

BBRL NEWS:

Members and collaborators of **BBRL** met on Friday December 20th, 2013 for the **annual holiday lunch** at TJ's Restaurant in Wooster, Ohio!

The **BBRL Journal Club** was established and held their first meeting on December 4th, 2013. One member selects and leads the discussion of a current scientific article every two weeks to facilitate team learning and group discussion.

Dr. Yebo Li together with two other OSU professors (Drs. David Cole and Liang-Shih Fan) has been named to the 2013-2014 Who's Who in Energy list compiled by Business First Columbus.

BBRL MEMBER SPOTLIGHT

Mary Wicks – Mrs. Mary Wicks is a Program Coordinator with the Department of Food, Agricultural and Biological Engineering at OSU/OARDC. She assists the BBRL with project reporting, educational program development, project management, and publication review. Mrs. Wicks is also Coordinator of the Ohio Composting and Manure Management (OCAMM), performing similar responsibilities. She has a B.S. in Geology from Virginia Tech, M.B.A. from the University of Houston, and a M.A.T (teaching-general science) from the University of Alaska, Anchorage. Mary is well traveled, as her earlier career involved oil and gas exploration, geotechnical and environmental consulting.



Upcoming events, deadlines, or grants

1/2-Initial Fee Due date (Spring semester)

2/5-Deadline for Graduate Proposal for SEEDS program

2/20-NIFA Postdoctoral Fellowship application deadline

BBRL RESEARCH

2013 Peer Reviewed Journal Publications

1. Zhao, J., Zheng, Y., Li, Y. B. 2014. Fungal pretreatment of yard trimmings for enhancement of methane yield from solid-state anaerobic digestion. *Bioresource Technology*. *In press*. IF: 4.750
2. Zhu, J. Y., Zheng, Y., Xu, F. Q., Li, Y. B. 2014. Solid-state anaerobic co-digestion of hay and soybean processing waste for biogas production. *Bioresource Technology*. *In press*. IF: 4.750
3. Hu, S. J., Luo, X. L., Li, Y. B. 2014. Polyols and Polyurethanes from the Liquefaction of Lignocellulosic Biomass. *ChemSusChem*. *In press*. IF: 7.475.
4. Wang, Z. W., Li, Y. B. 2014. A theoretical derivation of the Contois equation for kinetic modeling of the microbial degradation of insoluble substrates. *Biochemical Engineering Journal*. 82: 134-138. IF: 2.579
5. Sheets, J., Ge, X. M., Park, Y. S., Li, Y. B. 2014. Effect of outdoor conditions on *Nannochloropsis salina* cultivation in artificial seawater using nutrients from anaerobic digestion effluent. *Bioresource Technology*. 152:154-161. IF: 4.750

6. Cai, T., Ge, X. M., Park, Y. S., Li, Y. B. 2013. Comparison of *Synechocystis* sp. PCC6803 and *Nannochloropsis salina* for lipid production using artificial seawater and nutrients from anaerobic digestion effluent. *Bioresource Technology*, 144:255-260. IF: 4.750
7. Wang, Z. J., Xu, F. Q., Li, Y. B. 2013. Effects of total ammonia nitrogen concentration on solid-state anaerobic digestion of corn stover. *Bioresource Technology*, 144:281-287. IF: 4.750
8. Cai, T., Park S., Siam Racharaks, Li, Y. B. 2013. Cultivation of *Nannochloropsis salina* in anaerobic digestion effluent for nutrient removal and lipid production. *Applied Energy* 108: 486-492. IF: 4.781.
9. Canam, T., Dumonceaux, T. J., Record E., Li, Y. B. 2013. White Rot Fungi: The key to sustainable biofuel production? *Biofuels* 4(3):247-250.
10. Luo, X. L., Hu, S. J., Zhang, X., Li, Y. B. 2013. Thermochemical conversion of crude glycerol to biopolyols for the production of polyurethane foams. *Bioresource Technology* 139:323-329. IF: 4.750
11. Shi, J., Wang Z. J., Stiverson, J. A., Yu, Z. T., Li, Y. B. 2013. Reactor performance and microbial community dynamics during solid-state anaerobic digestion of corn stover at mesophilic and thermophilic conditions. *Bioresource Technology*. 136:574-581. IF: 4.750
12. Cai, T., Park, S., Li, Y. B. 2013. Nutrient recovery from wastewater streams by microalgae: status and prospects. *Renewable and Sustainable Energy Reviews* 19: 360-369. IF: 5.627
13. Cherosky P., Li, Y. B. 2013. Hydrogen sulfide removal from biogas by bio-based iron sponge. *Biosystems Engineering* 114:55-59. IF: 1.357
14. Xu, F. Q., Shi, J., Lv, W., Yu, Z. T., Li, Y. B. 2013. Comparison of different liquid anaerobic digestion effluents as inoculum and nitrogen sources for solid-state batch anaerobic digestion of corn stover. *Waste Management* 33: 26–32. IF: 2.485
15. Wan, C. X. and Li, Y. B. 2013. Solid-state biological pretreatment of lignocellulosic biomass for biofuel production. In "Green biomass pretreatment and processing methods for bioenergy production". Edited by Gu, Tingyue. Netherlands: Springer. 67-86.

