

## List of Prof. Dr. Ing. Jakob Burger's publications (14.11.2018)

### Peer-reviewed articles

- **C. F. Breitkreuz, N. Schmitz, E. Ströfer, J. Burger, H. Hasse:** Design of a Production Process for Poly(oxymethylene) Dimethyl Ethers from Dimethyl Ether and Trioxane, *Chem. Ing. Tech.* 90 (2018) 1489-1496. 10.1002/cite.201800038
- **N. Galeotti, J. Burger, H. Hasse:** Vapor-liquid equilibrium in the ternary systems acetic acid + water + (xylose or glucose), *Fluid Phase Equilib.* 473 (2018) 323-329. 10.1016/j.fluid.2018.06.011
- **F. Jirasek, J. Burger, H. Hasse:** Method for Estimating Activity Coefficients of Target Components in Poorly Specified Mixtures, *Ind. Eng. Chem. Res.* 57 (2018) 7310-7313. 10.1021/acs.iecr.8b00917
- **F. Jirasek, J. Burger, H. Hasse:** Solid-liquid equilibrium in the system 2-keto-L-gulonic acid + sodium-2-keto-L-gulonate + water, *Fluid Phase Equilib.* 473 (2018) 318-322. 10.1016/j.fluid.2018.06.010
- **F. Jirasek, N. Galeotti, J. Burger, H. Hasse:** Solid-liquid equilibrium in the system 2-keto-L-gulonic acid + L-ascorbic acid + water, *Chem. Eng. Technol.* (2018). 10.1002/ceat.201800240
- **M. Kaul, J. Burger, H. Hasse:** Hierarchical design of extraction-distillation processes using short-cut apparatus models with piece-wise linearized thermodynamics, *Chem. Eng. Sci.* 192 (2018) 422-433. 10.1016/j.ces.2018.07.030
- **N. Schmitz, C. F. Breitkreuz, E. Ströfer, J. Burger, H. Hasse:** Separation of water from mixtures containing formaldehyde, water, methanol, methylal, and poly(oxymethylene) dimethyl ethers by pervaporation, *J. Memb. Sci.* 564 (2018) 806-812. 10.1016/j.memsci.2018.07.053
- **N. Schmitz, C. F. Breitkreuz, E. Ströfer, J. Burger, H. Hasse:** Vapor-liquid equilibrium and distillation of mixtures containing formaldehyde and poly(oxymethylene) dimethyl ethers, *Chem. Eng. Process.* 131 (2018) 116-124. doi.org/10.1016/j.ces.2018.06.012
- **N. Asprion, S. Blagov, R. Böttcher, J. Schwientek, J. Burger, E. von Harbou, M. Bortz:** Simulation and Multi-criteria Optimization under Uncertain Model Parameters of a Cumene Process, *Chem. Ing. Tech.* 89 (2017) 665-674. 10.1002/cite.201600098
- **J. Berje, J. Burger, H. Hasse, J. Baldamus:** NMR spectroscopic study of chemical equilibria in solutions of formaldehyde, water, and butynediol, *AIChE J.* 63 (2017) 4442-4450. 10.1002/aic.15788
- **M. Bortz, J. Burger, E. von Harbou, M. Klein, J. Schwientek, N. Asprion, R. Böttcher, K.-H. Küfer, H. Hasse:** Efficient Approach for Calculating Pareto Boundaries under Uncertainties in Chemical Process Design, *Ind. Eng. Chem. Res.* 56 (2017) 12672-12681. 10.1021/acs.iecr.7b02539
- **E. Forte, J. Burger, K. Langenbach, H. Hasse, M. Bortz:** Multi-criteria optimization for parameterization of SAFT-type equations of state for water, *AIChE J.* 64 (2017) 226-237. 10.1002/aic.15857
- **E. Forte, E. von Harbou, J. Burger, N. Asprion, M. Bortz:** Optimal Design of Laboratory and Pilot-Plant Experiments Using Multiobjective Optimization, *Chem. Ing. Tech.* 89 (2017) 645-654. 10.1002/cite.201600104
- **A. Hoffmann, M. Bortz, R. Welke, J. Burger, K.-H. Küfer, H. Hasse:** Stage-to-stage calculations of distillation columns by fixed-point iteration and application of the Banach fixed-point theorem, *Chem. Eng. Sci.* 164 (2017) 188-201. 10.1016/j.ces.2017.02.006
- **S. E. Iannuzzi, C. Barro, K. Boulouchos, J. Burger:** POMDME-diesel blends: Evaluation of performance and exhaust emissions in a single cylinder heavy-duty diesel engine, *Fuel* 203 (2017) 57-67. 10.1016/j.fuel.2017.04.089
- **M. Schappals, T. Breug-Nissen, K. Langenbach, J. Burger, H. Hasse:** Solubility of

