



Department: School of Biotechnology

Professional field: Biochemical Engineering

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Profile

EDUCATION: PhD, Biochemical Engineering, Yamaguchi University, Ube, Japan, 1997-2001; Master of Engineering, Chemical Reaction Engineering, Zhejiang University, Hangzhou, China, 1995-1997; Bachelor of Engineering, Chemical Engineering, Nanjing University of Science and Technology, Nanjing, China, 1980-1984.

RESEARCH EXPERIENCES: 2006-Present: Professor, School of Biotechnology, State Key Laboratory of Bioreactor Engineering, East China University of Science and Technology, Shanghai, China; 2001-2006: Postdoctoral Associate, Biochemical Engineering Program, University of California, Davis, CA, USA.

Research Field

1. Industrial biotechnology and process engineering of lignocellulose biorefinery technology for Bioproduction of liquid biofuels and bio-based chemicals
2. Metabolic engineering of biorefinery fermenting microorganisms for high tolerance and pentose utilization from lignocellulose.

Research results and selected published papers

1. Zhao Yan¹, Xiaochuang Gao¹, Qiuqiang Gao, Jie Bao*. Identification, tolerance mechanism and metabolic modification of biorefinery fermentation strains to lignin derived inhibitor p-benzoquinone. *Applied and Environmental Microbiology* 2019, 85:e01443-19.
2. Pingping Zhou¹, Ruimiao Yao¹, Hongsen Zhang, Jie Bao*. Unique glucose oxidation catalysis of *Gluconobacteroxydans* constitutes an efficient cellulosic gluconic acid fermentation free of inhibitory compounds disturbance. *Biotechnology and Bioengineering* 2019, 116:2191-2199.
3. Xia Yi¹, Qiuqiang Gao¹, Lei Zhang¹, Xia Wang, Yanqing He, Fengxian Hu, Jian Zhang, Gen Zou, Shihui Yang, Zhihua Zhou*, Jie Bao*. Heterozygous diploid structure of *Amorphotheca resinae* ZN1 contributes efficient biodegradation on solid pretreated corn stover. *Biotechnology for Biofuels* 2019, 12:126.
4. Jingbai Wen, Jie Bao*. Engineering *Corynebacterium glutamicum* triggers glutamic acid accumulation in biotin rich corn stover hydrolysate. *Biotechnology for Biofuels* 2019, 12:86.
5. Ci Jin¹, Weiliang Hou¹, Ruimiao Yao¹, Pingping Zhou, Hongsen Zhang, Jie Bao*. Adaptive evolution of *Gluconobacteroxydans* accelerates the conversion rate of non-glucose sugars derived from lignocellulose biomass. *Bioresource Technology* 2019, 289:121623.
6. Xushen Han¹, Li Li¹, Jie Bao*. Microbial extraction of biotin from lignocellulose biomass and its application on glutamic acid production. *Bioresource Technology* 2019, 288:121523.
7. Gang Liu, Jie Bao*. Constructing super large scale cellulosic ethanol plant by decentralizing dry acid pretreatment technology into biomass collection depots. *Bioresource Technology* 2019, 275:338-344.
8. Gang Liu¹, Qiang Zhang¹, Hongxing Li, Abdul Sattar Qureshi, Jian Zhang, Xiaoming Bao*, Jie Bao*. Dry biorefining maximizes the potentials of simultaneous saccharification and co-fermentation for cellulosic ethanol production. *Biotechnology and Bioengineering* 2018, 115, 60-69.
9. Jingbai Wen, Yanqiu Xiao, Ting Liu, Qiuqiang Gao, Jie Bao*. Rich biotin content in lignocellulose biomass plays the key role in determining cellulosic glutamic acid accumulation by *Corynebacterium glutamicum*. *Biotechnology for Biofuels* 2018, 11, 132.
10. Weiliang Hou, Maofen Zhang, Jie Bao*. Cascade hydrolysis and fermentation of corn stover for production of high titer gluconic and xylonic acids. *Bioresource Technology* 2018, 264:395-399.
11. Weiliang Hou, Jie Bao*. Simultaneous saccharification and aerobic fermentation of high titer cellulosic citric acid by filamentous fungus *Aspergillus niger*. *Bioresource Technology* 2018, 253, 72-78.
12. Zhongyang Qiu, Qiuqiang Gao, Jie Bao*. Engineering *Pediococcus acidilactici* with xylose assimilation pathway for high titer cellulosic L-lactic acid fermentation. *Bioresource Technology* 2018, 249, 9-15.
13. Hanqi Gu, Ruixin An, Jie Bao*. Pretreatment refining leads to constant particle size distribution of lignocellulose biomass in enzymatic hydrolysis. *Chemical Engineering Journal* 2018, 352:198-205.
14. Xushen Han, Jie Bao*. General method on correcting the fluctuation of acid based pretreatment efficiency of lignocellulose for highly efficient bioconversion. *ACS Sustainable Chemistry & Engineering* 2018, 6(3):4212-4219.
15. Jian Zhang*, Cheng Lei, Gang Liu, Yanwen Bao, Venkatesh Balan*, Jie Bao*. In-situ vacuum distillation of ethanol helps to recycle cellulase and yeast during SSF of delignified corncob residues. *ACS Sustainable Chemistry & Engineering* 2017, 5, 11676-11685.
