

PROF. DR. FRÉDÉRIC VOGEL

PUBLICATIONS

SCIENTIFIC ARTICLES (PEER-REVIEWED)

88. Mangold, F.; Pilz, S.; Bjelić, S. **Vogel, F.** Equation of State and Thermodynamic Properties for Mixtures of H₂O, O₂, N₂, and CO₂ from Ambient up to 1000 K and 280 MPa, *J. Supercritical Fluids* (submitted)
87. Gschwend, D.; Soltic, P.; Wokaun, A.; **Vogel, F.** Review and Performance Evaluation of Fifty Alternative Liquid Fuels for Spark Ignition Engines, *Energy & Fuels* (submitted)
86. **Vogel, F.**; Gasser, U.; Alxneit, I.; Bjelić, S. Deactivation of methanation catalyst (Ru/C) under supercritical water by deposition of non-volatile organics: first insights into deposition patterns and chemical properties, *ChemCatChem* (accepted).
85. Bjelić, S.; Garbuio, L.; Arturi, K.R.; van Bokhoven, J.A.; Jeschke, G.; **Vogel, F.** Oxidative biphasic depolymerization (BPD) of Kraft lignin at low pH, *ChemistrySelect* 2018, 3, 11680-11686.
84. Arturi, K.; Kucheryavskiy, S.; Nielsen, R.; Maschietti, M.; **Vogel, F.**; Bjelić, S.; Sjøgaard, E.G. Molecular footprint of co-solvents in hydrothermal liquefaction (HTL) of *Fallopia japonica*, *J. Supercritical Fluids* 2019, 143, 211-222.
83. Gschwend, D.; Müller, S.; Wokaun, A.; **Vogel, F.** Optimum Fuel for Spark Ignition Engines from Lignin Pyrolysis Oil, *Energy & Fuels* 2018, 32, 9388-9398.
82. Scholz, D.; Kröcher, O.; **Vogel, F.** Deactivation and Regeneration of Sulfonated Carbon Catalysts in Hydrothermal Reaction Environments, *ChemSusChem* 2018, 11, 2189-2201.
81. Bagnoud-Velásquez, M.; Damergi, E.; Peng, G.; **Vogel, F.**; Ludwig, C. Fate and reuse of nitrogen-containing organics from the hydrothermal conversion of algal biomass, *Algal Res.* 2018, 32, 241-249.
80. Arturi, K. R.; Sokoli, H. U.; Sjøgaard, E. G.; **Vogel, F.**; Bjelić, S. Recovery of value-added chemicals by solvolysis of unsaturated polyester resin, *J. Cleaner Prod.* 2018, 170, 131-136.
79. Gschwend, D.; Soltic, P.; Edinger, P.; Wokaun, A.; **Vogel, F.** Performance Evaluation of Gasoline Alternatives Using a Thermodynamic Spark-Ignition Engine Model, *Sustainable Energy & Fuels* 2017, 1, 1991-2005.
78. Peng, G.; **Vogel, F.**; Refardt, D.; Ludwig, C. Catalytic Supercritical Water Gasification: Continuous Methanization of *Chlorella vulgaris*, *Ind. Eng. Chem. Res.* 2017, 56, 6256-6265.
77. Reimer, J.; Müller, S.; De Boni, E.; **Vogel, F.** Hydrogen-enhanced catalytic hydrothermal gasification of biomass, *Biomass Conv. Bioref.* 2017, 7, 511-519.
76. Boukis, N.; Hauer, E.; Herbig, S.; Sauer, J.; **Vogel, F.** Catalytic gasification of digestate sludge in supercritical water on the pilot plant scale, *Biomass Conv. Bioref.* 2017, 7, 415-424.
75. Kraft, S.; **Vogel, F.** Estimation of binary diffusion coefficients in supercritical water - mini review, *Ind. Eng. Chem. Res.* 2017, 56, 4847-4855.
74. Peng, G.; Ludwig, C.; **Vogel, F.** Catalytic Supercritical Water Gasification:

