

Curriculum Vitae

Xuebing ZHAO, Ph.D, Associate professor, PI

=====

Institution:

Institute of Applied Chemistry,

Department of Chemical Engineering,

Tsinghua University,

Haidian District, Beijing 100084, China.

Email: zhaoxb@mail.tsinghua.edu.cn; xuebing.zhao@gmail.com

Phone: +86-10-62772130 ext. 111

Brief introduction

Dr. Xuebing ZHAO received his Ph.D degree in June 2009 and continued his Post-doctoral research work in Department of Chemical Engineering, Tsinghua University. He became an Assistant Professor in July 2011. He worked as a Post-doctoral research fellow from Feb. 2014 to Mar. 2015 at University of Wisconsin-Madison. His current research topics are focused on the biorefining of lignocellulosic biomass to produce biofuels and chemicals via chemical and biological approaches, especially on the process development and fundamentals of biomass fractionation, enzymatic saccharification of cellulosic substrates, process intensifications and direct conversion of lignin to electricity using fuel cell technologies. His research works also involve the enzymatic conversion of oil feedstocks to biodiesel, mainly focusing on the genetic modification of strain to improve lipase production, immobilization of lipase for high stability, novel bioreactor development, downstream processing of biodiesel production, and utilization of by-product glycerol for microbial lipid production. He has published about 80 peer-reviewed journal papers with over 3000 total cites with an H-index of 28 (Google Scholar) (see [Publication List](#)). He has filed 17 patent applications, 8 of which have been granted in China. He had been invited to be the Editor-in-Chief for *Journal of Enzyme Research*, a Guest Editor for *BioEnergy Research* and *International Journal of Polymer Science*, an review editor for *Frontiers in Energy Research (Bioenergy and Biofuel)*, an Editorial Board member of *International Journal of Biochemistry and Molecular Biology Research*, and reviewer to review manuscripts for more than 80 international Journals. He has been awarded the First Award of the S&T Progress of China Petroleum and Chemical Industry Federation (CPCIF); Excellent paper at the 5th International Conference on Biomass Energy & Exhibition (ICBE 2016); Excellent paper of 2016 Chinese Journal of Biotechnology; and 2017 Hou De-Bang Chemical Engineering Science and Technology Youth Award.

Working experience

07/2011–present: Assistant Professor, Associate Professor in Department of Chemical Engineering, Tsinghua University, China.

02/2014 –03/2015: Post-doctoral research fellow in University of Wisconsin-Madison and USDA

Forest Products Laboratory, Madison, USA

07/2009–06/2011: Postdoctoral research associate in Department of Chemical Engineering, Tsinghua University, China.

05/2008–07/2008: Research Assistant in Shell Global Solutions International BV in Amsterdam, the Netherlands.

Education

09/2004 – 06/2009: Ph.D in Chemical Engineering and Technology, Department of Chemical Engineering, Tsinghua University.

Thesis: Pulping and Pretreatment of Lignocellulosic Biomass with Organic Acids (Excellent Ph.D thesis)

M.E. in Chemical Engineering and Technology, Department of Chemical Engineering, Tsinghua University.

Thesis: Preparation of Peracetic Acid and its Applications for Pretreatment of Lignocellulosic Biomass.

09/2000 – 07/2004: B.E. in Chemical Engineering and Technology, Department of Chemical Engineering, Tsinghua University, China

Thesis: Preliminary study on Microwave Pretreatment of Substrates for Cellulase Production by Solid-State Fermentation (Excellent undergraduate thesis)

Research Areas

Biorefining of lignocellulosic biomass to produce biofuels and chemicals via chemical and biological ways, especially on the process development and fundamentals of biomass fractionation, enzymatic saccharification of cellulosic substrates and process simulation, including:

- Clean fractionating pretreatment: technology and engineering;
- Biomass recalcitrance and its molecular mechanisms;
- Intensification of enzymatic hydrolysis of lignocellulose;
- Microbial oil production from lignocellulosic hydrolyzate;
- Characterization and application of lignin products;
- Process simulation and optimization for biomass conversion;
- Conversion of biomass to electricity using fuel cell technologies.

Research experience

02/2014 – 03/2015: Post-doctoral research fellow in University of Wisconsin-Madison and USDA Forest Products Laboratory, Madison, USA.

- *Research topic: Direct biomass fuel cell—conversion lignocellulosic biomass to electricity using fuel cell technology.*

07/2011 – present: Assistant Professor/Associate professor in Department of Chemical Engineering, Tsinghua University.

- *Research topic: the Biorefining of lignocellulosic biomass to produce biofuels and chemicals.*
- 07/2009 – 06/2011: Postdoctoral research** in Department of Chemical Engineering, Tsinghua University.
- *Research topic: Pretreatment of lignocellulosic biomass by organic acid delignification and corresponding mechanisms.*
- 05/2008 – 07/2008: Research Assistant** in Shell Global Solutions International BV in Amsterdam, the Netherlands.
- *Research topic: Process simulation and economic evaluation of acetic acid-peracetic acid pulping of sugarcane bagasse.*
- 09/2004 – 07/2009: Ph.D student** in Department of Chemical Engineering, Tsinghua University.
- *Research topic: Organosolv pulping and pretreatment of lignocellulose for pulp, ethanol and lignin productions.*
- 01/2004 – 07/2004: Undergraduate research assistant** in Department of Chemical Engineering, Tsinghua University.
- *Research topic: Microwave Pretreatment of Substrates for Cellulase Production by Solid-State Fermentation.*
- 02/2003 – 07/2003: Undergraduate research assistant** in Department of Chemical Engineering, Tsinghua University
- *Research topic: Oxidation of lignin and its derivatives with peracetic acid.*

Teaching and Supervision Experience

07/2004 – present:

- Undergraduate students course “Biomass Chemical Engineering”(2 credits, 32 periods)
- Undergraduate students course “English Practical Training for Chemical Engineering Students”(2 credits, 32 periods)
- Supervising six master students (two international students) for master thesis and more than twenty undergraduate students for research work as supervisor; co-supervising four Ph.D students and four master students for their thesis.
- Teaching Assistant (part-time) for undergraduate students course “Bioenergy and Sustainable Development”, Tsinghua University, for more than three years;
- Teaching Assistant (part-time) in Library of Tsinghua University for three years.

