

**Monographies and Editorials** (12)

- [1] Sundmacher, K., *Reaktivdestillation mit katalytischen Füllkörperpackungen- ein neuer Prozess zur Herstellung der Kraftstoffkomponente MTBE*, CUTEC-Schriftenreihe Clausthal-Cellerfeld, 1995.
- [2] Sundmacher, K., *Reaktionstechnische Grundlagen der elektrochemischen Absorption mit Gasdiffusionselektroden*, Series 3, VDI-Fortschrittsbericht, Düsseldorf, 1998.
- [3] Sundmacher, K. and Kienle, A., *Reactive Distillation-Status and Future Directions*, Wiley-VCH, Weinheim, 2003.
- [4] Sundmacher, K., *Fuel Cells - From Fundamentals to Systems*, Special Issue: Modelling of Fuel Cell Systems 5, 2005.
- [5] Sundmacher, K., Kienle, A. and Seidel-Morgenstern, A., *Integrated Chemical Processes*, Wiley-VCH, Weinheim, 2005.
- [6] Kienle, A., Seidel-Morgenstern, A. and Sundmacher, K., *Special Issue: Particulate Processes*, Chem. Eng. Processing 45, 2006.
- [7] Sundmacher, K., Kienle, A., Pesch, H. J., Berndt, J. and Huppmann, G., *Molten Carbonate Fuel Cells: Modelling, Analysis, Simulation and Control*, Wiley-VCH, Weinheim, 2007.
- [8] Sundmacher, K., *Energies*, Special Issue: Fuel Cells, 2010,ISSN: 1996-1073.
- [9] Sundmacher, K. (Ed.), *Fuel Cell Engineering Advances in Chemical Engineering*, Academic Press, 2012, ISBN: 978-0123868749.
- [10] Sundmacher, K., Górak, A., Kraume, M. and Wozny, G., Special Issue: *InPROMPT- Integrated Chemical Processes with Liquid Multiphase Systems*, Chemical Engineering Science 115, 2014, ISSN: 0009-2509
- [11] Benner, P., Findeisen, R., Flockerzi, D., Reichl, U. and Sundmacher, K. (Eds.), *Large-Scale Networks in Engineering and Life Sciences*, Modeling and Simulation in Science, Engineering and Technology, Birkhäuser Basel, 2014,ISBN: 978-3-319-08436-7.
- [12] Górak, A., Kraume, M., and Sundmacher, K. (Eds.), *Chemical Engineering and Processing: Process Intensification*, Chemical Engineering and Processing 99, 2016, ISBN: 978-3-319-08436-7.

**Journal and Book Contributions** (394)

- [1] Sundmacher, K. and Hoffmann, U., Importance of Irreversible Thermodynamics for Liquid-Phase Ion-Exchange Catalysis - Experimental-Verification for Mtbe-Synthesis, *Chemical Engineering Science* 47 (1992), 2733-2738, ISSN: 0009-2509.
- [2] Sundmacher, K. and Hoffmann, U., Activity evaluation of a catalytic distillation packing for MTBE production, *Chemical Engineering & Technology* 16 (1993), 279–289.

- [3] Sundmacher, K., Rihko, L. K. and Hoffmann, U., Classification of Reactive Distillation Processes by Dimensionless Numbers, *Chemical Engineering Communications* 127 (1994), 151-167, ISSN: 0098-6445.
- [4] Sundmacher, K. and Hoffmann, U., Multicomponent Mass and Energy-Transport on Different Length Scales in a Packed Reactive Distillation Column for Heterogeneously Catalyzed Fuel Ether Production, *Chemical Engineering Science* 49 (1994), 4443-4464, ISSN: 0009-2509.
- [5] Sundmacher, K. and Hoffmann, U., Macrokinetic Analysis of Mtbe-Synthesis in Chemical-Potentials, *Chemical Engineering Science* 49 (1994), 3077-3089, ISSN: 0009-2509.
- [6] Hoffmann, U. and Sundmacher, K., Reaktivdestillation: Stand und Entwicklungsrichtungen, *Chemie Ingenieur Technik* 67 (1995), 1137-1138, ISSN: 1522-2640.
- [7] Oost, C., Sundmacher, K. and Hoffmann, U., Synthesis of Tertiary Amyl Methyl-Ether (Tame) - Equilibrium of the Multiple Reactions, *Chemical Engineering & Technology* 18 (1995), 110-117, ISSN: 0930-7516.
- [8] Sundmacher, K. and Hoffmann, U., Oscillatory Vapor-Liquid Transport Phenomena in a Packed Reactive Distillation Column for Fuel Ether Production, *Chemical Engineering Journal and the Biochemical Engineering Journal* 57 (1995), 219-228, ISSN: 0923-0467.
- [9] Sundmacher, K., Zhang, R. S. and Hoffmann, U., Mass-Transfer Effects on Kinetics of Nonideal Liquid-Phase Ethyl Tert-Butyl Ether Formation, *Chemical Engineering & Technology* 18 (1995), 269-277, ISSN: 0930-7516.
- [10] Nowitzki, O., Hamelmann, R., Sundmacher, K. and Hoffmann, U., Production of gas-diffusion-electrodes loaded with non-noble metal catalyst for oxygen reduction by a calendaring rolling process, *Contemporary Trends in Electrochemical Engineering* (1996), 227-233.
- [11] Sundmacher, K., Nowitzki, O. and Hoffmann, U., Dynamic simulation and analysis of reaction and transport processes during oxygen reduction at gas-diffusion-electrodes, *Contemporary Trends in Electrochemical Engineering* (1996), 172-179.
- [12] Sundmacher, K., Zur Frage der Integration von Stofftrennung und Reaktion in katalytischen Destillationskolonnen, *Mitteilungsblatt der TU Clausthal* 81 (1996), 32-33.
- [13] Sundmacher, K. and Hoffmann, U., Development of a new catalytic distillation process for fuel ethers via a detailed nonequilibrium model, *Chemical Engineering Science* 51 (1996), 2359-2368, ISSN: 0009-2509.
- [14] Mohl, K. D., Kienle, A., Gilles, E. D., Rapmund, P., Sundmacher, K. and Hoffmann, U., Nonlinear dynamics of reactive distillation processes for the production of fuel ethers, *Computers & Chemical Engineering* 21 (1997), S989-S994, ISSN: 0098-1354.
- [15] Hoffmann, U., Krummradt, H., Rapmund, P. and Sundmacher, K., Production of the fuel ether TAME by reactive distillation, *Chemie Ingenieur Technik* 69 (1997), 483-487, ISSN: 0009-286X.
- [16] Sundmacher, K., Nowitzki, O. and Hoffmann, U., Oxygen reduction on gas-diffusion electrodes with non-noble metal catalysts, *Chemie Ingenieur Technik* 69 (1997), 1143-1146, ISSN: 0009-286X.

- [17] Thiel, C., Sundmacher, K. and Hoffmann, U., Synthesis of ETBE: Residue curve maps for the heterogeneously catalysed reactive distillation process, *Chemical Engineering Journal* 66 (1997), 181-191, ISSN: 0923-0467.
- [18] Thiel, C., Sundmacher, K. and Hoffmann, U., Residue curve maps for heterogeneously catalysed reactive distillation of fuel ethers MTBE and TAME, *Chemical Engineering Science* 52 (1997), 993-1005, ISSN: 0009-2509.
- [19] Hoffmann, U. and Sundmacher, K., Multifunctional reactors, *Chemie Ingenieur Technik* 69 (1997), 613-+, ISSN: 0009-286X.
- [20] Rapmund, P., Sundmacher, K. and Hoffmann, U., Multiple steady states in a reactive distillation column for the production of the fuel ether TAME part II: Experimental validation, *Chemical Engineering & Technology* 21 (1998), 136-+, ISSN: 0930-7516.
- [21] Uhde, G., Sundmacher, K. and Hoffmann, U., Activity and selectivity of macroporous ion-exchange catalysts for etherification of olefins, *Chemie Ingenieur Technik* 70 (1998), 886-890, ISSN: 0009-286X.
- [22] Sundmacher, K., Kunne, H. and Kunz, U., Contribution of gel phase diffusion to mass transfer in supported ion exchange catalysts, *Chemical Engineering & Technology* 21 (1998), 494-498, ISSN: 0930-7516.
- [23] Sundmacher, K. and Hoffmann, U., Macroscopic analysis of polarization characteristics of gas-diffusion electrodes in contact with liquid electrolytes Part I: First order reactions, *Journal of Applied Electrochemistry* 28 (1998), 359-368, ISSN: 0021-891X.
- [24] Bessling, B., Loning, J. M., Ohligschlagler, A., Schembecker, G. and Sundmacher, K., Investigations on the production of methyl acetate in a heterogeneous reactive distillation process, *Chemical Engineering & Technology* 21 (1998), 393-400, ISSN: 0930-7516.
- [25] Rapmund, P., Sundmacher, K. and Hoffmann, U., Multiple stationary operating states in the production of the fuel ether TAME by reactive rectification - Part 2: Experimental validation, *Chemie Ingenieur Technik* 70 (1998), 527-531, ISSN: 0009-286X.
- [26] Scott, K., Kraemer, S. and Sundmacher, K., Gas and liquid mass transport in solid polymer electrolyte fuel cells, *5th European Symposium on Electrochemical Engineering* (1999), 11-20.
- [27] Scott, K., Taama, W. M., Kramer, S., Argyropoulos, P. and Sundmacher, K., Limiting current behaviour of the direct methanol fuel cell, *Electrochimica Acta* 45 (1999), 945-957, ISSN: 0013-4686.
- [28] Sundmacher, K., Uhde, G. and Hoffmann, U., Multiple reactions in catalytic distillation processes for the production of the fuel oxygenates MTBE and TAME: Analysis by rigorous model and experimental validation, *Chemical Engineering Science* 54 (1999), 2839-2847, ISSN: 0009-2509.
- [29] Mohl, K. D., Kienle, A., Gilles, E. D., Rapmund, P., Sundmacher, K. and Hoffmann, U., Steady-state multiplicities in reactive distillation columns for the production of fuel ethers MTBE and TAME: theoretical analysis and experimental verification, *Chemical Engineering Science* 54 (1999), 1029-1043, ISSN: 0009-2509.
- [30] Sundmacher, K., Cyclone flow cell for the investigation of gas-diffusion electrodes, *Journal of Applied Electrochemistry* 29 (1999), 919-926, ISSN: 0021-891X.

- [31] Sundmacher, K. and Hoffmann, U., Design and operation of a membrane reactor for electrochemical gas purification, *Chemical Engineering Science* 54 (1999), 2937-2945, ISSN: 0009-2509.
- [32] Scott, K., Argyropoulos, P. and Sundmacher, K., A model for the liquid feed direct methanol fuel cell, *Journal of Electroanalytical Chemistry* 477 (1999), 97-110, ISSN: 0022-0728.
- [33] Scott, K., Taama, W. M., Argyropoulos, P. and Sundmacher, K., The impact of mass transport and methanol crossover on the direct methanol fuel cell, *Journal of Power Sources* 83 (1999), 204-216, ISSN: 0378-7753.
- [34] Schultz, T. and Sundmacher, K., Direkt-Methanolbrennstoffzelle: Experimentelle und modellbasierte Analyse des stationären und dynamischen Betriebsverhaltens, *Chemie Ingenieur Technik* 72 (2000), 979-980, ISSN: 1522-2640.
- [35] Stein, E., Kienle, A. and Sundmacher, K., Separation using coupled reactive distillation columns, *Chemical Engineering* 107 (2000), 68-72, ISSN: 0009-2460.
- [36] Zhou, S., Schultz, T., Peglow, M. and Sundmacher, K., Analysis of the nonlinear dynamics of a direct methanol fuel cell, *Physical Chemistry Chemical Physics* 3 (2001), 347-355, ISSN: 1463-9076.
- [37] Styczynski, F., Purmann, M., Sundmacher, K. and Schultz, T., Use of Fuel Cells for Stationary and Mobile Applications: System-oriented Approach, *Sigma Not. Przegląd Elektrotechniczny* 77 (2001), 174-178.
- [38] Schultz, T., Zhou, S. and Sundmacher, K., Current status of and recent developments in the direct methanol fuel cell, *Chemical Engineering & Technology* 24 (2001), 1223-1233, ISSN: 0930-7516.
- [39] Sundmacher, K., Schultz, T., Zhou, S., Scott, K., Ginkel, M. and Gilles, E. D., Dynamics of the direct methanol fuel cell (DMFC): experiments and model-based analysis, *Chemical Engineering Science* 56 (2001), 333-341, ISSN: 0009-2509.
- [40] Sundmacher, K. and Schultz, T., Electrochemical Gas absorption in cyclone membrane reactor: analysis of reaction mechanism and transport phenomena, *Chemical Engineering Journal* 82 (2001), 117-129, ISSN: 1385-8947.
- [41] Mohl, K. D., Kienle, A., Sundmacher, K. and Gilles, E. D., A theoretical study of kinetic instabilities in catalytic distillation processes: influence of transport limitations inside the catalyst, *Chemical Engineering Science* 56 (2001), 5239-5254, ISSN: 0009-2509.
- [42] Sundmacher, K. and Qi, Z., Integration von Reaktion und Stofftrennung: Konzepte und Bewertung, *Chemie Ingenieur Technik* 74 (2002), 593-594, ISSN: 1522-2640.
- [43] Hanke, R., Hannemann, F. and Sundmacher, K., Dynamic simulation of a low-temperature rectification column as component of an IGCC power plant, *Chemie Ingenieur Technik* 74 (2002), 1109-1113, ISSN: 0009-286X.
- [44] Qi, Z. W., Kolah, A. and Sundmacher, K., Residue curve maps for reactive distillation systems with liquid-phase splitting, *Chemical Engineering Science* 57 (2002), 163-178, ISSN: 0009-2509.
- [45] Qi, Z. W., Sundmacher, K., Stein, E., Kienle, A. and Kolah, A., Reactive separation of isobutene from C4 crack fractions by catalytic distillation processes, *Separation and Purification Technology* 26 (2002), 147-163, ISSN: 1383-5866.

- [46] Steyer, F., Qi, Z. W. and Sundmacher, K., Synthesis of cyclohexanol by three-phase reactive distillation: influence of kinetics on phase equilibria, *Chemical Engineering Science* 57 (2002), 1511-1520, ISSN: 0009-2509.
- [47] Qi, Z. W. and Sundmacher, K., Bifurcation analysis of reactive distillation systems with liquid-phase splitting, *Computers & Chemical Engineering* 26 (2002), 1459-1471, ISSN: 0098-1354.
- [48] Sundmacher, K. and Qi, Z., Importance of Reaction Kinetics for Catalytic Distillation Processes, *Reactive Distillation* (2003), 97-142, ISSN: 9783527600526.
- [49] Sundmacher, K. and Ivanova, M., Modern separation and reaction techniques: Reactive distillation, *Chemie in Unserer Zeit* 37 (2003), 268-278, ISSN: 0009-2851.
- [50] Christov, M. and Sundmacher, K., Simulation of methanol adsorption on Pt/Ru catalysts, *Surface Science* 547 (2003), 1-8, ISSN: 0039-6028.
- [51] Heidebrecht, P. and Sundmacher, K., Molten carbonate fuel cell (MCFC) with internal reforming: model-based analysis of cell dynamics *Chemical Engineering Science* 58 (2003), 1029-1036, ISSN: 0009-2509.
- [52] Sundmacher, K. and Qi, Z. W., Conceptual design aspects of reactive distillation processes for ideal binary mixtures, *Chemical Engineering and Processing* 42 (2003), 191-200, ISSN: 0255-2701.
- [53] Heidebrecht, P. and Sundmacher, K., Dynamic Modeling and Simulation of a Countercurrent Molten Carbonate Fuel Cell (MCFC) with Internal Reforming, *Fuel Cells* 2 (2003), 166-180, ISSN: 1615-6846.
- [54] Hanke, R., Hannemann, F. and Sundmacher, K., Dynamic simulation of a low-temperature rectification column as part of an IGCC power plant, *Chemical Engineering & Technology* 26 (2003), 1126-1130, ISSN: 0930-7516.
- [55] Kolah, A. K., Rihko-Struckmann, L. K. and Sundmacher, K., Catalytic Distillation Technology Applied to Ether Production, (2004), 159-202.
- [56] Ye, Y. M., Rihko-Struckmann, L., Munder, B., Rau, H. and Sundmacher, K., Feasibility of an electrochemical membrane reactor for the partial oxidation of n-butane to maleic anhydride, *Industrial & Engineering Chemistry Research* 43 (2004), 4551-4558, ISSN: 0888-5885.
- [57] Kenig, E. Y., Gorak, A., Pyhalahti, A., Jakobsson, K., Aittamaa, J. and Sundmacher, K., Advanced rate-based simulation tool for reactive distillation, *Aiche Journal* 50 (2004), 322-342, ISSN: 0001-1541.
- [58] Qi, Z., Kienle, A., Stein, E., Mohl, K. D., Tuchlenski, A. and Sundmacher, K., MTBE decomposition in a reactive distillation column, *Chemical Engineering Research & Design* 82 (2004), 185-191, ISSN: 0263-8762.
- [59] Krewer, U., Song, Y., Sundmacher, K., John, V., Lubke, R., Matthies, G. and Tobiska, L., Direct methanol fuel cell (DMFC): analysis of residence time behaviour of anodic flow bed, *Chemical Engineering Science* 59 (2004), 119-130, ISSN: 0009-2509.
- [60] Qi, Z. W. and Sundmacher, K., The impact of interfacial mass transfer on the feasible products of countercurrent reactive separation processes, *Separation and Purification Technology* 34 (2004), 201-211, ISSN: 1383-5866.

- [61] Huang, Y. S., Sundmacher, K., Qi, Z. W. and Schlunder, E. U., Residue curve maps of reactive membrane separation, *Chemical Engineering Science* 59 (2004), 2863-2879,ISSN: 0009-2509.
- [62] Vidakovic, T., Christov, M. and Sundmacher, K., Investigation of electrochemical oxidation of methanol in a cyclone flow cell, *Electrochimica Acta* 49 (2004), 2179-2187,ISSN: 0013-4686.
- [63] Qi, Z. W., Flockerzi, D. and Sundmacher, K., Singular points of reactive distillation systems, *Aiche Journal* 50 (2004), 2866-2876,ISSN: 0001-1541.
- [64] Mangold, A., Krasnyk, A. and Sundmacher, K., Nonlinear analysis of current instabilities in high temperature fuel cells, *Chemical Engineering Science* 59 (2004), 4869-4877,ISSN: 0009-2509.
- [65] Mangold, M., Sheng, M., Heidebrecht, P., Kienle, A. and Sundmacher, K., Development of physical models for the process control of a molten carbonate fuel cell system, *Chemical Engineering Science* 59 (2004), 4847-4852,ISSN: 0009-2509.
- [66] Steyer, F. and Sundmacher, K., VLE and LLE data for the system cyclohexane plus cyclohexene plus water plus cyclohexanol, *Journal of Chemical and Engineering Data* 49 (2004), 1675-1681,ISSN: 0021-9568.
- [67] Heidebrecht, P. and Sundmacher, K., Dynamic model of a cross-flow molten carbonate fuel cell with direct internal reforming, *Journal of the Electrochemical Society* 152 (2005), A2217-A2228,ISSN: 0013-4651.
- [68] Heidebrecht, P. and Sundmacher, K., Conceptual Design of Internal Reforming in High-Temperature Fuel Cells, *Integrated Chemical Processes* (2005), 45-67,ISSN: 9783527605736.
- [69] Mangold, M., Krasnyk, M., Kienle, A. and Sundmacher, K., Instabilities in High-Temperature Fuel Cells Due to Combined Heat and Charge Transport, *Integrated Chemical Processes* (2005), 69-84,ISSN: 9783527605736.
- [70] Sundmacher, K., Qi, Z., Huang, Y.-S. and Schlünder, E.-U., Thermodynamic and Kinetic Effects on the Feasible Products of Reactive Distillation: A-zeo-tropes and A-rheo-tropes, *Integrated Chemical Processes* (2005), 85-148,ISSN: 9783527605736.
- [71] Heidebrecht, P. and Sundmacher, K., Conceptual design of the integration of the reforming process in high temperature fuel cells, *Journal of Power Sources* 145 (2005), 40-49,ISSN: 0378-7753.
- [72] Schultz, T. and Sundmacher, K., Rigorous dynamic model of a direct methanol fuel cell based on Maxwell–Stefan mass transport equations and a Flory–Huggins activity model: Formulation and experimental validation, *Journal of Power Sources* 145 (2005), 435-462,ISSN: 0378-7753.
- [73] Kienle, A., Sundmacher, K. and Seidel-Morgenstern, A., Zur Integration von Reaktion und Stofftrennung, *Chemie Ingenieur Technik* 77 (2005), 1417-1429,ISSN: 1522-2640.
- [74] Galvita, V. and Sundmacher, K., Hydrogen production from methane by steam reforming in a periodically operated two-layer catalytic reactor, *Applied Catalysis a-General* 289 (2005), 121-127,ISSN: 0926-860X.
- [75] Suchorski, Y., Rihko-Struckmann, L., Klose, F., Ye, Y., Alandjiyska, M., Sundmacher, K. and Weiss, H., Evolution of oxidation states in vanadium-based catalysts under conventional XPS conditions, *Applied Surface Science* 249 (2005), 231-237,ISSN: 0169-4332.

- [76] Sundmacher, K. and Schultz, T., Macrokinetic analysis of polarisation characteristics of gas-diffusion electrodes in contact with liquid electrolytes, Part II: Oxygen reduction as example for a higher order reaction, *Journal of Applied Electrochemistry* 35 (2005), 1171-1181,ISSN: 0021-891X.
- [77] Steyer, F., Flockerzi, D. and Sundmacher, K., Equilibrium and rate-based approaches to liquid-liquid phase splitting calculations, *Computers & Chemical Engineering* 30 (2005), 277-284,ISSN: 0098-1354.
- [78] Chudej, K., Heidebrecht, P., Petzet, V., Scherdel, S., Schittkowski, K., Pesch, H. J. and Sundmacher, K., Index analysis and numerical solution of a large scale nonlinear PDAE system describing the dynamical behaviour of Molten Carbonate Fuel Cells, *Zamm-Zeitschrift Fur Angewandte Mathematik Und Mechanik* 85 (2005), 132-140,ISSN: 0044-2267.
- [79] Hanke, R., Mangold, M. and Sundmacher, K., Application of hierarchical process modelling strategies to fuel cell systems towards a Virtual Fuel Cell Laboratory, *Fuel Cells* 5 (2005), 133-147,ISSN: 1615-6846.
- [80] Sundmacher, K., "Modelling of fuel cell systems", *Fuel Cells* 5 (2005), 3-4,ISSN: 1615-6846.
- [81] Voigt, A., Adityawarman, D. and Sundmacher, K., Size and distribution prediction for nanoparticles produced by microemulsion precipitation: A Monte Carlo simulation study, *Nanotechnology* 16 (2005), S429-S434,ISSN: 0957-4484.
- [82] Steyer, F. and Sundmacher, K., VILE and LLE data set for the system cyclohexane plus cyclohexene plus water plus cyclohexanol plus formic acid plus formic acid cyclohexyl ester, *Journal of Chemical and Engineering Data* 50 (2005), 1277-1282,ISSN: 0021-9568.
- [83] Huang, Y. S., Sundmacher, K., Tulashie, S. and Schlunder, E. U., Theoretical and experimental study on residue curve maps of propyl acetate synthesis reaction, *Chemical Engineering Science* 60 (2005), 3363-3371,ISSN: 0009-2509.
- [84] Vidakovic, T., Christov, M. and Sundmacher, K., Rate expression for electrochemical oxidation of methanol on a direct methanol fuel cell anode, *Journal of Electroanalytical Chemistry* 580 (2005), 105-121,ISSN: 0022-0728.
- [85] Huang, Y. S., Schlunder, E. U. and Sundmacher, K., Feasibility analysis of membrane reactors - discovery of reactive arhetropes, *Catalysis Today* 104 (2005), 360-371,ISSN: 0920-5861.
- [86] Munder, B., Ye, Y. M., Rihko-Struckmann, L. and Sundmacher, K., Solid electrolyte membrane reactor for controlled partial oxidation of hydrocarbons: Model and experimental validation, *Catalysis Today* 104 (2005), 138-148,ISSN: 0920-5861.
- [87] Sundmacher, K., Rihko-Struckmann, L. K. and Galvita, V., Solid electrolyte membrane reactors: Status and trends, *Catalysis Today* 104 (2005), 185-199,ISSN: 0920-5861.
- [88] Rauscher, F., Veit, P. and Sundmacher, K., Analysis of a technical-grade w/o-microemulsion and its application for the precipitation of calcium carbonate nanoparticles, *Colloids and Surfaces a-Physicochemical and Engineering Aspects* 254 (2005), 183-191,ISSN: 0927-7757.
- [89] Ye, Y. M., Rihko-Struckmann, L., Munder, B. and Sundmacher, K., Partial oxidation of n-butane in a solid electrolyte membrane reactor: Periodic and steady-state operations, *Applied Catalysis a-General* 285 (2005), 86-95,ISSN: 0926-860X.

- [90] Heidebrecht, P. and Sundmacher, K., Optimization of reforming catalyst distribution in a cross-flow molten carbonate fuel cell with direct internal reforming, *Industrial & Engineering Chemistry Research* 44 (2005), 3522-3528,ISSN: 0888-5885.
- [91] Qi, Z. W. and Sundmacher, K., Geometrically locating azeotropes in ternary systems, *Industrial & Engineering Chemistry Research* 44 (2005), 3709-3719,ISSN: 0888-5885.
- [92] Sundmacher, K., Kienle, A. and Seidel-Morgenstern, A., Basic Integrated Chemical Processes, *Wiley-VCH* (2005),ISSN: 3-527-30831-8.
- [93] Oncul, A. A., Sundmacher, K. and Thevenin, D., Numerical investigation of the influence of the activity coefficient on barium sulphate crystallization, *Chemical Engineering Science* 60 (2005), 5395-5405,ISSN: 0009-2509.
- [94] Pfafferodt, M., Heidebrecht, P., Stelter, M. and Sundmacher, K., Model-based prediction of suitable operating range of a SOFC for an Auxiliary Power Unit, *Journal of Power Sources* 149 (2005), 53-62,ISSN: 0378-7753.
- [95] Heidebrecht, P. and Sundmacher, K., Development of a hierarchical model family for molten carbonate fuel cells with direct internal reforming (DIR-MCFC), *Progress in Industrial Mathematics at ECMI 2004* 8 (2006), 247-251.
- [96] Heineken, W., Voigt, A., Steyer, C., Flockerzi, D. and Sundmacher, K., Stability analysis of a particle precipitation reaction process in a continuously stirred tank reactor, *Biwic 2006* (2006), 267-274.
- [97] Koch, J., Hackbusch, W. and Sundmacher, K., Simulation of the population balance for droplet breakage in a liquid-liquid stirred tank reactor using H-matrix methods, *16th European Symposium on Computer Aided Process Engineering and 9th International Symposium on Process Systems Engineering* 21 (2006), 261-266,ISSN: 1570-7946.
- [98] Mangold, M., Steyer, C., Niemann, B., Voigt, A. and Sundmacher, K., Methods of State Estimation for Particulate Processes, *16th European Symposium on Computer Aided Process Engineering and 9th International Symposium on Process Systems Engineering* 21 (2006), 1191-1196,ISSN: 1570-7946.
- [99] Ye, Y. M., Rihko-Struckmann, L., Munder, B. and Sundmacher, K., Partial oxidation of n-butane in a solid electrolyte membrane reactor - Influence of electrochemical oxygen pumping, *Journal of the Electrochemical Society* 153 (2006), D21-D29,ISSN: 0013-4651.
- [100] Heidebrecht, P. and Sundmacher, K., Efficient distributed power supply with Molten Carbonate Fuel Cells, *Renewable Resources and Renewable Energy : A Global Challenge* (2006), 273-287.
- [101] Heidebrecht, P. and Qi, Z., Multifunctional Reactors, *Encyclopedia of Chemical Science, Engineering and Technology Resources of Encyclopedia of Life Support Systems* (2006).
- [102] Krewer, U., Christov, M., Vidakovic, T. and Sundmacher, K., Impedance spectroscopic analysis of the electrochemical methanol oxidation kinetics, *Journal of Electroanalytical Chemistry* 589 (2006), 148-159,ISSN: 0022-0728.
- [103] Kamath, R. S., Qi, Z. W., Sundmacher, K., Aghalayam, P. and Mahajani, S. M., Comparison of reactive distillation with process alternatives for the isobutene dimerization reaction, *Industrial & Engineering Chemistry Research* 45 (2006), 2707-2714,ISSN: 0888-5885.



- [104] Seliger, B., Hanke-Rauschenbach, R., Hannemann, F. and Sundmacher, K., Modelling and dynamics of an air separation rectification column as part of an IGCC power plant, *Separation and Purification Technology* 49 (2006), 136-148,ISSN: 1383-5866.
- [105] Gundermann, M., Heidebrecht, P. and Sundmacher, K., Validation of a mathematical model using an industrial MCFC plant, *Journal of Fuel Cell Science and Technology* 3 (2006), 303-307,ISSN: 1550-624X.
- [106] Talwalkar, S., Chauhan, M., Aghalayam, P., Qi, Z. W., Sundmacher, K. and Mahajani, S., Kinetic studies on the dimerization of isobutene with ion-exchange resin in the presence of water as a selectivity enhancer, *Industrial & Engineering Chemistry Research* 45 (2006), 1312-1323,ISSN: 0888-5885.
- [107] Oncul, A. A., Sundmacher, K., Seidel-Morgenstern, A. and Thevenin, D., Numerical and analytical investigation of barium sulphate crystallization, *Chemical Engineering Science* 61 (2006), 652-664,ISSN: 0009-2509.
- [108] Rihko-Struckmann, L. K., Ye, Y., Chalakov, L., Suchorski, Y., Weiss, H. and Sundmacher, K., Bulk and surface properties of a VPO catalyst used in an electrochemical membrane reactor: Conductivity-, XRD-, TPO- and XPS-study, *Catalysis Letters* 109 (2006), 89-96,ISSN: 1011-372X.
- [109] Ivanova, M., Qi, Z. W., Schlunder, E. U. and Sundmacher, K., Analysis of potential singular point surface of reactive stripping processes, *Chemical Engineering Science* 61 (2006), 1901-1912,ISSN: 0009-2509.
- [110] Mangold, M., Krasnyk, M. and Sundmacher, K., Theoretical investigation of steady state multiplicities in solid oxide fuel cells, *Journal of Applied Electrochemistry* 36 (2006), 265-275,ISSN: 0021-891X.
- [111] Kamath, R. S., Qi, Z. W., Sundmacher, K., Aghalayam, P. and Mahajani, S. M., Process analysis for dimerization of isobutene by reactive distillation, *Industrial & Engineering Chemistry Research* 45 (2006), 1575-1582,ISSN: 0888-5885.
- [112] Qi, Z. W. and Sundmacher, K., Multiple product solutions of tert-butyl alcohol dehydration in reactive distillation, *Industrial & Engineering Chemistry Research* 45 (2006), 1613-1621,ISSN: 0888-5885.
- [113] Krewer, U. and Sundmacher, K., Transfer function analysis of the dynamic behaviour of DMFCs: Response to step changes in cell current, *Journal of Power Sources* 154 (2006), 153-170,ISSN: 0378-7753.
- [114] Schultz, T. and Sundmacher, K., Mass, charge and energy transport phenomena in a polymer electrolyte membrane (PEM) used in a direct methanol fuel cell (DMFC): Modelling and experimental validation of fluxes, *Journal of Membrane Science* 276 (2006), 272-285,ISSN: 0376-7388.
- [115] Grottsch, M., Gundermann, M., Mangold, M., Kienle, A. and Sundmacher, K., Development and experimental investigation of an extended Kalman filter for an industrial molten carbonate fuel cell system, *Journal of Process Control* 16 (2006), 985-992,ISSN: 0959-1524.
- [116] Kienle, A., Seidel-Morgenstern, A. and Sundmacher, K., Particulate processes a special issue of Chemical Engineering and Processing, *Chemical Engineering and Processing* 45 (2006), 813-814,ISSN: 0255-2701.

- [117] Niemann, B., Rauscher, F., Adityawarman, D., Voigt, A. and Sundmacher, K., Microemulsion-assisted precipitation of particles: Experimental and model-based process analysis, *Chemical Engineering and Processing* 45 (2006), 917-935,ISSN: 0255-2701.
- [118] Qi, Z. W. and Sundmacher, K., Multiplicity of VLE equations: Case studies, *Chemical Engineering Science* 61 (2006), 6709-6717,ISSN: 0009-2509.
- [119] Kukul'a, R., Hasal, P., Schultz, T., Schroder, T. and Sundmacher, K., Can a fuel-cell stack and an enzyme electro-membrane reactor be combined into a multi-functional unit?, *Catalysis Today* 118 (2006), 104-112,ISSN: 0920-5861.
- [120] Gangadwala, J., Radulescu, G., Paraschiv, N., Kienle, A. and Sundmacher, K., Dynamics of Reactive Distillation Processes with Potential Liquid Phase Splitting, *17th European Symposium on Computer Aided Process Engineering* 24 (2007), 213-218,ISSN: 1570-7946.
- [121] Pfafferoth, M., Heidebrecht, P., Sundmacher, K., Wurtenberger, U. and Bednarz, M., Multiscale CFD simulation of a methane steam reformer for optimization of the spatial catalyst distribution, *17th European Symposium on Computer Aided Process Engineering* 24 (2007), 123-128,ISSN: 1570-7946.
- [122] Voigt, A. and Sundmacher, K., Herstellung maßgeschneiderter Nanopartikel durch Fällung in Mikroemulsionen, *Chemie Ingenieur Technik* 79 (2007), 229-232,ISSN: 1522-2640.
- [123] Heidebrecht, P. and Sundmacher, K., MCFC Reference Model, *Molten Carbonate Fuel Cells* (2007), 33-62,ISSN: 9783527611324.
- [124] Krasnyk, M., Mangold, M., Kienle, A. and Sundmacher, K., Hot Spot Formation and Steady State Multiplicities, *Molten Carbonate Fuel Cells* (2007), 141-163,ISSN: 9783527611324.
- [125] Heidebrecht, P. and Sundmacher, K., Conceptual Design and Reforming Concepts, *Molten Carbonate Fuel Cells* (2007), 165-182,ISSN: 9783527611324.
- [126] Heidebrecht, P. and Sundmacher, K., Optimisation of Reforming Catalyst Distribution, *Molten Carbonate Fuel Cells* (2007), 211-220, ISSN: 9783527611324.
- [127] Gundermann, M. and Sundmacher, K., Parameter Identification, *Molten Carbonate Fuel Cells: Modeling, Analysis, Simulation and Control* (2007), 75-173.
- [128] Heidebrecht, P., Gundermann, M. and Sundmacher, K., Steady State and Dynamic Process Analysis, *Molten Carbonate Fuel Cells: Modeling, Analysis, Simulation and Control* (2007), 125-140.
- [129] Suchorski, Y., Munder, B., Becker, S., Rihko-Struckmann, L., Sundmacher, K. and Weiss, H., Variation of the vanadium oxidation state within a VPO catalyst layer in a membrane reactor: XPS mapping and modelling, *Applied Surface Science* 253 (2007), 5904-5909, ISSN: 0169-4332.
- [130] Chalakov, L., Rihko-Struckmann, L. K., Munder, B. and Sundmacher, K., Feasibility study of the oxidative dehydrogenation of ethane in an electrochemical packed-bed membrane reactor, *Industrial & Engineering Chemistry Research* 46 (2007), 8665-8673,ISSN: 0888-5885.
- [131] Steyer, F. and Sundmacher, K., Cyclohexanol production via esterification of cyclohexene with formic acid and subsequent hydration of the ester-reaction kinetics, *Industrial & Engineering Chemistry Research* 46 (2007), 1099-1104,ISSN: 0888-5885.

- [132] Krewer, U., Pfafferoth, M., Kamat, A., Menendez, D. F. and Sundmacher, K., Hydrodynamic characterisation and modelling of anode flow fields of Direct Methanol Fuel Cells, *Chemical Engineering Journal* 126 (2007), 87-102,ISSN: 1385-8947.
- [133] Schultz, T., Krewer, U. and Sundmacher, K., Impact of electrode kinetics on the dynamic response of a DMFC to change of methanol feed concentration, *Journal of Power Sources* 165 (2007), 138-151,ISSN: 0378-7753.
- [134] Schultz, T., Krewer, U., Vidakovic, T., Pfafferoth, M., Christov, M. and Sundmacher, K., Systematic analysis of the direct methanol fuel cell, *Journal of Applied Electrochemistry* 37 (2007), 111-119,ISSN: 0021-891X.
- [135] Vidakovic, T., Christov, M., Sundmacher, K., Nagabhushana, K. S., Fei, W., Kinge, S. and Bonnemann, H., PtRu colloidal catalysts: Characterisation and determination of kinetics for methanol oxidation, *Electrochimica Acta* 52 (2007), 2277-2284,ISSN: 0013-4686.
- [136] Koch, J., Hackbusch, W. and Sundmacher, K., H-matrix methods for linear and quasi-linear integral operators appearing in population balances, *Computers & Chemical Engineering* 31 (2007), 745-759,ISSN: 0098-1354.
- [137] Chalakov, L., Rihko-Struckmann, L. K., Munder, B., Rau, H. and Sundmacher, K., Reaction induced current generation by butane oxidation in high temperature electrochemical membrane reactor, *Chemical Engineering Journal* 131 (2007), 15-22,ISSN: 1385-8947.
- [138] Huang, Y. S. and Sundmacher, K., Kinetics study of propyl acetate synthesis reaction catalyzed by Amberlyst 15, *International Journal of Chemical Kinetics* 39 (2007), 245-253,ISSN: 0538-8066.
- [139] Talwalkar, S., Mankar, S., Katariya, A., Aghalayam, P., Ivanova, M., Sundmacher, K. and Mahajani, S., Selectivity engineering with reactive distillation for dimerization of C-4 olefins: Experimental and theoretical studies, *Industrial & Engineering Chemistry Research* 46 (2007), 3024-3034,ISSN: 0888-5885.
- [140] Vidakovic, T., Christov, M. and Sundmacher, K., The use of CO stripping for in situ fuel cell catalyst characterization, *Electrochimica Acta* 52 (2007), 5606-5613,ISSN: 0013-4686.
- [141] Galvita, V. and Sundmacher, K., Redox behavior and reduction mechanism of Fe<sub>2</sub>O<sub>3</sub>-CeZrO<sub>2</sub> as oxygen storage material, *Journal of Materials Science* 42 (2007), 9300-9307,ISSN: 0022-2461.
- [142] Gangadwala, J., Radulescu, G., Kienle, A. and Sundmacher, K., Computer aided design of reactive distillation processes for the treatment of waste waters polluted with acetic acid, *Computers & Chemical Engineering* 31 (2007), 1535-1547,ISSN: 0098-1354.
- [143] Galvita, V. and Sundmacher, K., Cyclic water gas shift reactor(CWGS) for carbon monoxide removal from hydrogen feed gas for PEM fuel cells, *Chemical Engineering Journal* 134 (2007), 168-174,ISSN: 1385-8947.
- [144] Krewer, U., Kamat, A. and Sundmacher, K., Understanding the dynamic behaviour of direct methanol fuel cells: Response to step changes in cell current, *Journal of Electroanalytical Chemistry* 609 (2007), 105-119,ISSN: 1572-6657.
- [145] Yu, E. H. and Sundmacher, K., Enzyme electrodes for glucose oxidation prepared by electropolymerization of pyrrole, *Process Safety and Environmental Protection* 85 (2007), 489-493,ISSN: 0957-5820.