- Interaction of sulfur with ZnO and the Ruthenium catalyst, *Appl. Catal. B* 2017 202, 262–268.
73. Hübner, T.; Roth, M.; **Vogel, F.** Hydrothermal oxidation of fecal sludge: experimental investigations and kinetic modeling, *Ind. Eng. Chem. Res.* 2016 55, 11910-11922.
 72. Bährle, C.; Custodis, V.; Jeschke, G.; van Bokhoven, J. A.; **Vogel, F.** In Situ High Temperature Electron Paramagnetic Resonance Spectroscopy Study on the Influence of Zeolites on the Radical Formation during Lignin Pyrolysis, *ChemSusChem* 2016 9, 2397-2403.
 71. Reimer, J.; Peng, G.; Viereck, S.; De Boni, E.; Breinl, J.; **Vogel, F.** A Novel Salt Separator for the Supercritical Water Gasification of Biomass, *J. Supercritical Fluids* 2016b 117, 113-121.
 70. Reimer, J.; **Vogel, F.**; Steele-MacInnis, M. Speciation and Structural Properties of Hydrothermal Na-K-SO₄ Solutions Studied by Molecular Dynamics Simulations, *ChemPhysChem* 2016 17, 1446-1453.
 69. Peng, G.; Ludwig, C.; **Vogel, F.** Ru Dispersion: a Key Parameter for the Stability of Supported Ru Catalysts during Catalytic Supercritical Water Gasification, *ChemCatChem* 2016 8(1), 139-141.
 68. Reimer, J.; **Vogel, F.** Influence of Anions and Cations on the Phase Behavior of Ternary Salt Solutions Studied by High Pressure Differential Scanning Calorimetry, *J. Supercritical Fluids* 2016 109(3), 141-147.
 67. Ma, Z.; Custodis, V.; Hemberger, P.; Bährle, C.; **Vogel, F.**; Jeschke, G.; van Bokhoven, J. A. Chemicals from lignin by catalytic fast pyrolysis, From product control to reaction mechanism, *Chimia* 2015 69(10), 597–602.
 66. Custodis, V.B.F.; Bährle, C.; **Vogel, F.**; van Bokhoven, J.A. Phenols and Aromatics from Fast Pyrolysis of variously prepared Lignins from Hard- and Softwoods, *Journal of Analytical and Applied Pyrolysis* 2015 115, 214-223.
 65. Reimer, J.; Steele-MacInnis, M.; Wambach, J. M.; **Vogel, F.** Ion association in Hydrothermal Sodium Sulfate Solutions studied by Modulated FT-IR-Raman Spectroscopy and Molecular Dynamics, *J. Phys. Chem. B* 2015 119, 9847–9857.
 64. Bährle, C.; Nick, T. U.; Bennati, M.; Jeschke, G.; **Vogel, F.** High-Field Electron Paramagnetic Resonance and Density Functional Theory Study of Stable Organic Radicals in Lignin: Influence of the Extraction Process, Botanical Origin, and Protonation Reactions on the Radical g Tensor, *J. Phys. Chem. A* 2015 119(24), 6475–6482.
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 62. Bagnoud-Velásquez, M.; Schmid-Staiger, U.; Peng, G.; **Vogel, F.**; Ludwig, C. First developments towards closing the nutrient cycle in a biofuel production process, *Algal Research* 2015 8(3), 76–82.
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 60. Christensen, P. S.; Peng, G.; **Vogel, F.**; Iversen, B. B. Hydrothermal liquefaction of the microalgae *Phaeodactylum tricornutum*: Impact of reaction conditions on product and elemental distribution, *Energy & Fuels* 2014 28(9), 5792–5803.

