

Journal publications

2022

- [177] F. Grinschek, A. Charles, A. Elkaseer, C. Klahn, S. G. Scholz, R. Dittmeyer, Gas-tight means zero defects - Design considerations for thin-walled fluidic devices with overhangs by laser powder bed fusion, *Mater. Design* (2022), 111174, [doi: 10.1016/j.matdes.2022.111174](https://doi.org/10.1016/j.matdes.2022.111174)
- [176] P. Kant, L. Trinkies, N. Gensior, D. Fischer, M. Rubin, G. A. Ozin, R. Dittmeyer, Isophotonic reactor for the precise determination of quantum yields in gas, liquid, and multi-phase photoreactions, *Chem. Eng. J.* (2022)
- [175] M. Mahmoudizadeh, E. Hadjixenophontos, M. Rubin, D. Ullmer, F. Razmjooei, A.C. Hanf, A. Westphal, K. Kalinowski, R. Dittmeyer, A. Ansar, Palladium membrane with high density of Large Angle Grain Boundaries to promote hydrogen diffusivity, *Membranes* 12 (2022) 617, [doi: 10.3390/membranes12060617](https://doi.org/10.3390/membranes12060617)
- [174] B. Emonts, M. Müller, M. Hehemann, H. Janßen, R. Keller, M. Stähler, A. Stähler, V. Hagenmeyer, R. Dittmeyer, P. Pfeifer, S. Waczowicz, M. Rubin, N. Munzke, S. Kasselmann, A Holistic Consideration of Megawatt Electrolysis as a Key Component of Sector Coupling, *Energies* 15 (2022), 3656, [doi: 10.3390/en15103656](https://doi.org/10.3390/en15103656)
- [173] D. Xie, B. Fränkle, C. Klahn, R. Dittmeyer, Fabrication of Sectionally Permeable Components with Curved Surface by Laser-Beam Powder-Bed Fusion, *Chem. Ing. Tech.* 94 (2022), [doi: 10.1002/cite.202200009](https://doi.org/10.1002/cite.202200009)
- [172] F. Grinschek, S. Dübal, C. Klahn, R. Dittmeyer, Einfluss des additiven Fertigungsverfahrens auf die Gestalt einer Mikrorektifikationsapparatur, *Chem. Ing. Tech.* 94 (2022), [doi: 10.1002/cite.202200011](https://doi.org/10.1002/cite.202200011)
- [171] F. Grinschek, B. Ladewig, A. Navarrete Munoz, C. Klahn, R. Dittmeyer, Getting Chemical and Biochemical Engineers Excited about Additive Manufacturing, *Chem. Ing. Tech.* 94 (2022), [doi: 10.1002/cite.202200010](https://doi.org/10.1002/cite.202200010)
- [170] S. Banivaheb, S. Pitter, K. Herrera Delgado, M. Rubin, J. Sauer, R. Dittmeyer, Recent Progress in Direct DME Synthesis and Potential of Bifunctional Catalysts, *Chem. Ing. Tech.* 94 (2022), [doi: 10.1002/cite.202100167](https://doi.org/10.1002/cite.202100167)

[169] N. Mengis, A. Kalhori, S. Simon, C. Harpprecht, L. Baetcke, E. Prats, C. Schmidt-Hattenberger, A. Stevenson, C. Dold, J. El Zohbi, M. Borchers, D. Thrän, K. Korte, E. Gawel, T. Dolch, D. Heß, C. Yeates, T. Thoni, T. Markus, E. Schill, M. Xiao, F. Köhnke, A. Oschlies, J. Förster, K. Görl, M. Dornheim, T. Brinkmann, S. Beck, D. Bruhn, Z. Li, B. Steuri, M. Herbst, T. Sachs, N. Monnerie, Th. Pregger, D. Jacob, R. Dittmeyer, Net - zero CO₂ Germany - A retrospect from the year 2050, *Earth's Future* (2022),
[doi: 10.1029/2021EF002324](https://doi.org/10.1029/2021EF002324)

[168] S. Soldatov, E. Carbone, A. Kuhn, G. Link, J. Jelonnek, R. Dittmeyer, A. Navarrete, Efficiency of a compact CO₂ coaxial plasma torch driven by ultrafast microwave power pulsing: Stability and plasma gas flow dynamics, *Journal of CO₂ Utilization* 58 (2022) 101916, [doi: 10.1016/j.jcou.2022.101916](https://doi.org/10.1016/j.jcou.2022.101916)

[167] T.J. Stadler, B. Bertin-Mente, R. Dittmeyer, L.T. Brübach, T. Böltken, P. Pfeifer, Influence of CO₂-Rich Syngas on the Selectivity to C10–C14 in a Coupled Fischer-Tropsch/Hydro-cracking Process, *Chem. Ing. Tech.* 94 (2022), [doi: 10.1002/cite.202100172](https://doi.org/10.1002/cite.202100172)

2019 – 2021

- [166] G. Tofighi, H. Lichtenberg, A. Gaur, W. Wang, S. Wild, K. Herrera Delgado, S. Pitter, R. Dittmeyer, J.-D. Grunwaldt, D.E. Doronkin, Continuous synthesis of Cu/ZnO/Al₂O₃ nanoparticles in a co-precipitation reaction using a silicon based microfluidic reactor, *React. Chem. Eng.* (2021), [doi: 10.1039/d1re00499a](https://doi.org/10.1039/d1re00499a)
- [165] B.J. Deschner, D.E. Doronkin, T.L. Sheppard, G. Rabsch, J.-D. Grunwaldt, R. Dittmeyer, Continuous-flow reactor setup for operando x-ray absorption spectroscopy of high pressure heterogeneous liquid–solid catalytic processes, *Rev. Sci. Instrum.* 92 (2021) 124101, [doi: 10.1063/5.0057011](https://doi.org/10.1063/5.0057011)
- [164] D. Xie, R. Dittmeyer, Correlations of laser scanning parameters and porous structure properties of permeable materials made by laser-beam powder-bed fusion, *Addit. Manuf.* 47 (2021) 102261, [doi: 10.1016/j.addma.2021.102261](https://doi.org/10.1016/j.addma.2021.102261)
- [163] L. Trinkies, A. Düll, J. Zhang, S. Urban, B.J. Deschner, M. Kraut, B. P. Ladewig, A. Weltin, J. Kieninger, R. Dittmeyer, Investigation of mass transport processes in a microstructured membrane reactor for the direct synthesis of hydrogen peroxide, *Chem. Eng. Sci.* 248 (2022) 117145, [doi: 10.1016/j.ces.2021.117145](https://doi.org/10.1016/j.ces.2021.117145)
- [162] J. Guhathakurta, D. Schurr, G. Rinke, D. Grottke, M. Kraut, R. Dittmeyer, S. Simon, Investigation of the Influence of Transport Processes on Chemical Reactions in Bubbly Flows Using Space-Resolved In Situ Analytics and Simultaneous Characterization of Bubble Dynamics in Real-Time, In: Schlüter M., Bothe D., Herres-Pawlisch S., Nieken U. (eds) *Reactive Bubbly Flows. Fluid Mechanics and Its Applications*, Vol. 128, 2021, Springer, Cham, [doi: 10.1007/978-3-030-72361-3_9](https://doi.org/10.1007/978-3-030-72361-3_9)
- [161] S. Escolástico, F. Schulze-Küppers, S. Baumann, K. Haas-Santo, R. Dittmeyer, Development and Proof of Concept of a Compact Metallic Reactor for MIEC Ceramic Membranes, *Membranes* 11 (2021) 541, [doi: 10.3390/membranes11070541](https://doi.org/10.3390/membranes11070541)
- [160] S. Farsi, S. Liang, P. Pfeifer, R. Dittmeyer, Application of evaporation cooling in a microstructured packed bed reactor for decentralized CO₂ methanation, *Int. J. Hydr. Energy* 46 (2021) 19971-19987, [doi: 10.1016/j.ijhydene.2021.03.050](https://doi.org/10.1016/j.ijhydene.2021.03.050)

