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Professional Preparation

College of St. Catherine, Chemistry, B. A., 1979, St. Paul, MN
College of St. Catherine, German, B. A., 1979, St. Paul, MN
University of California, San Diego, Chemistry, Ph.D., 1986, La Jolla, CA

Professional Experience

1999- Present: Staff Scientist, Chemical Sciences Division, Oak Ridge National Laboratory
1995 – 1999: Senior Biochemist, Chemical Technology Division, Oak Ridge National Laboratory
1992 – 1995: Postdoctoral Research Associate, Oak Ridge National Laboratory
1990 – 1991: Postdoctoral Research Associate, University of Texas, Austin, TX
1987 – 1989: Postdoctoral Research Associate, Scripps Institute, La Jolla, CA

Scholarships and Organizations

1994-Present	American Chemical Society
1992-Present	Archeological Institute of America
1981-Present	American Association for the Advancement of Science
1979-1980	Fulbright Scholarship (West Germany)
1979	Phi Beta Kappa
1975-1979	National Merit Scholarship

Synergistic Activities

Mentor, Appalachian Regional Commission Summer Math Science-Technology Institute, 2015-2020.
Mentor, Siemens Teachers as Research Scientists (STARS) program, June 2011, 2012, 2013, and 2014.
Mentor, DOE Academies Creating Teacher Scientists (ACTS) Summer Program, 2005 – 2010.
Judge, DOE Science and Engineering Research Challenge (SERCh) Student Poster Competition, 11/10/2008 and 11/8-9/2009.

Patents

“Method of Tissue Repair Using a Composite Material”, Stacy A. Hutchens, Barbara R. Evans, Hugh M. O’Neill, and Jonathan Woodward. U.S. Patent No. 8,673,337 (March 18, 2014)

“High Throughput Reproducible Cantilever Functionalization”, Barbara R. Evans and Ida Lee. U.S. Patent No. 8,898,810 (November 25, 2014)

“Biochar Production Method and Composition Therefrom“, J. W. Lee, A. C. Buchanan III, B.R. Evans, M. Kidder U. S. Patent 8,398,738 (March 19, 2013).

“Composite Material”, S. A. Hutchens, J. Woodward, B. R. Evans, H. M. O’Neill. U.S. Patent 8,110,222 (February 7, 2012).

“Metallization of Bacterial Cellulose for Electrical and Electronic Device Manufacture” B. R. Evans, H. M. O’Neill, J. Woodward, V. P. Malyvanh. U. S. Patent 7,955,759 (June 7, 2011).

"Method of forming an electrically conductive cellulose composite", B. R. Evans, H. M. O’Neill, J. Woodward. U. S. Patent 8,062,868 (November 22, 2011).