- Carbon Dioxide in Poly(oxymethylene) Dimethyl Ethers, *J. Chem. Eng. Data* 62 (2017) 4027-4031. 10.1021/acs.jced.7b00718
- **N. Schmitz, E. Ströfer, J. Burger, H. Hasse:** Conceptual Design of a Novel Process for the Production of Poly(oxymethylene) Dimethyl Ethers from Formaldehyde and Methanol, *Ind. Eng. Chem. Res.* 56 (2017) 11519-11530. 10.1021/acs.iecr.7b02314
  - **J.-O. Weidert, J. Burger, M. Renner, S. Blagov, H. Hasse:** Development of an Integrated Reaction–Distillation Process for the Production of Methylal, *Ind. Eng. Chem. Res.* 56 (2017) 575-582. 10.1021/acs.iecr.6b03847
  - **N. Yakut, K. Krüning, G. Foltin, J. Burger, M. Krauss, N. Asprion, M. Bortz, M. Roth:** Modelldurchgängigkeit in der Prozessindustrie am Beispiel virtueller Inbetriebnahme, *Chem. Ing. Tech.* 89 (2017) 1444-1453. 10.1002/cite.201700059
  - **J. Burger, N. Asprion, S. Blagov, M. Bortz:** Simple Perturbation Scheme to Consider Uncertainty in Equations of State for the Use in Process Simulation, *J. Chem. Eng. Data* 62 (2016) 268-274. 10.1021/acs.jced.6b00633
  - **J. Burger, M. Kaul, H. Hasse:** Slope curve method for the analysis of separations in extraction columns of infinite height, *Chem. Eng. Sci.* 143 (2016) 105-113. 10.1016/j.ces.2015.12.008
  - **J. Burger, E. Ströfer, H. Hasse:** Process Design in World 3.0 - Challenges and Strategies to Master the Raw Material Change, *Chem. Eng. Technol.* 39 (2016) 219-224. 10.1002/ceat.201500196
  - **S. E. Iannuzzi, C. Barro, K. Boulouchos, J. Burger:** Combustion behavior and soot formation/oxidation of oxygenated fuels in a cylindrical constant volume chamber, *Fuel* 167 (2016) 49-59. 10.1016/j.fuel.2015.11.060
  - **N. Schmitz, J. Burger, E. Ströfer, H. Hasse:** From methanol to the oxygenated diesel fuel poly(oxymethylene) dimethyl ether: An assessment of the production costs, *Fuel* 185 (2016) 67-72. 10.1016/j.fuel.2016.07.085
  - **N. Schmitz, A. Friebel, E. von Harbou, J. Burger, H. Hasse:** Liquid-liquid equilibrium in binary and ternary mixtures containing formaldehyde, water, methanol, methylal, and poly(oxymethylene) dimethyl ethers, *Fluid Phase Equilib.* 425 (2016) 127-135. 10.1016/j.fluid.2016.05.017
  - **N. Asprion, R. Benfer, S. Blagov, R. Böttcher, M. Bortz, M. Berezny, J. Burger, E. von Harbou, K.-H. Küfer, H. Hasse:** INES - An Interface Between Experiments and Simulation to Support the Development of Robust Process Designs, *Chem. Ing. Tech.* 87 (2015) 1810-1825. 10.1002/cite.201500020
  - **M. Bortz, J. Burger, N. Asprion, S. Blagov, K.-H. Küfer, H. Hasse:** On the effort of approaching pure components and azeotropes in distillation, *Chem. Eng. Sci.* 127 (2015) 253-259. 10.1016/j.ces.2015.01.044
  - **J. Burger, V. Papaioannou, S. Gopinath, G. Jackson, A. Galindo, C. S. Adjiman:** A hierarchical method to integrated solvent and process design of physical CO<sub>2</sub> absorption using the SAFT- $\gamma$  Mie approach, *AIChE J.* 61 (2015) 3249-3269. 10.1002/aic.14838
  - **F. Petlyuk, R. Danilov, J. Burger:** A novel method for the search and identification of feasible splits of extractive distillations in ternary mixtures, *Chem. Eng. Res. Des.* 99 (2015) 132-148. 10.1016/j.cherd.2015.02.013
  - **N. Schmitz, J. Burger, H. Hasse:** Reaction Kinetics of the Formation of Poly(oxymethylene) Dimethyl Ethers from Formaldehyde and Methanol in Aqueous Solutions, *Ind. Eng. Chem. Res.* 54 (2015) 12553-12560. 10.1021/acs.iecr.5b04046
  - **N. Schmitz, F. Homberg, J. Berje, J. Burger, H. Hasse:** Chemical Equilibrium of the Synthesis of Poly(oxymethylene) Dimethyl Ethers from Formaldehyde and Methanol in Aqueous Solutions, *Ind. Eng. Chem. Res.* 54 (2015) 6409-6417. 10.1021/acs.iecr.5b01148
  - **M. Bortz, J. Burger, N. Asprion, S. Blagov, R. Böttcher, U. Nowak, A. Scheithauer, R. Welke, K.-H. Küfer, H. Hasse:** Multi-criteria optimization in chemical process design and decision support by navigation on Pareto sets, *Comput. Chem. Eng.* 60 (2014) 354-363. 10.1016/j.compchemeng.2013.09.015

- **J. Burger, N. Asprion, S. Blagov, R. Böttcher, U. Nowak, M. Bortz, R. Welke, K.-H. Küfer, H. Hasse:** Multi-Objective Optimization and Decision Support in Process Engineering - Implementation and Application, Chem. Ing. Tech. 86 (2014) 1065-1072. 10.1002/cite.201400008
- **J. Burger, H. Hasse:** Multi-objective optimization using reduced models in conceptual design of a fuel additive production process, Chem. Eng. Sci. 99 (2013) 118-126. 10.1016/j.ces.2013.05.049
- **J. Burger, E. Ströfer, H. Hasse:** Production process for diesel fuel components poly(oxyethylene) dimethyl ethers from methane-based products by hierarchical optimization with varying model depth, Chem. Eng. Res. Des. 91 (2013) 2648-2662. 10.1016/j.cherd.2013.05.023
- **J. Burger, E. Ströfer, H. Hasse:** Chemical Equilibrium and Reaction Kinetics of the Heterogeneously Catalyzed Formation of Poly(oxyethylene) Dimethyl Ethers from Methylal and Trioxane, Ind. Eng. Chem. Res. 51 (2012) 12751-12761. 10.1021/ie301490q
- **J. Burger, M. Siebert, E. Ströfer, H. Hasse:** Poly(oxyethylene) dimethyl ethers as components of tailored diesel fuel: Properties, synthesis and purification concepts, Fuel 89 (2010) 3315-3319. 10.1016/j.fuel.2010.05.014