- [159] S. Claramunt, M. Khurram, W. Benzinger, M. Kraut, R. Dittmeyer, Fabrication and Characterization of Hydrophobic Porous Metallic Membranes for High Temperature Applications, *Processes* 9 (2021) 809, [doi: 10.3390/pr9050809](https://doi.org/10.3390/pr9050809)
- [158] J. Li, H. Šimek, D. Illoae, N. Jung, S. Bräse, H. Zappe, R. Dittmeyer, B.P. Ladewig, In situ sensors for flow reactors – a review, *React. Eng. Chem.* 2021, [doi: 10.1039/d1re00038a](https://doi.org/10.1039/d1re00038a)
- [157] L.L. Trinkies, A. Düll, B.J. Deschner, A. Stroh, M. Kraut, R. Dittmeyer, Simulation of Fluid Flow During Direct Synthesis of H₂O₂ in a Microstructured Membrane Reactor, *Chem. Ing. Tech.* 93 (2021) 789-795, [doi: 10.1002/cite.202000232](https://doi.org/10.1002/cite.202000232)
- [156] P. Pietrek, M. Kraut, R. Dittmeyer, Towards a Novel Computer-Aided Optimization of Microreactors: Techno-Economic Evaluation of an Immobilized Enzyme System, *Symmetry* 13 (2021) 524, [doi: 10.3390/sym13030524](https://doi.org/10.3390/sym13030524)
- [155] B.J. Deschner, D.E. Doronkin, T.L. Sheppard, A. Zimina, J.-D. Grunwaldt, R. Dittmeyer, Effect of Selectivity Enhancers on the Structure of Palladium during High-Pressure Continuous-Flow Direct Synthesis of Hydrogen Peroxide in Ethanol, *J. Phys. Chem. C* 125 (2021) 3451-3462, [doi: 10.1021/acs.jpcc.0c11246](https://doi.org/10.1021/acs.jpcc.0c11246)
- [154] S. Urban, B.J. Deschner, L.L. Trinkies, J. Kieninger, M. Kraut, R. Dittmeyer, G.A. Urban, Andreas Weltin, In Situ Mapping of H₂, O₂, and H₂O₂ in Microreactors: A Parallel, Selective Multianalyte Detection Method, *ACS Sensors* 6 (2021) 6, 1583-1594, [doi: 10.1021/acssensors.0c02509](https://doi.org/10.1021/acssensors.0c02509)
- [153] S. Soldatov, G. Link, L. Silberer, C.M. Schmedt, E. Carbone, F. D'Isa, J. Jelonnek, R. Dittmeyer, A. Navarrete, Time-Resolved Optical Emission Spectroscopy Reveals Nonequilibrium Conditions for CO₂ Splitting in Atmospheric Plasma Sustained with Ultrafast Microwave Pulsation, *ACS Energy Letters* 6 (2021) 124-130, [doi: 10.1021/acsenergylett.0c01983](https://doi.org/10.1021/acsenergylett.0c01983)
- [152] M. Talebi, S. Sadir, M. Kraut, R. Dittmeyer, P. Woias, Local heat transfer analysis in a single microchannel with boiling DI-water and correlations with impedance local sensors, *Energies* 13 (2020) 6473, [doi: 10.3390/en13236473](https://doi.org/10.3390/en13236473)
- [151] X. Zhan, C. Yan, Y. Zhang, G. Rinke, G. Rabsch, M. Klumpp, A.I. Schäfer, R. Dittmeyer, Investigation of the reaction kinetics of photocatalytic pollutant degradation under defined conditions with inkjet-printed TiO₂ films – from batch to a novel continuous-flow

microreactor, React. Chem. & Eng. React. Chem. Eng. 5 (2020) 1658,

[doi: 10.1039/d0re00238k](https://doi.org/10.1039/d0re00238k)

[150] Y. Dong, P. Duchesne, A. Mohan, K.K. Ghuman, P. Kant, L. Hurtado, U. Ulmer, J.Y.Y. Loh, A.A. Tountas, L. Wang, A. Jelle, M. Xia, R. Dittmeyer, G.A. Ozin, Shining light on CO₂: from materials discovery to photocatalyst, photoreactor and process engineering, Chem. Soc. Rev. 49 (2020) 5648, [doi: 10.1039/d0cs00597e](https://doi.org/10.1039/d0cs00597e)

[149] D.E. Doronkin, B.J. Deschner, S. Wang, D.I. Sharapa, Th.L. Sheppard, A. Zimina, F. Studt, R. Dittmeyer, S. Behrens, J.-D. Grunwaldt, Dynamic structural changes of supported Pd, PdSn, and PdIn nanoparticles during continuous flow high pressure direct H₂O₂ synthesis, Catal. Sci. Technol. 10 (2020) 4726, [doi: 10.1039/d0cy00553c](https://doi.org/10.1039/d0cy00553c)

[148] E.P. Valadez Saánchez, A. Knebel, L. Izquierdo Saánchez, M. Klumpp, Ch. Wöll, R. Dittmeyer, Studying ZIF - 8 SURMOF Thin Films with a Langataate Crystal Microbalance: Single-Component Gas Adsorption Isotherms Measured at Elevated Temperatures and Pressures, Langmuir 36 (2020) 8444-8450, [doi: 10.1021/acs.langmuir.0c00875](https://doi.org/10.1021/acs.langmuir.0c00875)

[147] H. Kirsch, U. Sommer, P. Pfeifer, R. Dittmeyer, Power-to-fuel conversion based on reverse water-gas-shift, Fischer-Tropsch Synthesis and Hydrocracking: Mathematical modeling and simulation in Matlab/Simulink, Chem. Eng. Sci. 227 (2020) 115930
[doi: 10.1016/j.ces.2020.115930](https://doi.org/10.1016/j.ces.2020.115930)

[146] R.R. Zimmermann, M. Siebert, S. Ibrahimkutty, R. Dittmeyer, M. Armbrüster, Intermetallic GaPd₂ Thin Films for Selective Hydrogenation of Acetylene, Z. Anorg. Allg. Chem. 646 (2020) 1-10, [doi: 10.1002/zaac.202000124](https://doi.org/10.1002/zaac.202000124)

[145] G. Baracchini, M. Klumpp, P. Arnold, R. Dittmeyer, Direct synthesis of dimethyl ether: A simulation study on the influence of the catalyst configuration, Chem. Eng. J. 396 (2020) 125155, [doi: 10.1016/j.cej.2020.125155](https://doi.org/10.1016/j.cej.2020.125155)

[144] H. Kirsch, N. Lochmahr, C. Staudt, P. Pfeifer, R. Dittmeyer, Production of CO₂-neutral Liquid Fuels by Integrating Fischer-Tropsch Synthesis and Hydrocracking in a Single Micro-structured Reactor: Performance Evaluation of Different Configurations by Factorial Design Experiments, Chem. Eng. J. 393 (2020) 124553, [doi: 10.1016/j.cej.2020.124553](https://doi.org/10.1016/j.cej.2020.124553)

- [143] T. Burgahn, P. Pietrek, R. Dittmeyer, K.S. Rabe, C.M. Niemeyer, Evaluation of a Microreactor for Flow Biocatalysis by Combined Theory and Experiment, *ChemCatChem* 12 (2020) 1-10, [doi: 10.1002/cctc.202000145](https://doi.org/10.1002/cctc.202000145)
- [142] S. Farsi, W. Olbrich, P. Pfeifer, R. Dittmeyer, A consecutive methanation scheme for conversion of CO₂ – A study on Ni₃Fe catalyst in a short-contact time micro packed bed reactor, *Chem. Eng. J.* 388 (2020) 124233, [doi: 10.1016/j.cej.2020.124233](https://doi.org/10.1016/j.cej.2020.124233)
- [141] F. Grinschek, D. Xie, M. Klumpp, M. Kraut, E. Hansjosten, R. Dittmeyer, Regular Microstructured Elements for Intensification of Gas-Liquid Contacting Made by Selective Laser Melting, *Ind. Eng. Chem. Res.* 49 (2020) 3736-3743, [doi: 10.1021/acs.iecr.9b04548](https://doi.org/10.1021/acs.iecr.9b04548)
- [140] H. Kirsch, L. Brübach, M. Loewert, M. Riedinger, A. Gräfenhahn, T. Böltken, M. Klumpp, P. Pfeifer, R. Dittmeyer, CO₂-Neutral Fischer-Tropsch Fuels from Decentralized Modular Plants: Status and Perspectives, *Chem. Ing. Tech.* 92 (2020) 91-99, [doi: 10.1002/cite.201900120](https://doi.org/10.1002/cite.201900120)
- [139] H. Wang, J. Jia, L. Wang, K. Butler, R. Song, G. Casillas, L. He, N.P. Kherani, D.D. Perovic, L. Jing, A. Walsh, R. Dittmeyer, Geoffrey A. Ozin, Heterostructure Engineering of a Reverse Water Gas Shift Photocatalyst, *Adv. Sci.* 6 (2019), 1902170, [doi: 10.1002/advs.201902170](https://doi.org/10.1002/advs.201902170)
- [138] E.P. Valadez Sánchez, H. Gliemann, K. Haas-Santo, W. Ding, E. Hansjosten, J. Wohlgemuth, C. Wöll, R. Dittmeyer, α-Al₂O₃-supported ZIF-8 SURMOF membranes: Diffusion mechanism of ethene/ethane mixtures and gas separation performance, *J. Membr. Sci.* 594 (2020) 117421, [doi: 10.1016/j.memsci.2019.117421](https://doi.org/10.1016/j.memsci.2019.117421)
- [137] A. Fantin, T. Scherb, J. Seeger, G. Schumacher, U. Gerhards, M.E. Ivanova, W.A. Meulenberg, R. Dittmeyer, J. Banhart, Crystal structure of Mo-substituted lanthanum tungstate La_{5.4}W_{1-y}Mo_yO_{12-δ} (0 ≤ y ≤ 0.2) studied by X-ray and neutron diffraction, *J. Appl. Cryst.* 52 (2019) 1043-1053, [doi: 10.1107/S1600576719009385](https://doi.org/10.1107/S1600576719009385)
- [136] M. Talebi, S. Sadir, K. Cobry, A. Stroh, R. Dittmeyer, P. Woias, Investigation of water microchannel boiling flow regimes using electrical sensing elements along a single microchannel, *Meas. Sci. Technol.* 30 (2019) 125301, [doi: 10.1088/1361-6501/ab38f6](https://doi.org/10.1088/1361-6501/ab38f6)