Publications

1. Liang, L., Wang, Y.-Y., Bhagia, S., Sethuraman, V., Yang, Z., Meng, X., Bryant, N., Petridis, L., Smith, J. C., Pingali, S. V., Gallego, N. C., Pu, Y., Evans, B. R., O’Neill, H. M., Davison, B. H., and Ragauskas, A. J. (2022) *ACS Sustainable Chemistry & Engineering* 10 (28), 9041-9052. DOI: 10.1021/acssuschemeng.2c00948,
2. Yang, Z., Foston, M.B., O’Neill, H., Urban, V.S., Ragauskas, A., Evans, B.R, Davison, B.H., and Pingali, S. V. “Structural Reorganization of Non-Cellulosic Polymers Observed in situ during Dilute Acid Pretreatment by Small Angle Neutron Scattering.” (2021) *ACS Sustainable Chemistry & Engineering* 10(1): 314-322. DChemical and Morphological Structure of Transgenic Switchgrass Organosolv Lignin Extracted by Ethanol, Tetrahydrofuran, and γ -Valerolactone Pretreatments
3. Astner, A. F., Hayes, D. G., Pingali, S. V., O’Neill, H. M., Littrell, K. C., Evans, B. R., Urban, V. S. (2020) “Effects of soil particles and convective transport on dispersion and aggregation of nanoplastics via small-angle neutron scattering (SANS) and ultra SANS (USANS).” (2020) *PLoS One*. **15(7)**: e0235893. doi: 10.1371/journal.pone.0235893.
4. Pingali, S. V., Smith, M. D., Liu, S. H., Rawal, T. B., Pu, Y., Shah, R., Evans, B. R., Urban, V. S., Davison, B. H., Cai, C. M., Ragauskas, A. J., O’Neill, H. M., Smith, J. C., Petridis, L. (2020) “Deconstruction of biomass enabled by local demixing of cosolvents at cellulose and lignin surfaces.” *Proc. Natl. Acad. Sci. U S A*. **117(29)**:16776-16781 (<https://doi.org/10.1073/pnas.1922883117>).
5. Yuan, Q., Mirzajani, H., Evans, B., Greenbaum, E., Wu, J. “A Disposable Bulk-Acoustic-Wave Microalga Trapping Device for Real-time Water Monitoring.” (2020) *Sensors and Actuators B: Chemical* **304**: 127388 (<https://doi.org/10.1016/j.snb.2019.127388>).
6. Evans, B. R., Pingali, S. V., Bhagia, S., O’Neill, H. M., Ragauskas, A. J. “Structural Studies of Deuterium-Labeled Switchgrass Biomass”, In *Understanding Lignocellulose: Synergistic Computational and Analytic Methods*, ACS Symposium Series 1338, Ed. Micholas Dean Smith, Chapter 2, 17-32, ACS Publications, Washington D.C. (2019). DOI: 10.1021/bk-2019-1338.ch002
7. Astner, A. F., Hayes, D. G., O’Neill, H., Evans, B. R., Pingali, S. V., Urban, V. S., Young, T. M. “Mechanical formation of micro- and nano-plastic materials for environmental studies in agricultural ecosystems.” (2019) *Science of the Total Environment* **685**: 1097-1106.
8. Evans, B. R., Foston, M., O’Neill, H. M., Reeves, D., Rempe, C., McGrath, K., Ragauskas, A. J., and Davison, B. H. “Production of Deuterated Biomass by Cultivation of *Lemna minor* (duckweed) in D₂O.” (2019) *Planta* **249**: 1465 - 1475.