Awards and Honors

- **2017.08:** Hou De-bang Chemical Science and Technology Award-Youth Award
- **2017.01:** Excellent paper of 2016 Chinese Journal of Biotechnology
- **2016.11:** First Award of the S&T Progress of China Petroleum and Chemical Industry Federation (CPCIF)
- **2016.10:** Excellent paper at the 5th International Conference on Biomass Energy & Exhibition (ICBE 2016)
- **2013.06:** Excellent undergraduate thesis in Department of Chemical Engineering, Tsinghua University (as supervisor)
- **2013.01:** Student Laboratory-development Contribution Award of Tsinghua University (Class III,

as supervisor)

- **2012.06:** Excellent undergraduate thesis in Department of Chemical Engineering, Tsinghua University (as supervisor)
- **2012.05:** Experimental Technology Achievement Award of Tsinghua University (Class II)
- **2011.01:** Student Laboratory-development Contribution Award of Tsinghua University (Class II, as supervisor)
- **2009.11:** Excellent Ph.D thesis of Tsinghua University (Class II).
- **2008.11:** Tsinghua-Donggang Scholarship for graduate students (Class I)
- **2007.11:** Tsinghua-Xinhui Scholarship for graduate students (Class II)
- **2006.11:** Tsinghua Scholarship for graduate students (Class III)
- **2005.01:** Student Laboratory-development Contribution Award for students of Tsinghua University (Class III)
- **2004.11:** Excellent bachelor thesis in Department of Chemical Engineering, Tsinghua University (Class II)

Publications

Google Scholar Publication List:

<http://scholar.google.com/citations?user=9PFjySkAAAAJ&hl=en>

Monograph and book chapters

1. Chenyu Du, **Xuebing Zhao**, Dehua Liu, Carol Sze Ki Lin, Karen Wilson, Rafa Luque, James Clark. Introduction: an overview of biofuels and production technologies. In: R. Luque, J. Campelo and J. Clark (Eds), *Handbook of Biofuels Production* (2nd edition), Elsevier B.V, 2016.
2. **Xuebing Zhao**, Dehua Liu. Chapter 5-Techniques and fundamentals of organosolv pretreatments. In: *Biorefining and process engineering of lignocellulosic biomass*. Beijing: Chemical Industry Press, 2017.
3. **Xuebing Zhao**, Wei Liu, Yulin Deng, J.Y. Zhu*. *Lignocellulosic Biomass-Energized Fuel Cells*. Momentum Press, 2015.
<http://www.momentumpress.net/books/lignocellulosic-biomass-energized-fuel-cells-cases-high-temperature-conversion>
4. **Xuebing Zhao***, Feng Qi, Dehua Liu. Hierarchy Nano-and Ultrastructure of Lignocellulose and Its Impact on the Bioconversion of Cellulose. In: Mahendra Rai and Silvio Silv rio da Silva (Eds), *Nanotechnology for Bioenergy and Biofuel Production*, Springer International Publishing, 2017, pp 117-151 (Invited book chapter)
5. Lu Qiang, **Xuebing Zhao**, Zheng Zongming (Eds). *Technology and Engineering for Liquid Biofuels*. Shanghai: Shanghai Scientific & Technical Publishers, 2013 (In Chinese).

2018

82. Xuebing Zhao*, Ruchun Wu, Dehua Liu. Evaluation of the mass transfer effects on delignification kinetics of atmospheric acetic acid fractionation of sugarcane bagasse with a shrinking-layer model. *Bioresource Technology*, 2018, 261: 52-61.
81. Xingkai Cui, Xuebing Zhao*, Dehua Liu. A novel route for flexible preparation of hydrocarbon jet-fuels from biomass based platform chemicals: case of using furfural and 2, 3-butanediol as feedstocks. *Green Chemistry*, 2018, DOI: 10.1039/C8GC00292D
80. Xin Yan, **Xuebing Zhao***, Gaojian Ma, Lingmei Dai, Wei Du, Dehua Liu. Enzymatic ethanolysis of fish oil for selective concentration of polyunsaturated fatty acids (PUFAs) with flexible production of corresponding glycerides and ethyl esters. *Journal of Chemical Technology and Biotechnology*, 2018, <https://doi.org/10.1002/jctb.5588>
79. Tian Li[‡], Nan Liu[‡], Xianjin Ou, **Xuebing Zhao***, Feng Qi, Jianzhong Huang, Dehua Liu. Development of a fungi cellulose binding module (CBM) based fluorescent probe protein to visualize cellulase adsorption and quantitatively determine cellulose accessibility. *Biotechnology for Biofuels* 201811:105