- [135] G. Baracchini, A.G.F. Machoke, M. Klumpp, R. Wen, P. Arnold, W. Schwieger, R. Dittmeyer, Structured catalysts for the direct synthesis of dimethyl ether from synthesis gas: a comparison of core@shell versus hybrid catalyst configuration, *Catal. Today* 342 (2020), 46-58, doi: [10.1016/j.cattod.2019.07.016](https://doi.org/10.1016/j.cattod.2019.07.016)
- [134] M. Loewert, J. Hoffmann, P. Piermartini, M. Selinsek, R. Dittmeyer, P. Pfeifer, Microstructured Fischer-Tropsch Reactor Scale-up and Opportunities for Decentralized Application, *Chem. Eng. Technol. Chem. Eng. Technol.* 42 (2019) 2202-2214, doi: [10.1002/ceat.201900136](https://doi.org/10.1002/ceat.201900136)
- [133] R. Dittmeyer, M. Klumpp, P. Kant, G. Ozin, Crowd oil not crude oil, *Nat. Comm.* 10 (2019) 1818, doi: [10.1038/s41467-019-09685-x](https://doi.org/10.1038/s41467-019-09685-x)
- [132] K.M. Dyrda, F. Grinschek, G. Rabsch, K. Haas-Santo, R. Dittmeyer, Development of a microsieve based micro contactor for gas/liquid phase separation, *Sep. Purif. Technol.* 220 (2019) 238, doi: [10.1016/j.seppur.2019.03.016](https://doi.org/10.1016/j.seppur.2019.03.016)

2016 – 2018

- [131] M. Selinsek, M. Kraut, R. Dittmeyer, Experimental Evaluation of a Membrane Micro Channel Reactor for Liquid Phase Direct Synthesis of Hydrogen Peroxide in Continuous Flow Using Nafion® Membranes for Safe Utilization of Undiluted Reactants, *Catalysts* 8 (2018) 556, doi: [10.3390/catal8110556](https://doi.org/10.3390/catal8110556)
- [130] A. Wunsch, P. Kant, M. Mohr, K. Haas-Santo, P. Pfeifer, R. Dittmeyer, Recent Developments in Compact Membrane Reactors with Hydrogen Separation, *Membranes* 8 (2018), 107, doi: [10.3390/membranes8040107](https://doi.org/10.3390/membranes8040107)
- [129] K. Dyrda, V. Wilke, K. Haas-Santo, R. Dittmeyer, Experimental Investigation of the Gas/Liquid Phase Separation Using a Membrane-Based Micro Contactor, *ChemEngineering* 2 (2018) 55, doi: [10.3390/chemengineering2040055](https://doi.org/10.3390/chemengineering2040055)
- [128] S. Munoz, A. Navarrete, A. Martin, R. Dittmeyer, J.M. Cocero, Carbon Dioxide Hydrogenation by Means of Plasmonic Resonance Activation in Silica Aerogel Media, *Matrials* 11 (2018) 2134, doi: [10.3390/ma11112134](https://doi.org/10.3390/ma11112134)
- [127] A. Miska, D. Schurr, G. Rinke, R. Dittmeyer, S. Schindler, From model compounds to applications: Kinetic studies on the activation of dioxygen using an iron complex in a SuperFocus mixer, *Chem. Eng. Sci.* 190 (2018), 459-465, doi: [10.1016/j.ces.2018.05.064](https://doi.org/10.1016/j.ces.2018.05.064)
- [126] S. Urban, A. Weltin, H. Flamm, J. Kieninger, B. Deschner, M. Kraut, R. Dittmeyer, G. Urban, Electrochemical multisensor system for monitoring hydrogen peroxide, hydrogen and oxygen in direct synthesis microreactors, *Sens. Act. B:Chem.* 273 (2018), 973-982, doi: [10.1016/j.snb.2018.07.014](https://doi.org/10.1016/j.snb.2018.07.014)
- [125] C. Mortalò, E. Rebollo, S. Escolástico, S. Deambrosis, K. Haas-Santo, M. Rancan, R. Dittmeyer, L. Armelao, F. Fabrizio, Enhanced sulfur tolerance of $\text{BaCe}_{0.65}\text{Zr}_{0.20}\text{Y}_{0.15}\text{O}_{3-\Delta}$ - $\text{Ce}_{0.85}\text{Gd}_{0.15}\text{O}_{2-\Delta}$ composite for hydrogen separation membranes, *J. Mem. Sci.* **564** (2018) 123-132, doi: [10.1016/j.memsci.2018.07.015](https://doi.org/10.1016/j.memsci.2018.07.015)
- [124] E. Hansjosten, A. Wenka, A. Hensel, W. Benzinger, M. Klumpp, R. Dittmeyer, Custom-designed 3D-printed metallic fluid guiding elements for enhanced heat transfer at low pressure drop, *Chem. Eng. Proc.: Process Intensif.* **130** (2018) 119-126, doi: [10.1016/j.cep.2018.05.022](https://doi.org/10.1016/j.cep.2018.05.022)

- [123] T. Gietzelt, M. Kraut, F. Messerschmidt, W. Fürbeth, R. Dittmeyer, Corrosion-Resistant Microprocess Apparatuses by Means of CVD Coating with Tantalum, *Chem. Ing. Tech.* **90** (2018) 1037-1046, doi: [10.1002/cite.201700168](https://doi.org/10.1002/cite.201700168)
- [122] S. Escolástico, V. Stournari, K. Haas-Santo, R. Dittmeyer, J.M. Serra, Chemical stability in H₂S and creep characterization of the mixed protonic conductor Nd_{5.5}WO_{11.25-Δ}, *Int. J. Hydr. Energy* **43** (2018) 8342-8354, doi: [10.1016/j.ijhydene.2018.03.060](https://doi.org/10.1016/j.ijhydene.2018.03.060)
- [121] J. Cao, M. Kraut, R. Dittmeyer, L. Zhang, H. Xu, Numerical analysis on the effect of bifurcation angle and inlet velocity on the distribution uniformity performance of consecutive bifurcating fluid flow distributors, *Int. Commun. Heat Mass* **93** (2018), 60-65, doi: [10.1016/j.icheatmasstransfer.2017.04.017](https://doi.org/10.1016/j.icheatmasstransfer.2017.04.017)
- [120] Z. Zhang, J. Yu, J. Zhang, Q. Ge, H. Xu, F. Dallmann, R. Dittmeyer, J. Sun, Tailored metastable Ce–Zr oxides with highly distorted lattice oxygen for accelerating redox cycles, *Chem. Sci.* (2018), doi:[10.1039/C8SC00729B](https://doi.org/10.1039/C8SC00729B)
- [119] M. Selinsek, B.J. Deschner, D.E. Doronkin, T.L. Sheppard, J.-D. Grunwaldt, R. Dittmeyer, Revealing the Structure and Mechanism of Palladium during Direct Synthesis of Hydrogen Peroxide in Continuous Flow Using Operando Spectroscopy, *ACS Catal.* **8** (2018), 2546-2557, doi:[10.1021/acscatal.7b03514](https://doi.org/10.1021/acscatal.7b03514)
- [118] G. Tofighi, A. Gaur, D.E. Doronkin, H. Lichtenberg, W. Wang, D. Wang, G. Rinke, A. Ewinger, R. Dittmeyer, J.-D. Grunwaldt, Microfluidic Synthesis of Ultrasmall AuPd Nanoparticles with a Homogeneously Mixed Alloy Structure in Fast Continuous Flow for Catalytic Applications, *J. Phys. Chem. C* **122** (2018), 1721-1731, doi:[10.1021/acs.jpcc.7b11383](https://doi.org/10.1021/acs.jpcc.7b11383)
- [117] U. Ulmer, D. Oertel, T. Diemant, C.B. Minella, T. Bergfeldt, R. Dittmeyer, R.J. Behm, M. Fichtner, Performance Improvement of V-Fe-Cr-Ti Solid State Hydrogen Storage Materials in Impure Hydrogen Gas, *ACS Appl. Mater. Inter.* **10** (2018), 1662-1671, doi:[10.1021/acsami.7b13541](https://doi.org/10.1021/acsami.7b13541)
- [116] G. Tofighi, H. Lichtenberg, J. Pesek, T.W.L. Sheppard, W. Wang, L. Schoettner, G. Rinke, R. Dittmeyer, J.-D. Grunwaldt, Continuous microfluidic synthesis of colloidal ultrasmall gold nanoparticles: in situ study of the early reaction stages and application for catalysis, *React. Chem. Eng.* **2** (2017), 876-884, doi:[10.1039/c7re00114b](https://doi.org/10.1039/c7re00114b)