## Conference Proceedings

- **E. Baumeister, J. Burger:** Comparison of two approaches to model unknown components in poorly specified mixtures, Chem. Ing. Tech. 90 (2018) 1289-1290 10.1002/cite.201855343.
- **J. Burger, M. Härtl, P. Dworschak, G. Wachtmeister, N. Schmitz, H. Hasse:** Advances in OME fuel technology by combining the designs of engine combustion and chemical processes, Chem. Ing. Tech. 90 (2018) 1155-1156 10.1002/cite.201855051.
- **F. Jirasek, J. Burger, H. Hasse:** NMR Spectroscopic Method for Estimating Activity Coefficients of Target Components in Poorly Specified Mixtures in Bioprocess Engineering, Chem. Ing. Tech. 90 (2018) 1305-1305 10.1002/cite.201855373.
- **A. Keller, J. Burger, H. Steinmetz, H. Hasse:** Thermodynamische Modellierung und Prozess-Simulation der Phosphorrückgewinnung aus Abwasser, Chem. Ing. Tech. 90 (2018) 1152-1152 10.1002/cite.201855043.
- **N. Schmitz, C. F. Breitzkreuz, E. Ströfer, J. Burger, H. Hasse:** Conceptual Design of a Novel Process for the Production of OME Fuels, Chem. Eng. Trans. 69 (2018) 211-216. 10.3303/CET1869036
- **Y. Tönges, M. Held, M. Härtl, G. Wachtmeister, J. Burger:** Increasing the energy efficiency in the production of OME fuels by using water-tolerant synthesis routes, Chem. Ing. Tech. 90 (2018) 1180-1180 10.1002/cite.201855108.
- **N. Schmitz, E. Ströfer, J. Burger, H. Hasse:** Development of a Novel Process for the Large-scale Production of OME Fuels from Formaldehyde and Methanol, Proc. DGMK Conference (2017) 53-59.
- **M. Bortz, J. Burger, E. Forte, E. von Harbou, N. Asprion, H. Hasse:** A Pareto-Based Approach to Optimal Design of Experiments, Chem. Ing. Tech. 88 (2016) 1377-1378 10.1002/cite.201650072.
- **J. Burger, H. Hasse, M. Härtl, G. Wachtmeister, U. Arnold, J. Sauer:** Oxymethylene Dimethyl Ethers (OMEs): Alternative Diesel Fuels for Low-Emission Combustion, Chem. Ing. Tech. 88 (2016) 1259-1259 10.1002/cite.201650368.
- **E. Forte, J. Burger, K. Langenbach, M. Bortz, H. Hasse:** Multi-Criteria Optimization of Equations-of-State Models Using Water and PCP-SAFT as an Example, Chem. Ing. Tech. 88 (2016) 1285-1285 10.1002/cite.201650233.

- **N. Galeotti, F. Jirasek, J. Burger, H. Hasse:** PRODIAS: Studies on the Influence of Sugars on Vapor-Liquid Equilibria in Aqueous-Organic Systems - Water + Acetic Acid + Xylose as an Example, *Chem. Ing. Tech.* 88 (2016) 1404-1404 10.1002/cite.201650126.
- **K. Gaukel, D. Pélerin, M. Härtl, G. Wachtmeister, J. Burger, W. Maus, E. Jacob:** Der Kraftstoff OME2: Ein Beispiel für den Weg zu emissionsneutralen Fahrzeugen mit Verbrennungsmotor, 37. Internationales Wiener Motorensymposium (2016).
- **K. Gaukel, D. Pélerin, M. Härtl, G. Wachtmeister, J. Burger, W. Maus, E. Jacob:** The fuel OME2: An Example to Pave the Way to Emission-Neutral Vehicles with Internal Combustion Engine, 37th International Vienna Motor Symposium (2016).
- **A. Hoffmann, M. Bortz, J. Burger, H. Hasse, K.-H. Küfer:** A new scheme for process simulation by optimization: distillation as an example, 26th European Symposium on Computer Aided Chemical Engineering 38 (2016) 205-210 10.1016/B978-0-444-63428-3.50039-4.
- **F. Jirasek, N. Galeotti, J. Burger, H. Hasse:** PRODIAS: Solid-Liquid Equilibrium in the System 2-Keto-L-Gulonic Acid + Sodium Hydroxide + Water, *Chem. Ing. Tech.* 88 (2016) 1400-1400 10.1002/cite.201650100.
- **M. Kaul, J. Burger, H. Hasse:** Konzeptioneller Verfahrensentwurf unter Verwendung von M&T-Apparatemodellen, *Chem. Ing. Tech.* 88 (2016) 1277-1277 10.1002/cite.201650030.
- **M. Bortz, V. Maag, J. Schwientek, R. Benfer, R. Böttcher, J. Burger, E. von Harbou, N. Asprion, K.-H. Küfer, H. Hasse:** Decision Support by Multicriteria Optimization in Process Development: An Integrated Approach for Robust Planning and Design of Plant Experiments, *Comp. Aid. Chem. Eng.* 37 (2015) 2063-2068 10.1016/B978-0-444-63576-1.50038-8.
- **M. Bortz, J. Schwientek, K.-H. Küfer, J. Burger, E. von Harbou, H. Hasse, O. Hirth, N. Asprion, S. Blagov:** Minimizing the Impact of Uncertain Model Parameters on Process Design, *Chem. Ing. Tech.* 87 (2015) 1061-1061 10.1002/cite.201550007.
- **J. Burger, H. Hasse, M. Kaul, S. Deublein, F. Ruether, S. Blagov, G. Foltin, M. Bortz, K.-H. Küfer:** Short-Cut-Modelle für den konzeptionellen Entwurf von Trennverfahren - Von den Grundlagen in die industrielle Praxis, *Chem. Ing. Tech.* 87 (2015) 1062-1062 10.1002/cite.201550100.
- **A. Hoffmann, M. Bortz, J. Burger, K.-H. Küfer, H. Hasse:** Robuste Simulation und gleichzeitige Optimierung von Fließbildern mittels Schießverfahren, *Chem. Ing. Tech.* 87 (2015) 1059-1059 10.1002/cite.201550056.
- **F. Petlyuk, R. Danilov, J. Burger:** The method of infinitely sharp splits – A novel method for the search and identification of possible splits of extractive distillation, 10th Distillation & Absorption 2014 (2015) 849-854.
- **N. Asprion, R. Benfer, S. Blagov, R. Böttcher, M. Bortz, R. Welke, J. Burger, E. von Harbou, K.-H. Küfer, H. Hasse:** INES—Interface between Experiments and Simulation, *Comp. Aid. Chem. Eng.* 33 (2014) 1159-1164 10.1016/B978-0-444-63455-9.50028-3.
- **M. Kaul, J. Burger, H. Hasse:** Methode zur Bestimmung der maximal erreichbaren Produktzusammensetzungen in Extraktionskolonnen, *Chem. Ing. Tech.* 86 (2014) 1455-1455 10.1002/cite.201450128.
- **M. Bortz, R. Welke, J. Burger, A. Scheithauer, S. Blagov, A. Dittel:** Hierarchische Modellierung, Simulation und Optimierung von Destillationsprozessen, *Chem. Ing. Tech.* 85 (2013) 1407-1407 10.1002/cite.201250681.
- **N. Asprion, O. Ryll, S. Blagov, R. Böttcher, J. Burger, A. Scheithauer, H. Hasse, R. Welke, A. Dittel, M. Bortz, U. Nowak, K.-H. Küfer:** Pareto-Optimierung in der Verfahrenstechnik, *Chem. Ing. Tech.* 84 (2012) 1410-1410 10.1002/cite.201250114.
- **N. Asprion, S. Blagov, O. Ryll, R. Welke, A. Winterfeld, A. Dittel, M. Bortz, K.-H. Küfer, J. Burger, A. Scheithauer:** Decision support for process development in the chemical industry, *Chem. Eng. Trans.* 24 (2011) 301-306.
- **N. Asprion, S. Blagov, O. Ryll, R. Welke, A. Winterfeld, A. Dittel, M. Bortz, K.-H.**