2017

78. Lei Dong, Ruchun Wu, **Xuebing Zhao***, Dehua Liu. Phenomenological modeling and evaluation of formic acid fractionating pretreatment of wheat straw with an extended combined severity factor. *Journal of the Taiwan Institute of Chemical Engineers*. 2017, 81: 140-149.
77. Junyang Wang, **Xuebing Zhao***, Dehua Liu. Preparation of epoxidized fatty acid methyl ester with in situ auto-catalyzed generation of performic acid and the influence of impurities on epoxidation. *Waste and Biomass Valorization*, 2017 doi:10.1007/s12649-017-9945-6.
76. Tian Li, Qi Fang, Hongmei Chen, Feng Qi, Xianjin Ou, **Xuebing Zhao***, Dehua Liu. Solvent-based delignification and decrystallization of wheat straw for efficient enzymatic hydrolysis of cellulose and ethanol production with low cellulase loadings. *RSC Advances*, 2017, 7, 10609-0617.
75. **Xuebing Zhao***, Siming Li, Ruchun Wu, Dehua Liu. Organosolv fractionating pretreatment of lignocellulosic biomass for efficient enzymatic saccharification: chemistry, kinetics and substrate structures. *Biofuels, Bioproducts and Biorefining*, 2017, 11: 567-590. DOI: 10.1002/bbb.1768 (Cover paper)
74. Yi Ding, Bo Du, **Xuebing Zhao***, J.Y. Zhu, Dehua Liu. Phosphomolybdic acid and ferric iron as efficient electron mediators for coupling biomass pretreatment to produce bioethanol and electricity generation from wheat straw. *Bioresource Technology*, 2017, 228:279–289 (Cover paper).
73. **Xuebing Zhao**, Wei Liu, Yulin Deng*, J.Y. Zhu*. Low-temperature Microbial and Direct Conversion of Lignocellulosic Biomass to Electricity: Advances and Challenges. *Renewable & Sustainable Energy Reviews*, 2017, 71: 268-282. DOI: 10.1016/j.rser.2016.12.055.
72. **Xuebing Zhao***, Yi Ding, Bo Du, J.Y. Zhu, Dehua Liu. Polyoxometalate- mediated lignin oxidation for efficient enzymatic production of sugars and generation of electricity from lignocellulosic biomass. *Energy Technology*, 2017, DOI: 10.1002/ente.201600662.

71. CUI Xingkai, **ZHAO Xuebing***, LIU Dehua. Pyrolysis characteristics and kinetics of five isolated lignins from sugarcane bagasse. *Chemical Industry and Engineering Progress* (accepted). (In Chinese)
70. CUI Xing-kai, CHEN Ke, **ZHAO Xue-bing***, LIU De-hua. Characterization of Several Lignins Isolated from Sugarcane Bagasse by Different methods and Their Effects on Enzymatic Hydrolysis of Cellulose. *The Chinese Journal of Process Engineering* (accepted). (In Chinese)
69. Jingyang Xu*, **Xuebing Zhao**, Wei Du, Dehua Liu. Bioconversion of glycerol into lipids by *Rhodospiridium toruloides* in a two-stage process and characterization of lipid properties. *Engineering in Life Sciences*, 2017, 17 (3), 303-313.
68. Feng Qi, **Xuebing Zhao** (co-first author), Tian Li, Xianjin Ou, Wei Du, Dehua Liu. Integrative transcriptomic and proteomic analysis of the mutant lignocellulosic hydrolyzate-tolerant *Rhodospiridium toruloides*. *Engineering in Life Science*, 2017 (3), 249-261.

2016

69. Jingyang Xu*, **Xuebing Zhao**, Wei Du, Dehua Liu. Bioconversion of glycerol into lipids by *Rhodospiridium toruloides* in a two-stage process and characterization of lipid properties. *Engineering in Life Sciences*, 2016, DOI: 10.1002/elsc.201600062
68. Jingyang Xu*, Wei Du, **Xuebing Zhao**, Dehua Liu. Renewable microbial lipid production from Oleaginous Yeast: some surfactants greatly improved lipid production of *Rhodospiridium toruloides*. *World Journal of Microbiology and Biotechnology*, 2016, 32(7):1-9
67. Hongmei Chen, **Xuebing Zhao***, Dehua Liu. Relative significance of the negative impacts of hemicelluloses on enzymatic cellulose hydrolysis is dependent on lignin content: evidences from substrate structural features and protein adsorption *ACS Sustainable Chemistry & Engineering*, 2016, 4 (12): 6668–6679
66. Ardak Akimkulova, Yan Zhou, **Xuebing Zhao***, Dehua Liu. Improving the enzymatic hydrolysis of dilute acid pretreated wheat straw by metal ion blocking of non-productive cellulase adsorption on lignin. *Bioresource Technology*, 2016, 208:110-116.
65. Ruchun Wu, **Xuebing Zhao***, Dehua Liu. Structural features of Formiline pretreated sugarcane bagasse and their impacts on the enzymatic digestibility of cellulose. *ACS Sustainable Chemistry & Engineering*, 2016, 4 (3), pp 1255–1261
64. **Xuebing Zhao**, J.Y. Zhu*, Efficient Conversion of Lignin to Electricity Using A Novel Direct Biomass Fuel Cell Mediated by Polyoxometalates at Low Temperatures. *ChemSusChem* 2016, 9(2): 197–207.
63. Feng Qi, **Xuebing Zhao** (co-first author), Tian Li, Xianjin Ou, Wei Du, Dehua Liu. Integrative transcriptomic and proteomic analysis of the mutant lignocellulosic hydrolyzate-tolerant *Rhodospiridium toruloides*. *Engineering in Life Science*, 2016, DOI: 10.1002/elsc.201500143.

