

Linbo Yan

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WORK EXPERIENCE

Beijing Jiaotong University, Beijing, China

- Associate Professor, November, 2016- Present

University of British Columbia, Vancouver, Canada

- Post Doc., June, 2015-July, 2016
- Advisor: Prof. John R. Grace, C. Jim Lim

Tsinghua University, Beijing, China

- Post Doc., November, 2014-November, 2016
- Advisor: Prof. Guangxi Yue

EDUCATION

Beijing Jiaotong University, Beijing, China

- Ph.D., September, 2009-October, 2014
- Advisor: Prof. Boshu He
- Dissertation: Modeling analyses of the Zero Emission Coal system and research on the mechanism of coal hydrogasification in the system. (in Chinese)
- General Research Fields: Clean Coal Technology, Numerical Simulation of Combustion and Gasification, Solid Oxide Fuel cells

Beijing Jiaotong University, Beijing, China

- Bachelor, September, 2005-July, 2009.
- Thesis: Optimization of the heat-exchange surfaces in a 660MW tangentially fired pulverized-coal boiler manufactured by HBC. (in Chinese)
- General Research Fields: Boiler Thermodynamic Calculation, Retrofit on Large Scale Boilers

RESEARCH

Fluidized bed gasfication

- Set up a numerical solver to simulate the fluidized gasification based on OpenFOAM; set up a one-dimensional kinetic model for fluidized bed gasification using Aspen Plus.

Zero Emission Coal system (ZEC)

- Set up a Solid Oxide Fuel Cell model, a detailed ZEC model and studied the detailed Energy and Exergy flows of the ZEC system using Aspen Plus.

Coal Hydrogasification

- Set up a chemical equilibrium model and a chemical kinetic model for coal hydrogasification
- Set up a 3D model for a two-stage entrained flow coal hydrogasifier and performed the numerical simulations with Fluent
- Studied the hydropyrolysis properties of a certain steam coal using a pressurized thermogravimetric analyzer(PTGA)

Boiler Thermodynamic Calculation and Numerical Simulation

- Participated in the programming of a Boiler Thermodynamic Calculation package and compared two different Thermodynamic Calculation methods for large scale

boilers

- Implemented a series of numerical simulations for tangentially coal fired boilers

RESEARCH AND PROJECTS EXPERIENCE

- 1) National Natural Science Foundation of China (NSFC, 51706012), January, 2018-December, 2020 (*project leader*)
Research on a clean power generation system based on biomass/coal co-gasification in a quadruple fluidized bed reactor.
- 2) Fundamental Research Funds for the Central Universities (2017RC006), March, 2017-March, 2018 (*project leader*)
Coal/biomass co-gasification with steam for clean power generation.
- 3) Fundamental Research Funds for the Central Universities (M17RC00030), March, 2017-March, 2018 (*project leader*)
Exergy analysis of the ZEC system and the numerical simulation and experimental study of coal hydrogasification
- 4) China Postdoctoral Science Foundation (2015M570096), March, 2015-November, 2016 (*project leader*)
The chemical looping based coal/biomass co-hydrogasification system for clean power generation
- 5) Fundamental Research Funds for the Central Universities (2013YJS078), January, 2013-January, 2014 (*project leader*)
Exergy analysis of the ZEC system and the numerical simulation and experimental study of coal hydrogasification
- 6) Fundamental Research Funds for the Central Universities (2012YJS102), March, 2012-March, 2013 (*project leader*)
Study on the properties of ZEC system and coal hydrogasification
- 7) The National Key Research and Development Program of China (M17B500200), July, 2017-December, 2020 (*participant*)
Research on the influence rule of the gas flow, heat transfer and chemical

reactions on the formation of NO_x.

