**Zhihua Liu**

Synthetic & Systems Biology Innovation Hub (SSBiH)

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**RESEARCH INTERESTS**

Biomass refinery; Pretreatment; Biofuels; Bio-based products

**PROFESSIONAL SKILLS**

* Training and experience: ethanol fermentation, process development and optimization, pretreatment, chemical reactor design; Analytical technology: X-ray 3D microscope, XRD, TD-NMR, HPLC, GC-MS, FTIR, UV/Vis, TPA and SEM

**EDUCATION**

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| Sep. 2016 – Present | **Postdoc**, Department ofPlant Pathology & Microbiology, Texas A&M University, Texas, United States |
| Sep. 2013 – Jun. 2016 | **Ph.D.**, Biochemical Engineering, Institute of Process Engineering |
|  | Chinese Academy of Sciences, Beijing, China |
| Sep. 2010 - Jun. 2013 | **M.E.,** Biochemical Engineering, School of Chemical Engineering and Technology |
|  | Tianjin University, Tianjin, China |
| Sep. 2006 - Jun. 2010 | **B.E.,** Bioengineering, School of Chemical Engineering and Technology |
|  | Tianjin University, Tianjin, China |

**RESEARCH EXPERIENCE**

* Sep. 2013 – Jun. 2016 Ph.D., State Key Laboratory of Biochemical Engineering, Institute of Process Engineering, Chinese Academy of Sciences, Beijing, China

**Dissertation: Novel Process Intensification and Integration Technology of Lignocellulose Refinery**.

* Sep. 2010 - Jul. 2013 M.E., Collaborative Innovation Center of Chemical Science and Engineering, Tianjin University, Tianjin, China

**Dissertation: Evaluation of Size Reduction and Storage Methods for the Conversion of Lignocellulosic Biomass**.

* Sep. 2009 - Jul. 2010 B.E., Key Laboratory of Systems Bioengineering (Ministry of Education), Tianjin University, Tianjin, China

**Dissertation: Adsorption and Mass Transfer Behavior of a Novel Dextran-grafted Agarose Matrix**.

**PUBLISHED JOURNAL ARTICLES**

1. **Zhi-Hua Liu**, Hong-Zhang Chen\*. Periodic peristalsis enhancing the high solids enzymatic hydrolysis performance of steam exploded corn stover biomass. ***Biomass & Bioenergy,*** 2016, 93, 13-24.
2. **Zhi-Hua Liu**, Hong-Zhang Chen\*. Periodic peristalsis releasing constrained water in high solids enzymatic hydrolysis of steam exploded corn stover. ***Bioresource Technology*** 2016, 205, 142-152.
3. **Zhi-Hua Liu**, Hong-Zhang Chen\*. Biomass-water interaction and its correlations with enzymatic hydrolysis of steam exploded corn stover. ***ACS Sustainable Chemistry & Engineering***, 2016, 4(3), 1274-1285.
4. **Zhi-Hua Liu**, Hong-Zhang Chen\*. Simultaneous saccharification and co-fermentation for improving the xylose utilization of steam exploded corn stover biomass at high solid loading. ***Bioresource Technology***, 2016, 201, 15-26.
5. **Zhi-Hua Liu** 1, Lei Qin1, Bing-Zhi Li\*, Ying-Jin Yuan. Physical and chemical characterizations of corn stover from leading pretreatment methods and the effects on enzymatic hydrolysis. ***ACS Sustainable Chemistry & Engineering***, 2015, 3, 140-146.
6. **Zhi-Hua Liu**, Lei Qin, Jia-Qing Zhu, Bing-Zhi Li\*, Ying-Jin Yuan. Simultaneous saccharification and fermentation of steam-exploded corn stover at high glucan loading and high temperature. ***Biotechnology for Biofuels***, 2014. 7, 167.
7. **Zhi-Hua Liu**, Lei Qin, Ming-Jie Jin, Feng Pang, Bing-Zhi Li\*, Yong Kang, Bruce E Dale, Ying-Jin Yuan. Evaluation of storage methods for the conversion of corn stover to sugars. ***Bioresource Technology***, 2013, 132, 5-15.
8. **Zhi-Hua Liu**, Lei Qin, Feng Pang, Ming-Jie Jin, Bing-Zhi Li\*, Yong Kang, Bruce E Dale, Ying-Jin Yuan. Effects of biomass particle size on steam explosion pretreatment performance for improving the enzyme digestibility of corn stover. ***Industrial Crops and Products***, 2013, 44, 176-184.

**BOOK CHAPTERS**

1. Gas Explosion Technology and Biomass Refinery. Springer, 2015.

Chapter 3Equipments of gas explosion process

1. Lignocellulose Biorefinery Engineering: Principles and Applications. Woodhead Publishing, 2015

Chapter 1 Lignocellulose biorefinery engineering: an overview

Chapter 4 Lignocellulose biorefinery conversion engineering

Chapter 8 Future perspectives for lignocellulose biorefinery engineering

**PATENTS**

1. Ying-Jin Yuan, **Zhi-Hua Liu**. “Methods for increasing the saccharification efficiency of agricultural straw by two-step size reduction coupling steam explosion” ([China 201310167638.X](http://www.purdue.edu/lorre/translation/documents/US8921648B2.pdf))
2. Ying-Jin Yuan, **Zhi-Hua Liu**, Bing-Zhi Li, Lei Qin. “Methods for increasing the saccharification efficiency of agricultural straw by dry storage coupling steam explosion” ([China 201310167113.6](http://www.purdue.edu/lorre/translation/documents/US8921648B2.pdf))

**INTERNATIONAL & NATIONAL MEETINGS**

1. **Zhi-Hua Liu**. “Process intensification of high solids enzymatic hydrolysis and fermentation of steam exploded straw”, UBC-IPE Academic Exchange Symposium, Beijing, China, May 2016
2. **Zhi-Hua Liu**. ‘Steam explosion refining technology of lignocellulosic biomass for bio-based products’ (Plenary Speech), AFOB Bioenergy and Biorefinery Division Annual Meeting and Bioenergy and Biorefinery Summit 2014, Ji’nan, China, July 2014
3. **Zhi-Hua Liu**. ‘Research progress of steam explosion pretreatment technology for lignocellulosic ethanol’(Oral Presentation), Seminar on the Development of Bioethanol Industry in Guangdong Province, Guangzhou, Guangdong, China, May 2014
4. 2012 Sino-USA Seminar on Lignocelluloses Utilization, Tianjin University, Tianjin, China, June 2012

**HONORS&AWARDS**

* “Industrialized technology project of ethanol production from steam-exploded straw”, Chinese Academy of Sciences, China, 2014, the fifth completed person
* Invited peer-reviewer for ***Microbial Ecology,*** ***African Journal of Biotechnology*** - Journal (2015-present)

**INTERNSHIP EXPERIENCE & EXTRACURRICULAR ACTIVITIES**

* 2014.05-2014.08 Technology exchange and cooperation in Sonyuan Laihe Chemical Co., Ltd., Jilin, China
* 2014.03-2014.05 Technology exchange and cooperation in Hongtai Chemical Industry Co., Ltd of Huixian County, He’nan, China

**INTERESTS & SELF-EVALUATION**

* Swimming; Playing basketball; Table tennis; Reading
* Willing to learn and progress; Willing to assume responsibility; Excellent problem solving and strong communication skills; Effective collaboration with colleagues to push project forward