2015

62. Zhou Yan, **Zhao Xuebing***, Liu Dehua. Effects of Non-ionic Surfactants on the Enzymatic Hydrolysis of Lignocellulose and Corresponding Mechanism. *Progress in Chemistry* (In press).
61. Yuanman Zhang, Ji'an Luo, **Xuebing Zhao***, Dehua Liu**. A novel strategy for 1, 3-propanediol recovery from fermentation broth and colority control using scraped thin-film evaporation for desalination. *RSC Advances* 2015, 5:48269 - 48274
60. Ting Tang, Chongli Yuan, Hyun-Tae Hwang, **Xuebing Zhao**, Doraiswami Ramkrishna, Dehua

- Liu, Arvind Varma*. Engineering surface hydrophobicity improves activity of *Bacillus thermocatenulatus* lipase 2 enzyme. *Biotechnology Journal*, 2015, DOI: 10.1002/biot.201500011
59. Yujia Mao, Tie Yin, Wei Du*, **Xuebing Zhao****, Lingmei Dai, and Dehua Liu. High Level Expression of Lipase BTL2 by *Pichia Pastoris* and Its Application for Biodiesel Production. *Journal of Bioprocess Engineering and Biorefinery*, 2014, 3(3): 177-181.
58. Hongmei Chen, Tianhang Hu, Jia Zhao, **Xuebing Zhao***, Dehua Liu. A comparison of several organosolv pretreatments for increasing the enzymatic hydrolysis of wheat straw: substrate digestibility, fermentability and structural features. *Applied Energy*, 2015, 150:224-232
57. Yan Zhou, Hongmei Chen, Feng Qi, **Xuebing Zhao***, Dehua Liu. Non-ionic surfactants do not consistently improve the enzymatic hydrolysis of pure cellulose. *Bioresource Technology*, 2015, 182:136-143
56. Lei Dong, **Xuebing Zhao ***, Dehua Liu. Kinetic modeling of atmospheric formic acid pretreatment of wheat straw with “potential degree of reaction” models. *RSC Advances* 2015, 5:20992 – 21000, DOI: 10.1039/C4RA14634D
55. Jingyang Xu*, Wei Du, **Xuebing Zhao**, Dehua Liu. Exploration of sodium lignosulphonate's effects on lipid production of *Rhodospiridium toruloides*. *Process Biochemistry*, 2015, doi:10.1016/j.procbio.2015.01.006
54. **Xuebing Zhao***, Feng Qi, Chongli Yuan, Wei Du, Dehua Liu**. Lipase-catalyzed Process for Biodiesel Production: Enzyme Immobilization, Process Simulation and Optimization. *Renewable and Sustainable Energy Reviews*, 2015, 44: 182-197.

2014

53. Yuichi Morikawa, **Xuebing Zhao***, Dehua Liu. Biological co-production of biodiesel and ethanol from wheat straw: A case of dilute acid pretreatment. *RCS Advance*, 2014, 4, 37878-37888, DOI: 10.1039/c4ra07251k.
52. Qianqian Wang, **Xuebing Zhao***, J.Y. Zhu**. Kinetics of Strong Acid Hydrolysis of A Bleached Kraft Pulp for Producing Cellulose Nanocrystals (CNC). *Industrial & Engineering Chemistry Research*, 2014, 53 (27): 11007–11014 DOI: 10.1021/ie501672m
51. Xingkai Cui, **Xuebing Zhao***, Jing Zeng, Soh Kheang Loh, Yuen May Choo, Dehua Liu. Robust enzymatic hydrolysis of Formiline-pretreated oil palm empty fruit bunches (EFB) for efficient conversion of polysaccharide to sugars and ethanol. *Bioresource Technology*, 2014, 166: 584–591. DOI: 10.1016/j.biortech.2014.05.102
50. Feng Qi, Yuki Kitahara, Zitian Wang, **Xuebing Zhao**, Wei Du, Dehua Liu. Novel mutant strains of *Rhodospiridium toruloides* by plasma mutagenesis approach and their tolerance for inhibitors in lignocellulosic hydrolyzate. *Journal of Chemical Technology & Biotechnology*, 2014, 89(5): 735-742.
49. Yuki KITAHARA, Tie YIN, **Xuebing ZHAO**, Masaaki WACHI*, Wei DU, Dehua LIU. Isolation of oleaginous yeast *Rhodospiridium toruloides* mutants tolerant to sugarcane bagasse hydrolysate. *Bioscience, Biotechnology, and Biochemistry*, 2014, 78(2): 336-342. DOI: 10.1080/09168451.2014.882746
48. **Xuebing Zhao***, Yuichi Morikawa, Feng Qi, Jing Zeng, Dehua Liu. A novel kinetic model for polysaccharide dissolution during atmospheric acetic acid pretreatment of sugarcane bagasse. *Bioresource Technology* 2014, 151: 128–136.
47. Hyun Tae Hwang, Feng Qi, Chongli Yuan, **Xuebing Zhao***, Doraiswami Ramkrishna1, Dehua

Liu and Arvind Varma*. Lipase-Catalyzed Process for Biodiesel Production: Protein engineering and lipase production. *Biotechnology & Bioengineering*, 2014, 111(4):639-653.