**Küfer, J. Burger, A. Scheithauer:** Pareto-navigation in chemical engineering, Comp. Aid. Chem. Eng. 29 (2011) 422-426 10.1016/B978-0-444-53711-9.50085-7.

## Oral presentations

- **E. Baumeister, J. Burger:** A novel perturbation approach to model unknown components in poorly specified mixtures, Jahrestreffen der ProcessNet-Fachgemeinschaft "Prozess-, Apparate- und Anlagentechnik", Köln, Germany, 12.-13.11.2018.
- **J. Burger, M. Härtl, P. Dworschak, G. Wachtmeister, N. Schmitz, H. Hasse:** Advances in OME fuel technology by combining the designs of engine combustion and chemical processes, ProcessNet-Jahrestagung und 33. DECHEMA-Jahrestagung der Biotechnologen 2018, Aachen, Germany, 10.-13.09.2018.
- **F. Jirasek, J. Burger, H. Hasse:** NMR Spectroscopic Method for Estimating Activity Coefficients of Target Components in Poorly Specified Mixtures in Bioprocess Engineering, ProcessNet-Jahrestagung und 33. DECHEMA-Jahrestagung der Biotechnologen 2018, Aachen, Germany, 10.-13.09.2018.
- **A. Keller, J. Burger, H. Steinmetz, H. Hasse:** Thermodynamische Modellierung und Prozesssimulation der Phosphorrückgewinnung aus Abwasser, ProcessNet-Jahrestagung und 33. DECHEMA-Jahrestagung der Biotechnologen 2018, Aachen, Germany, 10.-13.09.2018.
- **J. Burger:** Die 3. Generation von OME-Produktionsverfahren, OME-Workshop, Neusäß, Germany, 06.11.2017.
- **J. Burger:** Science As Enabler For Innovative Processes - The Fuel OME As An Example, 1. Konferenz zur nachhaltigen chemischen Konversion in der Industrie, Düsseldorf, Germany, 20.-21.11.2017.
- **E. Forte, J. Burger, M. Bortz, H. Hasse:** Multicriteria optimization for parametrization of GE models, Thermodynamik-Kolloquium, Dresden, Germany, 27.-29.09.2017.
- **E. Forte, J. Burger, K. Langenbach, M. Bortz, H. Hasse:** A Pareto-based approach for parametrization of thermodynamic models, Jahrestreffen der ProcessNet-Fachgemeinschaft Prozess-, Apparate- und Anlagentechnik, Würzburg, Germany, 20.-21.11.2017.
- **F. Jirasek, N. Galeotti, J. Burger, H. Hasse:** Solubility and crystal composition of 2-Keto-L-gulonic acid crystallizing from aqueous electrolyte solutions, Jahrestreffen der ProcessNet-Fachgruppe Kristallisation, Köln, Germany, 06.03.2017.
- **N. Schmitz, E. Ströfer, J. Burger, H. Hasse:** Conceptual design of a novel process for the production of poly(oxymethylene) dimethyl ethers (OME), Jahrestreffen der ProcessNet-Fachgemeinschaft Prozess-, Apparate- und Anlagentechnik, Würzburg, Germany, 20.-21.11.2017.
- **N. Schmitz, E. Ströfer, J. Burger, H. Hasse:** Development of a Novel Process for the Large-scale Production of OME Fuels from Formaldehyde and Methanol, DGMK Konferenz, Dresden, Germany, 9.-12.10.2017.
- **N. Schmitz, E. Ströfer, J. Burger, H. Hasse:** From Thermodynamics to Process Design: A Novel Process for the Production of Poly(oxymethylene) Dimethyl Ethers (OME), Thermodynamik-Kolloquium, Dresden, Germany, 27.-29.09.2017.
- **M. Bortz, J. Burger, E. Forte, E. von Harbou, N. Asprion:** A Pareto-based approach to optimal design of experiments, ProcessNet-Jahrestagung, Aachen, Germany, 12.-15.09.2016.
- **M. Bortz, J. Schwientek, J. Burger, S. Blagov, R. Böttcher:** What is the cost of a robust process design?, Jahrestreffen der ProcessNet-Fachgemeinschaft Prozess-, Apparate- und Anlagentechnik, Bruchsal, Germany, 14.-15.11.2016.