- [146] Heineken, W., Flockerzi, D., Steyer, C., Voigt, A. and Sundmacher, K., Nonlinear dynamics of continuous precipitation reactors: A model based analysis, *Chemical Engineering Science* 62 (2007), 4896-4902,ISSN: 0009-2509.
- [147] Munder, B., Rihko-Struckmann, L. and Sundmacher, K., Steady-state and forced-periodic operation of solid electrolyte membrane reactors for selective oxidation of n-butane to maleic anhydride, *Chemical Engineering Science* 62 (2007), 5663-5668,ISSN: 0009-2509.
- [148] Heidebrecht, P., Hertel, C. and Sundmacher, K., Conceptual analysis of a cyclic water gas shift reactor, *International Journal of Chemical Reactor Engineering* 6 (2008),ISSN: 1542-6580.
- [149] Voigt, A., Heineken, W., Flockerzi, D. and Sundmacher, K., Dimension reduction of two-dimensional population balances based on the quadrature method of moments, *18th European Symposium on Computer Aided Process Engineering* 25 (2008), 913-918,ISSN: 1570-7946.
- [150] Sundmacher, K., Entwicklungslinien der Brennstoffzellentechnologie, *Die Zukunft der Energie* (2008), 223-245.
- [151] Gao, Y., Hilfert, L., Voigt, A. and Sundmacher, K., Decrease of Droplet Size of the Reverse Microemulsion 1-Butyl-3-methylimidazolium Tetrafluoroborate/Triton X-100/Cyclohexane by Addition of Water, *The Journal of Physical Chemistry B* 112 (2008), 3711-3719,ISSN: 1520-6106.
- [152] Gundermann, M., Heidebrecht, P. and Sundmacher, K., Physically motivated reduction of a 2D dynamic model for molten carbonate fuel cells (MCFC), *Fuel Cells* 8 (2008), 96-110,ISSN: 1615-6846.
- [153] Niemann, B., Veit, P. and Sundmacher, K., Nanoparticle precipitation in reverse microemulsions: Particle formation dynamics and tailoring of particle size distributions, *Langmuir* 24 (2008), 4320-4328,ISSN: 0743-7463.
- [154] Gundermann, M., Heidebrecht, P. and Sundmacher, K., Parameter identification of a dynamic MCFC model using a full-scale fuel cell plant, *Industrial & Engineering Chemistry Research* 47 (2008), 2728-2741,ISSN: 0888-5885.
- [155] Gangadwala, J., Radulescu, G., Kienle, A., Steyer, F. and Sundmacher, K., New processes for recovery of acetic acid from waste water, *Clean Technologies and Environmental Policy* 10 (2008), 245-254,ISSN: 1618-954X.
- [156] Gao, Y., Voigt, A., Zhou, M. and Sundmacher, K., Synthesis of single-crystal gold nano- and microprisms using a solvent-reductant-template ionic liquid, *European Journal of Inorganic Chemistry* (2008), 3769-3775,ISSN: 1434-1948.
- [157] Gao, Y. A., Voigt, A., Hilfert, L. and Sundmacher, K., Nanodroplet cluster formation in ionic liquid microemulsions, *Chemphyschem* 9 (2008), 1603-1609,ISSN: 1439-4235.
- [158] Koch, J., Hackbusch, W. and Sundmacher, K., H-matrix methods for quadratic integral operators appearing in population balances, *Computers & Chemical Engineering* 32 (2008), 1789-1809,ISSN: 0098-1354.
- [159] Lu, H., Rihko-Struckmann, L., Hanke-Rauschenbach, R. and Sundmacher, K., Dynamic Behavior of a PEM Fuel Cell During Electrochemical CO Oxidation on a PtRu Anode, *Topics in Catalysis* 51 (2008), 89-97,ISSN: 1022-5528.

- [160] Rollie, S. and Sundmacher, K., Determination of Cluster Composition in Heteroaggregation of Binary Particle Systems by Flow Cytometry, *Langmuir* 24 (2008), 13348-13358,ISSN: 0743-7463.
- [161] Steyer, F., Freund, H. and Sundmacher, K., A Novel Reactive Distillation Process for the Indirect Hydration of Cyclohexene to Cyclohexanol Using a Reactive Entrainer, *Industrial & Engineering Chemistry Research* 47 (2008), 9581-9587,ISSN: 0888-5885.
- [162] Galvita, V., Schroder, T., Munder, B. and Sundmacher, K., Production of hydrogen with low CO<sub>x</sub>-content for PEM fuel cells by cyclic water gas shift reactor, *International Journal of Hydrogen Energy* 33 (2008), 1354-1360,ISSN: 0360-3199.
- [163] Galvita, V., Hempel, T., Lorenz, H., Rihko-Struckmann, L. K. and Sundmacher, K., Deactivation of modified iron oxide materials in the cyclic water gas shift process for CO-free hydrogen production, *Industrial & Engineering Chemistry Research* 47 (2008), 303-310,ISSN: 0888-5885.
- [164] Galvita, V., Rihko-Struckmann, L. K. and Sundmacher, K., The CO adsorption on a Fe<sub>2</sub>O<sub>3</sub>-Ce<sub>0.5</sub>Zr<sub>0.5</sub>O<sub>2</sub> catalyst studied by TPD, isotope exchange and FTIR spectroscopy, *Journal of Molecular Catalysis a-Chemical* 283 (2008), 43-51,ISSN: 1381-1169.
- [165] Oncul, A. A., Niemann, B., Sundmacher, K. and Thevenin, D., CFD modelling of BaSO<sub>4</sub> precipitation inside microemulsion droplets in a semi-batch reactor, *Chemical Engineering Journal* 138 (2008), 498-509,ISSN: 1385-8947.
- [166] Freund, H. and Sundmacher, K., Towards a methodology for the systematic analysis and design of efficient chemical processes Part 1. From unit operations to elementary process functions, *Chemical Engineering and Processing* 47 (2008), 2051-2060,ISSN: 0255-2701.
- [167] Gao, Y., Voigt, A., Hilfert, L. and Sundmacher, K., Effect of polyvinylpyrrolidone on the microstructure of 1-butyl-3-methylimidazolium tetrafluoroborate/Triton X-100/cyclohexane microemulsions, *Colloids and Surfaces a-Physicochemical and Engineering Aspects* 329 (2008), 146-152,ISSN: 0927-7757.
- [168] Heidebrecht, P., Galvita, V. and Sundmacher, K., An alternative method for parameter identification from temperature programmed reduction (TPR) data, *Chemical Engineering Science* 63 (2008), 4776-4788,ISSN: 0009-2509.
- [169] Ivanov, I., Vidakovic, T. R. and Sundmacher, K., The influence of a self-assembled monolayer on the activity of rough gold for glucose oxidation, *Electrochemistry Communications* 10 (2008), 1307-1310,ISSN: 1388-2481.
- [170] Niemann, B. and Sundmacher, K., Reduced discrete population balance model for precipitation of barium sulfate nanoparticles in non-ionic microemulsions, *Chemical Engineering Journal* 143 (2008), 314-325,ISSN: 1385-8947.
- [171] Hanke-Rauschenbach, R., Weinzierl, C., Krasnyk, M., Rihko-Struckmann, L., Lu, H. and Sundmacher, K., Operating Behavior and Scale-Up of an ECPrOx Unit for CO Removal from Reformate for PEM Fuel Cell Application, *Journal of the Electrochemical Society* 156 (2009), B1267-B1275,ISSN: 0013-4651.
- [172] Steyer, C. and Sundmacher, K., Impact of feeding policy and ion excess on particle shape in semi-batch precipitation of barium sulfate, *Journal of Crystal Growth* 311 (2009), 2702-2708,ISSN: 0022-0248.

- [173] Rollie, S., Briesen, H. and Sundmacher, K., Discrete bivariate population balance modelling of heteroaggregation processes, *Journal of Colloid and Interface Science* 336 (2009), 551-564,ISSN: 0021-9797.
- [174] Heidebrecht, P. and Sundmacher, K., Thermodynamic analysis of a cyclic water gas-shift reactor (CWGSR) for hydrogen production, *Chemical Engineering Science* 64 (2009), 5057-5065,ISSN: 0009-2509.
- [175] Talwalkar, S., Thotla, S., Sundmacher, K. and Mahajani, S., Simultaneous Hydrogenation and Isomerization of Diisobutylenes over Pd-Doped Ion-Exchange Resin Catalyst, *Industrial & Engineering Chemistry Research* 48 (2009), 10857-10863,ISSN: 0888-5885.
- [176] Vidakovic, T., Christov, M. and Sundmacher, K., A method for rough estimation of the catalyst surface area in a fuel cell, *Journal of Applied Electrochemistry* 39 (2009), 213-225,ISSN: 0021-891X.
- [177] Borchert, C., Nere, N., Ramkrishna, D., Voigt, A. and Sundmacher, K., On the prediction of crystal shape distributions in a steady-state continuous crystallizer, *Chemical Engineering Science* 64 (2009), 686-696,ISSN: 0009-2509.
- [178] John, V., Mitkova, T., Roland, M., Sundmacher, K., Tobiska, L. and Voigt, A., Simulations of population balance systems with one internal coordinate using finite element methods, *Chemical Engineering Science* 64 (2009), 733-741,ISSN: 0009-2509.
- [179] Mangold, M., Buck, A., Schenkendorf, R., Steyer, C., Voigt, A. and Sundmacher, K., Two state estimators for the barium sulfate precipitation in a semi-batch reactor, *Chemical Engineering Science* 64 (2009), 646-660,ISSN: 0009-2509.
- [180] Chalakov, L., Rihko-Struckmann, L. K., Munder, B. and Sundmacher, K., Oxidative dehydrogenation of ethane in an electrochemical packed-bed membrane reactor: Model and experimental validation, *Chemical Engineering Journal* 145 (2009), 385-392,ISSN: 1385-8947.
- [181] Lu, H., Rihko-Struckmann, L., Hanke-Rauschenbach, R. and Sundmacher, K., Improved electrochemical CO removal via potential oscillations in serially connected PEM fuel cells with PtRu anodes, *Electrochimica Acta* 54 (2009), 1184-1191,ISSN: 0013-4686.
- [182] Chen, F. X., Zhou, S., Ji, G. J., Sundmacher, K. and Zhang, C. S., Blended learning fitting algorithm for polarization curves of fuel cells, *International Journal of Hydrogen Energy* 34 (2009), 5563-5567,ISSN: 0360-3199.
- [183] Steyer, C. and Sundmacher, K., Morphology of Barium Sulfate Crystals from Seeded Precipitation, *Chemical Engineering & Technology* 32 (2009), 1127-1130,ISSN: 0930-7516.
- [184] Cui, Y., Galvita, V., Rihko-Struckmann, L., Lorenz, H. and Sundmacher, K., Steam reforming of glycerol: The experimental activity of La<sub>1-x</sub>Ce<sub>x</sub>NiO<sub>3</sub> catalyst in comparison to the thermodynamic reaction equilibrium, *Applied Catalysis B-Environmental* 90 (2009), 29-37,ISSN: 0926-3373.
- [185] Ivanov, I., Vidakovic, T. R. and Sundmacher, K., Glucose Electrooxidation for Biofuel Cell Applications, *Chemical and Biochemical Engineering Quarterly* 23 (2009), 77-86,ISSN: 0352-9568.
- [186] Radulescu, G., Gangadwala, J., Paraschiv, N., Kienle, A. and Sundmacher, K., Dynamics of reactive distillation processes with potential liquid phase splitting based on equilibrium stage models, *Computers & Chemical Engineering* 33 (2009), 590-597,ISSN: 0098-1354.

- [187] Kadyk, T., Hanke-Rauschenbach, R. and Sundmacher, K., Nonlinear frequency response analysis of PEM fuel cells for diagnosis of dehydration, flooding and CO-poisoning, *Journal of Electroanalytical Chemistry* 630 (2009), 19-27,ISSN: 1572-6657.
- [188] Katariya, A., Freund, H. and Sundmacher, K., Two-Step Reactive Distillation Process for Cyclohexanol Production from Cyclohexene, *Industrial & Engineering Chemistry Research* 48 (2009), 9534-9545,ISSN: 0888-5885.
- [189] Adiche, C. and Sundmacher, K., Selection of membrane contactors used in a membrane distillation based micro-separator, *Pres 2010: 13th International Conference on Process Integration, Modelling and Optimisation for Energy Saving and Pollution Reduction* 21 (2010), 361-366,ISSN: 1974-9791.
- [190] Bensmann, B., Hanke-Rauschenbach, R., Meissner, E., Koch, I. and Sundmacher, K., Model Simulation and Analysis of Proton Incorporation into the Positive Active Mass of a Lead/Acid Battery, *Journal of the Electrochemical Society* 157 (2010), A243-A253,ISSN: 0013-4651.
- [191] Bensmann, B., Petkovska, M., Vidaković-Koch, T., Hanke-Rauschenbach, R. and Sundmacher, K., Nonlinear Frequency Response of Electrochemical Methanol Oxidation Kinetics: A Theoretical Analysis, *Journal of the Electrochemical Society* 157 (2010), B1279-B1289,ISSN: 0013-4651.
- [192] Hanke-Rauschenbach, R., Kirsch, S., Kelling, R., Weinzierl, C. and Sundmacher, K., Oscillations and Pattern Formation in a PEM Fuel Cell with Pt/Ru Anode Exposed to H<sub>2</sub>/CO Mixtures, *Journal of the Electrochemical Society* 157 (2010), B1521-B1528,ISSN: 0013-4651.
- [193] Rollie, S., Lendeckel, U., Naumann, M., Reichl, U. and Sundmacher, K., Dynamics of bionanoparticle targeting in mixtures of human tumour cells by validated population balance modelling, *Soft Matter* 6 (2010), 1203-1216,ISSN: 1744-683X.
- [194] Song, Y. and Sundmacher, K., Approximation of Laminar Flow Field in Rectangular Channels with Suction/Injection Along One Wall, *Chemical Engineering Communications* 197 (2010), 551-570,ISSN: 0098-6445.
- [195] Sundmacher, K., Fuel Cell Engineering: Toward the Design of Efficient Electrochemical Power Plants, *Industrial and Engineering Chemistry Research* 49 (2010), 10159-10182, ISSN:
- [196] Rihko-Struckmann, L., Munder, B., Chalakov, L. and Sundmacher, K., Solid timal reaction concept, *Membrane Reactors* (2010), 193-233, WILEY-VCH Verlag GmbH & Co. KGaA, ISBN: 978-3-527-32039-4.
- [197] Adiche, C. and Sundmacher, K., Experimental investigation on a membrane distillation based micro-separator, *Chemical Engineering and Processing* 49 (2010), 425-434,ISSN: 0255-2701.
- [198] Ivanov, I., Vidaković-Koch, T. and Sundmacher, K., Recent Advances in Enzymatic Fuel Cells: Experiments and Modeling, *Energies* 3 (2010), 803-846,ISSN: 1996-1073.
- [199] Pfafferodt, M., Heidebrecht, P. and Sundmacher, K., Stack Modelling of a Molten Carbonate Fuel Cell (MCFC), *Fuel Cells* 10 (2010), 619-635,ISSN: 1615-6846.
- [200] Rollie, S. and Sundmacher, K., Tracking the clustering dynamics in ternary particle mixtures by flow cytometry, *Powder Technology* 202 (2010), 185-189,ISSN: 0032-5910.

- [201] Kunde, C., Hanke-Rauschenbach, R., Mangold, M., Kienle, A., Sundmacher, K., Wagner, S. and Hahn, R., Temperature and Humidity Control of a Micro PEM Fuel Cell Stack, *Fuel Cells* 10 (2010), 949-959,ISSN: 1615-6846.
- [202] Niemann, B. and Sundmacher, K., Nanoparticle precipitation in microemulsions: Population balance model and identification of bivariate droplet exchange kernel, *Journal of Colloid and Interface Science* 342 (2010), 361-371,ISSN: 0021-9797.
- [203] Rollie, S. and Sundmacher, K., Analysis of interacting particles by flow-cell systems and multi-dimensional population balances, *Chemie Ingenieur Technik* 82 (2010), 1097-1109,ISSN: 0009-286X.
- [204] Steyer, C., Mangold, M. and Sundmacher, K., Modeling of Particle Size Distribution for Semibatch Precipitation of Barium Sulfate Using Different Activity Coefficient Models, *Industrial & Engineering Chemistry Research* 49 (2010), 2456-2468,ISSN: 0888-5885.
- [205] Chakraborty, J., Singh, M. R., Ramkrishna, D., Borchert, C. and Sundmacher, K., Modeling of crystal morphology distributions. Towards crystals with preferred asymmetry, *Chemical Engineering Science* 65 (2010), 5676-5686,ISSN: 0009-2509.
- [206] Heidebrecht, P., Hartono, B., Hertel, C. and Sundmacher, K., Biomass-Based Fuel Cell Power Plants: Evaluation of Novel Reactors and Process Designs, *Industrial & Engineering Chemistry Research* 49 (2010), 10859-10875,ISSN: 0888-5885.
- [207] Peschel, A., Freund, H. and Sundmacher, K., Methodology for the Design of Optimal Chemical Reactors Based on the Concept of Elementary Process Functions, *Industrial & Engineering Chemistry Research* 49 (2010), 10535-10548,ISSN: 0888-5885.
- [208] Rihko-Struckmann, L. K., Peschel, A., Hanke-Rauschenbach, R. and Sundmacher, K., Assessment of Methanol Synthesis Utilizing Exhaust CO<sub>2</sub> for Chemical Storage of Electrical Energy, *Industrial & Engineering Chemistry Research* 49 (2010), 11073-11078,ISSN: 0888-5885.
- [209] Klamt, S., Flassig, R. J. and Sundmacher, K., TRANSWESD: inferring cellular networks with transitive reduction, *Bioinformatics* 26 (2010), 2160-2168,ISSN: 1367-4803.
- [210] Chen, L., Zhou, T., Chen, L. F., Ye, Y. M., Qi, Z. W., Freund, H. and Sundmacher, K., Selective oxidation of cyclohexanol to cyclohexanone in the ionic liquid 1-octyl-3-methylimidazolium chloride, *Chemical Communications* 47 (2011), 9354-9356,ISSN: 1359-7345.
- [211] Kirsch, S., Hanke-Rauschenbach, R. and Sundmacher, K., Analysis of Spatio-temporal Pattern Formation in a PEM Fuel Cell with Pt/Ru Anode Exposed to H<sub>2</sub>/CO Mixtures, *Journal of the Electrochemical Society* 158 (2011), B44-B53,ISSN: 0013-4651.
- [212] Lu, H., Rihko-Struckmann, L. and Sundmacher, K., Spontaneous oscillations of cell voltage, power density, and anode exit CO concentration in a PEM fuel cell, *Physical Chemistry Chemical Physics* 13 (2011), 18179-18185,ISSN: 1463-9076.
- [213] Freund, H. and Sundmacher, K., Process Intensification, 1. Fundamentals and Molecular Level, *Ullmann's Encyclopedia of Industrial Chemistry*, Wiley-VCH Verlag GmbH & Co. KGaA, Weinheim, 2011,ISBN: 9783527306732.  
[http://dx.doi.org/10.1002/14356007.o22\\_o02](http://dx.doi.org/10.1002/14356007.o22_o02)



- [215] Freund, H. and Sundmacher, K., Process Intensification, 2. Phase Level, *Ullmann's Encyclopedia of Industrial Chemistry*, Wiley-VCH Verlag GmbH & Co. KGaA, Weinheim, (2011),ISSN: 9783527306732.  
[http://dx.doi.org/10.1002/14356007.o22\\_o03](http://dx.doi.org/10.1002/14356007.o22_o03)
- [216] Freund, H. and Sundmacher, K., Process Intensification, 3. Process Unit Level, *Ullmann's Encyclopedia of Industrial Chemistry*, Wiley-VCH Verlag GmbH & Co. KGaA, Weinheim, (2011),ISSN: 9783527306732.  
[http://dx.doi.org/10.1002/14356007.o22\\_o04](http://dx.doi.org/10.1002/14356007.o22_o04)
- [217] Freund, H. and Sundmacher, K., Process Intensification, 4. Plant Level, *Ullmann's Encyclopedia of Industrial Chemistry*, Wiley-VCH Verlag GmbH & Co. KGaA, Weinheim, (2011),ISSN: 9783527306732.  
[http://dx.doi.org/10.1002/14356007.o22\\_o05](http://dx.doi.org/10.1002/14356007.o22_o05)
- [218] Borchert, C. and Sundmacher, K., Crystal Aggregation in a Flow Tube: Image-Based Observation, *Chemical Engineering & Technology* 34 (2011), 545-556,ISSN: 0930-7516.
- [219] Freund, H., Peschel, A. and Sundmacher, K., Model-Based Reactor Design Based on the Optimal Reaction Route, *Chemie Ingenieur Technik* 83 (2011), 420-426,ISSN: 0009-286X.
- [220] Imam, R. A., Freund, H. and Sundmacher, K., Dynamics of liquid-liquid systems based on linear thermodynamics of irreversible processes, *Computers & Chemical Engineering* 35 (2011), 630-637,ISSN: 0098-1354.
- [221] Vidaković-Koch, T., Ivanov, I., Falk, M., Shleev, S., Ruzgas, T. and Sundmacher, K., Impact of the Gold Support on the Electrocatalytic Oxidation of Sugars at Enzyme-Modified Electrodes, *Electroanalysis* 23 (2011), 927-930,ISSN: 1040-0397.
- [222] Ye, K. M., Freund, H. and Sundmacher, K., Modelling (vapour plus liquid) and (vapour plus liquid plus liquid) equilibria of {water (H<sub>2</sub>O) + methanol (MeOH) + dimethyl ether (DME) + carbon dioxide (CO<sub>2</sub>)} quaternary system using the Peng-Robinson EoS with Wong-Sandler mixing rule, *Journal of Chemical Thermodynamics* 43 (2011), 2002-2014,ISSN: 0021-9614.
- [223] Kadyk, T., Kirsch, S., Hanke-Rauschenbach, R. and Sundmacher, K., Autonomous potential oscillations at the Pt anode of a polymer electrolyte membrane fuel cell under CO poisoning, *Electrochimica Acta* 56 (2011), 10593-10602,ISSN: 0013-4686.
- [224] Peschel, A., Karst, F., Freund, H. and Sundmacher, K., Analysis and optimal design of an ethylene oxide reactor, *Chemical Engineering Science* 66 (2011), 6453-6469,ISSN: 0009-2509.
- [225] Kirsch, S., Hanke-Rauschenbach, R., El-Sibai, A., Flockerzi, D., Krischer, K. and Sundmacher, K., The S-Shaped Negative Differential Resistance during the Electrooxidation of H<sub>2</sub>/CO in Polymer Electrolyte Membrane Fuel Cells: Modeling and Experimental Proof, *Journal of Physical Chemistry C* 115 (2011), 25315-25329,ISSN: 1932-7447.
- [226] Lemoine-Nava, R., Hanke-Rauschenbach, R., Mangold, M. and Sundmacher, K., The gas diffusion layer in polymer electrolyte membrane fuel cells: A process model of the two-phase flow, *International Journal of Hydrogen Energy* 36 (2011), 1637-1653,ISSN: 0360-3199.
- [227] Heineken, W., Flockerzi, D., Voigt, A. and Sundmacher, K., Dimension reduction of bivariate population balances using the quadrature method of moments, *Computers & Chemical Engineering* 35 (2011), 50-62,ISSN: 0098-1354.

- [228] Hartono, B., Heidebrecht, P. and Sundmacher, K., A mass integration concept for high temperature fuel cell plants, *International Journal of Hydrogen Energy* 36 (2011), 7240-7250,ISSN: 0360-3199.
- [229] Kumar, R., Katariya, A., Freund, H. and Sundmacher, K., Development of a Novel Catalytic Distillation Process for Cyclohexanol Production: Mini Plant Experiments and Complementary Process Simulations, *Organic Process Research & Development* 15 (2011), 527-539,ISSN: 1083-6160.
- [230] Ivanov, I., Vidaković-Koch, T. and Sundmacher, K., Direct hybrid glucose-oxygen enzymatic fuel cell based on tetrathiafulvalene-tetracyanoquinodimethane charge transfer complex as anodic mediator, *Journal of Power Sources* 196 (2011), 9260-9269,ISSN: 0378-7753.
- [231] Heidebrecht, P., Sundmacher, K. and Biegler, L. T., Optimal Design of Nonlinear Temperature Programmed Reduction Experiments, *AIChE Journal* 57 (2011), 2888-2901,ISSN: 0001-1541.
- [232] Heidebrecht, P., Pfafferoth, M. and Sundmacher, K., Multiscale modelling strategy for structured catalytic reactors, *Chemical Engineering Science* 66 (2011), 4389-4402,ISSN: 0009-2509.
- [233] Datta, P., Rihko-Struckmann, L. K. and Sundmacher, K., Influence of molybdenum on the stability of iron oxide materials for hydrogen production with cyclic water gas shift process, *Materials Chemistry and Physics* 129 (2011), 1089-1095,ISSN: 0254-0584.
- [234] Hanke-Rauschenbach, R., Mangold, M. and Sundmacher, K., Nonlinear dynamics of fuel cells: a review, *Reviews in Chemical Engineering* 27 (2011), 23-52,ISSN: 0167-8299.
- [235] Kadyk, T., Hanke-Rauschenbach, R. and Sundmacher, K., Nonlinear frequency response analysis for the diagnosis of carbon monoxide poisoning in PEM fuel cell anodes, *Journal of Applied Electrochemistry* 41 (2011), 1021-1032,ISSN: 0021-891X.
- [236] Bajcinca, N., Qamar, S., Flockerzi, D. and Sundmacher, K., Integration and dynamic inversion of population balance equations with size-dependent growth rate, *Chemical Engineering Science* 66 (2011), 3711-3720,ISSN: 0009-2509.
- [237] Ochoa, J. G. D., Voigt, A., Briesen, H. and Sundmacher, K., Modeling of innate immune responses of cells for vaccine production, *Chemical Engineering Science* 66 (2011), 3954-3961,ISSN: 0009-2509.
- [238] Witte, H., Warnke, C., Voigt, T., de Lima, A., Ivanov, I., Vidaković-Koch, T. R., Sundmacher, K. and Krost, A., AlGaIn/GaN-based HEMTs for electrical stimulation of neuronal cell cultures, *Journal of Physics D-Applied Physics* 44 (2011),ISSN: 0022-3727.
- [239] Panic, V. V., Vidaković-Koch, T. R., Andric, M., Petkovska, M. and Sundmacher, K., Nonlinear Frequency Response Analysis of the Ferrocyanide Oxidation Kinetics. Part II. Measurement Routine and Experimental Validation, *Journal of Physical Chemistry C* 115 (2011), 17352-17358,ISSN: 1932-7447.
- [240] Vidaković-Koch, T. R., Panic, V. V., Andric, M., Petkovska, M. and Sundmacher, K., Nonlinear Frequency Response Analysis of the Ferrocyanide Oxidation Kinetics. Part I. A Theoretical Analysis, *Journal of Physical Chemistry C* 115 (2011), 17341-17351,ISSN: 1932-7447.
- [241] Oettel, C., Rihko-Struckmann, L. and Sundmacher, K., Combined generation and separation of hydrogen in an electrochemical water gas shift reactor (EWGSR), *International Journal of Hydrogen Energy* 37 (2012), 6635-6645,ISSN: 0360-3199.

- [242] Vidaković-Koch, T., Gonzalez Martinez, I., Kuwertz, R., Kunz, U., Turek, T. and Sundmacher, K., Electrochemical Membrane Reactors for Sustainable Chlorine Recycling, *Membranes* 2 (2012), 510-528,ISSN: 2077-0375.
- [243] Heidebrecht, P., Piewek, S. and Sundmacher, K., Modeling of Molten Carbonate Fuel Cells, *Fuel Cell Science and Engineering*, Wiley-VCH Verlag GmbH & Co. KGaA, 791-817, 2012,ISBN: 9783527650248.  
<http://dx.doi.org/10.1002/9783527650248.ch28>
- [245] Peschel, A., Hentschel, B., Freund, H. and Sundmacher, K., Design of optimal multiphase reactors exemplified on the hydroformylation of long chain alkenes, *Chemical Engineering Journal* 188 (2012), 126-141,ISSN: 1385-8947.
- [246] Sundmacher, K., Hanke-Rauschenbach, R., Heidebrecht, P., Rihko-Struckmann, L. and Vidaković-Koch, T., Some reaction engineering challenges in fuel cells: dynamics, integration, renewable fuels, enzymes, *Current Opinion in Chemical Engineering* 1 (2012), 328-335,ISSN: 2211-3398.
- [247] Kadyk, T., Hanke-Rauschenbach, R. and Sundmacher, K., Nonlinear Frequency Response Analysis of Dehydration Phenomena in Polymer Electrolyte Membrane Fuel, *International Journal of Hydrogen Energy* 37 (2012), 7689-7701.
- [248] Oettel, C., Rihko-Struckmann, L. and Sundmacher, K., Improved CO Tolerance with PtRu Anode Catalysts in ABPBI Based High Temperature PEM Fuel Cells, *International Journal of Fuel Cell Science and Technology* 9 (2012),ISSN: 031009.
- [249] Ye, K. M., Freund, H., Xie, Z., Subramaniam, B. and Sundmacher, K., Prediction of Multicomponent Phase Behaviour of CO<sub>2</sub>-Expanded Liquids using CEoS/GE models and comparison with experimental data, *The Journal of Supercritical Fluids* 67 (2012), 41-52.
- [250] Fricke, M. and Sundmacher, K., Mass Transfer Model of Triethylamine across the n-Decane/Water Interface Derived from Dynamic Interfacial Tension Experiments, *Langmuir* 28 (2012), 6803-6815,ISSN: 0743-7463.
- [251] Zhou, T., Chen, L., Ye, Y., Chen, L., Qi, Z., Freund, H. and Sundmacher, K., An Overview of Mutual Solubility of Ionic Liquids and Water Predicted by COSMO-RS, *Industrial & Engineering Chemistry Research* 51 (2012), 6256-6264,ISSN: 0888-5885.
- [252] Oettel, C., Rihko-Struckmann, L. and Sundmacher, K., Characterisation of the electrochemical water gas shift reactor (EWGSR) operated with hydrogen and carbon monoxide rich feed gas, *International Journal of Hydrogen Energy* 37 (2012), 11759-11771,ISSN: 0360-3199.
- [253] Ji, G. J., Hanke-Rauschenbach, R., Bornhöft, A., Zhou, S. and Sundmacher, K., Fuel Cell Power Control Based on a Master-Slave Structure: A Proton Exchange Membrane Fuel Cell Case Study, *Journal of Fuel Cell Science and Technology* 9 (2012),ISSN: 1550-624X.
- [254] Borchert, C. and Sundmacher, K., Efficient formulation of crystal shape evolution equations, *Chemical Engineering Science* 84 (2012), 85-99,ISSN: 0009-2509.
- [255] Flassig, R. J. and Sundmacher, K., Optimal design of stimulus experiments for robust discrimination of biochemical reaction networks, *Bioinformatics* 28 (2012), 3089-96,ISSN: 1367-4811.

- [256] Hertel, C., Heidebrecht, P. and Sundmacher, K., Experimental quantification and modelling of reaction zones in a cyclic watergas shift reactor, *International Journal of Hydrogen Energy* 37 (2012), 2195-2203,ISSN: 0360-3199.
- [257] Zhai, S., Zhou, S., Chen, F. X., Sun, P. T. and Sundmacher, K., Advanced Study of Non-Uniform Cell Voltage Distribution for a PEMFC Stack, *Journal of Fuel Cell Science and Technology* 9 (2012),ISSN: 1550-624X.
- [258] Fricke, M. and Sundmacher, K., Emulsion-Assisted Nanoparticle Precipitation: Time Scale Analysis and Dynamic Simulation, *Industrial & Engineering Chemistry Research* 51 (2012), 1579-1591,ISSN: 0888-5885.
- [259] Rollié, S., Mangold, M. and Sundmacher, K., Designing biological systems: Systems Engineering meets Synthetic Biology, *Chemical Engineering Science* 69 (2012), 1-29,ISSN: 0009-2509.
- [260] Heidebrecht, P., Hanke-Rauschenbach, R., Jorke, A. and Sundmacher, K., On the design of cascades of ECPrOx reactors for deep CO removal from reformat gas, *Chemical Engineering Science* 67 (2012), 34-43,ISSN: 0009-2509.
- [261] Borchert, C. and Sundmacher, K., Morphology evolution of crystal populations: Modeling and observation analysis, *Chemical Engineering Science* 70 (2012), 87-98,ISSN: 0009-2509.
- [262] Zhou, T., Wang, Z. Y., Chen, L. F., Ye, Y. M., Qi, Z. W., Freund, H. and Sundmacher, K., Evaluation of the ionic liquids 1-alkyl-3-methylimidazolium hexafluorophosphate as a solvent for the extraction of benzene from cyclohexane: (Liquid plus liquid) equilibria, *Journal of Chemical Thermodynamics* 48 (2012), 145-149,ISSN: 0021-9614.
- [263] Hartono, B., Heidebrecht, P. and Sundmacher, K., Combined Branch and Bound Method and Exergy Analysis for Energy System Design, *Industrial & Engineering Chemistry Research* 51 (2012), 14428-14437,ISSN: 0888-5885.
- [264] Chen, L., Chen, L. F., Ye, Y. M., Qi, Z. W., Freund, H. and Sundmacher, K., Co-solvent intensification effect on aromatic alcohol oxidation, *Catalysis Communications* 28 (2012), 143-146,ISSN: 1566-7367.
- [265] Li, J., You, C. J., Chen, L. F., Ye, Y. M., Qi, Z. W. and Sundmacher, K., Dynamics of CO<sub>2</sub> Absorption and Desorption Processes in Alkanolamine with Cosolvent Polyethylene Glycol, *Industrial & Engineering Chemistry Research* 51 (2012), 12081-12088,ISSN: 0888-5885.
- [266] Peschel, A., Jörke, A., Sundmacher, K. and Freund, H., Optimal reaction concept and plant wide optimization of the ethylene oxide process, *Chemical Engineering Journal* 207-208 (2012), 656-674.
- [267] Bornhöft, A., Hanke-Rauschenbach, R. and Sundmacher, K., Steady State Analysis of the Anaerobic Digestion Model No 1 (ADMI), *Bioresour. Technol.* 73 (2013) 535-549, ISSN: 0924-090X.
- [268] Kirsch, S., Hanke-Rauschenbach, R., Stein, B., Kraume, R. and Sundmacher, K., The Electro-Oxidation of H<sub>2</sub>, CO in a Model PEM Fuel Cell: Oscillations, Chaos, Pulses, *Journal of the Electrochemical Society* 160 (2013), F436-F446, ISSN: 0013-4651.
- [269] Gonzalez Martinez, I., Vidaković-Koch, T., Kuwertz, R., Kunz, U., Turek, T. and Sundmacher, K., The kinetics of hydrogen chloride oxidation, *Journal of the Serbian Chemical Society* 78 (2013), 2115-2130.

- [270] Ivanov, I., Vidaković-Koch, T. and Sundmacher, K., Alternating electron transfer mechanism in the case of high-performance tetrathiafulvalene–tetracyanoquinodimethane enzymatic electrodes, *Journal of Electroanalytical Chemistry* 690 (2013), 68-73, ISSN: 0022-0728.
- [271] Kuwertz, R., Gonzalez Martinez, I., Vidaković-Koch, T. and Sundmacher, K., Turek, T. and Kunz, U., Energy-efficient chlorine production by gas-phase HCl electrolysis with oxygen depolarized cathode, *Electrochemistry Communications* 34 (2013), 320-322.
- [272] Vidaković-Koch, T., Mittal, V. K., Do, T. Q. N., Varničić, M. and Sundmacher, K., Application of electrochemical impedance spectroscopy for studying of enzyme kinetics, *Electrochimica Acta* 110 (2013), 94-104, ISSN: 0013-4686.
- [273] Bensmann, B., Hanke-Rauschenbach, R., Peña Arias, I. K. and Sundmacher, K., Energetic evaluation of high pressure PEM electrolyzer systems for intermediate storage of renewable energies, *Electrochimica Acta* 110 (2013), 570-580, ISSN: 0013-4686.
- [274] Bensmann, A., Hanke-Rauschenbach, R. and Sundmacher, K., Reactor configurations for biogas plants – a model based analysis, *Chemical Engineering Science* 104 (2013), 413-426, ISSN: 0009-2509.
- [275] Ahamed Imam, R., Freund, H., Guit, R. P. M., Fellay, C., Meier, R. J. and Sundmacher, K., Evaluation of Different Process Concepts for the Indirect Hydration of Cyclohexene to Cyclohexanol, *Organic Process Research & Development* 17 (2013), 343-358.
- [276] Ye, K., Freund, H. and Sundmacher, K., A New Process for Azeotropic Mixture Separation by Phase Behavior Tuning Using Pressurized Carbon Dioxide, *Industrial & Engineering Chemistry Research* 52 (2013), 15154-15164, ISSN: 0888-5885.
- [277] Flassig, R. J., Heise, S., Sundmacher, K. and Klamt, S., An effective framework for reconstructing gene regulatory networks from genetical genomics data, *Bioinformatics* 29 (2013), 246-254.
- [278] Borchert, C., Temmel, E., Eisenschmidt, H., Lorenz, H., Seidel-Morgenstern, A. and Sundmacher, K., Image-based identification of face specific crystal growth rates, *Crystal Growth & Design* 14 (2014), 952-971, ISSN: 1528-7483.
- [279] Bensmann, B., Hanke-Rauschenbach, R. and Sundmacher, K., In-situ measurement of hydrogen crossover in polymer electrolyte membrane water electrolysis, *International Journal of Hydrogen Energy* 39 (2014), 49-53, ISSN: 0360-3199.
- [280] Wang, W., Wolff, M. W., Reichl, U. and Sundmacher, K., Avidity of influenza virus: Model-based identification of adsorption kinetics from surface plasmon resonance experiments, *Journal of Chromatography A* 1326 (2014), 125-129, ISSN: 0021-9673.
- [281] Martinez, I. G., Vidaković-Koch, T., Kuwertz, R., Kunz, U., Turek, T. and Sundmacher, K., Analysis of a novel chlorine recycling process based on anhydrous HCl oxidation, *Electrochimica Acta* 123 (2014), 387-394.
- [282] Hentschel, B., Freund, H. and Sundmacher, K., Model-Based Determination of the Optimal Reaction Route for Integrated Multiphase Processes, *Chemie Ingenieur Technik-Themenheft "Themenheft über Informationstechnologie im Anlagenbau"* 86 (2014), 1080-1087.
- [283] Hentschel, B., Peschel, A., Xie, M., Vogelpohl, C., Sadowski, G., Freund, H. and Sundmacher, K., Model-based prediction of optimal conditions for 1-octene hydroformylation, *Chemical Engineering Science* (2014), 58-68, ISSN: 0009-2509.