46. Chen Hongmei; **Xuebing Zhao***; Liu Dehua. Enzymatic digestibility of ethanol pretreated wheat straw. *Chinese Journal of Bioprocess Engineering*, 2014, 12(1): 1-7. (In Chinese)

2013

45. **Xuebing Zhao***, Ming Fan, Jing Zeng, Wei Du, Canming Liu, Dehua Liu. Kinetics of lipase recovery from the aqueous phase of biodiesel production by macroporous resin adsorption and reuse of the adsorbed lipase for biodiesel preparation. *Enzyme and Microbial Technology*, 2013, 52(4-5): 226-233.
44. Lu He, **Xuebing Zhao***, Keke Cheng, Yan Sun, Dehua Liu**. Kinetic modeling of fermentative production of 1, 3-propanediol by *Klebsiella pneumoniae* HR526 with consideration of multiple product inhibitions. *Applied Biochemistry and Biotechnology*, 2013, 169(1): 312-326.
43. **Xuebing Zhao***, Dehua Liu. Kinetic modeling and mechanisms of acid-catalyzed delignification of sugarcane bagasse by aqueous acetic acid. *BioEnergy Research*, 2013, 6(2): 436-447.
42. **Xuebing Zhao***, Lei Dong, Liang Chen, Dehua Liu. Batch and multi-step fed-batch enzymatic saccharification of Formiline-pretreated sugarcane bagasse at high solid loadings for high sugar and ethanol titers. *Bioresource Technology*, 135:350-356
41. Qiang Li, **Xuebing Zhao**, Keke Cheng, Wei Du, Dehua Liu*. Simulation and experimentation on the gas holdup characteristics of a novel oscillate airlift loop reactor. *Journal of Chemical Technology & Biotechnology*, 2013, 88(4): 704-710
40. Jingyang Xu, Wei Du*, **Xuebing Zhao**, Guoling Zhang and Dehua Liu. Microbial oil production from various carbon sources and its use for biodiesel preparation. *Biofuels, Bioproducts and Biorefining*, 2013, 7(1):65-77.
39. Xiaoying Sun, Xiang Liu, **Xuebing Zhao***, Ming Yang, Dehua Liu. Progress in synthesis technologies and application of aviation biofuels. *Chinese Journal of Biotechnology* 2013, 29(3): 1-14. (in Chinese).

2012

38. Yuanquang Song, Qiang Li, **Xuebing Zhao***, Yan Sun, Dehua Liu**. Production of 2,3-butanediol by *Klebsiella pneumoniae* from enzymatic hydrolyzate of sugarcane bagasse. *BioResources*, 2012, 7(4), 4517-4530.
37. **Xuebing Zhao***, Dehua Liu. Fractionating pretreatment of sugarcane bagasse by aqueous formic acid with direct recycle of spent liquor to increase cellulose digestibility-the Formiline process. *Bioresource Technology*, 2012, 117: 25-32.
36. **Xuebing Zhao***, Lihua Zhang, Dehua Liu. Biomass recalcitrance, Part II: fundamentals of different pretreatments to increase the enzymatic digestibility of lignocellulose. *Biofuels, Bioproducts and Biorefinery*, 2012, 6(5): 561-579.
35. **Xuebing Zhao***, Lihua Zhang, Dehua Liu. Biomass recalcitrance, Part I: the chemical compositions and physical structures affecting the enzymatic hydrolysis of lignocellulose. *Biofuels, Bioproducts and Biorefinery*, 2012, 6(4): 465-482.
34. **Xuebing Zhao***, Yujie Zhou, Dehua Liu. Kinetic model for glycan hydrolysis and formation of monosaccharides during dilute acid hydrolysis of sugarcane bagasse. *Bioresource Technology*, 2012, 105: 160-168.

33. **Xuebing Zhao***, Feng Peng, Wei Du, Canming Liu, Dehua Liu. Effects of some inhibitors on the growth and lipid accumulation of oleaginous yeast *Rhodospiridium toruloides* and preparation of biodiesel by enzymatic transesterification of the lipid. *Bioprocess and Biosystems Engineering*, 2012, 35(6): 993-1004.
32. Ke-Ke Cheng, **Xue-Bing Zhao**, Jing Zeng and Jian-An Zhang*. Biotechnological production of succinic acid: current state and perspectives. *Biofuels, Bioproducts and Biorefining*, 2012, 6(3): 302-318.
31. Ke-Ke Cheng, **Xue-Bing Zhao**, Jing Zeng, Ru-Chun Wu, Yun-Zhen Xu, De-Hua Liu and Jian-An Zhang*. Downstream processing of biotechnological produced succinic acid. *Applied Microbiology and Biotechnology*, 2012, 95(4): 841-850.
30. Jingyang Xu, **Xuebing Zhao**, Wencong Wang, Wei Du, Dehua Liu*. Microbial conversion of biodiesel byproduct glycerol to triacylglycerols by oleaginous yeast *Rhodospiridium toruloides* and the individual effect of some impurities on lipid production. *Biochemical Engineering Journal*, 2012, 65(15): 30-36.
29. LI Qiang, **ZHAO Xuebing**, DU Wei, LIU Dehua. CFD simulation and structural optimization in a novel airlift reversible loop bioreactor. *Chemical Industry and Engineering Progress*, 2012, 31(08): 1690-1699. (In Chinese)
28. He Lu, **Zhao Xue-bing**, Sun Yan, Liu De-hua. Optimization of Continuous Fermentative Production of 1,3-propanediol by *Klebsiella pneumoniae*. Food and Fermentation Industries, 2012, 38(8): 23-28.(In Chinese)