- [115] C. Sun, Z. Luo, A. Choudhary, P. Pfeifer, R. Dittmeyer, Influence of the Condensable Hydrocarbons on an Integrated Fischer-Tropsch Synthesis and Hydrocracking Process: Simulation and Experimental Validation, *Ind. Eng. Chem. Res.* **56** (2017), 13076-13086, doi:[10.1021/acs.iecr.7b01326](https://doi.org/10.1021/acs.iecr.7b01326)
- [114] C. Sun, P. Pfeifer, R. Dittmeyer, One-stage syngas-to-fuel in a micro-structured reactor: Investigation of integration pattern and operating conditions on the selectivity and productivity of liquid fuels, *Chem. Eng. J.* **326** (2017), 37-46, doi:[10.1016/j.cej.2017.05.133](https://doi.org/10.1016/j.cej.2017.05.133)
- [113] M. Siebert, R.R. Zimmermann, M. Armbruester, R. Dittmeyer, Inkjet Printing of GaPd₂ into Micro-Channels for the Selective Hydrogenation of Acetylene, *CHEMCATCHEM*, **9** (2017), 3733-3742, doi:[10.1002/cctc.201700288](https://doi.org/10.1002/cctc.201700288)
- [112] U. Ulmer, M. Dieterich, A. Pohl, R. Dittmeyer, M. Linder, M. Fichtner, Study of the structural, thermodynamic and cyclic effects of vanadium and titanium substitution in laves-phase AB(2) hydrogen storage alloys, *Int. J. Hydr. Energy* **42** (2017), 20103-20110, doi:[10.1016/j.ijhydene.2017.06.137](https://doi.org/10.1016/j.ijhydene.2017.06.137)
- [111] R. Dittmeyer, T. Boeltken, P. Piermartini, M. Selinsek, M. Loewert, F. Dallmann, H. Kreuder, M. Cholewa, A. Wunsch, M. Belimov, S. Farsi, P. Pfeifer, Micro and micro membrane reactors for advanced applications in chemical energy conversion, *Curr. Opin. Chem. Eng.* **17** (2017), 108-125, doi:[10.1016/j.coche.2017.08.001](https://doi.org/10.1016/j.coche.2017.08.001)
- [110] D. Schurr, J. Guhathakurta, S. Simon, G. Rinke, R. Dittmeyer, Characterization of a Raman Spectroscopic and Holographic System for Gas-Liquid Flows in Microchannels, *Chem. Eng. Technol.* **40** (2017), 1400-1407, doi:[10.1002/ceat.201600622](https://doi.org/10.1002/ceat.201600622)
- [109] A. Oppermann, L. Laurini, F. Etscheidt, K. Hollmann, F. Strassl, A. Hoffmann, D. Schurr, R. Dittmeyer, G. Rinke, S. Herres-Pawlis, Detection of Copper Bisguanidine NO Adducts by UV-vis Spectroscopy and a SuperFocus Mixer, *Chem. Eng. Technol.* **40** (2017), 1475-1483, doi:[10.1002/ceat.201600691](https://doi.org/10.1002/ceat.201600691)
- [108] A. Fantin, T. Scherb, J. Seeger, G. Schumacher, U. Gerhards, M.E. Ivanova, W.A. Meulenberg, R. Dittmeyer, J. Banhart, Relation between composition and vacant oxygen sites in the mixed ionic electronic conductors La_{5.4}W_{1-y}M_yO_{12-delta} (M = Mo, Re; 0 <= y <= 0.2) and their mother compound La_{6-x}WO_{12-delta} (0.4 <= x <= 0.8), *Solid State Ionics* **306** (2017), 104-111, doi:[10.1016/j.ssi.2017.04.005](https://doi.org/10.1016/j.ssi.2017.04.005)
- [107] C. Sun, M. Klumpp, J.R. Binder, P. Pfeifer, R. Dittmeyer, One-Stage Syngas-to-Fuel Conversion with Printed Catalyst Layers in Microstructured Reactors, *Chem. Ing. Tech.* **89** (2017), 894-902, doi:[10.1002/cite.201600180](https://doi.org/10.1002/cite.201600180)

- [106] T.L. Sheppard, S.W.T. Price, F. Benzi, S. Baier, M. Klumpp, R. Dittmeyer, W. Schwieger, J.-D. Grunwaldt, In Situ Multimodal 3D Chemical Imaging of a Hierarchically Structured Core@Shell Catalyst, *JACS* **139** (2017), 7855-7863, doi:[10.1021/jacs.7b02177](https://doi.org/10.1021/jacs.7b02177)
- [105] C. Prechtl, M. Kraut, M. Franzreb, G. Brenner-Weiss, R. Dittmeyer, Membrane-Supported Multichannel Microfluidic Solvent Extraction System, *Chem. Eng. Technol.* **40** (2017), 670-677, doi:[10.1002/ceat.201600395](https://doi.org/10.1002/ceat.201600395)
- [104] C. Wagner, M. Cholewa, U. Ulmer, D. Poncette, A. Patyk, M. Fichtner, R. Dittmeyer, P. Pfeifer, Konzept zur chemischen Wärmespeicherung mit flüssigen organischen Hydriden, *Chem. Ing. Tech.* **89** (2017), 341-345, doi:[10.1002/cite.201600025](https://doi.org/10.1002/cite.201600025)
- [103] C. Sun, T. Zhan, P. Pfeifer, R. Dittmeyer, Influence of Fischer-Tropsch synthesis (FTS) and hydrocracking (HC) conditions on the product distribution of an integrated FTS-HC process, *Chem. Eng. J.* **310** (2017), 272-281, doi:[10.1016/j.cej.2016.10.118](https://doi.org/10.1016/j.cej.2016.10.118)
- [102] T. Gietzelt, V. Toth, A. Huell, R. Dittmeyer, Determining the Dependence of Deformation during Diffusion Welding on the Aspect Ratio Using Samples Made of SS 304 (1.4301), *Adv. Eng. Mater.* **19** (2017), 1600344, doi:[10.1002/adem.201600344](https://doi.org/10.1002/adem.201600344)
- [101] K.F. Kalz, R. Krahnert, M. Dvoyashkin, R. Dittmeyer, R. Glaeser, U. Krewer, K. Reuter, J.-D. Grunwaldt, Future Challenges in Heterogeneous Catalysis: Understanding Catalysts under Dynamic Reaction Conditions, *CHEMCATCHEM* **9** (2017), 17-29, doi:[10.1002/cctc.201600996](https://doi.org/10.1002/cctc.201600996)
- [100] J. Yu, Z. Zhang, F. Dallmann, J. Zhang, D. Miao, H. Xu, A. Goldbach, R. Dittmeyer, Facile synthesis of highly active Rh/Al₂O₃ steam reforming catalysts with preformed support by flame spray pyrolysis, *Appl. Catal. B: Environ.* **198** (2016), 171-179, doi:[10.1016/j.apcatb.2016.05.050](https://doi.org/10.1016/j.apcatb.2016.05.050)
- [99] J.S. Hauser, J. Schwichtenberg, M. Marz, C. Suergers, A. Seiler, U. Gerhards, F. Messerschmidt, A. Hensel, R. Dittmeyer, H. von Loehneysen, R. Hoffmann-Vogel, Controlled electromigration and oxidation of free-standing copper wires, *Appl. Phys. A-Mater. Sci. Process.* **122** (2016), 1068, doi:[10.1007/s00339-016-0600-z](https://doi.org/10.1007/s00339-016-0600-z)
- [98] E.P. Valadez-Sanchez, H. Gliemann, K. Haas-Santo, C. Woell, R. Dittmeyer, ZIF-8 SURMOF Membranes Synthesized by Au-Assisted Liquid Phase Epitaxy for Application in Gas Separation, *Chem. Ing. Tech.* **88** (2016), 1798-1805, doi:[10.1002/cite.201600061](https://doi.org/10.1002/cite.201600061)

- [97] A. Fantin, T. Scherb, J. Seeger, G. Schumacher, U. Gerhards, M.E. Ivanova, W.A. Meulenberg, R. Dittmeyer, J. Banhart, Crystal structure of Re-substituted lanthanum tungstate $\text{La}_{5.4}\text{W}_{1-y}\text{Re}_y\text{O}_{12-\delta}$ ($0 \leq y \leq 0.2$) studied by neutron diffraction, *J. Appl. Crystallogr.* **49** (2016), 1544-1560, doi:[10.1107/S1600576716011523](https://doi.org/10.1107/S1600576716011523)
- [96] W. Ding, G. Baracchini, M. Klumpp, W. Schwieger, R. Dittmeyer, Adsorption Device Based on a Langatate Crystal Microbalance for High Temperature High Pressure Gas Adsorption in Zeolite H-ZSM-5, *JoVE* **114** (2016), e54413, doi:[10.3791/54413](https://doi.org/10.3791/54413)
- [95] H. Kreuder, T. Boeltken, M. Cholewa, J. Meier, P. Pfeifer, R. Dittmeyer, Heat storage by the dehydrogenation of methylcyclohexane - Experimental studies for the design of a microstructured membrane reactor, *Int. J. Hydr. Energy* **41** (2016), 12082-12092, doi:[10.1016/j.ijhydene.2016.05.140](https://doi.org/10.1016/j.ijhydene.2016.05.140)
- [94] M. Selinsek, M. Bohrer, B.K. Vankayala, K. Haas-Santo, M. Kraut, R. Dittmeyer, Towards a new membrane micro reactor system for direct synthesis of hydrogen peroxide, *Catal. Today* **268** (2016), 85-94, doi:[10.1016/j.cattod.2016.02.003](https://doi.org/10.1016/j.cattod.2016.02.003)
- [93] U. Ulmer, M. Cholewa, T. Diemant, C.B. Minella, R. Dittmeyer, J. Behm, M. Fichtner, Thermochemical Energy Storage through De/Hydrogenation of Organic Liquids: Reactions of Organic Liquids on Metal Hydrides, *ACS Appl. Mater. Inter.* **8** (2016), 13993-14003, doi:[10.1021/acسامی.6b05537](https://doi.org/10.1021/acسامی.6b05537)
- [92] I. Gerken, J.J. Brandner, R. Dittmeyer, Heat transfer enhancement with gas-to-gas micro heat exchangers, *Appl. Therm. Eng.* **93** (2016), 1410-1416, doi:[10.1016/j.applthermaleng.2015.08.098](https://doi.org/10.1016/j.applthermaleng.2015.08.098)
- [91] D. Schurr, F. Strassl, P. Liebhaeuser, G. Rinke, R. Dittmeyer, S. Herres-Pawlits, Decay kinetics of sensitive bioinorganic species in a SuperFocus mixer at ambient conditions, *React. Chem. Eng.* **1** (2016), 485-493, doi:[10.1039/c6re00119j](https://doi.org/10.1039/c6re00119j)