- [284] Hentschel, B., Peschel, A., Freund, H. and Sundmacher, K., Simultaneous design of the optimal reaction and process concept for multiphase systems, *Chemical Engineering Science* 115 (2014), 69-87, ISSN: 0009-2509.
- [285] Zhou, T., Qi, Z. and Sundmacher, K., Model-based method for the screening of solvents for chemical reactions, *Chemical Engineering Science* 115 (2014), 177-185, ISSN: 0009-2509.
- [286] Lyu, Z., Zhou, T., Chen, L., Ye, Y., Sundmacher, K. and Qi, Z., Simulation based ionic liquid screening for benzene-cyclohexane extractive separation, *Chemical Engineering Science* 115 (2014), 186-194.
- [287] Flassig, R., Maubach, G., Täger, C., Sundmacher, K. and Naumann, M., Experimental design, validation and computational modeling uncover DNA damage sensing by DNA-PK and ATM, *Molecular BioSystems* 10 (2014), 1978-1986.
- [288] Do, T. Q. N., Varničić, M., Hanke-Rauschenbach, R., Vidaković-Koch, T. and Sundmacher, K., Mathematical Modeling of a Porous Enzymatic Electrode with Direct Electron Transfer Mechanism, *Electrochimica Acta* 137 (2014), 616-626, ISSN 0013-4686.
- [289] Datta, P., Rihko-Struckmann, L. K. and Sundmacher, K., Quantification of produced hydrogen in a cyclic water gas shift process with Mo stabilized iron oxide, *Fuel Processing Technology* 128 (2014), 36-42, ISSN: 0378-3820.
- [290] Bajcinca, N., Hofmann, S. and Sundmacher, K., Method of moments over orthogonal polynomial bases, *Chemical Engineering Science* 119 (2014), 295-309.
- [291] Varnicic, M., Bettenbrock, K., Hermsdorf, D., Vidaković-Koch, T. and Sundmacher, K., Combined electrochemical and microscopic study of porous enzymatic electrodes with direct electron transfer mechanism, *RSC Advances* 4 (2014), 36471-36479, ISSN: 2046-2069.
- [292] Bensmann, A., Hanke-Rauschenbach, R., Heyer, R., Kohrs, F., Benndorf, D., Reichl, U. and Sundmacher, K., Biological methanation of hydrogen within biogas plants: A model-based feasibility study, *Applied Energy* 134 (2014), 413-425, ISSN: 0306-2619.
- [293] Karst, F., Freund, H., Maestri, M. and Sundmacher, K., Multiscale Chemical Process Design Exemplified for a PEM Fuel Cell Process, *Chemie-Ingenieur-Technik-Journal (100 Jahre Ullmann)* 86 (2014), 2075-2088, ISSN: 0009-286X.
- [294] Facht, M., Flassig, R.J., Rihko-Struckmann, L.K. and Sundmacher, K., A growth model of *Dunaliella salina*: Parameter identification and profile likelihood analysis, *Bioresource Technology* 173 (2014), 21-31.
- [295] Sharma, D.K., Gautam, K., Jueppner, J., Giavalisco, P., Rihko-Struckmann, L., Pareek, A. and Sundmacher, K., UPLC-MS analysis of *Chlamydomonas Reinhardtii* and *Scenedesmus Obliquus* Lipid Extracts and their possible Metabolic Roles, *Journal of Applied Phycology* (2014), ISSN: 0921-8971.
- [296] Hentschel, B., Freund H. and Sundmacher, K., Modellbasierte Ermittlung der optimalen Reaktionsführung für integrierte Mehrphasenprozesse, *CIT Journal* 7 (2014), 1080-1087.
- [297] Eisenschmidt, H., Bajcinca, N. and Sundmacher, K., Model-based Observation and Design of Crystal Shapes via Controlled Growth-Dissolution Cycles, *Computer Aided Chemical Engineering* 37 (2015), 1673-1678.

- [298] Bajcinca, N., Hofmann, S., Bieliievstov, D. and Sundmacher, K., Approximate ODE Models for Population Balance System, *Computers & Chemical Engineering* 74 (2015), 158–168, ISSN: 0098-1354.
- [299] Hentschel, B., Kiedorf, G., Gerlach, M., Hamel, C., Seidel-Morgenstern, A., Freund, H. and Sundmacher, K., Model-based Identification and Experimental Validation of the Optimal Reaction Route for the Hydroformylation of 1-Dodecene, *Industrial and Engineering Chemistry Research* 54 (6) (2015), 1755-1765, ISSN: 0888-5885.
- [300] Le Borne, S., Shahmuradyan, L. and Sundmacher, K., Fast Evaluation of Univariate Aggregation Integrals on Equidistant Grids, *Computers & Chemical Engineering* 74 (2015), 115-127, ISSN: 0098-1354.
- [301] Flassig R.J., Migal I., van der Zalm E., Rihko-Struckmann L. and Sundmacher K., Rational Selection of Experimental readout and Intervention Sites for Reducing Uncertainties in Computational Model Predictions, *BMC Bioinformatics* 16 (2015), 13.
- [302] Eisenschmidt, H., Voigt, A. and Sundmacher, K., Face Specific Growth and Dissolution Kinetics of Potassium Dihydrogen Phosphate Crystals from Batch Crystallization Experiments, *Crystal Growth & Design* 1 (2015), 219-227.
- [303] Zhou, T., McBride, K., Zhang, X., Qi, Z. and Sundmacher, K., Integrated Solvent and Process Design Exemplified for a Diels–Alder Reaction, *AIChE Journal* 61 (1) (2015), 147-158, ISSN: 0001-1541.
- [304] Flassig, R. J., Facht, M., Rihko-Struckmann, L. and Sundmacher, K., Robust Process Design for the Bioproduction of b-Carotene in Green Microalgae, *Computer Aided Chemical Engineering* 37 (2015), 2117-2122.
- [305] Lautenschleger, A., Voigt, A., Sundmacher, K. and Kenig, E.Y., Model-based Analysis of a Gas/Vapor-liquid Micro-Channel Membrane Contactor, *AIChE Journal* 61 (2015), 2240-2056.
- [306] Zinser, A., Ye, K., Rihko-Struckmann, L. and Sundmacher, K., A Dynamic Method for Computing Thermodynamic Equilibria in Process Simulation, *Computer Aided Chemical Engineering* 37 (2015), 299-304.
- [307] El Sibai, A., Rihko-Struckmann, L. and Sundmacher, K., Synthetic Methane from CO<sub>2</sub>: Dynamic Optimization of the Sabatier Process for Power-to-Gas Applications, *Computer Aided Chemical Engineering* 37 (2015), 1157-1162.
- [308] McBride, K. and Sundmacher, K., Computer-Aided Design of Solvents for the Recovery of a Homogeneous Catalyst used for Alkene Hydroformylation, *Computer Aided Chemical Engineering* 37 (2015), 2075-2080.
- [309] McBride, K. and Sundmacher, K., Data Driven Conceptual Process Design for the Hydroformulation on 1-Dodecene in a Thermomorphic Solvent System, *Industrial & Engineering Chemistry Research* 26 (2015), 6761-6771.
- [310] Varničić, M., Vidaković-Koch, T. and Sundmacher, K., Gluconic Acid Synthesis in an Electroenzymatic Reactor, *Electrochimica Acta* 174 (2015), 480-487, ISSN: 0013-4686.
- [311] Karst, F., Maestri, M., Freund, H. and Sundmacher, K., Reduction of Microkinetic Reaction Models for Reactor Optimization exemplified for Hydrogen Production from Methane, *Chemical Engineering Journal* 281 (2015), 981-994, ISSN: 1385-8947.

- [312] Pirwitz, K., Rihko-Struckmann, L. and Sundmacher, K., Comparison of Flocculation Methods for harvesting *Dunaliella*, *Bioresource Technology* 196 (2015), 145-152.
- [313] Zhou, T., Lyu, Z., Qi, Z. and Sundmacher, K., Robust Design of Optimal Solvents for Chemical Reactions – A Combined Experimental and Computational Strategy, *Chemical Engineering Science* 137 (2015), 613-625, ISSN: 0009-2509.
- [314] Fricke, M. Voigt, A., Veit, P. and Sundmacher, K., Miniemulsion-based Process for Controlling the Size and Shape of Zinc Oxide Nanoparticles, *Ind. Eng. Chem. Res. Special Issue: Doraiswami Ramkrishna Festschrift* 54 (2015), 10293-10300.
- [315] Pirwitz, K., Flassig, J. Robert, Rihko-Struckmann, L. and Sundmacher, K., Energy and Operating Cost Assessment of Competing Harvesting Methods for *D. Salina* in a  $\beta$ -Carotene Production Process, *Algal Research* 12 (2015), 161-169, ISSN: 2211-9264.
- [316] Do, T.Q.N., Varničić, M., Flassig, R. J., Vidaković-Koch, T. and Sundmacher, K., Dynamic and Steady State 1-D Model of Mediated Electron Transfer in a Porous Enzymatic Electrode, *Bioelectrochemistry* 106 (2015), 3–13.
- [317] Auer, A. A., Cap, S., Antonietti, M., Cherevko, S., Deng, X., Papakonstantinou, G., Sundmacher, K., Brüller, S., Antonyshy, I., Dimitratos, N., Davis, R., Fechner, N., Freakley, S., Grin, Y., Gunnoe, B., Haj-Hariri, H., Hutchings, G., Liang, H., Mayrhofer, K., Müllen, K., Neese, F., Ranjan, C., Sankar, M., Schlögl, R., Schüth, F., Spanos, I., Stratmann, M., Tüysüz, H., Vidakovic-Koch, T., Yi, Y. and Zangari, G., MAXNET Energy – Focusing Research in Chemical Energy Conversion on the Electrocatalytic Oxygen Evolution, *Green - The International Journal of Sustainable Energy Conversion and Storage* 5 (2015), 7-21, ISSN: 1869-876X.
- [318] Rihko-Struckmann, L., Datta, P., Wenzel, M., Sundmacher, K., Dharanipragada, N., Poelman, H., Galvita, V. and Marin, G., Hydrogen and Carbon Monoxide Production by Chemical Looping over Iron-Aluminium Oxides, *Energy Technology* 4 (2016), 304–313, ISSN: 2194-4288.
- [319] Bensmann, B., Hanke-Rauschenbach, R., Müller-Syring, G., Henel, M. and Sundmacher, K., Optimal Configuration and Pressure Levels of Electrolyzer Plants in Context of Power-To-Gas Applications, *Applied Energy* 167 (2016), 107-124, ISSN: 0306-2619.
- [320] Facht, M., Hermsdorf, D., Rihko-Struckmann, L. and Sundmacher, K., Flow Cytometry enables Dynamic Tracking of Algal Stress Response: A case study using *Dunaliella Salina*, *Algal Research* 13 (2016), 227-234.
- [321] Le Borne, S., Eisenschmidt, H. and Sundmacher, K., Image-based Analytical Crystal Shape Computation exemplified for Potassium Dihydrogen Phosphate (KDP), *Chemical Engineering Science* 139 (2016), 61-74, ISSN: 0009-2509.
- [322] McBride, K., Gaide, T., Vorholt, A., Behr, A. and Sundmacher, K., Thermomorphic Solvent Selection for Homogeneous Catalyst Recovery based on COSMO-RS, *Chemical Engineering and Processing: Process Intensification Special Issue: Tunable Solvents* (2016), 97-106, ISSN: 0255-2701.
- [323] Zinser, A., Rihko-Struckmann, L. and Sundmacher, K., Dynamic Method for Computation of Chemical and Phase Equilibria, *Computers and Chemical Engineering* 89 (2016), 1-10, ISSN: 0098-1354.



- [324] Kuwertz, R., Martinez, I. G., Vidaković-Koch, T., Turek, T., Kunz, U. and Sundmacher, K., Material development and process optimization for anhydrous hydrogen chloride electrolysis with oxygen depolarized cathode, *Journal of Applied Electrochemistry* 46 (7) (2016), 755-767.
- [325] Eisenschmidt, H., Bajcinca, N. and Sundmacher, K., Optimal Control of Crystal Shapes in Batch Crystallization Experiments by Growth-Dissolution Cycles, *Crystal Growth & Design* 16 (6) (2016), 3297–3306.
- [326] Eisenschmidt, H., Bajcinca, N. and Sundmacher, K., Optimal Control of Crystal Shapes in a cyclic Growth-Dissolution Process, *Crystal Growth & Design* 16 (6) (2016), 3297–3306.
- [327] Wang, W., Voigt, A. and Sundmacher, K., The interaction of protein-coated bionanoparticles and surface receptors reevaluated: How important is the number of bonds?, *Soft Matter* 30 (2016), 6451-6462.
- [328] Nogueira, J. A., P. Arias, I. K., Hanke-Rauschenbach, R., Vidaković-Koch, T., Varela, H. and Sundmacher, K., Autonomous Voltage Oscillations in a Direct Methanol Fuel Cell, *Electrochimica Acta* 212 (2016), 545-552, ISSN: 0013-4686.
- [330] Bensmann, B., Trinke, P., Hanke-Rauschenbach, R., Reichstein, S. and Sundmacher, K., Hydrogen permeation in PEM electrolyzer cells operated at asymmetric pressure conditions, *Journal of the Electrochemical Society* 163 (11) (2016), 3164-3170, ISSN: 0013-4651.
- [331] Flassig, R. J., Facht, M., Höffner, K., Barton, P.I. and Sundmacher, K., Dynamic flux balance modeling to increase the production of high-value compounds in green microalgae, *Biotechnology for Biofuels* (2016), 1-12, ISSN: 1754-6834.
- [332] Wang W., Voigt A., Wolff M.W., Reichl U. and Sundmacher K., Binding kinetics and multi-bond: Finding correlations by synthesizing interactions between ligand-coated bionanoparticles and receptor surfaces, *Analytic Biochemistry* 505 (2016), 8-17, ISSN: 0003-2697.
- [333] Bensmann, A., Hanke-Rauschenbach, R., Heyer, R., Kohrs, F., Benndorf, D., Kausmann, R., Plöchl, M., Heiermann, M., Reichl, U. and Sundmacher, K., Diagnostic Concept for Dynamically Operated Biogas Production Plants, *Renewable Energy* 96 (2016), 479–489, ISSN: 0960-1481.
- [334] Bremer, J., Rätze, K.H.G. and Sundmacher, K., CO<sub>2</sub> Methanation: Optimal Start-Up Control of a Fixed-Bed Reactor for Power-To-Gas Applications, *AIChE Journal- Special Issue (ISCRE24)* 63 (1) (2017), 23-31, ISSN: 0001-1541.
- [335] Wenzel, M., Rihko-Struckmann, L. and Sundmacher, K., Thermodynamic Analysis and Optimization of RWGS Processes for Solar Syngas Production from CO<sub>2</sub>, *AIChE Journal- Special Issue (ISCRE24)* 63 (1) (2016), 15-22, ISSN: 0001-1541.
- [336] Zinser, A. and Sundmacher, K., Dynamic Method for Computation of Thermodynamic Equilibria in Reactive Multiphase System, *Chemie Ingenieur Technik* 88 (11) (2016), 1617–1627, ISSN 0009-286X.
- [337] Zhou, T., Wang, J., McBride, K. and Sundmacher, K., Optimal Design of Solvents for Extractive Reaction Processes, *AIChE Journal* 62 (9) (2016), 3238-3249, ISSN: 0001-1541.
- [338] Pirwitz, K., Rihko-Struckmann, L. and Sundmacher, K., Valorization of the Aqueous Phase obtained from Hydrothermally Treated Dunaliella Salina Remnant Biomass, *Bioresource Technology* 219 (2016), 64-71, ISSN: 0960-8524.

- [339] Vidaković-Koch, T., Hanke-Rauschenbach, R., González Martínez, I. and Sundmacher, K., Catalyst Layer Modeling, *Handbook of Electrochemical Energy*, Springer Verlag (2016), 259-285.
- [340] Temmel, E., Eisenschmidt, H., Sundmacher, K., Lorenz, H. and Seidel-Morgenstern, A., A Short-Cut Method for the Quantification of Crystallization Kinetics. 1. Method Development, *Crystal Growth & Design* 6 (12) (2016), 6743-6755, ISSN: 1528-7483.
- [341] Kaiser, N., Flassig, R. and Sundmacher, K., Probabilistic reactor design in the framework of elementary process functions, *Computers and Chemical Engineering* 94 (2016), 45–59, ISSN: 0098-1354.
- [342] Trinke, P., Bensmann, B., Hanke-Rauschenbach, R., Reichstein, S. and Sundmacher, K., Hydrogen permeation in PEM electrolyzer cells operated at asymmetric pressure conditions, *Journal of the Electrochemical Society* 163 (11) (2016), F3164-F3170, ISSN: 0013-4651.
- [343] Trinke, P., Bensmann, B., Reichstein, S., Hanke-Rauschenbach, R. and Sundmacher, K., Impact of Pressure and Temperature on Hydrogen Permeation in PEM Water Electrolyzers Operated at Asymmetric Pressure Conditions, *ECS Transactions* 75 (14) (2016), 1081-1094, ISSN: 1938-5862.
- [344] Rihko-Struckmann, L., Molnar, M., Pirwitz, K., Fachel, M., McBride, K., Zinser, A. and Sundmacher, K., Recovery and Separation of Carbohydrate Derivatives from the Lipid Extracted Alga *Dunaliella* by Mild Liquefaction, *ACS Sustainable Chemistry & Engineering* 5 (2017), 588–595.
- [345] El Sibai, A., Rihko-Struckmann, L. and Sundmacher, K., Model based Optimal Sabatier Reactor Design for Power-to-Gas Applications, *Energy Technology* 5 (2017), 911-921.
- [346] Wenzel, M., Aditya Dharanipragada, N. V. R., Rihko-Struckmann, L., Galvita, V., Poelman, H., Marin, G.B. and Sundmacher, K., Kinetics of Reverse-Water-Gas-Shift Chemical Looping on modified Iron Oxide for CO Production from CO<sub>2</sub>, *Journal of CO<sub>2</sub> Utilization* 17 (2017), 60-68, ISSN: 2212-9820.
- [347] Zhou, T., Zhou, Y. and Sundmacher, K., A Hybrid Stochastic-Deterministic Optimization Approach for Integrated Solvent and Process Design, *CES special issue iCAMD* (2017), 207-216, ISSN: 0009-2509.
- [348] McBride, K., Kaiser, N.M. and Sundmacher, K., Integrated Reaction-Extraction Process for the Hydro-formylation of Long-Chain Alkenes with a Homogeneous Catalyst, *Computers & Chemical Engineering* 105 (2017), 212-223.
- [349] Jokiel, M., Wagner, L.M., Kaiser, N.M., Mansour, M., Zähringer, K., Janiga, G., Nigam, K., Thévenin, D. and Sundmacher, K., Measurement and Simulation of Mass Transfer and Backmixing Behavior in a Gas-Liquid Helically Coiled Tubular Reactor, *CES special issue GLS13* (2017), 410-421, ISSN: 0009-2509.
- [350] Bremer, J., Goyal, P., Feng, L., Benner, P. and Sundmacher, K., POD-DEIM for Efficient Reduction of a Dynamic 2D Catalytic Reactor Model, *Computers & Chemical Engineering* 106 (2017), 777-784.
- [351] Zhang, J., Peng, D., Song, Z., Zhou, T., Cheng, H., Chen, L. and Qi, Z., COSMO-descriptor based computer-aided ionic liquid design for separation processes. Part I: Modified group contribution methodology for predicting surface charge density profile of ionic liquids, *Chemical Engineering Science* 162 (2017), 355-363.

- [352] Song, Z., Zhou, T., Qi, Z., and Sundmacher, K., A systematic method for screening ionic liquids as extraction solvents exemplified by an extractive desulfurization process, *ACS Sustainable Chemistry & Engineering* 5 (4) (2017), 3382–3389.
- [353] Wiedmeyer, V., Anker, F., Bartsch, C., Voigt, A., John, V. and Sundmacher, K., Continuous Crystallization in a Helically-Coiled Flow Tube: Analysis of Flow Field, Residence Time Behavior and Crystal Growth, *Industrial & Engineering Chemistry Research* 56 (13) (2017), 3699–3712.
- [354] Kovačević T., Wiedmeyer V., Schock J., Voigt, A., Pfeiffer, F., Sundmacher, K. and Briesen, H., Disorientation Angle Distribution of Primary Particles in Potash Alum Aggregates for Different Supersaturation Profiles, *Journal of Crystal Growth* 467 (2017), 93-106, ISSN: 0022-0248.
- [355] Eisenschmidt, H., Soumaya, M., Bajcinca, N., Le Borne, S. and Sundmacher, K., Estimation of aggregation kernels based on Laurent polynomial approximation, *Computers & Chemical Engineering* 103 (2017), 210-217, ISSN: 0098-1354.
- [356] Peña Arias, I. K., Trinke, P., Hanke-Rauschenbach, R. and Sundmacher, K., Understanding PEM fuel cell dynamics: the reversal curve, *International Journal of Hydrogen Energy* (2017), 15818–15827.
- [357] Sorrentino, A., Vidakovic-Koch, T., Hanke-Rauschenbach, R. and Sundmacher, K., Electrochemical concentration frequency response: A new method for studying PEM fuel cells dynamics, *Electrochimica Acta Special Issue (EIS10)* (2017), 53–64.
- [358] Mansour, M., Liu, Z., Janiga, G. Nigam, K. and Sundmacher, K., Numerical Study of Liquid-Liquid Mixing in Helical Pipes, *Chemical Engineering Science* 172 (2017), 250-261.
- [359] Hofmann, S., Bajcinca, N., Raisch, J. and Sundmacher, K., Optimal control of univariate and multivariate population balance systems involving external fines removal, *Chemical Engineering Science* 168 (2017), 101-123.
- [360] Pischel, D., Flassig, R. J. and Sundmacher, K., Efficient Simulation of Intrinsic, Extrinsic, and External Noise in Biochemical Systems, *Bioinformatics* 33 (2017), i319-i324.
- [361] Vidaković-Koch T. and Sundmacher K., Porous electrodes for bioelectrochemistry, *Encyclopedia of Interfacial Chemistry - Surface Science and Electrochemistry*, 2017, in press.
- [362] Vidaković-Koch, T., Hanke-Rauschenbach, R., González Martínez, I. and Sundmacher, K., Catalyst Layer for Gas-Diffusion-Electrodes, *Handbook of Electrochemistry*, Springer Verlag (2017), 259-285.
- [363] Facht, M., Flassig, R. J., Rihko-Struckmann, L. and Sundmacher, K., Carotenoid Production Process using Green Microalgae of the *Dunaliella* Genus: Model-Based Analysis of Interspecies Variability, *ACS Ind. & Eng. Chem. Res.* (2017), 12888–12898.
- [364] Wiedmeyer, V., Voigt, A. and Sundmacher, K., Crystal population growth in a continuous helically coiled flow tube crystallizer, *Chemical Engineering and Technology* 40 (9) (2017), 1584–1590.
- [365] Zähringer, K., Wagner, L. M., Thévenin, D., Siegmund, P. and Sundmacher, K., Particle-Image-Velocimetry Measurements in Organic Liquid Multiphase Systems for an Optimal Reactor Design and Operation, *Journal of Visualization* 21 (2017), 5-17.

- [366] Peña Arias, I. K., Hanke-Rauschenbach, R. and Sundmacher, K., Influence of the autonomous oscillations and the CO concentration on the performance of an ECPrOx reactor, *Electrochimica Acta* 251 (2017), 602-612.
- [367] Aydin, E., Bonvin, D. and Sundmacher, K., Dynamic optimization of constrained semi-batch processes using Pontryagin's minimum principle—An effective quasi-Newton approach, *Computers & Chemical Engineering* (2017), 135-144.
- [368] McBride, K., Kaiser, N. M. and Sundmacher, K., Integrated reaction-extraction process for the hydroformulation of long-chain alkenes with a homogeneous catalyst, *CACE: Special Issue Process Intensification* (2017), 212-223.
- [369] El Sibai, A., Rihko-Struckmann, L. and Sundmacher, K., Model based Optimal Sabatier Reactor Design for Power-to-Gas Applications, *Energy Technology* 5 (6) (2017), 911-921.
- [370] Kaiser, N.M., Jokiel, M., McBride, K., Flassig, R.J. and Sundmacher, K., Optimal Reactor Design via Flux Profile Analysis for an Integrated Hydroformylation Process Using a Thermomorphic Solvent System for Catalyst Recovery, *Industrial & Engineering Chemistry Research* 56 (40) (2017), 11507-11518.
- [371] Otrin, L., Marusic, N., Bednarz, C., Vidakovic-Koch, T., Lieberwirth, I., Landfester, K. and Sundmacher, K., Towards Artificial Mitochondrion: Mimicking Oxidative Phosphorylation in Polymer and Hybrid Membranes, *Nano Letters* 17 (11) (2017), 6816-6821, ISSN: 1530-6984.
- [372] Sievers, G., Vidakovic-Koch, T., Walter, C., Steffen, F., Kruth, A., Hermsdorf, D., Sundmacher, K., Jakubith, S. and Brüser, V., Ultra low loading Pt-sputtered gas diffusion electrodes for oxygen reduction reaction, *Journal of Applied Electrochemistry* (2018), 1–12.
- [373] Zhang, J., Qin, L., Peng, D., Zhou, T., Cheng, H., Chen, L. and Qi, Z., COSMO-descriptor based computer-aided ionic liquid design for separation processes. Part II: Task-specific design for extraction processes, *Chemical Engineering Science* 162 (2017), 364-374, ISSN: 0009-2509.
- [374] Schack, D., Sundmacher, K., Technoökonomische Optimierung des Produktionsnetzwerkes für die Synthese von Ameisensäure aus erneuerbaren Ressourcen, *Chemie Ingenieur Technik Sonderheft: Energieträger* 90(1) (2017), 256–266.
- [375] Aydin, E., Bonvin, D. and Sundmacher, K., NMPC using Pontryagin's Minimum Principle – Application to a two-phase semi-batch hydroformulation reactor under uncertainty, *Computers & Chemical Engineering* 108 (2018), 47-56.
- [376] Wenzel, M., Rihko-Struckmann, L. and Sundmacher, K., Continuous Production of CO from CO<sub>2</sub> by RWGS Chemical Looping in Fixed and Fluidized Bed Reactors, *Chemical Engineering Journal* 336 (2018), 278-296.
- [377] Kaiser, N.M., Flassig, R.J. and Sundmacher, K., Reactor-Network Synthesis via Flux Profile Analysis, *Chemical Engineering Journal* 335 (2018), 1018-1030.
- [378] Song, Z., Zhang, C., Qi, Z., Zhou, T. and Sundmacher, K., Computer-aided design of ionic liquids as solvents for extractive desulfurization, *AIChE Journal* 64 (3) (2018), 1013–1025, ISSN: 0001-1541.
- [379] Weiss, M., Frohnmayer, J. P., Benk, L. T., Haller, B., Janiesch, J.-W., Heitkamp, T., Börsch, M., Lira, R. B., Dimova, R., Lipowsky, R., Bodschenschatz, E., Baret, J.-C., Vidakovic-Koch, T.,

- Sundmacher, K., Platzman, I. and Spatz, J., Sequential bottom-up assembly of mechanically stabilized synthetic cells by microfluidics, *Nature Materials* 17 (2018), 89-96, ISSN: 1476-1122.
- [380] Bystron, T., Vesely, M., Paidar, M., Papakonstantinou, G., Sundmacher, K., Bensmann, B., Hanke-Rauschenbach, R. and Bouzek, K., Enhancing PEM water electrolysis efficiency by reducing the extent of Ti gas diffusion layer passivation, *Journal of Applied Electrochemistry* 48 (6) (2018), 713–723.
- [381] Immerz, C., Paidar, M., Papakonstantinou, G., Bensmann, B., Bystron, T., Vidakovic-Koch, T., Bouzek, K., Sundmacher, K., Hanke-Rauschenbach, R., Effect of the MEA design on the performance of PEMWE single cells with different sizes, *Journal of Applied Electrochemistry* 48 (6) (2018), 701–711.
- [382] Aydin, E., Bonvin, D., Sundmacher, K., Computationally Efficient NMPC for Semi-Batch Processes - Use of Parsimonious Input Parameterization together with Shrinkinh Horizon, *Journal of Process Control* 66 (2018), 12-22.
- [383] Zhou, T., Jhamb, S., Liang, X., Sundmacher, K., Gani, R., Prediction of Acid Dissociation Constants of Organic Compounds using Group Contribution Methods, *Chemical Engineering Science* 183 (2018), 95–105, ISSN: 0009-2509.
- [384] Schwille, P., Spatz, J., Landfester, K., Bodenschatz, E., Herminghaus, S., Sourjik, V., Erb, T., Bastiaens, P., Lipowsky, R., Hyman, A., Dabrock, P., Baret, J. C., Vidakovic-Koch, T., Bieling, P., Dimova, R., Mutschler, H., Robinson, T., Tang, D., Wegner, S., Sundmacher, K., MaxSynBio – Avenues towards creating cells bottom-up, *Angewandte Chemie* (2018), 13382-13392.
- [385] Pischel, D., Buchbinder, J. H., Sundmacher, K., Lavrik, I. N., Flassig, R. J., A Guide to Automated Apoptosis Detection: How to Make Sense of Imaging Flow Cytometry Data, *PLoS ONE* (2018).
- [386] Wang, M., Wölfer, C., Otrin, L., Ivanov, I., Vidakovic-Koch, T., Sundmacher, K., Transmembrane NADH oxidation with tetracyanoquinodimethane, *Langmuir* 34 (19) (2018), 5435–5443, ISSN: 0743-7463.
- [387] Beneyton, T., Krafft, D., Bednarz, C., Kleineberg, C., Woelfer, C., Ivanov, I., Vidakovic-Koch, Sundmacher, K., Baret, J.-C., Out-of-equilibrium microcompartments for the bottom-up integration of metabolic functions microcompartments, *Nature Commun* (2018), Article number: 2391.
- [388] Aydin, E., Bonvin, D., Sundmacher, K., Towards Fast Dynamic Optimization: Towards Fast Dynamic Optimization: A Tailored Indirect Algorithm that Uses Parsimonious Input Parameterization, *Industrial & Engineering Chemistry Research: Special Issue for ESCAPE 2017*, 10038–10048.
- [389] Schack, D., Rihko-Struckmann, L., Sundmacher, K., Linear programming approach for structure optimization of Renewable-to-Chemicals (R2Chem) production networks, *Industrial & Engineering Chemistry Research* 57 (30) (2018), 9889–9902.
- [390] Bechtel S., Vidakovic-Koch, T., Sundmacher, K., Integrated Process and Ionic Liquid Design by Combining Flowsheet Simulation with Quantum-Chemical Solvent Screening, *Proceedings of the 13th International Symposium on Process Systems Engineering –PSE 2018* (2018), 2167-2172.
- [391] Bechtel S., Vidakovic-Koch, T., Sundmacher, K., Novel Process for the exergetically efficient recycling of chlorine by gas phase electrolysis of hydrogen chloride, *Chemical Engineering Journal* 346 (2018), 535-548, ISSN: 1385-8947.

- [392] Pischel, D., Buchbinder, J. H., Sundmacher, K., Lavrik, I. N., Flassig, R. J., A Guide to Automated Apoptosis Detection: How to Make Sense of Imaging Flow Cytometry Data, *PLoS ONE* (2018).
- [393] Sadegh-Vaziri, R., Ludwig, K., Sundmacher, K., Bäbler, M. U., A Guide to Automated Apoptosis Detection: How to Make Sense of Imaging Flow Cytometry Data, *Journal of Colloid and Interface Science* (2018), 336-348, ISSN: 0021-9797.
- [394] Buchbinder, J., Pischel, D., Sundmacher, K., Flassig, R. J., Lavrik, I., Quantitative single cell analysis uncovers the life/death decision in CD95 network, *PLoS Computational Biology* (2018).

### **Supervised Ph.D. Theses** (35)

- [1] Schultz, T., Experimental and Model-based Analysis of the Steady-state and Dynamic Operating Behaviour of the Direct Methanol Fuel Cell (DMFC), 2004.  
<http://diglib.uni-magdeburg.de/Dissertationen/2004/thoschultz.pdf>
- [2] Heidebrecht, P., Modelling, Analysis and Optimisation of a Molten Carbonate Fuel Cell with Direct Internal Reforming (DIR-MCFC), 826, Fortschritt-Berichte VDI, 2005.
- [3] Vidakovic, T., Kinetics of Methanol Electrooxidation on PtRu Catalysts in a Membrane Electrode Assembly, 2005.  
<http://diglib.uni-magdeburg.de/Dissertationen/2005/tanvidakovic.pdf>
- [4] Krewer, U., System-oriented Analysis of the Dynamic Behaviour of Direct Methanol Fuel Cells, 2005.  
<http://diglib.uni-magdeburg.de/Dissertationen/2005/ulrkrewer.pdf>
- [5] Huang, Y. S., Mass Transfer Effects on Reactive Separation Processes – Discovery of Reactive Arrheotropes, 2005.  
<http://diglib.uni-magdeburg.de/Dissertationen/2005/yuahuang.pdf>
- [6] Ye, Y., Experimental Study on n-Butane Partial Oxidation to Maleic Anhydride in a Solid Electrolyte Membrane Reactor, 2006.  
<http://diglib.uni-magdeburg.de/Dissertationen/2006/yinye.pdf>
- [7] Adityawarman, D., Precipitation of Barium Sulphate Nanoparticles in Microemulsion: Experiments and Modelling, 2007.  
<http://diglib.uni-magdeburg.de/Dissertationen/2007/denadityawarman.pdf>
- [8] Rauscher, F., Verfahrenstechnische Analyse der Fällung von Calciumcarbonat- Nanopartikeln in W/O-Mikroemulsionen, *Forschungsberichte aus dem Max-Planck- Institut für Dynamik komplexer technischer Systeme*, Shaker Verlag, 2007, ISBN: 978-3-8322-6627-1.
- [9] Hanke-Rauschenbach, R., Strukturierte Modellierung und nichtlineare Analyse von PEM Brennstoffzellen, 2007.  
<http://diglib.uni-magdeburg.de/Dissertationen/2007/rihankerauschenbach.pdf>
- [10] Gundermann, M., Parameteridentifikation und Reduktion des mathematischen Modells einer industriellen Schmelzkarbonatbrennstoffzellenanlage, *Forschungsberichte aus dem Max-Planck-*

- Institut für Dynamik komplexer technischer Systeme*, Shaker Verlag, 2007, ISBN: 978-3-8322-7251-7.
- [11] Niemann, B., Population Dynamics of Nanoparticle Precipitation in Microemulsions, Docupoint Wissenschaft, 2009, ISBN: 978-3-86912-015-7.
- [12] Chalakova, M., Conceptual Design and Analysis of Reactive Distillation Processes for the Production of Isooctane via Indirect Alkylation, Docupoint Wissenschaft, 2009, ISBN: 978-3-86912-024-9.
- [13] Rollié, S., Heteroaggregation Processes in Colloidal Particle and Cell Systems, Shaker Verlag, Forschungsberichte aus dem Max-Planck-Institut für Dynamik komplexer technischer Systeme, 2010, ISBN: 978-3-8322-9171-6.
- [14] Steyer, F., A Novel Reactive Distillation Process for the Production of Cyclohexanol from Cyclohexene, Magdeburg, Univ., Fak. für Verfahrens- und Systemtechnik, 125, 2010.
- [15] Pfafferoth, M., Modelling of a Symmetric Molten Carbonate Fuel Cell Stack, *Docupoint Wissenschaft*, 2011, ISBN: 978-3-86912-049-2.
- [16] Ivanov, I., Development of a glucose-oxygen enzymatic fuel cell, Shaker Verlag, 127, 2012, ISBN: OND-00000-0000141.
- [17] Peschel, A., Model-based design of optimal chemical reactors, *Forschungsberichte aus dem Max-Planck-Institut für Dynamik komplexer technischer Systeme*, Shaker Verlag, Vol. 34, 186, 2012, ISBN: 978-3-8440-1108-1.
- [18] Borchert, C., Topics in Crystal Shape Dynamics, *Forschungsberichte aus dem Max-Planck-Institut für Dynamik komplexer technischer Systeme*, Shaker Verlag, Vol. 36, 208, 2012, ISBN: 978-3-8440-1526-3, 2012..
- [19] Steyer, C., Precipitation of barium sulfate in a semi-batch stirred tank reactor - influence of feeding policy on particle size and morphology, Magdeburg, Univ., Fak. für Verfahrens- und Systemtechnik, 172, 2012.  
<http://edoc2.bibliothek.uni-halle.de/hs/content/titleinfo/24809>
- [20] Kadyk, T., Nonlinear frequency response analysis for the diagnosis of polymer electrolyte membrane fuel cells, Magdeburg, Univ., Fak. für Verfahrens- und Systemtechnik, 128, 2012.  
<http://edoc2.bibliothek.uni-halle.de/urn/urn:nbn:de:gbv:ma9:1-2757>
- [21] Oettel, C., Electrochemical High Temperature Membrane Reactor for the Processing of Hydrogen-Carbon Monoxide Gas Mixtures, Magdeburg, Univ., Fak. für Verfahrens- und Systemtechnik, 136, 2013.  
<http://edoc2.bibliothek.uni-halle.de/hs/content/titleinfo/30343>
- [22] Hartono, B., Process Design Concepts for Wood-fed Fuel Cell Power Plants. *Verlag Dr. Hut*, 2013, ISBN: 978-3-8439-1302-7.
- [23] Kirsch, S., On H<sub>2</sub>,CO Electro-Oxidation in Polymer-Electrolyte-Membrane Fuel Cells, Magdeburg, Otto-von-Guericke-Universität, 142, 2014.  
<http://pubman.mpg.de/pubman/item/escidoc:2032975/component/escidoc:2033252/ThesisKirsch.pdf>

- [24] Iman, R. A., Evaluation of process concepts for liquid-liquid systems exemplified for the indirect hydration of cyclohexene to cyclohexanol, 2014.  
<http://edoc2.bibliothek.uni-halle.de/hs/content/titleinfo/39079>
- [25] Flassig, R., Statistical Model Identification: Dynamical Processes and Large-Scale Networks in Systems Biology, Magdeburg, Otto-von-Guericke-Universität, Fakultät für Verfahrens- und Systemtechnik, 2014.  
<http://edoc2.bibliothek.uni-halle.de/hs/content/titleinfo/38744>
- [26] Ye, K. M., Process Design Based on CO<sub>2</sub>-Expanded Liquids as Solvents, Magdeburg, Otto-von-Guericke-Universität, Fakultät für Verfahrens- und Systemtechnik, 2014.  
<http://edoc2.bibliothek.uni-halle.de/hs/content/titleinfo/38305>
- [27] Fricke, M., Der Tropfen als Reaktor: Emulsionsgestützte Fällung von Nanopartikeln am Beispiel der Synthese von Zinkoxid, Magdeburg, Otto-von-Guericke-Universität, Fakultät für Verfahrens- und Systemtechnik, 2014.  
<http://edoc2.bibliothek.uni-halle.de/urn/urn:nbn:de:gbv:ma9:1-5922>
- [28] Hertel, C., Experimental and Theoretical Analysis of the Cyclic Water Gas Shift Reactor, Magdeburg, Otto-von-Guericke-Universität, Fakultät für Verfahrens- und Systemtechnik, 2015.  
<http://hdl.handle.net/11858/00-001M-0000-0029-0554-6>
- [29] González Martínez, I, Hydrogen chloride electrolysis in a polymer-electrolyte-membrane reactor with oxygen-depolarized cathode, Magdeburg, Otto-von-Guericke-Universität, Fakultät für Verfahrens- und Systemtechnik, 2015.  
<http://edoc2.bibliothek.uni-halle.de/id/47791>
- [30] Bensmann, A.L., Modellbasierte Analysen zur Gestaltung und Betriebsführung von Biogasanlagen, Magdeburg, Otto-von-Guericke-Universität, Fakultät für Verfahrens- und Systemtechnik, 2016, ISBN: 9783843929080
- [32] Zhou, Teng, Systematic Methods for Reaction Solvent Design and Integrated Solvent and Process Design, Otto-von-Guericke-Universität, Fakultät für Verfahrens- und Systemtechnik, 2016.  
<http://edoc2.bibliothek.uni-halle.de/hs/content/titleinfo/62163>
- [31] Wang, Wenjing, Multivalent Adsorption of Biological Nanoparticles on Functional Surfaces, Otto-von-Guericke-Universität, Fakultät für Verfahrens- und Systemtechnik, 2016.  
<http://edoc2.bibliothek.uni-halle.de/hs/content/titleinfo/64876>
- [32] Bensmann, B., Systemanalyse der Druckwasser-Elektrolyse im Kontext von Power-to-Gas-Anwendungen, Otto-von-Guericke-Universität, Fakultät für Verfahrens- und Systemtechnik, 2017.  
<http://edoc2.bibliothek.uni-halle.de/hs/content/titleinfo/70531>
- [33] Do, T.Q.N. , Model-based Analysis of an Electro-Enzymatic System for Glucose Oxidation, Otto-von-Guericke-Universität, Fakultät für Verfahrens- und Systemtechnik, 2017.  
<http://edoc2.bibliothek.uni-halle.de/hs/content/titleinfo/68747>
- [34] Facht, M., Systematic Analysis of Carotenogenesis in Microalgae for Model-Based Process Design, Otto-von-Guericke-Universität, Fakultät für Verfahrens- und Systemtechnik, 2017.  
<http://edoc2.bibliothek.uni-halle.de/hs/content/titleinfo/69335>
- [35] McBride, K., Model-based process design and solvent selection for the efficient recovery of homogeneous catalysts in chemicals production, Otto-von-Guericke-Universität, Fakultät für



Prof. Dr. Kai Sundmacher, List of Publications, October 2018

Verfahrens- und Systemtechnik, 2017.