2011

27. SUN Xiaoying, **ZHAO Xuebing***, DU Wei, LIU Dehua. Kinetics of Formic Acid-autocatalyzed Preparation of Performic Acid in Aqueous Phase. *Chinese Journal of Chemical Engineering*, 2011, 19(6): 1-8.
26. Xuebing Zhao*, Yuanquan Song, Dehua Liu. Enzymatic hydrolysis and simultaneous saccharification and fermentation of alkali/peracetic acid-pretreated sugarcane bagasse for ethanol and 2, 3-butanediol production. *Enzyme and Microbial Technology*, 2011, 49(4): 413-419.
25. **Xuebing Zhao***, Wu Ruchun, Dehua Liu. Production of pulp, ethanol and lignin from sugarcane bagasse by alkali-peracetic acid delignification. *Biomass and Bioenergy*, 2011, 35(7): 2874-2882
24. **Xuebing Zhao***, Evert van der Heide, Ting Zhang, Dehua Liu. Single-stage pulping of sugarcane bagasse with peracetic acid. *Journal of Wood Chemistry and Technology*, 2011, 31(01): 1 – 25
23. **Xuebing Zhao**, Dehua Liu*. Pyrolysis of formic acid lignin and acetic acid lignin isolated from crofton weed stem. *Journal of Tsinghua University (Sci & Tech)*, 2011, 51(6): 814-819. (In Chinese)
22. **Xuebing Zhao***, Dehua Liu. Fractionating pretreatment of sugarcane bagasse for increasing the enzymatic digestibility of cellulose. *Chinese Journal of Biotechnology*, 2011, 27(3): 384–392. (In Chinese)

2010

21. **Xuebing Zhao***, Dehua Liu. Chemical and thermal characteristics of lignins isolated from Siam weed stem by acetic acid and formic acid delignification. *Industrial Crops and Product*, 2010,

32:284-291.

20. **Xuebing Zhao***, Evert van der Heide, Ting Zhang, Dehua Liu. Delignification of sugarcane bagasse with alkali and peracetic acid and characterization of the pulp. *BioResources*, 2010, 5(3): 1565-1580.
19. **Xuebing Zhao***, Lihua Zhang, Dehua Liu. Pretreatment of Siam weed stem by several chemical methods for increasing the enzymatic digestibility. *Biotechnology Journal*, 2010, 5: 493-504.
18. **Xuebing Zhao**, Yujie Zhou, Guangjian Zheng, Dehua Liu*. Microwave pretreatment of substrates for cellulase production by solid state fermentation. *Applied Biochemistry and Biotechnology*, 2010, 160(5): 1557 – 1571.
17. Erik Chavez*, Dehua Liu, **Xuebing Zhao**. Biofuels production development and prospects in China. *Journal of Biobased Materials and Bioenergy*, 2010, 4(3): 221-242.
16. Xiao-ying Sun, **Xue-bing ZHAO**, Wei DU, De-hua LIU*. Preparation of Epoxidized Soybean Oil by Catalysis of Small Amount of Sulfuric Acid. *The Chinese Journal of Process Engineering*, 2010, 10(4): 714-719. (In Chinese)
15. Ming FAN, Qiang LI, **Xue-bing ZHAO***, Wei DU, Dehua LIU**. Recovery of Free Lipase in the Aqueous Phase of Enzymatic Production of Biodiesel by Foam Separation. *The Chinese Journal of Process Engineering*, 2010, 10(6): 85-91. (In Chinese)

2009

14. **Xuebing Zhao***, Keke Cheng, Dehua Liu*. Organosolv pretreatment of lignocellulosic biomass for enzymatic hydrolysis. *Applied Microbiology and Biotechnology*, 2009, 82(5): 815-827.
13. **Xuebing Zhao***, Feng Peng, Keke Cheng, Dehua Liu*. Enhancement of the enzymatic digestibility of sugarcane bagasse by alkali-peracetic acid pretreatment. *Enzyme and Microbial Technology*, 2009, 44(1): 17-23.
12. **Xuebing Zhao***, Lingmei Dai, Dehua Liu. Characterization and comparison of Acetosolv and Milox lignin isolated from Crofton weed stem. *Journal of Applied Polymer Science*, 2009, 114: 1295-1302.
11. Yuan Lu, Chong Zhang, Hongxin Zhao, Kun Ma, **Xuebing Zhao**, Hongzhang Chen, Dehua Liu and Xin-Hui Xing*, Characteristics of hydrogen and methane production from cornstalks by an augmented two- or three-stage anaerobic fermentation process. *Bioresource Technology*, 2009, 100: 2889-2895.
10. Feng PENG, **Xuebing ZHAO**, Canming LIU, Dehua LIU. Detoxification of bagasse acid-hydrolyzate for yeast oil production. *Renewable Energy Resources*, 2009, 27(4): 32-36. (In Chinese)

2008

9. **Xuebing Zhao***, Keke Cheng, Junbin Hao, Dehua Liu*. Preparation of peracetic acid from hydrogen peroxide, part II: kinetics for spontaneous decomposition of peracetic acid in the liquid phase. *Journal of Molecular Catalysis A: Chemical*, 2008, 284(1-2):58-68
8. **Xue-bing Zhao**, Lei Wang, De-hua Liu*. Peracetic acid pretreatment of sugarcane bagasse for enzymatic hydrolysis: a continued work. *Journal of Chemical Technology & Biotechnology*, 2008, 83(6): 950-956.
7. **Xuebing Zhao***, Lihua Zhang, Dehua Liu**. Comparative study on chemical pretreatment methods for improving enzymatic digestibility of crofton weed stem. *Bioresource Technology*,

2008, 99(9): 3729-3736.

