (EELES) Model in a Gas-Liquid, a Liquid-Liquid and a Solid-Gas system.	Tabib, Mandar Vasudeo; <u>Schwarz, Philip</u>	Two phase natural convection: CFD Simulations and PIV measurement
		Gandhi, M. S.; Sathe, M. J.; <u>Joshi, J. B.</u>	Dynamics of Drop Impact and Spreading on Inclined Surfaces
11.00-11.30	Coffee break		
11.30-11.50	Motion of Single Ellipsoidal Bubble in Co-Current and Counter-Current Shear Flow: Experiments and CFD	<u>Kulkarni, Amol Arvindrao</u>	Numerical investigation of the drag closure for bubbles in bubble swarms
		<u>Lau, Yuk Man;</u> Deen, Niels; Kuipers, Hans	Heat transfer in Three - Phase(G/L/S) Circulating Fluidized Beds with Low Surface Tension Media
11.50-12.10	Solid Suspension and Dispersion in Moderate to Dense Liquid-Solid Mixing	<u>Jafari, Rouzbeh;</u> Chaouki, Jamal; Tanguy, Philippe	CFD ANALYSIS OF ENERGY AND PHASE SEPARATION IN RANQUE-HILSCH VORTEX TUBE AT CRYOGENIC TEMPERATURE
		<u>Bandyopadhyay, Syamalendu S.;</u> Dutta, Tanmay; Sinhamahapatra, Kalyan P.	Gas-Liquid-Solid Reactors for Environment Protection: Remediation of Phenolic Wastewaters by Advanced Oxidation Processes (AOPs) at Ambient Conditions
12.10-12.30	Investigation of flow	Sathe, M J; Mathpati,	Measurement of liquid
		<u>Schubert, M.;</u> Hampel,	Environmental
			<u>Rossi, André F.;</u>

	structures and transport phenomena in bubble columns using particle image velocimetry and miniature pressure sensors	C S; <u>Joshi, J B</u>	distributions in separation columns	U.; Kenig, E. Y.; Grünewald, M.	Heterogeneous Fenton using ceria based solid catalysts: effect of the calcination temperature in the process efficiency.	Martins, Rui C.; Amaral-Silva, Nuno; Quinta-Ferreira, Rosa M.
12.30-14.00	Lunch					
14.00-14.50	Plenary Lecture - "Some aspects of bubbly flows dynamics as revealed by advanced measuring techniques combined with hybrid modeling", Alain Cartellier, LEGI (Laboratoire des Ecoulements Géophysiques et Industriels), CNRS- Grenoble University, France					
15.00-15.20	Engineering Adhesive Biocatalytic Coatings for Microbial Microchannel Bioreactors for High Intensity Chiral Oxidations	Fidaleo, Marcello; <u>Flickinger, Michael C.</u>	Mass transfer in a dense bubble swarm.	<u>Colombet, Damien</u> ; Legendre, Dominique; Cockx, Arnaud; Guiraud, Pascal; Risso, Frederic; Cazin, Sebastien; Daniel, Claude; Galinat, Sophie	Kinetic model of NOx ozonation and its experimental verification	<u>Ledakowicz, Stanislaw</u> ; Skalska, Kinga; Miller, Jacek S.
15.20-15.40	A multiscale approach for studying an anaerobic multiphase bioreactor	Zhang, Jinbai; Poncin, Souhila; Wu, Jing; <u>Li, Huai Z</u>	New insights into gas/liquid textures in rotating solid foams	<u>Schubert, M.</u> ; Bieberle, A.; Hampel, U.; Tschentscher, R.; Nijhuis, T. A.; van der Schaaf, J.; Schouten, J. C.	Destruction of chlorinated organics by hydrotreatment using Ru/TiO2 catalyst	Dussa, Vikramkumar S.; <u>Vaidya, Prakash D.</u>
15.40-16.00	DECOUPLING OF OXYGEN TRANSFER AND POWER DISSIPATION FOR THE STUDY OF THE PRODUCTION OF PRISTINAMYCINS BY STREPTOMYCES PRISTINAESPIRALIS IN SHAKING FLASKS	Nasir, Mehmood; <u>Eric, Olmos</u> ; Jochen, Büchs; Jean-Louis, Goergen; Stéphane, Delaunay	DIRECT MEASUREMENT OF MASS TRANSFER AROUND A SINGLE BUBBLE BY MICRO-PLIF	François, Jessica; <u>Dietrich, Nicolas</u> ; Cockx, Aarnaud	ABSORPTION OF CARBON DIOXIDE IN PIPERAZINE ACTIVATED CONCENTRATED AQUEOUS 2-AMINO-2-METHYL-1-PROPANOL SOLVENT	<u>Bandyopadhyay, Syamalendu S.</u> ; Dash, Sukanta Kumar; Samanta, Arunkumar; Samanta, Amar Nath
16.00-16.20	Residence Time Distribution Measurements in a	<u>Essadki, Abdelhafid</u>	Experimental investigations of lift force acting on	Rabha, Swapna S.; <u>Buwa, Vivek V.</u>	Foaming Characteristics of Industrial Amine	<u>Al Taweel, Adel M.</u> ; Kiest, Brian; Xue, Yan; Rafi, M. S.;