59. Kruusement, K.; Luik, H.; Waldner, M.; **Vogel, F.**; Luik, L. Gasification and liquefaction of solid fuels by hydrothermal conversion methods, *Journal of Analytical and Applied Pyrolysis* 2014 108(7), 265-273.
58. Peng, G.; Steib, M.; Gramm, F.; Ludwig, C.; **Vogel, F.** Synthesis factors affecting the catalytic performance and stability of Ru/C catalysts for supercritical water gasification, *Catalysis Science & Technology* 2014 4(9), 3329-3339.
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55. Zöhrer, H.; De Boni, E.; **Vogel, F.** Hydrothermal processing of fermentation residues in a continuous multistage rig – operational challenges for liquefaction, salt separation, and catalytic gasification, *Biomass & Bioenergy* 2014(6) 65, 51-63.
54. Mosteiro Romero, M.; **Vogel, F.**; Wokaun, A. Liquefaction of wood in hot compressed water. Part 2: Modeling of particle dissolution, *Chemical Engineering Science* 2014b 109(4), 220-235.
53. Mosteiro Romero, M.; **Vogel, F.**; Wokaun, A. Liquefaction of wood in hot compressed water. Part 1: Experimental results, *Chemical Engineering Science* 2014a 109(4), 111–122.
52. Dreher, M.; Steib, M.; Nachtegaal, M.; Wambach, J.; **Vogel, F.** On-Stream Regeneration of a Sulfur-Poisoned Ru/C Catalyst Under Hydrothermal Gasification Conditions, *Chem. Cat. Chem.* 2014 6, 626-633.
51. Bagnoud-Velásquez, M.; Brandenberger, M.; **Vogel, F.**; Ludwig, Ch. Continuous catalytic hydrothermal gasification of algal biomass and case study on toxicity of aluminum as a step toward effluents recycling, *Catalysis Today* 2014 223(3), 35-43.
50. Reimer, J.; **Vogel, F.** High Pressure Differential Scanning Calorimetry of the Hydrothermal Salt Solutions K_2SO_4 - Na_2SO_4 - H_2O and K_2HPO_4 - H_2O , *RSC Advances* 2013 3, 24503.
49. Pin, S.; Huthwelker, T.; Brown, M.; **Vogel, F.** Sulfur K-edge XANES-EXAFS Combined Study of the Effect of Protonation on the Sulfate Tetrahedron in solids and solutions, *J. Phys. Chem. A* 2013 117(35), 8368–8376.
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47. Zöhrer, H.; **Vogel, F.** Hydrothermal catalytic gasification of fermentation residues from a biogas plant, *Biomass & Bioenergy* 2013 53(6), 138-148.
46. Brandenberger, M.; Matzenberger, J.; **Vogel, F.**; Ludwig, Ch. Producing synthetic natural gas from microalgae via supercritical water gasification: A techno-economic sensitivity analysis, *Biomass & Bioenergy* 2013 51(4), 26-34.
45. Dreher, M.; Johnson, B.; Peterson, A. A.; Nachtegaal, M.; Wambach, J.; **Vogel, F.** Catalysis in Supercritical Water: Pathway of the Methanation Reaction and Sulfur Poisoning over a Ru/C Catalyst During the Reforming of Bio-Molecules, *J. Catal.* 2013 301(5), 38-45.
44. Wambach, J.; Schubert, M.; Döbeli, M.; **Vogel, F.** Characterisation of a spent Ru/C