6. **Xuebing Zhao**, Ting Zhang, Yujie Zhou, Dehua Liu*. Preparation of Peracetic Acid from Acetic Acid and Hydrogen Peroxide: Experimentation and Modeling. *The Chinese Journal of Process Engineering*, 2008, 8(1): 35-41.

2007 and before

5. **Xue-bing Zhao**, Lei Wang, De-hua Liu*. Effect of several factors on peracetic acid pretreatment of sugarcane bagasse for enzymatic hydrolysis. *Journal of Chemical Technology & Biotechnology*. 2007, 82: 1115-1121.
4. **Xuebing Zhao***, Ting Zhang, Yujie Zhou*, Dehua Liu. Preparation of peracetic acid from hydrogen peroxide: Part I: Kinetics for peracetic acid synthesis and hydrolysis. *Journal of Molecular Catalysis A: Chemical*, 2007, 271(1-2): 246-252.
3. Zheng GuangJian, Zhou YuJie, Zhang Jian'an, Cheng KeKe, **Zhao XueBing**, Zhang Ting, Liu DeHua*. Pretreatment of rice hulls for cellulase production by solid substrate fermentation. *Journal of Wood Chemistry and Technology*, 2007, 27(2): 65-71.
2. **Xue-bing Zhao**, Li-hua Zhang, De-hua Liu. Effects of different pretreatment methods on enzymatic digestibility of *Chromolaena odorata* stem. *Modern Chemical Industry*, 2007(S2): 293-296. (In Chinese)
1. **Xuebing Zhao**, Fengyi Su, Xinhui Xing. Oxidation of sodium lignosulphonate by peracetic acid. *Journal of Tsinghua University (Sci & Tech)*. 2005, 45(9): 1244-1247. (In Chinese)

Conference oral presentations

18. **Xuebing Zhao***, Dehua Liu. Fractionating Pretreatment of Lignocellulosic Biomass as An Entry Into Biomass Refining. **2013 AIChE Annual Meeting**, November 3-8, 2013, San Francisco, CA, the USA.
17. **Xuebing Zhao***, Dehua Liu. Fractionating pretreatment of lignocellulosic biomass as an entry into biomass refining: Technology and Engineering. **Tsinghua-Aarhus Workshop on Advanced Biological, Bioprocess and Catalysis Technologies (TAW-ABC)**, Oct. 24-25, 2013, Tsinghua University, Beijing, China (*conference secretary and speaker*).
16. **Xuebing Zhao**, Dehua Liu*. Integrated production of ethanol, microbial oil and lignin from lignocellulosic biomass. **241st ACS National Meeting & Exposition**, March 27-31, 2011, Anaheim, California, USA
15. **Xuebing ZHAO**, Dehua LIU*. Biorefining of lignocellulosic biomass based on organosolv pretreatment. **Workshop on Climate Change and Energy**. 23-24 August 2010, Rio de Janeiro, Brazil.
14. **Xuebing ZHAO**, Lihua ZHANG and Dehua LIU*. Production of fermentable sugars and lignin from Siam weed stem. **APBioChEC'09--Biotechnology for Sustainable Development**, November 24-28, 2009, Kobe, Japan.
13. Dehua LIU*, **Xuebing ZHAO**. China's activities and outlook on next generation biofuels and biorefineries from R&D to industrial scale. **Expert Group Meeting on the evaluation of initiatives on pilot plants set-up**, 16-17 November 2009, Trieste, Italy.
12. **Xuebing Zhao**, Dehua Liu*, Wei Du, Yan Sun. Biorefinery of non-food feedstock for integrated production of biofuels and bio-based chemicals. **Tokyo Tech-Tsinghua University Joint**

Symposium on New Frontier in Biological Systems: From Molecules to Organisms and Environments, Nov. 30, 2009, Tokyo, Japan.

11. Dehua Liu*, **Xuebing Zhao**. Biorefinery of non-edible oils and lignocellulosic biomass: Integrated production of biofuels and bio-based chemicals. **Tsinghua Siemens R&D Cooperation Day-Siemens CKI Workshop**, Nov. 9th, 2009, Beijing, China.
10. **Xuebing Zhao**, Lei Wang, Dehua Liu*. Comparison of several chemical pretreatment methods for improving the enzymatic digestibility of sugarcane bagasse. **The 2nd International Symposium on Advanced Biological Engineering and Science**, Tsinghua University, Beijing, China, March 31-April 1, 2008
9. **Xuebing Zhao**, Lei Wang, Dehua Liu*. Peracetic acid pretreatment of sugarcane bagasse for enhancement of enzymatic digestibility. **Sub-forum of the Third Tsinghua International Forum for Doctoral Candidates**, Beijing, China, 5th, Sep. 2007.
8. **Xuebing Zhao**, Yujie Zhou, Dehua Liu*. Preliminary study on microwave pretreatment of substrates for cellulase production by solid state fermentation. **The 1st International Symposium on Advanced Biological Engineering and Science**, Tsinghua University, Beijing, China, March 16-18, 2006.