2011 - 2015

- [90] S. Lee, K. Schneider, J. Schumann, A.K. Mogalicherla, P. Pfeifer, R. Dittmeyer, Effect of metal precursor on Cu/ZnO/Al₂O₃ synthesized by flame spray pyrolysis for direct DME production, *Chem. Eng. Sci.* **138** (2015), 194-202, doi:[10.1016/j.ces.2015.08.021](https://doi.org/10.1016/j.ces.2015.08.021)
- [89] T. Gietzelt, T. Wunsch, L. Eichhorn, R. Dittmeyer, Impact of Different Parameters for Pulsed-Laser Welding of the Austenitic Stainless Steel 304, *Chem. Eng. Technol.* **38** (2015), 2189-2197, doi:[10.1002/ceat.201500212](https://doi.org/10.1002/ceat.201500212)
- [88] U. Ulmer, K. Asano, A. Patyk, H. Enoki, Y. Nakamura, A. Pohl, R. Dittmeyer, M. Fichtner, Cost reduction possibilities of vanadium-based solid solutions - Microstructural, thermodynamic, cyclic and environmental effects of ferrovanadium substitution, *J. Alloy Compd.* **648** (2015), 1024-1030, doi:[10.1016/j.jallcom.2015.07.110](https://doi.org/10.1016/j.jallcom.2015.07.110)
- [87] W. Ding, M. Klumpp, H. Li, U. Schygulla, P. Pfeifer, W. Schwieger, K. Haas-Santo, R. Dittmeyer, Investigation of High-Temperature and High-Pressure Gas Adsorption in Zeolite H-ZSM-5 via the Langatare Crystal Microbalance: CO₂, H₂O, Methanol, and Dimethyl Ether, *J. Phys. Chem. C* **119** (2015), 23478-23485, doi:[10.1021/acs.jpcc.5b06591](https://doi.org/10.1021/acs.jpcc.5b06591)
- [86] D. Ipsakis, Tz. Kraia, G.E. Marnellos, M. Ouzounidou, S. Voutetakis, R. Dittmeyer, A. Dubbe, K. Haas-Santo, M. Konsolakis, H.E. Figen, N.O. Guldal, S.Z. Baykara, An electrocatalytic membrane-assisted process for hydrogen production from H₂S in Black Sea: Preliminary results, *Int. J. Hydr. Energy* **40** (2015), 7530-7538, doi:[10.1016/j.ijhydene.2014.12.017](https://doi.org/10.1016/j.ijhydene.2014.12.017)
- [85] M. Selinsek, A. Pashkova, R. Dittmeyer, Numerical analysis of mass transport effects on the performance of a tubular catalytic membrane contactor for direct synthesis of hydrogen peroxide, *Catal. Today* **248** (2015), 101-107, doi:[10.1016/j.cattod.2014.05.048](https://doi.org/10.1016/j.cattod.2014.05.048)
- [84] A. Pashkova, R. Dittmeyer, Carbon dioxide as an alternative solvent for the direct synthesis of hydrogen peroxide: A review of recent activities, *Catal. Today* **248** (2015), 128-137, doi:[10.1016/j.cattod.2014.03.012](https://doi.org/10.1016/j.cattod.2014.03.012)
- [83] R. Dittmeyer, J.-D. Grunwaldt, A. Pashkova, A review of catalyst performance and novel reaction engineering concepts in direct synthesis of hydrogen peroxide, *Catal. Today* **248** (2015), 149-159, doi:[10.1016/j.cattod.2014.03.055](https://doi.org/10.1016/j.cattod.2014.03.055)
- [82] W. Ding, M. Klumpp, S. Lee, S. Reuss, S.A. Al-Thabaiti, P. Pfeifer, W. Schwieger, R. Dittmeyer, Simulation of One-Stage Dimethyl Ether Synthesis over a Core-Shell Catalyst, *Chem. Ing. Tech.* **87** (2015), 702-712, doi:[10.1002/cite.201400157](https://doi.org/10.1002/cite.201400157)

- [81] H. Li, K. Haas-Santo, U. Schygulla, R. Dittmeyer, Inorganic microporous membranes for H₂ and CO₂ separation - Review of experimental and modeling progress, *Chem. Eng. Sci.* **127** (2015), 401-417, doi:[10.1016/j.ces.2015.01.022](https://doi.org/10.1016/j.ces.2015.01.022)
- [80] H. Kreuder, C. Mueller, J. Meier, U. Gerhards, R. Dittmeyer, P. Pfeifer, Catalyst development for the dehydrogenation of MCH in a microstructured membrane reactor - For heat storage by a Liquid Organic Reaction Cycle, *Catal. Today* **242** (2015), 211-220, doi:[10.1016/j.cattod.2014.06.029](https://doi.org/10.1016/j.cattod.2014.06.029)
- [79] A. Navarrete, S. Munoz, L.M. Sanz-Moral, J.J. Brandner, P. Pfeifer, A. Martin, R. Dittmeyer, M.J. Cocero, Novel windows for solar commodities: a device for CO₂ reduction using plasmonic catalyst activation, *Faraday Discussions* **183** (2015), 249-259, doi:[10.1039/c5fd00109a](https://doi.org/10.1039/c5fd00109a)
- [78] M. Mayer, J. Bucko, W. Benzinger, R. Dittmeyer, W. Augustin, S. Scholl, Modeling fouling factors for microscale heat exchangers, *Exp. Heat Trans.* **28** (2015), 222-243, doi:[10.1080/08916152.2013.854284](https://doi.org/10.1080/08916152.2013.854284)
- [77] U. Ulmer, K. Asano, T. Bergfeldt, V.S.K. Chakrauadhanula, R. Dittmeyer, H. Enoki, C. Kuebel, Y. Nakamura, A. Pohl, M. Fichtner, Effect of oxygen on the microstructure and hydrogen storage properties of V-Ti-Cr-Fe quaternary solid solutions, *Int. J. Hydr. Energy* **39** (2014), 20000-20008, doi:[10.1016/j.ijhydene.2014.08.152](https://doi.org/10.1016/j.ijhydene.2014.08.152)
- [76] T. Gietzelt, V. Toth, A. Huell, F. Messerschmidt, R. Dittmeyer, Systematic Investigation of the Diffusion Welding Behavior of the Austenitic Stainless Steel 304 (1.4301), *Adv. Eng. Mat.* **16** (2014), 1381-1390, doi:[10.1002/adem.201400035](https://doi.org/10.1002/adem.201400035)
- [75] T. Boeltken, A. Wunsch, T. Gietzelt, P. Pfeifer, R. Dittmeyer, Ultra-compact microstructured methane steam reformer with integrated Palladium membrane for on-site production of pure hydrogen: Experimental demonstration, *Int. J. Hydr. Energy* **39** (2014), 18058-18068, doi:[10.1016/j.ijhydene.2014.06.091](https://doi.org/10.1016/j.ijhydene.2014.06.091)
- [74] T. Boeltken, D. Soysal, S. Lee, G. Straczewski, U. Gerhards, P. Peifer, J. Arnold, R. Dittmeyer, Perspectives of suspension plasma spraying of palladium nanoparticles for preparation of thin palladium composite membranes, *J. Membr. Sci.* **468** (2014), 233-241, doi:[10.1016/j.memsci.2014.06.003](https://doi.org/10.1016/j.memsci.2014.06.003)
- [73] W. Ding, H. Li, P. Pfeifer, R. Dittmeyer, Crystallite-pore network model of transport and reaction of multicomponent gas mixtures in polycrystalline microporous media, *Chem. Eng. J.* **254** (2014), 545-558, doi:[10.1016/j.cej.2014.05.081](https://doi.org/10.1016/j.cej.2014.05.081)