9. Shah, R., Huan, S., Pingali, S. V., Sawada, D., Kim, S., Evans, B. R., Davison, B. H., O'Neill, H. "Hemicellulose-cellulose composites reveal differences in cellulose organization after dilute acid pretreatment." (2019) *Biomacromolecules* **20**(2): 893-903.
10. Bhagia, S., Meng, X., Evans, B. R., Dunlap, J. R., Bali, G., Chen, J., Reeves, K. S., Ho, H. C. H., Davison, B. H., and Ragauskas, A. J. "Ultrastructure and Enzymatic Hydrolysis of Deuterated Switchgrass." (2018) *Scientific Reports* 8(1): 13226.
11. Bhagia, S., Pu, Y., Evans, B. R., Davison, B. H., Ragauskas, A. J., "Hemicellulose characterization of deuterated switchgrass." (2018) *Bioresource Technology* **269**: 567 - 570.
12. O'Neill, H., Pingali, S. V., Petridis, L., He, J., Mamontov, E., Hong, L., Urban, V., Evans, B., Langan, P., Smith, J. C., and Davison, B. H. "Dynamics of water bound to crystalline cellulose", (2017) *Scientific Reports* 7(1): 11840 (doi: 10.1038/s41598-017-12035-w).
13. Meng, X., Evans, B. R., Yoo, C. G., Pu, Y., Davison, B. H., Ragauskas, A. J. "Effect of in Vivo Deuteration on Structure of Switchgrass Lignin." (2017) *ACS Sustainable Chemistry & Engineering* 5(9): 8004 – 8010.
14. Evans, B. R., Bali, G., Ragauskas, A., Shah, R., O'Neill, H., Howard, C., Lavenhouse, F., Ramirez, D., Weston, K., Ramey, K., Cangemi, V., Kinney, B., Partee, C., Ware, T., and Davison, B. "Alleopathic effects of exogenous phenylalanine: A comparison of four monocot species" (2017) *Planta* 246 (4): 673 – 685.
15. Yuan, Q., Wu, J., Greenbaum, E., Evans, B. R. "A resettable in-line particle concentrator using AC electrokinetics for distributed monitoring of microalgae in source waters." (2017) *Sensors and Actuators B: Chemical* 244: 265 – 274.
16. Pingali, S. V., Urban, V. S., Heller, W. T., McGaughey, J., O'Neill, H., Foston, M. B., Li, H., Wyman, C. E., Myles, D. A., Langan, P., Ragauskas, A., Davison, B., and Evans, B. R. "Understanding Multiscale Structural Changes During Dilute Acid Pretreatment of Switchgrass and Poplar." (2017) *ACS Sustainable Chemistry & Engineering* 5 (1): 426-435 (DOI: 10.1021/acssuschemeng.6b01803).
17. Lee, J. W., Hawkins, B., Kidder, M. K., Evans, B. R., Buchanan, A. C., Day, D. "Characterization of Biochars Produced from Peanut Hulls and Pine Wood with Different Pyrolysis Conditions." (2016) *Bioresources and Bioprocessing* 3(1): article 15.
18. O'Neill, H., Shah, R., Evans, B., He, J., Pingali, S. V., Chundawat, S. P. S., Jones, A. D., Langan, P., Davison, B. H., Urban, V., "Production of Bacterial Cellulose with Controlled Deuterium-Hydrogen Substitution for Neutron Scattering Studies" in *Methods in Enzymology: Volume 565 Isotope Labeling of Biomolecules*, ed. Kelman, Z., Volume 565, Chapter 6, Elsevier Ltd., Oxford, Great Britain (2015), pp. 123 – 146.
19. Evans, B. R., & Shah, R., "Development of Approaches for Deuterium Labeling in Plants", in *Methods in Enzymology: Volume 565 Isotope Labeling of Biomolecules*, ed. Kelman, Z., Chapter 10, Elsevier Ltd., Oxford, Great Britain (2015), pp. 213 - 243.
20. Lee, I., Evans, B. R., Bali, G., Foston, M., Ragauskas, A. J., "Silicon cantilever functionalization for

- cellulose-specific chemical force imaging of switchgrass.” (2015) *Analytical Methods* **7**: 4541 - 4545.
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 26. He, J., Pingali, S. V., Chundawat, S. P. S., Pack, A., Jones, A. D., Langan, P., Davison, B. H., Urban, V., Evans, B. R., O’Neill, H. “Controlled incorporation of deuterium into bacterial cellulose.” (2014) *Cellulose* **21**(2): 927- 936.
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 29. Lee, J. W., Buchanan, A. C. III, Evans, B. R., Kidder, M. (2012) Chapter 4. Oxygenation of biochar for enhanced cation exchange capacity. *In* *Advanced Biofuels and Bioproducts*, Springer Science + Business Media (New York).
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 32. Greenbaum, E., Evans, B. R., Chapter 10, “Synthetic Chromophores and Neural Stimulation of the

Visual System” In *Visual Prosthetics: Physiology, Bioengineering, Rehabilitation*, ed. G. Dagnelie, Springer Science + Business Media (2011).

33. Lee, J. W., Kidder, M., Evans, B. R., Paik, S., Buchanan III, A. C., Garten, C. T., Brown, R. C. “Characterization of biochars produced from cornstovers for soil amendment and carbon sequestration.” (2010) *Environmental Science and Technology* 44, 7970-7974.
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44. O’Neill, H. M., Evans, B. R., Greenbaum, E., "Photodependent hydrogen evolution by Photosystem I entrapped in hybrid organo-silicate glasses." (2005) Preprint, Fuels Division, 230th National Meeting of the American Chemical Society.
45. Evans, B. R., O’Neill, H. M. “Effect of surface attachment on synthesis of bacterial cellulose.” (2005) *Appl Biochem. Biotechnol.* **121-124**: 439-450.

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