

## Edited Books and Monographs

- [EM8] Kraume, M., Enders, S., Drews, A., Schomäcker, R., Engell, S., & **Sundmacher, K.** (Eds.) (2022). *Integrated Chemical Processes in Liquid Multiphase Systems. From Chemical Reaction to Process Design and Operation*. Berlin/Boston: de Gruyter GmbH. ISBN: 978-3-11-070943-8. doi: 10.1515/9783110709858
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- [EM6] **Sundmacher, K.** (Ed.) (2012). *Fuel Cell Engineering*. Amsterdam: Academic Press. ISBN: 978-0123868749.
- [EM5] **Sundmacher, K.**, Kienle, A., Pesch, H. J., Berndt, J. F., & Huppmann, G. (Eds.) (2007). *Molten Carbonate Fuel Cells: Modeling, Analysis, Simulation, and Control*. Weinheim: Wiley-VCH. ISBN: 9783527611324. doi: 10.1002/9783527611324.
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## Edited Special Issues

- [ES9] **Sundmacher, K.**, Zhang, X. (2024). Special Issue - Model-based process design. *Current Opinion in Chemical Engineering*, Elsevier. 46, 101047. doi: 10.1016/j.coche.2024.101047.
- [ES8] **Sundmacher, K.**, Engell, S. & Kraume, M. (2022). Special Issue - Process Systems Engineering meets Green Chemistry. *Chemical Engineering Science*, Elsevier. doi: 10.1016/j.ces.2022.117571.
- [ES7] Zhou, T. & **Sundmacher, K.** (2022). Multiscale process systems engineering—analysis and design of chemical and energy systems from molecular design up to process optimization. *Frontiers of Chemical Science and Engineering*, 16, 137–140. doi: 10.1007/s11705-021-2135-x.
- [ES6] Qian, F., Jin, Y., Qin, S. J., & **Sundmacher, K.** (2021). Guest Editorial Special Issue on Deep Integration of Artificial Intelligence and Data Science for Process Manufacturing. *IEEE Transactions on Neural Networks*, 32 (8), 3294–3295. Institute of Electrical and Electronics Engineers. doi: 10.1109/TNNLS.2021.3092896.
- [ES5] Landfester, K. & **Sundmacher, K.** (2019). Special Issue - Bottom-Up Synthetic Biology: Towards the Modular Design of Artificial Cells from Functional Modules. *Advanced Biosystems*, 3 (6). Wiley-VCH. doi: 10.1002/adbi.201900095.
- [ES4] Górák, A., Kraume, M., & **Sundmacher, K.** (2016). Special Issue - Tuneable solvents for intensified reactions and separations. *Chemical Engineering and Processing: Process Intensification*, (99), 86–87. doi: 10.1016/j.cep.2015.12.001.
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- [ES1] **Sundmacher, K.** (2005). Special Issue - Modelling of Fuel Cell Systems. *Fuel Cells*, 5 (1), 3-4. doi: 10.1002/face.200590001

## Journal Articles

- [J486] Bächle, V., Hegde, C. L., Voigt, A., **Sundmacher, K.**, & Gleiß, M. (2025). Tailings as a Source for Generating Valuable Magnesium and Calcium Carbonates by Leaching and Carbonization. *Industrial & Engineering Chemistry Research*, 64, 12064–12073. doi: 10.1021/acs.iecr.5c00797.
- [J485] Minor, A.-J., Sanchez Medina, E. I., Goldhahn, R., Linke, S., Rihko-Struckmann, L., & **Sundmacher, K.** (2025). Chemical recycling of nylon 6 using ionic liquids: From solvent screening to techno-economic assessment. *Separation and Purification Technology*, 2, 136502. doi: 10.1016/j.seppur.2025.136502.
- [J484] Qin, H., Zhang, X., Ruan, J., & **Sundmacher, K.** (2025). Screen ammonium-based deep eutectic solvents for CO<sub>2</sub> capture: Extended UNIFAC-DES, calibrated COSMO-RS, and experiment. *AIChE Journal*. doi: 10.1002/aic.70121.
- [J483] Wang, Z., Zhou, T., & **Sundmacher, K.** (2025). BayesCAMPD: Data-efficient and closed-loop integrated molecular and process design using Bayesian optimization. *AIChE Journal*. doi: 10.1002/aic.70191.
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- [J479] Sanchez Medina, E. I. & **Sundmacher, K.** (2026). Graph neural networks embedded into Margules model for vapor–liquid equilibria prediction. *Fluid Phase Equilibria*, 599: 114520. doi: 10.1016/j.fluid.2025.114520.
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- [J477] Beer, K., Böcher, M., Ganzer, C., Blöbaum, A., Engel, L., De Paula Sieverding, T., **Sundmacher, K.**, & Matthies, E. (2025). Forest-based bioeconomy and bio-based chemical production in the European Union: Policy issues, institutions, actors, and instruments in a changing forest policy subsystem. *Forest Policy and Economics*, 177: 103521. doi: 10.1016/j.forpol.2025.103521.
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## Conference Talks

- [T509] Zimmermann, R. T., Geschke, A., & **Sundmacher, K.** *Enabling Load-Flexible Fixed-Bed Reactor Operation with Core-Shell Catalyst Pellets*. Presented at: AIChE 2025 Annual Meeting. Boston, USA, November 2, 2025.
- [T508] Hegde, Chinmay, Voigt, A., & **Sundmacher, K.** *pH Controlled Selective Precipitation of CaCO<sub>3</sub> and MgCO<sub>3</sub> from Mine Tailings: A Population Balance Modeling Approach*. Presented at: AIChE 2025 Annual Meeting. Boston, USA, November 2, 2025.
- [T507] Klimek, A., Plate, C., Ganzer, C., Sager, S., & **Sundmacher, K.** *Integrating Artificial Neural Networks in Superstructure Optimization for Sustainable Aviation Fuel Production*. Presented at: AIChE 2025 Annual Meeting. Boston, USA, November 2, 2025.
- [T506] Peterson, L., Forootani, A., Sanchez Medina, E. I., Gosea, I. V., Benner, P., & **Sundmacher, K.** *Digital Twin Model Development for Catalytic CO<sub>2</sub> Methanation*. Presented at: AIChE 2025 Annual Meeting. Boston, USA, November 2, 2025.
- [T505] Plate, C., Hahn, M., Klimek, A., Ganzer, C., **Sundmacher, K.**, & Sager, S. *Strategies for Solving Mixed Integer Linear Optimization Problems with Embedded ReLU Artificial Neural Networks*. Presented at: INFORMS 2025 Annual Meeting. Atlanta, US, October 26, 2025.
- [T504] Sethi, S., Ganzer, C., & **Sundmacher, K.** *Property prediction for ionic liquids without prior structural knowledge using limited experimental data: A data-driven neural recommender system leveraging transfer learning*. Presented at: 15th European Congress of Chemical Engineering (ECCE). Lisbon/Portugal, September 8, 2025.
- [T503] Vhora, K., Thévenin, D., **Sundmacher, K.**, & Janiga, G. (2025). *Investigation of Laminar Steady and Unsteady Flows in Gyroid TPMS Structures*. Presented at: Conference on Modelling Fluid Flow (CMFF'25). Budapest/Hungary. August 26 – 29, 2025.
- [T502] Wang, Z., Zhou, T., & **Sundmacher, K.** *Efficient Computer-Aided Molecular and Process Design Driven by Bayesian Optimization*. Presented at: 12th World Congress of Chemical Engineering and 21st Asian Pacific Confederation of Chemical Engineering Congress (WCCE 12 & APCCHE 2025). Beijing, China, July 14, 2025.
- [T501] Hamedi, D., Ganzer, C., & **Sundmacher, K.** *MINLP Optimization of Hydrogen Networks with Discrete Diameters and Strategic Compressor Placement*. Presented at: 12th World Congress of Chemical Engineering and 21st Asian Pacific Confederation of Chemical Engineering Congress (WCCE 12 & APCCHE 2025). Beijing, China, July 14, 2025.
- [T500] Sanchez Medina, E. I., Minor, A.-J., & **Sundmacher, K.** *Systematic comparison between the Gibbs-Helmholtz Graph Neural Network and UNIFAC-IL for solvent pre-selection*. Presented at: 35th European Symposium on Computer Aided Process Engineering (ESCAPE 35). Ghent, Belgium, July 6, 2025.
- [T499] Khalid, M. M., Peterson, L., Sanchez Medina, E. I., & **Sundmacher, K.** *Physics-Informed Graph Neural Networks for Modeling Spatially Distributed Dynamically Operated Processes*. Presented at: 35th European Symposium on Computer Aided Process Engineering (ESCAPE 35). Ghent, Belgium, July 6, 2025.

- [T498] Ganzer, C., Minor, A.-J., Rihko-Struckmann, L., & **Sundmacher, K.** *Comprehensive Life Cycle Assessment for Circular Polyamide*. Presented at: 1st SUSTENS Meeting . Virtual, June 4, 2025.
- [T497] Rihko-Struckmann, L., König-Mattern, L., & **Sundmacher, K.** *Computational design and solvent selection for a zero waste algal biomass biorefinery*. Presented at: RRB Conference 2025 : Renewable Resources & Biorefineries. Turku, Finland, June 2, 2025.
- [T496] Zimmermann, R. T. & **Sundmacher, K.** *Core-Shell Catalyst Pellets: Theoretical Background, Preparation, and Experimental Validation*. Presented at: 58. Jahrestreffen Deutscher Katalytiker. Weimar, Germany, March 12, 2025.
- [T495] Peterson, L., Forootani, A., Sanchez Medina, E. I., Gosea, I. V., Benner, P., & **Sundmacher, K.** *Comparing Surrogate Models for Real-Time Dynamic Reactor Simulations*. Presented at: Digital Twins in Engineering 2025. Paris, France, February 17, 2025.
- [T494] Svitnic, T. & **Sundmacher, K.** *Investigating the design of global-scale Power-to-Methanol production systems: Large- or small-scale chemical plants?*. Presented at: 2024 AIChE Annual Meeting . San Diego, USA, October 27, 2024.
- [T493] Ganzer, C., Rihko-Struckmann, L., & **Sundmacher, K.** *Annual Meeting: Life Cycle Assessment for Polyamide 6: Production, Recycling, Disposal*. Presented at: 2024 AIChE Annual Meeting . San Diego, USA, October 27, 2024.
- [T492] Hamedi, D., Ganzer, C., & **Sundmacher, K.** *Hydrogen pipeline networks: repurposing of natural gas networks vs. design from scratch*. Presented at: 2024 AIChE Annual Meeting . San Diego, USA, October 27, 2024.
- [T491] Klimek, A., Svitnic, T., Ganzer, C., & **Sundmacher, K.** *The influence of technical, economic, and site-specific factors on optimal ammonia production from renewables*. Presented at: 2024 AIChE Annual Meeting . San Diego, USA, October 27, 2024.
- [T490] Peterson, L., Goyal, P. K., Pontes Duff, I., Gosea, I. V., Bremer, J., Benner, P., & **Sundmacher, K.** *Stability-Guaranteed Inference of Reduced-Order Models with Control of Power-to-X Processes*. Presented at: 2024 AIChE Annual Meeting. San Diego, USA, October 27, 2024.
- [T489] Dam, A. P., Franz, T., Papakonstantinou, G., & **Sundmacher, K.** *Catalyst Dissolution in PEM Water Electrolysis: Influence of Time, Current Density, Temperature and Iridium Ion Transport in Single-Pass and Recirculation Water Flow Modes*. Presented at: Electrochemistry 2024. Braunschweig, Germany, September 16, 2024.
- [T488] Balasbas III, S. & **Sundmacher, K.** *Kinetics of Synthetic Multi-Enzyme Reaction Networks: Dynamic Flux Estimation by use of Piecewise Cubic Hermite Interpolating Polynomials (PCHIP)*. Presented at: International Symposium on Chemical Reaction Engineering 2024, ISCRE 28. Turku Finland, June 16, 2024.
- [T487] Zimmermann, R. T., Geschke, A., Peterson, L., Bremer, J., & **Sundmacher, K.** *A Smart Catalytic Fixed-Bed Reactor for CO<sub>2</sub> Methanation*. Presented at: Achema 2024 . Frankfurt, Germany, June 10, 2024.
- [T486] Sanchez Medina, E. I., Minor, A.-J., & **Sundmacher, K.** *A Comparison of the UNIFAC Model vs. Graph Neural Network-based Models for the Prediction of Binary Vapor-Liquid Equilibria*. Presented at: 33rd European Symposium on Applied Thermodynamics 2024. Edinburgh, UK, June 9, 2024.
- [T485] Hiremath , S. A., Kakanov , M., Voigt, A., **Sundmacher, K.**, & Bajcinca , N. *Learning based Adaptive Robust Control of a Precipitation Process*. Presented at: ESCAPE-34. Florence, Italy, June 2, 2024.
- [T484] Klimek, A., Ganzer, C., & **Sundmacher, K.** *Enhancing superstructure optimization via embedded neural networks in optimal process design for sustainable aviation fuel (SAF) production*. Presented at: ESCAPE34. Florence, Italy, June 2, 2024.
- [T483] Svitnic, T. & **Sundmacher, K.** *Spatially distributed power-to-methanol plants in dissimilar locations: specific or standardized designs?*. Presented at: ESCAPE34. Florence, Italy, June 2, 2024.
- [T482] König-Mattern, L., Sanchez Medina, E. I., Komarova, A. O., Linke, S., Rihko-Struckmann, L., Luterbacher, J. S., & **Sundmacher, K.** *PSEvolve: A graph-based solvent design framework*. Presented at: ESCAPE34 . Florence, Italy, June 2, 2024.

- [T481] Peterson, L., Bremer, J., Goyal, P. K., Gosea, I. V., Benner, P., & **Sundmacher, K.** *Learning reduced-order models for dynamic CO<sub>2</sub> methanation using operator inference*. Presented at: ESCAPE-34. Florence, Italy, June 2, 2024.
- [T480] Kay, S., Sanchez Medina, E. I., **Sundmacher, K.**, & Zhang, D. *A symbolic regression based methodology for the construction of interpretable and predictive thermodynamic models*. Presented at: ESCAPE-34. Florence, Italy, June 2, 2024.
- [T479] Hamedi, D., Ganzer, C., & **Sundmacher, K.** *Hydrogen pipeline networks: retrofit vs. new-built*. Presented at: EHEC (European Hydrogen Energy Conference). Bilbao, Spain, March 6, 2024.
- [T478] Franz, T., Dam, A. P., Papakonstantinou, G., & **Sundmacher, K.** *Analysis of PEM water electrolysis system operation strategies and their impact on iridium catalyst dissolution based on onshore wind data*. Presented at: EHEC (European Hydrogen Energy Conference). Bilbao, Spain, March 6, 2024.
- [T477] **Sundmacher, K.** *INTEGRATED COMPUTER-AIDED MOLECULAR, MATERIAL AND PROCESS DESIGN FOR EFFICIENT CHEMICAL PRODUCTION SYSTEMS*. Invited Talk Presented at: 30th Annual Roger Sargent Centre Lecture. London, UK, December 7, 2023.
- [T476] Wang, Z., Zhou, T., & **Sundmacher, K.** *Data-driven integrated design of solvents and extractive distillation processes*. Presented at: 2023 AIChE Annual Meeting. Orlando, USA, November 5, 2023.
- [T475] König-Mattern, L., Sanchez Medina, E. I., Komarova, A. O., Linke, S., Rihko-Struckmann, L., Luterbacher, J., & **Sundmacher, K.** *Tailored solvent design for lignin dissolution using graph neural networks*. Presented at: ECCE 14 & ECAB 7: 14th European Congress of Chemical Engineering and 7th European Congress of Applied Biotechnology. Berlin, Germany, September 17, 2023.
- [T474] Hiremath, S. A., Batool, I., Kakanov, M., Bajcinca, N., Hegde, C., Voigt, A., & **Sundmacher, K.** *Self-Learning Adaptive Robust Control of a Precipitation Process*. Presented at: ECCE 14 & ECAB 7: 14th European Congress of Chemical Engineering and 7th European Congress of Applied Biotechnology. Berlin, Germany, September 17, 2022.
- [T473] Otrin, L., Otrin, N., Bednarz, C., & **Sundmacher, K.** *Bottom-up assembly of A prokaryotic synthetic cell*. Presented at: N.I.C.E. Interational Rendez-vous. Nice, France, June 20, 2023.
- [T472] Zhang, X. & **Sundmacher, K.** *Optimal design of anion-pillared metal-organic frameworks for gas separation*. Presented at: ESCAPE-33. Athens, Greece, June 18, 2023.
- [T471] Minor, A.-J., Goldhahn, R., Rihko-Struckmann, L., & **Sundmacher, K.** *Techno-Economic Process Analysis of the Chemical Recycling of Nylon 6 Using Phosphoric Acid*. Presented at: ESCAPE-33. Athens, Greece, June 18, 2023.
- [T470] Sanchez Medina, E. I. & **Sundmacher, K.** *Solvent pre-selection for extractive distillation using Gibbs-Helmholtz Graph Neural Networks*. Presented at: ESCAPE-33. Athens, Greece, June 18, 2023.
- [T469] Sanchez Medina, E. I., Kunchapu, S., & **Sundmacher, K.** *Predicting activity coefficients at infinite dilution of polymer solutions using Graph Neural Networks*. Presented at: WCCE11 - 11th WORLD CONGRESS OF CHEMICAL ENGINEERING. Buenos Aires, Argentina, June 4, 2023.
- [T468] Sanchez Medina, E. I., Ganzer, C., Antonio, del R. C., Matar, O., & **Sundmacher, K.** *An introductory course of machine learning for chemical engineering students: a prototype*. Presented at: WCCE11 - 11th WORLD CONGRESS OF CHEMICAL ENGINEERING. Buenos Aires, Argentina, June 4, 2023.
- [T467] Hamedi, D., Ganzer, C., & **Sundmacher, K.** *Comparative study of hydrogen and natural gas networks: Simulation and network design optimization*. Presented at: WCCE11 - 11th WORLD CONGRESS OF CHEMICAL ENGINEERING. Buenos Aires, Argentina, June 4, 2023.
- [T466] Svitnic, T. & **Sundmacher, K.** *Identifying simple process designs of methanol production from renewables by multi-objective optimization using the FluxMax approach*. Presented at: WCCE11 - 11th WORLD CONGRESS OF CHEMICAL ENGINEERING. Buenos Aires, Argentina, June 4, 2023.
- [T465] Otrin, L., Otrin, N., Bednarz, C., & **Sundmacher, K.** *Bottom-up assembly of A prokaryotic synthetic cell*. Presented at: SynCell 2023. Minneapolis, USA, May 22, 2023.

- [T464] Peterson, L., Bremer, J., & **Sundmacher, K.** *Hybrid modeling of the catalytic CO<sub>2</sub> methanation using process data and mechanistic knowledge*. Presented at: ReactEng23: Annual Meeting on Reaction Engineering 2023. Frankfurt am Main, May 15, 2023.
- [T463] Franz, T., Papakonstantinou, G. & **Sundmacher, K.** *Transient hydrogen crossover in dynamically operated PEM water electrolysis cells*. Presented at: ModVal 2023. Duisburg, Germany, March 21-23, 2023.
- [T462] Voigt, A. & **Sundmacher, K.** *Mine tailings for CO<sub>2</sub> mineralization - Towards efficient processes and usable products*. Presented at: 2022 AIChE Annual Meeting. Phoenix, USA, November 13, 2022.
- [T461] Bremer, J. & **Sundmacher, K.** *Novel Multiplicity and Stability Criteria for Polytropic Fixed-Bed Reactors*. Presented at: 2022 AIChE Annual Meeting. Phoenix, USA, November 13, 2022.
- [T460] Zimmermann, R. T., Bremer, J., & **Sundmacher, K.** *Prototyping "Egg-Yolk" and "Egg-White" Catalyst Pellets for Exothermic Reactions*. Presented at: 2022 AIChE Annual Meeting. Phoenix, USA, November 13, 2022.
- [T459] Bremer, J., Zimmermann, R. T., & **Sundmacher, K.** *New Insights on Fixed-Bed Reactor Dynamics Via Real-Time Distributed Temperature Sensing*. Presented at: 2022 AIChE Annual Meeting. Phoenix, USA, November 13, 2022.
- [T458] Maggi, A., Bremer, J., & **Sundmacher, K.** *Multiperiod Design Optimization of a Flexible Power-to-Methanol Process*. Presented at: 2022 AIChE Annual Meeting. Phoenix, USA, November 13, 2022.
- [T457] Svitnic, T. & **Sundmacher, K.** *Optimization-based design of renewable methanol production encompassing waste heat utilization with the FluxMax approach*. Presented at: 2022 AIChE Annual Meeting. Phoenix, USA, November 13, 2022.
- [T456] Dam, A. P., Papakonstantinou, G., & **Sundmacher, K.** *Insights on the Pathway-Related Charge of Iridium Dissolution Products and Electrocatalytic Stability of Water Splitting*. Presented at: 73rd ISE Annual Meeting. Virtual, September 12, 2022.
- [T455] Papakonstantinou, G., Dam, A. P., & **Sundmacher, K.** *Electrochemical Investigation of the De-/Re-activation of Oxygen Evolving Iridium Oxide*. Presented at: 73rd ISE Annual Meeting. Virtual, September 12, 2022.
- [T454] Maggi, A., Bremer, J., & **Sundmacher, K.** *Multiperiod Design Optimization of a Flexible Power-to-Methanol Process*. Presented at: 26th International Congress of Chemical and Process Engineering (CHISA 2022). Prague, Czech Republic, August 21, 2022.
- [T453] Dam, A. P., Papakonstantinou, G., & **Sundmacher, K.** *Insights on the Pathway-Related Charge of Iridium Dissolution Products and Implications for Electrocatalytic Water Splitting*. Presented at: ISE Regional Meeting 2022. Prague, Czech Republic, August 15, 2022.
- [T452] Zimmermann, R. T., Weber, S., Bremer, J., Idakiev, V., Sheppard, T., Mörl, L., & **Sundmacher, K.** *Prototyping Core-Shell Catalyst Particles for Exothermic Reactions*. Presented at: Annual Meeting on Reaction Engineering 2022. Würzburg, Germany, July 18, 2022.
- [T451] Zimmermann, R. T., Bremer, J., & **Sundmacher, K.** *Optimal Catalyst-Reactor Design for Load-Flexible CO<sub>2</sub> Methanation by Multi-Period Design Optimization*. Presented at: 14th International Symposium on Process Systems Engineering (PSE2021+). Kyoto, Japan, June 19, 2022.
- [T450] Wang, Z., Zhou, T., & **Sundmacher, K.** *A Novel Machine Learning-Based Optimization Approach for the Molecular Design of Solvents*. Presented at: ESCAPE-32. Toulouse, France, June 12, 2022.
- [T449] König-Mattern, L., Linke, S., Rihko-Struckmann, L., & **Sundmacher, K.** *Lipid extraction in microalgal biorefineries: A COSMO-RS approach*. Presented at: 18th International Conference on Renewable Resources and Biorefineries. Bruges, Belgium, June 1, 2022.
- [T448] König-Mattern, L., Komarova, A., Linke, S., Rihko-Struckmann, L., Luterbacher, J., & **Sundmacher, K.** *Computational solvent screening for the organosolv fractionation of lignocellulosic biomass*. Presented at: ISGC 2022: International Symposium on Green Chemistry. La Rochelle, France, May 16, 2022.
- [T447] Franz, T., Phuc Dam, A., Papakonstantinou, G., & **Sundmacher, K.** *Degradation of PEM Water Electrolyzers in connection to operating strategies*. Presented at: 5th International Workshop on Degradation Issues of Fuel Cells and Electrolyzers. Corfu, Greece, May 3, 2022.