- [72] T. Gietzelt, L. Eichhorn, T. Wunsch, U. Gerhards, T. Przeorski, H. Weiss, R. Dittmeyer, Contribution to the Laser Welding of Wrought and Spray-Compacted Aluminum Alloys and the Impact of the Alloy Composition on the Welding Microstructure, *Adv. Eng. Mat.* **16** (2014), 1052-1065, doi:[10.1002/adem.201300497](https://doi.org/10.1002/adem.201300497)
- [71] G. Straczewski, J. Voeller-Blumenroth, H. Beyer, P. Pfeifer, M. Steffen, I. Felden, A. Heinzel, M. Wessling, R. Dittmeyer, Development of thin palladium membranes supported on large porous 310L tubes for a steam reformer operated with gas-to-liquid fuel, *Chem. Eng. & Proc.* **81** (2014) 12-23, doi:[10.1016/j.cep.2014.04.002](https://doi.org/10.1016/j.cep.2014.04.002)
- [70] A. Vittoriosi, J.J. Brandner, P. Ruther, O. Paul, R. Dittmeyer, Design and characterization of integrated microsensors for heat transfer studies in microchannels, *Exp. Heat Trans.* **27** (2014), 389-402, doi:[10.1080/08916152.2013.849465](https://doi.org/10.1080/08916152.2013.849465)
- [69] H. Li, U. Schygulla, J. Hoffmann, P. Niehoff, K. Haas-Santo, R. Dittmeyer, Experimental and modeling study of gas transport through composite ceramic membranes, *Chem. Eng. Sci.* **108** (2014), 94-102, doi:[10.1016/j.ces.2013.12.030](https://doi.org/10.1016/j.ces.2013.12.030)
- [68] A.K. Mogalicherla, S. Lee, P. Pfeifer, R. Dittmeyer, Drop-on-demand inkjet printing of alumina nanoparticles in rectangular microchannels, *Microfluid. Nanofluid.* **16** (2014), 655-666, doi:[10.1007/s10404-013-1260-3](https://doi.org/10.1007/s10404-013-1260-3)
- [67] C. Fraeulin, G. Rinke, R. Dittmeyer, G. Waters, M. Nilles, Simultane In-situ-Messung des Sauerstoffverbrauchs und der Produktbildung während der Cyclohexanoxidation, *Chem. Ing. Tech.* **86** (2014), 524-528, doi:[10.1002/cite.201300123](https://doi.org/10.1002/cite.201300123)
- [66] M. Ruf, C. Solis, S. Escolastico, R. Dittmeyer, J.-M. Serra, Transport properties and oxidation and hydration kinetics of the proton conductor Mo doped Nd_{5.5}WO_{11.25}-delta, *J. Mater. Chem. A*, **43** (2014), 18539-18546, doi:[10.1039/c4ta03248a](https://doi.org/10.1039/c4ta03248a)
- [65] C. Fraeulin, G. Rinke, R. Dittmeyer, Characterization of a new system for space-resolved simultaneous in situ measurements of hydrocarbons and dissolved oxygen in microchannels, *Microfluid. Nanofluid.* **16** (2014), 149-157, doi:[10.1007/s10404-013-1223-8](https://doi.org/10.1007/s10404-013-1223-8)
- [64] M. Mayer, J. Bucko, W. Benzinger, R. Dittmeyer, W. Augustin, S. Scholl, Crystallization Fouling in Experimental Micro Heat ExchangersOptical and Thermal Investigations, *Exp. Heat Transfer*, **26** (2013), 487-502, doi:[10.1080/08916152.2012.719066](https://doi.org/10.1080/08916152.2012.719066)
- [63] S. Lee, T. Boeltken, A.K. Mogalicherla, U. Gerhards, R. Pfeifer, R. Dittmeyer, Inkjet printing of porous nanoparticle-based catalyst layers in microchannel reactors, *Appl. Catal. A:Gen* **467** (2013), 69-75, doi:[10.1016/j.apcata.2013.07.002](https://doi.org/10.1016/j.apcata.2013.07.002)

- [62] T. Gietzelt, L. Eichhorn, T. Wunsch, C. Schorle, M. Kraut, R. Dittmeyer, Laser Welding of Multilayer Stacks Made of Thin-Sheet Material for the Manufacture of Microstructured Devices for Process Engineering, *Chem. Ing. Tech.* **85** (2013) 1624-1631, doi:[10.1002/cite.201200181](https://doi.org/10.1002/cite.201200181)
- [61] A. Koelbl, M. Kraut, R. Dittmeyer, Kinetic investigation of the Dushman reaction at concentrations relevant to mixing studies in microstructured cyclone type mixers, *Chem. Eng. Sci.* **101** (2013), 454-460, doi:[10.1016/j.ces.2013.07.008](https://doi.org/10.1016/j.ces.2013.07.008)
- [60] C. Fraeulin, G. Rinke, R. Dittmeyer, In-Situ Laser Raman Spectroscopy Adapted to Process Conditions for Studying Cyclohexane Oxidation, *J. Flow Chem.* **3** (2013), 87-91, doi:[10.1556/JFC-D-13-00007](https://doi.org/10.1556/JFC-D-13-00007)
- [59] T. Gietzelt, V. Toth, H. Lambach, R. Dittmeyer, Considerations of Microstructural Influences for Diffusion Welding of Metals in Microsystem Technology, *Adv. Eng. Mat.* **15** (2013), 669-683, doi:[10.1002/adem.201200339](https://doi.org/10.1002/adem.201200339)
- [58] B. Dittmar, A. Behrens, N. Schoedel, M. Ruettinger, Th. Franco, G. Straczewski, R. Dittmeyer, Methane steam reforming operation and thermal stability of new porous metal supported tubular palladium composite membranes, *Int. J. Hydr. Energy* **38** (2013), 8759-8771, doi:[10.1016/j.ijhydene.2013.05.030](https://doi.org/10.1016/j.ijhydene.2013.05.030)
- [57] K. Hecht, F. Messerschmidt, P. Pfeifer, R. Dittmeyer, B. Kraushaar-Czarnetzki, S. Hecht, Surface roughness of machined microchannels and its effect on multiphase boundary conditions, *Chem. Eng. J.* **227** (2013) 2-12, doi:[10.1016/j.cej.2012.11.127](https://doi.org/10.1016/j.cej.2012.11.127)
- [56] W. Wibel, A. Wenka, J.J. Brandner, R. Dittmeyer, Measuring and modeling the residence time distribution of gas flows in multichannel microreactors (Reprinted from Chemical Engineering Journal, Vol. 215, Pg. 449-460, 2013), *Chem. Eng. J.* **227** (2013) 203-214, doi:[10.1016/j.cej.2013.05.016](https://doi.org/10.1016/j.cej.2013.05.016)
- [55] U. Hampel, R. Dittmeyer, A. Patyk, T. Wetzel, R. Lange, H. Freund, W. Schwieger, M. Gruenewald, M. Schlueter, U. Petasch, The Helmholtz Energy Alliance Energy Efficient Multiphase Chemical Processes, *Chem. Ing. Tech.* **85** (2013), 992-996, doi:[10.1002/cite.201300002](https://doi.org/10.1002/cite.201300002)
- [54] K. Hecht, G. Froehlich, P. Pfeifer, R. Dittmeyer, B. Kraushaar-Czarnetzki, The influence of surface properties on chemical reaction in multiphase flow in capillaries, *Chem. Eng. J.* **225** (2013) 837-847, doi:[10.1016/j.cej.2012.11.092](https://doi.org/10.1016/j.cej.2012.11.092)