- 8) National Natural Science Foundation of China (NSFC: 51176009), January, 2012-December, 2015 (*participant*)
Researches on the characteristics of pulverized coal combustion and burnout under pressurized rich-oxygen environment and the CO₂ separation processes
- 9) Beijing Jiaotong University Science and Technology Innovation Center (M12X00900), July, 2012-May, 2013 (*main participant, undertook the boiler thermal-dynamic calculation*)
Countermeasure for the leakage problem of the radiation super-heater hanger tube in a 500 MW tower type boiler
- 10) Beijing Jiaotong University Science and Technology Innovation Center (M11X00400), December, 2010-March, 2011 (*main participant, undertook the boiler thermal-dynamic calculation*)
Feasibility study on the reconstruction of the heat exchangers in the second phase#3 boiler of a power plant
- 11) Beijing Jiaotong University Science and Technology Innovation Center (M10X00840), May, 2010-October, 2010 (*main participant, undertook the boiler thermal-dynamic calculation*)
Retrofit scheme designation for the heat exchangers arranged in the rear flue of the #2 boiler in a power plant
- 12) Beijing Jiaotong University Science and Technology Innovation Center (M10X00370), October, 2009-November, 2010 (*main participant, undertook the boiler thermal-dynamic calculation*)
Retrofit scheme designation for the heat exchangers arranged in the rear flue of the #1 boiler in a power plant

PUBLICATION

- [1] Linbo Yan, Yang Cao, Xuezheng Li, Boshu He. Characterization of a dual fluidized bed gasifier with blended biomass/coal as feedstock. Bioresource

Technology, 2018; 254: 97-106.

- [2] **Linbo Yan**, Yang Cao, Xuezheng Li, Boshu He. A modified exponential wide band model for gas emissivity prediction in pressurized combustion and gasification processes. *Energy & Fuels*, 2018; 32: 1634-1643.
- [3] **Linbo Yan**, Yang Cao, Boshu He. On the kinetic modeling of biomass/coal char co-gasification with steam. *Chemical Engineering Journal*, 2018; 331: 435-442.
- [4] **Linbo Yan**, He Boshu. On a clean power generation system with the co-gasification of biomass and coal in a quadruple fluidized bed gasifier. *Bioresource Technology*, 2017; 235: 113-121.
- [5] **Linbo Yan**, C. Jim Lim, Guangxi Yue, Baizeng Fang, Boshu He, John R. Grace. Insights into the redox reactivity of an inexpensive Fe-based oxygen carrier. *Thermochimica Acta*, 2017; 648: 52-61.
- [6] **Linbo Yan**, Guangxi Yue, Boshu He. Application of the efficient exponential wide band model in the natural gas combustion simulation in a 300 kW BERL burner furnace. *Applied Thermal Engineering*, 2015. (Under review)
- [7] **Linbo Yan**, Guangxi Yue, Boshu He. Development of an absorption coefficient calculation method potential for combustion and gasification simulations. *International Journal of Heat and Mass Transfer*, 2015. (Under review)
- [8] **Linbo Yan**, Boshu He, Xiaohui Pei, Chaojun Wang, Zhipeng Duan, Jingge Song; Xuezheng Li. Design and Comparisons of Three Biomass Based Hydrogen Generation Systems with Chemical Looping Process. *International Journal of Hydrogen Energy* 2014; 39: 17540-17553.
- [9] **Linbo Yan**, Boshu He, Tianyi Hao, Xiaohui Pei, Chaojun Wang, Zhipeng Duan. Pressurized Thermogravimetric Study on the Hydropyrolysis and Hydrogasification Kinetics of a Bituminous Coal. *Energy&Fuels* 2014; 28(5): 2993-3001.
- [10] **Linbo Yan**, Boshu He, TianyiHao, Xiaohui Pei, Xusheng Li, Chaojun Wang, Zhipeng Duan. Thermogravimetric Study on the Pressurized Hydropyrolysis Kinetics of a Lignite Coal. *International Journal of Hydrogen Energy* 2014;

39(15): 7826-7833.