- [T446] **Sundmacher, K.** *Wasserstoff-Technologien: Bausteine einer CO<sub>2</sub>-neutralen Energieversorgung*. Invited Talk presented at: Technikwissenschaftliche Vorlesung, Berlin-Brandenburgische Akademie der Wissenschaften. Berlin, June 2, 2022.
- [T445] Bremer, J. & **Sundmacher, K.** *Novel Multiplicity and Stability Criteria for Polytropic Fixed-Bed Reactors*. Presented at: ISCRE-26 & APCRE 9. Virtual, December 5, 2021.
- [T444] Sanchez Medina, E. I., Rodriguez-Vallejo, D. F., del Rio-Chanona, E. A., **Sundmacher, K.**, & Petsagkourakis, P. *Multi-Objective Bayesian optimization of process flowsheets using trust regions and quality set metrics*. Presented at: 2021 AIChE Annual Meeting. Virtual, November 15, 2021.
- [T443] Jokiel, M. & **Sundmacher, K.** *Helically Coiled Tubular Reactor for the Hydroformylation of 1-Dodecene: Operation, Characterization and Limitations*. Presented at: ECCE 13 & ECAB 6: 13th European Congress of Chemical Engineering and 6th European Congress of Applied Biotechnology. Berlin, Virtual, September 19, 2021.
- [T442] König-Mattern, L., Linke, S., Rihko-Struckmann, L., & **Sundmacher, K.** *Computational Solvent Screening for the Fractionation of Wet Microalgal Biomass Exemplified by *Phaeodactylum tricornutum**. Presented at: ECCE 13 & ECAB 6: 13th European Congress of Chemical Engineering and 6th European Congress of Applied Biotechnology. Berlin, Virtual, September 19, 2021.
- [T441] Zhang, X., Zhou, T., & **Sundmacher, K.** *Integrated Material and Process Design for Gas Separation: Hybrid Modeling for MOF Descriptor Targeting*. Presented at: ECCE 13 & ECAB 6: 13th European Congress of Chemical Engineering and 6th European Congress of Applied Biotechnology. Berlin, Virtual, September 19, 2021.
- [T440] Abel, K. L., Zimmermann, R. T., Titus, J., **Sundmacher, K.**, & Gläser, R. *Influence of Preparation Method on Structure, Reducibility and Activity of Ni-based CO<sub>2</sub> Methanation Catalysts*. Presented at: 18th International Conference on Carbon Dioxide Utilization (ICCDU 2021). Virtual, July 18, 2021.
- [T439] König-Mattern, L., Linke, S., Rihko-Struckmann, L., & **Sundmacher, K.** *Computational Solvent Screening for Efficient Microalgal-based Biorefineries exemplified by *Phaeodactylum tricornutum**. Presented at: International Conference on Algal Biomass, Biofuels and Bioproducts (AlgalBBB 2021). Virtual, June 15, 2021.
- [T438] Bremer, J., Heiland, J., Benner, P., & **Sundmacher, K.** *Nonintrusive Time Galerkin POD for Optimal Control of a Fixed-Bed Reactor for CO<sub>2</sub> Methanation*. Presented at: ADCHEM 2021. Virtual, June 13, 2021.
- [T437] Zimmermann, R. T., Bremer, J., & **Sundmacher, K.** *Multi-Period Design Optimization of Flexible Fixed-Bed Reactors by Stoichiometry-Based Model Reduction*. Presented at: 31st European Symposium on Computer-Aided Process Engineering (ESCAPE-31). Istanbul, Turkey, June 6, 2021.
- [T436] Song, Z., Zhou, T., Qi, Z., & **Sundmacher, K.** *Computer-aided design of deep eutectic solvent systems for the associative extraction of  $\alpha$ -tocopherol from deodorizer distillate*. Presented at: 31st European Symposium on Computer-Aided Process Engineering (ESCAPE-31). Istanbul, Turkey, June 6, 2021.
- [T435] Otrin, L., Diehl, C., Erb, T., **Sundmacher, K.**, & Vidaković-Koch, T. *Artificial Mitochondrion, Bottom-up!* Presented at: SYNCELL 2021: International Conference on Engineering Synthetic Cells and Organelles. Virtual, May 19, 2021.
- [T434] Bremer, J., Zimmermann, R. T., & **Sundmacher, K.** *New Insights on Fixed-Bed Reactor Dynamics via Real-Time Distributed Temperature Sensing*. Presented at: Annual Meeting on Reaction Engineering (Jahrestreffen Reaktionstechnik). Virtual, March 10, 2021.
- [T433] **Sundmacher, K.** *Engineering Functional Modules for Life-like Systems: Energy Supply, Metabolism, and Growth*. Presented at: Matter to Life Lecture Series. Virtual, February 24, 2021.
- [T432] **Sundmacher, K.** *MaxSynBio: Bottom-up Synthesis of Live-like Systems from Functional Modules*. Presented at International MaxSynBio Symposium: Avenues towards Artificial Life-like Systems. Virtual. November 30 – December 02, 2020.
- [T431] Linke, S., Jokiel, M., McBride, K., & **Sundmacher, K.** *Green solvents for the hydroformylation of long chain alkenes*. Presented at 2020 Virtual AIChE Annual Meeting. Virtual. November 16-20, 2020.

- [T430] Zimmermann, R. T., Bremer, J., & **Sundmacher, K.** *Optimal Catalyst-Reactor Design for Flexible CO<sub>2</sub> Methanation*. Presented at: 10. ProcessNet-Jahrestagung und 34. DECHEMA-Jahrestagung der Biotechnologen 2020: Processes for Future. Virtual, September 21-24, 2020.
- [T429] **Sundmacher, K.** *Kohlenstoff-Kreislaufwirtschaft und Bio-Elektro-Ökonomie: Neue Technologien für eine nachhaltigere Gesellschaft*. Invited Talk presented at: Öffentlicher Vortrag im Rahmen der Reihe "Forschung verstehen". Museum für Naturkunde Magdeburg, Germany, September 17, 2020.
- [T428] Zhou, Y., Zhou, T., & **Sundmacher, K.** *In silico discovery of metal-organic frameworks for ethylene/acetylene separation*. Presented at: ESCAPE 30, 30th European Symposium on Computer Aided Process Engineering. Virtual, August 30-September 2, 2020.
- [T427] Maggi, A., Wenzel, M., & **Sundmacher, K.** *Power-to-Syngas Processes by Reactor-Separator Optimization*. Presented at: ESCAPE 30, 30th European Symposium on Computer Aided Process Engineering. Virtual, August 30-September 2, 2020.
- [T426] Matschek, J., Himmel, A., **Sundmacher, K.**, & Findeisen, R. *Constrained Gaussian Process Learning for Model Predictive Control*. Presented at: IFAC World Congress - 21st WC 2020. Virtual, July 12-17, 2020.
- [T425] **Sundmacher, K.** *Selection and Tuning of Solvents for Sustainable Chemical Processes*. Presented as Online Lecture at: University of Aveiro, Portugal, July 1, 2020
- [T424] **Sundmacher, K.** *Structure and Dynamics of Chemical Energy Conversion Systems*. Presented as Webinar at: Delaware Energy Institute, USA, June 26, 2020.
- [T423] Otrin, L., Witkowska, A., Zhao, Z., Lira, R. de, Dimova, R., Lipowsky, R., Jahn, R., **Sundmacher, K.**, & Vidaković-Koch, T. *SNARE-mediated Fusion of Polymer and Hybrid Compartments*. Presented at: Biomembrane Days 2019. Berlin, Germany, December 11, 2019.
- [T422] Otrin, L., Diehl, C., Erb, T., **Sundmacher, K.**, & Vidaković-Koch, T. *Mitochondrion Reimagined: Fueling Synthetic Life*. Presented at: BioSynSys 2019. Bordeaux, France, November 20, 2019.
- [T421] Marusic, N., Otrin, L., Zhao, Z., Lira, R. de, Vidaković-Koch, T., Ivanov, I., Dimova, R., & **Sundmacher, K.** *Integration of respiratory enzymes in PDMS-g-PEO polymer and polymer/lipid hybrid vesicles*. Presented at: Biomembrane Days 2019. Berlin, Germany, December 11, 2019.
- [T420] Marusic, N., Otrin, L., Zhao, Z., Lira, R. de, Vidaković-Koch, T., Ivanov, I., Dimova, R., & **Sundmacher, K.** *Reconstitution of respiratory enzymes in PDMS-g-PEO polymer and polymer/lipid hybrid vesicles*. Presented at: BioSynSys/MaxSynBio/SynBioSymposium. Bordeaux, France, November 20, 2019.
- [T419] Schack, D., Liesche, G., & **Sundmacher, K.** *Optimal Process Design for a Sustainable Methanol Production Using Renewable Energies by Applying the FluxMax Approach*. Presented at: Optimal Process Design for a Sustainable Methanol Production Using Renewable Energies by Applying the FluxMax Approach. Orlando, USA, November 10, 2019.
- [T418] Liesche, G., Schack, D., & **Sundmacher, K.** *The FluxMax Approach: Integrated Process Synthesis and Heat Integration Exemplified for the Production of Hydrogen Cyanide*. Presented at: AIChE Annual Meeting. Orlando, USA, November 10, 2019.
- [T417] Himmel, A. & **Sundmacher, K.** *Conceptual Framework for Integrated Control and Design of Coupled Processes*. Presented at: AIChE Annual Meeting. Orlando, USA, November 10, 2019.
- [T416] Schack, D., Jastram, A., & **Sundmacher, K.** *Simultaneous Heat and Mass Flow Optimization of a Distillation Column Applying the FluxMax Approach*. Presented at: 22nd Conference on Process Integration for Energy Saving and Pollution Reduction. Agios Nikolaos, Crete, Greece, October 20, 2019.
- [T415] Rätze, K., McBride, K., & **Sundmacher, K.** *A Bayesian approach for continuous improvement of kinetic parameter estimates*. Presented at: 12th European Congress of Chemical Engineering – ECCE 12. Florence, Italy, September 15, 2019.
- [T414] Schack, D. & **Sundmacher, K.** *Optimal Process Design for a Sustainable Methanol Production Using Renewable Energies by Applying the FluxMax Approach*. Presented at: 12th European Congress of Chemical Engineering – ECCE 12. Florence, Italy, September 15, 2019.

- [T413] Linke, S., McBride, K., Rätze, K., & **Sundmacher, K.** *Green Solvent Selection and Early Stage Process Design for the Homogeneously Catalyzed Reductive Amination of Long-chain Aldehydes*. Presented at: 12th European Congress of Chemical Engineering – ECCE 12. Florence, Italy, September 15, 2019.
- [T412] Bremer, J., Zimmermann, R. T., & **Sundmacher, K.** *Enhanced Fixed-Bed Reactor Flexibility through Optimal Control and Design for CO<sub>2</sub> Methanation*. Presented at: 12th European Congress of Chemical Engineering – ECCE 12. Florence, Italy, September 15, 2019.
- [T411] Kunde, C., Keßler, T., Linke, S., McBride, K., **Sundmacher, K.**, & Kienle, A. *Global optimization of catalyst recovery in a thermomorphic multiphase system using surrogate models*. Presented at: 12th European Congress of Chemical Engineering – ECCE 12. Florence, Italy, September 15, 2019.
- [T410] Song, Z., Zhou, T., Qi, Z., & **Sundmacher, K.** *Computer-aided screening of deep eutectic solvents for separation processes*. Presented at: ILSEPT - 4th International Conference on Ionic Liquids in Separation and Purification Technology. Melia Sitges, Sitges, Spain, September 8, 2019.
- [T409] Bechtel, S., Vidaković-Koch, T., & **Sundmacher, K.** *Electrochemical Gas Phase Oxidation of Hydrogen Chloride to Chlorine: Model-based Analysis of Transport and Reaction Mechanisms*. Presented at: 70th Annual Meeting of the International Society of Electrochemistry. Durban, South Africa, August 4, 2019.
- [T408] Papakonstantinou, G. & **Sundmacher, K.** *Influence of H<sub>2</sub> permeation on polymer electrolyte electrolysis: safety, anode catalysis and durability*. Presented at: European Fuel Cell Forum 2019 (EFCF 2019). Lucerne, Switzerland, July 2, 2019.
- [T407] Zhou, T., Song, Z., Gani, R., & **Sundmacher, K.** *Optimal solvent design for extractive distillation processes: A multiobjective optimization-based hierarchical framework*. Presented at: 5th International Conference on Sustainable Chemical Product and Process Engineering (SCPPE). Nanjing, China, June 30, 2019.
- [T406] **Sundmacher, K.** & McBride, K. *Separation Units 4.0: Modellgestützter Entwurf und Betrieb von Trennapparaten*. Presented at: 58. Tutzing-Symposium. Tutzing, October 21, 2019.
- [T405] **Sundmacher, K.** *Structure Optimization of Renewables-to-Chemicals Production Systems*. Invited talk presented at: EPFL. Sion, Switzerland, May 23, 2019.
- [T404] **Sundmacher, K.** *Challenges for Process Engineers*. Invited talk, presented at: YCOPE 2019. Magdeburg, Germany, March 20, 2019.
- [T403] Schack, D. & **Sundmacher, K.** *Converting Electricity, Water and CO<sub>2</sub> into Transportation Fuels*. Invited talk presented at: 1. Workshop zur Nachhaltigkeit In der MPG. Magdeburg, Germany, May 16, 2019.
- [T402] Liesche, G., Schack, D., & **Sundmacher, K.** *Process Intensification by Network Flow Optimization in the Thermodynamic State Space*. Invited talk presented at: Process Intensification Colloquium Dortmund. Dortmund, Germany, May 7, 2019.
- [T401] Rihko-Struckmann, L., Sahni, A., McBride, K., Linke, S., & **Sundmacher, K.** *Algal remnant transformation to 5-HMF under biphasic conditions using a computationally predicted solvent selection approach*. Presented at: International Symposium on Green Chemistry 2019. La Rochelle, France, May 13, 2019.
- [T400] Rätze, K. & **Sundmacher, K.** *Analysis of a cyclically operated semi-batch reactor for the hydroformylation of long-chain olefins in a continuous production process under uncertain feed composition*. Presented at: Jahrestreffen Reaktionstechnik 2019 DECHEMA. Würzburg, Germany, May 27, 2019.
- [T399] Song, Z., Bechtel, S., Zhou, T., Qi, Z., & **Sundmacher, K.** *Computer-aided methods for screening and design of ionic liquids for separation processes*. Presented at: 8th International Congress on Ionic Liquids (COIL-8). Beijing, China, May 13, 2019.
- [T398] Rätze, K., Jokiel, M., McBride, K., & **Sundmacher, K.** *Alternative Process Configuration and Solvent Selection for Enhanced Performance of the Hydroformylation of 1-Dodecene*. Presented at: YCOPE 2019. Magdeburg, Germany, March 18, 2019.
- [T397] Linke, S., McBride, K., & **Sundmacher, K.** *Green solvent selection for the homogeneously catalyzed hydroformylation of long-chain olefins in a thermomorphic solvent system*. Presented at: YCOPE 2019. Magdeburg, Germany, March 18, 2019.

- [T396] Liesche, G., Schack, D., & **Sundmacher, K.** *Integrated Process Synthesis and Heat Integration Exemplified for Production of Hydrogen Cyanide*. Presented at: YCOPE 2019. Magdeburg, Germany, March 18, 2019.
- [T395] Liesche, G., Schack, D., & **Sundmacher, K.** *Integriertes Prozessdesign und Wärmeintegration gezeigt am Beispiel der Synthese von Blausäure*. Presented at: ProcessNet Energieverfahrenstechnik 2019. Frankfurt am Main, Germany, March 6, 2019.
- [T394] Schack, D., Liesche, G., & **Sundmacher, K.** *Optimaler Prozessentwurf für eine nachhaltige Methanolproduktion unter Einsatz von CO<sub>2</sub> und erneuerbaren Energien*. Presented at: ProcessNet Energieverfahrenstechnik 2019. Frankfurt am Main, Germany, March 6, 2019.
- [T393] Uebbing, J., Sager, S., & **Sundmacher, K.** *Rigorous MINLP Optimization of Power-to-Methane Processes*. Presented at: SIAM Conference on Computational Science and Engineering (CSE19). Spokane, Washington, USA, February 25, 2019.
- [T392] Rätze, K., 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*. Presented at: ISCRE25 (International Symposium of Chemical Reaction Engineering). Florence, Italy, May 20, 2018.
- [T391] Liesche, G. & **Sundmacher, K.** *Design of a High Temperature Catalytic Wall Reactor: Steam Methane Reforming*. Presented at: ISCRE25 (International Symposium of Chemical Reaction Engineering). Florence, Italy, May 20, 2018.
- [T390] Jokiel, M. & **Sundmacher, K.** *Novel Reactor Design for the Hydroformylation of Long-Chain Olefins: Flexibility and Automation Aspects*. Presented at: CHEMREACTOR-23. Ghent, Belgium, November 5, 2018.
- [T389] Bremer, J. & **Sundmacher, K.** *Flexible Production of Synthetic Methane: Dynamic Operation and Control of Fixed-Bed Methanation Reactors*. Presented at: CHEMREACTOR-23. Ghent, Belgium, November 5, 2018.
- [T388] Uebbing, J., Rihko-Struckmann, L., & **Sundmacher, K.** *Exergy Efficiency of Methane as a Chemical Energy Carrier for Renewable Energies*. Presented at: Jahrestreffen der ProcessNet-Fachgruppe Energieverfahrenstechnik. Frankfurt am Main, March 7, 2018.
- [T387] Uebbing, J., Rihko-Struckmann, L., & **Sundmacher, K.** *Exergy efficiency of power-to-methane processes using CO<sub>2</sub> from anaerobic digestion*. Presented at: 23rd International Congress of Chemical and Process Engineering (CHISA 2018). Prague, Czech Republic, August 25, 2018.
- [T386] Jokiel, M., Kaiser, N. M., Zähringer, K., Nigam, K. D., & **Sundmacher, K.** *Helically Coiled Segmented Flow Tubular Reactor for the Hydroformylation of Long-Chain Olefins in a Thermomorphic Multicomponent Solvent System*. Presented at: ISCRE25 (International Symposium of Chemical Reaction Engineering). Florence, Italy, May 20, 2018.
- [T385] Linke, S., McBride, K., Xu, S., & **Sundmacher, K.** *“Green” solvent screening for thermomorphic solvent systems exemplified for hydroformylation*. Presented at: COSMO-RS-Symposium. Cologne, Germany, March 6, 2018.
- [T384] Bremer, J. & **Sundmacher, K.** *Flexible Production of Synthetic Methane: Dynamic Operation and Control of Fixed-Bed Methanation Reactors*. Presented at: ProcessNet-Jahrestagung und 33. DECHEMA-Jahrestagung der Biotechnologen 2018. Aachen, Germany, September 10, 2018.
- [T383] Wenzel, M., Rihko-Struckmann, L., & **Sundmacher, K.** *Modelling Coupled Conduction-Convection-Radiation for Reactive Flows in High Temperature Applications: Synthesis of Hydrogen Cyanide*. Presented at: FFHMT'18 (International Conference on Fluid Flow, Heat & Mass Transfer). Niagara Falls, Canada, June 7, 2018.
- [T382] Wiedmeyer, V., Voigt, A., Anker, F., John, V., Ahrens, R., Le Borne, & **Sundmacher, K.** *Kontinuierliche formselektive Kristallisation: Neue Strategien*. Presented at: ProcessNet-Jahrestagung und 33. DECHEMA-Jahrestagung der Biotechnologen 2018. Aachen, Germany, September 10, 2018.
- [T381] Bremer, J. & **Sundmacher, K.** *Stabilizing Unstable Operation Regimes of Cooled Exothermic Fixed-Bed Reactors*. Presented at: ISCRE25 (International Symposium of Chemical Reaction Engineering). Florence, Italy, May 20, 2018.
- [T380] Schack, D., Liesche, G., & **Sundmacher, K.** *Renewables-to-Chemicals: Optimaler Prozessentwurf für eine nachhaltige Methanolproduktion unter Einsatz von CO<sub>2</sub>*. Presented

- at: ProcessNet-Jahrestagung und 33. DECHEMA-Jahrestagung der Biotechnologen 2018. Aachen, Germany, September 10, 2018.
- [T379] Voigt, A., Wiedmeyer, V., & **Sundmacher, K.** *Agglomeration-Driven Product Selection in a Continuously Operated Fluidized-Bed Crystallizer*. Presented at: AIChE Annual Meeting 2018. Pittsburgh, USA, October 28, 2018.
- [T378] **Sundmacher, K.** *Bottom-up Synthetic Biology – From Biomolecules to Functional Systems*. Invited talk presented at: Frühjahrstagung der Biotechnologien DECHEMA. Frankfurt am Main, Germany, March 5, 2018.
- [T377] Kozłowski, A., Pischel, D., Fachel, M., Pirwitz, K., Flassig, R., & **Sundmacher, K.** *From Lab to Outdoor: Modeling Light Fluctuations in Algal Photobioreactors to Identify Economically Feasible Solutions*. Presented at: Young Algaeneers Symposium. Oban, UK, May 16, 2018.
- [T376] Himmel, A., Sager, S., & **Sundmacher, K.** *Flexibler Betrieb von Biogasanlagen mittels inversionsbasierter zeitoptimaler Steuerung*. Presented at: ProcessNet-Jahrestagung und 33. DECHEMA-Jahrestagung der Biotechnologen 2018. Aachen, Germany, September 10, 2018.
- [T375] Zinser, A., Papakonstantinou, G., & **Sundmacher, K.** *PEM Water Electrolysis: Analysis of Transport Processes in the Anodic Porous Transport Layer*. Presented at: ESEE 2017. Prague, Czech Republic, June 4, 2017.
- [T374] Bremer, J., Goyal, P. K., Feng, L., Benner, P., & **Sundmacher, K.** *Towards Fast Optimal Control of CO<sub>2</sub> Methanation Reactors via POD-DEIM*. Presented at: MODRED 2017. Odense, Denmark, January 11, 2017.
- [T373] Liesche, G. & **Sundmacher, K.** *Analysis of key heat transport phenomena in a high temperature catalytic reactor*. Presented at: Société Française de Génie de Procédés (SFGP) meeting 2017. Nancy, France, July 11, 2017.
- [T372] Kleineberg, C., Caire da Silva, L., Vidaković-Koch, T., Bannwarth, M., **Sundmacher, K.**, & Landfester, K. *Light-induced ATP synthesis for synthetic biology applications*. Presented at: DECHEMA Workshop Systems Biology meets Synthetic Biology. Frankfurt am Main, Germany, May 2, 2017.
- [T371] Vidaković-Koch, T., Otrin, L., Kleineberg, C., Krafft, D., Wang, M., Bednarz, C., Marušič, N., Ivanov, I., & **Sundmacher, K.** *Bottom-up design and reconstitution of energy regeneration infrastructure of an artificial cell*. Presented at: Jahreskongress 2017 Biotechnologie 2020+ "Nächste Generation biotechnologischer Verfahren." Jülich, Germany, October 4, 2017.
- [T370] Rihko-Struckmann, L., Olyinka, O. B., McBride, K., Fachel, M., & **Sundmacher, K.** *Mild Liquefaction of Dunaliella remnant to 5-HMF and levulinic acid under biphasic reaction*. Presented at: ECAB/WCCE 2017. Barcelona, Spain, October 1, 2017.
- [T369] Kaiser, N. M., Flassig, R., & **Sundmacher, K.** *From the Reaction Network to Optimal Process Design via Flux Analysis – Exemplified by the Hydroformylation of 1-Dodecene*. Presented at: Jahrestreffen Reaktionstechnik 2017. Wuerzburg, Germany, 2017, May 22, 2017.
- [T368] Pischel, D., **Sundmacher, K.**, & Flassig, R. *Efficient simulation of intrinsic, extrinsic and external noise in biochemical systems*. Presented at: ISMB/ECCB. Prague, Czech Republic, July 21, 2017.
- [T367] Krafft, D., Wang, W., Otrin, L., Ivanov, I., Vidaković-Koch, T., & **Sundmacher, K.** *Functionalized Membranes for Bottom-up Synthetic Biology*. Presented at: DECHEMA Workshop Systems Biology meets Synthetic Biology. Frankfurt am Main, Germany, May 2, 2017.
- [T366] Wenzel, M., Rihko-Struckmann, L., & **Sundmacher, K.** *Continuous Production of Syngas from CO<sub>2</sub> by Reverse Water-Gas Shift Chemical Looping Processes*. Presented at: WCCE 2017. Barcelona, Spain, October 1, 2017.
- [T365] Pischel, D., Buchbinder, J. H., Flassig, R., Lavrik, I. N., & **Sundmacher, K.** *Process Monitoring with Imaging Flow Cytometry - a Machine Learning Approach*. Presented at: ECAB/WCCE 2017. Barcelona, Spain, October 1, 2017.
- [T364] Otrin, L., Bednarz, C., Marušič, N., Vidaković-Koch, T., Landfester, K., & **Sundmacher, K.** *Bottom-up Reconstitution of Artificial Respiratory Chain into Natural and Synthetic Containers*. Presented at: Designer Biology Symposium. Vienna, Austria, June 7, 2017.
- [T363] Bremer, J. & **Sundmacher, K.** *Dynamisch geregelte Methanisierung von CO<sub>2</sub>: Neue Betriebsstrategien für flexible PtG Anlagen*. Presented at: JT ProcessNet: EVT 2018. Frankfurt am Main, March 7, 2018.