	External-loop Airlift Reactor: Study of the hydrodynamic of the liquid circulation induced by the hydrogen bubbles.	single/multiple bubbles rising in sheared liquids	Scrubbing Streams	Boucher, Heather; Odedra, Dilip
16.20-16.40				
16.40-17.00	Coffee break			

17.00-18.30	POSTER SESSION
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9.00-9.50	Plenary Lecture - "Inventing multiphase flow systems at pilot and microreactor scales", Malcolm Mackley, Department of Chemical Engineering and Biotechnology, University of Cambridge, Cambridge, UK NORMAN EPSTEIN			
10.00-10.20	An experimental study of gas void fraction in dilute alcohol solutions in annular gap bubble columns using a four-point conductivity probe	<u>Aloufi, Fahd Mahboob</u>; Rielly, Chris D.; Cumming, Iain W.	Global gas/liquid/solid volumetric mass transfer coefficients in a single pellet string reactor	<u>Rolland, Matthieu</u>; Hipolito, Ana; Boyer, Christophe; de Belefon, Claude
10.20-10.40	EXPERIMENTAL CHARACTERIZATION OF COUNTER-CURRENT LIQUID-GAS FLOWS OVER CORRUGATED SURFACES	<u>Vitry, Youen</u>; Rouzineau, David; Meyer, Michel; Prevost, Michel	Experimental Analysis of Local Turbulence in Bubble Column Reactors	<u>Kulkarni, Amol Arvindrao</u>
10.40-11.00	Ultrafast tomography for multiphase flow measurement in process applications	<u>Hampel, U.</u>; Fischer, F.; Bieberle, M.; Schubert, M.	MULTIPHASE FLOW DYNAMICS IN STRUCTURED PACKINGS FOR TUBE REACTORS	<u>Vervloet, David</u>; Nijenhuis, John; Van Ommen, J. Ruud; Kapteijn, Freek
11.00-11.30	Coffee break			
11.30-11.50	APPLICATION OF THE RADIOACTIVE PARTICLE TRACKING TECHNIQUE TO PILOT PLANT SCALE VESSELS	Upadhyay, Rajesh; Pant, Harish J.; Sharma, V. K.; <u>Roy, Shantanu</u>	Reactive distillation for selectivity improvement in multiple reaction systems: An experimental and theoretical study	<u>Keller, Tobias</u>; Holtbrügge, Johannes; Górak, Andrzej
11.50-12.10			Heat Transfer in Trickle Bed Column with Constant and Modulated Feed Temperature: Experiments and Modeling	<u>Stüber, Frank</u>; Habtu, Nigus; Ayude, Maria Alejandra; Haure, Patricia; Font, Josep; Fortuny, Agusti; Bengoa, Christophe; Fabregat, Azael
12.10-12.30	Ultrafast X-ray computed tomography of gas-solid fluidized beds	<u>Bieberle, Martina</u>; Fischer, Frank; Menz, Hans-Jürgen; Mayer, Hans-Georg; Hampel, Uwe	BIOPROCESS INTENSIFICATION: ENHANCED PHA PRODUCTION USING POROUS MESH IMPELLERS	<u>Boodhoo, Kamelia</u>; Cartwright, Craig; Cooper, Jerry