<http://edoc2.bibliothek.uni-halle.de/hs/content/titleinfo/71380>

**Supervised Habilitations** (1)

- [1] Heidebrecht, P., Model Hierarchies for Chemical Process Design, *Fortschrittberichte aus dem Max-Planck-Institut für Dynamik komplexer technischer Systeme*, Shaker Verlag, 2011, ISBN: 978-3-8440-0638-4.

**Patent Application** (4)

- [1] Mahajani, S., Talwalkar, S. and Sundmacher, K., Process and catalyst for simultaneous Isomerisation and Hydrogenation of Isooctenes (Alkenes) to Isooctane (Alkanes), Patent Application: Indian Patent Application: 2204/MUM/2008, 23 April 2010.
- [2] Talwalkar, S., Thotla, S., Mahajani, S. and Sundmacher, K., Process and Catalyst System for Synthesis of Iso-Octane in higher Yields, Patent Application: WO/2010/046925, 29 April 2010.
- [3] Kuwertz, R., Turek, T., Kunz, U., Vidaković-Koch, T., Gonzalez-Martinez, I. and Sundmacher, K., Verfahren und Membranreaktor zur Herstellung von Chlor aus Chlorwasserstoffgas, Patent Application: DE102013009230 A8 (auch veröffentlicht unter DE102013009230A1), 26 February 2015.
- [4] Bechtel, S., Vidakovic-Koch, T., Sundmacher, K., A method and apparatus for separating chlorine gas from a gaseous anode outlet stream of an electrochemical reactor, Submitted Patent Application: EP 17203967.9, 28 November 2017.

**Conference Contributions** (609)

- [1] Sundmacher, K., Einsatz einer Finite-Volumen-Methode zur Simulation der katalytischen Destillation in Füllkörper-Reaktionskolonnen, *DECHEMA-Arbeitsausschuss „Reaktorberechnung“*, 1992, Frankfurt am Main, Germany.
- [2] Sundmacher, K. and Hoffmann, U., Importance of Irreversible Thermodynamics for Liquid Phase Ion Exchange Catalysis: Experimental Verification for MTBE-Synthesis, *12th International Symposium on Chemical Reaction Engineering - ISCRE 12*, 1992, Turino, Italy.
- [3] Holthusen, H. and Sundmacher, K., Detektion des laminar-turbulenten Grenzschichtübergangs mit schubspannungssensitiven Flüssigkristallen, *Deutscher Luft- und Raumfahrt-Kongress, DGLR-Jahrestagungen*, Hamburg, Germany appeared in: Proceedings, Vol. 2.
- [4] Sundmacher, K., Catalytic Distillation in a Fixed Bed Reaction Column for Producing the Antiknock Enhancer MTBE, *Chemical Engineering Forum for Young Scientists*, 2-4 July 1992, Turino, Italy.
- [5] Sundmacher, K. and Hoffmann, U., Heterogeneously Catalyzed Formation of MTBE in a Reactive Distillation Column, *EUROPACAT-1*, 12-17 September 1993, Montpellier, France.
- [6] Sundmacher, K., Rihko, L. K. and Hoffmann, U., Classification of Reactive Distillation Processes by Dimensionless Numbers (Oral), *CHISA '93*, 29 August - 2 September 1993, Prague, Czech Republic.

- [7] Sundmacher, K. and Hoffmann, U., Oscillatory Vapor-Liquid Transport Phenomena in a Packed Reactive Distillation Column for Fuel Ether Production (Oral), *International Symposium on Maxwell-Stefan Approach to Mass Transfer*, 18-19 November 1994, Amsterdam, Netherlands.
- [8] Hoffmann, U. and Sundmacher, K., Reactive Distillation of Nonideal Multicomponent Mixtures - Demonstrated for the Synthesis of MTBE, TAME and ETBE (Oral), *Eurogas'94*, 21-23 March 1994, Trondheim, Norway.
- [9] Sundmacher, K. and Hoffmann, U., Multicomponent Mass and Energy Transport on Different Length Scales in a Packed Reactive Distillation Column for Heterogeneously Catalyzed Fuel Ether Production (Oral), *13th International Symposium on Chemical Reaction Engineering*, 25-28 September 1994, Baltimore, USA.
- [10] Hoffmann, U. and Sundmacher, K., Reaktivdestillation mit katalytisch aktiven Füllkörperpackungen (Oral), *GVC-Fachausschuss „Thermische Zerlegung von Gas- und Flüssigkeitsgemischen“*, 4-5 May 1995, Jena, Germany.
- [11] Sundmacher, K. and Hoffmann, U., Multicomponent Mass and Energy Transfer in a Packed Reactive Distillation Column for Fuel Ether Production (Poster), *14th Colloquium on Chemical Reaction Engineering*, 24-26 May 1995, Bled, Slovenia.
- [12] Hoffmann, U. and Sundmacher, K., Reaktivdestillation: Stand und Entwicklungsrichtungen (Oral), *GVC-Jahrestagung*, 27-29 September 1995, Straßburg, France.
- [13] Sundmacher, K. and Hoffmann, U., Development of a New Catalytic Distillation Process for Fuel Ethers via a Detailed Nonequilibrium Model (Oral), *14th International Symposium on Chemical Reaction Engineering* 5-8 May 1996, Brugge, Belgium.
- [14] Sundmacher, K. and Hoffmann, U., Dynamische Simulation der Reaktions- und Transportprozesse in Gasdiffusionselektroden dargestellt am Beispiel der Sauerstoffreduktion in Brennstoffzellen (Oral), *GDCh-Jahrestagung der Fachgruppe Angewandte Elektrochemie*, 9-12 October 1996, Monheim appeared in: *GDCh-Monography*, Vol. 9, 151.
- [15] Hamelmann, R., Sundmacher, K. and Hoffmann, U., Einsatz eines Kalandervalzwerkes zur reproduzierbaren Herstellung von porösen Elektroden auf Kohlenstoffbasis (Poster), *GDCh-Jahrestagung der Fachgruppe Angewandte Elektrochemie*, 9-12 October 1996, Monheim appeared in: *GDCh-Monography*, Vol. 9, 435.
- [16] Uhde, G., Sundmacher, K. and Hoffmann, U., Simultaneous Gas-Solid Reaction and Comminution - A Novel Multifunctional Reactor (Oral), *5th World Congress of Chemical Engineering*, 14-18 July 1996, San Diego, USA appeared in: *Congress Proceedings, Advanced Fundamentals*, Vol. I, 167-172.
- [17] Hoffmann, U. and Sundmacher, K., Multifunktionale Reaktoren (Oral), *DECHEMA-Jahrestagungen*, 21-23 May 1996, Wiesbaden, Germany.
- [18] Sundmacher, K. and Hoffmann, U., Simulation der katalytischen Destillation in Packungskolonnen mit einem detaillierten, kinetisch basierten Modell (Oral), *Colloquium of VW-Foundation on „Modellierung komplexer Systeme in der Verfahrenstechnik“*, 22-23 February 1996, Aachen, Germany.
- [19] Sundmacher, K., Nowitzki, O. and Hoffmann, U., Dynamic Simulation and Analysis of Reaction and Transport Processes During Oxygen Reduction at Gas-Diffusion-Electrodes (Oral), *4th European Symposium on Electrochemical Engineering*, 28-30 August 1996, Prague, Czech Republic.

- [20] Nowitzki, O., Hamelmann, R., Sundmacher, K. and Hoffmann, U., Production of Gas-Diffusion-Electrodes loaded with Non-noble Metal Catalyst for Oxygen Reduction by a Calendering Rolling Process (Oral), *4th European Symposium on Electrochemical Engineering*, 28-30 August 1996, Prague, Czech Republic.
- [21] Sundmacher, K., Gravekarstens, M., Rapmund, P., Thiel, C. and Hoffmann, U., Intensified Production of Fuel Ethers in Reactive Distillation Columns - Systematic Model-Based Process Analysis (Oral), *The First European Congress on Chemical Engineering*, Florence, Italy appeared in: AIDIC Conf. Series. Selected Papers of ECCE-I, Vol. 2, 215-221.
- [22] Thiel, C., Rapmund, P., Sundmacher, K., Hoffmann, U., Mohl, K. D., Kienle, A. and Gilles, E. D., Intensified Production of Fuel Ethers in Reactive Distillation Columns - Experimental Validation of Predicted Multiple Steady States (Poster), *The First European Congress on Chemical Engineering*, 4-7 May 1997, Florence, Italy appeared in: Proceed., Vol. 2, 1423-1426.
- [23] Hoffmann, U., Kunz, U., Sundmacher, K. and Uhde, G., The Role of Side Reactions in the Synthesis of MTBE (Poster), *DGMK-Tagung „C4-Chemistry: Manufacture and Use of C4-Hydrocarbons“*, 6-8 October 1997, Aachen, Germany.
- [24] Hoffmann, U., Schwarzer, S., Sundmacher, K. and Thiel, C., Chemical Reaction Engineering Aspects in the ETBE-Production (Oral), *DGMK-Conference „C4-Chemistry: Manufacture and Use of C4-Hydrocarbons“*, 6-8 October 1997, Aachen, Germany.
- [25] Thiel, C., Sundmacher, K. and Hoffmann, U., Design katalytischer Destillationskolonnen für kinetisch limitierte Reaktionen (Oral), *GVC-Fachaussschuß „Thermische Zerlegung von Gas- und Flüssigkeitsgemischen“*, 10-11 April 1997, Wiesbaden, Germany.
- [26] Sundmacher, K. and Hoffmann, U., Investigation of Electrolysis Cells with Gas-Diffusion Electrodes on Hierarchical Length Scales (Poster), *7th International Fischer Symposium*, 15-19 June 1997, Karlsruhe, Germany.
- [27] Hamelmann, R., Sundmacher, K. and Hoffmann, U., Kontinuierliche Herstellung von membrangebundenen Dünnschichtelektroden (Poster), *GDCh-Jahrestagung der Fachgruppe Angewandte Elektrochemie*, 24-26 September 1997, Vienna, Austria.
- [28] Kalvelage, H., Sundmacher, K. and Hoffmann, U., Edelmetall-Wolframoxid-Katalysatoren für die Elektrooxidation von Methanol in saurer Lösung (Poster), *GDCh-Jahrestagung der Fachgruppe Angewandte Elektrochemie*, 24 - 26 September 1997, Vienna, Austria.
- [29] Mohl, K. D., Kienle, A., Gilles, E. D., Rapmund, P., Sundmacher, K. and Hoffmann, U., Nonlinear Dynamics of Reactive Distillation Processes for the Production of Fuel Ethers (Oral), *European Symposium on Computer Aided Process Engineering*, 26-29 May 1997, Trondheim, Norway.
- [30] Sundmacher, K., Elektrochemische Absorptionsprozesse mit Gasdiffusionselektroden: Modellierung und Zelldesign (Oral), *GDCh-Jahrestagung der Fachgruppe Angewandte Elektrochemie*, 2 October 1998, Frankfurt am Main, Germany.
- [31] Sundmacher, K. and Scott, K., Electrochemical Oxidation of Methanol in a Polymer Electrolyte Fuel Cell: Modelling and Experimental Validation of Current-Voltage Characteristics (Oral), *ICHEME Research Event*, 7-8 April 1998, Newcastle upon Tyne, Great Britain.

- [32] Bessling, B., Schoenmakers, H., Kreul, L., Gorak, A., Schembecker, G. and Sundmacher, K., Auslegung reaktiver Destillationsprozesse, Möglichkeiten und Grenzen (Oral), *GVC-Fachaussschuß „Thermische Zerlegung von Gas- und Flüssigkeitsgemischen“*, 9-20 March 1998, Munich, Germany.
- [33] Sundmacher, K., Uhde, G. and Hoffmann, U., Multiple Reactions in Catalytic Distillation Processes for the Production of the Fuel Oxygenates MTBE and TAME: Analysis by Rigorous Model and Experimental Validation (Oral), *15th International Symposium on Chemical Reaction Engineering*, 13-16 September 1998, Newport Beach, USA.
- [34] Sundmacher, K. and Hoffmann, U., Design, Operation and Analysis of a Membrane Reactor for Electrochemical Gas Purification (Poster), *15th International Symposium on Chemical Reaction Engineering* 13-16 September 1998, Newport Beach, USA.
- [35] Sundmacher, K. and Scott, K., Direct Methanol Polymer Electrolyte Fuel Cell: Analysis of Charge and Mass Transfer in the Vapour-Liquid-Solid System (Oral), *15th International Symposium on Chemical Reaction Engineering*, 13-16 September 1998, Newport Beach, USA, Newport Beach, USA.
- [36] Mohl, K. D., Kienle, A., Gilles, E. D., Rapmund, P., Sundmacher, K. and Hoffmann, U., Multiple Steady States in a Reactive Distillation Column for the Production of TAME – Theoretical and Experimental Results (Oral), *AIChE Annual Meeting*, 15 - 20 November 1998, Miami Beach, Florida, U.S.A.
- [37] Scott, K., Sundmacher, K., Taama, W. and Argyropoulos, P., Direct Methanol Polymer Electrolyte Fuel Cell: Model-based Analysis and Experimental Validation (Oral), *EPSRC-Meeting on Polymer Electrolyte Fuel Cells & Fuel Processing*, 29 January 1998, Loughborough, Great Britain.
- [38] Sundmacher, K., Hoffmann, U., Rapmund, P., Mohl, K. D., Kienle, A. and Gilles, E. D., Nachweis mehrfacher stationärer Betriebszustände einer gepackten Reaktivdestillations-kolonne für die Herstellung der Kraftstoffkomponentetert.-Amylmethylether (Oral), *GVC-Jahrestagung*, 30 September – 2 October 1998, Freiburg, Germany.
- [39] Bessling, B., Schoenmakers, H., Kreul, L., Gorak, A., Schembecker, G. and Sundmacher, K., Auslegung reaktiver Destillationsprozesse, Möglichkeiten und Grenzen (Oral), *GVC-Jahrestagung*, 30 September – 2 October 1998, Freiburg, Germany.
- [40] Sundmacher, K., Schultz, T., Ginkel, M., Gilles, E. D. and Scott, K., Methods and Tools for Modelling and Simulation of Fuel Cells (Oral), *4th International Congress on Industrial and Applied Mathematics*, 5-9 July 1999, Edinburgh, Great Britain.
- [41] Sundmacher, K., Integration verfahrenstechnischer Grundoperationen in multifunktionalen Reaktoren dargestellt am Beispiel der Reaktivdestillation (Oral), *Tagung der DGMK-Bezirksgruppe Berlin/Brandenburg*, 6 May 1999, Berlin, Germany.
- [42] Sundmacher, K. and Kolah, A., Process Intensification by Integration of Reaction and Distillation in Multifunctional Reactors (Oral), *NICHE-Conference on Reactive Separations*, 13-16 June 1999, Marco Island, Florida, USA.
- [43] Sundmacher, K. and Scott, K., Direct methanol polymer electrolyte fuel cell: Analysis of charge and mass transfer in the vapour-liquid-solid system, *Chemical Engineering Science*, 13-16 September 1998, Newport Beach, California appeared in, Vol. 54, 2927-2936, ISSN: 0009-2509.

- [44] Scott, K., Krämer, S. and Sundmacher, K., Gas and Liquid Mass Transport in Solid Polymer Electrolyte Fuel Cells (Oral), *5th European Symposium on Electrochemical Engineering*, 24-26 March 1999, Exeter, Great Britain.
- [45] Scott, K. and Sundmacher, K., Kinetics, Mass Transport Characteristics and Model of the Direct Methanol Fuel Cell Anode (Poster), *5th European Symposium on Electrochemical Engineering*, 24 – 26 March 1999, Exeter, Great Britain.
- [46] Schultz, T., Zhou, S. and Sundmacher, K., Direkte Methanol-Brennstoffzelle: Analyse des nichtlinearen dynamischen Verhaltens (Oral), *99. Hauptversammlung der Deutschen Bunsen-Tagung für Physikalische Chemie*, 1-3 June 2000, Würzburg, Germany.
- [47] Sundmacher, K., Schultz, T., Zhou, S. and Petrov, P., Prozessführung von Brennstoffzellen-Systemen (Oral), *DEHEMA-Kolloquium "Neue Aspekte der Brennstoffzellen-Systemtechnik in mobilen und stationären Anwendungen"*, 07. Dezember 2000, Magdeburg, Germany.
- [48] Sundmacher, K., Schultz, T., Zhou, S., Scott, K., Ginkel, M. and Gilles, E. D., Dynamics of the Direct Methanol Fuel Cell: Experiments and Model-based Analysis (Oral), *16th International Symposium on Chemical Reaction Engineering* 10-13 September 2000, Cracow, Poland.
- [49] Stein, E., Kienle, A., Kolah, A., Qi, Z., Sundmacher, K. and Mohl, K. D., Production of High-purity Isobutene using Coupled Reactive Distillation Columns (Oral), *AIChE Annual Meeting*, 12-17 November 2000, Los Angeles, USA.
- [50] Schultz, T., Zhou, S. and Sundmacher, K., Direkt-Methanolbrennstoffzelle: Experimentelle und modellbasierte Analyse des stationären und dynamischen Betriebsverhaltens (Oral), *GVC-Jahrestagung*, 20-22 September 2000, Karlsruhe, Germany appeared in: *Chem.-Ing. Tech.*, Vol. 72, 979-980.
- [51] Peglow, M., Sundmacher, K., Koch, M. and Berndt, J., Prozesssimulation eines Blockheizkraftwerkes unter Einbindung einer Schmelzcarbonat-Brennstoffzelle (Oral), *International Innovation Seminar, Session on Computational Chemical Engineering*, 26-27 October 2000, Magdeburg, Germany.
- [52] Rudolph, C. and Sundmacher, K., Bestimmung von Größenverteilungen disperser Systeme durch Ultraschallspektroskopie (Poster), *International Innovation Seminar, Session on Computational Chemical Engineering*, 26-27 October 2000, Magdeburg, Germany.
- [53] Sundmacher, K., Zhou, S. and Schultz, T., Steady-State and Dynamic Behaviour of the Direct Methanol Fuel Cell (DMFC) (Poster), *International Innovation Seminar, Session on Computational Chemical Engineering*, 26-27 October 2000, Magdeburg, Germany.
- [54] Sundmacher, K. and Schultz, T., Electrochemical Gas Absorption in GDE-Membrane Reactor: Analysis of Reaction Mechanisms and Transport Phenomena (Oral), *CHISA 2000*, 27-31 August 2000, Prague, Czech Republic.
- [55] Sundmacher, K., Catalytic Distillation (Oral), *Advanced Catalysis Engineering, Dutch Graduate Schools in Catalysis (NIOK) and Engineering (OSPT)*, 27 November - 1 December 2000, Delft, The Netherlands.
- [56] Scott, K., Argyropoulos, P., Jackson, C., Taama, W., Horsfall, J., Lovell, K. and Sundmacher, K., Methanol Crossover Aspects of Materials for Direct Methanol Fuel Cells (Oral), *Fuel Cells – Powering the 21st Century*, 30 October – 02 November 2000, Portland, Oregon, USA.

- [57] Sundmacher, K., Fuel Cells: Modelling, Simulation and Process Analysis (Oral), *Modelling and Computation in Chemical Engineering and Biotechnology* 1-4 October 2001, Hohenwart, Germany.
- [58] Sundmacher, K., Importance of Micro- and Macrokinetics of Chemical Reactions for Catalytic Distillation Processes (Oral), *1st International Max-Planck-Symposium on Reactive Distillation*, 2 – 4 July 2001, Magdeburg, Germany.
- [59] Zhou, S., Schultz, T. and Sundmacher, K., Operation and Control of a Direct Methanol Fuel Cell System (Oral), *1st North American Symposium on Chemical Reaction Engineering*, 6-9 January 2001, January 2001, Houston, USA.
- [60] Peglow, M. and Sundmacher, K., Dynamics of a Molten Carbonate Fuel Cell (MCFC) Power Station with Direct Internal Reforming (Poster), *1st North American Symposium on Chemical Reaction Engineering*, 6-9 January 2001, Houston, USA.
- [61] Styczynski, Z., Purmann, M., Sundmacher, K. and Schultz, T., Use of Fuel Cells for Stationary and Mobile Applications – System Oriented Approach (Oral), *Int. Conf. on Advances in Processing, Testing and Applications of Dielectric Materials* 17-19 September 2001, Wroclaw, Poland.
- [62] Heidebrecht, P. and Sundmacher, K., Integrierte Dampfreformierung und elektrochemische Wasserstoffoxidation in Schmelzcarbonatbrennstoffzellen (Oral), *Fachtreffen Reaktionstechnik*, 21-23 March 2001, Weimar, Germany.
- [63] Sundmacher, K. and Schultz, T., Steady State and Dynamic Process Behaviour of DMFCs (Oral), *Open Problems of Direct Methanol Fuel Cells, Workshop des Weierstraß-Instituts für Angewandte Analysis und Stochastik* 23-24 November 2001, Berlin, Germany.
- [64] Steyer, F., Qi, Z. and Sundmacher, K., Synthesis of Cyclohexanol by Three-Phase Catalytic Distillation: Kinetics and Equilibria (Oral), *International Symposium on Multifunctional Reactors* 26-28 June 2001, Nürnberg, Germany.
- [65] Qi, Z. and Sundmacher, K., Optimal Catalyst Distributions and Feeding Strategies for Packed Reactive Distillation Columns (Poster), *International Symposium on Multifunctional Reactors* 26-28 June 2001, Nürnberg, Germany.
- [66] Sundmacher, K. and Schultz, T., Performance of Oxygen Gas-Liquid Membranes for Application in Electrochemical Oxidation Processes (Oral), *European Congress on Chemical Engineering* 26-28 June 2001, Nürnberg, Germany.
- [67] Heidebrecht, P. and Sundmacher, K., Integration of Steam Reforming and Electrochemical Oxidation in a Molten Carbonate Fuel Cell (MCFC): Modelling and Analysis (Poster), *European Congress on Chemical Engineering*, 26-28 June 2001, Nürnberg, Germany.
- [68] Stein, E., Kienle, A., Kolah, A., Qi, Z., Sundmacher, K. and Mohl, K. D., New Concepts for the Production of High-purity Isobutene in Coupled Reactive Distillation Columns (Poster), *European Congress on Chemical Engineering* 26-28 June 2001, Nürnberg, Germany, Nürnberg, Germany.
- [69] Schultz, T. and Sundmacher, K., Stofftransportphänomene in PEM für die DMFC: Modellierung auf Basis des vollständigen Maxwell-Stefan-Ansatzes (Oral), *72. AGEF-Seminar*, 4 December 2002, Jülich, Germany.
- [70] Gundermann, M., Sundmacher, K. and Styczynski, Z., Fuel Cells (Oral), *Internationales Innovationsseminar*, 5 December 2002, Magdeburg, Germany.

- [71] Sundmacher, K., Prozessintegration in Direkt-Brennstoffzellen (Oral), *DECHEMA-Kolloquium "Integrierte Reaktionstechnik in Brennstoffzellen"*, 7 March 2002, Frankfurt/M., Germany.
- [72] Qi, Z., Sundmacher, K., Stein, E. and Kienle, A., Reactive Separation of Isobutene from C4-Fractions using Coupled Reactive Distillation Columns (Oral), *DGMK-Conference "Chances for Innovative Processes at the Interface between Refining and Petro-chemistry"*, 9-11 October 2002, Berlin, Germany appeared in: DGMK-Monography, Vol. 2002-4, 187-194.
- [73] Sundmacher, K. and Qi, Z., Integration von Reaktion und Stofftrennung: Konzepte und Bewertung (Oral), *GVC/DECHEMA-Jahrestagung*, 11-13 June 2002, Wiesbaden, Germany.
- [74] Sundmacher, K. and Heidebrecht, P., Dynamic Simulation of Molten Carbonate Fuel Cells (Oral), *53rd Annual Meeting of the Int. Society of Electrochemistry* 15-20 September 2002, Düsseldorf, Germany.
- [75] Rauscher, F. and Sundmacher, K., Size Control of Particles using W/O-Microemulsions – Investigation of the Phase Behavior (Poster), *4th Annual National Workshop on Nanoscience and Nanotechnology*, 17-19 October 2002, Sofia, Bulgaria appeared in: Proceedings, 77-80.
- [76] Qi, Z. and Sundmacher, K., Countercurrent Separative Reactors: Prediction of Feasible Products by Fixed Point Analysis (Poster), *ISCRE-17*, 25-28 August 2002, Hongkong, China.
- [77] Heidebrecht, P. and Sundmacher, K., Molten Carbonate Fuel Cell (MCFC) with Internal Reforming: Model-based Analysis of Cell Dynamics (Oral), *ISCRE-17*, 25-28 August 2002, Hongkong, China.
- [78] Kienle, A. and Sundmacher, K., Synthesis, Dynamics and Control of Reactive Distillation Processes (Oral), *AspenWorld 2002*, 27-31 October 2002, Washington, USA.
- [79] Sundmacher, K., Direct Fuel Cells: Experimental and Model-based Analysis of Dynamic Process Behaviour (Oral), *Fuel Cell Workshop*, 30 October - 4 November 2002, Dalian, China.
- [80] Schultz, T. and Sundmacher, K., Dynamische Modellierung und Simulation von Direkt-Methanolbrennstoffzellen auf Basis der verallgemeinerten Maxwell-Stefan-Transportgleichungen (Oral), *GDCh-Jahrestagung*, Munich, Germany appeared in: *Elektrochemie und Materialforschung, GDCh-Monographie Nr. 29 (2003)* (Eds.: K. Jüttner and J. Russow), 24-33.
- [81] Ye, Y., Rihko-Struckmann, L. K., Munder, B. and Sundmacher, K., Experimental Study on Electrochemical Membrane Reactor for n-Butane Partial Oxidation (Oral), *16th International Conference on Chemical Reactors*, 1-5 December 2003, Berlin, Germany.
- [82] Galvita, V., Sobyenin, V. and Sundmacher, K., The Use of Ethanol for Combined Heat and Power Stations on the Basis of Polymer Electrolyte Fuel Cells (Poster), *16th International Conference on Chemical Reactors*, 1-5 December 2003, Berlin, Germany.
- [83] Zeyer, K.-P., Jacobs, T., Kienle, A. and Sundmacher, K., Integration von Reaktion und Stofftrennung in Microplants (Poster), *Internationaler Workshop, Zentrum für Innovationskompetenz für Mikrosystemintegration (ZIK)*, 3-4 June 2003, Magdeburg, Germany.
- [84] Rauscher, F. and Sundmacher, K., Precipitation of Calcium Carbonate Particles in Nonionic and Ionic Microemulsions (Poster), *BIWIC 10th*, 4-5 September 2003, Rouen, France.
- [85] Chalakov, L., Rau, H., Schulz, M. and Sundmacher, K., Partielle Oxidation von n-Butan in einem elektrochemischen Membranreaktor zur simulanten Elektroenergieerzeugung und Maleinsäureanhydridsynthese (Oral), *Energy Forum* 12-15 June 2003, Varna, Bulgaria.



- [86] Ye, Y., Rihko-Struckmann, L. K., Munder, B. and Sundmacher, K., Electrochemical Characterization of VPO Catalyst for Butane Partial Oxidation (Poster), *EUROPACAT VI*, 13 August – 4 September 2003, Innsbruck, Austria.
- [87] Sundmacher, K., Rihko-Struckmann, L. K., Munder, B. and Ye, Y., Partielle Oxidation von Butan in einem elektrochemischen Membranreaktor (Oral), *DECHEMA-Arbeitsausschuss Technische Reaktionen*, 14 January 2003, Frankfurt/M., Germany.
- [88] Heidebrecht, P., Gundermann, M. and Sundmacher, K., Internal Steam Reforming in Molten Carbonate Fuel Cells (Oral), *Innovation in the Manufacture and Use of Hydrogen, DGMK-Conference*, 15-17 October 2003, Dresden, Germany appeared in: *DGMK-Tagungsbericht Vol. 2003-2*, 123-130.
- [89] Galvita, V. and Sundmacher, K., Production of Hydrogen by Reforming of Bioethanol in a Two-Layer Fixed Bed Reactor for Fuel Cell Applications (Poster), *Innovation in the Manufacture and Use of Hydrogen, DGMK-Conference*, 15-17 October 2003, Dresden, Germany.
- [90] Schultz, T. and Sundmacher, K., Direkte Methanol-Brennstoffzelle (DMFC): Analyse experimenteller Miniplant-Bilanzdaten auf Basis der Maxwell-Stefan-Gleichungen (Oral), *GVC/DECHEMA-Jahrestagungen*, 16-18 September 2003, Mannheim, Germany appeared in: *Chem.-Ing.-Tech.*, Vol. 75(2003), 1087-1088.
- [91] Rauscher, F., Niemann, B. and Sundmacher, K., Charakterisierung von W/O-Mikroemulsionen - Voraussetzung für die Nutzung als Reaktionsmedium (Oral), *GVC/DECHEMA-Jahrestagungen*, 16-18 September 2003, Mannheim, Germany appeared in: *Chem.-Ing.-Tech.*, Vol. 75/8, 1157.
- [92] Hanke, R., Mangold, M. and Sundmacher, K., Modellierung und dynamische Simulation von Brennstoffzellen - auf dem Weg zu einem virtuellen Brennstoffzellen-Labor (Oral), *Symposium Simulationstechnik*, 16-19 September 2003, Magdeburg, Germany appeared in: *Frontiers in Simulation - Proceedings zum 17. Symposium Simulationstechnik ASIM 2003* (Eds.: R. Hohmann), 19-26.
- [93] Rihko-Struckmann, L. K., Ye, Y., Munder, B., Sundmacher, K., Chalakov, L., Schulz, M. and Rau, H., Kontrollierte Partialoxidation von Butan in einem elektrochemischen Membran-reaktor (Oral), *XXXVI. Treffen Deutscher Katalytiker*, 19-21 March 2003, Weimar, Germany.
- [94] Hanke, R. and Sundmacher, K., Hierarchical Process Modelling Strategies to Fuel Cell Systems – Towards a Virtual Fuel Cell Laboratory (Oral), *ACHEMA 2003*, 19-24 May 2003, Frankfurt/M., Germany.
- [95] Steyer, F., Qi, Z. and Sundmacher, K., Selective Separation by Reactive Distillation Applied to Close Boiling Mixtures Undergoing Phase Splitting (Oral), *ACHEMA 2003*, 19 – 24 May 2003, Frankfurt/M., Germany.
- [96] Munder, B., Rihko-Struckmann, L. K., Ye, Y. and Sundmacher, K., Electrochemical Membrane Reactor for Controlled Partial Oxidation of Hydrocarbons: Model-based Analysis of Reactor Dynamics (Oral), *ECCE-4*, 21-25 September 2003, Granada, Spain.
- [97] Schultz, T. and Sundmacher, K., Direct Methanol Fuel Cell (DMFC): Analysis of Miniplant Experiments based on Maxwell-Stefan Equations (Poster), *ECCE-4*, 21–23 September 2003, Granada, Spain.

- [98] Pesch, H. J., Chudej, K., Petzet, V., Scherdel, S., Schittkowski, K., Heidebrecht, P. and Sundmacher, K., Numerical Simulation of a 1D Model of a Molten Carbonate Fuel Cell (Oral), *GAMM 2003*, 24-28 March 2003, Abano Terme, Italy appeared in: Proc. Appl. Math. Mech. , Vol. 3 (2003), 521-522.
- [99] Chudej, K., Petzet, V., Scherdel, S., Pesch, H. J., Schittkowski, K., Heidebrecht, P. and Sundmacher, K., Index Analysis of a Nonlinear PDAE System Describing a Molten Carbonate Fuel Cell (Oral), *GAMM 2003*, 24-28 March 2003, Abano Terme, Italy appeared in: Proc. Appl. Math. Mech., Vol. 3 (2003), 563-564.
- [100] Heidebrecht, P., Gundermann, M., Sundmacher, K., Berndt, J. and Koch, M., Experimental Validation of a Mathematical Model for a MCFC Power Plant (Oral), *ACHEMA 2003*, 24-28 March 2003, Frankfurt/M., Germany.
- [101] Qi, Z., Kienle, A., Stein, E., Mohl, K. D., Tuchlenski, A. and Sundmacher, K., MTBE- Decomposition in a Reactive Distillation Column (Oral), International Symposium on Multifunctional Reactors *ISMR-3*, 27-29 August 2003, Bath, Great Britain.
- [102] Huang, Y.-S., Schlünder, E. U. and Sundmacher, K., Mass Transfer Effects on the Residual Curve Maps for Membrane Reactors (Poster), *International Symposium on Multifunctional Reactors ISMR-3*, 27-30 August 2003, Bath, Great Britain.
- [103] Alandjiyska, M., Klose, F., Rihko-Struckmann, L. K., Suchorski, Y., Sundmacher, K., Weiß, H. and Ye, Y., On the Stability of VPO and VOx Catalysts under Normal XPS Conditions (Poster), *XXXVII. Jahrestreffen Deutscher Katalytiker*, Weimar, Germany.
- [104] Niemann, B., Mahoney, A. W. and Sundmacher, K., Two-dimensional PDF Model of Chemical Reactions in Liquid-Liquid Dispersions (Poster), *PBM 2004*, 5-7 May 2004, Valencia, Spain.
- [105] Schultz, T. and Sundmacher, K., Rigorous Dynamic Model of a DMFC based on Maxwell-Stefan Mass Transport Equations and a Flory-Huggins Activity Model: Formulation and Experimental Validation (Oral), *Grove-Symposium*, 6-7 October 2004, Munich, Germany.
- [106] Sundmacher, K., Rihko-Struckmann, L. K. and Galvita, V., Solid Electrolyte Membrane Reactors - Status and Trends (Oral), *ICCMR-6*, 6-9 July 2004, Lahnstein, Germany.
- [107] Munder, B., Ye, Y., Rihko-Struckmann, L. K. and Sundmacher, K., Electrochemical Membrane Reactor for Controlled Partial Oxidation of Hydrocarbons: Model and Experimental Validation (Oral), *ICCMR-6*, 6-9 July 2004, Lahnstein, Germany.
- [108] Huang, Y.-S., Schlünder, E. U. and Sundmacher, K., Feasibility Analysis of Membrane Reactors – Discovery of Reactive Arheotropes (Oral), *ICCMR-6*, 6-9 July 2004, Lahnstein, Germany.
- [109] Kukula, R., Schultz, T., Schröder, T., Sundmacher, K. and Hasal, P., Multifunctional Unit Combining a Fuel Cell and an Enzyme Electro-Membrane Reactor: Concepts, Design, Experiments (Poster), *ICCMR-6*, 6-9 July 2004, Lahnstein, Germany.
- [110] Mangold, M., Sheng, M., Heidebrecht, P., Kienle, A. and Sundmacher, K., Physical Model Development, Model Reduction and Observer Design of a Molten Carbonate Fuel Cell (Oral), *ISCRE-18*, 6-9 June 2004, Chicago, USA.
- [111] Mangold, M., Krasnik, M. and Sundmacher, K., Nonlinear Analysis of Current Instabilities in High Temperature Fuel Cells (Poster), *ISCRE-18*, 6-9 June 2004, Chicago, USA.

- [112] Schultz, T. and Sundmacher, K., Rigorous Modelling and Experimental Validation of Mass, Charge and Energy Transport in a DMFC Polymer Electrolyte Membrane (Oral), *AICHE Annual Meeting*, 7-12 November 2004, Austin, USA.
- [113] Heidebrecht, P., Mangold, M., Gundermann, M., Kienle, A. and Sundmacher, K., Modeling, Simulation and Optimization of a Cross Flow Molten Carbonate Fuel Cell (Oral), *AICHE Annual Meeting*, 7-12 November 2004, Austin, USA.
- [114] Huang, Y. S., Schlünder, E. U. and Sundmacher, K., From Reactive Distillation to Reactive Membrane Separation: A Generalized Approach for Feasibility Analysis (Oral), *AICHE Annual Meeting*, 7-12 November 2004, Austin, USA.
- [115] Niemann, B., Adityawarman, D. and Sundmacher, K., Multidimensional Population Balance Modeling of Barium Sulfate Precipitation in Microemulsions (Oral), *AICHE Annual Meeting*, 7-12 November 2004, Austin, USA.
- [116] Voigt, A., Adityawarman, D. and Sundmacher, K., Evaluation of Operational Process Parameters for Nanoparticle Precipitation in Microemulsions using a Monte-Carlo Simulation Approach (Oral), *AICHE Annual Meeting*, 7-12 November 2004, Austin, USA.
- [117] Frömmichen, R., Chalakov, L., Rihko-Struckmann, L. K., Ye, Y., Munder, B. and Sundmacher, K., Electrochemical Membrane Reactors for Partial Oxidation of Light Hydrocarbons (Poster), *13th International Congress on Catalysis*, 11-16 July 2004, Paris, France.
- [118] Vidakovic, T., Christov, M., Sundmacher, K. and Bönnemann, H., Pt/Ru Methanol Fuel Cell Catalysts - Influence of Synthetic Procedures (Oral), *13th International Congress on Catalysis*, 11-16 July 2004, Paris, France.
- [119] Galvita, V. and Sundmacher, K., Novel Catalytic Concepts for Ethanol Processing in Low and High Temperature Fuel Cell Systems (Poster), *13th International Congress on Catalysis*, 11-16 July 2004, Paris, France.
- [120] Rauscher, F. and Sundmacher, K., Precipitation in Microemulsions - A Method for Large-Scale Production of Nanoparticles (Oral), *PARTEC2004*, 16-18 March 2004, Nürnberg, Germany.
- [121] Rihko-Struckmann, L. K., Ye, Y., Munder, B., Chalakov, L. and Sundmacher, K., Vanadyl-pyrophosphatkatalysator (VPO) als Anodenkomponente in elektrochemischen Membranreaktoren (Poster), *XXXVII. Jahrestreffen Deutscher Katalytiker*, 17-19 March 2004, Weimar, Germany.
- [122] Sundmacher, K., Adityawarman, D., Rauscher, F., Niemann, B. and Voigt, A., Emulsion-assisted Particle Precipitation (Oral), *2nd International Symposium on Particulate Processes*, 17-19 November 2004, Magdeburg, Germany.
- [123] Krewer, U., Schultz, T. and Sundmacher, K., Direct Methanol Polymer Electrolyte Fuel Cell: Transfer Function Analysis of Current-Voltage Dynamics (Oral), *Fuel Cell Research Symposium: Modelling and Experimental Validation*, 18-19 March 2004, Zürich, Switzerland.
- [124] Vidakovic, T., Christov, M. and Sundmacher, K., Electrochemical Oxidation of Methanol in a Cyclone Flow Cell (Oral), *55th Annual Meeting of the Int. Society of Electrochem.*, 19-24 September 2004, Thessaloniki, Greece.