- [T362] Liesche, G. & **Sundmacher, K.** *Optimization of a High Temperature Catalytic Wall Reactor: Synthesis of Hydrogen Cyanide*. Presented at: WCCE10. Barcelona, Spain, October 1, 2017.
- [T361] Wiedmeyer, V., Voigt, A., Le Borne, S., & **Sundmacher, K.** *Experimentelle Aggregation im Wirbelschichtkristaller zur Modellierung von Aggregationskernen*. Presented at: ProcessNet Jahrestreffen MPH & WSUE & CFD, HTT & AuW, KRI, PMT. Bremen, Germany, March 6, 2018.
- [T360] Aydin, E., Bonvin, D., & **Sundmacher, K.** *NMPC of Semi-Batch Processes under Uncertainty using Pontryagin's Minimum Principle*. Presented at: AIChE Annual Meeting. Minneapolis, USA, October 29, 2017.
- [T359] Peña Arias, I., Hanke-Rauschenbach, R., & **Sundmacher, K.** *Experimental Characterization of an Electrochemical Preferential Oxidation Reactor*. Presented at: WCCE10. Barcelona, Spain, October 1, 2017.
- [T358] Bremer, J., Benner, P., & **Sundmacher, K.** *Fast Optimal Control of Exothermic Packed-Bed Reactors via Reduced Order Models*. Presented at: AIChE 2017. Minneapolis, USA, October 29, 2017.
- [T357] Bremer, J., Rätze, K., & **Sundmacher, K.** *Dynamische CO<sub>2</sub> Methanisierung – Optimale Betriebsführung eines Festbettreaktors für Power to Gas Anwendungen*. Presented at: Jahrestreffen Frankfurt II: Jahrestreffen der ProcessNet-Fachgruppen Abfallbehandlung und Wertstoffrückgewinnung, Energieverfahrenstechnik, Gasreinigung, Hochtemperaturtechnik, Rohstoffe. Frankfurt am Main, Germany, March 21, 2017.
- [T356] **Sundmacher, K.** *Mimicking Essential Life Processes in Synthetic Biosystems*. Invited talk presented at: BrisSynBio MaxSynBio Joint Workshop. Bristol, UK, April 6, 2017.
- [T355] **Sundmacher, K.** *Innovative Elektrochemie in der Energiewende: Herausforderungen und Chancen*. Invited talk presented at: BMBF-Statusseminar zur Fördermaßnahme „InnoEMat“. Leipzig, Germany, November 24, 2017.
- [T354] **Sundmacher, K.** *Integrated Solvent Selection and Process Design for the Efficient Recovery of Homogeneous Catalysts in Hydroformylation Processes*. Presented at: Tunable Solvents For Green Processing, International Symposium InPROMPT 2016. Berlin, June 2, 2016.
- [T353] 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>*. Presented at: AIChE Annual Meeting 2016. San Francisco, USA, November 13, 2016.
- [T352] Bremer, J., Goyal, P. K., Feng, L., Benner, P., & **Sundmacher, K.** *Reduced Order Modeling and Optimization of CO<sub>2</sub> Methanation Reactors*. Presented at: Workshop on Optimal and Feedback Control of Differential Equations. Konstanz, Germany, November 22, 2016.
- [T351] Bremer, J., Goyal, P. K., Feng, L., Benner, P., & **Sundmacher, K.** *Reduced Order Modeling and Optimization of CO<sub>2</sub> Methanation Reactors*. Presented at: ALOP Workshop: Reduced Order Models in Optimization. Trier, Germany, September 26, 2016.
- [T350] Schack, D., Rihko-Struckmann, L., & **Sundmacher, K.** *Strukturoptimierung von Renewables-to-Chemicals (R2Chem) Netzwerken zur wirtschaftlichen Nutzung erneuerbarer Energien*. Presented at: Processnet-Jahrestagung. Aachen, Germany, September 12, 2016.
- [T349] Flassig, R., Facht, M., Höffner, K., & **Sundmacher, K.** *Dynamic flux balance modeling to increase the production of high-value compounds in green microalgae*. Presented at: ENCAPP 2016. Malta, April 26, 2016.
- [T348] **Sundmacher, K.**, Ivanov, I., Mangold, M., Otrin, L., & Vidaković-Koch, T. *Nachahmung essenzieller Lebensprozesse in minimalen synthetischen Systemen*. Presented at: 18. Heiligenstädter Kolloquium. Heiligenstadt, September 19, 2016.
- [T347] Voigt, A., Wiedmeyer, V., & **Sundmacher, K.** *Agglomeration in a Fluidized Bed Crystallizer - from Experiments to Modeling*. Presented at: AIChE Annual Meeting 2016. San Francisco, USA, November 13, 2016.
- [T346] Liesche, G. & **Sundmacher, K.** *Multiscale Modeling for High Temperature Heterogeneous Gas Phase Synthesis Reactions: HCN Synthesis*. Presented at: AIChE Annual Meeting 2016. San Francisco, USA, November 13, 2016.
- [T345] Krafft, D., Kleineberg, C., Bednarz, C., Ivanov, I., Vidaković-Koch, T., & **Sundmacher, K.** *A cell-free, self-sustaining metabolic platform*. Presented at: EUSynBioS Symposium 2016. London, United Kingdom, April 9, 2016.

- [T344] Wiedmeyer, V., Voigt, A., & **Sundmacher, K.** *Analysis of Growth Kinetics of a Multivariate Crystal Population in a Continuous Crystallizer*. Presented at: PARTEC 2016. Nuremberg, Germany, April 19, 2016.
- [T343] Eisenschmidt, H. & **Sundmacher, K.** *Kristallformsteuerung durch einen zyklischen Wachstums- Auflösungs-prozess*. Presented at: Jahrestreffen der ProcessNet-Fachgruppe Kristallisation. Frankfurt am Main, March 10, 2016.
- [T342] Bremer, J., Rätze, K., & **Sundmacher, K.** *CO<sub>2</sub> Methanation: Optimal Start-Up Control of a Fixed-Bed Reactor for Power-To-Gas Applications*. Presented at: ISCRE 24. Minneapolis, USA, June 12, 2016.
- [T341] **Sundmacher, K.** *MaxSynBio - Status and Future Directions*. Invited talk presented at: MaxSynBio Workshop. Göttingen, Germany, June 6, 2016.
- [T340] Fachet, M., Gladebeck, S., Flassig, R., Höffner, K., Rihko-Struckmann, L., & **Sundmacher, K.** *Model-based Optimization of Microalgal Biorefineries by Dynamic Flux Balance Analysis (DFBA)*. Presented at: CAPE Forum 2016. EPFL Valais-Wallis, Sion, March 30, 2016.
- [T339] Sorrentino, A., Vidaković-Koch, T., & **Sundmacher, K.** *Concentration frequency response analysis: a new method for the study of the PEM fuel cell dynamics*. Presented at: 10th International Symposium on Electrochemical Impedance Spectroscopy. A Toxa, Galicia, Spain, June 19, 2016.
- [T338] Zhou, T. & **Sundmacher, K.** *Computer Aided Molecular Design (CAMD): Integration of molecular decisions into process systems design*. Presented at: 4th international conference on sustainable chemical product and process engineering (SCPPE 2016). Nanjing, China, May 31, 2016.
- [T337] Wang, W., Voigt, A., Wolff, M. W., Reichl, U., & **Sundmacher, K.** *Optimization of affinity membrane adsorption by evaluating multivalent interaction*. Presented at: ECCE10+ECAB3+EPIC5. Nice, France, September 27, 2015.
- [T336] Pirwitz, K., Rihko-Struckmann, L., & **Sundmacher, K.** *Investigation of different flocculation methods for *Dunaliella* sp.* Presented at: Algal Biomass, Biofuels and Bioproducts. San Diego, USA, June 7, 2015.
- [T335] Vidaković-Koch, T., Do Thi, Q. N., Varničić, M., & **Sundmacher, K.** *Towards Rational Design of Bioelectrochemical Systems*. Presented at: ECHEMS 2015. Bad Zwischenahn, Germany, June 14, 2015.
- [T334] Peña Arias, I., Trinke, P., Hanke-Rauschenbach, R., & **Sundmacher, K.** *Experimental investigation on fuel cell dynamics and local current density inhomogeneities*. Presented at: ECCE10+ECAB3+EPIC5. Nice, France, September 27, 2015.
- [T333] Nogueira, J. A., Peña Arias, I., Vidaković-Koch, T., **Sundmacher, K.**, & Varela, H. *Autonomous voltage oscillations in a Direct Methanol Fuel Cell (DMFC)*. Presented at: SIBEE (XX Simpósio Brasileiro de Eletroquímica e Eletroanalítica). Uberlândia, Estado de Minas Gerais, Brasil, August 17, 2015.
- [T332] **Sundmacher, K.** *Mathematical Optimization of Chemical Energy Conversion Systems*. Invited talk presented at: 7th COSMO Workshop. Heidelberg, Germany, October 8, 2015.
- [T331] Do Thi, Q. N., Varničić, M., Flassig, R., Vidaković-Koch, T., & **Sundmacher, K.** *Dynamic and Steady State 1-D Model of Mediated Electron Transfer in a Porous Enzymatic Electrode*. Presented at: XXIII International Symposium on Bioelectrochemistry and Bioenergetics. Malmo, Sweden, June 14, 2015.
- [T330] Pischel, D., Flassig, R., & **Sundmacher, K.** *Coping with heterogeneity and stochasticity in microbial processes*. Presented at: MACKIE 2015. Ghent, Belgium, July 2, 2015.
- [T329] Höffner, K., Flassig, R., Fachet, M., & **Sundmacher, K.** *Modeling metabolite accumulation and biomass composition in microalgae using dynamic flux balance analysis*. Presented at: ECCE10+ECAB3+EPIC5. Nice, France, September 27, 2015.
- [T328] Mangal, M., Vidaković-Koch, T., & **Sundmacher, K.** *Plant wide evaluation analysis of hydrogen chloride electrolysis for chlorine recycling within an isocyanate production process*. Presented at: ECCE10+ECAB3+EPIC5. Nice, France, September 27, 2015.
- [T327] Flassig, R., Pischel, D., & **Sundmacher, K.** *An efficient approach to parameter identifiability analysis in nonlinear models*. Presented at: MACKIE 2015. Ghent, Belgium, July 2, 2015.
- [T326] Wenzel, M., Rihko-Struckmann, L., & **Sundmacher, K.** *CO<sub>2</sub> Activation and Conversion into CO via Chemical Looping*. Presented at: Energy Science and Technology (EST) 2015. Karlsruhe, Germany, May 20, 2015.

- [T325] Wiedmeyer, V., Voigt, A., & **Sundmacher, K.** *Formentwicklung bei der kontinuierlichen Kristallisation*. Presented at: ProcessNet Jahrestreffen der Fachgruppe "Kristallisation." Magdeburg, March 18, 2015.
- [T324] 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*. Presented at: PSE2015 Conference. Copenhagen, Denmark, May 31, 2015.
- [T323] Gerlach, M., Kaiser, N. M., Hentschel, B., Kiedorf, G., Jörke, A., Hamel, C., Seidel-Morgenstern, A., & **Sundmacher, K.** *Process control strategies and identification of kinetic parameters based on dynamic optimization*. Presented at: AICHEM 2015. Frankfurt am Main, Germany, June 15, 2015.
- [T322] Sorrentino, A., Vidaković-Koch, T., Hanke-Rauschenbach, R., & **Sundmacher, K.** *Concentration-induced Electrochemical Impedance Spectroscopy (cEIS) for the Analysis of PEM Fuel Cells*. Presented at: ECCE10+ECAB3+EPIC5. Nice, France, September 27, 2015.
- [T321] Varničić, M., Do Thi, Q. N., Vidaković-Koch, T., Haak, E., & **Sundmacher, K.** *Enzymatic Electrochemical Reactor for the Batch Production of Gluconic Acid*. Presented at: ECCE10+ECAB3+EPIC5. Nice, France, September 27, 2015.
- [T320] Rihko-Struckmann, L., Pirwitz, K., Karani, U., Molnar, M., Flassig, R., & **Sundmacher, K.** *Mild Hydrothermal Liquefaction of Dunaliella salina for the Recovery and Extraction of Valuable Microalgal Ingredients*. Presented at: ECCE10+ECAB3+EPIC5. Nice, France, September 27, 2015.
- [T319] Varničić, M., Vidaković-Koch, T., Haak, E., & **Sundmacher, K.** *Enzymatic Fuel Cell for Chemical Production*. Presented at: XXIII International Symposium on Bioelectrochemistry and Bioenergetics. Malmö, Sweden, June 14, 2015.
- [T318] Zhou, T. & **Sundmacher, K.** *Fast screening and molecular design of solvents for chemical reactions based on COSMO-RS-derived theoretical descriptor*. Presented at: 4th COSMO-RS symposium. Bonn, Germany, March 16, 2015.
- [T317] **Sundmacher, K.** *Translating Desirable Molecular Transformations into an Integrated Chemical Process: A Multi-Scale Design Approach*. Invited talk presented at: Einstein Workshop. Berlin, Germany, November 2, 2015.
- [T316] Facht, M., Rihko-Struckmann, L., & **Sundmacher, K.** *Analysis of Dunaliella salina cellular properties during carotenogenesis using spectro- and fluorometric techniques*. Presented at: Young Algaeneers + Alg'n'Chem conference. Montpellier, France, April 3, 2014.
- [T315] **Sundmacher, K.** *Synthetic Biology – Challenges for Chemistry, Physics and Engineering*. Presented at: CPT Section Symposium Synthetic Biology. Berlin, Germany, October 23, 2014.
- [T314] Bensmann, B., Hanke-Rauschenbach, R., & **Sundmacher, K.** *Aspekte der Hochdruck-Wasserelektrolyse im Kontext von Power-to-Gas-Anwendungen*. Presented at: ProcessNet-Annual Meeting. Aachen, Germany, September 30, 2014.
- [T313] Eisenschmidt, H., Wiedmeyer, V., Borchert, C., Bajcinca, N., & **Sundmacher, K.** *Shape-Selective Crystallization: Modeling, Observation, Control*. Invited talk presented at: TU Graz, Institut für Prozess- und Partikeltechnik. Graz, Austria, April 24, 2014.
- [T312] **Sundmacher, K.** *Power-to-Gas: Energetik, Dynamik, Systemdesign, Akzeptanz*. Presented at: Leopoldina-Symposium "Energiespeicher." Halle (Saale), Germany, February 6, 2014.
- [T311] Facht, M., Rihko-Struckmann, L., & **Sundmacher, K.** *Biomass composition analysis of Dunaliella salina under carotenogenic conditions*. Presented at: Algal Biomass, Biofuels & Bioproducts. Santa Fe, USA, June 15, 2014.
- [T310] Vidaković-Koch, T., Varničić, M., Do Thi, Q. N., & **Sundmacher, K.** *Electroenzymatic Reactors for Partial Oxidation Processes*. Presented at: ProcessNet-Annual Meeting. Aachen, Germany, September 30, 2014.
- [T309] **Sundmacher, K.** *Synthetic Biology: Challenges for Chemistry, Physics and Engineering*. Invited talk presented at: CPT Section Symposium Synthetic Biology. Berlin, Germany, October 23, 2014.
- [T308] Bensmann, B., Hanke-Rauschenbach, R., Heyer, R., Kohrs, F., Benndorf, D., & **Sundmacher, K.** *Methanation of renewable hydrogen within biogas reactors? A process systems engineering approach*. Presented at: CHISA 2014. Prague, Czech Republic, August 23, 2014.

- [T307] Voigt, A., Wang, W., & **Sundmacher, K.** *Key-Lock Systems for Bioseparations - Molecular Simulation for Kinetic Models*. Presented at: AIChE Annual Meeting. Atlanta, USA, November 16, 2014.
- [T306] Bensmann, A., Hanke-Rauschenbach, R., & **Sundmacher, K.** *Reaktor-Konfigurationen für Biogas-Anlagen: Eine modellgestützte Analyse*. Presented at: Biogas-Workshop des ifak. Erfurt, Germany, May 20, 2014.
- [T305] 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*. Presented at: 97th Canadian Chemistry Conference 2014. Vancouver, Canada, June 1, 2014.
- [T304] Pirwitz, K., Rihko-Struckmann, L., & **Sundmacher, K.** *Establishment of a multi-stage production system with photosynthetic microorganisms*. Presented at: Young Algaeneers + Alg'n'Chem conference. Montpellier, France, April 3, 2014.
- [T303] Bensmann, B., Hanke-Rauschenbach, R., & **Sundmacher, K.** *In-situ characterisation of hydrogen crossover in polymer electrolyte membrane water electrolysis*. Presented at: 65th Annual Meeting of the International Society of Electrochemistry. Lausanne, Switzerland, August 31, 2014.
- [T302] 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*. Presented at: 226th Meeting of the Electrochemical Society. Cancun, Mexico, October 5, 2014.
- [T301] Eisenschmidt, H., Voigt, A., & **Sundmacher, K.** *Image Based Real Time Crystal Shape Observer*. Presented at: 6th International Congress on Pharmaceutical Engineering (ICPE 6). Graz, Switzerland, June 16, 2014.
- [T300] Hanke-Rauschenbach, R., Bensmann, B., & **Sundmacher, K.** *High-Pressure PEM Water Electrolysis: in-Situ Measurement of Hydrogen Crossover*. Presented at: 225th ECS Meeting. Orlando, USA, May 11, 2014.
- [T299] **Sundmacher, K.** *Design of Chemical Processes in a Multi-level Dynamic Optimization Framework*. Presented at: 4th KoMSO Challenge Workshop - BASF SE. Ludwigshafen, Germany, January 23, 2014.
- [T298] Bensmann, B., Hanke-Rauschenbach, R., & **Sundmacher, K.** *Systems consideration for high-pressure water electrolysis: Energy-optimal configuration of electrolysis, compression and product drying*. Presented at: 14th Ulm Electrochemistry Talks. Ulm, Germany, June 23, 2014.
- [T297] Hanke-Rauschenbach, R., Mangold, M., & **Sundmacher, K.** *Nonlinear dynamics of fuel cells: A survey*. Invited talk presented at: Institute of Technical Thermodynamics at the German Aerospace Center. Stuttgart, Germany, June 13, 2014.
- [T296] **Sundmacher, K.** *Wohin entwickelt sich die Synthetische Biologie in Deutschland?* Invited talk presented at: Podiumsdiskussion im Rahmen der Jahrestagung der Forschungsorganisationen zum Strategieprozess „Biotechnologie 2020+ - neue Generation biotechnologischer Verfahren“. Berlin, Germany, September 22, 2015.
- [T295] Flassig, R. & **Sundmacher, K.** *Estimating model response distributions of dynamic systems with distributed parameters for robust optimal design problems*. Presented at: MaCKiE 2013. Madras, India, February 4, 2013.
- [T294] Hanke-Rauschenbach, R., Bensmann, B., & **Sundmacher, K.** *High-pressure water electrolysis for intermediate storage of renewable energy - Process options, energetic analysis and experimental characterization*. Presented at: Hydrogen+Fuel Cells 2013 (HFC2013). Vancouver, Canada, June 16, 2013.
- [T293] Flassig, R., Heise, S., Pinna, A., de la Fuente, A., Klamt, S., & **Sundmacher, K.** *Novel Methods for the Reconstruction of Regulatory Networks Based on Perturbation Graphs and Transitive Reduction*. Presented at: ICSB Copenhagen. Copenhagen, August 30, 2013.
- [T292] Varničić, M. & **Sundmacher, K.** *Fluorescence Spectroscopy for the Visualization of the Enzyme Distribution on Enzymatic Fuel Cell Electrodes*. Presented at: Bioelectrochemistry 2013. Bochum, Germany, March 17, 2013.
- [T291] Hanke-Rauschenbach, R., Bensmann, B., Peña Arias, I., & **Sundmacher, K.** *High pressure hydrogen production by means of water electrolysis*. Presented at: ICEPE 2013: 3rd International Conference on Energy Process Engineering. Frankfurt am Main, Germany, June 3, 2013.

