

## Journal publications

1. Amer, E., Gren, P., Sjö Dahl, M. "Stimulated laser induced fluorescence holography for imaging fluorescent species" *Optics Communications* 311 (2013)124-128
2. Amer, E., Gren, P., Sjö Dahl, M. "UV laser interaction with a fluorescent dye solution studied using pulsed digital holography" *Optics Express* 21 (2013) 25316-25323
3. Broström, M., Enestam, S., Backman, R., Mäkilä, K., " Condensation in the KCl-NaCl system" *Fuel Processing Technology* 105(2013)142-148
4. Carlsson, P., Lycksam, H., Gren, P., Gebart, R., Wiinikka, H. & Iisa, K. "High-speed imaging of biomass particles heated with a laser" *Journal of Analytical and Applied Pyrolysis* 103 (2013) 278-286
5. Konttinen, J., Backman, R., Hupa, M., Moilanen, A., Kurkela, E., "Trace element behaviour in the fluidized bed gasification of solid recovered fuels – A thermodynamic study" *Fuel* 106(2013) 621-631
6. Lindberg, D., Backman, R., Chartrand, P., Hupa, M. "Towards a comprehensive thermodynamic database for ash-forming elements in biomass and waste combustion — Current situation and future developments" *Fuel Processing Technology* 105(2013)129-141
7. Ma, C., Weiland, F., Hedman, H., Boström, D., Backman, R. & Öhman, M. "Characterization of reactor ash deposits from pilot-scale pressurized entrained-flow gasification of woody biomass" *Energy and Fuels* 27 (2013) 6801-6814
8. Risberg, M., Gebart, R. "Numerical modeling of counter-current condensation in a black liquor gasification plant", *Applied Thermal Engineering* 58 (2013) 327-335
9. Weiland, F., Hedman, H., Marklund, M., Wiinikka, H., Öhrman, O.G.W., Gebart, R. "Pressurized oxygen blown entrained-flow gasification of wood powder" *Energy and Fuels* 27 (2013) 932-941
10. Neves, D. ; Thunman, H. ; Tarelho, L. et al. (2014). Method for online measurement of the CHON composition of raw gas from biomass gasifier. *Applied Energy*. 113 p. 932-945.
11. Gómez-Barea, A. ; Leckner, B. (2013). Estimation of gas composition and char conversion in a fluidized bed. *Fuel*. 107 p. 419-431.
12. Gómez-Barea, A. ; Leckner, B. ; Villanueva Perales, A. et al. (2013). Improving the performance of fluid-ized bed biomass/waste gasifiers. *Applied Thermal Engineering*. 50 p. 1453-1462.

13. Gómez-Barea, A. ; Ollero, P. ; Leckner, B. (2013). Optimization of char and tar conversion in fluidized bed biomass gasifiers. *Fuel*. 103 p. 42-52.
14. Göransson, K. , Ulf Söderlind, Per Engstrand and Wennan Zhang, “An experimental study on catalytic bed materials in a dual fluidized bed gasifier” Submitted to *Energy & Fuels*. (2013)
15. He, J., Engstrand, P., Björkqvist, O. and Zhang, W.; “Techno-economic evaluation of a mechanical pulp mill with gasification”, *Nordic Pulp & Paper Research Journal*, 28, 349-357 (2013).
16. Israelsson, M.; Seeman, M.; Thunman, H. (2013). Assessment of the Solid-Phase Adsorption Method for Sampling Biomass-Derived Tar in Industrial Environments. *Energy Fuels*, 2013, 27 (12), pp 7569–7578
17. Keller, M, Leion, H, Mattisson, T (2013). Mechanisms of Solid Fuel Conversion by Chemical-Looping Combustion (CLC) using manganese Ore: Catalytic Gasification by Potassium Compounds, *Energy Tech-nology*, 1: 273–282.
18. Kopyscinski, J.; Seeman, M. ; Moergeli, R. et al. (2013). Synthetic natural gas from wood: Reactions of ethylene in fluidised bed methanation. *Applied Catalysis A: General*. 462-463 p. 150-156.
19. König, C. ; Nachtegaal, M. ; Seeman, M. et al. (2013). Mechanistic studies of chemical looping desulfurization of Mn-based oxides using in situ X-ray absorption spectroscopy. *Applied Energy*.
20. Larsson, A. ; Seeman, M. ; Neves, D. et al. (2013). Evaluation of Performance of Industrial-Scale Dual Fluidized Bed Gasifiers Using the Chalmers 2–4-MWth Gasifier. *Energy & Fuels*.
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22. Tchoffor, A., P.; Davidsson, K.; Thunman, H.; (2013). Transformation and Release of Potassium, Chlorine, and Sulfur from Wheat Straw under Conditions Relevant to Dual Fluidized Bed Gasification, *Energy Fuels*, 2013, 27 (12), pp 7510–7520
23. Thunman, H.; Lind, F.; Breitholtz, C. et al. (2013). Using an oxygen-carrier as bed material for combustion of biomass in a 12-MWth circulating fluidized-bed boiler. *Fuel*. 113 p. 300-309.
24. Lin, L.; Strand, M. (2013) Investigation of the intrinsic CO<sub>2</sub> gasification kinetics of biomass char at medi-um to high temperatures. *Applied Energy*, 109, 220-228.