12.30-13.00

CLOSING SESSION

13.00-14.00

LUNCH

POSTER PRESENTATIONS

- Gas-Liquid and Gas-Liquid-Solid Transport Phenomena

1.1 Simulation of the gas-liquid CO ₂ absorption in alkaline aqueous solutions from partially contaminated spherical bubbles and ellipsoidal clean bubbles	<u>Wylock, Christophe Etienne</u> ; Larcy, Aurélie; Colinet, Pierre; Cartage, Thierry; Haut, Benoît
1.2 Numerical Investigation of Multicomponent Diffusion in Porous Pellets for Sorption-Enhanced Steam Methane Reforming and Desorption Process	<u>Rout, Kumar Ranjan</u> ; Nayak, Ameeya Kumar; Jakobsen, Hugo Atle
1.3 Effect of the bubble characteristics on the validity of transition concentration for coalescence behaviour of electrolyte solutions	<u>Orvalho, Sandra</u> ; Ruzicka, Marek C.
1.4 GENERALIZED APPROACH FOR HYDRODYNAMIC SIMILITUDE OF COUNTER-CURRENT GAS-LIQUID FLOWS IN EXTREME CONDITION	<u>Vitry, Youen</u> ; Rouzineau, David; Meyer, Michel; Prevost, Michel
1.5 Experimental and theoretical study of bubble interactions with the solid surface	<u>Vobecká, Lucie</u> ; Zedníková, Maria; Vejrazka, Jiri; Ruzicka, Marek C.
1.6 Mass transfer in static mixers	<u>Toader, Adrian Robert</u> ; Hamersma, Peter J.; Mudde, Robert F. Toader, Adrian Robert
1.7 CFD simulation of vertical two phase pipe flow	<u>Deshpande, Gouri S.</u> ; Deshpande, Sagar S.; Dhotre, Mahesh T.
1.8 Hydrodynamics and mass transfer properties of micro-bubbles in a bubble column	<u>Muroyama, Katsuhiko</u> ; Sanda, Takahiro; Oka, Yuji; Fujiki, Ryota; Kubo, Shohei
1.9 Drag coefficient in suspensions of spherical gas bubbles.	<u>Giliissen, Jurriaan</u> ; Sundaresan, Sankaran; Van den Akker, Harrie
1.10 Patterns formation in sedimentary deposit	Kulaviak, L.; Hladil, J.; <u>Ruzicka, M.</u> ; Drahos, J.

1.11 Effect of orifice diameter in CO ₂ -water mass transfer in an oscillatory baffled column	<u>Pereira, F M</u> ; Mackley, M R; Sousa, D Z; Alves, M M; Reis, N M
1.12 Comparative analysis of the absorption of CO ₂ in aqueous solutions of single and blended alkanolamines. Influence of thermal effects	La Rubia García, Maria Dolores; Camacho Rubio, Fernando; Pacheco Reyes, Rafael; Sánchez Villasclaras, Sebastián; López García, <u>Ana Belén</u>

- **Classical Multiphase Reactors: Packed and Trickle Beds, Bubble Columns, Three Phase Slurry and Fluidized Bed Reactors, Stirred Tank Reactors**