- [T290] Hanke-Rauschenbach, R., Bensmann, B., Müller-Syring, M., Henel, M., & **Sundmacher, K.** *Aspects on high-pressure water electrolysis for intermediate storage of renewable energy.* Presented at: f-cell 2013. Stuttgart, Germany, September 30, 2013.
- [T289] **Sundmacher, K.** *Multiscale Optimal Process Design: The Elementary Process Functions Methodology.* Invited talk presented at: 3rd Summer School of the IMPRS for Analysis, Design, and Optimization in Chemical and Biochemical Process Engineering. Magdeburg, Germany, September 2, 2013.
- [T288] Facht, M., Rihko-Struckmann, L., & **Sundmacher, K.** *Fermentation of Dunaliella Salina for b-Carotene Production: Modeling and Optimization of Bioreactor Operatio Conditions.* Presented at: ECCE-ECAB: 2nd European Congress of Applied Biotechnology 2013. The Hague, The Netherlands, April 21, 2013.
- [T287] Hentschel, B., Peschel, A., Freund, H., & **Sundmacher, K.** *Optimale Reaktionsführung der Hydroformylierung langkettiger Olefine in innovativen Lösungsmittelsystemen.* Presented at: Jahrestreffen Reaktionstechnik 2013. Würzburg, Germany, May 6, 2013.
- [T286] Hanke-Rauschenbach, R., Bensmann, B., & **Sundmacher, K.** *Hochdruck-Wasserelektrolyse zur Zwischenspeicherung regenerativer Energie — Prozessoptionen, energetische Analyse und experimentelle Charakterisierung.* Presented at: Jahrestreffen der ProcessNet-Fachgruppe "Energieverfahrenstechnik". Würzburg, Germany, March 18, 2013.
- [T285] **Sundmacher, K.** *Rationales Reaktordesign für die Hydroformylierung langkettiger Olefine in thermomorphen Lösungsmittelsystemen.* Presented at: Symposium "Advanced Fluids meets Equipment" der Fachgruppe "Advanced Fluids", DECHEMA. Frankfurt am Main, Germany, November 13, 2013.
- [T284] Eisenschmidt, H., Voigt, A., & **Sundmacher, K.** *Experimentelle Untersuchung zum Auflösungsverhalten von Kaliumdihydrogenphosphat Kristallen.* Presented at: Jahrestreffen der Fachgruppe Kristallisation. Magdeburg, Germany, March 13, 2013.
- [T283] **Sundmacher, K.** *Die Komposition lebendiger Organismen aus funktionellen Bausteinen - aus der ingenieurwissenschaftlichen Perspektive.* Presented at: Synthetische Biologie Symposium anlässlich der Feierlichen Sitzung der Österreichischen Akademie der Wissenschaften. Vienna, Austria, May 14, 2013.
- [T282] **Sundmacher, K.** *Multiscale Process Design for Chemicals and Fuel Production: Towards a Sustainable Energy Conversion System.* Invited talk presented at: Workshop "The Future of Energy Technology", MPS Headquarters. Munich, Germany, July 9, 2013.
- [T281] **Sundmacher, K.** *Nonlinear Dynamics of Electrochemical CO Oxidation in PEM Fuel Cells.* Invited talk presented at: Max Planck Institut Dynamische Systeme. Göttingen, Germany, August 28, 2013.
- [T280] Hentschel, B., Peschel, A., Freund, H., & **Sundmacher, K.** *Optimal Reactor Design for the Hydroformylation of Long Chain Olefins in Thermomorphic Solvent Systems.* Presented at: AIChE 2013. San Francisco, USA, November 3, 2013.
- [T279] Hanke-Rauschenbach, R., Bensmann, B., & **Sundmacher, K.** *Aspekte der Hochdruck-Wasserelektrolyse im Kontext von Power-to-Gas-Anwendungen.* Presented at: DBI-Fachforum "Energiespeicher — Pilotprojekte." Berlin, Germany, September 17, 2013.
- [T278] Ye, K., Freund, H., & **Sundmacher, K.** *New Process for Azeotropic Mixture Separation by Phase Behavior Tuning Using Pressurized CO<sub>2</sub>.* Presented at: ECCE9. The Hague, The Netherlands, April 21, 2013.
- [T277] **Sundmacher, K.** *Assembling living systems from functional modules: The engineer's view.* Presented at: Synthetische Biologie. Wien, Austria, May 14, 2013.
- [T276] **Sundmacher, K.** *Some Elements of Multiscale Chemical Process Design.* Presented at: Colloquium on Chemical Reaction Engineering 2013 "First Principles Methods in Chemical Reaction Engineering, CCRE Milano. Milano, Italy, October 17, 2013.
- [T275] **Sundmacher, K.** *Hoogewerff, lecture "Molecular Structures, Matter Elements, Thermodynamic Routes, Process Networks: Some Elements of the Future Toolbox for Chemical Process Design.* Presented at: ECCE 9. The Hague, the Netherlands, April 25, 2013.
- [T274] **Sundmacher, K.** *Strom und Wärme aus Sonne, Wind und Biomasse.* Invited talk presented at: Deutsches Museum. Munich, Germany, February 27, 2013.

- [T273] **Sundmacher, K.** *Zur Frage der modellgestützten Optimierung biotechnologischer Produktionsprozesse.* Invited talk presented at: BASF SE. Ludwigshafen, Germany, July 8, 2013.
- [T272] Hanke-Rauschenbach, R., Mangold, M., & **Sundmacher, K.** *Mass transport in PEM fuel cells — A potential source for nonlinear operating behavior.* Presented at: Hydrogen + Fuel Cells 2013 (HFC 2013). Vancouver, Canada, June 16, 2013.
- [T271] **Sundmacher, K.** *Brennstoffzellen als elektrochemische Membranreaktoren: Von der reaktionstechnischen Analyse zum optimierten Reaktordesign.* Presented at: DECHEMA-Kolloquium "Elektrochemische Reaktionstechnik. Frankfurt am Main, Germany, April 18, 2013.
- [T270] Hentschel, B., Peschel, A., Freund, H., & **Sundmacher, K.** *Optimal Reactor Design for the Hydroformylation of long chain Olefins.* Presented at: ISCRE 22., Maastricht, The Netherlands, September 2, 2012.
- [T269] Sharma, D., Rihko-Struckmann, L., & **Sundmacher, K.** *Systems Biology Studies for Understanding and Controlling Metabolic Systems in Microalgae: Challenges in Biofuel Production.* Presented at: IFSL. New Delhi, India, March 5, 2012.
- [T268] Vidaković-Koch, T., Ivanov, I., Do Thi, Q. N., Varničić, M., & **Sundmacher, K.** *Energy Conversion in Bioelectrochemical Systems.* Presented at: ISE 2012. Prague, Czech Republic, August 19, 2012.
- [T267] **Sundmacher, K.** *Controlling the Morphology Evolution of Crystals: Modeling and First Experiments.* Invited talk presented at: CBI Kolloquium. Erlangen, Germany, July 19, 2012.
- [T266] Zeng, A. P. & **Sundmacher, K.** *Biosystemtechnik: Design neuer biologischer Produktionssysteme.* Presented at: ProcessNet -Jahrestagung und 30. DECHEMA-Jahrestagung der Biotechnologen 2012. Karlsruhe, Germany, September 10, 2012.
- [T265] Freund, H., Peschel, A., & **Sundmacher, K.** *Process Intensification in Ethylene Oxide Production: Optimal Reactor Design from a Process Point of View.* Presented at: 2012 AIChE Annual Meeting. Pittsburgh, USA, October 28, 2012.
- [T264] Peschel, A., Jörke, A., Freund, H., & **Sundmacher, K.** *Optimal Reaction Concept and Plant Wide Optimization of the Ethylene Oxide Process.* Presented at: ISCRE 22. Maastricht, The Netherlands, September 2, 2012.
- [T263] Kirsch, S., Hanke-Rauschenbach, R., & **Sundmacher, K.** *Experimental investigation of autonomous oscillations and pattern formation in a PEM fuel cell operated with H<sub>2</sub>/CO mixtures.* Presented at: ISE 2012 Satellite Meeting: Electromembrane Processes and Materials. Cesky Krumlov, Czech Republic, August 26, 2012.
- [T262] Borchert, C., Temmel, E., Eisenschmidt, H., Lorenz, H., Seidel-Morgenstern, A., & **Sundmacher, K.** *Experimental Investigation of Crystal Size and Shape Dynamics.* Invited talk presented at: European Conference on Crystal Growth (ECCG4). Glasgow, UK, June 17, 2012.
- [T261] Borchert, C., Eisenschmidt, H., & **Sundmacher, K.** *Morphology Evolution of Crystal Populations: Modeling, Observation, Control.* Invited talk presented at: University of Cambridge. Cambridge, UK, February 2, 2012.
- [T260] Karst, F., Freund, H., Maestri, M., & **Sundmacher, K.** *Optimal Reactor Design for the Catalytic Partial Oxidation (CPO) of Methane Based on a Micro Kinetic Model.* Presented at: ISCRE 22. Maastricht, The Netherlands, September 2, 2012.
- [T259] Do Thi, Q. N., Varničić, M., Vidaković-Koch, T., & **Sundmacher, K.** *Application of Electrochemical Impedance Spectroscopy for Studying of Redox Enzyme Kinetics.* Presented at: ISE 2012. Prague, Czech Republic, August 19, 2012.
- [T258] Bensmann, B., Schlingmann, Y., Hanke-Rauschenbach, R., & **Sundmacher, K.** *Influence of operating conditions on mass transport in a PEM water electrolysis cell: theoretical and experimental analysis.* Presented at: ISE 2012 Satellite Meeting: Electromembrane Processes and Materials. Cesky Krumlov, Czech Republic, August 26, 2012.
- [T257] Bensmann, B., Peña Arias, I., Hanke-Rauschenbach, R., & **Sundmacher, K.** *High pressure hydrogen production by means of asymmetric water electrolysis - A realistic option.* Presented at: ISE 2012. Prague, Czech Republic, August 19, 2012.
- [T256] Temmel, E., Borchert, C., Lorenz, H., Seidel-Morgenstern, A., & **Sundmacher, K.** *Experimentelle Untersuchung der Kristallform- und Größenentwicklung zur Bestimmung von Wachstumskinetiken.* Presented at: Jahrestreffen der ProcessNet-Fachgruppen

- Agglomerations- und Schüttguttechnik & Kristallisation 2012. Wittenberg, Germany, March 5, 2012.
- [T255] Oettel, C., Rihko-Struckmann, L., & **Sundmacher, K.** *Combined Separation and Generation of Hydrogen from Reformat Gas in an Electrochemical Water Gas Shift Reactor*. Presented at: WHEC 2012. Toronto, Canada, June 3, 2012.
- [T254] Sharma, D. K., Rihko-Struckmann, L., & **Sundmacher, K.** *Controlling the Interactions between Microalgae, Bacteria and Fungi: Towards Synthetic Cellular Communities as Possible Basis for Future Biochemical Production Processes*. Presented at: Algae Europe 2011. Milan, Italy, October 5, 2011.
- [T253] Chen, L., Ye, K., Qi, Z., Freund, H., & **Sundmacher, K.** *Highly Selective Oxidation of Cyclohexanol to Cyclohexanone in Ionic Liquids*. Presented at: APCRE - 6th Asia Pacific Chemical Reaction Engineering Symposium. Beijing, China, September 18, 2011.
- [T252] Kadyk, T., Kirsch, S., Hanke-Rauschenbach, R., & **Sundmacher, K.** *Autonomous Potential Oscillations in a PEM Fuel Cell with a Pt Anode operated with H<sub>2</sub>/CO Mixtures*. Presented at: 220th ECS Meeting. Boston, USA, October 9, 2011.
- [T251] **Sundmacher, K.** *Strom aus Stroh: Von der Biomasse zur Brennstoffzelle*. Invited talk presented at: MNU-Tag Südbayern 2011. Augsburg, Germany, September 23, 2011.
- [T250] Hertel, C., Heidebrecht, P., & **Sundmacher, K.** *Design and evaluation of a cyclic fixed bed reactor for hydrogen purification*. Presented at: European Fuel Cell Forum 2011. Lucerne, Switzerland, June 28, 2011.
- [T249] Peschel, A., Karst, F., Freund, H., & **Sundmacher, K.** *Optimal Reactor Design for Ethylene Oxide Production*. Presented at: 8th European Congress of Chemical Engineering together with ProcessNet-Annual Meeting. Berlin, Germany, September 25, 2011.
- [T248] Hentschel, B., Peschel, A., Freund, H., & **Sundmacher, K.** *Optimal Reactor Design for the Hydroformylation of Higher Olefins in a Multiphase System*. Presented at: EPIC 2011. Manchester, England, June 20, 2011.
- [T247] Hertel, C., Heidebrecht, P., & **Sundmacher, K.** *The Cyclic Watergas Shift Reactor for Carbon Monoxide Removal - Experimental Validation, Design and Evaluation*. Presented at: HFC 2011 - Hydrogen + Fuel Cells 2011. Vancouver, BC, Canada, May 14, 2011.
- [T246] Flassig, R. & **Sundmacher, K.** *Design of Stimulus Experiments for Robust Model Discrimination*. Presented at: International Conference On Systems Biology. Heidelberg, Germany, August 28, 2011.
- [T245] Hanke-Rauschenbach, R., Mangold, M., & **Sundmacher, K.** *Nonlinear Operating Behaviour of PEM Fuel Cells*. Presented at: EFCF 2011 - European Fuel Cell Forum 2011. Lucerne, Switzerland, June 28, 2011.
- [T244] Zhou, T., Chen, L., Ye, K., Qi, Z., Freund, H., & **Sundmacher, K.** *Screening Ionic Liquid for Toluene/Isooctane Extraction by COSMO-RS*. Presented at: International Conference on Process Intensification for Sustainable Chemical Industries. Beijing, China, June 26, 2011.
- [T243] Kadyk, T., Kirsch, S., Hanke-Rauschenbach, R., & **Sundmacher, K.** *Autonomous potential oscillations in a PEM Fuel Cell with a Pt anode under CO poisoning*. Presented at: ModVal 8. Bonn, Germany, March 8, 2011.
- [T242] Hartono, B., Heidebrecht, P., & **Sundmacher, K.** *Exergy based methodology in energy system design*. Presented at: DBFZ Workshop "Fließschemasimulationen in der Energietechnik. Leipzig, Germany, June 23, 2011.
- [T241] Kadyk, T., Hanke-Rauschenbach, R., & **Sundmacher, K.** *Discrimination of Performance Limiting Processes in PEMFC using Nonlinear Frequency Response Analysis*. Presented at: 220th ECS Meeting. Boston, USA, October 9, 2011.
- [T240] Hentschel, B., Peschel, A., Freund, H., & **Sundmacher, K.** *Rational Catalyst and Reactor Design*. Invited talk presented at: IChemE, Catalysis Subject Group. Oxford, UK, September 19, 2011.
- [T239] **Sundmacher, K.** *Towards Dream Processes: Systems Engineering Concepts for the Design of Efficient Chemical Production Routes*. Invited talk presented at: DSM. Geleen, Netherlands, October 10, 2011.
- [T238] **Sundmacher, K.** *Dynamic Optimization of Catalytic Reactors*. Invited talk presented at: Workshop DeMiR 2011: from Detailed Microkinetics to the Reactor. Garching, Germany, September 6, 2011.

- [T237] Freund, H., Peschel, A., Hentschel, B., & **Sundmacher, K.** *Optimal Reactor Design and Operation for Multiphase Systems*. Presented at: ECCE 2011/ECAB 2011. Berlin, Germany, September 25, 2011.
- [T236] Hanke-Rauschenbach, R., Mangold, M., & **Sundmacher, K.** *Nonlinear Dynamics of Fuel Cells: A Prototype Model*. Presented at: 220th ECS Meeting. Boston, USA, October 9, 2011.
- [T235] Flassig, R. & **Sundmacher, K.** *Design of robust discrimination experiments for modeling biochemical reaction networks*. Invited talk presented at: MaCKiE 7 - Mathematics in Chemical Kinetics and Engineering. Heidelberg, Germany, May 18, 2011.
- [T234] **Sundmacher, K.**, Hanke-Rauschenbach, R., Kirsch, S., & Rihko-Struckmann, L. *Dynamics of Electrochemical CO Oxidation in PEM Fuel Cells*. Invited talk presented at: International Conference on Engineering of Chemical Complexity. Berlin, Germany, July 4, 2011.
- [T233] Singh, M. R., Boerrigter, S. X. M., Borchert, C., **Sundmacher, K.**, & Ramkrishna, D. *Experimental Investigation of Crystal Shape Evolution During Growth and Dissolution*. Presented at: 2011 AIChE Annual Meeting. Minneapolis, USA, October 16, 2011.
- [T232] Hentschel, B., Peschel, A., Freund, H., & **Sundmacher, K.** *Rational Reactor Design for the Hydroformylation of Higher Olefins based on a Dynamic Optimization Approach*. Presented at: IChemE Event Rational Catalyst and Process Design. Oxford, England, September 19, 2011.
- [T231] Heuer, M., Käbisch, M., Styczynski, Z., Bensmann, B., Bornhöft, A., & **Sundmacher, K.** *Effiziente Elektroenergieversorgung im Kraftfahrzeug durch ein Brennstoffzellenhilfsstromaggregat*. Presented at: 10. Magdeburger Maschinenbau-Tage. Magdeburg, Germany, September 27, 2011.
- [T230] Singh, A., Hanke-Rauschenbach, R., & **Sundmacher, K.** *Modeling of Morphology Transformations In Crystalline Materials: A Generalized Framework*. Presented at: AIChE 2011. Minneapolis, USA, October 16, 2011.
- [T229] Voigt, A. & **Sundmacher, K.** *Modeling Solution Crystallization - Small Step and big Leaps towards improved understanding*. Presented at: AIChE Annual Meeting 2010. Salt Lake City, USA, November 7, 2010.
- [T228] Freund, H., Kumar, R., Katariya, A., & **Sundmacher, K.** *Intensification Options for Different Hierarchical Process Levels Illustrated in the Conceptual Design of a Novel Cyclohexanol Production Process*. Presented at: AIChE Annual Meeting 2010. Salt Lake City, USA, November 7, 2010.
- [T227] **Sundmacher, K.**, Hanke-Rauschenbach, R., Kirsch, S., & Rihko-Struckmann, L. *Electrochemical Preferential Oxidation (ECP<sub>ro</sub>X) of CO in a PEM-Reactor for Production the pure Hydrogen: Experimental and Model-Based Process Analysis*. Invited talk presented at: Annual ISE Meeting — 61th Annual Meeting of the International Society of Electrochemistry. Nizza, Frankreich, September 29, 2010.
- [T226] Vidaković-Koch, T., Ivanov, I., & **Sundmacher, K.** *Anode Coatings for a Direct Glucose Fuel Cell Application*. Invited talk presented at: 37th International Conference on Metallurgical Coatings and Thin Films. San Diego, USA, April 26, 2010.
- [T225] **Sundmacher, K.** *Strom aus Stroh: Von der Biomasse zur Brennstoffzelle*. Invited talk presented at: Max-Planck-Forum: Gespräche über Energie München. Munich, Germany, June 8, 2010.
- [T224] Panic, V. V., Vidaković-Koch, T., Petkovska, M., & **Sundmacher, K.** *Non-linear Frequency Response Analysis of Hydrogen Reaction Kinetics*. Presented at: Electrochemistry 2010. Bochum, Germany, September 13, 2010.
- [T223] Adiche, C. & **Sundmacher, K.** *Separation of Alcohol-Water Mixtures in a Micro-Scale Sweep Gas Membrane Distillation Process*. Presented at: ProcessNet Jahrestagung 2010. Aachen, Germany, September 21, 2010.
- [T222] Tong, L., Qi, Z., Yuan, W., Freund, H., & **Sundmacher, K.** *Novel Green Processes Intensified by Direct and Indirect Auxiliary Reactions*. Presented at: SCPPE-2 - 2nd International Symposium on Sustainable Chemical Product and Process Engineering. Hangzhou, China, May 9, 2010.
- [T221] Hartono, B., Heidebrecht, P., & **Sundmacher, K.** *Biomass-Based Fuel Cell Power Plants - Evaluation of Novel Reactors and Process Designs*. Presented at: ISCRE 21. Philadelphia, USA, June 13, 2010.

- [T220] Borchert, C., Ramkrishna, D., & **Sundmacher, K.** *Towards Tailor-Made Crystal Shape Distributions - A Model-Based Analysis*. Presented at: WCPT6 2010 - World Congress on Particle Technology. Nuremberg, Germany, April 26, 2010.
- [T219] Rihko-Struckmann, L., Peschel, A., & **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*. Presented at: E-MRS 2010 Fall Meeting - Eur. Mat. Res. Society. Warsaw, Poland, September 13, 2010.
- [T218] Pfafferoth, M., Heidebrecht, P., & **Sundmacher, K.** *Multiphysics Simulation of a Molten Carbonate Fuel Cell Stack*. Presented at: IMA Conference on Fluid Problems in Process Engineering. Leeds, England, September 6, 2010.
- [T217] Peschel, A., Freund, H., & **Sundmacher, K.** *Methodology for the Design of Optimal Chemical Reactors based on the Concept of Elementary Process Functions*. Presented at: ISCRE 21. Philadelphia, USA, June 13, 2010.
- [T216] Panic, V. V., Vidaković-Koch, T., Zivkovic, L., Petkovska, M., & **Sundmacher, K.** *Non-linear frequency response analysis of the kinetics of electrochemical reactions*. Presented at: RSE-SEE - Second Regional Symposium on Electrochemistry South-East Europe. Belgrade, Serbia, June 6, 2010.
- [T215] **Sundmacher, K.** & Freund, H. *Process Systems Engineering and Process Intensification: Rival Brothers or Best Buddies?* Presented at: CAPE Forum. Aachen, March 11, 2010.
- [T214] Fricke, M., Voigt, A., & **Sundmacher, K.** *Emulsion Droplets as Reactors: A Model-Based Analysis of the Metal Oxide Nanoparticle Synthesis by Diffusive Mass Transfer across a Droplet Interface*. Presented at: WCPT6 2010 - World Congress on Particle Technology. Nuremberg, Germany, April 26, 2010.
- [T213] Hanke-Rauschenbach, R., Kirsch, S., & **Sundmacher, K.** *Oscillations and Pattern Formation in an Electrochemical Membrane Reactor Exposed to H<sub>2</sub>O/CO Mixtures*. Presented at: 218th ECS Meeting. Las Vegas, USA, September 26, 2010.
- [T212] Borchert, C. & **Sundmacher, K.** *Experimentelle Untersuchung von Aggregation im Strömungsrohr*. Presented at: ProcessNet-Jahrestagung 2010. Aachen, Germany, September 21, 2010.
- [T211] Ivanov, I., Vidaković-Koch, T., & **Sundmacher, K.** *Direct Glucose Enzymatic Fuel Cell*. Presented at: Second Regional Symposium on Electrochemistry South-East Europe. Belgrade, Serbia, June 6, 2010.
- [T210] Rihko-Struckmann, L., Peschel, A., Hanke-Rauschenbach, R., & **Sundmacher, K.** *Exergetic Analysis of the Utilisation of Exhaust CO<sub>2</sub> for the Chemical Storage of Renewable Energy*. Presented at: ISCRE 21. Philadelphia, USA, June 13, 2010.
- [T209] Thotla, S., Freund, H., & **Sundmacher, K.** *Entrainer Based Reactive Divided Wall Columns*. Presented at: CHEMREACTOR-19. Vienna, Austria, September 5, 2010.
- [T208] Kadyk, T., Hanke-Rauschenbach, R., & **Sundmacher, K.** *Nonlinear Frequency Response Analysis for the Diagnosis of Carbon Monoxide Poisoning in PEM Fuel Cell Anodes*. Presented at: CHISA 2010 & ECCE-7 (Special Symposium on Electrochemical Engineering). Prague, Czech Republic, August 28, 2010.
- [T207] Borchert, C. & **Sundmacher, K.** *Image-Based Experimental Investigation of Crystal Aggregation along a Pipe*. Presented at: AIChE Annual Meeting 2010. Salt Lake City, USA, November 7, 2010.
- [T206] Kadyk, T., Hanke-Rauschenbach, R., & **Sundmacher, K.** *Nonlinear Frequency Response Analysis - Yet another Nonlinear Based on Electrochemical Impedance Spectroscopy?* Presented at: EIS 2010. Algarve, Portugal, June 6, 2010.
- [T205] Rollié, S. & **Sundmacher, K.** *Preferential Targeting of Cells with Bionanoparticles: Flow Cytometric Analysis and Multivariate Population Balance Modeling*. Presented at: WCPT6 2010 - World Congress on Particle Technology. Nuremberg, Germany, April 26, 2010.
- [T204] Singh, M. R., Chakraborty, J., Ramkrishna, D., Boerrigter, S., Borchert, C., & **Sundmacher, K.** *Morphological Measurements of Faceted Crystals Using Image Analysis*. Presented at: AIChE Annual Meeting 2010. Salt Lake City, USA, November 7, 2010.
- [T203] **Sundmacher, K.** *Fuel Cell Engineering: Towards the Design of Efficient Electrochemical Power Plants*. Invited talk presented at: ISCRE 21. Philadelphia, USA, June 13, 2010.