- **J. Burger:** Conceptual process design based on key property data – Application of short-cut models in simulation and optimization, SCEJ Annual Meeting 2016, Osaka, Japan, 14.03.2016.
- **J. Burger:** Considering uncertainties in thermodynamic property models, International Workshop “Mathematical methods in process engineering”, Kaiserslautern, Germany, 22.-23. 09.2016.
- **J. Burger:** Pareto optimisation and interactive decision support, Imperial College Workshop - Decision support for design of downstream processes, London, England, 21.11.2016.
- **J. Burger, N. Asprion, S. Blagov, M. Bortz, H. Hasse:** A practical scheme to consider uncertain property data in process simulation, Jahrestreffen der ProcessNet-Fachgemeinschaft Prozess-, Apparate- und Anlagentechnik, Bruchsal, Germany, 14.-15.11.2016.
- **J. Burger, N. Asprion, S. Blagov, M. Bortz, E. von Harbou:** Accounting for uncertainties of thermodynamic data in modeling and process simulation, Thermodynamik-Kolloquium, Kaiserslautern, Germany, 5.-7.10.2016.
- **J. Burger, T. Dittmer:** Recent Developments in OME Production Technology, 3rd Methanol Technology and Policy Commercial Congress, Frankfurt, Germany, 30.11.2016.
- **J. Burger, H. Hasse, M. Härtl, G. Wachtmeister, U. Arnold:** Oxymethylene Dimethyl Ethers (OMEs): alternative diesel fuels for low-emission combustion, ProcessNet-Jahrestagung, Aachen, Germany, 12.-15.09.2016.
- **E. Forte, J. Burger, K. Langenbach, M. Bortz, H. Hasse:** Multi-criteria optimization for parameterization of equations of state, Thermodynamik-Kolloquium, Kaiserslautern, Germany, 5.-7.10.2016.
- **E. Forte, J. Burger, K. Langenbach, M. Bortz, H. Hasse:** Multi-criteria optimization of equations of state models using water and PCP-SAFT as an example, ProcessNet-Jahrestagung, Aachen, Germany, 12.-15.09.2016.
- **M. Härtl, K. Gaukel, D. Pélerin, G. Wachtmeister, J. Burger:** Der Kraftstoff OME2: Ein Beispiel für den Weg zu emissionsneutralen Fahrzeugen mit Verbrennungsmotor, 37. Internationales Wiener Motorensymposium, Wien, Austria, 28.-29.04.2016.
- **A. Hoffmann, M. Bortz, J. Burger, H. Hasse, K.-H. Küfer:** A new scheme for process simulation by optimization, 26th European Symposium on Computer-Aided Process Engineering (Poster), Portoroz, Slovenia, 12.-15.06.2016.
- **M. Kaul, J. Burger, H. Hasse:** Konzeptioneller Verfahrensentwurf unter Verwendung von M&T-Apparatemodellen, ProcessNet-Jahrestagung, Aachen, Germany, 12.-15.09.2016.
- **M. Kaul, J. Burger, H. Hasse:** Konzeptioneller Verfahrensentwurf von Extraktions-/Destillationsprozessen mittels Slope-Curve Methode, Jahrestreffen der Fachgruppen Extraktion und Grenzflächenbestimmte Systeme und Prozesse, Weimar, Germany, 14.-15.03.2016.
- **N. Schmitz, A. Friebel, J. Burger, E. von Harbou, H. Hasse:** Liquid-liquid equilibrium in binary and ternary mixtures containing formaldehyde, water, methanol, methylal, and poly(oxymethylene) dimethyl ethers (Poster), Thermodynamik-Kolloquium, Kaiserslautern, Germany, 5.-7.10.2016.
- **N. Asprion, R. Böttcher, S. Blagov, O. Hirth, M. Bortz, J. Schwientek, K.-H. Küfer, J. Burger, E. von Harbou, H. Hasse:** Verfahrenssimulation und -optimierung unter Unsicherheiten, Jahrestreffen der ProcessNet-Fachgemeinschaft Prozess-/Apparate- und Anlagentechnik, Bruchsal, Germany, 16.-17.11.2015.
- **M. Bortz, V. Maag, J. Schwientek, R. Benfer, R. Böttcher, J. Burger, E. von Harbou, N. Asprion, K.-H. Küfer, H. Hasse:** Decision support by multicriteria optimization in process development - An integrated approach for robust planning and design of plant experiments, ESCAPE 25, Kopenhagen, Germany, 31.05.-04.06.2015.