2.1 Using image analysis technique for individual characterization of k_L and a in multiphase reactors	<u>Ferreira, António</u> ; Pereira, Graça; Rocha, Fernando; Teixeira, José
2.2 Modeling stochastic effects of random packing in reactors	<u>Rolland, Matthieu</u> ; Pascal, Benjamin
2.3 Synthesis of Dimethyl Ether (DME) by Catalytic Distillation	<u>Zhigang, Lei</u> ; Zhiwu, Zou; Biaohua, Chen
2.4 Effect of electrolytes on mass transfer and hydrodynamics in bubble column operated in homogeneous and heterogeneous conditions	Fialova, Marie; <u>Orvalho, Sandra</u> ; Zednikova, Maria; Drahos, Jiri; Ruzicka, Marek C.
2.5 Investigations of local heat transfer and hydrodynamics in bubble column with internal heat transfer surface	<u>Prakash, Anand</u> ; Jhawar, Anil Kumar
2.6 Dynamics of oxygen absorption in bubble column reactors: hydrodynamic characterization by compartmental models vs axial dispersion model.	<u>Cardona, Salvador C.</u> ; Navarro-Laboulais, Javier; Valiente, Sonia; García-Cantó, Mónica
2.7 Modeling of a Bubble Column Slurry Reactor for Hydrogenolysis of Polyols	<u>Torres, Arely Alejandra</u> ; Roy, Debudt S; Subramaniam, Bala; Chaudhari, Raghunath Vitthal
2.8 Experimental trickle bed reactor optimization for hydrogen peroxide direct synthesis	<u>Biasi, Pierdomenico</u> ; Menegazzo, Federica; Pinna, Francesco; Eränen, Kari; Canu, Paolo; Salmi, Tapio

2.9 Numerical simulation of a fluidized bed reactor and validation of Eulerian-based model for the ozonation of high-strength phenolic wastewaters	<u>Lopes, Rodrigo JG</u>; Quinta-Ferreira, Rosa M
2.10 Catalytic conversion of synthesis to higher hydrocarbons over a CuO-CoO-Cr2O3 catalyst mixed with ZSM-5	<u>Pant, Kamal Kishore</u>; Mohanty, Pravakar; Majhi, Sachchit
2.11 Performances of three-phase continuous loop reactors Used for Direct Coal Liquefaction Process (I): Liquid Side Mass Transfer	Zhang, Xiaodong; Gu, Kuiqing; <u>Liu, Hui</u>; Lei, Zhigang; Li, Hongxing; Li, Jianwei
2.12 Performances of three-phase continuous loop reactors Used for Direct Coal Liquefaction Process (II): Axial Dispersion of Liquid Phase	Zhang, Xiaodong; Gu, Kuiqing; <u>Liu, Hui</u>; Lei, Zhigang; Li, Hongxing; Li, Jianwei
2.13 Direct conversion of methane to liquid hydrocarbons over bi-functional bimetallic Mo/Zn/MFI catalyst	<u>Majhi, Sachchit</u>; Mohanty, Pravakar; Pant, Kamal Kishore

- **Multiphase Computational Fluid Dynamics & Multi-Scale Modeling in Multiphase Chemical Reactors**

3.1 Prediction of Hydrodynamics in Bench-Scale Bubble Column Using Commercial CFD Software	<u>Fujioka, Satoko</u>; Yamanaka, Kenji; Funakoshi, Naoki; Terasaka, Koichi; Kobayashi, Daisuke
3.2 HYDRODYNAMICS OF BINARY FLUIDIZED BEDS: DEM SIMULATIONS AND EXPERIMENTAL VALIDATION	Abhinit, Ashish; Upadhyay, Rajesh; <u>Roy, Shantanu</u>
3.3 MASS TRANSFER AND LIQUID HOLD-UP DETERMINATION IN STRUCTURED PACKING USING VOLUME OF FLUID METHOD	<u>Haroun, Yacine</u>; Raynal, Ludovic; legendre, Dominique
3.4 Shear- versus wake-induced lift force on a single bubble rising in sheared liquids	Rabha, Swapna S.; <u>Buwa, Vivek V.</u>
3.5 Numerical simulations with CFD codes of a 2D bubble column reactor : homogeneous flow, static bubble plume and oscillating bubble plume.	Chiva, Sergio; <u>Perez, Jorge</u>; Julia, Enrique; Hernandez, Leonor; Vela, Antonio
3.6 From local to global modeling of airlift contactor: effect of spatial heterogeneity of gas	Rahmani, Mohamed Ali; Chahed, Jamel; <u>Liné, Alain</u>

distribution	
3.7 Hydrodynamics of an FCC riser using energy-minimization multi-scale drag model	Shah, Milinkumar; Utikar, Ranjeet; Tade, Moses; Evans, Geoffrey; <u>Pareek, Vishnu</u>
3.8 Towards CFD of hot spots in trickle bed reactors	<u>Mousazadeh, Farzad</u> ; Mudde, Robert F; Van den Akker, Harry E.A
3.9 Flow of Concentrated Suspension through Bifurcation: Numerical Simulations	Gupta, Shubham; Singh, Anugrah; <u>Upadhyay, Rajesh Kumar</u>