- [125] Frömmichen, R., Chalakov, L. and Sundmacher, K., Reaction Kinetics of Partial Oxidation of Ethane in a Tubular Electrolytic Cell (Oral), *55th Annual Meeting of the Int. Society of Electrochem*, 19-24 September 2004, Thessaloniki, Greece.
- [126] Adityawarman, D., Veit, P., Voigt, A. and Sundmacher, K., Precipitation of BaSO<sub>4</sub> Nanoparticles in Non-ionic Microemulsion (Oral), *NANO 2004*, 20-24 June 2004, Wiesbaden, Germany.
- [127] Heidebrecht, P. and Sundmacher, K., Development of a Hierarchical Model Family for Molten Carbonate Fuel Cells with Direct Internal Reforming (DIR-MCFC) (Oral), *ECMI*, 21-25 June 2004, Eindhoven, Netherlands.
- [128] Heidebrecht, P., Mangold, M., Kienle, A. and Sundmacher, K., Conceptual Design of the Integration of the Reforming Process in High-Temperature Fuel Cells (Oral), *International Max Planck Symposium on Integrated Chemical Processes*, 22-24 March 2004, Magdeburg, Germany.
- [129] Sundmacher, K., Huang, V., Qi, Z. and Schlünder, E. U., Thermodynamic and Kinetic Effects on the Feasible Products of Reactive Distillation (Oral), *International Max Planck Symposium on Integrated Chemical Processes*, 22-24 March 2004, Magdeburg, Germany.
- [130] Ye, Y., Rihko-Struckmann, L. K., Munder, B. and Sundmacher, K., Conversion and Selectivity Behavior of an Electrochemical Membrane Process (Oral), *CHISA 2004*, 22-26 August 2004, Prague, Czech Republic.
- [131] Mangold, M., Krasnik, M. and Sundmacher, K., Instabilities and Pattern Formation in High Temperature Fuel Cells (Oral), *CHISA 2004*, 22-26 August 2004, Prague, Czech Republic.
- [132] Kukula, R., Schultz, T., Schröder, T., Sundmacher, K. and Hasal, P., Multifunctional Unit Combining a Fuel Cell and an Enzyme Electro-Membrane Reactor: Concepts, Design, Experiments (Oral), *CHISA 2004*, 22-26 August 2004, Prague, Czech Republic.
- [133] Doerner, S., Schultz, T., Schneider, T., Sundmacher, K. and Hauptmann, P., Capacitive sensor for methanol concentration measurement in direct methanol fuel cells (DMFC), *Proceedings of the Ieee Sensors 2004*, 24-27 October 2004, Vienna, Austria.
- [134] Voigt, A. and Sundmacher, K., Simulationsgestützte Prozessgestaltung zur technischen Erzeugung von Nanopartikeln in Mikroemulsionen (Poster), *Molecular Modelling für chemisch-technische Anwendungen*, 27-28 September 2004, Frankfurt/Main, Germany.
- [135] Hanke, R., Mangold, M. and Sundmacher, K., Hierarchical Modeling of Fuel Cell Systems – Virtual Fuel Cell Laboratory (Oral), *Symposium on Modelling of Complex Processes*, 1-3 March 2005, College Station, Texas, USA.
- [136] Schultz, T., Hertel, C. and Sundmacher, K., Experimental and Model-based Analysis of the Dynamic Operating Behaviour of the Direct Methanol Fuel Cell (DMFC) (Oral), *7th European Symposium on Electrochemical Engineering* 3-5 October 2005, Toulouse, France.
- [137] Yu, E. H. and Sundmacher, K., Electrochemical Study of Glucose Oxidation on Glucose Oxidase Modified Electrodes (Poster), *7th European Symposium on Electrochemical Engineering*, 3-5 October 2005, Toulouse, France.
- [138] Heidebrecht, P., Mangold, M. and Sundmacher, K., Model-based Design and Control of Molten Carbonate Fuel Cell (Oral), *7th European Symposium on Electrochemical Engineering*, 3-5 October 2005 Toulouse, France.

- [139] Schultz, T. and Sundmacher, K., Analysis of the Dynamic Cell Voltage Response of a DMFC to Changes in Anode Feed Concentrations based on a Rigorous Dynamic Model: Comparison of Different Anode and Cathode Reaction Mechanisms (Oral), *EICHEM2005*, 4-7 September 2005, Newcastle upon Tyne, Great Britain.
- [140] Galvita, V. and Sundmacher, K., Formation of Pure Hydrogen by the Redox Process of Modified Iron Oxides (Poster), *4th International Conference on Environmental Catalysis*, 5-8 June 2005, Heidelberg, Germany.
- [141] Vidakovic, T., Christov, M., Sundmacher, K., Nagabhushana, K., Fei, W., Kinge, S. and Bönemann, H., Pt/Ru Colloidal Catalysts: Characterisation and Determination of Kinetics for Methanol Electrooxidation (Oral), *3rd Gerischer Symposium – Electro-catalysis: Theory and Experiment*, 6-8 July 2005, Berlin, Germany.
- [142] Mangold, M., Krasnik, M. and Sundmacher, K., Stationäre Mehrdeutigkeiten und Musterbildung in Hochtemperaturbrennstoffzellen (Oral), *Sitzung der DECHEMA/GVC-Ausschüsse „Technische Reaktionsführung“ und „Energieverfahrenstechnik“*, 7-9 March 2005, Bad Herrenalb, Germany.
- [143] Krewer, U., Christov, M. and Sundmacher, K., Kinetische Analyse der elektrochemischen Oxidation von Methanol in einer Zyklonströmungszelle (Oral), *Sitzung der DECHEMA/GVC-Ausschüsse „Technische Reaktionsführung“ und „Energieverfahrenstechnik“*, 7-9 March 2005, Bad Herrenalb, Germany.
- [144] Gundermann, M., Heidebrecht, P., Koch, M., Berndt, J. and Sundmacher, K., Validierung eines Brennstoffzellenmodells an einer industriellen MCFC-Anlage (Oral), *Sitzung der DECHEMA/GVC-Ausschüsse „Technische Reaktionsführung“ und „Energieverfahrenstechnik“*, 7-9 March 2005, Bad Herrenalb, Germany.
- [145] Rauscher, F., Voigt, A., Heidenreich, F. and Sundmacher, K., Untersuchung des Phasenverhaltens einer technischen w/o-Mikroemulsion: Experiment und Simulation (Poster), *Surfaces and Interfaces – Engineering at the Nanoscale*, 7-9 March 2005, Frankfurt/M., Germany.
- [146] Suchorski, Y., Rihko-Struckmann, L. K., Ye, Y., Sundmacher, K. and Weiß, H., XPS-Mapping of a Membrane Reactor Surface: Vanadium Oxidation State Variations (Poster), *IWSP-2005*, 10-13 September 2005, Polancia Zdroj/Wroclaw, Polen.
- [147] Rauscher, F., Voigt, A. and Sundmacher, K., Synthesis of Different Nanostructures by Precipitation Reactions in a Technical w/o-Microemulsion (Oral), *16th International Symposium on Industrial Crystallization*, 11-14 September 2005, Dresden, Germany.
- [148] Heidebrecht, P., Galvita, V. and Sundmacher, K., CO-free Hydrogen Production in a Two-step Cyclic Reactor (Poster), *1st European Fuel Cell Technology and Applications Conference*, 14-16 December 2005, Rome, Italy.
- [149] Gundermann, M., Heidebrecht, P. and Sundmacher, K., Validation of a Mathematical Model using an Industrial MCFC plant (Oral), *1st European Fuel Cell Technology and Applications Conference*, 14-16 December 2005, Rome, Italy.
- [150] Kamath, R., Qi, Z., Sundmacher, K., Aghalayam, P. and Mahajani, S., Dimerization of Isobutylene in a Reactive Distillation Column: Process Analysis and Comparison with Conventional Reactor Concepts (Oral), *PRES'05*, 15-18 May 2005, Giardini Naxos, Italy.

- [151] Talwalker, S., Chauhan, M., Aghalayam, P., Mahajani, S., Qi, Z. and Sundmacher, K., Kinetics of Dimerization of Isobutylene catalysed by an Ion Exchange Resin (Oral), *PRES'05*, 15-18 May 2005, Giardini Naxos, Italy.
- [152] Krewer, U., Christov, M., Vidakovic, T. and Sundmacher, K., Analysis of the Kinetics of the Electrochemical Methanol Oxidation in a Cyclone Flow Cell (Oral), *207th Meeting of the Electrochemical Society*, 15-20 May 2005, Quebec, Canada.
- [153] Krewer, U. and Sundmacher, K., Transfer Function Analysis of the Direct Methanol Fuel Cells Response to Dynamic Changes in Cell Current (Oral), *24th IASTED International Conference on Modelling, Identification and Control - MIC2005*, 16-18 February 2005, Innsbruck, Austria.
- [154] Rihko-Struckmann, L. K., Ye, Y., Chalakov, L., Suchorski, Y., Weiß, H. and Sundmacher, K., Charakterisierung von anodischen Vanadylpyrophosphatkatalysatoren (VPO) in elektrochemischen Membranreaktoren (Oral), *XXXVIII. Jahrestreffen Deutscher Katalytiker*, 16-18 March 2005, Weimar, Germany.
- [155] Yu, E. H. and Sundmacher, K., Glucose Oxidation on Enzyme Modified Electrodes for Biofuel Cell Applications (Oral), *ECS 208*, 16-21 October 2005, Los Angeles, USA.
- [156] Galvita, V. and Sundmacher, K., Hydrogen Production from Methane Steam Reforming in a Periodically Operated Reactor for Low-temperature Fuel Cells (Oral), *8th International Conference on Energy for a Clean Environment*, 27-30 June 2005, Lisbon, Portugal.
- [157] Ye, Y., Rihko-Struckmann, L. K., Munder, B. and Sundmacher, K., Influence of Electrochemical Oxygen Pumping on the Performance of Butane Partial Oxidation to Maleic Anhydride in a Solid Electrolyte Membrane Reactor (Poster), *EuropCat 7*, 28 August - 1 September 2005, Sofia, Bulgaria.
- [158] Heidebrecht, P. and Sundmacher, K., Coupled Partial Differential Equations in Fuel Cell Models (Oral), *76th Annual GAMM Conference*, 28 March – 1 April 2005, Luxembourg.
- [159] Niemann, B., Recksiedler, J., Adityawarman, D. and Sundmacher, K., Nucleation and Growth Kinetics for the Nanoparticle Precipitation of Barium Sulfate in Microemulsions (Oral), *AICHE 2005, Annual Meeting*, 30 October – 4 November 2005, Cincinnati, USA.
- [160] Adityawarman, D., Voigt, A., Veit, P. and Sundmacher, K., Precipitation of BaSO<sub>4</sub> nanoparticles in a non-ionic microemulsion: Identification of suitable control parameters, *Chemical Engineering Science*, Jun, appeared in, Vol. 60, 3373-3381, ISSN: 0009-2509.
- [161] Mangold, M., Heidebrecht, P., Gundermann, M., Kienle, A. and Sundmacher, K., Model Based Analysis and Control of an Industrial Molten Carbonate Fuel Cell Stack (Oral), *3rd Sino-German-Workshop on Fuel Cells*, May 1-4, 2005, Shanghai, China.
- [162] John, V., Angelov, L., Oncül, A., Thévenin, D. and Sundmacher, K., Towards the Optimal Reconstruction of a Distribution From its Moments (Poster), *AICHE Annual Meeting 2005*, October 30 – November 4, 2005, Cincinnati, USA.
- [163] Voigt, A., Niemann, B., Recksiedler, J. and Sundmacher, K., A Comparison of Deterministic Population Balance Equations and Stochastic Monte-Carlo Approaches for Modelling the Particle Precipitation in Microemulsions (Oral), *2005 Annual AIChE Meeting*, October 30, 2005 Cincinnati, USA.

- [164] Voigt, A., Rauscher, F., Adityawarman, D., Heidenreich, F. and Sundmacher, K., Monte-Carlo-Simulation der Nanopartikelfällung in Mikroemulsionen (Oral), *GVC/DEHEMA-Jahrestagungen*, September 6-8, 2005, Wiesbaden, Germany.
- [165] Mitkova, T., John, V., Tobiska, L., Steyer, C., Voigt, A. and Sundmacher, K., Simulationsmethoden für Partikel-Populationsbilanzen zur Analyse von Fällungsprozessen in Strömungsfeldern (Oral), *GVC/DEHEMA-Jahrestagungen*, September 6-8, 2005, Wiesbaden, Germany appeared in: *Chemie-Ingenieur-Technik*, 77 (2005), Vol. 8, 1040.
- [166] Voigt, A., Niemann, B. and Sundmacher, K., Model-based process evaluation of nanoparticle precipitation in Microemulsions, *Biwic 2006* (2006), 51-58.
- [167] Ivanova, M., Qi, Z., Kamath, R., Aghalayam, P., Mahajani, S. and Sundmacher, K., Development and Analysis of Coupled Reactive Separation Processes for the Synthesis of Isooctane from Isobutene (Poster), *19th International Symposium on Chemical Reaction Engineering*, 3-6 September 2006, Potsdam, Germany.
- [168] Heineken, W., Flockerzi, D., Steyer, C., Voigt, A. and Sundmacher, K., Nonlinear Dynamics of Continuous Precipitation Reactors: A Model-based Analysis (Poster), *19th International Symposium on Chemical Reaction Engineering*, 3-6 September 2006, Potsdam, Germany.
- [169] Heidebrecht, P., Gundermann, M. and Sundmacher, K., Development of a Validated Reduced Model for DIR-DMFC (Poster), *19th International Symposium on Chemical Reaction Engineering*, 3-6 September 2006, Potsdam, Germany.
- [170] Munder, B., Rihko-Struckmann, L. K. and Sundmacher, K., Analysis of Steady-state and Forced Periodic Operation of Electrochemical Membrane Reactors for Selective Partial Oxidation of n-Butane to Maleic Anhydride (Oral), *19th International Symposium on Chemical Reaction Engineering*, 3-6 September 2006, Potsdam, Germany.
- [171] Heineken, W., Voigt, A., Steyer, C., Flockerzi, D. and Sundmacher, K., Stability Analysis of a Precipitation Reaction Process in a CSTR (Poster), *BIWIC06*, 7-9 September 2006, Delft, Netherlands.
- [172] Oncul, A. A., Niemann, B., Sundmacher, K. and Thevenin, D., CFD Model of a Semi-batch Reactor for the Precipitation of Nanoparticles in the Droplets of a Microemulsion, *16th European Symposium on Computer Aided Process Engineering and 9th International Symposium on Process Systems Engineering* 21 (2006), 203-208, ISSN: 1570-7946.
- [173] Mangold, M., Steyer, C., Niemann, B., Voigt, A. and Sundmacher, K., Methods of State Estimation for Particulate Processes (Oral), *ESCAPE-16*, 9-13 July 2006, Garmisch-Partenkirchen, Germany.
- [174] Koch, J., Hackbusch, W. and Sundmacher, K., Simulation of the Population Balance for Droplet Breakage in a Liquid-Liquid Stirred Tank Reactor using H-Matrix Methods (Oral), *ESCAPE-16*, 9-13 July 2006, Garmisch-Partenkirchen, Germany.
- [175] Hanke-Rauschenbach, R., Mangold, M. and Sundmacher, K., Nonlinear Behaviour of PEM Fuel Cells operated in Auto-humidification Mode (Oral), *AIChE-Meeting*, 12-17 November 2006, San Francisco, USA.
- [176] Oncül, A., Thévenin, D. and Sundmacher, K., Numerical Simulation of BaSO<sub>4</sub> Precipitation in a Coaxial Pipe Mixer with Micromixing Effects (Oral), *AIChE-Meeting*, 12-17 November 2006, San Francisco, USA.

- [177] Niemann, B. and Sundmacher, K., Manipulation and Control of the Particle Size Distribution of Nanoparticles during their Formation in Microemulsions Droplets by a Suitable Feed Strategy (Oral), *AIChE-Meeting*, 12-17 November 2006, San Francisco, USA.
- [178] Voigt, A., Niemann, B. and Sundmacher, K., The Influence of Nucleation Kinetics on the Particle Population Dynamics in Microemulsion Precipitation using Molecular Modelling Approaches (Oral), *AIChE-Meeting*, 12-17 November 2006, San Francisco, USA.
- [179] Adityawarman, D., Niemann, B. and Sundmacher, K., Efficient mathematical model for the precipitation of nanoparticles in microemulsions, *Biwic 2006*, 13-15 Septmeber 2006, Delft Univ Technol, Delft, The Netherlands appeared in, 259-266,ISSN: 978-1-58603-658-4.
- [180] Gundermann, M., Heidebrecht, P. and Sundmacher, K., Validation of a MCFC Model to an Industrial Plant (Poster), *Fuel Cell Seminar*, 13-17 November 2006, Honolulu, Hawaii.
- [181] Pfafferodt, M., Heidebrecht, P., Sundmacher, K., Würtenberger, U. and Bednarz, M., Multiscale Modelling of the Local Catalyst Structure in an Indirect Internal Reformer (IIR) of a Molten Carbonate Fuel Cell (Poster), *Fuel Cell Seminar*, 13-17 November 2006, Honolulu, Hawaii.
- [182] Galvita, V. and Sundmacher, K., Hydrogen Purification for Low Temperature Fuel Cell by Redox Iron Process in Periodically Operated Catalytic reactor (Oral), *CHEMREACTOR*, 15-17 May 2006, Athens, Greece.
- [183] Voigt, A. and Sundmacher, K., Microemulsion-based Nanoparticle Production on a Technical Scale: Experimental and Theoretical Process Evaluation (Oral), *ACHEMA 2006*, 15-19 May 2006, Frankfurt/M., Germany.
- [184] Heidebrecht, P. and Sundmacher, K., Direkte Interne Reformierung in Hochtemperaturbrennstoffzellen: Prozessintegration und konzeptionelles Systemdesign (Oral), *XXXVIII. Jahrestreffen Deutscher Katalytiker*, 16-18 March 2006, Weimar, Germany.
- [185] Radulescu, G., Gangadwala, J., Kienle, A., Steyer, F. and Sundmacher, K., Dynamic Simulation of Reactive Distillation Processes with Liquid-Liquid Phase Splitting (Oral), *5th International Symposium on Process Control*, 18-19 May 2006, Ploiesti, Romania.
- [186] Voigt, A. and Sundmacher, K., Herstellung von Nanopartikeln durch Fällungsreaktionen in Mikroemulsionen: Form und Morphologie (Oral), *3. Symposium des Fraunhofer ICT „Produktgestaltung in der Partikeltechnologie“*, 22-23 June 2006.
- [187] Voigt, A., Rauscher, F. and Sundmacher, K., Calciumcarbonat-Kristallisation in Wasser-in-Öl-Mikroemulsionen: Steuerung von Form und Morphologie(Oral), *GVC-Fachausschuss-Sitzung"Kristallisation"*, 23-24 March 2006, Basel, Schweiz.
- [188] Yu, E. H., Scott, K., Vidakovic, T. and Sundmacher, K., Glucose Oxidation on Enzyme immobilised Gold Electrodes prepared by Electrodeposition (Poster), *10th International Fischer Symposium on Electrochemical Aspects of Biological and Nanoscopic Structures*, 23 -28 July 2006, Benediktbeuern, Germany.
- [189] Niemann, B. and Sundmacher, K., A Discrete-Continuous Population Balance Approach for the Nanoparticle Precipitation in Microemulsions (Oral), *World Congress on Particle Technology 2006*, 23 – 27 April 2006, Orlando, Florida.



- [190] Heidebrecht, P., Gundermann, M. and Sundmacher, K., Optimierung von Betriebs- und Designparametern einer 300 kW-Carbonatbrennstoffzelle (MCFC), mittels eines 2D-Prozessmodells (Oral), *GVC/DECHEMA-Jahrestagungen*, 26-28 September 2006, Wiesbaden, Germany appeared in: *Chemie Ingenieur Technik* Vol. 78/9 (2006), 1309-1309.
- [191] Niemann, B. and Sundmacher, K., Emulsionsgestützte Synthese von Nanopartikeln: Experimentelle und modelltheoretische Prozessanalyse (Oral), *GVC/DECHEMA-Jahrestagungen*, 26-28 September 2006, Wiesbaden, Germany appeared in: *Chemie Ingenieur Technik*, Vol. 78/9 (2006), 1341-1341.
- [192] Pfafferodt, M., Heidebrecht, P., Sundmacher, K., Würtenberger, U. and Bednarz, M., Mehrskalige Modellierung der örtlichen Katalysatorstrukturierung eines indirekten internen Reformers einer Schmelzcarbonatbrennstoffzelle (Poster), *GVC/DECHEMA-Jahrestagungen*, 26-28 September 2006, Wiesbaden, Germany appeared in: *Chemie Ingenieur Technik*, Vol. 78/9 (2006), 1271-1272.
- [193] Steyer, F. and Sundmacher, K., Einsatz eines reaktiven Entrainers zur Synthese von Cyclohexanol in einem Prozess gekoppelter Reaktivdestillationskolonnen (Oral), *GVC/DECHEMA-Jahrestagungen*, 26-28 September 2006, Wiesbaden, Germany appeared in: *Chemie Ingenieur Technik*, Vol. 78/9 (2006), 1200-1200.
- [194] Gangadwala, J., Radulescu, G., Kienle, A., Steyer, F. and Sundmacher, K., New Process for Recovery of Acetic Acid from Waste Water (Oral), *17th International Congress of Chemical and Process Engineering*, 27-31 August 2006, Prague, Czech Republic.
- [195] Chalakov, L., Rihko-Struckmann, L. K. and Sundmacher, K., Electrocatalytic Oxidative Dehydrogenation of Ethane with a Solid Electrolyte Membrane Reactor (Oral), *17th International Congress of Chemical and Process Engineering*, 27-31 August 2006, Prague, Czech Republic.
- [196] Gundermann, M., Heidebrecht, P. and Sundmacher, K., Validation of an MCFC Model for an Industrial Plant (Poster), *57th Annual Meeting of the Int. Soc. of Electrochemistry*, 27 Aug - 1 Sept. 2006, Edinburgh, Scotland.
- [197] Vidakovic, T., Christov, M. and Sundmacher, K., Can CO Stripping Voltammetry be used as a Quantitative Method for *in situ* Fuel Cell Catalyst Characterisation? (Oral), *57th ISE Meeting*, 28 August-1 September 2006, Edinburgh, Scotland.
- [198] Munder, B., Rihko-Struckmann, L. K. and Sundmacher, K., Distributed Impedance Modelling and Analysis of Reactions and Charge Transport in Au-YSZ Composite Electrodes (Oral), *57th ISE Meeting*, 28 August – 1 September 2006, Edinburgh, Scotland.
- [199] Suchorski, Y., Munder, B., Rihko-Struckmann, L. K., Becker, S., Sundmacher, K. and Weiß, H., Spatial Distribution of Vanadium Oxidation States within a VPO Catalytic Layer in an Electrochemical Membrane Reactor: XPS Mapping and Modelling (Poster), *ISSHAC-6*, 28 August – 2 September 2006, Zakopane, Poland.
- [200] Vidakovic, T., Krewer, U., Christov, M. and Sundmacher, K., Determination of a Rate Expression for Electrochemical Oxidation of Methanol (Oral), *International Symposium on Surface Imaging/Spectroscopy at the Solid/Liquid Interface*, 28 May – 1 June 2006, Krakow, Poland.
- [201] Ivanova, M., Qi, Z., Kamath, R., Aghalayam, P., Mahajani, S. and Sundmacher, K., Influence of the Reaction Kinetics on the Design of a Reactive Distillation Column for Isobutene Dimerisation (Oral), *17th International Congress of Chemical and Process Engineering*, August 27-31, 2006, Prague, Czech Republic.

- [202] Galvita, V. and Sundmacher, K., Redox Properties and Catalyst Stability of Iron and modified Iron Oxides in a Novel Process for Hydrogen Production from Natural Gas (Poster), *10th International Symposium on Catalyst Deactivation*, February 5-8, 2006, Berlin, Germany.
- [203] Sommer, S., Raisch, J. and Sundmacher, K., Modelling and Feedback Control of the Startup Process of Empty Cold Reactive Distillation Columns: the Filling and Heating Case (Oral), *MATHMOD 2006*, February 8-10, 2006, Wien.
- [204] Suchorski, Y., Munder, B., Rihko-Struckmann, L. K., Becker, S., Sundmacher, K. and Weiß, H., Distribution of Vanadium Oxidation State within a VPO Catalytic Layer in a Membrane Reactor: 3D XPS Mapping and Modelling (Poster), *Symposium on Surface Science 2006*, March 5-11, 2006, St. Christoph am Arlberg, Austria.
- [205] Klose, F., Wolff, T., Hamel, C., Tóta, A., Seidel-Morgenstern, A., Chalakov, L., Rihko-Struckmann, L. K., Sundmacher, K., Peglow, M., Achieva, D. G., Heinrich, S., Mörl, L. and Weiß, H., Möglichkeiten und Grenzen des Einsatzes von Membranreaktoren in der katalytischen Oxidation von Kohlenwasserstoffen (Oral), *XXXIX. Jahrestreffen Deutscher Katalytiker*, March 15-17, 2006, Weimar, Germany.
- [206] Sundmacher, K. and Freund, H., Process Intensification: Towards a Design Approach in Terms of Elementary Process Functions (Oral), *XIX Polish Conference of Chemical and Process Engineering*, 3-7 September 2007, Rzeszów, Polen.
- [207] Voigt, A., Fricke, M. and Sundmacher, K., Scale-Up Investigation of Particle Production in Emulsions (Oral), *AIChE Annual Meeting*, 4-9 November 2007, Salt Lake City, USA.
- [208] Freund, H. and Sundmacher, K., Systematic Analysis of Process Intensification Options: The Elementary Function Methodology (Oral), *AIChE Annual Meeting*, 4-9 November 2007, Salt Lake City, USA.
- [209] Borchert, C., Nere, N., Voigt, A., Sundmacher, K. and Ramkrishna, D., Prediction of Crystal Shape and Size Distributions using Multidimensional Population Balances (Oral), *AIChE Annual Meeting*, 4-9 November 2007, Salt Lake City, USA.
- [210] Katariya, A., Chalakova, M., Sundmacher, K. and Mahajani, S., Nonlinear Dynamics in Reactive Distillation with Multiple Reactions (Oral), *AIChE Annual Meeting*, 4-9 November 2007, Salt Lake City, USA.
- [211] Pfafferodt, M., Heidebrecht, P. and Sundmacher, K., Mehrskalige CFD-Modellierung der örtlichen Katalysatorstrukturierung eines Indirekten Reformers einer Schmelzcarbonatbrennstoffzelle (Oral), *VDI-GVC-Fachausschuß CFD*, 5-6 March 2007.
- [212] Sundmacher, K. and Freund, H., Prozessintensivierung: Neue konzeptionelle Ansätze für die Prozessgestaltung und -führung (Oral), *ProcessNet-Jahrestagung 2007*, 6-18 October 2007, Aachen, Germany appeared in: *Chemie-Ingenieur-Technik*, Vol. 79/9 (2007), 1298-1298.
- [213] Rihko-Struckmann, L. K., Thomas, S., Kusnezoff, M. and Sundmacher, K., Integrated Systems for the Utilization of Biomass in Fuel Cells, *German EU Council Presidency (Poster)*, 8-10 May 2007, Leipzig, Germany.
- [214] Ivanov, I., Vidakovic, V. and Sundmacher, K., Glucose Oxidation: Electrocatalysis versus Bioelectrocatalysis (Oral), *58th Annual Meeting of the International Society of Electrochemistry*, 9-14 September 2007, Banff, Canada.

- [215] Chalakova, M., Kaur, R., Freund, H., Mahajani, S. and Sundmacher, K., Innovative Reactive Distillation Process for the Production of the MTBE Substitute Isooctane from Isobutene (Oral), *DGMK International Conference*, 10-12 October 2007, Hamburg, Germany.
- [216] Freund, H., Katariya, A., Kumar, R., Steyer, F. and Sundmacher, K., Application of Catalytic Distillation in a Novel Process Concept for the Production of Cyclohexanol (Poster), *DGMK International Conference*, 10-12 October 2007, Hamburg, Germany.
- [217] Chalakov, L., Munder, B., Rihko-Struckmann, L. K. and Sundmacher, K., Feasibility Study of the Oxidative Dehydrogenation of Ethane in an Electrochemical Packed Bed Membrane Reactor (Oral), *6th International Symposium on Catalysis in Multiphase Reactors (CAMURE-6) and 5th International Symposium on Multifunctional Reactors (ISMR-5)*, 14-17 January 2007, Pune, India.
- [218] Ivanova, M., Qi, Z., Steyer, F., Aghalayam, P., Mahajani, S. and Sundmacher, K., Coupling of Chemical Reactions in a Reactive Distillation Process (Poster), *6th International Symposium on Catalysis in Multiphase Reactors (CAMURE-6) and 5th International Symposium on Multifunctional Reactors (ISMR-5)*, 14-17 January 2007, Pune, India.
- [219] Kamath, R., Talwalker, S., Singh, A., Ivanova, M., Aghalayam, P., Sundmacher, K. and Mahajani, S., Reactive Distillation with Non-Condensables and Liquid Phase Splitting: One-step Synthesis of MIBK from Acetone (Poster), *6th International Symposium on Catalysis in Multiphase Reactors (CAMURE-6) and 5th International Symposium on Multifunctional Reactors (ISMR-5)*, 14-17 January 2007, Pune, India.
- [220] Sundmacher, K., Fricke, M., Niemann, B. and Voigt, A., Synthese maßgeschneiderter Feststoffpartikel in Emulsionen: Status und Entwicklungstrends (Oral), *ProcessNet-Jahrestagung 2007*, 16-18 October 2007, Aachen, Germany appeared in: *Chemie-Ingenieur-Technik*, Vol. 79/9 (2007), 1395-1395.
- [221] Voigt, A., Heineken, W., Flockerzi, D. and Sundmacher, K., Populationsdynamik von Fällungsreaktionen: Analyse von Oszillationen der Partikelgröße (Poster), *ProcessNet-Jahrestagung 2007*, 16-18 October 2007, Aachen, Germany.
- [222] Radulescu, G., Gangadwala, J., Kienle, A., Paraschiv, N. and Sundmacher, K., Dynamics of Reactive Distillation Processes with Potential Liquid Phase Splitting (Oral), *ESCAPE 17*, 27-30 May 2007, Bucharest, Romania.
- [223] Niemann, B. and Sundmacher, K., Two Coupled Population Balances with Three Discrete Internal Coordinates for Nanoparticle Precipitation in Colloidal Systems (Oral), *3rd International Conference on Population Balance Modeling*, 19-21 September 2007, Québec City, Canada.
- [224] Borchert, C., Nere, N., Voigt, A., Sundmacher, K. and Ramkrishna, D., On the Prediction of Crystal Shape Distribution through Multidimensional Population Balances (Oral), *3rd International Conference on Population Balance Modeling*, 19-21 September 2007, Québec City, Canada.
- [225] Mangold, M., Schenkendorf, R., Steyer, C., Voigt, A. and Sundmacher, K., Model-based Measurement of Particle Size Distributions (Oral), *3rd International Conference on Population Balance Modeling*, 19-21 September 2007, Québec City, Canada.
- [226] John, V., Roland, M., Mitkova, T., Sundmacher, K., Tobiska, L. and Voigt, A., Simulations of Population Balance Systems with One Internal Coordinate using Finite Element Methods (Oral), *3rd International Conference on Population Balance Modeling*, 19-21 September 2007, Québec City, Canada.

- [227] Pfafferodt, M., Heidebrecht, P. and Sundmacher, K., Multi-scale Modelling of the Anode and Cathode Compartments and the IIR Unit within a MCFC (Oral), *ECCE-6*, 21-26 September 2007, Copenhagen, Denmark.
- [228] Sommer, S., Raisch, J. and Sundmacher, K., Start-up of Empty Cold Reactive Distillation Columns by means of Feedback Control Strategies: the Discontinuous Stage (Oral), *ECCE-6*, 21-26 September 2007, Copenhagen, Denmark.
- [229] Ivanov, I., Vidakovic, T. and Sundmacher, K., Electrocatalysis and Bioelectrocatalysis for Glucose Oxidation in a Biofuel Cell (Poster), *UCTM International Scientific Conference dedicated to the 60-th anniversary of "Physical Chemistry" department*, 23 November 2007, Sofia, Bulgaria.
- [230] Hertel, C., Heidebrecht, P. and Sundmacher, K., Model-based Analysis of a Cyclic Water Gas Shift Reactor (Oral), *CRE XI: Green Chemical Reactor Engineering Conference*, 26-31 August 2007, Bilbao, Spain.
- [231] Pfafferodt, M., Heidebrecht, P. and Sundmacher, K., 3D Simulation of a Symmetric MCFC Stack Model (Oral), *CRE XI: Green Chemical Reactor Engineering Conference*, 26-31 August 2007, Bilbao, Spain.
- [232] Lu, H., Rihko-Struckmann, L. K. and Sundmacher, K., CO-Removal in Electrochemical Preferential Oxidation (Poster), *Europacat-8*, 26-31 August 2007, Turku, Finland.
- [233] Cui, Y., Song, Y., Munder, B., Galvita, V., Rihko-Struckmann, L. K. and Sundmacher, K., Sustainable Hydrogen Production by Glycerol Steam Reforming (Poster), *Europacat-8*, 26-31 August 2007, Turku, Finland.
- [234] Sundmacher, K. and Fricke, M., Using Droplets as Reactors for the Production of Solid Particles: A Survey (Oral), *4th International Berlin Workshop on Transport Phenomena with Moving Boundaries*, 27-28 September 2007, Berlin, Germany appeared in: *Fortschritt-Berichte VDI, Reihe 3, Nr. 883 (2007)*, 155-166.
- [235] Niemann, B. and Sundmacher, K., Nanoparticle Precipitation in Microemulsion: A Discrete-Continuous Population Balance Approach (Oral), *PARTEC 2007*, 27-29 March 2007, Nürnberg, Germany.
- [236] Fricke, M., Parmer, R., Voigt, A. and Sundmacher, K., Droplet Size Distribution of Technical Macroemulsions: Variation of Process Parameters (Poster), *PARTEC 2007*, 27-29 March 2007, Nürnberg, Germany.
- [237] Pfafferodt, M., Heidebrecht, P., Sundmacher, K., Würtenberger, U. and Bednarz, M., Multiscale CFD Simulation of a Methane Steam Reformer for Optimization of the Spatial Catalyst Distribution (Poster), *ESCAPE 17*, 27-30 May 2007, Bucharest, Romania.
- [238] Hanke-Rauschenbach, R., Mangold, M. and Sundmacher, K., Bistable current-voltage characteristics of PEM fuel cells operated with reduced feed stream humidification, *Journal of the Electrochemical Society* 155 (2008), B97-B107, ISSN: 0013-4651.
- [239] Voigt, A., Heineken, W., Flockerzi, D. and Sundmacher, K., Dynamical Evolution of Particle Size and Shape Distribution in Crystallization and Precipitation Processes – Detailed Modelling and System Analysis (Poster), *ESCAPE 18*, 1-4 June 2008, Lyon, France.

- [240] Pfafferodt, M., Heidebrecht, P. and Sundmacher, K., Symmetric Stack Model of a Molten Carbonate Fuel Cell (MCFC) with Indirect Reforming, *Comsol Conference 2008*, 4-6 November 2008, Hannover, Germany.
- [241] Ivanov, I., Vidakovic, T. and Sundmacher, K., Glucose Electrooxidation for Biofuel Cell Applications (Oral), *RSE-SEE, First Regional Symposium on Electrochemistry of South-East Europe*, 4-8 May 2008, Istria, Croatia.
- [242] Heidebrecht, P., Rihko-Struckmann, L. K. and Sundmacher, K., Modellgestützter Entwurf eines zyklischen Wassergas-shiftreaktors zur Reinigung von Wasserstoff (Oral), *ProcessNet-Jahrestagung 2008*, 7-9 October 2008, Karlsruhe, Germany.
- [243] Rollié, S. and Sundmacher, K., Heteroaggregationsprozesse: Mehrdimensionale Vermessung der Clusterzusammensetzung mittel Durchflusszytometrie (Oral), *ProcessNet Jahrestagung 2008*, 7-9 October 2008, Karlsruhe, Germany.
- [244] Heidebrecht, P., Rihko-Struckmann, L. K. and Sundmacher, K., Hydrogen Production by a Cyclic Water Gas Shift Reactor (Oral), *The 20th International Symposium on Chemical Reaction Engineering*, 7-10 September 2008, Kyoto, Japan.
- [245] Ivanov, I., Vidakovic, T. and Sundmacher, K., The Influence of a Self-Assembled Monolayer on the Activity of Rough Gold for Glucose Oxidation (Poster), *ISE-59th Annual Meeting of the International Society of Electrochemistry*, 7-12 September 2008, Seville, Spain.
- [246] Steyer, C., Mangold, M. and Sundmacher, K., Semi-batch Precipitation in a Stirred Tank Reactor: Influence of Feeding Strategy on Particle Size and Morphology (Oral), *BIWIC 2008, 15th International Workshop on Industrial Crystallization*, 10-12 September 2008, Magdeburg, Germany.
- [247] Voigt, A. and Sundmacher, K., Multidimensional Property Design of Crystal Populations using a Systems Approach (Poster), *BIWIC 2008, 15th International Workshop on Industrial Crystallization*, 10-12 September 2008, Magdeburg, Germany.
- [248] Mangold, M., Hanke-Rauschenbach, R. and Sundmacher, K., Single Cell Modelling and Experimental Validation of PEFC I. (Oral), *5th Symposium on Fuel Cell Modelling and Experimental Validation*, 11-12 March 2008, Winterthur, Switzerland.
- [249] Adiche-Ait Aissa, C., Schultz, T., Heidebrecht, P. and Sundmacher, K., Continuous Mini-Channel Membrane Device for the Separation of Organic Mixtures: Experimental and Model-based Evaluation (Oral), *SYNTOPI-1: Smart Synthesis and Technologies for Organic Processes*, 11-13 June 2008, Potsdam, Germany appeared in: VDI-Berichte 2039, 161-170.
- [250] Borchert, C., Voigt, A. and Sundmacher, K., Evolution of Crystal Shape Distributions and Morphology Classification (Poster), *ISIC 17, 17th International Symposium on Industrial Crystallization*, 14-17 September 2008, Maastricht, Netherlands.
- [251] Fricke, M., Voigt, A. and Sundmacher, K., Miniemulsion-Assisted Reactive Crystallization of Nanoparticles (Poster), *ISIC 17-17th International Symposium on Industrial Crystallization*, 14-17 September 2008, Maastricht, Netherlands.
- [252] Kumar, R., Katariya, A., Freund, H. and Sundmacher, K., A Continuous Reactive Distillation Process for the Production of Cyclohexanol from Cyclohexene (Poster), *AIChE Annual Meeting 2008*, 16-21 November 2008, Philadelphia, USA.