- **M. Bortz, J. Schwientek, K.-H. Küfer, J. Burger, E. von Harbou, H. Hasse, O. Hirth, N. Asprion, S. Blagov:** Minimizing the Impact of Uncertain Model Parameters on Process Design, Jahrestreffen der ProcessNet-Fachgemeinschaft Fluidodynamik und Trenntechnik, Bamberg, Germany, 9.-11.09.2015.
- **J. Burger:** Wertschöpfungsketten der Zukunft - Am Beispiel der C1-Chemie, RCR-Tagung - Ressourceneffiziente Stoffwandlungsketten, Kaiserslautern, Germany, 19.02.2015.
- **J. Burger, H. Hasse, M. Kaul, S. Deublein, F. Ruether, S. Blagov, G. Foltin, M. Bortz, K.-H. Küfer:** Short-Cut-Modelle für den konzeptionellen Entwurf von Trennverfahren – Von den Grundlagen in die industrielle Praxis, Jahrestreffen der ProcessNet-Fachgemeinschaft Fluidodynamik und Trenntechnik, Bamberg, Germany, 9.-11.09.2015.
- **A. Hoffmann, M. Bortz, J. Burger, K.-H. Küfer, H. Hasse:** Robuste Simulation und gleichzeitige Optimierung von Fließbildern mittels Schießverfahren, Jahrestreffen der ProcessNet-Fachgemeinschaft Prozess-/Apparate- und Anlagentechnik, Bruchsal, Germany, 16.-17.11.2015.
- **A. Hoffmann, M. Bortz, J. Burger, K.-H. Küfer, H. Hasse:** Robuste Simulation und gleichzeitige Optimierung von Fließbildern mittels Schießverfahren, Jahrestreffen der ProcessNet-Fachgemeinschaft Fluidodynamik und Trenntechnik, Bamberg, Germany, 9.-11.09.2015.
- **N. Schmitz, J. Burger, H. Hasse:** Reaction Kinetics of the Formation of Poly(oxyethylene) Dimethyl Ethers from Formaldehyde and Methanol in Aqueous Solutions, 2015 American Institute of Chemical Engineers (AIChE) Annual Meeting, San Francisco, USA, 08-13.11.2015.
- **N. Asprion, R. Benfer, S. Blagov, R. Böttcher, M. Bortz, R. Welke, J. Burger, E. von Harbou, K.-H. Küfer, H. Hasse:** INES – Interface between Experiments and Simulation, 24th European Symposium on Computer Aided Process Engineering - ESCAPE 24, Budapest, Hungary, 15.-18.06.2014.
- **J. Berje, J. Baldamus, J. Burger, H. Hasse:** Thermodynamische Modellierung und Analyse der destillativen Trennung von reagierenden Mischungen aus Formaldehyd, Wasser und mehrwertigen Alkoholen, Thermodynamik-Kolloquium, Stuttgart, Germany, 22.-24.09.2014.
- **J. Burger, M. Kaul, H. Hasse:** Slope curve method for the conceptual design of counter-current extraction columns, Jahrestreffen der Fachgemeinschaft Prozess-/Apparate- und Anlagentechnik, Lüneburg, Germany, 17.-18.11.2014.
- **J. Burger, V. Papaioannou, A. Galindo, G. Jackson, C. S. Adjiman:** Integrated process and solvent design of physical CO<sub>2</sub> absorption using the SAFT-Mie equation of state. , Jahrestreffen Fachgruppen Extraktion und Fluid-VT, Fulda, Germany, 27-28.03.2014.
- **H. Hasse, J. Burger, M. Bortz, K.-H. Küfer, N. Asprion:** Multi-Objective Optimization in Chemical Process Development (Eingeladener Vortrag), ProcessNet Arbeitsausschuss Modellgestützte Prozessentwicklung und –optimierung, Hanau-Wolfgang, Germany, 27.05.2014.
- **M. Kaul, J. Burger, H. Hasse:** Methode zur Bestimmung der maximal erreichbaren Produktzusammensetzungen in Extraktionskolonnen, ProcessNet-Jahrestagung, Aachen, Germany, 30.09.-02.10.2014.
- **M. Kaul, J. Burger, H. Hasse:** Methode zur Bestimmung der maximal erreichbaren Produktzusammensetzungen in Gegenstrom-Extraktionskolonnen, Jahrestreffen Fachgruppen Extraktion und Fluid-VT, Fulda, Germany, 27-28.03.2014.
- **M. Bortz, R. Welke, J. Burger, A. Scheithauer, S. Blagov, A. Dittel, N. Asprion, K.-H. Küfer, H. Hasse:** Hierarchical Modeling, Simulation and Optimization of Distillation Processes, Jahrestreffen der Fachgemeinschaft Fluidodynamik und Trenntechnik, Würzburg, Germany, 25.-27.09.2013.
- **M. Bortz, R. Welke, J. Burger, A. Scheithauer, S. Blagov, A. Dittel, N. Asprion, K.-H. Küfer, H. Hasse:** Hierarchical Modeling, Simulation and Optimization of Distillation