25. Lin, L.; Strand, M. (2013) Online Investigation of Steam Gasification Kinetics of Biomass Chars up to High Temperatures. *Energy & Fuels*, Published on web Dec. 16, 2013
26. M. Ahmadi, H. Knoef, B. Van de Beld, C. Brage, K. Engvall and K. Sjöström, “Development of a PID based on-line tar measurement method – Proof of concept”, *Fuel*, 113 (2013) 113-121.
27. M. Ahmadi, E.E. Svensson and K. Engvall, “Application of Solid-Phase Microextraction (SPME) as a Tar Sampling Method”, *Energy & Fuels*, 27 (7) (2013) 3853–3860.
28. Tao, Jun , Zhao, Leiqiang , Dong, Changqing, Lu, Qiang , Du, Xiaoze, Dahlquist, Erik, Catalytic Steam Re-forming of Toluene as a Model Compound of Biomass Gasification Tar Using Ni-CeO<sub>2</sub>/SBA-15 Catalysts, *Energies*, Vol.7, No 6,pp 3284-3296, 2013

## Conference articles

1. Amer, E., Stenvall, J., Gren, P. & Sjödaahl, M Stimulated LIF studied using pulsed digital holography and modeling, 2013, *Optical Measurement Systems for Industrial Inspection VIII*.
2. Lehman, P. H., Osten, W. & Albertazzi, A. (red.). SPIE - International Society for Optical Engineering, 9 s. (Proceedings of S P I E - International Society for Optical Engineering; Nr 8788)
3. Carlborg, M., Boström, D., Öhman, M. & Backman,R. (2013). Reaction between Ash and Ceramic lining in entrained flow gasification of wood – Exposure Studies and Thermodynamic Considerations . Presented at the 22nd European Biomass Conference and Exhibition Copenhagen.
4. Falk, J., Larsson, S. H. & Broström, M. (2013). Particle properties and feeding characteristics of biomass powders. Presented at the 22nd European Biomass Conference and Exhibition Copenhagen.
5. Gullberg, M., Carlsson, P., Wiinikka, H Online optimization of wood powder combustion and gasification using image processing, Presented at TC Biomass 2013, Chicago
6. Johansson, A.C., Öhrman, O.G.W., Pettersson, E., and Sweeney, D. “Tar and trace element measurements in synthesis gas from a pressurised black liquor gasifier” 21st European Biomass Conference and Exhibition, 3-7 June 2013, Copenhagen, Denmark
7. Persson, A., Holmgren, P. & Broström, M. (2013). Decomposition modeling using thermogravimetry with a multivariate approach. Presented at the 22nd European Biomass Conference and Exhibition Copenhagen.

