

Journal publications

1. S. Pissot, T. Berdugo Vilches, H. Thunman, M. Seemann et al. *Effect of ash circulation on the performance of a dual fluidized bed gasification system*. Biomass and Bioenergy. Vol. 115, p. 45-55
2. J. Maric, T. Berdugo Vilches, H. Thunman et al. *Valorization of Automobile Shredder Residue Using Indirect Gasification*, Energy & Fuels. Vol. 32 (12), p. 12795-12804
3. H. Thunman, M. Seemann, T. Berdugo Vilches et al. *Advanced biofuel production via gasification – lessons learned from 200 man-years of research activity with Chalmers’ research gasifier and the GoBiGas demonstration plant*. Energy Science and Engineering. Vol. 6 (1), p. 6-34
4. T. Berdugo Vilches, M. Seemann, H. Thunman. *Influence of in-bed catalysis by ash-coated olivine on tar formation in steam gasification of biomass*, Energy & Fuels. Vol. 32 (9), p. 9592-9604
5. T. Berdugo Vilches, J. Maric, P. Knutsson et al. *Bed material as a catalyst for char gasification: The case of ash-coated olivine activated by K and S addition*. Fuel. Vol. 224, p. 85-93
6. H.Nguyen, M.Seemann, H.Thunman. *Fate of Polycyclic Aromatic Hydrocarbons during Tertiary Tar Formation in Steam Gasification of Biomass*. Energy & Fuels. Vol. 32 (3), p. 3499-3509
7. M. Pushp, D.Gall, K.Davidsson et al. *Influence of Bed Material, Additives, and Operational Conditions on Alkali Metal and Tar Concentrations in Fluidized Bed Gasification of Biomass*. Energy & Fuels. Vol. 32 (6), p. 6797-6806
8. Zhu, Y. , Si, Y. , Wang, X. , Zhang, W. , Shao, J. , Yang, H. & Chen, H. *Characterization of hydrochar pellets from hydrothermal carbonization of agricultural residues*. Energy & Fuels, 32, 11538-11546
9. Zhu, Y. , Yang, W. , Fan, J. , Kan, T. , Zhang, W. , Liu, H. , Cheng, W. , Yang, H. & et al. *Effect of sodium carboxymethyl cellulose addition on particulate matter emissions during biomass pellet combustion*. Applied Energy 230, 925–934 (2018)
10. Zhu, Y. , Hu, J. , Yang, W. , Zhang, W. , Zeng, K. , Yang, H. , Du, S. & Chen, H. *Ash fusion characteristics and transformation behaviors during bamboo combustion in comparison with straw and poplar*. Energy & Fuels, 32, 5244–5251 (2018)
11. Yang, H. , Wang, D. , Li, B. , Zeng, Z. , Qu, L. , Zhang, W. & Chen, H. *Effects of potassium salts loading on calcium oxide on the hydrogen production from pyrolysis-gasification of biomass*. Bioresource Technology 249, 744-750 (2018)
12. Lundberg, L., Pallarès, D., Thunman, H. *Upscaling Effects on Char Conversion in Dual Fluidized Bed Gasification*. Energy and Fuels, 32(5), pp. 5933-5943
13. Djerf, T., Pallarès, D., Johnsson, F. *Bottom-bed fluid-dynamics – influence on solids entrainment*. Fuel Processing Technology, 173, pp. 112-118