- Processes, Jahrestreffen der Fachgruppen Fluidverfahrenstechnik und Wärme- und Stoffübertragung, Baden-Baden, Germany, 20.-21.03.2013.
- **M. Bortz, R. Welke, J. Burger, A. Scheithauer, S. Blagov, A. Dittel, N. Asprion, K.-H. Küfer, H. Hasse:** Hierarchische Modellierung, Simulation und Optimierung von Destillationsprozessen, Jahrestreffen der Fachgemeinschaft Prozess-, Apparate- und Anlagentechnik, Bruchsal, Germany, 18-19.11.2013.
  - **J. Burger:** OMEs – a valuable contribution to the value added chains of the future, IKFT, Karlsruhe Institute of Technology (KIT), Germany, 16.12.2013.
  - **J. Burger, H. Hasse:** Hierarchical process design using multi-objective optimization and varying model depth - method and examples, Jahrestreffen der Fachgemeinschaft Prozess-, Apparate- und Anlagentechnik, Bruchsal, Germany, 18-19.11.2013.
  - **J. Burger, V. Papaioannou, A. Galindo, G. Jackson, C. S. Adjiman:** Integrated process and solvent design of physical CO<sub>2</sub> absorption using the SAFT-Mie equation of state, American Institute of Chemical Engineers (AIChE) Annual Meeting, San Francisco, USA, 02-09.11.2013.
  - **J. Burger, V. Papaioannou, A. Galindo, G. Jackson, C. S. Adjiman:** Integrated process and solvent design of physical CO<sub>2</sub> absorption using the SAFT-Mie equation of state, Thermodynamik Kolloquium, Hamburg-Harburg, Germany, 7-9.10.2013.
  - **J. Burger, E. Ströfer:** Energy supply & chemical value added chains for the world of tomorrow, Université de Rouen, Germany, Mai 2013.
  - **O. Ryll, N. Asprion, S. Blagov, A. Dittel, M. Bortz, R. Welke, K.-H. Küfer, J. Burger, A. Scheithauer, H. Hasse:** Hierarchical Modeling, Simulation and Optimization of Distillation Processes, 9th European Congress of Chemical Engineering (ECCE), The Hague, The Netherlands, 21.-25.04.2013.
  - **N. Asprion, S. Blagov, O. Ryll, R. Welke, A. Dittel, U. Nowak, M. Bortz, K.-H. Küfer, J. Burger, A. Scheithauer, H. Hasse:** Mehrkriterielle Optimierung in der Verfahrensentwicklung der chemischen Industrie, Jahrestreffen der Fachgruppen Computational Fluid Dynamics und Fluidverfahrenstechnik, Weimar, Germany, 12.-14.03.2012.
  - **J. Burger:** Multi-objective optimisation in conceptual process design, Imperial College London, England, November 2012.
  - **J. Burger, N. Asprion, S. Blagov, A. Dittel, O. Ryll, R. Böttcher, R. Welke, U. Nowak, M. Bortz, K.-H. Küfer, A. Scheithauer, H. Hasse:** Pareto-Optimierung in der Verfahrenstechnik (Tandem-Lecture), ProcessNet Jahrestagung, Karlsruhe, Germany, 10.-13.09.2012.
  - **J. Burger, H. Hasse:** Multi-Objective Optimization and inverse Product Specification in conceptual Process Design, 20th International Congress of Chemical and Process Engineering CHISA, Prague, Czech Republic, 25.-29.08.2012.
  - **A. Scheithauer, J. Burger, N. Asprion, S. Blagov, R. Böttcher, O. Ryll, R. Welke, A. Dittel, U. Nowak, M. Bortz, K.-H. Küfer, H. Hasse:** Multi-Objective Optimization in Industrial Chemical Process Development by Navigation on Pareto Fronts, 2012 American Institute of Chemical Engineers (AIChE) Annual Meeting, Pittsburgh, USA, 28.10.-02.11.2012.
  - **A. Scheithauer, J. Burger, N. Asprion, C. Grossmann, H. Hasse:** Neue Methode zur Auslegung der Druckwechseldestillation, Jahrestreffen der Fachgruppen Computational Fluid Dynamics und Fluidverfahrenstechnik, Weimar, Germany, 12.-14.03.2012.
  - **A. Scheithauer, J. Burger, N. Asprion, C. Grossmann, H. Hasse:** New Method for the Design of Pressure-Swing Distillation, 20th International Congress of Chemical and Process Engineering CHISA, Prague, Czech Republic, 25.-29.08.2012.
  - **A. Scheithauer, J. Burger, N. Asprion, C. Grossmann, H. Hasse:** A Novel Systematic Approach to Pressure-Swing Distillation Process Design, 2012 American Institute of Chemical Engineers (AIChE) Annual Meeting, Pittsburgh, USA, 28.10.-02.11.2012.
  - **N. Asprion, S. Blagov, O. Ryll, R. Welke, A. Winterfeld, A. Dittel, M. Bortz, K.-H. Küfer, J. Burger, A. Scheithauer, H. Hasse:** Decision Support for Process



- Development in the Chemical Industry, 10th International Conference on Chemical & Process Engineering, Florence, Italy, 13.04.2011.
- **N. Asprion, S. Blagov, O. Ryll, R. Welke, A. Winterfeld, A. Dittel, M. Bortz, K.-H. Küfer, J. Burger, A. Scheithauer, H. Hasse:** Multi-objective Optimization for Process Development in the Chemical Industry, 8th European Congress of Chemical Engineering, Berlin, Germany, 27.09.2011.
  - **N. Asprion, S. Blagov, O. Ryll, R. Welke, A. Winterfeld, A. Dittel, M. Bortz, K.-H. Küfer, J. Burger, A. Scheithauer, H. Hasse:** Pareto-Navigation in Chemical Engineering, 21st European Symposium on Computer-Aided Process Engineering, Chalkidiki, Greece, 12.05.2011.
  - **J. Burger, M. Siegert, E. Ströfer, M. Nilles, H. Hasse:** Poly(oxymethylene) Dimethyl Ethers as Components of Tailored Diesel Fuel, Properties, Synthesis and Purification Concepts, 8th European Congress of Chemical Engineering, Berlin, Germany, 25.-29.09.2011.
  - **J. Burger, M. Siegert, E. Ströfer, M. Nilles, H. Hasse:** Poly(oxymethylene) Dimethyl Ethers as Components of Tailored Diesel Fuel, Properties, Synthesis and Purification Concepts, AIChE Annual Meeting, Minneapolis, Minnesota, USA, 16.-21.10.2011.