8. Werner, K., Borén, E., Broström, M. & Pommer, L. (2013). Comprehensive study of the thermal decomposition of different hemicelluloses. Presented at the 22nd European Biomass Conference and Exhibition Copenhagen.
9. Widman, S., Boström, D., Öhman, M. & Broström, M. (2013). Early release of NH<sub>3</sub> from nitrogen rich fuels - a TG-FTIR study. Presented at the 22nd European Biomass Conference and Exhibition Copenhagen.
10. Öhrman, O.G.W., Johansson, A.C., Molinder, R., Weiland, F. Analysis of trace compounds generated by pressurized oxygen blown entrained flow biomass gasification, Presented at TC Biomass 2013, Chicago
11. Lin, L., Strand, M. (2013). Further development and application of aerosol-based method for on-line investigation of char reactivity in steam. Proceedings for 21st European Biomass Conference and Exhibition. 875-878
12. Parsland, C., Brandin, J. (2013). Nickel-substituted Ba-hexaaluminates as catalysts steam-reforming of tars. CRS-2, Catalysis for Renewable sources : Fuel. Energy, Chemicals Book of Abstracts. 62-63
13. Brandin, J. (2013). Reforming of tars and hydrocarbons from gasified biomass. Releasing Green Bioenergy for Human: Main Conference Volume 2.
14. C. Rosén, M. Lundgren and K. Engvall, Pressurized steam-oxygen gasification of biomass in BFB using dolomite as bed material. TCbiomass2013. The International Conference on Thermochemical Conversion Science, 3-6 September 2013, Chicago, USA.
15. L.N. Samuelsson, K. Engvall and R. Moriana, A New Methodology to Model the Kinetics of Torrefaction. TCbiomass2013 The International Conference on Thermochemical Conversion Science, 3-6 September 2013, Chicago, USA.
16. P. Haghghi Moud and K.Engvall, Gas phase alkali interaction with tar reforming catalyst and tar cracking in biomass gasification. TCbiomass2013. The International Conference on Thermochemical Conversion Science, 3-6 September 2013, Chicago, US.
17. L.N. Samuelsson, K. Engvall and R. Moriana,, State of the art study of cellulose pyrolysis kinetics. CEEC-TAC2, 2nd Central and Eastern European Conference on Thermal Analysis and Calorimetry, 27-30 August 2013, Vilnius, Lithuania.
18. A.V. González, L. Arkatova and Klas Engvall, Ni<sub>3</sub>Al intermetallites for biomass-derived tar reforming. 23rd North American Catalysis Society Meeting, June 2-7, 2013, Louisville, Kentucky, US.

19. Erik Dahlquist, Guilnaz Mirmoshtaghi, Eva K Larsson, Eva Thorin, Jinyue Yan, Klas Engvall, Truls Liliedahl, Changqing Dong, Qiang Lu and Xiaoying Hu, Modelling and Simulation of Biomass Conversion Processes, 8th EUROSIM Congress on Modelling and Simulation, IEEE, 10-13 September 2013, Cardiff, Wales, UK.
20. E. Robert, R. Imani Jajarmi, J.B. Pettersson, K. Engvall, Acoustic separation of sub-micron particles in gases. Proceedings of Meetings on Acoustics, Vol. 19, 045020 (2013), ICA 2013, Montreal Montreal, Canada, 2 - 7 June 2013.
21. E. Robert, R. Imani Jajarmi, M. Steibel, and K. Engvall. Acoustophoresis in gases: Effect of turbulence and geometrical parameters on separation efficiency. International Conference on Multiphase Flow 2013, Jeju, South Korea, 26-31 May.
22. Mirmoshtaghi G., Li H., Dahlquist E., Thorin E. Bio-methane production through different biomass gasifiers, International Conference on Applied Energy ICAE 2013, July 1-4, 2013, Pretoria, South Africa
23. Starfelt F., Tomás-Aparicio E., Li H., Dotzauer E. A case study of integration of torrefaction in CHP plants, Proceedings of the 5th International Conference on Applied Energy, July 1-4, Pretoria, South Africa