- catalyst after gasification of biomass in supercritical water, *Chimia* 2012 66 (9), 706–711.
43. Müller, J. B.; **Vogel, F.** Tar and coke formation during hydrothermal processing of glycerol and glucose. Influence of temperature, residence time and feed concentration, *J. Supercritical Fluids* 2012 70 (10), 126-136.
 42. Peterson, A. A.; Dreher, M.; Wambach, J.; Nachtegaal, M.; Dahl, S.; Nørskov, J. K.; **Vogel, F.** Evidence of scrambling over ruthenium-based catalysts in supercritical-water gasification, *Chem. Cat. Chem.* 2012 4 (8), 1185-1189.
 41. Dreher, M.; De Boni, E.; Nachtegaal, M.; Wambach, J.; **Vogel, F.** Design of a continuous-flow reactor for in-situ x-ray absorption spectroscopy of solids in supercritical fluids, *Rev. Sci. Instrum.* 2012 83, 054101.
 40. Schubert, M.; Aubert, J.; Müller, J. B.; **Vogel, F.** Continuous salt precipitation and separation from supercritical water. Part 3: Interesting effects in processing type 2 salt mixtures, *J. Supercritical Fluids* 2012 61 (1), 44-54.
 39. Rouff, A. A.; Rabe, S.; **Vogel, F.** Phase Transitions in Hydrothermal K_2HPO_4 Solutions, *J. Supercritical Fluids* 2011 57 (3), 207-212.
 38. Gassner, M.; **Vogel, F.**; Heyen, G.; Maréchal, F. Process design of SNG production by hydrothermal gasification of waste biomass: Process optimisation for selected substrates, *Energy & Environmental Science* 2011 4, 1742-1758.
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 34. Kopyscinski, J.; Schildhauer, T. J.; **Vogel, F.**; Biollaz, S. M. A.; Wokaun, A. Applying spatially resolved concentration and temperature measurements in a catalytic plate reactor for the kinetic study of CO methanation, *J. Catal.* 2010 271, 262-279.
 33. Schubert, M.; Regler, J. W.; **Vogel, F.** Continuous salt precipitation and separation from supercritical water. Part 2: Type 2 salts and mixtures of two salts, *J. Supercritical Fluids* 2010 52 (1), 113-124.
 32. Schubert, M.; Regler, J. W.; **Vogel, F.** Continuous salt precipitation and separation from supercritical water. Part 1: Type 1 salts, *J. Supercritical Fluids* 2010 52 (1), 99-112.
 31. Haiduc, A. G.; Brandenberger, M.; Suquet, S.; **Vogel, F.**; Bernier-Latmani, R.; Ludwig, C. SunCHem: an integrated process for hydrothermal production of methane from microalgae and CO₂ mitigation. *J. Appl. Phycology* 2009 21, 529-541.
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27. Stucki, S.; **Vogel, F.**; Ludwig, C.; Haiduc, A. G.; Brandenberger, M. Catalytic gasification of algae in supercritical water for biofuel production and carbon capture. *Energy & Environmental Science* 2009 2 (5), 535-541.
26. Requieres, J.; Rabe, S.; **Vogel, F.**; Truong, T.-B.; Filonova, K.; Barrio, V. L.; Cambra, J.; Güemez, B.; Arias, P. L. Reforming of methane over noble metal catalysts: catalyst deactivation induced by thiophene. *Catalysis Today* 2009 143 (1-2), 9-16.
25. Peterson, A. A.; Vontobel, P.; **Vogel, F.**; Tester, J. W. Normal-phase dynamic imaging of supercritical-water salt precipitation using neutron radiography. *J. Supercritical Fluids* 2009 49 (1), 71-78.
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23. Rabe, S.; **Vogel, F.** A thermogravimetric study of the partial oxidation of methanol for hydrogen production over a Cu/ZnO/Al₂O₃ catalyst. *Appl. Catal. B* 2008 84, 827-834.
22. Peterson, A. A.; **Vogel, F.**; Lachance, R. P.; Fröling, M.; Antal, M. J.; Tester, J. W. Thermochemical biofuel production in hydrothermal media: A review of sub- and supercritical water technologies. *Energy & Environmental Science* 2008 1 (1), 32-65.
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20. Waldner, M. H.; Krumeich, F.; **Vogel, F.** Synthetic Natural Gas by Hydrothermal Gasification of Biomass. Selection Procedure Towards a Stable Catalyst and its Sodium Sulfate Tolerance. *J. Supercritical Fluids* 2007 43, 91-105.
19. **Vogel, F.**; Waldner, M. H.; Rouff, A. A.; Rabe, S. Synthetic natural gas from biomass by catalytic conversion in supercritical water. *Green Chemistry* 2007 9 (6), 616-619.
18. Barrio, V. L.; Schaub, G.; Rhode, M.; Rabe, S.; **Vogel, F.**; Cambra, J. F.; Arias, P. L.; Güemez, M. B. Reactor modeling to simulate catalytic partial oxidation and steam reforming of methane. Comparison of temperature profiles and strategies for hot spot minimization. *Int. J. Hydrogen Energy* 2007 32, 1421-1428.
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11. Waldner, M. H.; **Vogel, F.** Renewable Production of Methane from Woody Biomass by Catalytic Hydrothermal Gasification. *Ind. Eng. Chem. Res.* 2005 44 (13), 4543-4551.
10. **Vogel, F.**; DiNaro Blanchard, J. L.; Marrone, P. A.; Rice, S. F.; Webley, P. A.; Peters, W. A.; Smith, K. A.; Tester, J. W. Critical Review of Kinetic Data For the Oxidation of Methanol in Supercritical Water. *J. Supercritical Fluids* 2005 34, 249-286.
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5. Zhou, N.; Krishnan, A.; **Vogel, F.**; Peters, W. A. A Computational Model for Supercritical Water Oxidation of Organic Toxic Wastes. *Advances in Environmental Research* 2000 4, 79-95.
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3. **Vogel, F.**; Harf, J.; Hug, A.; Rudolf von Rohr, P. Promoted Oxidation of Phenol in Aqueous Solution Using Molecular Oxygen at Mild Conditions. *Environmental Progress* 1999 18 (1), 7-13.
2. Hug, A.; Harf, J.; **Vogel, F.**; Rudolf von Rohr, P. Deactivation of Sewage Sludge by Wet Oxidation (WO) Using the LOPROX Process: A Complete Wastewater Plant/WO System with an Analysis of Wet Oxidation Products. *Chem. Eng. Technol.* 1998 21 (11), 880-885.
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BOOKS AND BOOK CONTRIBUTIONS