- Engineering, Microfluidics

4.1 Experimental Study of Co-current Two-phase Flow in a Small Channel for Fuel Cell Applications	<u>Jayanti, Sreenivas</u> ; Patnaikuni, Venkata Suresh
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- Heat & Mass Transfer in Multiphase Systems

5.1 Interfacial area and mass transfer in oxygen absorption in aqueous solutions of polymer + surfactant system	<u>Gómez-Díaz, Diego</u> ; Álvarez-Silva, Elena; García-Abuín, Alicia; Losada, María; Navaza, José Manuel; Vidal-Tato, Isabel
5.2 Characterization of carbon dioxide absorption in GLL systems	<u>García-Abuín, Alicia</u> ; Belo, Isabel; Gómez-Díaz, Diego; Navaza, José Manuel; Vidal-Tato, Isabel
5.3 DETERMINATION OF OXYGEN DIFFUSION COEFFICIENTS ON A PLANAR GAS-LIQUID INTERFACE BY PLIF TECHNIQUE	<u>Dietrich, Nicolas</u> ; Hebrard, Gilles
5.4 Oxygen absorption into stirred emulsions	<u>Ngo, Thanh Hai</u> ; Schumpe, Adrian; Golfinger, Nadja

5.5 Gas-liquid mass transfer mechanism in presence of solid nano- and micro- particles.	<u>Kordač, Michal</u> ; Šíma, Ján; Linek, Václav
5.6 Migration of species into a particle under different flow conditions	<u>Carella, Alfredo Raúl</u> ; Dorao, Carlos Alberto

- **Bioreactor Engineering for Multiphase Systems**

6.1 VOC absorption in water/silicone oil mixtures: calculation procedure for diameter determination of a packed-bed column	Dumont, Eric; Darracq, Guillaume; Couvert, Annabelle; Couriol, Catherine; <u>Amrane, Abdeltif</u> ; Thomas, Diane; Andrès, Yves; Le Cloirec, Pierre
6.2 Modeling Approaches for Nanoporous Gas-Liquid-Solid Biocatalytic Coatings as Photoabsorbers of Gas-Phase Carbon Emissions COx	Flickinger, Michael C.; <u>Mota, Manuel J. M. G.</u> ; Gosse, Jimmy L.
6.3 Use of an Organic Phase Stemming from Ballast for the Treatment of VOC in a Two Phase Partitioning Bioreactor	Chikh, Rebiha; Couvert, Annabelle; Ait-Amar, Hamid; <u>Amrane, Abdeltif</u>
6.4 Fluid-dynamic considerations in photobioreactor design: Photoinhibition and Photoadaptation	<u>Merchuk, J. C.</u> ; Garcia-Camacho, Francisco; Molina-Grima, Emilio

- **Process Intensification in Multiphase Reactors**

7.1 Effect of catalyst wettability on ON-OFF liquid flow modulation of a Trickle Bed Reactor.	Ayude, Maria Alejandra; Massa, Paola; <u>Stüber, Frank</u> ; Fenoglio, Rosa; Haure, Patricia
7.2 Entrainer based Reactive Distillation for 2-Ethylhexyl Acetate Synthesis	<u>Patidar, Prafull</u> ; Mahajani, Sanjay M.
7.3 The Gas/Liquid Dispersion Performance of a Fixed Throat Transonic Sparger	Ramadan, Atef M.M.; <u>Al Taweel, Adel M.</u>