- [253] Katariya, A., Chalakova, M., Freund, H., Mahajani, S. and Sundmacher, K., Investigation of Isobutene Dimerization Process in Reactive Distillation Using Rigorous Three-Phase Non-Equilibrium Stage Model (Poster), *AIChE Annual Meeting 2008*, 16-21 November 2008, Philadelphia, USA.
- [254] Voigt, A., Fricke, M. and Sundmacher, K., Molecular Modeling of Particle Nucleation in Emulsion Droplets – Towards an Improved Understanding of Nanoparticle Production Processes (Oral), *AIChE Annual Meeting 2008*, 16-21 November 2008, Philadelphia, USA.
- [255] Borchert, C., Nere, N., Voigt, A., Sundmacher, K. and Ramkrishna, D., Modeling the Manipulation of Crystal Morphology Distributions (Oral), *AIChE Annual Meeting 2008*, 16-21 November 2008, Philadelphia, USA.
- [256] Agarwal, V., Thotla, S., Kaur, R., Chalakova, M., Freund, H. and Sundmacher, K., Attainable Regions of Reactive Distillation, *Indo-German Workshop on Advances in Reaction and Separation Processes*, 18-20 February 2008, Madras, India.
- [257] Vidakovic, T., Ivanov, I. and Sundmacher, K., Biofuel Cells: Prospects and current limitations (Oral), *Indo-German Workshop on Advances in Reaction and Separation Processes*, 18-20 February 2008, Madras, India.
- [258] Heidebrecht, P. and Sundmacher, K., Modellbasierte Analyse eines zyklischen Wassergas-Shiftreaktors (Poster), *Jahrestreffen Reaktionstechnik 2008*, 18-20 May 2008, Würzburg, Germany.
- [259] Sundmacher, K., Der Tropfen als Reaktor – Synthese von Nanopartikeln in Emulsionsphasen (Oral), *Jahrestreffen Reaktionstechnik 2008*, 18-20 May 2008, Würzburg, Germany.
- [260] Oettel, C., Hanke-Rauschenbach, R. and Sundmacher, K., Experimental Investigation of the Nonlinear Behaviour of a CSTR PEM Fuel Cell (Oral), *18th International Congress of Chemical and Process Engineering CHISA 2008*, 24-28 August 2008, Prague, Czech Republic.
- [261] Hanke-Rauschenbach, R., Weinzierl, C., Rihko-Struckmann, L. K. and Sundmacher, K., Electrochemical Preferential Oxidation of CO in a Reformate for Fuel Cell Application with Coupled Oscillating EPrOx Reactors (Oral), *18th International Congress of Chemical and Process Engineering CHISA 2008*, 24-28 August 2008, Prague, Czech Republic.
- [262] Bensmann, B., Petkovska, M., Hanke-Rauschenbach, R., Vidakovic, T. and Sundmacher, K., Use of Nonlinear Frequency Response Analysis for Model Discrimination: Example – DMFC Anode Kinetics (Oral), *18th International Congress of Chemical and Process Engineering CHISA 2008*, 24-28 August 2008, Prague, Czech Republic.
- [263] Pfafferodt, M., Heidebrecht, P. and Sundmacher, K., 3D Modelling of a Symmetric Molten Carbonate Fuel Cell Stack (Oral), *18th International Congress of Chemical and Process Engineering CHISA 2008*, 24-28 August 2008, Prague, Czech Republic.
- [264] Katariya, A., Steyer, F., Freund, H. and Sundmacher, K., Process Intensification in Cyclohexanol Production: A Novel Integrated Process Scheme (Oral), *18th International Congress of Chemical and Process Engineering CHISA 2008*, 24-28 August 2008, Prague, Czech Republic.
- [265] Rihko-Struckmann, L. K., Cui, Y., Lu, H. and Sundmacher, K., Biomasse-Konversion zu Wasserstoff: Dampfreformierung von Glycerin an Mischoxid-Katalysatoren (Poster), *41. Jahrestreffen Deutscher Katalytiker*, 27-29 Februar 2008, Weimar, Germany.

- [266] Rollié, S. and Sundmacher, K., Cluster Composition in Heteroaggregation of Binary Mixtures (Oral), *ECIS 2008 Conference and COST D43 Workshop*, 31 August – 5 September 2008, Cracow, Polen.
- [267] Pfafferodt, M., Heidebrecht, P., Sundmacher, K., Wurtenberger, U. and Bednarz, M., Multiscale simulation of the indirect internal reforming unit (IIR) in a molten carbonate fuel cell (MCFC), *Industrial & Engineering Chemistry Research* 47 (2008), 4332-4341, ISSN: 0888-5885.
- [268] Adityawarman, D., Niemann, B. and Sundmacher, K., Dynamic process model for nanoparticle precipitation in microemulsion systems, *Chemical Engineering & Technology*, Jun, appeared in, Vol. 31, 978-983, ISSN: 0930-7516.
- [269] Borchert, C., Voigt, A. and Sundmacher, K., Evolution of Crystal Shape Distributions (Oral), *ProcessNet-Fachausschüsse "Trocknungstechnik" und "Kristallisation"*, März 5-7, 2008 Halle-Wittenberg, Germany.
- [270] Zhou, S., Ji, G., Ma, T. and Sundmacher, K., The Direct Methanol Fuel Cell (DMFC): Determination of Model Parameters (Oral), *Power Systems Conference*, November 2008, Seattle, WA, USA appeared in: *SAE International Journal of Aerospace*, Vol. 1 (2009), 832-842.
- [271] Sundmacher, K., Fuel Cell Engineering: State of the Art and Future Perspectives (Oral), *Workshop on Distributed and Renewable Generation-CRIS*, September 16-19, 2008, Magdeburg, Germany.
- [272] Heidebrecht, P., Sundmacher, K. and Biegler, L. T., Optimal design of non-linear Temperature Programmed Reduction (TPR) experiments, *19th European Symposium on Computer Aided Process Engineering* 26 (2009), 609-613, ISSN: 1570-7946.
- [273] Kadyk, T., Hanke-Rauschenbach, R. and Sundmacher, K., Nonlinear Frequency Response Analysis for the Diagnosis of PEM Fuel Cells (Oral), *216. ECS-Meeting*, 4 - 9 October 2009, Vienna, Austria.
- [274] Banerjee, S., Voigt, A., Briesen, H. and Sundmacher, K., A Multiscale Model to Simulate Crystal Growth (Poster), *BACG 40th Anniversary Conference 2009*, 6 – 8 June 2009, Bristol, UK.
- [275] Ivanov, I., Vidakovic, T. and Sundmacher, K., The Influence of some Structural Parameters on the Performance of an Enzymatic Anode for Glucose Oxidation (Oral), *SMCBS '2009*, 6 – 10 November 2009, Przegorzaly, Poland.
- [276] Heidebrecht, P., Piewek, S. and Sundmacher, K., Robuste Optimierung eines integrierten Reaktors am Beispiel einer DIR-MCFC (Poster), *Jahrestreffen Reaktionstechnik 2009*, 8 – 10 June 2009, Würzburg, Germany.
- [277] Hanke-Rauschenbach, R., Weinzierl, C., Lu, H., Rihko-Struckmann, L. K. and Sundmacher, K., EPrOx: Elektrochemische präferentielle Oxidation von CO aus H<sub>2</sub>/CO-Gemischen in gekoppelten Membran-Reaktoren (Oral), *Jahrestreffen Reaktionstechnik 2009*, 8 – 10 June 2009, Würzburg, Germany.
- [278] Rihko-Struckmann, L. K., Hanke-Rauschenbach, R., Alten, S. and Sundmacher, K., Bewertung und energetische Analyse der chemischen Speicherung von erneuerbarer Energie durch Reduktion von CO<sub>2</sub> (Poster), *ProcessNet-Jahrestagung 2009*, 8 – 10 September 2009, Mannheim, Germany.
- [279] Rollié, S. and Sundmacher, K., Heteroaggregation in Particle Systems: Model-based Analysis with Property Discrete PBM (Poster), *ProcessNet-Jahrestagung 2009*, 8 – 10 September 2009, Mannheim, Germany.

- [280] Hartono, B., Hertel, C., Heidebrecht, P. and Sundmacher, K., Modellbasierter Entwurf eines Brennstoffzellenkraftwerks mit Biomassevergasung (Oral), *ProcessNet-Jahrestagung 2009*, 8 – 10 September 2009, Mannheim, Germany.
- [281] Borchert, C. and Sundmacher, K., Dynamische Modellierung und Simulation von Kristallformverteilungen (Oral), *ProcessNet-Jahrestagung 2009*, 8 – 10 September 2009, Mannheim, Germany.
- [282] Peschel, A., Freund, H. and Sundmacher, K., Systematik zur modellgestützten Ermittlung der optimalen Reaktionsführung am Beispiel der SO<sub>2</sub>-Oxidation (Oral), *ProcessNet-Jahrestagung 2009*, 8 – 10 September 2009, Mannheim, Germany.
- [283] Diaz Ochoa, J. G., Voigt, A. and Sundmacher, K., Einfluss der Eigenimmunantwort von Zellpopulationen auf die Optimierung der Impfstoffherstellung (Oral), *ProcessNet-Jahrestagung 2009*, 8 – 10 September 2009, Mannheim, Germany.
- [284] Borchert, C. and Sundmacher, K., Statistical Modeling of Image-Based Crystallization Observation (Oral), *AIChE Annual Meeting*, 8 – 13 November 2009, Nashville, TN.
- [285] Voigt, A. and Sundmacher, K., Simulation the Shape Evolution of Crystals with Monte Carlo Methods (Oral), *AIChE Annual Meeting*, 8 – 13 November 2009, Nashville, TN.
- [286] Heidebrecht, P. and Sundmacher, K., Experimental Design of Dynamic Temperature-Programmed Reduction (TPR) Experiments (Oral), *AIChE Annual Meeting*, 8 – 13 November 2009, Nashville, TN.
- [287] Fricke, M., Zinser, A., Borchert, C. and Sundmacher, K., Numerical Simulation of Spatially Distributed Population Balances (Poster), *AIChE Annual Meeting*, 8 – 13 November 2009, Nashville, TN.
- [288] Rollié, S. and Sundmacher, K., Particle Heteroaggregation: Analysis by a Property Discrete Population Balance Model (Oral), *AIChE Annual Meeting*, 8 – 13 November 2009, Nashville, TN.
- [289] Peschel, A., Freund, H. and Sundmacher, K., Systematic Analysis, Design and Optimization of Heterogeneously Catalyzed Gas Phase Reaction Processes (Oral), *AIChE Annual Meeting*, 8 – 13 November 2009, Nashville, TN.
- [290] Fricke, M., Voigt, A. and Sundmacher, K., Tailoring the Size Distribution of Nanoparticles via an Emulsion-Assisted Precipitation Process: A Model-Based Analysis (Oral), *AIChE Annual Meeting*, 8 – 13 November 2009, Nashville, TN.
- [291] Voigt, A. and Sundmacher, K., Analysis of Anisotropic Crystal Growth in Solution using Molecular Modeling Methods (Poster), *BIWIC 2009-6th International Workshop on Industrial Crystallization*, 9 – 11 September 2009, Lappeenranta, Finland.
- [292] Borchert, C., Ramkrishna, D. and Sundmacher, K., Model Based Prediction of Crystal Shape Distributions, *19th European Symposium on Computer Aided Process Engineering*, 14-17 June 2009, Cracow, Poland.
- [293] Borchert, C., Ramkrishna, D. and Sundmacher, K., Model Based Prediction of Prediction of Crystal Shape Distribution Prediction (Oral), *ESCAPE 19*, 14-17 June 2009, Cracow, Poland appeared in: *Computer Aided Chemical Engineering*, Vol. 26, 114-146 (2009).



- [294] Freund, H., Peschel, A. and Sundmacher, K., Process Intensification in Terms of Elementary Process Functions (Poster), *EPIC 2009*, 14-17 June 2009, Venice, Italy.
- [295] Kumar, R., Thotla, S., Katariya, A., Freund, H. and Sundmacher, K., Development of a Novel Reactive Distillation Process for Cyclohexanol Production: Mini Plant Experiments and Complementary Process Simulations (Oral), *EPIC 2009*, 14-17 June 2009, Venice, Italy.
- [296] Ivanov, I., Vidakovic, T. and Sundmacher, K., A Flow-through Glucose-oxygen Fuel Cell based on Enzymatic Anode and Pt Cathode (Oral), *ISE – 60th Annual Meeting of the International Society of Electrochemistry*, 16 - 21 August 2009, Beijing, China.
- [297] Heidebrecht, P. and Sundmacher, K., Schmelzkarbonatbrennstoffzellen (MCFC) mit interner Reformierung: modellgestützte mehrskalige Analyse (Oral), *ProcessNet-Arbeitsausschüsse Elektrochemische Prozesse und Technische Reaktionen*, 20 January 2009, Frankfurt/Main, Germany.
- [298] Borchert, C. and Sundmacher, K., A New Method for the Determination of Crystallization Kinetics (Poster), *WCCE8 – 8th World Congress of Chemical Engineering*, 23 - 27 August 2009, Montréal, Canada.
- [299] Rollié, S. and Sundmacher, K., Heteroaggregation in Particle/Cell Systems: Populations Balance Modelling and Experiments (Poster), *WCCE8 – 8th World Congress of Chemical Engineering*, 23 - 27 August 2009, Montréal, Canada.
- [300] Hanke-Rauschenbach, R., Weinzierl, C., Rihko-Struckmann, L. K. and Sundmacher, K., Scale-up of an Oscillation EPrOx Reactor for Electrochemical CO Removal from Reformate Gas (Oral), *215. ECS-Meeting*, 24-29 May 2009, San Francisco, California.
- [301] Piewek, S., Heidebrecht, P. and Sundmacher, K., Model based Optimisation of High Temperature Fuel Cells (Oral), *MODVAL 6 – 6th Symposium on Fuel Cell Modelling and Experimental Validation*, 25 – 26 March 2009, Bad Herrenalb/Karlsruhe/Germany.
- [302] Rihko-Struckmann, L. K., Chalakov, L., Munder, B. and Sundmacher, K., Solid Electrolyte Membrane Reactor for the Oxidative Dehydrogenation of Ethane: Experiments and Modeling (Oral), *ICCMR9 – 9th International Conference on Catalysis in Membrane Reactors*, 28 June-2 July 2009, Lyon, France.
- [303] Thomas, S., Schotte, E., Herrmann, A., He, L., Sundmacher, K., Rihko-Struckmann, L. K., Heidebrecht, P., Kumar, V., Datta, P., Hertel, C., Oettel, C., Hartono, B., Kusnezoff, M. and Kayurucu-Schubert, S., ProBio: Integrated Process System for the Transformation of Biomass into Electrical Energy by use of Fuel Cells (Poster), *17th European Biomass Conference & Exhibition – From Research to Industry and Markets*, 29 June – 3 July 2009, Hamburg, Germany.
- [304] Diaz Ochoa, J. G., Voigt, A., Briesen, H. and Sundmacher, K., Time Dependent Virus Replication in Cell Cultures (Oral), *Complex 2009*, February 23-25, 2009, Shanghai, China.
- [305] Diaz Ochoa, J. G., Voigt, A., Briesen, H. and Sundmacher, K., Virus Production in Cell Populations with Innate Immune Response (Poster), *Complex 2009*, February 23-25, 2009, Shanghai, China.
- [306] Bajcinca, N., de Oliveira, V., Borchert, C., Raisch, J. and Sundmacher, K., Optimal control solutions for crystal shape manipulation, *20th European Symposium on Computer Aided Process Engineering*, appeared in, Vol. 28, 751-756, ISBN: 978-0-444-53569-6.

- [307] Ochoa, J. G. D., Kalweit, S., Voigt, A. and Sundmacher, K., Modeling Heterogeneous Virus Infectiosity for Cells in Bioreactors for Vaccine Production, *20th European Symposium on Computer Aided Process Engineering* 28 (2010), 307-312, ISBN: 978-0-444-52569-6.
- [308] Thotla, S., Freund, H. and Sundmacher, K., Entrainer Based Reactive Divided Wall Columns, *CHEMREACTOR-19*, 5 – 9 September 2010, Vienna, Austria.
- [309] Kadyk, T., Hanke-Rauschenbach, R. and Sundmacher, K., Nonlinear Frequency Response Analysis – Yet another Nonlinear Based on Electrochemical Impedance Spectroscopy?, *EIS 2010*, 6-11 June 2010, Algarve, Portugal.
- [310] Ivanov, I., Vidaković-Koch, T. and Sundmacher, K., Direct Glucose Enzymatic Fuel Cell, *RSE-SEE Second Regional Symposium on Electrochemistry South-East Europe*, 6 - 10 June 2010, Belgrade, Serbia.
- [311] Panic, V., Vidaković-Koch, T., Zivkovic, L., Petkovska, M. and Sundmacher, K., Non-Linear Frequency Response Analysis of the Kinetics of Electrochemical Reactions: A Case Study – Ferrocyanide Oxidation Kinetics, *RSE-SEE Second Regional Symposium on Electrochemistry South-East Europe*, 6 - 10 June 2010, Belgrade, Serbia.
- [312] Pfafferodt, M., Heidebrecht, P. and Sundmacher, K., Multiphysics Simulation of a Molten Carbonate Fuel Cell Stack, *IMA Conference on Fluid Problems in Process Engineering*, 6 – 8 September Leeds 2010, England.
- [313] Bajcinca, N., Hofmann, S., Raisch, J. and Sundmacher, K., Robust and Optimal Control Scenarios for Batch Crystallization Processes, *ESCAPE-20*, 6 – 9 June 2010, Ischia, Naples, Italy appeared in: *Computer Aided Chemical Engineering* Vol. 28, 1605-1610 (2010), ISBN: 978-0-444-53569-6.
- [314] Borchert, C. and Sundmacher, K., Image-Based Experimental Investigation of Crystal Aggregation along a Pipe, *AIChE Annual Meeting* 7 – 12 November 2010, Salt Lake City, Utah.
- [315] Singh, A., Meenesh, R., Chakraborty, J., Ramkrishna, D., Boerrigter, S., Borchert, C. and Sundmacher, K., Morphological Measurements of Faceted Crystals Using Image Analysis, *AIChE Annual Meeting 2010*, 7 – 12 November 2010, Salt Lake City, Utah.
- [316] Voigt, A. and Sundmacher, K., Modeling Solution Crystallization – Small Steps and Big Leaps towards an Improved Understanding, *AIChE Annual Meeting 2010*, 7 – 12 November 2010, Salt Lake City, Utah.
- [317] Freund, H., Kumar, R., Katariya, A. and Sundmacher, K., Intensification Options for Different Hierarchical Process Levels Illustrated in the Conceptual Design of a Novel Cyclohexanol Production Process, *AIChE Annual Meeting 2010*, 7 – 12 November 2010, Salt Lake City, Utah.
- [318] Eisenschmidt, H., Borchert, C. and Sundmacher, K., Image-based Measurement of Crystal Shape Distributions (Poster), *BIWIC 2010 - 17th International Workshop on Industrial Crystallization*, 8. – 10. September 2010, Halle, Germany.
- [319] Tong, L., Qi, Z., Yuan, W., Freund, H. and Sundmacher, K., Novel Green Processes Intensified by Direct and Indirect Auxiliary Reactions, *2nd International Symposium on Sustainable Chemical Product and Process Engineering (SCPPE-2)*, 9 – 12 May 2010, Hangzhou, China.
- [320] Hartono, B., Heidebrecht, P. and Sundmacher, K., Integration of Gasifier and Fuel Cell by Anode Exhaust Gas Recycle, *Jahrestreffen Reaktionstechnik 2010*, 10 – 12 May 2010, Würzburg, Germany.

- [321] Peschel, A., Freund, H. and Sundmacher, K., Systematik zum Entwurf und zur apparativen Gestaltung optimaler chemischer Reaktoren am Beispiel der SO<sub>2</sub>-Oxidation, *Jahrestreffen Reaktionstechnik 2010*, 10 – 12 May 2010, Würzburg, Germany.
- [322] Adiche, C. and Sundmacher, K., Micro-scale Sweep Gas Membrane Distillation for the Separation of Sub-cooled Mixtures, *Bioprozessorientiertes Anlagendesign*, 10 – 12 May 2010, Nürnberg, Germany.
- [323] Hanke-Rauschenbach, R., Kirsch, S. and Sundmacher, K., Oscillations and Pattern Formation in an Electrochemical Membrane Reactor Exposed to H<sub>2</sub>O/CO Mixtures, *218th ECS Meeting*, 10 – 14 October 2010, Las Vegas, USA.
- [324] Sundmacher, K. and Freund, H., Process Systems Engineering and Process Intensification: Rival Brothers or Best Buddies?, *CAPE Forum*, 11 - 12 März 2010, Aachen, Germany.
- [325] Borchert, C. and Sundmacher, K., Modellbasiertes Messen von Kristallformverteilungen, *Fachausschuss Kristallisation*, 11 – 12 March 2010, Magdeburg, Germany.
- [326] Thotla, S., Katariya, A., Freund, H. and Sundmacher, K., Cyclohexanol Production from Cyclohexene in a Reactive Divided Wall Column: A Feasibility Study, *Distillation & Absorption 2010*, 12 – 15 September 2010, Eindhoven, The Netherlands appeared in: Proceedings of the 9<sup>th</sup> Distillation & Absorption Conference (Eds.: H. K. A.B. de Haan, A. Górak).
- [327] Adiche-Ait Aissa, C. and Sundmacher, K., Effect of Hydrodynamic Conditions on Mass and Heat Transfer in a Novel Membrane based Continuous Micro-Distillation Device: Experimental Approach, *Distillation & Absorption 2010*, 12 – 15 September 2010, Eindhoven, The Netherlands appeared in: Proceedings of the 9th Distillation&Absorption (Eds.: H. K. A.B. de Haan, A. Górak), 283 – 288.
- [328] Panic, V., Vidaković-Koch, T., Petkovska, M., Zivkovic, L. and Sundmacher, K., Non-linear Frequency Response Analysis of Electrochemical Hydrogen Reaction Kinetics, *Electrochemistry 2010*, 13 – 15 September 2010, Bochum, Germany.
- [329] Peschel, A., Freund, H. and Sundmacher, K., Methodology for the Design of Optimal Chemical Reactors based on the Concept of Elementary Process Functions, *ISCRE 21*, 13 – 16 June 2010, Philadelphia, USA.
- [330] Rihko-Struckmann, L. K., Peschel, A., Hanke-Rauschenbach, R. and Sundmacher, K., Exergetic Analysis of the Utilisation of Exhaust CO<sub>2</sub> for the Chemical Storage of Renewable Energy, *ISCRE 21*, 13 – 16 June 2010, Philadelphia, USA.
- [331] Hartono, B., Heidebrecht, P. and Sundmacher, K., Biomass-Based Fuel Cell Power Plants – Evaluation of Novel Reactors and Process Designs, *ISCRE 21*, 13 – 16 June 2010, Philadelphia, USA.
- [332] Hanke-Rauschenbach, R., Kirsch, S., Rihko-Struckmann, L. K. and Sundmacher, K., Electrochemical Preferential CO Oxidation in CO/H<sub>2</sub> Mixtures: Influence of Nonlinear Pattern Formation on Selectivity, *ISCRE 21*, 13 – 16 June 2010, Philadelphia, USA.
- [333] Sundmacher, K., Fuel Cell Engineering: Towards the Design of Efficient Electrochemical Power Plants, *ISCRE 21*, 13 – 16 June 2010, Philadelphia, USA.

- [334] Rihko-Struckmann, L. K., Peschel, A. and Sundmacher, K., Energetic and Exergetic Comparison of the Utilization of CO<sub>2</sub> for the Production of Methanol or Methane as a Chemical Storage for Fluctuating Renewable Energy, *EMRS (Eur. Mat. Res. Society)*, 13 – 17 September 2010, Warsaw, Poland.
- [335] Rollié, S. and Sundmacher, K., Analysis of Multidimensional Cluster Distributions in Particle-/Cell Systems by Population Balance Models, *PBM 2010 - 4th International Conference on Population Balance Modeling*, 15 – 17 September 2010, Berlin, Germany.
- [336] Borchert, C. and Sundmacher, K., Morphology Evolution of Crystal Populations: Population Balance Model Predictions Versus Experimental Data, *PBM 2010 - 4th International Conference on Population Balance Modeling*, 15 – 17 September 2010, Berlin, Germany.
- [337] Hertel, C., Heidebrecht, P., Rihko-Struckmann, L. K. and Sundmacher, K., Hydrogen Production from Reformate Gas by a Cyclic Water Gas Shift Reactor, *WHEC 18th World Hydrogen Energy Conference*, 16 – 21 May 2010, Essen, Germany appeared in: 18<sup>th</sup> World Hydrogen Production Energy Conference 2010 - WHEG 2010, Parallel Sessions Book 3: Hydrogen Production Technologies - Part 2/Detlef Stolten, Thomas Grube/Forschungszentrum Jülich GmbH, Zentralbibliothek,ISSN: 978-3-89336-653-8.
- [338] Adiche, C. and Sundmacher, K., Separation of Alcohol-Water Mixtures in a Micro-Scale Sweep Gas Membrane Distillation Process, *ProcessNet-Jahrestagung 2010*, 21 – 23 September 2010, Aachen, Germany.
- [339] Borchert, C. and Sundmacher, K., Experimentelle Untersuchung von Aggregation im Strömungsrohr, *ProcessNet-Jahrestagung 2010*, 21 – 23 September 2010, Aachen, Germany.
- [340] Freund, H., Kumar, R., Katariya, A. and Sundmacher, K., Konzeptioneller Entwurf eines neuen Reaktivdestillationsprozesses zur Herstellung von Cyclohexanol aus Cyclohexen, *ProcessNet-Jahrestagung 2010*, 21 – 23 September 2010, Aachen, Germany.
- [341] Bajcinca, N., Perl, R., Raisch, J., Borchert, C. and Sundmacher, K., Convex Optimization for Crystal Shape Manipulation, *16th Nordic Process Control Workshop*, 25 – 27 August 2010, Lund, Schweden.
- [342] Sundmacher, K. and Freund, H., Chemical Process Design: Moving Matter Elements Along Optimal Travel Routes in the Thermodynamic State Space, *PSE ASIA 2010 – 5th International Symposium on Design, Operation and Control of Chemical Processes*, 25 – 28 July 2010, Singapore.
- [343] Rollié, S. and Sundmacher, K., Preferential Targeting of Cells with Bionanoparticles: Flow Cytometric Analysis and Multivariate Population Balance Modeling, *WCPT6 – World Congress on Particle Technology*, 26 – 29 April 2010, Nürnberg, Germany.
- [344] Fricke, M., Voigt, A. and Sundmacher, K., Emulsion Droplets as Reactors: A Model-Based Analysis of the Metal Oxide Nanoparticle Synthesis by Diffusive Mass Transfer across the Droplet Interface, *WCPT6 2010 – World Congress on Particle Technology*, 26 – 29 April 2010, Nürnberg, Germany.
- [345] Borchert, C., Ramkrishna, D. and Sundmacher, K., Towards Tailor-Made Crystal Shape Distributions – A Model-Based Analysis, *WCPT6 – World Congress on Particle Technology*, 26 – 29 April 2010, Nürnberg, Germany.

- [346] Vidakovic, T., Ivanov, I. and Sundmacher, K., Anode Coatings for a Direct Glucose Fuel Cell Application (Oral), *ICMCTF 2010 International Conference on Metallurgical Coatings and Thin Films*, 26 – 30 April 2010, San Diego, CA, USA.
- [347] Ivanov, I., Vidaković-Koch, T. and Sundmacher, K., Enzymatic Glucose Fuel Cell - Influence of Structural and Operational Parameters on Performance, *Annual ISE Meeting – 61th Annual Meeting of the International Society of Electrochemistry*, 26 September 2010 – 1 October 2010, Nice, France.
- [348] Vidakovic, T., Ivanov, I. and Sundmacher, K., Kinetics of Glucose Oxidation in an Enzymatic Electrode Assembly, *Annual ISE Meeting – 61th Annual Meeting of the International Society of Electrochemistry*, 26 September 2010 – 1 October 2010, Nice, France.
- [349] Sundmacher, K., Hanke-Rauschenbach, R., Kirsch, S. and Rihko-Struckmann, L. K., Electrochemical Preferential Oxidation (ECPrOx) of CO in a PEM-Reactor for Production the Pure Hydrogen: Experimental and Model-based Process Analysis, *Annual ISE Meeting – 61th Annual Meeting of the International Society of Electrochemistry*, 26 September 2010 – 1 October 2010.
- [350] Kirsch, S., Hanke-Rauschenbach, R. and Sundmacher, K., Modeling Pattern Formation during the Electrochemical Preferential CO Oxidation in CO/H<sub>2</sub> Mixtures, *CHISA 2010 & ECCE-7 (Special Symposium on Electrochem. Eng.)*, 28 August – 1 September 2010, Prague, Czech Republic.
- [351] Sundmacher, K. and Hanke-Rauschenbach, R., Nonlinear Operating Behaviour of Fuel Cells: A Review, *CHISA 2010 & ECCE-7 (Special Symp. on Electrochem. Eng.)*, 28 August – 1 September 2010, Prague, Czech Republic.
- [352] Hertel, C., Heidebrecht, P. and Sundmacher, K., Model Based Design of a Cyclic Watergas Shift Reactor, *CHISA 2010 & ECCE-7 (Special Symp. on Electrochem. Eng.)*, 28 August – 1 September 2010, Prague, Czech Republic.
- [353] Kadyk, T., Hanke-Rauschenbach, R. and Sundmacher, K., Nonlinear Frequency Response Analysis for the Diagnosis of Carbon Monoxide Poisoning in PEM Fuel Cell Anodes, *CHISA 2010 & ECCE-7 (Special Symp. on Electrochem. Eng.)*, 28 August – 1 September 2010, Prague, Czech Republic appeared in: *Journal of Applied Electrochemistry*, Vol. 41, 1021-1032 (2011).
- [354] Adiche, C. and Sundmacher, K., A Novel Membrane Distillation based Continuous Micro-Device for the Separation of Liquid Mixtures, *PRES 2010*, 28 August – 1 September 2010, Prague, Czech Republic.
- [355] Adiche, C. and Sundmacher, K., Selection of membrane contactors used in a membrane distillation based micro-separator, *7th European Congress of Chemical Engineering ECCE-7 and 19th International Congress of Chemical and Process*, 28 August – 1 September 2010, Prague, Czech Republic.
- [356] Flockerzi, D. and Sundmacher, K., On Coupled Lane-Emden Equations Arising in Dusty Fluid Models, *Murphy 5*, 31 May – 3 June 2010, Pécs, Hungary appeared in: *Journal of Physics: Conference Series (JPCONF) 268 (2011) Vol. 012006*.
- [357] Bajcinca, N., Perl, R. and Sundmacher, K., Convex optimization for shape manipulation of multidimensional crystal particles, *21st European Symposium on Computer Aided Process Engineering*, 29 May - 1 June 2011, Chalkidiki, Greece , appeared in, Vol. 29, 855-859,ISSN: 1570-7946.

- [358] Peschel, A., Hentschel, B., Freund, H. and Sundmacher, K., Optimal Reactor Design for the Hydroformylation of Long Chain Alkenes in Biphasic Liquid Systems, *21st European Symposium on Computer Aided Process Engineering*, 29 May - 1 June 2011, Chalkidiki, Greece, appeared in, Vol. 29, *Comput-Aided Chem En*, 1246-1250, ISSN: 1570-7946.
- [359] Sharma, D., Rihko-Struckmann, L. K. and Sundmacher, K., Emerging need of Studying Quorum Sensing and Signal Transduction in Microalgae for Boosting the Product of Biofuels from Algae, *5th International Algae Congress 2011*, 1 – 2 December 2011, Berlin, Germany.
- [360] Sundmacher, K., Hanke-Rauschenbach, R., Kirsch, S. and Rihko-Struckmann, L. K., Dynamics of Electrochemical CO Oxidation in PEM Fuel Cells, *International Conference on Engineering of Chemical Complexity*, 4 – 8 July 2011, Berlin, Germany.
- [361] Sharma, D., Rihko-Struckmann, L. K. and Sundmacher, K., Controlling the Interactions between Microalgae, Bacteria and Fungi: Towards Synthetic Cellular Communities as Possible Basis for Future Biochemical Production Processes, *Algae Europe 2011*, 5 – 7 October 2011, Milan, Italy.
- [362] Kadyk, T., Kirsch, S., Hanke-Rauschenbach, R. and Sundmacher, K., Autonomous potential oscillations at the Pt anode of a PEM Fuel Cell under CO poisoning, *MODVAL8 - 8th Symposium on Fuel Cell Modeling and Experimental Validation*, 8 – 9 March 2011, Bonn, Germany.
- [363] Hanke-Rauschenbach, R., Mangold, M. and Sundmacher, K., Nonlinear Dynamics of Fuel Cells: A Prototype Model, *220th ECS Meeting*, 9 – 14 October 2011, Boston, USA.
- [364] Kadyk, T., Kirsch, S., Hanke-Rauschenbach, R. and Sundmacher, K., Autonomous potential oscillations in a PEM fuel cell with a Pt anode operated with H<sub>2</sub>/CO mixtures, *220th ECS Meeting*, 9 – 14 October 2011, Boston, USA.
- [365] Kadyk, T., Hanke-Rauschenbach, R. and Sundmacher, K., Discrimination of performance limiting processes in PEMFC using nonlinear frequency response analysis, *220th ECS Meeting*, 9 – 14 October 2011, Boston, USA.
- [366] Bajcinca, N. and Sundmacher, K., Convex Optimization for Shape Manipulation of Crystal Populations, *ISIC 18 – 18th International Symposium on Industrial Crystallization*, 13 – 16 September 2011, Zurich, Switzerland.
- [367] Hentschel, B., Peschel, A., Freund, H. and Sundmacher, K., Rational Reactor Design for the Hydroformylation of Higher Olefins based on a Dynamic Optimization Approach, *ICHEME Event Rational Catalyst and Process Design*, September 19-20, 2011, University College, Oxford, UK.
- [367] Voigt, A. and Sundmacher, K., Molecular Modeling of Crystal Shape Evolution in Solutions, *International Conference on Simulation Technology 2011* 14 – 17 June 2011, Stuttgart, Germany.
- [368] Oettel, C., Rihko-Struckmann, L. K. and Sundmacher, K., Impact of Pt-Ru on the CO Tolerance and Dynamic Step Behaviour of the HT-PEMFC, *Hydrogen + Fuel Cells 2011*, 15 – 18 May 2011, Vancouver, BC, Canada.
- [369] Hertel, C., Heidebrecht, P. and Sundmacher, K., The Cyclic Watergas Shift Reactor for Carbon Monoxide Removal – Experimental Validation, Design and Evaluation, *HFC 2011 – Hydrogen + Fuel Cells 2011*, 15 – 18 May 2011, Vancouver, BC, Canada.

- [370] Hentschel, B., Peschel, A., Freund, H. and Sundmacher, K., Modellbasierte Optimierung der zweiphasigen Hydroformylierung höherer Olefine in innovativen Lösungsmittel-Systemen (Poster), *44. Jahrestreffen Dt. Katalytiker und Jahrestreffen Reaktionstechnik*, 16 – 18 March 2011, Weimar, Germany.
- [371] Hertel, C., Heidebrecht, P. and Sundmacher, K., Der zyklische Wassergas-Shiftreaktor – Zeitkonstanten, Modellierung und experimentelle Validierung, *44. Jahrestreffen Deutscher Katalytiker und Jahrestreffen Reaktionstechnik*, 16 – 18 March 2011, Weimar, Germany.
- [372] Singh, A., Hanke-Rauschenbach, R. and Sundmacher, K., Modeling of Morphology Transformations In Crystalline Materials: A Generalized Framework, *AICHE 2011*, 16 – 21 October 2011, Minneapolis.
- [373] Singh, A., Meenesh, R., Borchert, C., Sundmacher, K. and Ramkrishna, D., Experimental Investigation of Crystal Shape Evolution During Growth and Dissolution, *AICHE 2011*, 16 – 21 October 2011, Minneapolis.
- [374] Flassig, R. and Sundmacher, K., Design of Robust Discrimination Experiments for Modeling Biochemical Reaction Networks, *MaCKiE 2011*, 18 – 20 May 2011, Heidelberg, Germany.
- [375] Chen, L., Ye, Y., Qi, Z., Freund, H. and Sundmacher, K., Highly Selective Oxidation of Cyclohexanol to Cyclohexanone in Ionic Liquids, *APCRE - 6th Asia Pacific Chemical Reaction Engineering Symposium*, 18 – 21 September 20, Beijing, China.
- [376] Hentschel, B., Peschel, A., Freund, H. and Sundmacher, K., Rational Reactor Design for the Hydroformylation of Higher Olefins based on a Dynamic Optimization Approach, *ICHEME – Catalysis Subject Group*, 19 – 20 September 2011, Oxford, UK.
- [377] Hentschel, B., Peschel, A., Freund, H. and Sundmacher, K., Optimal Reactor Design for the Hydroformylation of Higher Olefins in a Multiphase System, *EPIC 2011 – The 3rd European Process Intensification Conference*, 21 – 23 June 2011, Manchester, UK.
- [378] Hartono, B., Heidebrecht, P. and Sundmacher, K., Exergy based Methodology in Energy System Design, *DBFZ - Workshop Fließschemasimulationen*, 23 June 2011, Leipzig, Germany.
- [379] Peschel, A., Karst, F., Freund, H. and Sundmacher, K., Optimal Reactor Design for Ethylene Oxidation Production, *ECCE 2011/ECAB 2011*, 25 - 29 September 2011, Berlin, Germany.
- [380] Hanke-Rauschenbach, R., Mangold, M. and Sundmacher, K., Nonlinear Dynamics of Fuel Cells: A Survey Based on a Prototype Model, *ECCE 2011/ECAB 2011*, 25 - 29 September 2011, Berlin, Germany.
- [381] Freund, H., Peschel, A., Hentschel, B. and Sundmacher, K., Optimal Reactor Design and Operation for Multiphase Systems, *ECCE 2011/ECAB 2011*, 25 - 29 September 2011, Berlin, Germany.
- [382] Zhou, S., Chen, L., Qi, Z., Freund, H. and Sundmacher, K., Mutual Solubility of Water with Ionic Liquids, *ECCE 2011/ECAB 2011*, 25 - 29 September 2011, Berlin, Germany.
- [383] Heuer, M., Käbisch, M., Styczynski, Z., Bensmann, B., Bornhöft, A. and Sundmacher, K., Effiziente Elektroenergieversorgung im Kraftfahrzeug durch ein Brennstoffzellenhilfsstromaggregat, *10. Magdeburger Maschinenbau-Tage*, 27 – 29 September 2011, Magdeburg, Germany

- [384] Zinser, A., Rihko-Struckmann, L. K. and Sundmacher, K., Energetic Comparison of the Utilization of CO<sub>2</sub> for Production of Methanol or Methane as a Chemical Storage for Renewable Energy, *ICCDU XI – 11th International Conference on carbon dioxide utilization*, 27 – 30 June 2011, Dijon, France.
- [385] Flassig, R. and Sundmacher, K., Design of Stimulus Experiments for Robust Model Discrimination, *ICSB 2011*, 28 August – 1 September 2011, Heidelberg, Germany.
- [386] Hanke-Rauschenbach, R., Mangold, M. and Sundmacher, K., Nonlinear Operating Behaviour of PEM Fuel Cells, *EFCF 2011 - European Fuel Cell Forum 2011*, 28 June - 1 July, 2011, Lucerne, Switzerland.
- [387] Hertel, C., Heidebrecht, P. and Sundmacher, K., Design and Evaluation of a Cyclic Fixed Bed Reactor for Hydrogen Purification, *EFCF 2011 - European Fuel Cell Forum 2011*, 28 June – 1 July, 2011, Lucerne, Switzerland.
- [388] Zhou, S., Chen, L., Ye, Y., Qi, Z., Freund, H. and Sundmacher, K., Screening Ionic Liquid for Toluene/Isooctane Extraction by COSMO-RS, *ICPI 2011 – International Conference on Process Intensification for Sustainable Chemical Industries*, June 26 – 29, 2011, Beijing, China.
- [389] Hanke-Rauschenbach, R., Kirsch, S. and Sundmacher, K., Spatiotemporal Pattern Formation during deep CO Removal from Reformate Gas in an Electrochemical Membrane Reactor, *ESCAPE-21*, May 29 – June 1, 2011, Chalkidiki, Greece appeared in: *Computer Aided Chemical Engineering* Vol. 29, 201-205 (2011), ISSN: 978-0-444-53711-9.
- [390] Zeng, A. P. and Sundmacher, K., Biosystemtechnik: Design neuer biologischer Produktionssysteme, *DECHEMA 2012*, Karlsruhe, Germany appeared in: *Chemie Ingenieur Technik*, WILEY-VCH Verlag, Vol. 84, 1328-1328, ISSN: 1522-2640.
- [391] Peschel, A., Jörke, A., Sundmacher, K. and Freund, H., Optimal reaction concept and plant wide optimization of the ethylene oxide process, *ISCRE 22*, 2-5 September 2012, Maastricht, The Netherlands appeared in: *Chemical Engineering Journal*, Vol. 207–208, 656-674, ISSN: 1385-8947.
- [392] Oettel, C., Rihko-Struckmann, L. and Sundmacher, K., Combined Separation and Generation of Hydrogen from Reformat Gas in an Electrochemical Water Gas Shift Reactor, (EWGSR), *WHEC 2012*, 3.-7. Juni 2012, Toronto, Canada.
- [393] Temmel, E., Borchert, C., Lorenz, H., Seidel-Morgenstern, A. and Sundmacher, K., Experimentelle Untersuchung der Kristallform- und Größenentwicklung zur Bestimmung von Wachstumskinetiken, *Jahrestreffen der ProcessNet-Fachgruppen Agglomerations- und Schüttguttechnik & Kristallisation 2012*, 5.-6. März 2012, Wittenberg.
- [394] Sharma, D., Rihko-Struckmann, L. and Sundmacher, K., Systems Biology Studies for Understanding and Controlling Metabolic Systems in Microalgae: Challenges in Biofuel Production, *IFSL 2012*, 5.-7. März 2012, New Delhi, India.
- [395] Freund, H., Peschel, A. and Sundmacher, K., Intensivierung des sauerstoffbasierten Ethylenoxid-Prozesses: Optimaler Reaktor für den Gesamtprozess, *ProcessNet Jahrestagung 2012*, 10.-13. September 2012, Karlsruhe, Germany.
- [396] Kuwertz, R., Gonzalez, M., I., Kunz, U., Sundmacher, K., Turek, T. and Vidaković-Koch, T., Elektrolyse von gasförmigem Chlorwasserstoff in einem PEM-Brennstoffzellenreaktor, *Jahrestreffen Reaktionstechnik 2012*, 14-16 May, 2012, Würzburg, Germany.