1. **Vogel, F.** *Nassoxidation von Phenol mit Sauerstoff bei milden Bedingungen.* Fortschritt-Berichte VDI, Reihe 3: Verfahrenstechnik, Nr. 533, VDI Verlag: Düsseldorf, 1998, ISBN 3-18-353303-0.
2. **Vogel, F.** *Hydrothermal Processes.* In: Municipal Solid Waste Management, Ludwig, Ch., Hellweg, S., Stucki, S. (Eds.), Springer: Berlin, 2003, 204-210, ISBN 3-540-44100-X.
3. **Vogel, F.** *Catalytic conversion of high-moisture biomass to synthetic natural gas in*

supercritical water. In: Handbook of Green Chemistry, Paul Anastas (Series Editor), Volume 2 Heterogeneous Catalysis, Robert Crabtree (Volume Editor), Wiley-VCH: Weinheim, 2009, chapter 12, 281-324, ISBN 978-3-527-32497-2.

4. Kruse, A.; **Vogel, F.**; van Bennekom, J.; Venderbosch, R. *Biomass gasification in supercritical water*. In: Handbook Biomass Gasification, Second Edition, H.A.M. Knoef (Editor), btg Biomass Technology Group, 2012, chapter 9, 251-280, ISBN 978-90-819385-0-1.
5. **Vogel, F.** *Hydrothermale Verfahren*. In: Energie aus Biomasse, 3rd Ed., M. Kaltschmitt, H. Hartmann, H. Hofbauer, (Eds.), Springer: Berlin, 2016, chapter 15, 1267-1337, ISBN 978-3-662-47437-2.
6. **Vogel, F.** *Hydrothermal production of SNG from wet biomass*. In: Synthetic Natural Gas from Coal, Dry Biomass, and Power-To-Gas Applications, T.J. Schildhauer, S.M.A. Biollaz (Eds.), John Wiley & Sons: Hoboken, 2016, chapter 10, 249-278, ISBN 9781118541814.