14. H. N. T. Nguyen, M. Seemann, H. Thunman. *Fate of polycyclic hydrocarbons during tertiary tar formation in steam gasification of biomass*. Energy & Fuels, 32 (3), pp 3499-3509.
15. H. N. T. Nguyen, N. Berguerand, H. Thunman. *Applicability of a kinetic model for catalytic conversion of tar and light hydrocarbons using process-activated ilmenite*. Fuel, 231, pp 8-17.
16. T. Berdugo Vilches, M. Seemann, H. Thunman. *Influence of ash-coated olivine on tar formation in steam gasification of biomass*. Energy & Fuels, 32 (9), pp 9592-9604.
17. Knutsson P et al. *Role of potassium in the enhancement of the catalytic activity of calcium oxide towards tar reduction*, Applied Catalysis: B. Environmental, 229 pp 85-95
18. Corcoran, A., et al., *Mechanism for Migration and Layer Growth of Biomass Ash on Ilmenite Used for Oxygen Carrier Aided Combustion*. Energy & Fuels, 32(8): p. 8845-8856.
19. Pissot, S., et al., *Effect of ash circulation on the performance of a dual fluidized bed gasification system*. Biomass and Bioenergy, 115: p. 45-55.
20. Berdugo Vilches, T., et al., *Bed material as a catalyst for char gasification: The case of ash-coated olivine activated by K and S addition*. Fuel, 224: p. 85-93
21. W. Wei, K. Engvall, W. Yang. *Self-cleaning surfaces for the Release and Condensation of Inorganics for a Pressurized Fluidized-Bed Gasification Process: Effects of Gasification Temperature*. ACS Omega 3.6, 6321-6329.
22. W. Wei, K. Engvall, W. Yang, B. Fredriksson Möller. *Experimental and modelling studies on condensation of inorganic species during cooling of product gas from pressurized biomass fluidized bed gasification*. Energy 153, pp 35-44.
23. W. Wei, K. Engvall, W. Yang. *Model investigation of condensation behaviors of alkalis during syngas treatment of pressurized biomass gasification*. Chemical Engineering and Processing 129, pp 28-36.
24. R. Sadegh-Vaziri, MU. Bäbler. *Modeling of slow pyrolysis of various biomass feedstock in a rotary drum using TGA data*. Chemical Engineering and Processing 129, pp 95-102.
25. R. Sadegh-Vaziri, K. Ludwid, K. Sundmacher, MU. Bäbler. *Mechanisms behind overshoots in mean cluster size profiles in aggregation-breakup processes*, Journal of colloid and interface science 528, pp 336-348.
26. J. Simonsson, N.-E. Olofsson, H. Bladh, M. Sanati, P.-E. Bengtsson, *Influence of potassium and other metal salts on soot formation using imaging LII/ELS, and TEM techniques*, Combustion and Flame 190, 188-200
27. Fatehi H, Schmidt F M, Bai X-S. *Gas phase combustion in the vicinity of a biomass particle during devolatilization—Model development and experimental verification*, Combust. Flame 196 351-363.

28. Qu Z, Holmgren P, Skoglund N, Wagner D R, Broström M and Schmidt F M. *Distribution of temperature, H₂O and atomic potassium during entrained flow biomass combustion – Coupling in situ TDLAS with modeling approaches and ash chemistry*, Combust. Flame 188, pp 488-97.
29. Rutkowski L, Foltynowicz A, Schmidt F M, Johansson A C, Khodabakhsh A, Kyuberis A A, Zobov N F, Polyansky O L, Yurchenko S N and Tennyson J. *An experimental water line list at 1950 K in the 6250–6670 cm⁻¹ region*, J. Quant. Spectrosc. Radiat. Transf. 205, pp 213-9.
30. Ögren Y, Gullberg M, Wennebro J, Sepman A, Toth P, Wiinikka H. *Influence of oxidizer injection angle on the entrained flow gasification of torrefied wood powder*. Fuel Processing Technology 181 pp 8-17
31. Ögren Y, Toth P, Garami A, Sepman A, Wiinikka H. *Development of a vision-based soft sensor for estimating equivalence ratio and major species concentration in entrained flow biomass gasification reactors*. Applied Energy 226 pp 450-460
32. Wiinikka H, Toth P, Jansson K, Molinder R, Broström M, Sandström L, Lighty JS, Weiland F. *Particle formation during pressurized entrained flow gasification of wood powder: Effects of process conditions on chemical composition, nanostructure, and reactivity*. Combustion and Flame 189 pp 1339-1351
33. Holmgren P, Broström M., Backman R. *Slag Formation during Entrained Flow Gasification: Silicon Rich Grass Fuel with KHCO₃ Additive*, Energy & Fuels, American Chemical Society (ACS) Vol. 32, (10) : 10720-10726.
34. Wagner D, Holmgren P, Skoglund N, Broström M, *Design and validation of an advanced entrained flow reactor system for studies of rapid solid biomass fuel particle conversion and ash formation reactions*, Review of Scientific Instruments, Vol. 89, (6)
35. Carlborg, M., Weiland, F., Ma, C., Landälv, I., Wiinikka, H. *Exposure of refractory materials during high-temperature gasification of woody biomass and peat mixture*, Journal of the European Ceramic Society 38, pp 777–787
36. Jafari, P.H., Misiulia, D., Hellström, J.G.I. and Gebart, R. *Modeling of Particle-Laden Cold Flow in a Cyclone Gasifier*. Journal of Fluids Engineering, Vol. 141, No. 2
37. Hardi, F., Imai, A., Theppitak, S., Kirtania, K., Furusjö, E., Umeki, K., Yoshikawa, K. *Gasification of Char Derived from Catalytic Hydrothermal Liquefaction of Pine Sawdust under CO₂ Atmosphere*, Energy & Fuels 32, pp 5999-6007
38. Trubetskaya, A., Brown, A., Tompsett, G.A., Timko, M.T., Kling, J., Broström, M., Andersen, M.L., Umeki, K. *Characterization and reactivity of soot from fast pyrolysis of lignocellulosic compounds and monolignols*, Applied Energy 212, pp 1489-1500
39. J. Simonsson, N-E. Olofsson, A. Hosseinnia, P-E. Bengtsson. *Influence of potassium chloride and other metal salts on soot formation studied using imaging LII and ELS, and TEM technique*, Combustion and Flame, Volume 190, Pages 188-200