- [T202] **Sundmacher, K.** *Using Droplets as Chemical Reactors: Synthesis of Nanoparticles in Emulsions*. Invited talk presented at: East China University of Science and Technology. Shanghai, China, October 18, 2010.
- [T201] Ivanov, I., Vidaković-Koch, T., & **Sundmacher, K.** *A flow-through glucose-oxygen fuel cell based on enzymatic anode and Pt cathode*. Presented at: ISE - The 60th Annual Meeting of the International Society of Electrochemistry. Beijing, China, August 16, 2009.
- [T200] Heidebrecht, P., **Sundmacher, K.**, & Biegler, L. *Experimental Design of dynamic Temperature-Programmed Reduction (TPR) Experiments*. Presented at: 2009 AIChE Annual Meeting. Nashville, TN, USA, November 8, 2009.
- [T199] Borchert, C. & **Sundmacher, K.** *Dynamische Modellierung und Simulation von Kristallformverteilungen*. Presented at: ProcessNet-Jahrestagung 2009. Mannheim, Germany, September 8, 2009.
- [T198] Piewek, S., Heidebrecht, P., & **Sundmacher, K.** *Model based Optimisation of High Temperature Fuel Cells*. Presented at: MODVAL 6 - 6th Symposium on Fuel Cell Modelling and Experimental Validation. Bad Herrenalb, Germany, March 25, 2009.
- [T197] Diaz Ochoa, J. G., Voigt, A., Briesen, H., & **Sundmacher, K.** *Time Dependent Virus Replication in Cell Cultures*. Presented at: Complex 2009. Shanghai, China, February 22, 2009.
- [T196] Hanke-Rauschenbach, R., Mangold, M., Oettel, C., & **Sundmacher, K.** *Bistable current-voltage characteristics of self-humidifying PEM fuel cells operated at constant flow rate*. Presented at: ECS-Meeting, 215th Meeting of the Electrochemical Society. San Francisco, USA, May 24, 2009.
- [T195] Voigt, A. & **Sundmacher, K.** *Simulating the Shape Evolution of Crystals with Monte Carlo Methods*. Presented at: AIChE Annual Meeting 2009. Nashville, TN, USA, November 8, 2009.
- [T194] Hanke-Rauschenbach, R., Weinzierl, C., Rihko-Struckmann, L., & **Sundmacher, K.** *EPrOx: Elektrochemische präferentielle Oxidation von CO aus H<sub>2</sub>/CO-Gemischen in gekoppelten Membran-Reaktoren*. Presented at: Jahrestreffen Reaktionstechnik 2009. Würzburg, Germany, June 8, 2009.
- [T193] Rihko-Struckmann, L., Chalakov, L., Munder, B., & **Sundmacher, K.** *Solid Electrolyte Membrane Reactor for the Oxidative Dehydrogenation of Ethane: Experiments and Modelling*. Presented at: ICCMR 9 - 9th International Conference on Catalysis in Membrane Reactors. Lyon, France, June 28, 2009.
- [T192] Peschel, A., Freund, H.-J., & **Sundmacher, K.** *Systematik zur modellgestützten Ermittlung der optimalen Reaktionsführung am Beispiel der SO<sub>2</sub>-Oxidation*. Presented at: ProcessNet-Jahrestagung 2009. Mannheim, Germany, September 8, 2009.
- [T191] Hartono, B., Hertel, C., Heidebrecht, P., & **Sundmacher, K.** *Modellbasierter Entwurf eines Brennstoffzellenkraftwerks mit Biomassevergasung*. Presented at: ProcessNet-Jahrestagung 2009 und 27. Jahrestagung der Biotechnologen. Mannheim, Germany, September 8, 2009.
- [T190] Kumar, R., Katariya, A., Freund, H., & **Sundmacher, K.** *Reactive Distillation Process for Cyclohexanol Production: Miniplant Experiments and Complementary Process Simulations*. Presented at: EPIC 2009, 2nd International Congress on Green Process Engineering. Venice, Italy, June 14, 2009.
- [T189] Kadyk, T., Hanke-Rauschenbach, R., & **Sundmacher, K.** *Nonlinear Frequency Response Analysis for the Diagnosis of PEM Fuel Cells*. Presented at: 216th ECS Meeting. Vienna, Austria, October 4, 2009.
- [T188] Ivanov, I., Vidaković-Koch, T., & **Sundmacher, K.** *The influence of some structural parameters on the performance of an enzymatic anode for glucose oxidation*. Presented at: SMCBS 2009 - Surface Modification for Chemical and Biochemical Sensing, 4th International Workshop. Przegorzaly (Cracow), Poland, November 6, 2009.
- [T187] Mangold, M., Sheng, M., Heidebrecht, P., Kienle, A., & **Sundmacher, K.** *Physical Model Development, Model Reduction, and Observer Design of a Molten Carbonate Fuel Cell*. Presented at: 18th International Symposium on Chemical Reaction Engineering - ISCRE 18. Chicago, USA, June 6, 2004.
- [T186] Heidebrecht, P. & **Sundmacher, K.** *Schmelzkarbonatbrennstoffzellen (MCFC) mit interner Reformierung: modellgestützte mehrskalige Analyse*. Presented at: ProcessNet-Arbeitsausschusssitzung. Frankfurt, Germany, January 20, 2009.

- [T185] Bensmann, B., Hanke-Rauschenbach, R., Meißner, E., Koch, I., & **Sundmacher, K.** *Theoretical analysis of proton incorporation into the positive active mass of a lead/acid battery: Influence on transient and steady-state behavior.* Presented at: ECS-Meeting, 215th Meeting of the Electrochemical Society. Vienna, Austria, October 4, 2009.
- [T184] Borchert, C. & **Sundmacher, K.** *Statistic Modelling of Image-Based Crystallization Observation.* Presented at: AIChE Annual Meeting 2009. Nashville, USA, November 8, 2009.
- [T183] Rollié, S. & **Sundmacher, K.** *Particle heteroaggregation: Analysis by a property-discrete population balance model.* Presented at: AIChE Annual Meeting 2009. Nashville, TN, USA, November 8, 2009.
- [T182] Hanke-Rauschenbach, R., Weinzierl, C., Rihko-Struckmann, L., & **Sundmacher, K.** *Scale-up on oscillation EPrOx reactor for electrochemical CO removal from reformat gas.* Presented at: ECS-Meeting, 215th Meeting of the Electrochemical Society. San Francisco, USA, May 24, 2009.
- [T181] Diaz Ochoa, J. G., Voigt, A., & **Sundmacher, K.** *Einfluss der Eigenimmunantwort von Zellpopulationen auf die Optimierung der Impfstoffherstellung.* Presented at: ProcessNet-Jahrestagung 2009 und 27. Jahrestagung der Biotechnologen. Mannheim, Germany, August 8, 2009.
- [T180] Fricke, M., Voigt, A., & **Sundmacher, K.** *Tailoring the Size Distribution of Nanoparticles via an Emulsion-Assisted Precipitation Process: A Model-Based Analysis.* Presented at: AIChE Annual Meeting 2009. Nashville, TN, USA, November 8, 2009.
- [T179] Borchert, C., Voigt, A., & **Sundmacher, K.** *Evolution of crystal shape distributions.* Presented at: ProcessNet-Fachausschuss-Sitzung "Trocknungstechnik und Kristallisation." Halle, March 5, 2008.
- [T178] Heidebrecht, P., Rihko-Struckmann, L., & **Sundmacher, K.** *Modellgestützter Entwurf eines zyklischen Wassergasshiftreaktors zur Reinigung von Wasserstoff.* Presented at: ProcessNet Jahrestagung 2008. Karlsruhe, Germany, October 7, 2008.
- [T177] Rollié, S. & **Sundmacher, K.** *Heteroaggregationsprozesse: Mehrdimensionale Vermessung der Clusterzusammensetzung mittels Durchflusszytometrie.* Presented at: ProcessNet Jahrestagung 2008. Karlsruhe, Germany, October 7, 2008.
- [T176] Voigt, A., Fricke, M., & **Sundmacher, K.** *Molecular Modeling of Particle Nucleation In Emulsion Droplets: Towards An Improved Understanding of Nanoparticle Production Processes.* Presented at: AIChE Annual Meeting 2008. Philadelphia, USA, November 16, 2008.
- [T175] **Sundmacher, K.** *Fuel Cell Engineering : State-of-the-Art and Future Prospects.* Invited talk presented at: International Summer CRIS Workshop on Distributed and Renewable Power Generation. Magdeburg, September 16, 2008.
- [T174] Heidebrecht, P., Rihko-Struckmann, L., & **Sundmacher, K.** *Hydrogen production by a cyclic water gas shift reactor.* Presented at: ISCRE 20. Kyoto, Japan, September 7, 2008.
- [T173] Hanke-Rauschenbach, R., Weinzierl, C., Rihko-Struckmann, L., & **Sundmacher, K.** *Electrochemical preferential oxidation of CO in a reformat for fuel cell application with coupled oscillation EPrOx reactors.* Presented at: CHISA 2008 : 18th International Congress on Chemical and Process Engineering. Prag, Czech Republic, August 24, 2008.
- [T172] **Sundmacher, K.** *Der Tropfen als Reaktor : Synthese von Nanopartikeln in Emulsionsphasen.* Presented at: Jahrestreffen Reaktionstechnik 2008. Würzburg, Germany, May 18, 2008.
- [T171] Mangold, M., Hanke-Rauschenbach, R., & **Sundmacher, K.** *Single Cell Modelling and Experimental Validation of PEFC I.* Invited talk presented at: 5th Symposium on Fuel Cell Modelling and Experimental Validation. Winterthur, Switzerland, March 11, 2008.
- [T170] **Sundmacher, K.** *Model-based Development of Fuel Cell Technologies for Mobile and Stationary Power Supply Systems.* Invited talk presented at: Tongji-University. Shanghai, China, September 11, 2008.
- [T169] Zhou, S., Ji, G., Ma T., & **Sundmacher, K.** *The Direct Methanol Fuel Cell (DMFC): Determination of Model Parameters.* Presented at: American Control Conference. Seattle, USA, June 11, 2008.
- [T168] Agarwal, V., Thotla, S., Kaur, R., Chalakova, M., Freund, H.-J., & **Sundmacher, K.** *Attainable Regions of Reactive Distillation.* Presented at: Indo-German Workshop on Advances in Reaction and Separation Processes. Madras, India, February 18, 2008.

- [T167] Borchert, C., Nere, N., Voigt, A., **Sundmacher, K.**, & Ramkrishna, D. *Modeling the Manipulation of Crystal Morphology Distributions*. Presented at: AIChE Annual Meeting 2008. Philadelphia, USA, November 16, 2008.
- [T166] **Sundmacher, K.** & Freund, H. *Intensivierung chemischer Produktionsprozesse*. Invited talk presented at: BASF Ludwigshafen. Ludwigshafen, Germany, April 17, 2008.
- [T165] Vidaković-Koch, T., Ivanov, I., & **Sundmacher, K.** *Biofuel cells: Prospects and current limitations*. Presented at: Indo German Workshop on Advances in Reaction and Separation Processes. Chennai, India, February 18, 2008.
- [T164] Rollié, S. & **Sundmacher, K.** *Cluster Composition in Heteroaggregation of Binary Mixtures*. Presented at: ECIS 2008. Cracow, Poland, August 31, 2008.
- [T163] Oettel, C., Hanke-Rauschenbach, R., & **Sundmacher, K.** *Experimental Investigation of the Nonlinear Behaviour of a CSTR PEM Fuel Cell*. Presented at: CHISA 2008 : 18th International Congress on Chemical and Process Engineering. Prag, Czech Republic, August 24, 2008.
- [T162] Ivanov, I., Vidaković-Koch, T., & **Sundmacher, K.** *Glucose electrooxidation for biofuel cell applications*. Presented at: First Regional Symposium on Electrochemistry of South-East Europe. Crveni Otok, Rovinj, Croatia, May 4, 2008.
- [T161] **Sundmacher, K.** & Engel, R. *Nanopartikel-Synthese in Mikro- und Miniemulsionen*. Invited talk presented at: DECHEMA-Kolloquium. Frankfurt, Germany, October 30, 2008.
- [T160] Rihko-Struckmann, L. & **Sundmacher, K.** *ProBio : Integrierte Prozesssysteme zur energetischen Nutzung von Biomasse in Brennstoffzellen*. Presented at: DECHEMA Informationstag "Biomasse und Brennstoffzellen." Frankfurt am Main, Germany, January 16, 2007.
- [T159] Freund, H. & **Sundmacher, K.** *Systematic Analysis of Process Intensification Options : The Elementary Process Function Methodology*. Presented at: AIChE Annual Meeting 2007. Salt Lake City, USA, November 4, 2007.
- [T158] Chalakov, L., Rihko-Struckmann, L., Munder, B., & **Sundmacher, K.** *Feasibility Study of the Oxidative Dehydrogenation of Ethane in an Electrochemical Packed Bed Membrane Reactor*. Presented at: CAMURE-6 and ISMR-5. Pune, India, January 14, 2007.
- [T157] Borchert, C., Nere, N., Voigt, A., **Sundmacher, K.**, & Ramkrishna, D. *Prediction of Crystal Shape and Size Distributions using Multidimensional Population Balances*. Presented at: AIChE Annual Meeting 2007. Salt Lake City, USA, November 4, 2007.
- [T156] Pfafferoth, M., Heidebrecht, P., & **Sundmacher, K.** *3D simulation of a symmetric MCFC stack model*. Presented at: Chemical Reaction Engineering XI - CRE XI. Bilbao, Spain, August 26, 2007.
- [T155] Pfafferoth, M., Heidebrecht, P., & **Sundmacher, K.** *Multi-scale modeling of the anode and cathode compartments and the IIR unit within a MCFC*. Presented at: European Congress of Chemical Engineering ECCE-6. Copenhagen, Denmark, September 16, 2007.
- [T154] **Sundmacher, K.** & Freund, H. *Prozessintensivierung: neue konzeptionelle Ansätze für die Prozessgestaltung und -führung*. Presented at: ProcessNet-Jahrestagung 2007. Aachen, Germany, October 16, 2007.
- [T153] **Sundmacher, K.** *Electrochemical Energy Conversion using Fuel Cell Systems*. Invited talk presented at: Faculty of Natural Sciences and Technology. Trondheim, Norway, June 9, 2007.
- [T152] **Sundmacher, K.** *Fuel Cell Systems for Electrochemical Energy Conversion*. Invited talk presented at: Max-Planck-Institut für Sonnensystemforschung. Göttingen, Germany, March 22, 2007.
- [T151] Ivanov, I., Vidaković-Koch, T., & **Sundmacher, K.** *Glucose Oxidation : Electrocatalysis vs. Bioelectrocatalysis*. Presented at: 58th Annual Meeting of the International Society of Electrochemistry (ISE). Banff, Canada, September 9, 2007.
- [T150] **Sundmacher, K.** *Einsatz von Mikro- und Miniemulsionen als alternative Medien zur Durchführung chemischer Reaktionen*. Invited talk presented at: ProcessNet-Fachtagung „Unkonventionelle Reaktionssysteme“. Frankfurt am Main, Germany, April 20, 2007.
- [T149] **Sundmacher, K.** *Multifunktionale Reaktoren*. Invited talk presented at: GDCh-Kolloquium. Magdeburg, Germany, February 8, 2007.
- [T148] Katariya, A., Chalakova, M., **Sundmacher, K.**, & Mahajani, S. *Nonlinear Dynamics in Reactive Distillation with Multiple Reactions*. Presented at: AIChE Annual Meeting 2007. Salt Lake City, USA, November 4, 2007.

- [T147] **Sundmacher, K.**, Fricke, M., Niemann, B., & Voigt, A. *Synthese maßgeschneiderter Feststoffpartikel in Emulsionen: Status und Entwicklungstrends*. Presented at: ProcessNet-Jahrestagung 2007. Aachen, Germany, October 16, 2007.
- [T146] **Sundmacher, K.** & Freund, H. *Process intensification : towards a design approach in terms of elementary process functions*. Presented at: XIX Polish Conference of Chemical and Process Engineering. Rzeszów, Poland, September 3, 2007.
- [T145] Hertel, C., Heidebrecht, P., & **Sundmacher, K.** *Model-based Analysis of a Cyclic Water Gas Shift Reactor*. Presented at: Chemical Reaction Engineering XI - CRE XI. Bilbao, Spain, August 26, 2007.
- [T144] Pfafferodt, M., Heidebrecht, P., & **Sundmacher, K.** *Mehrskalige CFD-Modellierung der örtlichen Katalysatorstrukturierung eines Indirekten Internen Reformers einer Schmelzkarbonatbrennstoffzelle*. Presented at: VDI-GVC Fachausschuß CFD. Würzburg, Germany, March 5, 2007.
- [T143] Fricke, M., Parmer, R., Voigt, A., & **Sundmacher, K.** *Droplet Size Distribution of Technical Macroemulsions: Variation of Process Parameters*. Presented at: PARTEC 2007. Nuremberg, Germany, March 27, 2007.
- [T142] Oncül, A., **Sundmacher, K.**, & Thévenin, D. *Numerical Simulation of BaSO<sub>4</sub> Precipitation in a Coaxial Pipe Mixer with Micromixing Effects*. Presented at: AIChE-Meeting. San Francisco, USA, November 12, 2006.
- [T141] Vidaković-Koch, T., Krewer, U., Christov, M., & **Sundmacher, K.** *Determination of a rate expression for electrochemical oxidation of methanol*. Presented at: International Symposium on Surface Imaging/Spectroscopy at the Solid/Liquid Interface. Krakow, Poland, May 28, 2006.
- [T140] Steyer, F. & **Sundmacher, K.** *Einsatz eines reaktiven Entrainers zur Synthese von Cyclohexanol in einem Prozess gekoppelter Reaktivdestillationskolonnen*. Presented at: GVC/DECHEMA-Jahrestagungen. Wiesbaden, Germany, September 26, 2006.
- [T139] Munder, B., Rihko-Struckmann, L., & **Sundmacher, K.** *Distributed Impedance Modelling and Analysis of Reactions and Charge Transport in Au-YSZ Composite Electrodes*. Presented at: 57th ISE Meeting. Edinburgh, UK, August 27, 2006.
- [T138] Chalakov, L., Rihko, L. K., & **Sundmacher, K.** *Electrocatalytic Oxidative Dehydrogenation of Ethane with a Solid Electrolyte Membrane Reactor*. Presented at: 17th International Congress of Chemical and Process Engineering. Prague, Czech Republic, August 27, 2006.
- [T137] Galvita, V. & **Sundmacher, K.** *Hydrogen Purification for Low Temperature Fuel Cell by Redox Iron Process in Periodically Operated Catalytic reactor*. Presented at: CHEMREACTOR. Athens, Greece, May 15, 2006.
- [T136] Niemann, B. & **Sundmacher, K.** *Manipulation and Control of the Particle Size Distribution of Nanoparticles during their Formation in Microemulsions Droplets by a Suitable Feed Strategy*. Presented at: AIChE-Meeting. San Francisco, USA, November 12, 2006.
- [T135] Heidebrecht, P., Gundermann, M., & **Sundmacher, K.** *Optimierung von Betriebs- und Designparametern einer 300 kW-Carbonatbrennstoffzelle (MCFC), mittels eines 2D-Prozessmodells*. Presented at: GVC/DECHEMA-Jahrestagungen. Wiesbaden, Germany, September 26, 2006.
- [T134] Heidebrecht, P., Ivanova, M., Munder, B., Heineken, W., & **Sundmacher, K.** *Development of a validated reduced model for DIR-DMFC*. Invited talk presented at: ISCRE 19th International Symposium on Chemical Reaction Engineering. Potsdam, Germany, September 3, 2006.
- [T133] **Sundmacher, K.** *Elektrochemische Energieumwandlung mit Brennstoffzellen-Systemen*. Invited talk presented at: Nordrhein-Westfälische Akademie der Wissenschaften. Düsseldorf, Germany, November 15, 2006.
- [T132] **Sundmacher, K.** & Voigt, A. *Populationsdynamik disperser Systeme in der Verfahrenstechnik*. Invited talk presented at: Jahre verfahrenstechnische Forschung und Lehre in Magdeburg. Magdeburg, Germany, October 6, 2006.
- [T131] Voigt, A., Niemann, B., & **Sundmacher, K.** *The Influence of Nucleation Kinetics on the Particle Population Dynamics in Microemulsion Precipitation using Molecular Modelling Approaches*. Presented at: AIChE-Meeting. San Francisco, USA, November 12, 2006.
- [T130] Heidebrecht, P. & **Sundmacher, K.** *Direkte Interne Reformierung in Hochtemperaturbrennstoffzellen: Prozessintegration und konzeptionelles Systemdesign*.