- [397] Karst, F., Freund, H., Maestri, M. and Sundmacher, K., Incorporating Micro Reaction Kinetics in Dynamic Optimization: Intensified Reactor concepts for the Catalytic Partial Oxidation (CPO) of Methane, *JT Reaktionstechnik*, 14.-16. Mai 2012, Würzburg, Germany.
- [398] Freund, H., Peschel, A. and Sundmacher, K., Ermittlung der optimalen Reaktionsführung im prozesstechnischen Kontext am Beispiel der Ethylenoxidsynthese, *JT Reaktionstechnik*, 14.-16. Mai 2012, Würzburg, Germany.
- [399] Vidaković-Koch, T., Ivanov, I., Do Thi, Q. N., Varnicic, M. and Sundmacher, K., Energy Conversion in Bioelectrochemical Systems, *ISE 2012*, 19-24 August 2012, Prague, Czech Republic.
- [400] Bensmann, B., Pena Arias, I. K., Hanke-Rauschenbach, R. and Sundmacher, K., High pressure hydrogen production by means of asymmetric water electrolysis - A realistic option?, *ISE 2012*, 19-24 August 2012, Prague, Czech Republic.
- [401] Heidebrecht, P., Hanke-Rauschenbach, R., Jörke, A. and Sundmacher, K., Cascade of oscillating electrochemical converters for deep CO-removal from H<sub>2</sub>/CO-mixtures: A model-based design approach, *ISE 2012*, 19-24 August 2012, Prague, Czech Republic.
- [402] Gonzalez, Martinez M., I., Sundmacher, K. and Vidaković-Koch, T., Interrelation of catalyst layer parameters for more physically reasonable gas diffusion electrode modeling, *ISE 2012*, 19-24 August, 2012, Prague, Czech Republic.
- [403] Bensmann, B., Schlingmann, Y., Hanke-Rauschenbach, R. and Sundmacher, K., Influence of operating conditions on mass transport in a PEM water electrolysis cell: theoretical and experimental analysis, *ISE 2012 Satellite Meeting: Electromembrane Processes and Materials*, 26-29 August 2012, Cesky Krumlov, Czech Republic.
- [404] Do Thi, Q. N., Varnicic, M., Vidaković-Koch, T. and Sundmacher, K., Application of electrochemical Impedance Spectroscopy for Studying of Redox Enzyme Kinetics, *ISE 2012*, August 19-24, Prague, Czech Republic.
- [405] Vidaković-Koch, T., Ivanov, I., Do Thi, Q. N., Varnicic, M. and Sundmacher, K., Energy Conversion in Bioelectrochemical Systems, *ISE 2012*, August 19-24, 2012, Prague, Czech Republic.
- [406] Do Thi, Q. N., Varnicic, M., Vidaković-Koch, T. and Sundmacher, K., Application of Electrochemical Impedance Spectroscopy for Studying of Redox Enzyme Kinetics, *ISE 2012*, August 19-24, 2012, Prague, Czech Republic.
- [407] Bensmann, B., Schlingmann, Y. and Hanke-Rauschenbach, R., Sundmacher, K., Influence of operating conditions on mass transport in a PEM water electrolysis cell: Theoretical and experimental analyses, *ISE 2012 Satellite Meeting: Electromembrane Processes and Materials*, August 26-29, 2012, Cesky Krumlov, Czech Republic.
- [408] Kirsch, S., Hanke-Rauschenbach, R. and Sundmacher, K., Experimental investigation of autonomous oscillations and pattern formation in a PEM fuel cell operated with H<sub>2</sub>/CO mixtures, *ISE 2012 Satellite Meeting: Electromembrane Processes and Materials*, August 26-29, 2012, Cesky Krumlov, Czech Republic.
- [409] Temmel, E., Borchert, C., Eisenschmidt, H., Seidel-Morgenstern, A., Lorenz, H. and Sundmacher, K., Online-Analyse der Kristallform- und -größenentwicklung bei Kristallisationsprozessen, *8. Kolloquium Prozessanalytik Berlin 2012*, December 2-4, 2012, Berlin, Germany.

- [410] Flassig, R. J., Maubach, G., Schenkendorf, R., Mangold, M., Sundmacher, K. and Naumann, M., Systems Biology of Genotoxic Stress Induced DNA Double-Strand Breaks, *SBMC 2012*, July 9-11, 2012, Leipzig, Germany.
- [411] Voigt, A., Sundmacher, K., Multidimensional Monte Carlo Cell Population Dynamics in Virus Replication Systems, *PSE 2012*, July 15-19, 2012, Singapur.
- [412] Flassig, R. and Sundmacher, K., Nonlinear design of stimulus experiments for optimal perturbation analysis of biochemical systems, *PSE 2012*, July 15-19, 2012, Singapur.
- [413] Zinser, A., Rihko-Struckmann, L. and Sundmacher, K., Storage of Renewable Energies via Chemical Conversion using CO<sub>2</sub>: Energy Systems Analysis, *PSE 2012*, July 15-19, 2012, Singapur.
- [414] Bornhöft, A., Hanke-Rauschenbach, R. and Sundmacher, K., Steady-state multiplicity of a biogas production system based on anaerobic digestion, *PSE 2012*, July 15-19, 2012, Singapur.
- [415] Peschel, A., Jörke, A., Freund, H. and Sundmacher, K., Model-based Development of Optimal Reaction Concepts for Plant Wide Process Intensification, *PSE 2012*, July 15 – 19, 2012, Singapore.
- [416] Peschel, A., Jörke, A., Freund, H. and Sundmacher, K., Model-based development of optimal reaction concepts for plant wide process intensification, *PSE 2012*, July, 15-19, 2012, Singapur.
- [417] Oettel, C., Rihko-Struckmann, L. K. and Sundmacher, K., Combined Separation and Generation of Hydrogen from Reformat Gas in an Electrochemical Water Gas Shift Reactor (EWGSR), *WHEC 2012*, June 3 – 7, 2012, Toronto, Canada.
- [418] Facht, M., Rihko-Struckmann, L. and Sundmacher, K., Metabolic network construction and analysis in *Dunaliella salina*, *Young Algaeneers Symposium*, June 14-16, 2012, Wageningen, The Netherlands.
- [419] Pirwitz, K., Grammel, H., Rihko-Struckmann, L. and Sundmacher, K., Analysis of dynamic interactions in a coculture of green algae and purple nonsulfur bacteria, *Young Algaeneers Symposium*, June 14 - 16, 2012, Wageningen, The Netherlands.
- [420] Borchert, C., Temmel, E., Eisenschmidt, H., Lorenz, H., Seidel-Morgestern, A. and Sundmacher, K., Experimental Investigation of Crystal Size and Shape Dynamics, *ECCG4*, June 17-20, 2012, Glasgow.
- [421] Voigt, A. and Sundmacher, K., Monte Carlo Simulation of Shape Evolution in Solutions – A Model Study of BaSO<sub>4</sub> Precipitation, *ESCAPE 22*, June 17 – 20, 2012, London, UK.
- [422] Eisenschmidt, H. and Sundmacher, K., Bestimmung von Kristallformverteilungen aus binären Bildern, *Jahrestreffen der ProcessNet-Fachgruppen Agglomerations- und Schüttguttechnik & Kristallisation 2012*, March 5 – 6, 2012, Wittenberg, Germany.
- [423] Temmel, E., Borchert, C., Lorenz, H., Seidel-Morgenstern, A. and Sundmacher, K., Experimentelle Untersuchung der Kristallform- und Größenentwicklung zur Bestimmung von Wachstumskinetiken, *Jahrestreffen der ProcessNet-Fachgruppen Agglomerations- und Schüttguttechnik & Kristallisation*, March 5 – 6, 2012, Wittenberg, Germany.
- [424] Sharma, D., Rihko-Struckmann, L. K. and Sundmacher, K., Systems Biology Studies for Understanding and Controlling Metabolic Systems in Microalgae: Challenges in Biofuel Production, *IFSL 2012*, March 5 – 7, 2012, New Delhi, India.

- [425] Karst, F., Freund, H., Maestri, M. and Sundmacher, K., Incorporating Micro Reaction Kinetics in Dynamics Optimization: Intensified Reactor Concepts for the Catalytic Partial Oxidation (CPO) of Methane, *Jahrestreffen Reaktionstechnik 2012*, May 14 – 16, 2012, Würzburg, Germany.
- [426] Freund, H., Peschel, A. and Sundmacher, K., Process Intensification in Ethylene Oxide Production: Optimal Reactor Design from a Process Point of View, *2012 AIChE Annual Meeting*, October 28 - November 2, 2012, Pittsburgh, USA.
- [427] Freund, H., Peschel, A. and Sundmacher, K., Intensivierung des sauerstoffbasierten Ethylenoxid-Prozesses: Optimaler Reaktor für den Gesamtprozess, *ProcessNet Jahrestagung 2012*, 10.-13. September 2012, Karlsruhe, Germany
- [429] Peschel, A., Jörke, A., Sundmacher, K. and Freund, H., Optimal Reaction Concept and Plant Wide Optimization of the Ethylene Oxide Process, *ISCRE 22*, September 2 – 5, 2012, Maastricht, The Netherlands.
- [430] Hentschel, B., Peschel, A., Freund, H. and Sundmacher, K., Optimal Reactor Design for the Hydroformylation of long chain Olefins, *ISCRE 22*, September 2 – 5, 2012, Maastricht, The Netherlands.
- [431] Karst, F., Freund, H., Maestri, M. and Sundmacher, K., Optimal Reactor Design for the Catalytic Partial Oxidation (CPO) of Methane Based on a Micro Kinetic Model, *ISCRE 22*, September 2 – 5, 2012, Maastricht, The Netherlands.
- [432] Flassig, R. J., Heise, S., Sundmacher, K. and Klamt, S., An effective Framework for Gene Regulatory Network Reconstruction from Genetical Genomics Data, *GCB 2012*, September 19-22, 2012, Jena, Germany.
- [433] Hentschel, B., Peschel, A., Freund, H. and Sundmacher, K., Optimale Reaktionsführung der Hydroformylierung langkettiger Olefine in innovativen Lösungsmittelsystemen, *Jahrestreffen Reaktionstechnik 2013*, 6-8 May 2013, Würzburg, Germany.
- [434] Eisenschmidt, H., Voigt, A. and Sundmacher, K., Experimentelle Untersuchung zum Auflösungsverhalten von Kaliumdihydrogenphosphat Kristallen, *Jahrestreffen der Fachgruppe Kristallisation*, 14-15 March 2013, Magdeburg, Germany.
- [435] van der Zalm, E. R.-S., L., Sundmacher, K., Experimental analysis and dynamic-kinetic modeling of light energy conversion in microalgae, *2nd European Congress of Applied Biotechnology 2013*, (ECCE-ECAB), 21-24 April 2013, The Hague, The Netherlands.
- [436] Facht, M., Rihko-Struckmann, L. and Sundmacher, K., Fermentation of *Dunaliella Salina* for  $\beta$ -Carotene Production: Modeling and Optimization of Bioreactor Operatio Conditions, *2nd European Congress of Applied Biotechnology 2013*, (ECCE-ECAB), April 21-24, 2013, The Hague, The Netherlands.
- [437] Pirwitz, K., Rihko-Struckmann, L. and Sundmacher, K., Development of an integrated multi-product process based on the photosynthetic organisms *Chlamydomonas reinhardtii* and *Rhodospirillum rubrum*, *2nd European Congress of Applied Biotechnology 2013*, (ECCE-ECAB), April 21-24, 2013, The Hague, The Netherlands.
- [438] Sundmacher, K., Assembling living systems from functional modules: The engineer's view, *Synthetische Biologie*, May 14, 2013, Österreichische Akademie der Wissenschaften, Wien, Austria.

- [439] Ye, K. M., Freund, H. and Sundmacher, K., New Process for Azeotropic Mixture Separation by Phase Behavior Tuning Using Pressurized CO<sub>2</sub>, *ECCE9*, April 21-25, 2013, The Hague, The Netherlands.
- [440] Eisenschmidt, H., Voigt, A. and Sundmacher, K., Estimation of Crystal Shape Distributions from Microscopic Images, *PARTEC 2013*, April 23-25, 2013, Nürnberg, Germany.
- [441] Flassig, R., Heise, S., sy, A., de la Fuente, A., Sundmacher, K. and Klamt, S., Novel Methods for the Reconstruction of Regulatory Networks Based on Perturbation Graphs and Transitive Reduction, *ICSB Copenhagen*, August 30 - September 3, 2013, Copenhagen.
- [442] Flassig, R. and Sundmacher, K., Estimating model response distributions of dynamic systems with distributed parameters for robust optimal design problems, *MaCKiE 2013*, February 4-6, 2013, Madras, India.
- [443] Hanke-Rauschenbach, R., Bensmann, B., Pena Arias, I. K. and Sundmacher, K., High pressure hydrogen production by means of water electrolysis, *3rd International Conference on Energy Process Engineering (ICEPE 2013)*, June 03-06, 2013, Frankfurt am Main/Germany.
- [444] Hanke-Rauschenbach, R., Mangold, A. and Sundmacher, K., Mass transport in PEM fuel cells — A potential source for nonlinear operating behavior, *Hydrogen+Fuel Cells 2013 (HFC2013)*, June 16-19, 2013 Vancouver/Canada.
- [445] Sundmacher, K., Brennstoffzellen als elektrochemische Membranreaktoren: Von der reaktionstechnischen Analyse zum optimierten Reaktordesign, *DECHEMA-Kolloquium "Elektrochemische Reaktionstechnik"*, April 18, 2013, DECHEMA-Haus, Frankfurt am Main, Germany.
- [446] Hanke-Rauschenbach, R., Bensmann, B. and Sundmacher, K., High-pressure water electrolysis for intermediate storage of renewable energy - Process options, energetic analysis and experimental characterization, *Hydrogen+Fuel Cells 2013 (HFC2013)*, June 16-19, 2013 Vancouver/ Canada.
- [447] Varnicic, M., Sundmacher, K., Fluorescence Spectroscopy for the Visualization of the Enzyme Distribution on Enzymatic Fuel Cell Electrodes, *Bioelectrochemistry 2013*, March 17, 2013, Bochum, Germany.
- [448] Hanke-Rauschenbach, R., Bensmann, B. and Sundmacher, K., Hochdruck-Wasserelektrolyse zur Zwischenspeicherung regenerativer Energie — Prozessoptionen, energetische Analyse und experimentelle Charakterisierung, *Jahrestreffen der ProcessNet-Fachgruppe "Energieverfahrenstechnik"*, March 18-19, 2013, Würzburg, Germany.
- [449] Eisenschmidt, H., voigt, A. and Sundmacher, K., Estimation of Crystal Shape Distributions from Microscopic Images, *BIWIC 2013*, September 18-20, 2013, Odense, Denmark.
- [450] Hanke-Rauschenbach, R., Bensmann, B. and Sundmacher, K., Aspekte der Hochdruck-Wasserelektrolyse im Kontext von Power-to-Gas-Anwendungen, *DBI-Fachforum "Energiespeicher — Pilotprojekte"*, September 17 - 18, 2013, Berlin, Germany.
- [451] Hanke-Rauschenbach, R., Bensmann, B., Sundmacher, K., Müller-Syring, G. and Henel, M., Aspects on high-pressure water electrolysis for intermediate storage of renewable energy, *f-cell 2013*, September 30 - October 2, 2013, Stuttgart/Germany.

- [452] Sundmacher, K., Some Elements of Multiscale Chemical Process Design, *Colloquium on Chemical Reaction Engineering 2013 "First Principles Methods in Chemical Reaction Engineering, CCRE Milano*, October 17-18, 2013, Milano, Italy.
- [453] Sundmacher, K., Hoogewerff, lecture "Molecular Structures, Matter Elements, Thermodynamic Routes, Process Networks: Some Elements of the Future Toolbox for Chemical Process Design", *ECCE 9*, April 25, 2013, The Hague, the Netherlands.
- [454] Hentschel, B., Peschel, A., Freund, H. and Sundmacher, K., Optimal Reactor Design for the Hydroformylation of Long Chain Olefins in Thermomorphic Solvent Systems, *AIChE 2013*, November 3 - 8, 2013, San Francisco, USA.
- [455] Vidakovic, T., Varnicic, M., Do Thi, Q. N. and Sundmacher, K., Partial Oxidations in Electroenzymatic Reactors, *Dechema Workshop*, November 11, 2013, Frankfurt, Germany.
- [456] Sundmacher, K., Rationales Reaktordesign für die Hydroformylierung langkettiger Olefine in thermomorphen Lösungsmittelsystemen, Symposium "Advanced Fluids meets Equipment" der Fachgruppe "Advanced Fluids", November 13, 2013, *DECHEMA*, Frankfurt am Main, Germany.
- [457] Sundmacher, K., Design of Chemical Processes in a Multi-level Dynamic Optimization Framework, 4th KoMSO Challenge Workshop, January 23, 2014, *BASF SE Ludwigshafen*, Germany.
- [458] Sundmacher, K., Power-to-Gas: Energetik, Dynamik, Systemdesign, Akzeptanz, Leopoldina-Symposium "Energiespeicher", February 6, 2014, *Nationale Akademie der Wissenschaften Leopoldina*, Halle (Saale), Germany.
- [459] Pirwitz, K., Rihko-Struckmann, L. and Sundmacher, K., Establishment of a multi-stage production system with photosynthetic microorganisms, *Young Algaeneers + Alg'n'Chem conference*, April 3-5, 2014, Montpellier, France.
- [460] Facht, M., Rihko-Struckmann, L. and Sundmacher, K., Analysis of *Dunaliella salina* cellular properties during carotenogenesis using spectro- and fluorometric techniques (Oral), *Young Algaeneers + Alg'n'Chem conference*, April 3-5, 2014, Montpellier, France.
- [461] Hamel, C., Hentschel, B., Kiedorf, G., Markert, J., Jörke, A., Gerlach, M., Sundmacher, K. and Seidel-Morgenstern, A., Prozessführungsstrategien für die Hydroformylierung von 1-Dodecen in einem Mehrphasen-Lösungsmittelsystem, *Jahrestreffen Reaktionstechnik*, April 28-30, 2014, Würzburg, Germany.
- [462] Kaiser, N. M., Hentschel, B. and Sundmacher, K., Technische Realisierung eines optimalen Reaktors für die Hydroformylierung langkettiger Olefine in thermomorphen Lösungsmittelsystemen, *Jahrestreffen Reaktionstechnik*, April 28-30, 2014, Würzburg, Germany.
- [463] Hanke-Rauschenbach, R., Bensmann, B. and Sundmacher, K., High-Pressure PEM Water Electrolysis: in-Situ Measurement of Hydrogen Crossover, *225th ECS Meeting*, May 11-16, 2014, Orlando, FL, USA.
- [464] Bensmann, A., Hanke-Rauschenbach, R. and Sundmacher, K., Reaktor-Konfigurationen für Biogas-Anlagen: Eine modellgestützte Analyse, *Biogas-Workshop des ifak*, May 20, 2014, Erfurt, Germany.
- [465] Hanke-Rauschenbach, R., Kirsch, S., Sundmacher, K., Understanding complex operating behavior of PEM fuel cells fed with H<sub>2</sub>/CO-mixtures by means of modeling and model reduction , *97th Canadian Chemistry Conference 2014*, June 1-5, 2014, Vancouver, Canada.

- [466] Pirwitz, K., Rihko-Struckmann, L.R., Sundmacher, K. Process analysis of  $\beta$ -carotene with *Dunaliella salina*, *Algal Biomass, Biofuels & Bioproducts*, June 15-18, 2014, Santa Fe/USA.
- [467] Facht, M., Rihko-Struckmann, L.K., Sundmacher K., Biomass composition analysis of *Dunaliella salina* under carotenogenic conditions, *Algal Biomass, Biofuels & Bioproducts*, June 15-18, 2014, Santa Fe/USA.
- [468] Eisenschmidt, H., Voigt, A., Sundmacher, K., Image Based Real Time Crystal Shape Observer, *6th International Congress on Pharmaceutical Engineering (ICPE 6)*, June 16-17, 2014, Graz/Swiss.
- [469] Bensmann, B., Hanke-Rauschenbach, R., Sundmacher, K., Systems consideration for high-pressure water electrolysis: Energy-optimal configuration of electrolysis, compression and product drying, *14th Ulm Electrochemistry Talks*, June 23-26, 2014, Ulm, Germany.
- [470] Bensmann, A., Hanke-Rauschenbach, R., Heyer, R., Kohrs, F., Benndorf, D., Sundmacher, K., Methanation of renewable hydrogen within biogas reactors? A process systems engineering approach, *CHISA 2014*, August 23-27, 2014, Prague/Czech Republic.
- [471] Bensmann, B., Hanke-Rauschenbach, R., Sundmacher, K., In-situ characterisation of hydrogen crossover in polymer electrolyte membrane water electrolysis, *65th Annual Meeting of the International Society of Electrochemistry*, August 31 – September 5, 2014, Lausanne/Switzerland.
- [472] Kirsch, S., Pena Arias, I.K., Hanke-Rauschenbach, R., Sundmacher, K., Experimental study of autonomous oscillations and patterns in a PEM fuel cell operated with H<sub>2</sub>/CO mixtures, *65th Annual Meeting of the International Society of Electrochemistry*, August 31 – September 5, 2014, Lausanne/Switzerland.
- [473] Varničić, M., Vidaković-Koch, T., Sundmacher, K., Partial Glucose Oxidation in Electroenzymatic Reactor, *65th Annual Meeting of the International Society of Electrochemistry*, August 31 – September 5, 2014, Lausanne/Switzerland.
- [474] Do, T. Q. N., Varničić, M., Hanke-Rauschenbach, R., Vidaković-Koch, T., Sundmacher, K., Mathematical Modeling of a Porous Enzymatic Electrode with Direct Electron Transfer Mechanism, *65th Annual Meeting of the International Society of Electrochemistry*, August 31 – September 5, 2014, Lausanne/Switzerland.
- [475] Wang, W., Voigt, A., Wolff, M., Reichl, U., Sundmacher, K., A Synthetic Biology Approach to Affinity Membrane Adsorption, *ProcessNet-Annual Meeting*, September 30 - October 2, 2014, Aachen/Germany.
- [476] Zinser, A., Rihko-Struckmann, L.K., Sundmacher, K., Dynamic Optimization of a Methanol Synthesis Process using renewable Hydrogen and CO<sub>2</sub>, *ProcessNet-Annual Meeting*, September 30 - October 2, 2014, Aachen/Germany.
- [477] Bensmann, A., Hanke-Rauschenbach, R., Heyer, R., Kohrs, F., Benndorf, D., Reichl, U., Sundmacher, K., Methanisierung von erneuerbarem Wasserstoff in Biogas-Anlagen, *ProcessNet-Annual Meeting*, September 30 - October 2, 2014, Aachen/Germany.
- [478] Bensmann, B., Hanke-Rauschenbach, R., Sundmacher, K., Aspekte der Hochdruck-Wasserelektrolyse im Kontext von Power-to-Gas-Anwendungen, *ProcessNet-Annual Meeting*, September 30 - October 2, 2014, Aachen/Germany.
- [479] McBride, K., Sundmacher, K., Conceptual and data driven process design for the hydroformylation of 1-dodecene in a thermomorphic solvent system, *ProcessNet-Annual Meeting*, September 30 - October 2, 2014, Aachen/Germany.

- [480] Vidaković-Koch, T., Varničić, M., Do Thi, Q. N., Sundmacher, K., Electroenzymatic Reactors for Partial Oxidation Processes, *ProcessNet-Annual Meeting*, September 30 - October 2, 2014, Aachen/Germany.
- [481] El Sibai, A., Rihko-Struckmann, L.K., Sundmacher, K., Dynamic Optimisation of the Sabatier Process for Power-to-Gas Applications, *ProcessNet-Annual Meeting*, September 30 - October 2, 2014, Aachen/Germany.
- [482] Kirsch, S., Hanke-Rauschenbach, R., Sundmacher, K., The electro-oxidation of H<sub>2</sub>, CO in a model PEM fuel cell: Oscillations, chaos, pulses, *226th Meeting of the Electrochemical Society*, October 5-10, 2014, Cancun/Mexico.
- [483] Sundmacher, K., Synthetic Biology – Challenges for Chemistry, Physics and Engineering, *CPT Section Symposium Synthetic Biology*, October 23, 2014, Berlin/Germany.
- [484] Zhou, T., Sundmacher, K., Integrated Solvent and Process Design Exemplified for a Diels-Alder Reaction, *AIChE Annual Meeting*, November 16-21, 2014, Atlanta/USA.
- [485] Voigt, A., Wang, W., Sundmacher, K., Key-Lock Systems for Bioseparations - Molecular Simulation for Kinetic Models, *AIChE Annual Meeting*, November 16-21, 2014, Atlanta/USA.
- [486] Wang, W., Voigt, A., Sundmacher, K., Application of synthetic bionanoparticles to affinity membrane adsorption, *Soft Smart Particles: Preparation and Applications*, *DECHMA*, 2014.
- [487] El Sibai, A., Zinser, A., Rihko-Struckmann, L., Sundmacher, K., Synthetic Methane from CO<sub>2</sub>: Dynamic Optimization of the Sabatier Process for Power-to-Gas Applications, *ProcessNet Jahrestreffen der Fachgruppe "Energieverfahrenstechnik"*, February 23-24, Bonn/Germany, 2015.
- [488] Wenzel, M., Rihko-Struckmann, L., Sundmacher, K., CO<sub>2</sub>-Aktivierung mittels Chemical Looping, *ProcessNet Jahrestreffen der Fachgruppe "Energieverfahrenstechnik"*, February 23-24, Bonn/Germany, 2015.
- [489] Schack, D., Rihko-Struckmann, L., Sundmacher, K., Thermodynamische Analyse der Erzeugung flüssiger Kraftstoffe aus erneuerbarer Energie und Biomasse, *ProcessNet Jahrestreffen der Fachgruppe "Energieverfahrenstechnik"*, February 23-24, Bonn/Germany, 2015.
- [490] Zhou, T., Sundmacher, K., Fast Screening and Molecular Design of Solvents for Chemical Reactions based on COSMO-RS-derived Theoretical Descriptors, *4th COSMO-RS Symposium*, March 16-18, Bonn/Germany, 2015.
- [491] Wiedmeyer, V., Voigt, A., Sundmacher, K., Formentwicklung bei der kontinuierlichen Kristallisation, *ProcessNet Jahrestreffen der Fachgruppe "Kristallisation"*, March 16-20, Magdeburg/Germany, 2015.
- [492] Wenzel, M., Rihko-Struckmann, L., Sundmacher, K., CO<sub>2</sub> Activation and Conversion into CO via Chemical Looping, *Energy Science and Technology (EST)*, May 20-22, Karlsruhe/Germany, 2015.
- [493] McBride, K., Sundmacher, K., Computer-aided Design of Solvents for the Recovery of a Homogeneous Catalyst used for Alkene Hydroformylation, *12th International Symposium on Process Systems Engineering and 25th European Symposium on Computer Aided Process Engineering (PSE2015 Conference)*, May 31 - June 4, Copenhagen/Denmark, 2015.

- [494] Sundmacher, K., Multi-Level Design of Process Systems for Efficient Chemicals Production and Energy Conversion, *12th International Symposium on Process Systems Engineering and 25th European Symposium on Computer Aided Process Engineering (PSE Conference)*, May 31 - June 4, Copenhagen/Denmark, 2015, 25-34.
- [495] Flassig, R.J., Facht, M., Rihko-Struckman, L., Sundmacher, K., Robust Process Design for the Bioproduction of b-Carotene in Green Microalgae, *12th International Symposium on Process Systems Engineering and 25th European Symposium on Computer Aided Process Engineering (PSE Conference)*, May 31 - June 4, Copenhagen/Denmark, 2015.
- [496] Eisenschmidt, H., Bajcinca, N., Sundmacher, K., Model-based Observation and Design of Crystal Shapes via Controlled Growth-Dissolution Cycles, *PSE Conference*, May 31 - June 4, Copenhagen/Denmark, 2015.
- [497] EL Sibai, A., Rihko-Struckmann, L., Sundmacher, K., Synthetic Methane from CO<sub>2</sub>: Dynamic Optimization of the Sabatier Process for Power-to-Gas Applications, *12th International Symposium on Process Systems Engineering and 25th European Symposium on Computer Aided Process Engineering (PSE Conference)*, May 31 - June 4, Copenhagen/Denmark, 2015.
- [498] Bajcinca, N., Hofmann, S., Eisenschmidt, H., Sundmacher, K., Generalizing ODE Modeling Structure for Multivariate Systems with Distributed Parameters, *ADCHEM 2015*, June 7-10, Whistler, Canada, 2015.
- [499] Pirwitz, K., Rihko-Struckmann, L., Sundmacher, K., Investigation of Different Flocculation Methods for *Dunaliella* Sp., *Algal Biomass, Biofuels and Bioproducts*, 7 - 10 June, San Diego, USA, 2015.
- [500] Do, T. Q. N., Varničić, M., Flassig, R. J., Vidaković-Koch, T., Sundmacher, K., Dynamic and Steady State 1-D Model of Mediated Electron Transfer in a Porous Enzymatic Electrode, *XXIII International Symposium on Bioelectrochemistry and Bioenergetic*, June 14-18, Malmö, Sweden, 2015.
- [501] Varničić, M., Vidaković-Koch, T., Haak, E., Sundmacher, K., Enzymatic Fuel Cell for Chemical Production, *XXIII International Symposium on Bioelectrochemistry and Bioenergetic*, June 14-18, Malmö, Sweden, 2015.
- [502] Vidaković-Koch, T., Do, T. Q. N., Varničić, M., Sundmacher, K., Towards Rational Design of Bioelectrochemical Systems, *ECHEMS 2015*, June 14-18, 2015, Bad Zwischenahn, Germany, 2015.
- [503] Gerlach, M., Kaiser, N.M., Hentschel, B., Kiedorf, G., Jörke, A., Hamel, C., Seidel-Morgenstern, A. and Sundmacher, K., Process Control Strategies and Identification of Kinetic Parameters based on Dynamic Optimization, *ACHEMA 2015*, June 15-19, 2015, Frankfurt am Main, Germany, 2015.
- [504] Pischel, D., Flassig, R. J., Sundmacher, K., Coping with Heterogeneity and Stochasticity in Microbial Processes, *MACKIE 2015*, July 2-3, Ghent, Belgium, 2015.
- [505] Flassig, R. J., Pischel, D., Sundmacher, K., An Efficient Approach to Parameter Identifiability Analysis in Nonlinear Models, *MACKIE 2015*, July 2-3, Ghent, Belgium, 2015.
- [506] Nogueira, J. A., P. Arias, I. K., Vidaković-Koch, T., Varela, H., Sundmacher, K., Autonomous Voltage Oscillations in a Direct Methanol Fuel Cell (DMFC), *SIBEE (XX Simpósio Brasileiro de Eletroquímica e Eletroanalítica)*, August 17 - 21, Uberlândia, Minas Gerais, Brasilien, 2015.



- [507] Höffner, K., Flassig, R.J., Facht, M., Sundmacher, K., Modeling Metabolite Accumulation and Biomass Composition in Microalgae using Dynamic Flux Balance Analysis, *ECCE10+ECAB3+EPIC5*, September 27 - October 1, Nice, France, 2015.
- [508] Rihko-Struckmann, L., Pirwitz, K., Karani, U., Molnar, M., Flassig, R. J., Sundmacher, K., Mild Hydrothermal Liquefaction of *Dunaliella salina* for the Recovery and Extraction of Valuable Microalgal Ingredients, *ECCE10+ECAB3+EPIC5*, September 27 - October 1, Nice, France, 2015.
- [509] Wang, W., Voigt, A., Wolff, M. W., Reichl, U., Sundmacher, K., Optimization of Affinity Membrane Adsorption by Evaluating Multivalent Interaction, *ECCE10+ECAB3+EPIC5*, September 27 - October 1, Nice, France, 2015.
- [510] Varničić, M., Do, T. Q. N., Vidaković-Koch, T., Haak, E., Sundmacher, K., Enzymatic Electrochemical Reactor for the Batch Production of Gluconic Acid, *ECCE10+ECAB3+EPIC5*, September 27 - October 1, Nice, France, 2015.
- [511] Sorrentino, A., Vidaković -Koch, T., Hanke-Rauschenbach, R., Sundmacher, K., Concentration-induced Electrochemical Impedance Spectroscopy (cEIS) for the Analysis of PEM Fuel Cells, *ECCE10+ECAB3+EPIC5*, September 27 - October 1, Nice, France, 2015.
- [512] Mangal, M., Vidaković -Koch, T., Sundmacher, K., Plant Wide Evaluation Analysis of Hydrogen Chloride Electrolysis for Chlorine Recycling within an Isocyanate Production Process, *ECCE10+ECAB3+EPIC5*, September 27 - October 1, Nice, France, 2015.
- [513] Peña Arias, I.K., Trinke, P., Hanke-Rauschenbach, R., Sundmacher, K., Experimental Investigation on Fuel Cell Dynamics and Local Current Density Inhomogeneity, *ECCE10+ECAB3+EPIC5*, September 27 - October 1, Nice, France, 2015.
- [514] Zhou, T., Sundmacher, K., Robust Design of Optimal Solvents for Chemical Reactions - A Combined Experimental and Computer-Aided Strategy, *PSE2015 Conference*, May 31 - June 4, Copenhagen, Denmark, 2015.
- [516] Zinser, A., Ye, K., Rihko-Struckmann, L., Sundmacher, K., A Dynamic Method for Computing Thermodynamic Equilibria in Process Simulation, *12th International Symposium on Process Systems Engineering and 25th European Symposium on Computer Aided Process Engineering (PSE2015 Conference)*, May 31 - June 4, Copenhagen, Denmark, 2015.
- [517] Kaiser, N.M., Sundmacher, K., Model-based Optimal Design of a Hydroformylation Process with Catalyst Recovery by a Thermomorphic Solvent System, *PSE2015 Conference*, May 31 - June 4, Copenhagen, Denmark, 2015.
- [518] Facht, M., Flassig, R. J., Rihko-Struckmann, L., Sundmacher, K., Model-Based Process Design for Natural  $\beta$ -Carotene: Accounting for Parameter Uncertainties and Process Design Variabilities, *Algal Biomass, Biofuels and Bioproducts*, June 7 - 10, San Diego, USA, 2015.
- [519] Ivanov, I., Krafft, D., Vidaković-Koch, T., Beneyton, T., Baret, J.-C., Sundmacher, K., Glycerol Conversion in Microcompartments, *Biotrans 2015*, July 26 - 30, Vienna, Austria, 2015.