- [11] **Linbo Yan**, Boshu He, Lele Ma, Xiaohui Pei, Chaojun Wang. Chemical equilibrium model and prediction for coal hydrogasification. International Journal of Chemical Reactor Engineering, 2014; 12(1): 1-10.
- [12] **Linbo Yan**, Boshu He, Xiaohui Pei, Chaojun Wang, Xusheng Li, Zhipeng Duan. Kinetic Models for Coal Hydrogasification and Analyses of Hydrogasification Characteristics in Entrained Flow Gasifiers. Energy&Fuels 2013; 27: 6388-6396.
- [13] **Linbo Yan**, Boshu He, Xiaohui Pei, Chaojun Wang, Huaxin Liang, Zhipeng Duan. Computational Fluid Dynamics Based Evaluation and Optimization of an Entrained Flow Gasifier Potential for Coal Hydrogasification. Energy&Fuels 2013; 27: 6397-6407.
- [14] **Linbo Yan**, Boshu He, Xiaohui Pei, Xusheng Li, Chaojun Wang, Huaxin Liang. Kinetic model and prediction for coal hydrogasification. International Journal of Hydrogen Energy 2013; 38(11):4513-4523.
- [15] **Linbo Yan**, Boshu He, Xiaohui Pei, Xusheng Li, Chaojun Wang. Energy and exergy analyses of a zero emission coal system. Energy 2013; 55(15): 1094-1103.
- [16] **Linbo Yan**, Boshu He, Lele Ma, Xiaohui Pei, Chaojun Wang, Mingyang Li. Numerical study with ChemKin for hydrogasification mechanism of pulverized coal and Hg speciation transformation inside a hydrogasifier. STROJARSTVO 2013; 55(1):73-85.
- [17] **Linbo Yan**, Boshu He, Lele Ma, Xiaohui Pei, Chaojun Wang, Xusheng Li. Integrated characteristics and performance of zero emission coal system. International Journal of Hydrogen Energy 2012; 37(12): 9669-9676.
- [18] **Linbo Yan**, Boshu He, Fang Yao, Rui Yang, Xiaohui Pei, Chaojun Wang, Jingge Song. Numerical simulation of a 600 MW utility boiler with different tangential arrangements of burners. Energy&fuels 2012; 26: 5491-5502.
- [19] **Linbo Yan**, Boshu He, Xiaohui Pei, Chaojun Wang, Min Yang, Jingge Song. Research on retrofit schemes for reheat steam underheating and excessive desuperheater spray for a 600 MW tangentially coal-fired boiler. Energy&fuels 2012; 26: 5804-5820.

- [20] **YAN Linbo**, HE Boshu, PEI Xiaohui, SONG Weining, CHEN Qi, SONG Jingge. Simulation Research of Solid Oxide Fuel Cell Integrated in Zero-emission Coal Systems. Proceedings of the CSEE 2012; 32(29):94-103. (in Chinese)
- [21] **YAN Linbo**, HE Boshu, PEI Xiaohui, Yang Min. Numerical Simulation of a Remedy of an Excessively Low Reheated Steam Temperature by Cutting Short the Partition Platens of a Superheater. Journal of Engineering for Thermal Energy and Power 2011; 26(1): 67-72. (in Chinese)
- [22] **YAN Linbo**, He Boshu, Meng Jianguo, Cao Jianchen. Modification of a 600 MW Coal-fired Boiler Due to an Excessively Low Temperature of the Secondary Steam and Its Implementation Effectiveness. Journal of Engineering for Thermal Energy and Power 2011; 26(3): 328-332.(in Chinese)
- [23] **YAN Linbo**, He Boshu, Meng Jianguo. Retrofit for Excessive Desuperheating Water of Superheater and Its Implementation Effect. Journal of Chinese Society of Power Engineering 2010; 30(2): 83-89. (in Chinese)
- [24] Boshu He, **Linbo Yan**, Liqiang Zhao, Lele Ma, Xiaohui Pei, Chaojun Wang, Mingyang Li. Numerical study with ChemKin for hydrogasification mechanism of pulverized coal and Hg speciation transformation inside a hydrogasifier, UNESCO Supported VIth Dubrovnik Conference on Sustainable Development of Energy, Water and Environment System, 2011.9.25 - 29, SDWS2011.0520, Dubrovnik, Croatia, 2011.
- [25] Pei Xiaohui, He Boshu, **Yan Linbo**, Wang Chaojun, Song Weining, Song Jingge. Process simulation of oxy-fuel combustion for a 300 MW pulverized coal-fired power plant using Aspen Plus. Energy Conversion and Management, 2013; 76: 581-587.
- [26] Chaojun Wang, Boshu He, **Linbo Yan**, Xiaohui Pei, Shinan Chen. Thermodynamic analysis of a low-pressure economizer based waste heat recovery system for a coal-fired power plant. Energy 2014; 65: 80-90.
- [27] Wang Chaojun, He Boshu, Sun Shaoyang, Wu Ying, Yan Na, **Yan Linbo**, Pei Xiaohui. Application of a low pressure economizer for waste heat recovery from the exhaust flue gas in a 600 MW power plant. Energy, 2012; 48(1): 196-202.