Accepted with minor/major revision

1. Zheng, Y., Zhao, J., Xu, F. Q., Li, Y. B. 2014. Pretreatment of lignocellulosic biomass for enhanced biogas production. *Progress in Energy and Combustion Science*. IF: 15.089
2. Shi J, Xu F. Q., Wang Z. J., Stiverson, J. A., Yu Z. T. 2014. Effects of microbial and non-microbial factors of liquid anaerobic digestion effluent as inoculum for solid-state anaerobic digestion of corn stover. *Bioresource Technology*. IF: 4.750
3. Gómez, E.F., Luo, X. L., Li, C., Michel F.C., Li, Y. B. 2014. Biodegradability of Crude Glycerol-based Polyurethane Foams during Composting, Anaerobic Digestion and Soil Incubation. *Polymer Degradation and Stability*. IF: 2.770

Under review

1. Hu, S. J., Li, Y. B. 2014. Polyols and polyurethane foams from base-catalyzed liquefaction of lignocellulosic biomass by crude

glycerol: effects of crude glycerol impurities. *Industrial Crops and Products*. IF: 2.468

2. Luo, X. L., Li, Y. B. 2014. Synthesis and characterization of polyols and polyurethane foams from PET waste and crude glycerol. *Journal of Polymers and the Environment*. IF: 1.495
3. Zhao, J., Ge, X. M., Vasco Correa J., Li, Y. B. 2014. Fungal Pretreatment of Unsterilized Yard Trimmings for Enhanced Methane Production by Solid-State Anaerobic Digestion. *Bioresource Technology*. IF: 4.750

2013 Conference Presentations

1. Lin, L, Xu, F. Q., Michel F, Li, Y. B. Yard trimmings and liquid AD effluent — dry digestion vs. composting comparisons. BioCycle 13th Annual Conference, 10/20-10/23, 2013, Columbus, OH.
2. Ge, X. M., Matsumoto, T., Li, Y. B. Hawaii-sourced biomass for biogas production: comparing solid-state and liquid digestion. BioCycle 13th Annual Conference, 10/20-10/23, 2013, Columbus, OH.
3. Racharaks, R., Li, Y. B. Study of the Simultaneous Use of Two Waste Streams for Biofuels Production: The Cultivation of Microalgae in Hydraulic Fracturing Flowback Water and Anaerobic Digestion Effluent. 7th Annual Algae Biomass Summit. 09/30-10/03, Orlando, FL.
4. Li, Y. B. Overview of the U.S. research and development programs in bioenergy and bioproducts. 2013 ASABE Annual International Meeting. Kansas City, KS. (July 21-July 24).
5. Zhao, J., Li, Y. B. 2013. Enhancement of methane production from solid-state anaerobic digestion (SS-AD) of yard trimmings by fungal pretreatment. 2013 ASABE Annual International Meeting. Kansas City, KS. (July 21-July 24).
6. Sheets J., Li, Y. B. 2013. Cultivation of *Nannochloropsis salina* in diluted anaerobic digester effluent under simulated seasonal climatic conditions and in open raceway ponds. 2013 ASABE Annual International Meeting. Kansas City, KS. (July 21-July 24).
7. Hu, S. J., Li, Y. B. 2013. Crude glycerol based liquefaction of lignocellulosic biomass: effects of crude glycerol impurities on polyol properties. 2013 ASABE Annual International Meeting. Kansas City, KS. (July 21-July 24).
8. Zhu, J. Y., Zheng, Y., Xu, F. Q., Li, Y. B. 2013. Solid state anaerobic co-digestion of hay and soybean processing waste in a reactor with leachate recirculation. 2013 ASABE Annual International Meeting. Kansas City, KS. (July 21-July 24).
9. Zhu, J. Y., Zheng, Y., Xu, F., Li, Y.B. 2013. Co-digestion of soybean processing waste and deteriorated hay in solid-state anaerobic digestion for biogas production. *OARDC Annual Meeting. Second Place Post-Doc Category.*
10. Zhao, J., Zheng, Y., Li, Y.B. 2013. Enhancement of methane production in solid-state anaerobic digestion from yard trimmings by fungal pretreatment. *OARDC Annual Meeting.*
11. Hu, S., Li, Y.B. 2013. Glycerol based liquefaction of corn stover: effects of crude glycerol impurities on polyol properties. *OARDC Annual Meeting.*
12. Sheets, J.P., Li, Y.B. 2013. *Nannochloropsis salina* cultivation in diluted anaerobic digester effluent under simulated seasonal climatic conditions. *OARDC Annual Meeting.*