Conference posters

7. **Xuebing Zhao***, Dehua Liu. Production of Bioethanol and Biodiesel from lignocellulose based on a fractionating pretreatment of biomass. **NSERC Bioconversion Network Pretreatment Workshop**, 4-6 Jun, University of British Columbia, Canada.
6. **Xuebing Zhao***, Dehua Liu. Production of biofuels and chemicals from lignocellulosic biomass based on organosolv fractionation process. **The 2nd i-BioP Asian Symposium**. 15 December 2011, Pohang, Korea.
5. **Xuebing Zhao**, Lihua Zhang, Dehua Liu*. Utilization of Crofton weed stem as a feedstock for fuel production. **The 4th International Symposium on Bioprocess and Biosystems Engineering**, August 3-6, 2009, Shanghai, China.
4. **Xuebing Zhao**, Lei Wang, Dehua Liu*. Organosolv pretreatment of lignocellulose for enzymatic hydrolysis. **2006 World Biofuels Symposium-Student Seminar**, Tsinghua University, Beijing, China, 13th, September, 2006.
3. Feng Peng, **Xuebing Zhao**, Wei Du, Dehua Liu*, Canming Liu. Diluted-acid hydrolysis of sugarcane bagasse and fermentation of the hydrolyzate for production of yeast oil. **The 2nd International Symposium on Advanced Biological Engineering and Science**, Tsinghua University, Beijing, China, **March 31-April 1, 2008**.
2. Chuanbin Zheng, **Xuebing Zhao**, Wei Du, Dehua Liu*. Simulation and optimization of biodiesel process by enzyme catalyzed alcoholysis of oil. **The 4th International Symposium on Bioprocess and Biosystems Engineering**, August 3-6, 2009, Shanghai, China.
1. Ming FAN, **Xuebing ZHAO**, Wei DU, Canming LIU, Dehua LIU*. Recovery of lipase in the aqueous phase of enzymatic production of biodiesel with foam fractionation. **2010 World Bioenergy Symposium**, 15-17, September, 2010, Suzhou, China.

(* and ** indicate that the author(s) is (are) corresponding author)

Patent applications

1. 刘德华, 周玉杰, 刘铮, 袁乃驹, 张建安, **赵雪冰**. 电场强化的固态发酵生产纤维素酶方法. ZL 200510002223.2 (已获授权)
2. 刘德华, **赵雪冰**. 一种木质纤维原料的生物炼制方法. 中国发明专利, ZL200910084431.X (已获授权)
3. **赵雪冰**, 刘德华. 一种木质纤维原料的预处理方法. 中国发明专利: ZL201010197815.5 (已获授权)
4. Erik F. Tusel, Davius Kazemekao, 刘德华, **赵雪冰**. 一种生产发酵产品的方法. 中国发明专利申请号: ZL201010258930.9 (已获授权)
5. **赵雪冰**, 杜伟, 刘德华. 一种回收和/或富集水相非固定化脂肪酶的方法和装置. 中国发明专利: ZL201010530582.6 (已获授权)
6. **赵雪冰**, 刘德华, 杜伟, 徐静阳. 一种以木质纤维素为原料联产乙醇和微生物油脂的方法. 中国发明专利申请号: ZL201010609409.5. (已获授权)
7. Evert van der Heide, **Xuebing Zhao**. Process for the extraction of sugars and lignin from solid biomass. US20110151516 A1, 2011/06/23.
8. Evert van der Heide, **Xuebing Zhao**. A process for the extraction of sugars and lignin from lignocellulose-comprising solid biomass, WO2011073284 A1, PCT/EP2010/069811. 2010/12/15
9. 刘德华, 杜伟, **赵雪冰**, 朱罗乐. 一种在线脱水的脂肪酶催化可再生油脂制备生物柴油工艺. 中国发明专利申请号: 201010536576.1 (已获授权)
10. 徐静阳, 杜伟, 刘德华, **赵雪冰**. 一种提高产油微生物发酵生产微生物油脂的方法. 中国发明专利申请号: 201210026602.5. (已获授权)
11. Erik F. Tusel, Hartmut Bruschke, 刘德华, **赵雪冰**. 改进膜过滤过程的方法和装置. 中国发明专利申请号: 201210322664.0.
12. Erik F. Tusel, Hartmut Bruschke, 刘德华, **赵雪冰**. 制备挥发性有机产品的方法. 中国发明专利申请号: 201210322634.X
13. Dehua LIU, Wei DU, **Xuebing ZHAO**, Luole ZHU. Process for preparing biodiesel from renewable grease with lipase as catalyst and online dehydration. WO2012059065, PCT/CN2011/081784, 2012/5/11.
14. Loh Soh Kheang, Choo Yuen May, **Xuebing Zhao**, Dehua Liu (2014). An integrated process for fractionation of oil palm empty fruit bunch and conversion of the cellulosic solid to ethanol. Malaysia Patent Application No. PI 2014000163 (21 January 2014).
15. Soh Kheang Loh, Yuen May Choo, Yujie Zhou, Jian'an Zhang, Shicheng Shen, Hongjuan Liu, Keke cheng, Dehua Liu, Lingmei Dai, **Xuebing Zhao**, Jie Mi (2013). Modified Alkali Lignin For Enhanced Oil Recovery. Malaysia Patent Application No. PI 2013003208 (30 August 2013).
16. 杜伟, 赵雪冰, 王松梅, 关鼎耀, 刘德华. 微藻油脂的提取方法. 中国发明专利申请号: 201410108480.3
17. 刘德华, 赵雪冰, 罗吉安, 张圆满. 从 1,3-丙二醇发酵液纯化 1,3-丙二醇的方法及其应用. 中国专利申请号: 201510206096.1, 申请日 2015 年 4 月 27 日