PLENARIES, KEYNOTES, AND INVITED TALKS AT CONFERENCES

1. **Vogel, F.** *Catalysis under hydrothermal conditions*. International Workshop "Future Concepts in Energy Related Catalysis", session on Catalytic Fuel Processing, Monte Verità, Switzerland, March 13-17, 2005 (invited talk).
2. Bosco, M.; Truong, T.-B.; De Boni, E.; **Vogel, F.** *Optically accessible channel reactor for kinetic investigations of gasoline reforming reactions*, 2nd European Hydrogen Energy Conference, Zaragoza, Spain, November 22-25, 2005 (**keynote**).
3. **Vogel, F.**; Nachtegaal, M.; Wambach, J. *Advanced in-situ instrumentation for catalysis research at the Paul Scherrer Institut*. Defining the Future III, Munich, Germany, September 24-26, 2007 (invited talk).
4. Schubert, M.; Regler, J. W.; **Vogel, F.** *Effiziente Salzabscheidung als ein wichtiger Schritt bei der katalytischen, hydrothermalen Vergasung nasser Biomasse*, 10. Tagung Ionenchromatographie, Luzern, Switzerland, May 7, 2008 (invited talk).
5. **Vogel, F.**; Schubert, M.; Brandenberger, M.; Regler, J. W. *Recent advances in catalytic hydrothermal gasification of biomass to synthetic natural gas*. XVII Congresso Nazionale di Chimica Industriale, Società Chimica Italiana, Genova, June 30-July 3, 2008 (**invited keynote**).
6. Brandenberger, M.; Schubert, M.; Müller, J.; **Vogel, F.**; Ludwig, C.; Stucki, S.; Haiduc, A. G.; Bernier-Latmani, R. *SunChem: a 3rd Generation Biofuel Technology to Produce Methane from Algae*. 36th Discussion Forum LCA of Future Biofuels, EMPA, Dübendorf, Switzerland, November 17, 2008 (invited talk).
7. **Vogel, F.** *PSI's catalytic hydrothermal gasification process*. Bio-SNG '09, Int. conference on advanced biomass-to-SNG technologies and their market implementation, Zürich, Switzerland, May 27, 2009 (invited talk).
8. **Vogel, F.** *SunChem – Recent Results on the Hydrothermal Conversion of Algae to Bio-Methane*. 17th European Biomass Conference & Exhibition, Hamburg, Germany, June 30, 2009 (**plenary**).
9. **Vogel, F.** *Hydrothermale katalytische Vergasung von Biomasse – eine Übersicht*. Fachgespräch "Hydrothermale Verfahren zur Nutzung von nachwachsenden

Rohstoffen”, Forschungszentrum Karlsruhe, Germany, organized by Fachagentur Nachwachsende Rohstoffe, September 2, 2009 (invited talk).

10. **Vogel, F.** *Catalytic hydrothermal conversion of biomass to methane*. 1st Chilean International Seminar on Biogenic Gases as Fuels for the Future, Universidad de Concepción, Chile, July 1, 2010 (invited talk).
11. **Vogel, F.;** Kröcher, O. *Hydrothermale Synthese von Biomethan aus nasser Biomasse*. Kolloquium Sustainable BioEconomy, Karlsruhe Institute of Technology (KIT), December 6-7, 2010 (invited talk).
12. **Vogel, F.** *Catalytic conversion of biomass to methane in supercritical water*. RRB7, 7th Int. Conference on Renewable Resources & Biorefineries, Bruges, Belgium, June 8-10, 2011 (invited talk).
13. **Vogel, F.;** Brandenberger, M.; Ludwig, Ch. *SunChem – Hydrothermale Vergasung von Algenbiomasse*, 5. Bundesalgenstammtisch, DECHEMA, München-Pullach, Germany, March 26-27, 2012 (invited talk).

CONFERENCE PROCEEDINGS

1. **Vogel, F.;** Hildebrand, F. *Catalytic Hydrothermal Gasification of Woody Biomass at High Feed Concentrations*. Proceedings 4th International Symposium on High Pressure Process Technology and Chemical Engineering, *Chemical Engineering Transactions*, 2, 771-777, Bertucco, A. (Ed.), AIDIC, 2002, ISBN 88-900775-1-4.
2. **Vogel, F.;** Waldner, M. H.; De Boni, E. *Efficient production of synthetic natural gas from biomass by hydrothermal gasification*. Proceedings Joint 20th AIRAPT – 43rd EHPRG Conference on Science and Technology of High Pressure, Forschungszentrum Karlsruhe, Germany, 2005, ISBN 3-923704-49-6.
3. **Vogel, F.;** Waldner, M. H. *Catalytic hydrothermal gasification of woody biomass at high feed concentrations*. Proceedings “Science in Thermal and Chemical Biomass Conversion STCBC”, A. V. Bridgwater, D. G. B. Boocock (Eds.), Vol. 2, 1001-1012, CPL Press, March 2006, ISBN 1-872691-97-8.