[28] Boshu He, Chaojun Wang, Shaoyang Sun, Ying Wu, Na Yan, Linbo Yan, Xiaohui Pei. Feasibility, economy and implementation of waste heat recovering from the exhausted flue gas with low-pressure economizer for a 600MW power plant, UNESCO Supported VIth Dubrovnik Conference on Sustainable Development of Energy, Water and Environment System, 2011.9.25 - 29, 2011, SDWS2011.0544, Dubrovnik, Croatia, 2011.

CONFERENCES AND ACADEMIC COMMUNICATIONS

- 1) Yan Linbo, He Boshu, Li Mingyang, Zhao Liqiang. Analysis of reactions in a pulverized coal hydrogasifier in ZEC system via chemical thermodynamics and kinetics. Chinese Society of Engineering Thermophysics, 104320. December 2010, Guangzhou, China.
- 2) Yan Linbo, He Boshu, Xue Jiwei, Chen Zhenxing, Zhao Liqiang. Numerical Simulation of Combustion in a Natural Gas Furnace with BERL Burner. Chinese Society of Engineering Thermophysics, 094098. October 2009, Hefei, China.
- 3) Energy conservation and emission reduction summer school for graduate students. 28th, July, 2010-14th, August, 2010, Tsinghua University, Beijing, China.
- 4) China-UK Summer School training on Carbon Capture and Storage. 9th-18th, September 2010, Beijing, P. R. China.

SOFTWARE COPYRIGHT

HE Boshu, LI Mingyang, YAN Linbo. Boiler Thermodynamic Calculation Software V1.0, 2009SRBJ5483, 2009.

ACADEMIC SERVICE

✧ Reviewer of the following Journals:

International Journal of Hydrogen Energy (ISSN: 0360-3199)

Energy (ISSN: 0360-5442)

Energy & Fuels (ISSN: 0887-0624)

Energy Conversion and Management (ISSN: 0196-8904)

Ain Shams Engineering Journal (ISSN:2090-4479)






Heat Transfer - Asian Research (ISSN:1099-2871)

✧ Teaching assistant (TA) of Engineering Thermodynamics



FELLOWSHIPS AND AWARDS

✧ National Scholarship	2013
✧ National Scholarship	2012
✧ Zhijin Scholarship	2012
✧ Award of Excellent Student Cadre	2011
✧ Award of Merit Student	2010

COMPUTER SKILLS

-  CFD Software (Fluent, Gambit)
-  Data Post Processing Software (Origin, Tecplot)
-  Chemical Engineering Process Software (Aspen Plus, Chemkin)
-  Programming Language (C++, C, Matlab, Fortran)
-  Microsoft Office™ Series (Excel, Word, PowerPoint, Visio)

ENGLISH PROFICIENCY

-  CET-4: 521
-  CET-6: 528