- Presented at: XXXVIII. Jahrestreffen Deutscher Katalytiker. Weimar, Germany, March 16, 2006.
- [T129] Vidaković-Koch, T., Christov, M., & **Sundmacher, K.** *Can CO stripping voltammetry be used as a quantitative method for in situ fuel cell catalyst characterisation?* Presented at: 57th Annual Meeting of the International Society of Electrochemistry. Edinburgh, UK, August 27, 2006.
- [T128] Ivanova, M., Qi, Z., Kamath, R., Mahajani, S., & **Sundmacher, K.** *Influence of the Reaction Kinetics on the Design of a Reactive Distillation Column for Isobutene Dimerisation.* Presented at: 17th International Congress of Chemical and Process Engineering. Prague, Czech Republic, August 27, 2006.
- [T127] Hanke-Rauschenbach, R., Mangold, M., & **Sundmacher, K.** *Nonlinear Behaviour of PEM Fuel Cells operated in Auto-humidification Mode.* Presented at: AIChE-Meeting. San Francisco, USA, November 12, 2006.
- [T126] Niemann, B. & **Sundmacher, K.** *Emulsionsgestützte Synthese von Nanopartikeln: Experimentelle und modelltheoretische Prozessanalyse.* Presented at: GVC/DECHEMA-Jahrestagungen. Wiesbaden, Germany, September 26, 2006.
- [T125] Voigt, A. & **Sundmacher, K.** *Microemulsion-based nanoparticle production on a technical scale : Experimental and theoretical process evaluation.* Invited talk presented at: AICHEM 2006. Frankfurt, Germany, May 15, 2006.
- [T124] Voigt, A., Rauscher, F., & **Sundmacher, K.** *Calciumcarbonat-Kristallisation in Wasser-in-Öl-Mikroemulsionen : Steuerung von Form und Morphologie.* Presented at: GVC-Fachausschuss-Sitzung "Kristallisation." Basel, Schweiz, March 23, 2006.
- [T123] Klose, F., Wolff, T., Hamel, C., Tota, A., Seidel-Morgenstern, A., Chalakov, L., Rihko-Struckmann, L., **Sundmacher, K.**, Peglow, M., Ahchieva, D., Heinrich, S., Mörl, L., & Weiß, H. *Möglichkeiten und Grenzen des Einsatzes von Membranreaktoren in der katalytischen Oxidation von Kohlenwasserstoffen.* Presented at: XXXIX. Jahrestreffen Deutscher Katalytiker. Weimar, Germany, March 15, 2006.
- [T122] **Sundmacher, K.** *Magdeburger Brennstoffzelle stellt Weltrekord auf, Festveranstaltung 30.000 Stunden.* Invited talk presented at: Weltbestzeit im Betrieb einer MCFC-Brennstoffzellenanlage-MTUHotModule. Magdeburg, Germany, June 14, 2006.
- [T121] Voigt, A. & **Sundmacher, K.** *Herstellung von Nanopartikeln durch Fällungsreaktionen in Mikroemulsionen : Einstellung von Partikeleigenschaften durch Prozessvariationen Form und Morphologie.* Invited talk presented at: 3. Symposium des Fraunhofer ICT "Produktgestaltung in der Partikeltechnologie. Pfinztal, Germany, June 22, 2006.
- [T120] Gangadwala, J., Radulescu, G., Kienle, A., Steyer, F., & **Sundmacher, K.** *New Process for Recovery of Acetic Acid from Waste Water.* Presented at: 17th International Congress of Chemical and Process Engineering. Prague, Czech Republic, August 27, 2006.
- [T119] Munder, B., Rihko-Struckmann, L., & **Sundmacher, K.** *Analysis of Steady-state and Forced Periodic Operation of Electrochemical Membrane Reactors for Selective Partial Oxidation of n-Butane to Maleic Anhydride.* Presented at: 19th International Symposium on Chemical Reaction Engineering. Potsdam, Germany, September 3, 2005.
- [T118] Krewer, U., Christov, M., & **Sundmacher, K.** *Kinetische Analyse der elektrochemischen Oxidation von Methanol in einer Zyklonströmungszelle.* Presented at: Sitzung der DECHEMA/GVC-Ausschüsse „Technische Reaktionsführung“ und „Energieverfahrenstechnik“. Bad Herrenalb, Germany, March 7, 2005.
- [T117] **Sundmacher, K.**, Heidebrecht, P., Gundermann, M., Mangold, M., Kienle, A., Koch, A., & Berndt, J. *Operation and Analysis of MCFCs with Direct Internal Reforming, International Centre for Science and High Technology of UNIDO (ICS-UNIDO).* Invited talk presented at: Expert Group Meeting "Technologies for hydrogen production and fuel cells." Trieste, Italy, March 7, 2005.
- [T116] Vidaković, T., Christov, M., **Sundmacher, K.**, Nagabhushana, K. S., Wen, F., Kinge, S., & Bönnemann, H. *Pt/Ru Colloidal Catalysts: Characterisation and Determination of Kinetics for Methanol Electrooxidation.* Presented at: 3rd Gerischer Symposium – Electrocatalysis: Theory and Experiment. Berlin, Germany, July 6, 2005.
- [T115] Hanke, R., Mangold, M., & **Sundmacher, K.** *Hierarchical Modeling of Fuel Cell Systems – Virtual Fuel Cell Laboratory.* Presented at: Symposium on Modelling of Complex Processes. Texas, USA, March 5, 2005.

- [T114] Mangold, M., Heidebrecht, P., Gundermann, M., Kienle, A., & **Sundmacher, K.** *Model Based Analysis and Control of an Industrial Molten Carbonate Fuel Cell Stack*. Invited talk presented at: Third Sino-German Workshop on Fuel Cells. Shanghai, China, May 1, 2005.
- [T113] Niemann, B., Recksiedler, J., Adityawarman, D., & **Sundmacher, K.** *Nucleation and Growth Kinetics for the Nanoparticle Precipitation of Barium Sulfate in Microemulsions*. Presented at: AIChE 2005 Annual Meeting. Cincinnati, USA, October 30, 2005.
- [T112] **Sundmacher, K.** *Elektrochemische Energieumwandlung mit Brennstoffzellen-Systemen*. Invited talk presented at: Max-Planck-Institut für Plasmaphysik. Greifswald, Germany, June 15, 2006.
- [T111] Mitkova, T., John, V., Tobiska, L., Steyer, C., Voigt, A., & **Sundmacher, K.** *Simulationsmethoden für Partikel-Populationsbilanzen zur Analyse von Fällungsprozessen in Strömungsfeldern*. Presented at: GVC-Jahrestagung. Wiesbaden, Germany, September 6, 2005.
- [T110] Heidebrecht, P. & **Sundmacher, K.** *Coupled Partial Differential Equations in Fuel Cell Models*. Presented at: 76th Annual GAMM Conference. Luxembourg, Luxembourg, March 28, 2005.
- [T109] Krewer, U., Christov, M., Vidaković, T., & **Sundmacher, K.** *Analysis of the Kinetics of the Electrochemical Methanol Oxidation in a Cyclone Flow Cell*. Presented at: 207th Meeting of the Electrochemical Society. Quebec, Canada, May 15, 2005.
- [T108] **Sundmacher, K.**, Krewer, U., Schultz, T., Vidaković, T., Christov, M., & Pfafferodt, M. *Nichtlineare Dynamik der Direkt-Methanolbrennstoffzelle: Modellierung und Analyse*. Invited talk presented at: Seminar at the University of Ulm. Ulm, Germany, June 6, 2005.
- [T107] **Sundmacher, K.** *Elektrochemische Energieumwandlung mit Brennstoffzellen – neue Wege der Energiegewinnung*. Invited talk presented at: Naturkundemuseum – Naturwissenschaftliche Vereine, Magdeburg, Germany, November 28, 2006.
- [T106] Yu, E. H. & **Sundmacher, K.** *Glucose Oxidation on Enzyme Modified Electrodes for Biofuel Cell Applications*. Presented at: ECS 208 : 208th Meeting of the Electrochemical Society. Los Angeles, USA, October 16, 2005.
- [T105] Gundermann, M., Heidebrecht, P., & **Sundmacher, K.** *Validation of a Mathematical Model using an Industrial MCFC plant*. Presented at: 1st European Fuel Cell Technology and Applications Conference. Rome, Italy, December 14, 2005.
- [T104] Galvita, V. & **Sundmacher, K.** *Hydrogen Production from Methane Steam Reforming in a Periodically Operated Reactor for Low-temperature Fuel Cells*. Presented at: 8th International Conference on Energy for a Clean Environment. Lisbon, Portugal, June 27, 2005.
- [T103] Voigt, A., Adityawarman, D., Rauscher, F., Heidenreich, F., & **Sundmacher, K.** *Monte-Carlo Simulation für Nanopartikelfällung in Mikroemulsionen*. Presented at: GVC-Jahrestagung. Wiesbaden, Germany, September 6, 2005.
- [T102] Mangold, M., Krasnyk, M., & **Sundmacher, K.** *Stationäre Mehrdeutigkeiten und Musterbildung in Hochtemperaturbrennstoffzellen*. Presented at: Sitzung der DECHEMA/GVC-Ausschüsse „Technische Reaktionsführung“ und „Energieverfahrenstechnik“. Bad Herrenalb, Germany, March 7, 2005.
- [T101] Gundermann, M., Heidebrecht, P., **Sundmacher, K.**, Koch, M., & Berndt, J. *Validierung eines Brennstoffzellenmodells an einer industriellen MCFC-Anlage*. Presented at: Sitzung der DECHEMA/GVC-Ausschüsse „Technische Reaktionsführung“ und „Energieverfahrenstechnik“. Bad Herrenalb, Germany, March 7, 2005.
- [T100] **Sundmacher, K.** *Elektrochemische Energieumwandlung mit Brennstoffzellen – neue Wege der Energiegewinnung*. Invited talk presented at: 1200 Jahre Magdeburg – 12 Vorlesungen zur Wissenschaft. Magdeburg, Germany, October 26, 2005.
- [T99] **Sundmacher, K.**, Adityawarman, D., Rauscher, F., Niemann, B., & Voigt, A. *Emulsion-assisted Particle Precipitation*. Presented at: 2nd International Symposium on Particulate Processes. Magdeburg, Germany, November 17, 2004.
- [T98] Heidebrecht, P., Mangold, M., Kienle, A., & **Sundmacher, K.** *Conceptual design of internal reforming in high temperature fuel cells*. Presented at: International Max Planck Symposium on Integrated Chemical Processes. Magdeburg, Germany, March 22, 2004.
- [T97] Heidebrecht, P. & **Sundmacher, K.** *Development of a Hierarchical Model Family for Molten Carbonate Fuel Cells with Direct Internal Reforming (DIR-MCFC)*. Presented at: ECMI. Eindhoven, Netherlands, June 21, 2004.

- [T96] Huang, Y.-S., Schlünder, E. U., & **Sundmacher, K.** *Feasibility Analysis of Membrane Reactors – Discovery of Reactive Arheotropes*. Presented at: ICCMR-6. Lahnstein, Germany, July 6, 2004.
- [T95] **Sundmacher, K.**, Rihko-Struckmann, L., & Galvita, V. *Solid Electrolyte Membrane Reactors – Status and Trends*. Invited talk presented at: Seminar of the Department of Chemical Engineering, University of Purdue. West Lafayette, USA, November 4, 2004.
- [T94] Vidaković, T., Christov, M., & **Sundmacher, K.** *Electrochemical Oxidation of Methanol in a Cyclone Flow Cell*. Presented at: 55th Annual Meeting of the Int. Society of Electrochemistry. Thessaloniki, Greece, September 19, 2004.
- [T93] Schultz, T. & **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*. Presented at: Grove-Symposium. Munich, Germany, October 6, 2004.
- [T92] Mangold, M., Krasnyk, M., & **Sundmacher, K.** *Instabilities and Pattern Formation in High Temperature Fuel Cells*. Presented at: CHISA 2004. Prague, Czech Republic, August 22, 2004.
- [T91] **Sundmacher, K.** *Prozesse der Reaktivdestillation: Einsatzgebiete, Entwurf und Betrieb*. Invited talk presented at: GdCh-Kolloquium. Oldenburg, Germany, December 2, 2004.
- [T90] Munder, B., Ye, Y., Rihko-Struckmann, L., & **Sundmacher, K.** *Electrochemical Membrane Reactor for Controlled Partial Oxidation of Hydrocarbons: Model and Experimental Validation*. Presented at: ICCMR-6. Lahnstein, Germany, July 6, 2004.
- [T89] Kukul'a, R., Schultz, T., Schröder, T., **Sundmacher, K.**, & Hasal, P. *Multifunctional Unit Combining a Fuel Cell and an Enzyme Electro-Membrane Reactor: Concepts, Design, Experiments*. Presented at: CHISA 2004. Prague, Czech Republic, August 22, 2004.
- [T88] Galvita, V. & **Sundmacher, K.** *Novel Catalytic Concepts for Ethanol Processing in Low and High Temperature Fuel Cell Systems*. Presented at: 13th International Congress on Catalysis. Paris, France, July 11, 2004.
- [T87] Adityawarman, D., Veit, P., Voigt, A., & **Sundmacher, K.** *Precipitation of BaSO<sub>4</sub> Nanoparticles in Non-ionic Microemulsion*. Presented at: NANO 2004. Wiesbaden, Germany, June 20, 2004.
- [T86] Krewer, U., Schultz, T., & **Sundmacher, K.** *Direct Methanol Polymer Electrolyte Fuel Cell: Transfer Function Analysis of Current-Voltage Dynamics*. Presented at: Fuel Cell Research Symposium: Modelling and Experimental Validation. Zurich, Switzerland, March 18, 2004.
- [T85] Heidebrecht, P., Mangold, M., Kienle, A., & **Sundmacher, K.** *Conceptual Design of the Integration of the Reforming Process in High-Temperature Fuel Cells*. Presented at: International Max Planck Symposium on Integrated Chemical Processes. Magdeburg, Germany, March 22, 2004.
- [T84] **Sundmacher, K.**, Huang, Y.-S., Qi, Z., & Schlünder, E.-U. *Thermodynamic and Kinetic Effects on the Feasible Products of Reactive Distillation*. Presented at: International Max Planck Symposium on Integrated Chemical Processes. Magdeburg, Germany, March 22, 2004.
- [T83] Frömmichen, R., Chalakov, L., & **Sundmacher, K.** *Reaction Kinetics of Partial Oxidation of Ethane in a Tubular Electrolytic Cell*. Presented at: 55th Annual Meeting of the Int. Society of Electrochemistry. Thessaloniki, Greece, September 19, 2004.
- [T82] Schultz, T. & **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*. Presented at: Grove-Symposium. Munich, Germany, October 6, 2004.
- [T81] **Sundmacher, K.**, Rihko-Struckmann, L., Munder, B., & Ye, Y. *Partielle Oxidation von Butan in einem elektrochemischen Membranreaktor*. Presented at: DECHEMA-Arbeitsausschuss Technische Reaktionen. Frankfurt, Germany, January 14, 2003.
- [T80] Hanke, R. & **Sundmacher, K.** *Hierarchical Process Modelling Strategies to Fuel Cell Systems - Towards a Virtual Fuel Cell Laboratory*. Presented at: ACHEMA 2003. Frankfurt am Main, Germany, May 19, 2003.
- [T79] Steyer, F., Qi, Z., & **Sundmacher, K.** *Selective Separation by Reactive Distillation Applied to Close Boiling Mixtures Undergoing Phase Splitting*. Presented at: ACHEMA 2003. Frankfurt am Main, Germany, May 19, 2003.

- [T78] Schultz, T. & **Sundmacher, K.** *Dynamische Modellierung und Simulation von Direkt-Methanolbrennstoffzellen auf Basis der verallgemeinerten Maxwell-Stefan-Transportgleichungen.* Presented at: GDCh-Jahrestagung. Munich, Germany, October 6, 2003.
- [T77] Huang, Y.-S., Schlünder, E. U., & **Sundmacher, K.** *Mass Transfer Effects on the Residue Curve Maps for Membrane Reactors.* Presented at: International Symposium on Multifunctional Reactors ISMR-3. Bath, Germany, August 27, 2003.
- [T76] Schultz, T. & **Sundmacher, K.** *Direkte Methanol-Brennstoffzelle (DMFC): Analyse experimenteller Miniplant-Bilanzdaten auf Basis der Maxwell-Stefan-Gleichungen.* Presented at: GVC/DECHEMA-Jahrestagungen. Mannheim, Germany, September 16, 2003.
- [T75] Heidebrecht, P., Gundermann, M., **Sundmacher, K.**, Berndt, J., & Koch, M. *Experimental Validation of a Mathematical Model for a MCFC Power Plant.* Presented at: AICHEM 2003. Frankfurt am Main, Germany, March 24, 2003.
- [T74] **Sundmacher, K.**, Mangold, M., & Heidebrecht, P. *Modellierung und Simulation von Schmelzcarbonat-Brennstoffzellen.* Invited talk presented at: Seminar des IWE, Universität Karlsruhe. Karlsruhe, Germany, January 16, 2003.
- [T73] **Sundmacher, K.** *Modellierung der Prozessdynamik von Schmelzcarbonat-Brennstoffzellen.* Invited talk presented at: Seminar über Nichtlinearität und Unordnung in komplexen Systemen. Magdeburg, Germany, January 20, 2003.
- [T72] Rauscher, F., Niemann, B., & **Sundmacher, K.** *Charakterisierung von W/O-Mikroemulsionen - Voraussetzung für die Nutzung als Reaktionsmedium.* Presented at: GVC/ DECHEMA-Jahrestagungen. Mannheim, Germany, September 16, 2003.
- [T71] **Sundmacher, K.** *Catalytic Distillation.* Invited talk presented at: Ringvorlesung Katalyse des Fritz-Haber-Instituts. Berlin, Germany, November 20, 2003.
- [T70] Rihko, L. K., Ye, Y., Munder, B., **Sundmacher, K.**, Chalakov, L., Schulz, M., & Rau, H. *Kontrollierte Partialoxidation von Butan in einem elektrochemischen Membranreaktor.* Presented at: XXXVI. Treffen Deutscher Katalytiker. Weimar, Germany, March 19, 2003.
- [T69] **Sundmacher, K.** *Direct Fuel Cells: Experimental and Model-based Analysis of Dynamic Process Behaviour.* Invited talk presented at: Fuel Cell Workshop. Dalian, China, October 30, 2002.
- [T68] **Sundmacher, K.** & Qi, Z. *Integration von Reaktion und Stofftrennung: Konzepte und Bewertung.* Presented at: GVC/DECHEMA-Jahrestagung. Wiesbaden, Germany, May 11, 2002.
- [T67] Kienle, A. & **Sundmacher, K.** *Synthesis, Dynamics and Control of Reactive Distillation Processes.* Invited talk presented at: Aspen World 2002. Washington, USA, October 27, 2002.
- [T66] **Sundmacher, K.**, Rauscher, F., Steyer, C., & Niemann, B. *Modellierung und Simulation von Fällungsreaktionen in Emulsionen.* Invited talk presented at: Max-Planck-Institut für Mathematik in den Naturwissenschaften. Leipzig, Germany, November 19, 2002.
- [T65] **Sundmacher, K.** & Heidebrecht, P. *Dynamic Simulation of Molten Carbonate Fuel Cells.* Presented at: 53rd Annual Meeting of the Int. Society of Electrochemistry. Dusseldorf, Germany, September 15, 2002.
- [T64] Schultz, T. & **Sundmacher, K.** *Stofftransportphänomene in PEM für die DMFC: Modellierung auf Basis des vollständigen Maxwell-Stefan-Ansatzes.* Presented at: 72. AGEF-Seminar : Grundlagenuntersuchungen und neue Entwicklungen von Brennstoffzellen-Membranen. Jülich; Germany, December 4, 2002.
- [T63] **Sundmacher, K.** *Prozessintegration in Direkt-Brennstoffzellen.* Invited talk presented at: DECHEMA-Kolloquium "Integrierte Reaktionstechnik in Brennstoffzellen." Frankfurt, Germany, March 2, 2002.
- [T62] Gundermann, M., **Sundmacher, K.**, & Styczynski, Z. *Fuel Cells.* Presented at: Internationales Innovationsseminar. Magdeburg, Germany, December 5, 2002.
- [T61] **Sundmacher, K.** & Qi, Z. *Separative Reactors: Concepts and Evaluation.* Invited talk presented at: Scientific Symposium of the Max-Planck-Institute for Complex Technical Systems. Magdeburg, Germany, May 24, 2002.
- [T60] **Sundmacher, K.** *Fuel Cell Systems.* Invited talk presented at: Seminar des Fritz-Haber-Instituts der Max-Planck-Gesellschaft. Berlin, Germany, September 25, 2002.

- [T59] **Sundmacher, K.**, Schultz, T., Munder, B., Ginkel, M., & Mangold, M. *Modellbildung und systemwissenschaftliche Analyse von Brennstoffzellen – auf dem Weg zu einem virtuellen Labor*. Invited talk presented at: DFG-Kolloquium „Neue Schichtstrukturen für Brennstoffzellen“. Pommersfelden, Germany, May 21, 2001.
- [T58] **Sundmacher, K.** *Brennstoffzellen und elektrochemische Membranreaktoren: Entwicklung, Betrieb, Modellierung und Prozessanalyse*. Invited talk presented at: Fakultätskolloquien der Universitäten Karlsruhe, Dortmund und Erlangen-Nuremberg. Karlsruhe, Germany, November 6, 2001.
- [T57] **Sundmacher, K.** *Reaktive Destillationsprozesse*. Invited talk presented at: Verfahrenstechnisches Kolloquium der Universität Sofia. Sofia, Bulgaria, November 19, 2001.
- [T56] **Sundmacher, K.** *Importance of Micro- and Macrokinetics of Chemical Reactions for Catalytic Distillation Processes*. Presented at: 1st International Max-Planck-Symposium on Reactive Distillation. Magdeburg, Germany, July 2, 2001.
- [T55] Steyer, F., Qi, Z., & **Sundmacher, K.** *Synthesis of Cyclohexanol by Three-Phase Catalytic Distillation: Kinetics and Equilibria*. Presented at: International Symposium on Multifunctional Reactors. Nuremberg, Germany, June 26, 2001.
- [T54] **Sundmacher, K.** & Schultz, T. *Steady State and Dynamic Process Behaviour of DMFCs*. Presented at: Open Problems of Direct Methanol Fuel Cells, Workshop des Weierstraß-Instituts für Angewandte Analysis und Stochastik. Berlin, Germany, November 23, 2001.
- [T53] **Sundmacher, K.** & Schultz, T. *Performance of Oxygen Gas-Liquid Membranes for Application in Electrochemical Oxidation Processes*. Presented at: European Congress on Chemical Engineering. Nuremberg, Germany, June 26, 2001.
- [T52] Styczinski, F., Purmann, M., **Sundmacher, K.**, & Schultz, T. *Use of Fuel Cells for Stationary and Mobile Applications - System Oriented Approach*. Presented at: Int. Conf. on Advances in Processing, Testing and Applications of Dielectric Materials. Wroclaw, Poland, September 17, 2001.
- [T51] Heidebrecht, P. & **Sundmacher, K.** *Integrierte Dampfreformierung und elektrochemische Wasserstoffoxidation in Schmelzcarbonatbrennstoffzellen*. Presented at: Fachtreffen Reaktionstechnik. Weimar, Germany, March 21, 2001.
- [T50] Scott, K., Argyropoulos, P., Jackson, C., Taama, W., Horsfall, J., Lovell, K., & **Sundmacher, K.** *Methanol Crossover Aspects of Materials for Direct Methanol Fuel Cells*. Presented at: Fuel Cells - Powering the 21st Century. Portland, USA, October 30, 2000.
- [T49] Schultz, T., Zhou, S., & **Sundmacher, K.** *Direkt-Methanolbrennstoffzelle: Experimentelle und modellbasierte Analyse des stationären und dynamischen Betriebsverhaltens*. Presented at: GVC-Jahrestagung. Karlsruhe, Germany, September 20, 2000.
- [T48] **Sundmacher, K.** *Katalytische Destillationsprozesse: Auswahlkriterien, Einsatzfelder, Betriebsverhalten*. Invited talk presented at: Verfahrenstechnisches Kolloquium der Degussa-Hüls AG. Marl, Germany, October 27, 2000.
- [T47] **Sundmacher, K.** *Einsatz mathematischer Methoden in der Systemverfahrenstechnik*. Invited talk presented at: Kolloquium des Weierstraß-Instituts. Berlin, Germany, April 10, 2000.
- [T46] **Sundmacher, K.** *Advanced Catalysis Engineering*. Presented at: Dutch Graduate Schools in Catalysis (NIOK) and Engineering (OSPT). Delft, The Netherlands, November 27, 2000.
- [T45] **Sundmacher, K.** *Fuel Cells: Modelling, Simulation and Process Analysis*. Presented at: Modelling and Computation in Chemical Engineering and Biotechnology. Hohenwart, Germany, October 1, 2000.
- [T44] **Sundmacher, K.**, Schultz, T., Zhou, S., Scott, K., Ginkel, M., & Gilles, E.-D. *Dynamics of the Direct Methanol Fuel Cell: Experiments and Model-based Analysis*. Presented at: 16th International Symposium on Chemical Reaction Engineering. Cracow, Poland, September 10, 2000.
- [T43] **Sundmacher, K.**, Kolah, A., & Qi, Z. *Reaktive Destillationssysteme*. Invited talk presented at: Verfahrenstechnisches Kolloquium der Degussa-Hüls AG. Marl, Germany, March 16, 2000.
- [T42] **Sundmacher, K.**, Zhou, S., & Schultz, T. *Steady-State and Dynamic Behaviour of the Direct Methanol Fuel Cell (DMFC)*. Presented at: International Innovation Seminar, Session on Computational Chemical Engineering. Magdeburg, Germany, October 26, 2000.
- [T41] **Sundmacher, K.** & Schultz, T. *Electrochemical Gas Absorption in GDE-Membrane Reactor: Analysis of Reaction Mechanisms and Transport Phenomena*. Presented at: CHISA 2000. Prague, Czech Republic, August 27, 2000.