40. D. Gall, M. Pushp, A. Larsson, K. Davidsson, J.B.C. Pettersson. *Online Measurements of Alkali Metals during Start-up and Operation of an Industrial-Scale Biomass Gasification Plant*, Energy & Fuels 32 (1) 532-541
41. M. Morgalla, L. Lin, M. Strand. *Benzene Conversion in a Packed Alumina Bed Continuously Fed with Woody Char Particles*, Energy & Fuels 32 (7), 7670-7677
42. M. Morgalla, L. Lin, M. Strand. *Benzene Conversion in a Packed Bed Loaded with Biomass Char Particles*, Energy & Fuels 32 (1), 554-560
43. Y. Zhu, P.J. van Eyk, C. Boman, M. Broström, K. Kirtania, P. Piotrowska, D. Bostrom, R. de Nys, S. Bhattacharya, F.G. Gentili, P.J. Ashman. *Preliminary understanding on the ash behavior of algae during co-gasification in an entrained flow reactor*, Fuel Processing Technology, Volume 175, Pages 26-34,

Conference articles

1. D. Maggiolo et al. *Two-phase flow patterns and condensation on wetted surfaces for innovative self-cleaning heat exchangers: experiments and numerics*; European Fluid Mechanics Conference - EFMC12, Wien , Austria
2. S. Pissot, et.al. *Chemical looping gasification in a 2-4 MWth dual fluidized bed gasifier*, 23rd International Conference on Fluidized Bed Conversion, Seoul, South Korea
3. Köhler, A. et.al. *Determination of the Apparent Viscosity of Dense Gas-Solids Emulsion by Magnetic Particle Tracking*. 23rd International Conference on Fluidized Bed Conversion, Seoul, South Korea
4. Broström M et.al. *Ash fractionation and slag formation during entrained flow biomass gasification*. The 27th International Conference on the Impacts of Fuel Quality on Power Production and the Environment, Lake Louise, Alberta, Canada
5. Faust R. et.al. *Role of K and Ca for catalytic activation of bed material during biomass gasification*, 23rd International Conference on Fluidized Bed Conversion, 23rd International Conference on Fluidized Bed Conversion, Seoul, South Korea
6. H. Thunman & F. Tengberg. *GoBiGas an Industrial Relevant State-of-the-Art Reference for Advanced Biofuel Production via Gasification*, IEA Webinar
7. A. Jareteg et.al. *Detailed simulations of heterogeneous reactions in porous media using the Lattice Boltzmann Method*, European Fluid Mechanics Conference - EFMC12, Wien , Austria
8. TR Jayawickrama et.al. *Effect of Stefan flow on drag coefficient of reactive spherical particles in gas flow, Turbulence*, Heat and Mass Transfer 9, Rio de Janeiro, Brazil

9. A. Phounglamcheik & K. Umeki. *Change in size and apparent density of charcoal particles during heterogeneous reactions*, 25th International Symposium of Chemical Reaction Engineering, Florence, Italy
10. A. Garcia et.al. *The influence of operation parameters on local conditions and fuel conversion of biomass flame*, 2nd International Workshop on Oxy-Fuel Combustion, Bochum, Germany
11. A. Bach-Oller et.al. *Effect Of Potassium Impregnation On The Emission Of Tar And Soot From Biomass Gasification*, 10th International Conference on Applied Energy, Hong Kong