- [53] T. Boeltken, M. Belimov, P. Pfeifer, T.A. Peters, R. Bredesen, R. Dittmeyer, Fabrication and testing of a planar microstructured concept module with integrated palladium membranes, *Chem. Eng. & Proc.* **67** (2013) 136-147, doi:[10.1016/j.cep.2012.06.009](https://doi.org/10.1016/j.cep.2012.06.009)
- [52] W. Wibel, A. Wenka, J.J. Brandner, R. Dittmeyer, Measuring and modeling the residence time distribution of gas flows in multichannel microreactors, *Chem. Eng. J.* **215** (2013) 449-460, doi:[10.1016/j.cej.2012.10.011](https://doi.org/10.1016/j.cej.2012.10.011)
- [51] A. Vittoriosi, J.J. Brandner, R. Dittmeyer, A sensor-equipped microchannel system for the thermal characterization of rarefied gas flows, *Exp. Therm. Fluid Sci.* **41** (2012) 112-120, doi:[10.1016/j.expthermflusci.2012.03.026](https://doi.org/10.1016/j.expthermflusci.2012.03.026)
- [50] N. Schueler, K. Hecht, M. Kraut, R. Dittmeyer, On the Solubility of Carbon Dioxide in Binary Water-Methanol Mixtures, *J. Chem. Eng. Data* **57** (2012) 2304-2308, doi:[10.1021/je300332b](https://doi.org/10.1021/je300332b)
- [49] M. Mayer, J. Bucko, W. Benzinger, R. Dittmeyer, W. Augustin, S. Scholl, The impact of crystallization fouling on a microscale heat exchanger, *Exp. Therm. Fluid Sci.* **40** (2012) 126-131, doi:[10.1016/j.expthermflusci.2012.02.007](https://doi.org/10.1016/j.expthermflusci.2012.02.007)
- [48] J. Bucko, M. Mayer, W. Benzinger, W. Augustin, S. Scholl, R. Dittmeyer, Investigation on Crystallization Fouling in Micro Heat Exchanger, *Chem. Ing. Tech.* **84** (2012), 491-502, doi:[10.1002/cite.201100234](https://doi.org/10.1002/cite.201100234)
- [47] K. Hecht, N. Schueler, A. Dubbe, M. Kraut, P. Pfeifer, R. Dittmeyer, Improving the Performance of Gas/Liquid Contactors by Optimizing Material Surface Properties, *J. Chem. Eng. Jpn.* **45** (2012) 727-733, doi:[10.1252/jcej.12we072](https://doi.org/10.1252/jcej.12we072)
- [46] W. Benzinger, A. Wenka, R. Ditrneyer, Kinetic modelling of the SO₂-oxidation with Pt in a microstructured reactor, *Appl. Catal. A:Gen* **397** (2011), 209-217, doi:[10.1016/j.apcata.2011.03.001](https://doi.org/10.1016/j.apcata.2011.03.001)
- [45] P. Pfeifer, T. Zscherpe, K. Haas-Santo, R. Dittmeyer, *Investigations on a Pt/TiO₂ catalyst coating for oxidation of SO₂ in a microstructured reactor for operation with forced decreasing temperature profile*, *Appl. Catal. A:Gen* **391** (2011), 289-296, doi:[10.1016/j.apcata.2010.06.044](https://doi.org/10.1016/j.apcata.2010.06.044)
- [44] R. Dittmeyer, L. Bortolotto, *Modification of the catalytic properties of a Pd membrane catalyst for direct hydroxylation of benzene to phenol in a double-membrane reactor by sputtering of different catalyst systems*, *Appl. Catal. A:Gen* **391** (2011), 311-318 doi:[10.1016/j.apcata.2010.07.024](https://doi.org/10.1016/j.apcata.2010.07.024)

2006 - 2010

- [43] A. Pashkova, R. Dittmeyer, N. Kaltenborn, H. Richter, Experimental study of porous tubular catalytic membranes for direct synthesis of hydrogen peroxide, *Chem. Eng. J.* **165** (2010), 924-933, doi:[10.1016/j.cej.2010.10.011](https://doi.org/10.1016/j.cej.2010.10.011)
- [42] J.-F. Drillet, H. Bueb, U. Dettlaff-Weglikowska, R. Dittmeyer, S. Roth, *Development of a self-supported single-wall carbon nanotube-based gas diffusion electrode with spatially well-defined reaction and diffusion layers*, *J. Pow. Sources* **195** (2010), 8084-8088, doi:[10.1016/j.jpowsour.2010.07.014](https://doi.org/10.1016/j.jpowsour.2010.07.014)
- [41] L. Bortolotto, R. Dittmeyer, *Direct hydroxylation of benzene to phenol in a novel microstructured membrane reactor with distributed dosing of hydrogen and oxygen*, *Sep. Purif. Technol.* **73** (2010), 51-58, doi:[10.1016/j.seppur.2009.10.019](https://doi.org/10.1016/j.seppur.2009.10.019)
- [40] D. Urbanczyk, R. Dittmeyer, A. Wolf, R. Warsitz, G. Fischer and I. Voigt, *Evaluation of porous catalytic membranes operated in pore-flow-through mode for hydrogenation of α -methylstyrene*, *Asia-Pacific J. Chem. Eng.* **5** (2010), 12-25, doi:[10.1002/apj.376](https://doi.org/10.1002/apj.376)
- [39] A. Pashkova, K. Svajda, G. Black, R. Dittmeyer, *Automated system for spectrophotometric detection of liquid phase hydrogen peroxide for concentrations up to 5% w/w*, *Rev. Sci. Instr.* **80** (2009), 055104/1-055104/5
- [38] J.-F. Drillet, H. Bueb, R. Dittmeyer, U. Dettlaff-Weglikowska, S. Roth, *Efficient SWCNT-Based Anode for DMFC Applications*, *J. Electrochem. Soc.* **156** (2009), F137-F144
- [37] J.-F. Drillet, H. Bueb, R. Dittmeyer, U. Dettlaff-Weglikowska, S. Roth, *The impact of purification and functional analyzing of carbon nanotubes on their catalytic properties in the Direct Methanol Fuel Cell-Anode*, *Chem. Ing. Tech.* **80** (2008), 1711-1718
- [36] L. Li, Y.M. Zhang, J.-F. Drillet, R. Dittmeyer, K.-M. Jüttner, *Erratum to: Preparation and characterization of Pt direct deposition on polypyrrole modified Nafion composite membranes for direct methanol fuel cell applications*, *Chem. Eng. J.* **139** (2008) 436
- [35] A. Pashkova, K. Svajda and R. Dittmeyer, *Direct synthesis of hydrogen peroxide in a catalytic membrane contactor*, *Chem. Eng. J.* **139** (2008), 165-171
- [34] A. Avhale, D. Kaya, G.T.P. Mabande, T. Selvam, W. Schwieger, Th. Stief and R. Dittmeyer, *Defect-free zeolite membranes of the type BEA for organic vapour separation and membrane reactor applications*, *Stud. Surf. Sci. Catal.* **174** (2008), 669-672

- [33] A. Schmidt, A. Wolf, R. Warsitz, R. Dittmeyer, D. Urbanczyk, I. Voigt, G. Fischer and R. Schomäcker, *Partial hydrogenation of 1,5-cyclooctadiene in a pore-through-flow membrane*, AIChE J. **54** (2008), 258-268
- [32] Y. Swesi, D. Ronze, I. Pitault, R. Dittmeyer and F. Heurtaux, *Purification process for non-conventional hydrogen storage*, Int. J. Hydrogen Energy **32** (2007), 5069-5066
- [31] J. F. Drillet, R. Dittmeyer and K. Jüttner, *Activity and long-term stability of PEDOT as Pt catalyst support for the DMFC anode*, J. Appl. Electrochemistry **37** (2007), 1219-1226
- [30] L. Li, Y.M. Zhang, J.F. Drillet, R. Dittmeyer, K.-M. Jüttner, *Preparation and characterization of Pt direct deposition on polypyrrole modified nafion composite membranes for direct methanol fuel cell applications*, Chem. Eng. J. **133** (2007), 113-119
- [29] Y. Huang and R. Dittmeyer, *Preparation of thin palladium membranes on a porous support with rough surface*, J. Membr. Sci. **302** (2007), 160-170
- [28] J.-F. Drillet, R. Dittmeyer, K. Jüttner, L. Li and K.-M. Mangold, *New Composite DMFC Anode with PEDOT as a Mixed Conductor and Catalyst Support*, Fuel Cells **6** (2006), 432-438
- [27] S. Haag, M. Hanebuth, G.T.P. Mabande, A. Avhale, W. Schwieger and R. Dittmeyer, *On the use of a catalytic H-ZSM-5 membrane for xylene isomerization*, Micropor. Mesopor. Mater. **96** (2006), 168-176
- [26] L. Li, J.-F. Drillet, Z. Mazova, R. Dittmeyer and K. Jüttner, *Poly(3,4-Ethylenedioxythiophene)- Modified Nafion Membrane for Direct Methanol Fuel Cells*, Russian Journal of Electrochemistry **42** (2006), 1193-1201
- [25] Y. Huang and R. Dittmeyer, *Preparation and characterization of composite palladium membranes on sinter-metal supports with a ceramic barrier against intermetallic diffusion*, J. Membr. Sci. **282** (2006), 296-310
- [24] L. Li, J. F. Drillet, R. Dittmeyer and K.-M. Jüttner, *Formation and characterization of PEDOT- modified Nafion® 117 membranes*, J. Solid State Electrochemistry **10** (2006), 708-713
- [23] M. Boder and R. Dittmeyer, *Catalytic modification of conventional SOFC anodes with a view to reducing their activity for direct internal reforming of natural gas*, J. Power Sources **155** (2006), 13-22