7.4 Hydrodynamics and mass transfer properties of micro-bubbles in a bubble column

Muroyama, Katsuhiko; Sanda, Takahiro; Oka, Yuji; Fujiki, Ryota; Kubo, Shohei

- Non-conventional/Innovative Reactor Design

8.1 PERFORMANCE OF PLUNGING JET REACTOR COUPLED WITH STIRRED TANK : PART I – SINGLE IMPELLER SINGLE AND MULTIJET JET SYSTEM Abstract

Kulkarni, Anand Vasudeo; Patil, Bhaskar Sudhakar

- Measurement and Flow Visualization Techniques for Multiphase Systems

9.1 BUBBLES FORMATION UNDER A SHEAR FLOW: EXPERIMENTAL STUDIES WITH PIV CHARACTERIZATION

ietrich, Nicolas; Poncin, Souhila; Midoux, Noël; Li, Huai-Zhi

9.2 Description of a new experimental technique used to study the shape and movement of gas bubbles rising in a liquid

Larcy, Aurélie Françoise; Dubois, Frank; Dehaeck, Sam; Baudine, Hervé; Haut, Benoît

9.3 Local experimental analysis of gas-liquid hydrodynamics in an internal loop airlift contactor

Rahmani, Mohamed Ali; Chahed, Jamel; Roig, Véronique; Liné, Alain

9.4 Measurement of local gas-phase properties using an optical probe in a three-phase systems

Mota, André Manuel; Vicente, António A.; Teixeira, José A.; Sechet, Philippe; Cartellier, Alain

9.5 Tomographic measurement of liquid hold up and gas-liquid interfacial area distributions in a column packed with Mellapak Plus 752Y

Aferka, Said; Viva, Aurora; Brunazzi, Elisabetta; Marchot, Pierre; Crine, Michel; Toye, Dominique

- Multiphase Interfacial Engineering

10.1 Experimental determination of gas-liquid mass transfer characteristics of modular catalytic

Brunazzi, Elisabetta; Viva, Aurora

structured packings

- Applications in Biotechnology, Environmental, Chemical or Hydrocarbon Processing, Mineralogy, and Process Metallurgy

11.1 COMPARING DIFFERENT TIERS OF INTEGRATED BIOCHEMICAL AND CFD MODELS IN THE CONTEXT OF WASTEWATER TREATMENT SYSTEMS	<u>Vedantam, Sreepriya</u> ; Plano, Salvatore; Nopens, Ingmar
11.2 Kinetics experiments and modelling in batch reactor for hydrogen peroxide direct synthesis	<u>Biasi, Pierdomenico</u> ; Hernández Carucci, José Rafael; Gemo, Nicola; Eränen, Kari; Canu, Paolo; Salmi, Tapio
11.3 Optimization of the Depuration of Chemical Industry Wastewaters by Ozonation for Industrial Application	<u>Amaral-Silva, Nuno</u> ; Martins, Rui C.; Castro-Silva, Sérgio; Quinta-Ferreira, Rosa M.
11.4 Kinetics of removal of carbon dioxide by aqueous diamines	<u>Bindwal, Ankush B.</u> ; <u>Vaidya, Prakash D.</u> ; Kenig, Eugeny Y.
11.5 Influence of plasmid vector size on bioprocess parameters during the growth of recombinant <u>E.coli</u>	<u>Chand, Subhash</u> ; Mathur, Ashwani
11.6 Effect of Inter-Phase Mass Transfer and Inherent Growth Rate on the Economic Viability of Converting Natural Gas into Animal Feed	<u>Al Taweel, Adel M.</u> ; Aufderheide, Brian; Paltoo, Vernon
11.7 OXYGEN MASS TRANSFER INTO A BIPHASIC MEDIUM USED FOR AROMA PRODUCTION IN AN AIRLIFT BIOREACTOR	<u>Gomes, Nelma</u> ; Gómez-Díaz, Diego; Teixeira, José A.; Belo, Isabel
11.8 Post-Combustion CO ₂ -Capture: Thermodynamic study of CO ₂ in Piperazine Activated Concentrated Aqueous 2-Amino-2-Methyl-1-propanol	<u>Dash, Sukanta Kumar</u> ; Mishra, Debasmiti; Vasireddy, Satyam Naidu; Samanta, Amar Nath; Bandyopadhyay, Syamalendu S.