TALKS AND POSTERS AT CONFERENCES

1996

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September 21-23, 2010.

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79. **Vogel, F.** *Hydrothermale Methanierung nasser Biomasse*. Tagung „Biomasseforschung in der Schweiz – Prozessoptimierung, Emissionen, neue Entwicklungen“, Bundesamt für Energie, Ittigen, Switzerland, November 3, 2011.

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2012.

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83. Zöhler, H.; **Vogel, F.** *Hydrothermal Gasification of Fermentation Residue.* 20th European Biomass Conference and Exhibition, Milano, Italy, June 18-22, 2012.
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87. Zöhler, H.; De Boni, E.; **Vogel, F.** *Hydrothermal catalytic gasification of fermentation residue in a continuous reactor.* ProcessNet-Jahrestagung 2012, Karlsruhe, Germany, September 10-13, 2012.
88. Zöhler, H.; Schubert, M.; **Vogel, F.** *Regeneration methods for sulfur-poisoned catalysts in supercritical water gasification.* ProcessNet-Jahrestagung 2012, Karlsruhe, Germany, poster session, September 10-13, 2012.
89. Dreher, M.; Johnson, B.; Peterson, A.; Nachttegaal, M.; Wambach, J.; **Vogel, F.** *Catalytic Reforming of Bio-Molecules in Supercritical Water: Sulfur Poisoning, Catalyst Regeneration and the Pathway of the Methanation Reaction.* Swiss Chemical Society 2012 Fall Meeting, Zürich, Switzerland, poster session, September 13, 2012.

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92. Bährle, C.; **Vogel, F.** *In Situ Observation of Radicals formed during Lignin Pyrolysis.* 21st European Biomass Conference and Exhibition, Copenhagen, Denmark, June 3-7, 2013.
93. Zöhler, H.; **Vogel, F.** *Hydrothermal gasification of fermentation residue in a continuous plant with continuous salt separation.* 21st European Biomass Conference

and Exhibition, Copenhagen, Denmark, June 3-7, 2013.

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95. Peng, G.; **Vogel, F.**; Ludwig, Ch. *Carbon as a Catalyst Support for Catalytic Supercritical Water Gasification (CSWG) of Microalgae for Bio-Synthetic Natural Gas (Bio-SNG) Production (SunChem Project)*, World Conference on Carbon, Carbon 2013, Rio de Janeiro, Brazil, July 14-19, 2013.
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97. **Vogel, F.** *Hydrothermal conversion of algal biomass to biomethane*. World Resources Forum WRF, workshop on Biofuels from Algae, Davos, Switzerland, October 7, 2013.

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99. Reimer, J.; Wambach, J.; **Vogel, F.** *Modulated FT-IR-Raman Spectroscopy of Hydrothermal Salt Solutions*, 11th International GeoRaman Conference, St. Louis, MO, USA, June 15-19, 2014.
100. Peng, G.; **Vogel, F.**; Ludwig, C. *Ru/C Catalyst for Catalytic Supercritical Water Gasification of Microalgae for Biomethane Production (SunChem Process)*, 22nd European Biomass Conference and Exhibition, Hamburg, Germany, June 23-26, 2014.
101. Peng, G.; **Vogel, F.**; Ludwig, C. *Ru/C as a Catalyst for Catalytic Supercritical Water Gasification of Isopropanol for Methane Production*, 8th International Conference on Environmental Catalysis, Asheville, USA, August 24-27, 2014.
102. Bährle, C.; Custodis, V.; Jeschke, G.; van Bokhoven, J.A.; **Vogel, F.** *Observation of radicals formed during lignin pyrolysis using in situ high temperature EPR*, Lignin 2014 - biosynthesis and utilization, Umeå, Sweden, August 24-28, 2014.

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