- [T40] Zhou, S., Schultz, T., & **Sundmacher, K.** *Operation and Control of a Direct Methanol Fuel Cell System*. Presented at: 1st North American Symposium on Chemical Reaction Engineering. Houston, USA, January 6, 2000.
- [T39] Peglow, M., **Sundmacher, K.**, & Koch, M. *Prozesssimulation eines Blockheizkraftwerkes unter Einbindung einer Schmelzcarbonat-Brennstoffzelle*. Presented at: International Innovation Seminar, Session on Computational Chemical Engineering. Magdeburg, Germany, October 26, 2000.
- [T38] **Sundmacher, K.**, Schultz, T., Zhou, S., & Petrov, P. *Prozessführung von Brennstoffzellen-Systemen*. Presented at: DECHEMA-Kolloquium "Neue Aspekte der Brennstoffzellen-Systemtechnik in mobilen und stationären Anwendungen." Magdeburg, Germany, December 7, 2000.
- [T37] **Sundmacher, K.** & Kolah, A. *Process Intensification by Integration of Reaction and Distillation in Multifunctional Reactors*. Presented at: NICHE-Conference on Reactive Separations. Marco Island, USA, June 13, 1999.
- [T36] Schultz, T., Zhou, S., & **Sundmacher, K.** *Direkte Methanol-Brennstoffzelle: Analyse des nichtlinearen dynamischen Verhaltens*. Presented at: 99. Hauptversammlung der Deutschen Bunsen-Tagung für Physikalische Chemie. Würzburg, Germany, June 1, 1999.
- [T35] **Sundmacher, K.** *Integration verfahrenstechnischer Grundoperationen in multifunktionalen Reaktoren dargestellt am Beispiel der Reaktivdestillation*. Presented at: Tagung der DGMK-Bezirksgruppe Berlin/Brandenburg. Berlin, Germany, May 6, 1999.
- [T34] **Sundmacher, K.** & Kolah, A. *Integration of Reaction and Distillation in Multifunctional Reactors*. Invited talk presented at: Mobil Technology Company. Paulsboro, USA, June 17, 1999.
- [T33] **Sundmacher, K.**, Schultz, T., Ginkel, M., Gilles, E., & Scott, K. *Methods and Tools for Modelling and Simulation of Fuel Cells*. Presented at: 4th International Congress on Industrial and Applied Mathematics. Edinburgh, UK, July 5, 1999.
- [T32] **Sundmacher, K.** & Scott, K. *Electrochemical Oxidation of Methanol in a Polymer Electrolyte Fuel Cell: Modelling and Experimental Validation of Current-Voltage Characteristics*. Presented at: IChemE Research Event. Newcastle upon Tyne, UK, April 7, 1998.
- [T31] Bessling, B., Schoenmakers, S., Gorak, A., Schembecker, G., & **Sundmacher, K.** *Auslegung reaktiver Destillationsprozesse, Möglichkeiten und Grenzen*. Presented at: GVC-Fachauschuß "Thermische Zerlegung von Gas- und Flüssigkeitsgemischen." Munich, Germany, September 30, 1998.
- [T30] **Sundmacher, K.** & Uhde, G. *Modeling, Simulation, Operation and Analysis of Reactive Distillation Processes*. Invited talk presented at: Department of Chemical Engineering, University of Amsterdam. Amsterdam, The Netherlands, July 14, 1998.
- [T29] **Sundmacher, K.** *Elektrochemische Absorptionsprozesse mit Gasdiffusionselektroden: Modellierung und Zelldesign*. Presented at: GDCh-Jahrestagung der Fachgruppe Angewandte Elektrochemie. Frankfurt am Main, Germany, September 30, 1998.
- [T28] **Sundmacher, K.** & Scott, K. *Direct Methanol Polymer Electrolyte Fuel Cell: Analysis of Charge and Mass Transfer in the Vapour-Liquid-Solid System*. Presented at: 15th International Symposium on Chemical Reaction Engineering. Newport Beach, USA, September 13, 1998.
- [T27] Bessling, B., Schoenmakers, H., Gorak, A., Schembecker, G., & **Sundmacher, K.** *Auslegung reaktiver Destillationsprozesse, Möglichkeiten und Grenzen*. Presented at: GVC-Fachauschuß "Thermische Zerlegung von Gas- und Flüssigkeitsgemischen." Munich, Germany, March 9, 1998.
- [T26] **Sundmacher, K.**, Uhde, G., & 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*. Presented at: Technische Universität Clausthal, External Organizations. Newport Beach, USA, September 13, 1998.
- [T25] Scott, K., **Sundmacher, K.**, & Taama, W. *Direct Methanol Polymer Electrolyte Fuel Cell: Model-based Analysis and Experimental Validation*. Presented at: EPSRC-Meeting on Polymer Electrolyte Fuel Cells & Fuel Processing. Loughborough, UK, January 29, 1998.
- [T24] Mohl, K. D., Kienle, A., Gilles, E. D., Rapmund, P., **Sundmacher, K.**, & Hoffmann, U. *Nonlinear Dynamics of Reactive Distillation Processes for the Production of Fuel Ethers*.

- Presented at: European Symposium on Computer Aided Process Engineering. Trondheim, Norway, May 26, 1997.
- [T23] Hoffmann, U., Schwarzer, S., **Sundmacher, K.**, & Thiel, C. *Chemical Reaction Engineering Aspects in the ETBE-Production*. Presented at: DGMK-Conference "C4-Chemistry: Manufacture and Use of C4-Hydrocarbons." Aachen, Germany, October 6, 1997.
- [T22] Thiel, C., **Sundmacher, K.**, & Hoffmann, U. *Design katalytischer Destillationskolonnen für kinetisch limitierte Reaktionen*. Presented at: GVC-Fachausschuss "Thermische Zerlegung von Gas- und Flüssigkeitsgemischen." Wiesbaden, Germany, April 10, 1997.
- [T21] **Sundmacher, K.** & Hoffmann, U. *Simulation der katalytischen Destillation in Packungskolonnen mit einem detaillierten, kinetisch basierten Modell*. Presented at: Colloquium of VW-Foundation on „Modellierung komplexer Systeme in der Verfahrenstechnik". Aachen, Germany, February 22, 1996.
- [T20] **Sundmacher, K.** *Reaktivdestillation*. Invited talk presented at: Verfahrenstechnisches Kolloquium der BASF AG. Ludwigshafen, Germany, June 4, 1996.
- [T19] Uhde, G., **Sundmacher, K.**, & Hoffmann, U. *Simultaneous Gas-Solid Reaction and Comminution - A Novel Multifunctional Reactor*. Presented at: 5th World Congress of Chemical Engineering. San Diego, USA, July 14, 1996.
- [T18] **Sundmacher, K.** & Hoffmann, U. *Development of a New Catalytic Distillation Process for Fuel Ethers via a Detailed Nonequilibrium Model*. Presented at: 14th International Symposium on Chemical Reaction Engineering. Bruges, Belgium, May 5, 1996.
- [T17] **Sundmacher, K.** *Reaktions- und prozeßtechnische Grundlagen der Herstellung von MTBE*. Invited talk presented at: Institut für Chemische Verfahrenstechnik, Universität Stuttgart. Stuttgart, Germany, November 30, 1996.
- [T16] **Sundmacher, K.** & Hoffmann, U. *Dynamische Simulation der Reaktions- und Transportprozesse in Gasdiffusionselektroden dargestellt am Beispiel der Sauerstoffreduktion in Brennstoffzellen*. Presented at: GDCh-Jahrestagung der Fachgruppe Angewandte Elektrochemie. Monheim am Rhein, Germany, October 9, 1996.
- [T15] **Sundmacher, K.** *Reactive Distillation*. Invited talk presented at: Department of Chemical Engineering, University of Amsterdam. Amsterdam, Netherlands, September 25, 1996.
- [T14] Nowitzki, O., Hamelmann, R., **Sundmacher, K.**, & Hoffmann, U. *Production of Gas-Diffusion-Electrodes loaded with Non-noble Metal Catalyst for Oxygen Reduction by a Calendering Rolling Process*. Presented at: 4th European Symposium on Electrochemical Engineering. Prague, Czech Republic, August 28, 1996.
- [T13] **Sundmacher, K.**, Nowitzki, O., & Hoffmann, U. *Dynamic Simulation and Analysis of Reaction and Transport Processes During Oxygen Reduction at Gas-Diffusion-Electrodes*. Presented at: 4th European Symposium on Electrochemical Engineering. Prague, Czech Republic, August 28, 1996.
- [T12] Hoffmann, U. & **Sundmacher, K.** *Reaktivdestillation: Stand und Entwicklungsrichtungen*. Presented at: GVC-Jahrestagung. Strasbourg, France, September 27, 1995.
- [T11] **Sundmacher, K.** *Kopplung von chemischen Reaktionen und physikalischen Transportphänomenen bei der Reaktivdestillation*. Invited talk presented at: Lehrstuhl für Thermische Verfahrenstechnik der Universität Dortmund. Dortmund, Germany, October 10, 1995.
- [T10] Hoffmann, U. & **Sundmacher, K.** *Reaktivdestillation mit katalytisch aktiven Füllkörperpackungen*. Presented at: GVC-Fachausschuss "Thermische Zerlegung von Gas- und Flüssigkeitsgemischen." Jena, Germany, May 4, 1995.
- [T9] **Sundmacher, K.** & Hoffmann, U. *Reactive Distillation of Nonideal Multicomponent Mixtures - Demonstrated for the Synthesis of MTBE, TAME and ETBE*. Presented at: Eurogas '94. Trondheim, Norway, March 21, 1994.
- [T8] **Sundmacher, K.** & Hoffmann, U. *Multicomponent Mass and Energy Transport on Different Length Scales in a Packed Reactive Distillation Column for Heterogeneously Catalyzed Fuel Ether Production*. Presented at: 13th International Symposium on Chemical Reaction Engineering. Baltimore, USA, September 25, 1994.
- [T7] **Sundmacher, K.** & Hoffmann, U. *Oscillatory Vapor-Liquid Transport Phenomena in a Packed Reactive Distillation Column for Fuel Ether Production*. Presented at: International Symposium on Maxwell-Stefan Approach to Mass Transfer. Amsterdam, Netherlands, November 18, 1994.

- [T6] **Sundmacher, K.** & Hoffmann, U. *Heterogeneously Catalyzed Formation of MTBE in a Reactive Distillation Column*. Presented at: EUROPACAT-1. Montpellier, France, September 12, 1993.
- [T5] **Sundmacher, K.**, Rihko-Struckmann, L., & Hoffmann, U. *Classification of Reactive Distillation Processes by Dimensionless Numbers*. Presented at: CHISA '93. Prague, Czech Republic, August 29, 1993.
- [T4] **Sundmacher, K.** *Catalytic Distillation in a Fixed Bed Reaction Column for Producing the Antiknock Enhancer MTBE*. Presented at: Chemical Engineering Forum for Young Scientists. Turino, Italy, July 2, 1992.
- [T3] **Sundmacher, K.** & Hoffmann, U. *Importance of Irreversible Thermodynamics for Liquid Phase Ion Exchange Catalysis: Experimental Verification for MTBE-Synthesis*. Presented at: 12th International Symposium on Chemical Reaction Engineering - ISCRE 12. Turino, Italy, June 28, 1992.
- [T2] **Sundmacher, K.** *Importance of Irreversible Thermodynamics for Liquid Phase Ion Exchange Catalysis: Experimental Verification for MTBE-Synthesis*. Invited talk presented at: Deutsche Luft- und Raumfahrtgesellschaft (DLR). Göttingen, Germany, May 5, 1992.
- [T1] **Sundmacher, K.** *Einsatz einer Finite-Volumen-Methode zur Simulation der katalytischen Destillation in Füllkörper-Reaktionskolonnen*. Presented at: DECHEMA-Arbeitsausschuss „Reaktorberechnung“. Frankfurt am Main, Germany, March 13, 1992.

## Conference Poster

- [P210] Plate, C., Hahn, M., Klimek, A., Ganzer, C., **Sundmacher, K.**, & Sager, S. *Strategies for Solving Mixed Integer Linear Optimization Problems with Embedded ReLU Artificial Neural Networks*. Presented at: AIChE 2025 Annual Meeting. Boston, USA, November 2, 2025.
- [P209] Hegde, C., Voigt, A., & **Sundmacher, K.** *Introducing a Novel Autonomous Process Chain for Selective Precipitation of CaCO<sub>3</sub> and MgCO<sub>3</sub> using Extracted Mine Tailings*. Presented at: PARTEC 2025. Nürnberg, Germany, September 23, 2025.
- [P208] Franz, T., Dam, A. P., Papakonstantinou, G., & **Sundmacher, K.** *Iridium catalyst dissolution in PEM water electrolysis single-cells under steady-state and dynamic operation using single-pass water flow*. Presented at: 5th International Conference on Electrolysis. Freiburg, Germany, August 25, 2025.
- [P207] Klimek, A., Ganzer, C., & **Sundmacher, K.** *Optimal System Design and Scheduling for Ammonia Production from Renewables under Uncertainty: Stochastic Programming vs. Robust Optimization*. Presented at: 35th European Symposium on Computer Aided Process Engineering (ESCAPE 35). Ghent, Belgium, July 6, 2025.
- [P206] Peterson, L., Forootani, A., Sanchez Medina, E. I., Gosea, I. V., Benner, P., & **Sundmacher, K.** *Learning reduced-order models for dynamic CO<sub>2</sub> methanation using operator inference*. Presented at: 35th European Symposium on Computer Aided Process Engineering (ESCAPE 35). Ghent, Belgium, July 6, 2025.
- [P205] Vhora, K., Thévenin, D., Janiga, G., & **Sundmacher, K.** *Numerical Investigation of Low Reynolds Number Flow in Double Schwarz-D TPMS Structure*. Presented at: 1st SUSTENS Meeting . Virtual, June 4, 2025.
- [P204] Geschke, A., Zimmermann, R. T., & **Sundmacher, K.** *Experimental Validation of the Core-Shell Catalyst Pellet Concept in a Fixed-Bed Tubular Reactor*. Presented at: Annual Meeting on Reaction Engineering 2025. Würzburg, Germany, May 26, 2025.
- [P203] Geschke, A., Bremer, J., & Sundmacher, K. *Learning a Data-Driven Reactor Model from Experimental Data of a Continuously Operated Fixed-Bed CO<sub>2</sub> methanation Reactor on Pilot-Scale*. Presented at: 2024 AIChE Annual Meeting . San Diego, USA, October 27, 2024.
- [P202] Franz, T., Dam, A. P., Papakonstantinou, G., & **Sundmacher, K.** *Analysis of PEM water electrolysis system operation strategies and their impact on iridium catalyst dissolution during realistic on/off-operation*. Presented at: Electrochemistry 2024. Braunschweig, Germany, September 16, 2024.
- [P201] Peterson, L., Sanchez Medina, E. I., Khalid, M. M., & **Sundmacher, K.** *Surrogate modeling of dynamical systems: deep learning or model-order reduction?*. Presented at: ECML 2024 (ML4CCE workshop). Vilnius, Lithuania, September 9, 2024.

- [P200] Griehl, C., Sanchez Medina, E. I., & **Sundmacher, K.** *Rapid phosphine ligand discovery in homogeneous catalysis: Bayesian optimization approach for low-throughput experimentation.* Presented at: CHISA 2024. Prague, Czech Republic, August 25, 2024.
- [P199] Griehl, C., Sanchez Medina, E. I., & **Sundmacher, K.** *BOHO CAT - Bayesian Optimization for Low Throughput Ligand Selection in Homogeneous Catalysis.* Presented at: Cambridge ELLIS Unit Summer School 2024. Cambridge, UK, July 15, 2024.
- [P198] Goldhahn, R., Minor, A.-J., Rihko-Struckmann, L., & **Sundmacher, K.** *Facilitating the depolymerization of polyamide 6 (PA6) by ultrasound and microwave assistance using CaCl<sub>2</sub>-EtOH-H<sub>2</sub>O mixture for polymer dissolution.* Presented at: ISCRE 28: International Symposium on Chemical Reaction Engineering 2024. Turku, Finland, June 16, 2024.
- [P197] Ganzer, C. & **Sundmacher, K.** *Systematic comparison of flowsheet optimization options: surrogate modelling vs. genetic algorithms vs Bayesian optimization.* Presented at: 34th European Symposium on Computer-Aided Process Engineering (ES-CAPE-34). Florence, Italy, June 2, 2024.
- [P196] Hegde, C., Voigt, A., & **Sundmacher, K.** *Towards pH swing-based CO<sub>2</sub> mineralization for Calcium Carbonate precipitation: Modeling and Experimental Analysis.* Presented at: 34th European Symposium on Computer-Aided Process Engineering (ES-CAPE-34). Florence, Italy, June 2, 2024.
- [P195] Vhora, K., Neeraj, T., Thévenin, D., Janiga, G., & **Sundmacher, K.** *Investigating Fluid Flow Dynamics in Triply Periodic Minimal Surfaces (TPMS) Structures Using CFD Simulation.* Presented at: 34th European Symposium on Computer-Aided Process Engineering (ES-CAPE-34). Florence, Italy, June 2, 2024.
- [P194] Sethi, S., Zhang, X., & **Sundmacher, K.** *Rational function-based approach for integrated ionic liquids solvent selection and process design for efficient extractive distillation.* Presented at: 34th European Symposium on Computer-Aided Process Engineering (ES-CAPE-34). Florence, Italy, June 2, 2024.
- [P193] Zimmermann, R. T. & **Sundmacher, K.** *Reaction Heat Release Control in Fixed-Bed Reactors by Core-Shell Catalyst Pellets for a Multi-Reaction System.* Presented at: Annual Meeting on Reaction Engineering and Electrochemical Processes 2024. Würzburg, Germany, May 6, 2024.
- [P192] Gochitashvili, T., Ivanov, I., Van Wonderen, J., Clarke, T. A., & **Sundmacher, K.** *Creating conductive GUVs.* Presented at: SynCell2024 International Conference on Engineering Synthetic Cells and Organelles. Toulouse, France, April 17, 2024.
- [P191] Otrin, N., Hammer, M., Huang, W., Bednarz, C., Otrin, L., & **Sundmacher, K.** *Enzyme reconstitution into PMOXA-PDMS-PMOXA-based biomimetic vesicles.* Presented at: SynCell2024 International Conference on Engineering Synthetic Cells and Organelles. Toulouse, France, April 17, 2024.
- [P190] König-Mattern, L., Sanchez Medina, E. I., Rihko-Struckmann, L., & **Sundmacher, K.** *Machine learning-based solvent screening for lignocellulose biorefineries and lignin upgrading.* Presented at: BioSPRINT Spring School: Opportunities and challenges of process intensification application in lignocellulosic biorefineries. Frankfurt am Main, Germany, April 15, 2024.
- [P189] Sethi, S., Zhang, X., & **Sundmacher, K.** *Process-driven solvent screening for efficient extractive distillation: smart of interpolative rational functions.* Presented at: 2023 AIChE Annual Meeting. Orlando, USA, November 5, 2023.
- [P188] Goldhahn, R., Minor, A.-J., Rihko-Struckmann, L., & **Sundmacher, K.** *Depolymerization of polyamide 6 using ionic liquids with focus on process intensification.* Presented at: 14th European Congress of Chemical Engineering and 7th European Congress of Applied Biotechnology. Berlin, Germany, September 17, 2023.
- [P187] Voigt, A., Hegde, C., **Sundmacher, K.**, Athni Hiremath, S., Kakanov, M., Bajcinca, N., Bächle, V., & Gleiß, M. *Autonomous control of a process chain for CO<sub>2</sub> carbonation by use of mine waste.* Presented at: 14th European Congress of Chemical Engineering and 7th European Congress of Applied Biotechnology. Berlin, Germany, September 17, 2023.
- [P186] Hegde, C., Voigt, A., & **Sundmacher, K.** *Towards selective CO<sub>2</sub> mineralization to calcite or magnesite applying the pH swing process.* Presented at: 14th European Congress of Chemical Engineering and 7th European Congress of Applied Biotechnology. Berlin, Germany, September 17, 2023.