- [520] Bremer, B., Feng, L., Benner, B., Sundmacher, K., Quadratic Approximation for Model Order Reduction in Reaction Engineering, *MORE - Workshop on Model REduction*, September 6-10, Pilsen, Czech Republic, 2015.
- [521] Facht, M., Rihko-Struckmann, L., Sundmacher, K., Durchflusszytometrische Bioprozesskontrolle am Beispiel einer carotinoidbildenden Mikroalge, *8. Bundesalgenstammtisch*, September 7 – 9, Garching/München, Germany, 2015.
- [522] Wiedmeyer, V., Anker, F., Voigt, A., John, V., Sundmacher, K., Crystal Shape Evolution in a Continuous Helically Coiled Flow Tube Crystallizer, *ECCE10+ECAB3+EPIC5*, September 27 - October 1, Nice, France, 2015.
- [523] Zhou, T., Wang, J., Sundmacher, K., Computer-Aided Solvent Design for Extractive Reaction Processes, *ECCE10+ECAB3+EPIC5*, September 27 - October 1, Nice, France, 2015.
- [524] McBride, K., Gaide, T., Vorholt, A., Behr, A., Sundmacher, K., Temperature-switchable Solvents for the Recovery of Homogeneous Catalyst in Alkene Hydroformylation, *DECHEMA Infoday Switchable Solvent Systems*, September 28, Frankfurt am Main, Germany, 2015.
- [525] Kaiser, N.M., Flassig, R.J., Sundmacher, K., Hydroformylation Reactor Design under Model and Design Uncertainties, *DGMK "Synthesis Gas Chemistry"*, October 07 - October 09, Dresden, Germany, 2015.
- [526] Rihko-Struckmann, L., Pirwitz, K., Molnar, M., Sundmacher, K., Exploitation and Utilisation of Carbohydrate Derivatives Recovered from Lipid Extracted Algae, *Industrial Biotechnology Forum 2016 (IBF)*, March 14 – March 15, Garching, Munich, Germany, 2016.
- [527] Flassig, R. J., Facht, M., Höffner, K., Sundmacher, K., Dynamic flux balance modeling to increase the production of high-value compounds in green microalgae, *Industrial Biotechnology Forum 2016 (IBF)*, March 14 – March 15, Garching, Munich, Germany, 2016.
- [528] Facht, M., Rihko-Struckmann, L., Sundmacher, K. Durchflusszytometrische Bioprozesskontrolle am Beispiel einer carotinoidbildenden Mikroalge, *BioProcessing Days*, February 22 – February 24, Recklinghausen, Germany, 2016.
- [529] Pirwitz, K., Rihko-Struckmann, L., Sundmacher, K. Assessment of innovative downstream processes for microalgal  $\beta$ -carotene production, *BioProcessing Days*, February 22 – February 24, Recklinghausen, Germany, 2016.
- [530] Facht, M., Gladebeck, S., Flassig, J. R., Höffner, K., Rihko-Struckmann, L., Sundmacher, K. Model-based Optimization of Microalgal Biorefineries by Dynamic Flux Balance Analysis (DFBA), *CAPE Forum 2016*, March 30 – April 01, EPFL Valais-Wallis, Sion, Swiss, 2016.
- [531] Krafft, D., Kleineberg, C., Bednarz, C., Ivanov, I., Vidakovic-Koch, T., Sundmacher, K. A cell-free, self-sustaining metabolic platform, *EUSynBioS Symposium 2016*, April 09 – April 10, London, United Kingdom, 2016.
- [532] Wiedmeyer, V., Voigt, A., Sundmacher, K. Analysis of Growth Kinetics of a Multivariate Crystal Population in a Continuous Crystallizer, *PARTEC 2016*, April 19 – April 21, Nuremberg, Germany, 2016.

- [533] Flassig, R. J., Facht, M., Höffner, K., Sundmacher, K. Dynamic flux balance modeling to increase the production of high-value compounds in green microalgae, *Young Algaeneers Symposium 2016*, April 23 – April 25, Malta, 2016.
- [534] Flassig, R. J., Facht, M., Höffner, K., Sundmacher, K. Dynamic flux balance modeling to increase the production of high-value compounds in green microalgae, *ENCAPP 2016*, April 26 – April 29, Malta, 2016.
- [535] Sundmacher, K. Integrated Solvent Selection and Process Design for the Efficient Recovery of Homogeneous Catalysts in Hydroformylation Processes, *Tunable Solvents For Green Processing/International Symposium "InPROMPT 2016"*, June 2 – 3, Berlin, Germany, 2016.
- [536] Zinser, A., Rihko-Struckmann, L., Sundmacher, K. Computationally Efficient Steady-State Process Simulation by Applying a Simultaneous Dynamic Method, *ESCAPE26: 26th European Symposium on Computer Aided Process Engineering*, June, 12-15, Portorož, Slovenia, 2016.
- [537] Pischel, D., Flassig, R.J., Sundmacher, K. Efficient simulation of heterogeneity and stochasticity in microbial processes, *ESCAPE26: 26th European Symposium on Computer Aided Process Engineering*, June, 12-15, Portorož, Slovenia, 2016.
- [538] Kaiser, N.M., Flassig, R.J., Sundmacher, K. Design and Comparison of Optimal Reactor Concepts for the Hydroformylation of Olefins by Use of a Probabilistic Design Framework, *ESCAPE26: 26th European Symposium on Computer Aided Process Engineering*, June, 12-15, Portorož, Slovenia, 2016.
- [539] Schack, D, Rihko-Struckmann, L., Sundmacher, K. Structure optimization of power-to-chemicals (P2C) networks by linear programming for the economic utilization of renewable surplus energy, *ESCAPE26: 26th European Symposium on Computer Aided Process Engineering*, June, 12-15, Portorož, Slovenia, 2016.
- [540] Bremer, J., Goyal, P., Feng, L., Benner, P., Sundmacher, K. Nonlinear Model Order Reduction for Catalytic Tubular Reactors, *ESCAPE26: 26th European Symposium on Computer Aided Process Engineering*, June, 12-15, Portorož, Slovenia, 2016.
- [541] Wenzel, M., Rihko-Struckmann, L., Sundmacher, K. CO<sub>2</sub> Activation via Reverse Water Gas Shift (RWGS) Processes: A Comparative Thermodynamic Analysis, *ISCRE24*, June, 12-15, Minneapolis, USA, 2016.
- [542] Bremer, J., Rätze, K.H.G., Sundmacher, K. CO<sub>2</sub> Methanation: Optimal Start-Up Control of a Fixed-Bed Reactor for Power-To-Gas Applications, *ISCRE 24*, June 12-15, Minneapolis, USA, 2016.
- [543] Zhou, T., Sundmacher, K. Computer Aided Molecular Design (CAMD): Integration of molecular decisions into process systems design, *4th international conference on sustainable chemical product and process engineering (SCPPE)*, May, 31-June 4, Minneapolis, USA, 2016
- [544] Sorrentino, A., Vidaković-Koch, T., Sundmacher, K., Concentration frequency response analysis: a new method for the study of the PEM fuel cell dynamics, *10th International Symposium on Electrochemical Impedance Spectroscopy*, June 19-24, A Toxa, Galicia, Spain, 2016.

- [545] Kovačević, T., Wiedmeyer, V., Schock, J., Pfeiffer, F., Voigt, A., Sundmacher, K., Briesen, H., Orientation of Primary Particles in Potash Alum Aggregates, *BIWIC 2016*, September 6-8, Magdeburg, Germany, 2016.
- [546] Fricke, M., Voigt, A., Sundmacher, K., Shaping without Touching: ZnO Nanoparticle Production in Miniemulsions, *Processnet-Jahrestagung*, September 12-15, Aachen, Germany, 2016.
- [547] Himmel, A., Rihko-Struckmann, L., Sager, S., Sundmacher, K., Modellgestützte optimale Steuerung von Biogasanlagen, *Processnet- Jahrestagung*, September 12-15, Aachen, Germany, 2016.
- [548] Do Thi, Q. N., Krishna, G.S.R., Varnicic, M., Vidakovic-Koch, T., Sundmacher, K., Multi-step Biotransformations by Electroenzymatic Cascades, *EU-ISMET 2016*, September 26-28, Rome, Italy, 2016.
- [549] Sorrentino, A., Vidakovic-Koch, T., Sundmacher, K., Beyond classical EIS: A new Method for Analysing the Dynamics of PEM Fuel Cells, *Electrochemistry 2016*, September 26-28, Goslar, Germany, 2016.
- [550] Schack, D., Rihko-Struckmann, L., Sundmacher, K., Strukturoptimierung von Renewables-to-Chemicals (R2Chem) Netzwerken zur wirtschaftlichen Nutzung erneuerbarer Energien, *Processnet-Jahrestagung*, September 12-15, Aachen, Germany, 2016.
- [551] Ivanov, I., Mangold, M., Otrin, L., Vidakovic-Koch, T., Sundmacher, K., Nachahmung essentieller Lebensprozesse in synthetischen Biosystemen, *Heiligenstädter Kolloquium, Technische Systeme für Lebenswissenschaften*, September 19-21, Heiligenstadt, Germany, 2016.
- [552] Flassig, R.J., Facht, M., Gladebeck, S., Pirwitz, K., Rihko-Struckmann, L., Sundmacher, K., Modeling of Biomass Composition Using Dynamic Flux Balance Analysis for Optimization of Microalgal Biorefineries, *FOSBE 2016*, October 09-12, Magdeburg, Germany, 2016.
- [553] Voigt, A., Wiedmeyer, V., Sundmacher, K., Agglomeration in a Fluidized Bed Crystallizer - from Experiments to Modeling, *AIChE Annual Meeting 2016*, November 13-18, San Francisco, USA, 2016.
- [554] Wenzel, M., Rihko-Struckmann, L., Sundmacher, K., Optimization of Reverse Water-Gas Shift Chemical Looping for Continuous Production of Syngas from CO<sub>2</sub>, *AIChE Annual Meeting 2016*, November 13-18, San Francisco, USA, 2016.
- [555] Aydin, E., Sundmacher, K., Dynamic Optimization of Constrained Semi-Batch Processes using Pontryagin's Minimum Principle-An Effective Quasi-Newton Based Approach, *AIChE Annual Meeting 2016*, November 13-18, San Francisco, USA, 2016.
- [556] Liesche, G., Sundmacher, K., Multiscale modeling for high temperature heterogeneous gas phase synthesis reactions: HCN synthesis, *AIChE Annual Meeting 2016*, November 13-18, San Francisco, USA, 2016.
- [557] Kaiser, N.M., Sundmacher, K., Optimal Reactor-Separator-Network Synthesis, *AIChE Annual Meeting 2016*, November 13-18, San Francisco, USA, 2016.
- [558] Bremer, J., Goyal, P., Feng, L., Benner, P., Sundmacher, K., Optimization and Reduced Order Modeling of CO<sub>2</sub> Methanation Reactors, *KoMSO Challenge Workshop "Reduced-Order Modeling for Simulation and Optimization"*, November 17-18, Renningen, Germany, 2016.

- [559] Kraft, D., Ivanov, I., Vidakovic-Koch, T., Baret, J.-C., Beneyton, T., Sundmacher, K., Metabolic Conversions in Microcompartments, *MicroTAS 2016*, 9 - 13 October 2016, Dublin, Ireland, 2016.
- [560] Bremer, J., Goyal, P., Feng, L., Benner, P., Sundmacher, K., Towards Fast Optimal Control of CO<sub>2</sub> Methanation Reactors via POD-DEIM, *MODRED 2017*, January 11-13, Odense, Denmark, 2017.
- [561] Bremer, J., Rätze, K., Sundmacher, K., Dynamische CO<sub>2</sub> Methanisierung – Optimale Betriebsführung eines Festbettreaktors für Power to Gas Anwendungen, *ProcessNet Jahrestreffen GAS, EVT, AuW, HTT und RuK*, March 22, Frankfurt am Main, Germany, 2017.
- [562] Kaiser, N.M., Flassig R.J., Sundmacher, K., From the Reaction Network to Optimal Process Design via Flux Analysis – Exemplified by the Hydroformylation of 1-Dodecene, *Jahrestreffen Reaktionstechnik 2017*, May 22-24, Wuerzburg, Germany, 2017.
- [563] Krafft, D., Wang, M., Otrin, L., Ivanov, I., Vidakovic-Koch, T., Sundmacher, K., Functionalized Membranes for Bottom-up Synthetic Biology, *DEHEMA Workshop Systems Biology meets Synthetic Biology*, May 2-3, Frankfurt am Main, Germany, 2017.
- [564] Kleineberg, C., Caire da Silva, L., Vidakovic-Koch, T., Bannwarth, M. B., Sundmacher, K., Landfester, K., Light-induced ATP synthesis for synthetic biology applications, *DEHEMA Workshop Systems Biology meets Synthetic Biology*, May 2-3, Frankfurt am Main, Germany, 2017.
- [565] McBride, K., Kaiser, N.M., Sundmacher, K., Influence of enhanced homogeneous catalyst recovery on optimal reactor trajectories in the hydroformylation of 1-dodecene, *Jahrestreffen Reaktionstechnik 2017*, May 22-24, Wuerzburg, Germany, 2017.
- [566] Jokiel, M., Mansour, M., Kaiser, N.M., Zähringer, K., Janiga, G., Nigam, K., Thévenin, D., Sundmacher, K., Helix Reactor for Gas-Liquid-Reactions: Characterization of Mass Transfer and Axial Dispersion, *Jahrestreffen Reaktionstechnik 2017*, May 22-24, Wuerzburg, Germany, 2017.
- [567] Otrin, L., Bednarz, C., Marusic, N., Vidakovic-Koch, T., Landfester, K., Sundmacher, K., Bottom-up Reconstitution of Artificial Respiratory Chain into Natural and Synthetic Containers, *Designer Biology Symposium*, June 7-9, Vienna, Austria, 2017.
- [568] Zinser, A., Papakonstantinou, G., Sundmacher, K., PEM Water Electrolysis: Analysis of Transport Processes in the Anodic Porous Transport Layer, *ESEE 2017*, June 4-8, Prague, Czech Republic, 2017.
- [569] Liesche, G., Sundmacher, K., Analysis of key heat transport phenomena in a high temperature catalytic reactor, *SFGP30*, July 11-13, Nancy, France, 2017.
- [570] Pischel, D., Sundmacher, K., Flassig, R.J., Efficient simulation of intrinsic, extrinsic and external noise in biochemical systems, *ISMB/ECCB*, July 21-25, Prague, Czech Republic, 2017.
- [571] Jokiel, M., Wagner, L.M., Kaiser, N.M., Mansour, M., Zähringer, K., Janiga, G., Nigam, K., Thévenin, D., Sundmacher, K., Measurement and Simulation of Macro- and Micro-Mixing Effects in a Helically Coiled Tube Reactor, *GLS13*, August 20-23, Brussels, Belgium, 2017.
- [572] Zinser, A., Sundmacher, K., Process Optimization by Applying a Simultaneous Dynamic Method, *WCCE10+ECCE11+ECAB4*, October 01-05, Barcelona, Spain, 2017.
- [573] Himmel, A., Sager, S., Sundmacher, K., Set-point tracking of a biogas plant using distributed plant information, *ESCAPE 2017*, October 01-05, Barcelona, Spain, 2017.

- [574] Schack, D., Rihko-Struckmann, L., Sundmacher, K., An economic linear objective function approach for structure optimization of renewables-to-chemicals (R2Chem) networks, *ESCAPE 2017*, October 01-05, Barcelona, Spain, 2017.
- [575] McBride, K., Sundmacher, K., Surrogate Modeling of Liquid-Liquid Equilibria for Process Optimization Purposes, *ESCAPE 2017*, October 01-05, Barcelona, Spain, 2017.
- [576] Rätze, K. H. G., Bremer, J., Biegler, L. T., Sundmacher, K., Physics-Based Surrogate Models for Optimal Control of a CO<sub>2</sub> Methanation Reactor, *ESCAPE 2017*, October 01-05, Barcelona, Spain, 2017.
- [577] Wenzel, M., Rihko-Struckmann, L., Sundmacher, K., Continuous Production of Syngas from CO<sub>2</sub> by Reverse Water-Gas Shift Chemical Looping Processes, *WCCE 2017*, October 01-05, Barcelona, Spain, 2017.
- [578] Liesche, G., Sundmacher, K., Optimization of a High Temperature Catalytic Wall Reactor: Synthesis of Hydrogen Cyanide, *WCCE 2017*, October 01-05, Barcelona, Spain, 2017.
- [578] Bremer, J., Rätze, K. H. G., Benner, P., Sundmacher, K., Fast Optimal Control of CO<sub>2</sub> Methanation Reactors via Reduced Order Models, *ECCE/WCCE 2017*, October 01-05, Barcelona, Spain, 2017.
- [579] Pena Arias, I.K., Hanke-Rauschenbach, R., Sundmacher, K., Experimental Characterization of an Electrochemical Preferential Oxidation Reactor, *WCCE10*, October 01-05, Barcelona, Spain, 2017.
- [580] Pischel, D., Buchbinder, J. H., Flassig, R. J., Lavrik, I. N., Sundmacher, K., Process Monitoring with Imaging Flow Cytometry – a Machine Learning Approach, *ECAB/WCCE 2017*, October 01-05, Barcelona, Spain, 2017.
- [581] Rihko-Struckmann, L., Oluyinka, O., McBride, K., Facht, M., Sundmacher, K., Mild Liquefaction of Dunaliella remnant to 5-HMF and levulinic acid under biphasic reaction, *ECAB/WCCE 2017*, October 01-05, Barcelona, Spain, 2017.
- [582] Vidakovic-Koch, T., Otrin, L., Kleineberg C., Krafft D., M. Wang, Bednarz, C., Marusic, N., Ivanov I., Sundmacher, K., Bottom-up design and reconstitution of energy regeneration infrastructure of an artificial cell, *Jahreskongress 2017 Biotechnologie 2020+ "Nächste Generation biotechnologischer Verfahren"*, October 04, Jülich, Germany, 2017.
- [583] Aydin, E., Bonvin, D., Sundmacher, K., NMPC of Semi-Batch Processes under uncertainty using PMP, *AICHE 2017*, October 29 –November 03, Minneapolis, USA, 2017.
- [584] Bremer, J., Benner, P., Sundmacher, K., Fast Optimal Control of Exothermic Packed-Bed, *AICHE 2017*, October 29 –November 03, Minneapolis, USA, 2017.
- [585] Pischel, D., Sundmacher, K., Flassig, R.J., Efficient simulation of variability and heterogeneity in bioprocess engineering, *MATHMOD 2018*, 21.-23. February, Wien, Austria, 2018.
- [586] Wiedmeyer, V., Voigt, A., Le Borne, S., Sundmacher, K., Experimentelle Aggregation im Wirbelschichtkristaller zur Modellierung von Aggregationskernen, *ProcessNet Jahrestreffen MPH & WSUE & CFD, HTT & AuW, KRI, PMT*, 6.-9. March, Bremen, Germany, 2018.

- [587] Bremer, J., Sundmacher K., Dynamisch geregelte Methanisierung von CO<sub>2</sub>: Neue Betriebsstrategien für flexible PtG Anlagen, *JT ProcessNet: EVT 2018*, 7 - 8 March, Frankfurt am Main, Germany, 2018.
- [588] Uebbing, J., Rihko-Struckmann, L., Sundmacher K., Exergy Efficiency Analysis of Methane as a Chemical Energy Carrier for Renewable Energies, *JT ProcessNet: EVT 2018*, 7. - 8. March, Frankfurt am Main, Germany, 2018.
- [589] Linke, S., McBride, K., Xu, S., Sundmacher, K., Green solvent screening for thermomorphic multicomponent systems exemplified for hydroformylation of long-chain olefins, *COSMO-RS Symposium*, 06.-07. March, Cologne, Germany, 2018.
- [590] Song, Z., Zhou, T., Sundmacher, K., Systematic method for screening ionic liquids as extraction solvents exemplified by extractive desulfurization process, *COSMO-RS Symposium*, 06.-07. March, Cologne, Germany, 2018. [591] R. Ahrens, F. Anker, C. Bartsch, A. Voigt, V. Wiedmeyer, K. Sundmacher, V. John, S. Le Borne, ADVANCED NUMERICAL METHODS FOR THE SIMULATION OF POPULATION BALANCE SYSTEMS, *6th International Conference on Population Balance Modelling*, 07.-09 Mai, Ghent, Belgium, 2018.
- [591] Ahrens, R., Anker, F., Bartsch, C., Voigt, A., Wiedmeyer, V., Sundmacher, K., John, V., Le Borne, S., ADVANCED NUMERICAL METHODS FOR THE SIMULATION OF POPULATION BALANCE SYSTEMS, *6th International Conference on Population Balance Modelling*, 07.-09 Mai, Ghent, Belgium 2018.
- [592] Kozłowski, A., Pischel, D., Fachel, M., Pirwitz, K., Flassig, R. J., Sundmacher, K., From Lab to Outdoor: Modeling Light Fluctuations in Algal Photobioreactors to Identify Economically Feasible Solutions, *Young Algaeneers Symposium*, 16.-18. Mai, Oban, Scotland, 2018.
- [593] Liesche, G., Sundmacher, K., Design of a High Temperature Catalytic Wall Reactor: Steam Methane Reforming, *ISCRE25 (International Symposium of Chemical Reaction Engineering)*, 20.-23. Mai, Florence, Italy, 2018.
- [594] Jokiel, M., Kaiser, N. M., Zähringer, K., Nigam, K. D. P., Sundmacher, K., Helically Coiled Segmented Flow Tubular Reactor for the Hydroformylation of Long-Chain Olefins in a Thermomorphic Multicomponent Solvent System, *ISCRE25 (International Symposium of Chemical Reaction Engineering)*, 20.-23. Mai, Florence, Italy, 2018.
- [595] Bremer, J., Sundmacher, K., Stabilizing Unstable Operation Regimes of Cooled Exothermic Fixed-Bed Reactors, *ISCRE25 (International Symposium of Chemical Reaction Engineering)*, 20.-23. Mai, Florence, Italy, 2018.
- [596] Rätze, K. H. G., Jokiel, M., Kaiser, N. M., Sundmacher, K., Cyclic Operation of a Semi-Batch Reactor for the Hydroformylation of Long-Chain Olefins and Integration in a Continuous Production Process, *ISCRE25 (International Symposium of Chemical Reaction Engineering)*, 20.-23. Mai, Florence, Italy, 2018.
- [597] Wenzel, M., Rihko-Struckmann, L., Sundmacher, K. Modelling Coupled Conduction-Convection-Radiation for Reactive Flows in High Temperature Applications: Synthesis of Hydrogen Cyanide, *ISCRE25 (International Symposium of Chemical Reaction Engineering)*, 20.-23. Mai, Florence, Italy, 2018.

- [598] Wenzel, M., Rihko-Struckmann, L., Sundmacher, K., Modelling Coupled Conduction-Convection-Radiation for Reactive Flows in High Temperature Applications: Synthesis of Hydrogen Cyanide, *FFHMT'18 (International Conference on Fluid Flow, Heat & Mass Transfer)*, 07.-09. June, Niagara Falls, Canada, 2018.
- [599] Liesche, G., Sundmacher, K., Thermodynamic Network Flow Approach for Chemical Process Synthesis, *ESCAPE-28*, 10.-13. June, Graz, Austria, 2018.
- [600] Liesche, G., Schack, D., Rätze, K., Sundmacher, Dynamic Operation of Exothermic Fixed-Bed Reactors for Flexible Fuel Production exemplified for CO<sub>2</sub> Methanation, *Tailor-Made Fuels – From Production to Propulsion*, 19.-21. June, Aachen, Germany, 2018.
- [601] McBride, K., Linke, S., Xu, S., Sundmacher, K., Computer Aided Design of Green Thermomorphic Solvent Systems for Homogeneous Catalyst Recovery, *PSE 2018 - 13th International Symposium on Process Systems Engineering*, 01.-05. July, San Diego, CA, USA, 2018.
- [602] Bechtel, S., Song, Z., Zhou, T., Vidacovik-Koch, T., Sundmacher, K., Integrated Process and Ionic Liquid Design by Combining Flowsheet Simulation with Quantum-Chemical Solvent Screening, *PSE 2018 - 13th International Symposium on Process Systems Engineering*, 01.-05. July, San Diego, CA, USA, 2018.
- [603] Uebbing, J., Rihko-Struckmann, L., Sundmacher, K., Exergy efficiency of power to methane processes using CO<sub>2</sub> from anaerobic digestion, *CHISA 2018*, 25.-29. August, Prague, Czech Republic, 2018.
- [604] Sorrentino, A., Vidaković-Koch, T., Sundmacher, K., Studying mass transport dynamics in PEMFCs using concentration-alternating frequency response analysis, *69th ISE Annual Meeting*, 02.-07. September, Bologna, Italy, 2018.
- [605] Himmel, A., Sager, S., Sundmacher, K., Flexibler Betrieb von Biogasanlagen mittels inversionsbasierter zeitoptimaler Steuerung, *ProcessNet-Jahrestagung und 33. DECHEMA-Jahrestagung der Biotechnologen 2018*, 10.-13. September, Aachen, Germany, 2018.
- [606] McBride, K., Linke, S., Sundmacher, K., Greener Solvents in Homogeneous Catalyst Recovery, *ProcessNet-Jahrestagung und 33. DECHEMA-Jahrestagung der Biotechnologen 2018*, 10.-13. September, Aachen, Germany, 2018.
- [607] Bremer, J., Sundmacher, K., Flexible Production of Synthetic Methane: Dynamic Operation and Control of Fixed-Bed Methanation Reactors, *ProcessNet-Jahrestagung und 33. DECHEMA-Jahrestagung der Biotechnologen 2018*, 10.-13. September, Aachen, Germany, 2018.
- [608] Wiedmeyer, V., Voigt, A., Anker, F., John, V., Ahrens, R., Le Borne, S., Sundmacher, K., Kontinuierliche formselektive Kristallisation: Neue Strategien, *ProcessNet-Jahrestagung und 33. DECHEMA-Jahrestagung der Biotechnologen 2018*, 10.-13. September, Aachen, Germany, 2018.
- [609] Schack, D., Liesche, G., Sundmacher, K., Renewables-to-Chemicals: Optimaler Prozessentwurf für eine nachhaltige Methanolproduktion unter Einsatz von CO<sub>2</sub>, *ProcessNet-Jahrestagung und 33. DECHEMA-Jahrestagung der Biotechnologen 2018*, 10.-13. September, Aachen, Germany, 2018



**Further Oral Presentations (58)**

- [1] Sundmacher, K., Importance of Irreversible Thermodynamics for Liquid Phase Ion Exchange Catalysis: Experimental Verification for MTBE-Synthesis, *Deutsche Luft- und Raumfahrtgesellschaft (DLR)*, 5 May 1992, Göttingen, Germany.
- [2] Sundmacher, K., Kopplung von chemischen Reaktionen und physikalischen Transportphänomenen bei der Reaktivdestillation, *Lehrstuhl für Thermische Verfahrenstechnik der Universität Dortmund*, 10 October 1995, Dortmund, Germany.
- [3] Sundmacher, K., Reaktivdestillation, *Verfahrenstechnisches Kolloquium der BASF AG*, 4 June 1996, Ludwigshafen, Germany.
- [4] Sundmacher, K., Reactive Distillation, *Department of Chemical Engineering, University of Amsterdam*, 25 September 1996, Amsterdam, Netherlands.
- [5] Sundmacher, K., Reaktions- und prozeßtechnische Grundlagen der Herstellung von MTBE, *Institut für Chemische Verfahrenstechnik, Universität Stuttgart*, 30 November 1996, Universität Stuttgart, Stuttgart, Germany.
- [6] Sundmacher, K. and Uhde, G., Modeling, Simulation, Operation and Analysis of Reactive Distillation Processes, *Department of Chemical Engineering, University of Amsterdam*, 14 July 1998, Amsterdam, The Netherlands.
- [7] Sundmacher, K. and Kolah, A., Integration of Reaction and Distillation in Multifunctional Reactors, *Mobil Technology Company*, 17 June 1999, Paulsboro, New Jersey, U.S.A.
- [8] Sundmacher, K., Einsatz mathematischer Methoden in der Systemverfahrenstechnik, *Kolloquium des Weierstraß-Instituts*, 10 April 2000, Berlin, Germany.
- [9] Sundmacher, K., Kolah, A. and Qi, Z., Reaktive Destillationssysteme, *Verfahrenstechnisches Kolloquium der Degussa-Hüls AG*, 16 March 2000, Marl, Germany.
- [10] Sundmacher, K., Katalytische Destillationsprozesse: Auswahlkriterien, Einsatzfelder, Betriebsverhalten, *Verfahrenstechnisches Kolloquium der Degussa-Hüls AG*, 27 October 2000, Marl, Germany.
- [11] Sundmacher, K., Brennstoffzellen und elektrochemische Membranreaktoren: Entwicklung, Betrieb, Modellierung und Prozessanalyse, *Fakultätskolloquien der Universitäten Karlsruhe, Dortmund und Erlangen-Nürnberg*, 6-8 November 2001, Germany.
- [12] Sundmacher, K., Reaktive Destillationsprozesse, *Verfahrenstechnisches Kolloquium der Universität Sofia*, 19 November 2001, Sofia, Bulgaria.
- [13] Sundmacher, K., Schultz, T., Munder, B., Ginkel, M. and Mangold, M., Modellbildung und systemwissenschaftliche Analyse von Brennstoffzellen – auf dem Weg zu einem virtuellen Labor, *DFG-Kolloquium „Neue Schichtstrukturen für Brennstoffzellen“*, 21-23 May 2001, Pommersfelden, Germany.
- [14] Sundmacher, K., Rauscher, F., Steyer, C. and Niemann, B., Modellierung und Simulation von Fällungsreaktionen in Emulsionen, *Max-Planck-Institut für Mathematik in den Naturwissenschaften*, 19 November 2002, Leipzig, Germany.

- [15] Sundmacher, K. and Qi, Z., Separative Reactors: Concepts and Evaluation, *Scientific Symposium of the Max-Planck-Institute for Complex Technical Systems*, 24 May 2002, Magdeburg, Germany.
- [16] Sundmacher, K., Fuel Cell Systems, *Seminar des Fritz-Haber-Instituts der Max-Planck-Gesellschaft*, 25 September 2002, Berlin, Germany.
- [17] Sundmacher, K., Mangold, M. and Heidebrecht, P., Modellierung und Simulation von Schmelzcarbonat-Brennstoffzellen, *Seminar des IWE, Universität Karlsruhe*, 16 January 2003, Karlsruhe, Germany.
- [18] Sundmacher, K., Modellierung der Prozessdynamik von Schmelzcarbonat-Brennstoffzellen, *Seminar über Nichtlinearität und Unordnung in komplexen Systemen*, 20 January 2003, Magdeburg, Germany.
- [19] Sundmacher, K., Catalytic Distillation, *Ringvorlesung Katalyse des Fritz-Haber-Instituts*, 20 November 2003, Berlin, Germany.
- [20] Sundmacher, K., Prozesse der Reaktivdestillation: Einsatzgebiete, Entwurf und Betrieb, *GdCh-Kolloquium*, 2 December 2004, Oldenburg, Germany.
- [21] Sundmacher, K., Rihko-Struckmann, L. K. and Galvita, V., Solid Electrolyte Membrane Reactors – Status and Trends, *Seminar of the Department of Chemical Engineering*, 4 November 2004, University of Purdue, West Lafayette, U.S.A.
- [22] Sundmacher, K., Krewer, U., Schultz, T., Vidakovic, T., Christov, M. and Pfafferoth, M., Nichtlineare Dynamik der Direkt-Methanolfuelstoffzelle: Modellierung und Analyse, *Seminar at the University of Ulm*, 6-7 June 2005, Ulm, Germany.
- [23] Sundmacher, K., Heidebrecht, P., Gundermann, M., Mangold, M., Kienle, A., Koch, M. and Berndt, J., Operation and Analysis of MCFCs with Direct Internal Reforming, International Centre for Science and High Technology of UNIDO (ICS-UNIDO), *Expert Group Meeting "Technologies for hydrogen production and fuel cells"*, 7-8 March 2005, Trieste, Italy.
- [24] Sundmacher, K., Magdeburger Brennstoffzelle stellt Weltrekord auf, *Festveranstaltung 30.000 Stunden – Weltbestzeit im Betrieb einer MCFC-Brennstoffzellenanlage-MTUHotModule*, June 14, 2006, Magdeburg, Germany.
- [25] Sundmacher, K., Elektrochemische Energieumwandlung mit Brennstoffzellen – neue Wege der Energiegewinnung, *1200 Jahre Magdeburg – 12 Vorlesungen zur Wissenschaft*, October 26, 2005, Magdeburg, Germany.
- [26] Sundmacher, K., Elektrochemische Energieumwandlung mit Brennstoffzellen-Systemen, *Max-Planck-Institut für Plasmaphysik*, June 15, 2006, Greifswald, Germany.
- [27] Sundmacher, K., Elektrochemische Energieumwandlung mit Brennstoffzellen-Systemen, *Nordrhein-Westfälische Akademie der Wissenschaften*, November 15, 2006, Düsseldorf, Germany.
- [28] Sundmacher, K., Elektrochemische Energieumwandlung mit Brennstoffzellen – neue Wege der Energiegewinnung, *Naturkundemuseum – Naturwissenschaftliche Vereine*, November 28, 2006, Magdeburg, Germany.
- [29] Sundmacher, K., Populationsdynamik disperser Systeme in der Verfahrenstechnik, *Jahre verfahrenstechnische Forschung und Lehre in Magdeburg*, October 6, 2006, Magdeburg, Germany.

- [30] Sundmacher, K., Einsatz von Mikro- und Miniemulsionen als alternative Medien zur Durchführung chemischer Reaktionen, *ProcessNet-Fachtagung „Unkonventionelle Reaktionssysteme“*, April 20, 2007, Frankfurt, Germany.
- [31] Sundmacher, K., Multifunktionale Reaktoren, *GDCh-Kolloquium*, February 8, 2007, Magdeburg, Germany.
- [32] Sundmacher, K., Electrochemical Energy Conversion using Fuel Cell Systems, *Faculty of Natural Sciences and Technology*, June 29, 2007, Trondheim, Norway.
- [33] Sundmacher, K., Fuel Cell Systems for Electrochemical Energy Conversion, *Max-Planck-Institut für Sonnensystemforschung*, March 22, 2007, Göttingen, Germany.
- [34] Sundmacher, K. and Freund, H., Intensivierung chemischer Produktionsprozesse, *BASF Ludwigshafen*, April 17, 2008, Ludwigshafen, Germany.
- [35] Sundmacher, K. and Engel, R., Nanopartikel-Synthese in Mikro- und Miniemulsionen, *DECHEMA-Kolloquium*, October 30, 2008, Frankfurt, Germany.
- [36] Sundmacher, K., Model-based Development of Fuel Cell Technologies for Mobile and Stationary Power Supply Systems, *Tongji-University*, September 11, 2008, Shanghai, China.
- [37] Sundmacher, K., Strom aus Stroh: Von der Biomasse zur Brennstoffzelle, *Max-Planck-Forum: Gespräche über Energie München*, June 8, 2010, München, Germany.
- [38] Sundmacher, K., Using Droplets as Chemical Reactors: Synthesis of Nanoparticles in Emulsions, *East China University of Science and Technology*, October 18, 2010, Shanghai, China.
- [39] Sundmacher, K., Towards Dream Processes: Systems Engineering Concepts for the Design of Efficient Chemical Production Routes, *DSM*, October 10, 2011, Geleen, Netherlands.
- [40] Sundmacher, K., Dynamic Optimization of Catalytic Reactors, *Workshop DeMiR 2011: from Detailed Microkinetics to the Reactor*, September 6, 2011, München, Garching, Germany.
- [41] Sundmacher, K., Strom aus Stroh: Von der Biomasse zur Brennstoffzelle, *MNU-Tag Südbayern 2011*, September 23, 2011, Universität Augsburg, Germany.
- [42] Borchert, C., Eisenschmidt, H. and Sundmacher, K., Morphology Evolution of Crystal Populations: Modeling, Observation, Control, *University of Cambridge*, February 2, 2012, Cambridge, UK.
- [43] Sundmacher, K., Controlling the Morphology Evolution of Crystals: Modeling and First Experiments, *CBI Kolloquium*, July 19, 2012, Erlangen, Germany.
- [44] Sundmacher, K., Strom und Wärme aus Sonne, Wind und Biomasse, 27 February 2013, *Deutsches Museum*, München, Germany.
- [45] Sundmacher, K., Nonlinear Dynamics of Electrochemical CO Oxidation in PEM Fuel Cells, *Max Planck Institut Dynamische Systeme*, August 28, 2013, Göttingen, Germany.
- [46] Sundmacher, K., Zur Frage der modellgestützten Optimierung biotechnologischer Produktionsprozesse, *BASF SE*, July 8, 2013, Ludwigshafen, Germany.

- [47] Sundmacher, K., Multiscale Process Design for Chemicals and Fuel Production: Towards a Sustainable Energy Conversion System, *Workshop "The Future of Energy Technology"*, July 9, 2013, MPS Headquarters, Munich, Germany.
- [48] Sundmacher, K., Multiscale Optimal Process Design: The Elementary Process Functions Methodology, *3rd Summer School of the IMPRS for Analysis, design, and Optimization in Chemical and Biochemical Process Engineering*, September 2-6, 2013, Magdeburg, Germany.
- [49] Eisenschmidt, H., Wiedmeyer, V., Borchert, C., Bajcinca, N. and Sundmacher, K., Shape-Selective Crystallization: Modeling, Observation, Control, *TU Graz*, Institut für Prozess- und Partikeltechnik, April 24, 2014, Graz, Austria.
- [50] Hanke-Rauschenbach, R., Mangold, M. and Sundmacher, K., Nonlinear dynamics of fuel cells: A survey, *Institute of Technical Thermodynamics at the German Aerospace Center*, Stuttgart/Germany, 2014.
- [51] Sundmacher, K., Synthetic Biology: Challenges for Chemistry, Physics and Engineering, *CPT Section Symposium Synthetic Biology*, October 23, 2014, Berlin/Germany.
- [52] Sundmacher, K., Wohin entwickelt sich die Synthetische Biologie in Deutschland?, *Podiumsdiskussion im Rahmen der Jahrestagung der Forschungsorganisationen zum Strategieprozess „Biotechnologie 2020+ - neue Generation biotechnologischer Verfahren“*, September 22, 2015, Berlin/Germany.
- [53] Sundmacher, K., Mathematical Optimization of Chemical Energy Conversion Systems, *7<sup>th</sup> COSMO Workshop*, October 8 - 9, 2015, Heidelberg/Germany.
- [54] Sundmacher, K., Translating Desirable Molecular Transformations into an Integrated Chemical Process: A Multi-Scale Design Approach, *Einstein Workshop*, November 2 - 3, 2015, Berlin/Germany.
- [55] Sundmacher, K., MaxSynBio - Status and Future Directions, *MaxSynBio Workshop*, June 6 - 7, 2016, Göttingen/ Germany.
- [56] Sundmacher, K., Mimicking Essential Life Processes in Synthetic Biosystems, *BrisSynBio MaxSynBio Joint Workshop*, April 6 - 7, 2017, Bristol, UK.
- [57] Sundmacher, K., Innovative Elektrochemie in der Energiewende: Herausforderungen und Chancen, *BMBF-Statusseminar zur Fördermaßnahme „InnoEMat“*, November 24, 2017, Leipzig/Germany.
- [58] Sundmacher, K., Bottom-up Synthetic Biology – From Biomolecules to Functional Systems, *Frühjahrstagung der Biotechnologien DECHEMA*, 05-06. March, Frankfurt a.M., Germany, 2018.

#### **Further Publications (5)**

- [1] Sundmacher, K., Kurzer Prozess im chemischen Reaktor, *Max-Planck-Forschung* Vol. 2/2007, S. 52-57, 2007.
- [2] Sundmacher, K., Strom, der aus Holz fließt, *Max-Planck-Forschung* Vol. 2/2010, S. 25-29, 2010.

- [3] Sundmacher, K., Designing the energy system of the future: a complex optimisation problem, Annual Report 2013, *Max Planck Society for the Advancement of Science*, 34-43, 2014.
- [4] Schwille, P. and Sundmacher, K., Life remixed, *Research Perspectives of the Max Planck Society*, 2014, München.
- [5] Schweizer, J., & Sundmacher, K., MaxSynBio: Max-Planck-Forschungsnetzwerk für die Synthetische Biologie. *Biospektrum*, 22 (3), 2016, 323-324.