## Posters

- **E. Baumeister, J. Burger:** Comparison of two approaches to model unknown components in poorly specified mixtures, ProcessNet-Jahrestagung und 33. DECHEMA-Jahrestagung der Biotechnologen 2018, Aachen, Germany, 10.-13.09.2018.
- **Y. Tönges, M. Held, M. Härtl, G. Wachtmeister, J. Burger:** Increasing the energy efficiency in the production of OME fuels by using water-tolerant synthesis routes, ProcessNet-Jahrestagung und 33. DECHEMA-Jahrestagung der Biotechnologen 2018, Aachen, Germany, 10.-13.09.2018.
- **N. Galeotti, J. Burger, H. Hasse:** Vapor-liquid and liquid-liquid equilibria in aqueous-organic systems containing sugar (Poster), Thermodynamik-Kolloquium, Dresden, Germany, 27.-29.09.2017.
- **F. Jirasek, J. Burger, H. Hasse:** Influence of electrolytes and pH on the solubility of 2-keto-L-gulonic acid in aqueous solutions (Poster), Thermodynamik-Kolloquium, Dresden, Germany, 27.-29.09.2017.
- **A. Keller, J. Burger, H. Steinmetz, H. Hasse:** Modeling and Simulation of the Recovery of Resources from Complex Aqueous Salt Solutions Based on the Extended Pitzer Model (Poster), Thermodynamik-Kolloquium, Dresden, Germany, 27.-29.09.2017.
- **A. Friebel, A. Fröscher, J. Burger, K. Münnemann, E. von Harbou:** Nichtinvasive Untersuchung von flüssig-flüssig Gleichgewichten im Benchtop-NMR-Spektrometer (Poster), Thermodynamik-Kolloquium, Kaiserslautern, Germany, 5.-7.10.2016.
- **N. Galeotti, F. Jirasek, J. Burger, H. Hasse:** PRODIAS: Studies on the influence of sugars on vapor-liquid equilibria in aqueous-organic systems water + acetic acid + xylose as an example (Poster), ProcessNet-Jahrestagung, Aachen, Germany, 12.-15.09.2016.
- **N. Galeotti, F. Jirasek, J. Burger, H. Hasse:** Studies on the influence of sugars on vapor-liquid equilibria in aqueous-organic systems - water + acetic acid + xylose as an example (Poster), Thermodynamik-Kolloquium, Kaiserslautern, Germany, 5.-7.10.2016.
- **F. Jirasek, N. Galeotti, J. Burger, H. Hasse:** PRODIAS: Solid-liquid equilibrium in the system (2-Keto-L-gulonic acid + sodium hydroxide + water) (Poster), ProcessNet-Jahrestagung, Aachen, Germany, 12.-15.09.2016.
- **F. Jirasek, N. Galeotti, J. Burger, H. Hasse:** Solid-liquid equilibrium in the system (2-Keto-L-gulonic acid + sodium hydroxide + water) (Poster), Thermodynamik-Kolloquium,

- Kaiserslautern, Germany, 5.-7.10.2016.
- **M. Kaul, J. Burger, H. Hasse:** Konzeptioneller Verfahrensentwurf unter Verwendung von wenigen Stoffdaten mit M&T-Apparatemodellen (Poster), Thermodynamik-Kolloquium, Kaiserslautern, Germany, 5.-7.10.2016.
  - **N. Schmitz, J. Burger, H. Hasse:** Kinetic Modeling of the Formation of Poly(oxymethylene) Dimethyl Ethers from Formaldehyde and Methanol in Aqueous Solutions (Poster), Jahrestreffen Reaktionstechnik 2016, Würzburg, Germany, 02.-04.05.2016.
  - **J. Berje, J. Baldamus, J. Burger, H. Hasse:** NMR Spectroscopic Study of Chemical Equilibria and Reaction Kinetics in Complex Reacting Mixtures of Formaldehyde - Water and Butynediol (Poster), NMRPM, Kaiserslautern, Germany, 15.-16.01.2015.
  - **F. Jirasek, J. Burger, E. von Harbou, H. Hasse:** EU HORIZON 2020 Project - Processing Diluted Aqueous Systems“ (PRODIAS) (Poster), RCR-Tagung - Ressourceneffiziente Stoffwandlungsketten, Kaiserslautern, Germany, 19.02.2015.
  - **M. Kaul, J. Burger, H. Hasse:** Method for Determining the Limiting Achievable Product Compositions in Counter-current Extraction Columns (Poster), RCR-Tagung - Ressourceneffiziente Stoffwandlungsketten, Kaiserslautern, Germany, 19.02.2015.
  - **M. Schappals, T. Breug-Nissen, K. Langenbach, J. Burger, H. Hasse:** Solubility of carbon dioxide in poly(oxymethylene) dimethyl ethers - experiments and thermodynamic modeling (Poster), Thermodynamik-Kolloquium, Bochum, Germany, 6.-7.10.2015.
  - **N. Schmitz, F. Homberg, J. Burger, H. Hasse:** Chemisches Gleichgewicht der Synthese von Poly(oxymethylen)dimethylethern aus Formaldehyd und Methanol in wässrigen Lösungen (Poster), RCR-Tagung - Ressourceneffiziente Stoffwandlungsketten, Kaiserslautern, Germany, 19.02.2015.
  - **M. Kaul, J. Burger, H. Hasse:** Thermodynamische Grenzen der Produktzusammensetzungen von Gegenstromextraktionskolonnen (Poster), Thermodynamik-Kolloquium, Stuttgart, Germany, 22.-24.09.2014.
  - **F. Petlyuk, R. Danilov, J. Burger:** The method of infinitely sharp splits – A novel method for the search and identification of possible splits of extractive distillation (Poster), Distillation & Absorption 2014, Friedrichshafen, Germany, 14.-17. 09.2014.
  - **F. Homberg, A. Brächer, J. Burger, H. Hasse:** Studies of the chemical equilibria in the synthesis of poly(oxymethylene) dimethylethers (OMEs) from formaldehyde + water + methanol (Poster), Thermodynamik Kolloquium, Hamburg-Harburg, Germany, 7-9.10.2013.
  - **J. Burger, D. Rothe, E. Ströfer, H. Hasse:** Neue Dieseladditive Poly(oximethylen)dimethylether (OME), Eigenschaften, Herstellrouten und Prozessdesign (Poster), Jahrestreffen der Fachgruppen Computational Fluid Dynamics und Fluidverfahrenstechnik, Weimar, Germany, 12.-14.03.2012.

## Further publications

- **N. Asprion, J. Burger, M. Bortz:** Nachhaltiges Prozessdesign - Integration von Ökobilanz und Toxizitätsbewertung in Prozesssimulation optimiert chemische Prozesse, CHEManager Ausgabe 20 (2015).
- **J. Burger, H. Hasse:** Herausforderung und Strategien im Energie- und Rohstoffwandel - Design chemischer Verfahren für die Welt 3.0, chemie&more Ausgabe 3 (2015).
- **J. Burger:** A novel process for the production of diesel fuel additives by hierarchical design, Dissertation (2012) University of Kaiserslautern