2013 Current Research Projects

1. **LI, Y. B. (PI)**. Methane potential of cellulosic biomass in Hawaii. USDA, ARS, PBARC. \$55,000. 4/2013-3/2014.
2. **LI, Y. B. (PI), Luo, X. L.** Production of UV-curable polyurethane acrylate coatings from high-oleic soymeal. Ohio Soybean Council. \$64,857. 10/2013-9/2014.
3. **LI, Y. B. (PI)**, Lal, R., Shearer, S., Bakshi, B., Yu, Z. T., Hall, D., Halene, C., Yu, F., Mani, S. Bioenergy and Biofuels Production from Lignocellulosic Biomass via Anaerobic Digestion and Fisher-Tropsch Reaction, *USDA-DOE Biomass Research and Development Initiatives program*, \$6,510,183. 2012-2015.
4. **LI, Y. B. (PI)**, Buchheit, R. G., Bakshi B. Development and demonstration of a low VOC polyurethane coating system using biopolyols derived from crude glycerol. *USD NIFA Critical Agricultural Materials Program*. \$418,965. 1/2012-12/2015.
5. **LI, Y. B. (PI)**, Pryor S., Liao, W. He, B., Shahbazi A., Wang, L. Christy, A., Michel F., Ezeji T. Biobased energy education materials exchange system (BEEMS). *USDA Higher Education Challenge (HEC)*, \$459,867. 10/1/2009-9/30/2014.
6. **LI, Y. B. (PI)**. Re-utilization of industrial CO₂ for algae production using a phase change material. *Touchstone Research Laboratory/DOE (Phase II, total DOE funds: 7 million dollar)*, \$674,630. 1/2011-12/2013.

2013 Graduates

- **Johnathon Sheets, M.S.** Cultivation of *Nannochloropsis salina* in Diluted Anaerobic Digester Effluent under Simulated Seasonal Climatic Conditions and in Open Raceway Ponds.
- **Jia Zhao, M.S.** Enhancement of Methane Production from Solid-state Anaerobic Digestion of Yard Trimmings by Biological Pretreatment.
- **Shengjun Hu, Ph.D.** Production and Characterization of Bio-based Polyols and Polyurethanes (PU) from Biodiesel-derived Crude Glycerol and Lignocellulosic Biomass.

2013 New Jobs of BBRL members

- **Dr. Caixia (Ellen) Wan (Ph.D. student of BBRL)** will join Department of Bioengineering, University of Missouri as a tenure-track Assistant professor.
- **Phil Cherosky (M.S. of BBRL)** hired as Environmental Specialist at Ohio EPA.
- **Dan Brown (M.S. of BBRL)** hired as Mechanical Designer at Machine Concepts Inc.
- **Dr. Yi Zheng (Post Doc of BBRL)** hired as a tenure-track Assistant professor at Department of Environmental Engineering and Earth Sciences, Clemson University
- **Dr. Cong Li (Post Doc of BBRL)** hired as a postdoc in Department of Cereal Sciences, Kansas State University.

Editors

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