- [P185] Rihko-Struckmann, L., Kopton, J., König, L., & **Sundmacher, K.** *Multi-objective life cycle optimization for sustainable biorefinery design*. Presented at: The 11th Int. Conf. Life Cycle Management. Lille, France, September 6, 2023.
- [P184] Tenberg, V., Rihko-Struckmann, L., **Sundmacher, K.**, & Lorenz, H. *Purification of  $\epsilon$ -Caprolactam Monomers via Crystallization from a Depolymerization Reaction Mixture*. Presented at: ISIC / BACG 2023 Annual Meeting of the British Association of Crystal Growth. Glasgow, UK, September 5, 2023.
- [P183] Goldhahn, R., Minor, A.-J., Rihko-Struckmann, L., & **Sundmacher, K.** *Depolymerization of polyamide 6 using ionic liquids with focus on process intensification*. Presented at: 14th International Workshop on Polymer Reaction Engineering (PRE). Potsdam, Germany, September 5, 2023.
- [P182] Dam, A. P., Papakonstantinou, G., & **Sundmacher, K.** *Influences on Iridium Catalyst Dissolution in Single-Cell PEM Water Electrolysis*. Presented at: EFCF 2023 (European Fuel Cell Forum). Lucerne, Switzerland, July 5, 2023.
- [P181] Peterson, L., Bremer, J., & **Sundmacher, K.** *Hybrid modeling of the catalytic CO<sub>2</sub> methanation using process data and mechanistic knowledge*. Presented at: ESCAPE-33. Athens, Greece, June 18, 2023.
- [P180] Wang, Z., Zhou, T., & **Sundmacher, K.** *Molecular Property Targeting for Optimal Solvent Design in Extractive Distillation Processes*. Presented at: ESCAPE-33. Athens, Greece, June 18, 2023.
- [P179] Zimmermann, R. T., Bremer, J., & **Sundmacher, K.** *'Egg-White' Catalyst Pellet Preparation by Fluidized-Bed Coating*. Presented at: ReactEng23: Annual Meeting on Reaction Engineering 2023. Frankfurt am Main, May 15, 2023.
- [P178] Dam, A. P., Papakonstantinou, G. & **Sundmacher, K.** *Iridium Catalyst Dissolution in Single-Cell Polymer Electrolyte Membrane Water Electrolysis*. Presented at: ModVal 2023. Duisburg, Germany, March 21-23, 2023.
- [P177] Sanchez Medina, E. I., Linke, S., Stoll, M., & **Sundmacher, K.** *Predicting Activity Coefficients at Infinite Dilution Using Hybrid Residual Graph Neural Networks*. Presented at: 2022 AIChE Annual Meeting. Phoenix, USA, November 13, 2022.
- [P176] Nguyen, V. D. L., Kim, G. S., Tran, N. N., Lee, D. Y., Fulcheri, L., Song, Z., **Sundmacher, K.**, Lee, M., & Hessel, V. *Biogas upgrading using ionic liquid bmim<sup>+</sup>pf<sub>6</sub><sup>-</sup> followed by thermal-plasma-assisted renewable hydrogen and solid carbon production*. Presented at: 2nd International Conference on Unconventional Catalysis, Reactors & Applications (UCRA 2022). Leamington Spa, United Kingdom, September 21, 2022.
- [P175] Zhou, T., Wang, Z., & **Sundmacher, K.** *A New Machine Learning Framework for Efficient MOF Discovery: Application to Hydrogen Storage*. Presented at: 14th International Symposium on Process Systems Engineering: PSE 2021+. Kyoto, Japan, June 19, 2022.
- [P174] Zhang, X., Zhou, T., & **Sundmacher, K.** *Metal-Organic Framework Targeting for Optimal Pressure Swing Adsorption Process*. Presented at: 14th International Symposium on Process Systems Engineering: PSE 2021+. Kyoto, Japan, June 19, 2022.
- [P173] König-Mattern, L., Linke, S., Rihko-Struckmann, L., & **Sundmacher, K.** *Computer-aided solvent selection for the design of sustainable biorefinery processes*. Presented at: SmartProSys Symposium. Online, March 2, 2022.
- [P172] Qin, H., Song, Z., Qi, Z., & **Sundmacher, K.** *Computer-aided Design of Biphasic System Comprising Ionic Liquid and Conventional Solvent to Extract  $\alpha$ -Tocopherol from Deodorizer Distillate*. Presented at: ESCAPE-32. Toulouse, France, June 12, 2022.
- [P171] Dam, A. P., Papakonstantinou, G., & **Sundmacher, K.**, *Model-based Analysis of Catalyst Corrosion Pathways during Oxygen Evolution Reaction*. Presented at: ISCRE 26 & APCRE 9. Virtual, December 5, 2021.
- [P170] Zimmermann, R. T., Bremer, J., & **Sundmacher, K.**, *Load-Flexible Fixed-Bed Reactors for CO<sub>2</sub> Methanation: Comparison of Catalyst Dilution and Core-Shell Catalyst Particles*. Presented at: ECCE 13 & ECAB 6: 13th European Congress of Chemical Engineering and 6th European Congress of Applied Biotechnology. Berlin, Virtual, September 19, 2021.
- [P169] Sanchez Medina, E. I., Linke, S., & **Sundmacher, K.** *Prediction of Bioconcentration factors (BCF) using Graph Neural Networks*. Presented at: 31st European Symposium on Computer-Aided Process Engineering (ESCAPE-31). Istanbul, Turkey, June 6, 2021.

- [P168] Sanchez Medina, E. I., Rodriguez Vallejo, D., Chachuat, B., **Sundmacher, K.**, Petsagkourakis, P., & del Rio Chanona, E. A. *Acyclic modular flowsheet optimization using multiple trust regions and Gaussian process regression*. Presented at: 31st European Symposium on Computer-Aided Process Engineering (ESCAPE-31). Istanbul, Turkey, June 6, 2021.
- [P167] Zimmermann, R. T., Bremer, J., & **Sundmacher, K.** *Multi-Period Design Optimization of Flexible Fixed-Bed Reactors by Stoichiometry-Based Model Reduction*. Presented at: 31st European Symposium on Computer-Aided Process Engineering (ESCAPE-31). Istanbul, Turkey, June 6, 2021.
- [P166] Marusic, N., Otrin, L., Zhao, Z., Dimova, R., Ivanov, I., & **Sundmacher, K.** *Charge vs. SNARE-mediated fusion of biomimetic polymer/lipid hybrid compartments: Which one is more efficient?* Presented at: SYNCELL 2021. Virtual, May 19, 2021.
- [P165] Weber, S., Abel, K. L., Zimmermann, R. T., Huang, X., Kübel, C., **Sundmacher, K.**, Gläser, R., & Sheppard, T. L. *Porosity and Structure of Hierarchically Porous Ni/Al<sub>2</sub>O<sub>3</sub> Catalysts for CO<sub>2</sub> Methanation*. Presented at: 54. Jahrestreffen Deutscher Katalytiker. Virtual, March 16, 2021.
- [P164] McHardy, C., König-Mattern, L., Knappert, J., Rauh, C., Rihko-Struckmann, L., & **Sundmacher, K.** *Prozessintegration von Zellaufschluss und Extraktion zur Fraktionierung feuchter Mikroalgen-Biomasse*. Presented at: 10. ProcessNet-Jahrestagung und 34. DECHEMA-Jahrestagung der Biotechnologen 2020: Processes for Future. Virtual, September 21-24, 2020.
- [P163] Jokiel, M. & **Sundmacher, K.** *Prozessintensivierung durch optimierte Reaktionsführung in Tandem-Reaktoren am Beispiel der Hydroformylierung von 1-Dodecen*. Presented at: 10. ProcessNet-Jahrestagung und 34. DECHEMA-Jahrestagung der Biotechnologen 2020: Processes for Future. Virtual, September 21-24, 2020.
- [P162] Rätze, K., McBride, K., & **Sundmacher, K.** *Optimal Experimental Design with Bayesian Parameter Identification for Chemical Reaction Networks*. Presented at: 10. ProcessNet-Jahrestagung und 34. DECHEMA-Jahrestagung der Biotechnologen 2020: Processes for Future. Virtual, September 21-24, 2020.
- [P161] Bremer, J., Zimmermann, R. T., & **Sundmacher, K.** *FOReCAST: A Novel Power-to-Gas Pilot-Plant Concept for Flexible CO<sub>2</sub> Methanation*. Presented at: 10. ProcessNet-Jahrestagung und 34. DECHEMA-Jahrestagung der Biotechnologen 2020: Processes for Future. Virtual, September 21-24, 2020.
- [P160] Otrin, L., Diehl, C., Erb, T., **Sundmacher, K.**, & Vidaković-Koch, T. *Mitochondrion Reimagined: Fueling Synthetic Life*. Presented at: 64th Annual Meeting of the Biophysical Society. San Diego, California, USA, February 15, 2020.
- [P159] Marusic, N., Otrin, L., Zhao, Z., Lira, R. de, Vidaković-Koch, T., Ivanov, I., Dimova, R., & **Sundmacher, K.** *Reconstitution of respiratory enzymes in PDMS-g-PEO polymer and polymer/lipid hybrid vesicles*. Presented at: 64th Annual Meeting of the Biophysical Society. San Diego, California, USA, February 15, 2020.
- [P158] Zimmermann, R. T., Bremer, J., & **Sundmacher, K.** *“Egg-Yolk” Catalyst Particle Design for Improved Flexibility of Industrial Scale Fixed-Bed Reactor used for CO<sub>2</sub> Methanation*. Presented at: 12th European Congress of Chemical Engineering – ECCE 12. Florence, Italy, September 15, 2019.
- [P157] Maggi, A., Wenzel, M., & **Sundmacher, K.** *Power-to-Syngas Processes by Reactor-Separator Superstructure Optimization*. Presented at: 12th European Congress of Chemical Engineering – ECCE 12. Florence, Italy, September 15, 2019.
- [P156] Wiedmeyer, V., Voigt, A., & **Sundmacher, K.** *Crystal Growth Simulation in a Continuously Operated Helically Coiled Tube*. Presented at: 12th European Congress of Chemical Engineering – ECCE 12. Florence, Italy, September 15, 2019.
- [P155] Zimmermann, R. T., Bremer, J., & **Sundmacher, K.** *Optimal “Egg-Yolk” Catalyst Particle Design for Thermal Sensitivity Reduction of Industrial Scale Fixed-Bed CO<sub>2</sub> Methanation Reactors*. Presented at: Jahrestreffen Reaktionstechnik 2019 DECHEMA. Würzburg, Germany, May 27, 2019.
- [P154] König, L., Wiedmeyer, V., Voigt, A., & **Sundmacher, K.** *Crystallization in standard batch crystallizers and advanced helically coiled flow tubes: Numerical limits of current simulation methods*. Presented at: YCOPE 2019. Magdeburg, Germany, March 18, 2019.

- [P153] Bremer, J. & **Sundmacher, K.** *Flexible Production of Synthetic Methane: Dynamic Operation and Control of Fixed-Bed Methanation Reactors*. Presented at: YCOPE 2019. Magdeburg, Germany, March 18, 2019.
- [P152] Wiedmeyer, V., Voigt, A., **Sundmacher, K.**, Anker, F., Bartsch, C., John, V., Ahrens, R., & Le Borne, S. *Growth and Aggregation in a Shape Selective Fluidized Bed Crystallizer: Experiments versus Numerical Simulation*. Presented at: PARTEC. Nuremberg, Germany, April 9, 2019.
- [P151] Himmel, A. & **Sundmacher, K.** *Strategie zur Betriebsführung von Power-to-X Prozessen und der Anwendung zur optimalen Auslegung von Speicherelementen*. Presented at: ProcessNet Energieverfahrenstechnik 2019. Frankfurt am Main, Germany, March 6, 2019.
- [P150] Song, Z., Zhou, T., & **Sundmacher, K.** *Systematic method for screening ionic liquids as extraction solvents exemplified by extractive desulfurization process*. Presented at: COSMORS Symposium. Cologne, Germany, March 6, 2018.
- [P149] Bremer, J. & **Sundmacher, K.** *Dynamic Operation of Exothermic Fixed-Bed Reactors for Flexible Fuel Production exemplified for CO<sub>2</sub> Methanation*. Presented at: Tailor-Made Fuels – From Production to Propulsion. Aachen, Germany, June 19, 2018.
- [P148] Pischel, D., **Sundmacher, K.**, & Flassig, R. *Efficient simulation of variability and heterogeneity in bioprocess engineering*. Presented at: MATHMOD 2018. Vienna, Austria, February 21, 2018.
- [P147] McBride, K., Linke, S., & **Sundmacher, K.** *Greener Solvents in Homogeneous Catalyst Recovery*. Presented at: ProcessNet-Jahrestagung und 33. DECHEMA-Jahrestagung der Biotechnologen 2018. Aachen, Germany, September 10, 2018.
- [P146] Uebbing, J., Rihko-Struckmann, L., & **Sundmacher, K.** *Exergy Efficiency Analysis of Methane as a Chemical Energy Carrier for Renewable Energies*. Presented at: JT ProcessNet: EVT 2018. Frankfurt am Main, Germany, March 7, 2018.
- [P145] 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*. Presented at: 6th International Conference on Population Balance Modelling. Ghent, Belgium.
- [P144] Krafft, D., Lopez-Castellanos, S., Ivanov, I., & **Sundmacher, K.** *Compartments for protocells: Microfluidic liposome production*. Presented at: Microfluidics for Synthetic Biology and Health Applications. Bordeaux, France, December 6, 2018.
- [P143] Sorrentino, A., Vidaković-Koch, T., & **Sundmacher, K.** *Studying mass transport dynamics in PEMFCs using concentration-alternating frequency response analysis*. Presented at: 69th ISE Annual Meeting. Bologna, Italy, September 2, 2018.
- [P142] McBride, K. & **Sundmacher, K.** *Surrogate Modeling of Liquid-Liquid Equilibria for Process Optimization Purposes*. Presented at: ESCAPE 2017. Barcelona, Spain, October 1, 2017.
- [P141] Bremer, J., Rätze, K., Benner, P., & **Sundmacher, K.** *Fast Optimal Control of CO<sub>2</sub> Methanation Reactors via Reduced Order Models*. Presented at: ECCE/WCCE 2017. Barcelona, Spain, October 1, 2017.
- [P140] Zinser, A. & **Sundmacher, K.** *Process Optimization by Applying a Simultaneous Dynamic Method*. Presented at: WCCE10+ECCE11+ECAB4. Barcelona, Spain, October 1, 2017.
- [P139] McBride, K., Kaiser, N. M., & Sundmacher, K. *Influence of enhanced homogeneous catalyst recovery on optimal reactor trajectories in the hydroformylation of 1-dodecene*. Presented at: Jahrestreffen Reaktionstechnik 2017. Wuerzburg, Germany, May 22, 2017.
- [P138] Facht, M., Rihko-Struckmann, L., & **Sundmacher, K.** *Durchflusszytometrische Bioprozesskontrolle am Beispiel einer carotinoidbildenden Mikroalge*. Presented at: BioProcessing Days. Recklinghausen, Germany, February 22, 2016.
- [P137] Bremer, J., Goyal, P. K., Feng, L., Benner, P., & **Sundmacher, K.** *Optimization and Reduced Order Modeling of CO<sub>2</sub> Methanation Reactors*. Presented at: KoMSO Challenge Workshop "Reduced-Order Modeling for Simulation and Optimization". Renningen, Germany, November 17, 2016.
- [P136] Do Thi, Q. N., Krishna, G. S. R., Varničić, M., Vidaković-Koch, T., & **Sundmacher, K.** *Multi-step Biotransformations by Electroenzymatic Cascades*. Presented at: EU-ISMET 2016. Rome, Italy, September 26, 2016.
- [P135] Kovačević, T., Wiedmeyer, V., Schock, J., Pfeiffer, F., Voigt, A., **Sundmacher, K.**, & Briesen, H. *Orientation of Primary Particles in Potash Alum Aggregates*. Presented at: BIWIC 2016. Magdeburg, September 6, 2016.

- [P134] Sorrentino, A., Vidaković-Koch, T., & **Sundmacher, K.** *Beyond classical EIS: A new Method for Analysing the Dynamics of PEM Fuel Cells*. Presented at: Electrochemistry 2016. Goslar, Germany, September 26, 2016.
- [P133] Flassig, R., 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*. Presented at: FOSBE 2016. Magdeburg, Germany, October 9, 2016.
- [P132] Rihko-Struckmann, L., Pirwitz, K., Molnar, M., & **Sundmacher, K.** *Exploitation and Utilisation of Carbohydrate Derivatives Recovered from Lipid Extracted Algae*. Presented at: Industrial Biotechnology Forum 2016 (IBF). Garching, Germany, March 14, 2016.
- [P131] Kaiser, N. M. & **Sundmacher, K.** *Optimal Reactor-Separator Network Synthesis*. Presented at: AIChE Annual Meeting 2016. San Francisco, USA, November 13, 2016.
- [P130] Wenzel, M., Rihko-Struckmann, L., & **Sundmacher, K.** *CO<sub>2</sub> Activation via Reverse Water Gas Shift (RWGS) Processes: A Comparative Thermodynamic Analysis*. Presented at: ISCRE 24. Minneapolis, USA, June 12, 2016.
- [P129] Pirwitz, K., Rihko-Struckmann, L., & **Sundmacher, K.** *Assessment of innovative downstream processes for microalgal  $\beta$ -carotene production*. Presented at: BioProcessing Days. Recklinghausen, Germany, February 22, 2016.
- [P128] Flassig, R., Facht, M., Höffner, K., & **Sundmacher, K.** *Dynamic flux balance modeling to increase the production of high-value compounds in green microalgae*. Presented at: Industrial Biotechnology Forum 2016 (IBF). Garching/Munich/Germany, March 14, 2016.
- [P127] Himmel, A., Rihko-Struckmann, L., Sager, S., & **Sundmacher, K.** *Modellgestützte optimale Steuerung von Biogasanlagen*. Presented at: Processnet-Jahrestagung. Aachen, Germany, September 12, 2016.
- [P126] Fricke, M., Voigt, A., & **Sundmacher, K.** *Shaping without Touching: ZnO Nanoparticle Production in Miniemulsions*. Presented at: Processnet-JT. Aachen, September 12, 2016.
- [P125] Kaiser, N., Flassig, R., & **Sundmacher, K.** *Hydroformylation reactor design under model and design uncertainties*. Presented at: DGMK "Synthesis Gas Chemistry." Dresden, Germany, October 7, 2015.
- [P124] Wenzel, M., Rihko-Struckmann, L., & **Sundmacher, K.** *CO<sub>2</sub>- Aktivierung mittels Chemical Looping*. Presented at: ProcessNet Jahrestreffen der Fachgruppe "Energieverfahrenstechnik." Bonn, February 23, 2015.
- [P123] McBride, K., Gaide, T., Vorholt, A., Behr, A., & **Sundmacher, K.** *Temperature-switchable solvents for the recovery of homogeneous catalyst in alkene hydroformylation*. Presented at: DECHEMA Infoday Switchable Solvent Systems. Frankfurt am Main, Germany, September 28, 2015.
- [P122] Bremer, J., Feng, L., Benner, P., & **Sundmacher, K.** *Quadratic Approximation for Model Order Reduction in Reaction Engineering*. Presented at: MORE - Workshop on Model REduction. Pilsen, Czech Republic, September 6, 2015.
- [P121] Schack, D., Rihko-Struckmann, L., & **Sundmacher, K.** *Thermodynamische Analyse der Erzeugung flüssiger Kraftstoffe aus erneuerbarer Energie und Biomasse*. Presented at: ProcessNet Jahrestreffen der Fachgruppe "Energieverfahrenstechnik." Bonn, Germany, February 23, 2015.
- [P120] Facht, M., Flassig, R., Rihko-Struckmann, L., & **Sundmacher, K.** *Model-based process design for natural  $\beta$ -carotene: Accounting for parameter uncertainties and process design variabilities*. Presented at: Algal Biomass, Biofuels and Bioproducts. San Diego, USA, June 7, 2015.
- [P119] Zhou, T., Wang, J., & **Sundmacher, K.** *Computer-aided solvent design for extractive reaction processes*. Presented at: ECCE10+ECAB3+EPIC5. Nice, France, September 27, 2015.
- [P118] Wiedmeyer, V., Anker, F., Voigt, A., John, V., & **Sundmacher, K.** *Crystal Shape Evolution in a Continuous Helically Coiled Flow Tube Crystallizer*. Presented at: ECCE10+ECAB3+EPIC5. Nice, France, September 27, 2015.
- [P117] Facht, M., Rihko-Struckmann, L., & **Sundmacher, K.** *Durchflusszytometrische Bioprozesskontrolle am Beispiel einer carotinoidbildenden Mikroalge*. Presented at: 8. Bundesalgenstammtisch. Garching, Germany, September 7, 2015.
- [P116] Zhou, T. & **Sundmacher, K.** *Robust design of optimal solvents for chemical reactions - a combined experimental and computer-aided strategy*. Presented at: PSE2015 Conference. Copenhagen, Denmark, May 31, 2015.

- [P115] Kaiser, N. M. & **Sundmacher, K.** *Model-based optimal design of a hydroformylation process with catalyst recovery by a thermomorphic solvent system.* Presented at: PSE2015 Conference. Copenhagen, Denmark, May 31, 2015.
- [P114] Varničić, M., Vidaković-Koch, T., & **Sundmacher, K.** *Partial Glucose Oxidation in Electroenzymatic Reactor.* Presented at: 65th Annual Meeting of the International Society of Electrochemistry. Lausanne, Switzerland, August 31, 2014.
- [P113] Kirsch, S., Peña Arias, I., 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.* Presented at: 65th Annual Meeting of the International Society of Electrochemistry. Lausanne, Switzerland, August 31, 2014.
- [P112] Wang, W., Voigt, A., & **Sundmacher, K.** *Application of synthetic bionanoparticles to affinity membrane adsorption, Soft Smart Particles: Preparation and Applications.* Presented at: DECHMA. Frankfurt am Main, Germany, October 27, 2014.
- [P111] El-Sibai, A., Rihko-Struckmann, L., & **Sundmacher, K.** *Dynamic Optimisation of the Sabatier Process for Power-to-Gas Applications.* Presented at: ProcessNet-Annual Meeting. Aachen, Germany, September 30, 2014.
- [P110] Kaiser, N. M., Hentschel, B., & **Sundmacher, K.** *Technische Realisierung eines optimalen Reaktors für die Hydroformylierung langkettiger Olefine in thermomorphen Lösungsmittelsystemen.* Presented at: Jahrestreffen Reaktionstechnik. Würzburg, Germany, April 28, 2014.
- [P109] McBride, K. & **Sundmacher, K.** *Conceptual and data driven process design for the hydroformylation of 1-dodecene in a thermomorphic solvent system.* Presented at: ProcessNet-Annual Meeting. Aachen, Germany, September 30, 2014.
- [P108] Pirwitz, K., Rihko-Struckmann, L., & **Sundmacher, K.** *Process analysis of  $\beta$ -carotene with *Dunaliella salina*.* Presented at: Algal Biomass, Biofuels & Bioproducts. Santa Fe, USA, June 15, 2014.
- [P107] Zhou, T. & **Sundmacher, K.** *Integrated Solvent and Process Design Exemplified for a Diels-Alder Reaction.* Presented at: AIChE Annual Meeting. Atlanta, USA, November 16, 2014.
- [P106] Bensmann, A., Hanke-Rauschenbach, R., Heyer, R., Kohrs, F., Benndorf, D., Reichl, U., & **Sundmacher, K.** *Methanisierung von erneuerbarem Wasserstoff in Biogas-Anlagen.* Presented at: ProcessNet-Annual Meeting. Aachen, Germany, September 30, 2014.
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