16. Weiliang Hou, Lang Li, Jie Bao*. Oxygen transfer in high solids loading and highly viscous lignocellulose hydrolysates. *ACS Sustainable Chemistry & Engineering* 2017, 5, 11395-11402.
17. Abdul Sattar Qureshi, Jian Zhang*, Leonardo da Costa Sousa*, Jie Bao*. An antibacterial peptide secreted by *Pediococcus acidilactici* enables efficient cellulosic open L-lactic acid fermentation. *ACS Sustainable Chemistry & Engineering* 2017, 5, 9254-9262.
18. Xia Wang, Qiuqiang Gao, Jie Bao*. Enhancement of furan aldehydes conversion in *Zymomonas mobilis* by elevating dehydrogenase activity and cofactor regeneration. *Biotechnology for Biofuels* 2017, 10:24.
19. Ruimiao Yao¹, Weiliang Hou¹, Jie Bao*. Complete oxidative conversion of lignocellulose derived non-glucose sugars to sugar acids by *Gluconobacteroxydans*. *Bioresource Technology* 2017, 244: 1188-1192.
20. Gang Liu, Jie Bao*. Maximizing cellulosic ethanol potentials by minimizing wastewater generation and energy consumption: Competing with corn ethanol. *Bioresource Technology* 2017, 245: 18-26.
21. Gang Liu, Jie Bao*. Evaluation of electricity generation from lignin residue and biogas in cellulosic ethanol production. *Bioresource Technology* 2017, 243:1232-1236.
22. Zhongyang Qiu, Qiuqiang Gao, Jie Bao*. Constructing xylose-assimilating pathways in *Pediococcus acidilactici* for high titer D-lactic acid fermentation from corn stover feedstock. *Bioresource Technology* 2017, 245, 1369-1376.
23. Ping-Ping Zhou, Jiao Meng, Jie Bao*. Fermentative production of high titer citric acid from corn stover feedstock after dry dilute acid pretreatment and biodegradation. *Bioresource Technology* 2017, 224:563-572.
24. Hongsen Zhang¹, Xushen Han¹, Chengxiang Wei¹, Jie Bao*. Oxidative production of xylonic acid using xylose in distillation stillage of cellulosic ethanol fermentation broth by *Gluconobacteroxydans*. *Bioresource Technology* 2017, 224:573-580.
25. Shuai Shao, Jian Zhang*, Weiliang Hou, Abdul Sattar Qureshi, Jie Bao. Lower pressure heating steam is practical for the distributed dry dilute sulfuric acid pretreatment. *Bioresource Technology* 2017, 238: 744-748.
26. Hongsen Zhang¹, Gang Liu¹, Jian Zhang, Jie Bao*. Fermentative production of high titer gluconic and xylonic acids from corn stover feedstock by *Gluconobacteroxydans* and techno-economic analysis. *Bioresource Technology* 2016, 219:123-131.
27. Hongsen Zhang, Jian Zhang, Jie Bao*. High titer gluconic acid fermentation by *Aspergillus niger* from dry dilute acid pretreated corn stover without detoxification. *Bioresource Technology* 2016, 203:211-219.
28. Juan Wang, Qiuqiang Gao, Huizhan Zhang, Jie Bao*. Inhibitor degradation and lipid accumulation potentials of oleaginous yeast *Trichosporon cutaneum* using lignocellulose feedstock. *Bioresource Technology* 2016, 218:892-901.
29. Jian Zhang¹, Shuai Shao¹, Jie Bao*. Long term storage of dilute acid pretreated corn stover feedstock and ethanol fermentability evaluation. *Bioresource Technology* 2016, 201:355-359.
30. Yanqing He, Jian Zhang, Jie Bao*. Acceleration of biodegradation on dilute acid pretreated lignocellulose feedstock by aeration and the consequent ethanol fermentation evaluation. *Biotechnology for Biofuels* 2016, 9:19.
31. Hanqi Gu, Jian Zhang, Jie Bao*. High tolerance and physiological mechanism of *Zymomonas mobilis* to phenolic inhibitors in ethanol fermentation of corncob residue. *Biotechnology and Bioengineering*, 2015, 112:1770-1782.
32. Xia Yi, Hanqi Gu, Qiuqiang Gao, Z. Lewis Liu*, Jie Bao*. Transcriptome analysis of *Zymomonas mobilis* ZM4 reveals mechanisms of tolerance and detoxification of phenolic aldehyde inhibitors from lignocellulose pretreatment. *Biotechnology for Biofuels*, 2015, 8:153.
33. Xia Wang, Qiuqiang Gao, Jie Bao*. Transcriptional analysis of *Amorphotheca resinae* ZN1 on biological degradation of furfural and 5-hydroxymethylfurfural derived from lignocellulose pretreatment. *Biotechnology for Biofuels*, 2015, 8:136.
34. Gang Liu¹, Jiao Sun¹, Jian Zhang¹, Yi Tu, Jie Bao*. High titer L-lactic acid production from corn stover with minimum wastewater generation and techno-economic evaluation based on Aspen plus modeling. *Bioresource Technology*, 2015, 198:803-810.
35. Ke Liu, Jian Zhang, Jie Bao*. Two stage hydrolysis of corn stover at high solids content for mixing power saving and scale-up applications. *Bioresource Technology*, 2015, 196:716-720.
36. Abdul Sattar Qureshi, Jian Zhang, Jie Bao*. High ethanol fermentation performance of the dry dilute acid pretreated corn stover by an evolutionarily adapted *Saccharomyces cerevisiae* strain. *Bioresource Technology*, 2015, 189:399-404.