2001 - 2005

- [22] A. Wolf, R. Warsitz, R. Dittmeyer, D. Urbanczyk, R. Schomäcker und A. Fischer, *Poröse anorganische katalytisch aktive Membranen als neues Katalysatorkonzept für Flüssigphasenhydrierungen*, Chem. Ing. Tech. **77** (2005), 1206
- [21] M. Hanebuth, R. Dittmeyer, G.T. P. Mabande and W. Schwieger, *On the combination of different transport mechanisms for the simulation of steady-state mass transfer through composite systems using H₂/SF₆ permeation through stainless steel supported silicalite-1 membranes as a model system*, Catal. Today **104** (2005), 352-359
- [20] G.T.P. Mabande, G. Pradhan, W. Schwieger, M. Hanebuth, R. Dittmeyer, T. Selvam, A. Zampieri, H. Baser and R. Herrmann, *A study of Silicalite-1 and Al-ZSM-5 membrane synthesis on stainless steel supports*, Micropor. Mesopor. Mater. **75** (2004), 209-220
- [19] R. Dittmeyer, K. Svajda and M. Reif, *A review of catalytic membrane layers for gas/liquid reactions*, Top. Catal. **29** (2004), 3-27
- [18] M. Reif and R. Dittmeyer, *Application of Catalytically Active Ceramic Membranes for Gas/Liquid Reactions Demonstrated on the Removal of Nitrate and Nitrite from Water*, Catal. Today **82** (2003), 3-14
- [17] G. Centi, R. Dittmeyer, S. Perathoner and M. Reif, *Tubular Catalytic Membrane Reactors: Advantages and Performances in Hydrogenation Reactions in Solutions*, Catal. Today **79-80** (2003), 139-149
- [16] M. Hanebuth, R. Dittmeyer, G. Mabande und W. Schwieger, *Synthese und Gaspermeations-eigenschaften metallgestützter Silicalith-1-Membranen*, Chem. Ing. Tech. **75** (2003), 221-227
- [15] V. Höllein, M. Thornton and R. Dittmeyer, *Preparation and Characterization of Palladium Composite Membranes for Hydrogen Removal in Hydrocarbon Dehydrogenation Membrane Reactors*, Catal. Today **67** (2001), 33-42
- [14] K. Daub, V. Wunder and R. Dittmeyer, *CVD-Preparation of Catalytic Membranes for the Reduction of Nitrate in Water*, Catal. Today **67** (2001), 257-272
- [13] R. Dittmeyer, V. Höllein and K. Daub, *Membrane Reactors for Hydrogenation and Dehydrogenation based on Supported Palladium*, J. Mol. Catal. A: Chemical **173** (2001), 135-184

1991 - 2000

- [12] P. Quicker, V. Hölein and R. Dittmeyer, *Catalytic Dehydrogenation of Hydrocarbons in Palladium Composite Membrane Reactors*, Catal. Today **56** (2000), 21-34
- [11] H.-J. Zander, R. Dittmeyer and J. Wagenhuber, *Dynamic Modelling of Chemical Reaction Systems with Neural Networks and Hybrid Models*, Chem. Eng. Technol. **21** (1999), 517-574
- [10] K. Daub, G. Emig, M.-J. Chollier, M. Callant and R. Dittmeyer, *Studies on the Use of Catalytic Membranes for Reduction of Nitrate in Drinking Water*, Chem. Eng. Sci. **54** (1999), 1577-1582
- [9] R. Dittmeyer, V. Hölein, P. Quicker, G. Emig, G. Hausinger and F. Schmidt, *Factors Controlling the Performance of Catalytic Dehydrogenation of Ethylbenzene in Palladium Composite Membrane Reactors*, Chem. Eng. Sci. **54** (1999), 1431-1439
- [8] H.-J. Zander, R. Dittmeyer und J. Wagenhuber, *Dynamische Modellierung chemischer Reaktionssysteme mit Neuronalen Netzen und hybriden Modellen*, Chem. Ing. Tech. **71** (1999), 234-237
- [7] Ch. Hermann, P. Quicker and R. Dittmeyer, *Mathematical Modelling of Catalytic Dehydrogenation of Ethylbenzene to Styrene in a Composite Palladium Membrane Reactor*, J. Membr. Sci. **136** (1997), 161-172
- [6] J. Wagenhuber, H.-J. Zander und R. Dittmeyer, *Dynamische Modellierung chemischer Reaktionssysteme mit Neuronalen Netzen und hybriden Modellen*, in: B. Koppenhoefer und U. Epperlein (Hrsg.), Chemie und Informatik, Shaker-Verlag, Aachen, 1997, 265-277
- [5] J. Langguth, R. Dittmeyer, H. Hofmann and G. Tomandl, *Studies on Oxidative Coupling of Methane using High-Temperature Proton-Conducting Membranes*, Appl. Catal. A **158** (1997) 287-305
- [4] J. Langguth, R. Dittmeyer, H. Hofmann und G. Tomandl, *Keramische Hochtemperatur-Protonenleiter als Membrankonzept für die Oxidative Kopplung von Methan*, Chem. Ing. Tech. **69** (1997), 354-358
- [3] R. Dittmeyer and H. Hofmann, *Oxidative Coupling of Methane over a Ce/Li/MgO-Catalyst. Kinetic Analysis and Reactor Simulation*, in: H.E. Curry-Hyde and R.F. Howe (Eds.) Natural Gas Conversion II, Proceedings of the 3rd Natural Gas Conversion Symposium, Sydney/Australia, July 4-9, 1993, Studies in Surface Science and Catalysis **81** (1994), 241-247

- [2] J. Zhu, R. Dittmeyer and H. Hofmann, *Application of Sensitivity Analysis to the Reduction of a Complex Kinetic Model for the Homogeneous Oxidative Coupling of Methane*, Chem. Eng. Proc. **32** (1993), 167-176
- [1] J. Schiebisch, S. Bartsch, R. Dittmeyer und H. Hofmann, *Stofftransporteffekte bei der oxidativen Kopplung von Methan*, Chem. Ing. Tech. **63** (1991), 359-361

Book Chapters

R. Dittmeyer and G. Emig, *Simultaneous Heat and Mass Transfer and Chemical Reaction*, in: G. Ertl, H. Knözinger, F. Schüth and J. Weitkamp (Eds.), *Handbook of Heterogeneous Catalysis*, 2nd ed., Wiley-VCH, Weinheim, Vol. 4, 2008, Chapter 6.3, 1727-1784

R. Dittmeyer and J. Caro, *Catalytic Membrane Reactors*, in: G. Ertl, H. Knözinger, F. Schüth and J. Weitkamp (Eds.), *Handbook of Heterogeneous Catalysis*, 2nd ed., Wiley-VCH, Weinheim, Vol. 4, 2008, Chapter 10.7, 2198-2248

G. Emig and R. Dittmeyer, *Simultaneous Heat and Mass Transfer and Chemical Reaction*, in: G. Ertl, H. Knözinger and J. Weitkamp (Eds.), *Handbook of Heterogeneous Catalysis*, VCH-Verlag, Weinheim, Vol. 2, 1997, Chapter 6.2

Scientific Publications as Editor

R. Dittmeyer, S. Kuhn (Guest Editors), Reaction engineering and catalysis: Microreactor engineering, Curr. Opin. Chem. Eng. **36** (2022) 100822

R. Dittmeyer, W. Keim, G. Kreysa, A. Oberholz (Hrsg.), Winnacker □ Kühler, Chemische Technik – Prozesse und Produkte, 5. Auflage, Band 6b Metalle, Wiley-VCH, Weinheim, 2006, 670 S.

R. Dittmeyer, W. Keim, G. Kreysa, A. Oberholz (Hrsg.), Winnacker □ Kühler, Chemische Technik – Prozesse und Produkte, 5. Auflage, Band 6a Metalle, Wiley-VCH, Weinheim, 2006, 796 S.

R. Dittmeyer, W. Keim, G. Kreysa, A. Oberholz (Hrsg.), Winnacker □ Kühler, Chemische Technik – Prozesse und Produkte, 5. Auflage, Band 8 Ernährung, Gesundheit, Konsumgüter, Wiley-VCH, Weinheim, 2005, 1234 S.

R. Dittmeyer (Guest Editor), Proceedings of the 6th International Conference on Catalysis in Membrane Reactors, Lahnstein/Germany, July 6-9, 2004, Catal. Today **104** (2005)

R. Dittmeyer, W. Keim, G. Kreysa, A. Oberholz (Hrsg.), Winnacker □ Kühler, Chemische Technik – Prozesse und Produkte, 5. Auflage, Band 5 Organische Zwischenverbindungen, Polymere, Wiley-VCH, Weinheim, 2005, 1466 S.

R. Dittmeyer, W. Keim, G. Kreysa, A. Oberholz (Hrsg.), Winnacker □ Kühler, Chemische Technik – Prozesse und Produkte, 5. Auflage, Band 4 Energieträger, Organische Grundstoffe, Wiley-VCH, Weinheim, 2005, 1198 S.

R. Dittmeyer, W. Keim, G. Kreysa, A. Oberholz (Hrsg.), Winnacker □ Kühler, Chemische Technik – Prozesse und Produkte, 5. Auflage, Band 3 Anorganische Grundstoffe, Zwischenprodukte, Wiley-VCH, Weinheim, 2005, 1132 S.

R. Dittmeyer, W. Keim, G. Kreysa, A. Oberholz (Hrsg.), Winnacker □ Kühler, Chemische Technik – Prozesse und Produkte, 5. Auflage, Band 7 Industrieprodukte, Wiley-VCH, Weinheim, 2004, 1223 S.

R. Dittmeyer, W. Keim, G. Kreysa, A. Oberholz (Hrsg.), Winnacker □ Kühler, Chemische Technik – Prozesse und Produkte, 5. Auflage, Band 2 Neue Technologien, Wiley-VCH, Weinheim, 2004, 930 S.

R. Dittmeyer, W. Keim, G. Kreysa, A. Oberholz (Hrsg.), Winnacker □ Kühler, Chemische Technik – Prozesse und Produkte, 5. Aufl., Band 1 Methodische Grundlagen, Wiley-VCH,

Weinheim, 2004, 907 S.