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In Memoriam: Melissa M. Schultz

Edward T. Furlong, USGS; Christopher P. Higgins, Colorado School of Mines, Heiko Schoenfuss, St. Cloud State University, Paul Edmiston, College of Wooster, Sascha Usenko Baylor University, and Carin A. Huset, Minnesota Department of Public Health

Return to the Globe

SETAC and the environmental chemistry community suffered a tragic loss on Saturday, 7 February, when Melissa M. Schultz, 37, associate professor of chemistry at the College of Wooster died of injuries received in an automobile accident near her home in Wooster, Ohio.

Melissa excelled in many roles in her life and was a supportive and loving spouse to her husband Brett; a devoted mother to Lila, Teddy and Leo and a determined woman who had prevailed over breast cancer. We in SETAC knew and will remember her best as an outstanding scientist and educator, who made several substantive and original contributions to environmental organic chemistry. In her life as an academic, she thrived as a creative and dedicated professor who brought out the very best in her undergraduate students at The College of Wooster, enthusiastically training and inspiring the next generation of environmental scientists.

In her research, Melissa was creative, passionate and determined to work on problems of importance. As a graduate student working with Jennifer Field in the Department of Chemistry at Oregon State University, Melissa studied the role of wastewater treatment on the environmental chemistry and fate of poly- and perfluoroalkyl substances (PFASs). As part of this research, Melissa developed sensitive, selective and specific LC/MS/MS methods to determine aqueous film-forming, foam-derived fluorotelomer sulfonates and subsequently developed large-volume injection approaches to determine a wide range of individual PFASs in multiple PFAS classes in wastewater. Melissa's pioneering work in this area highlighted the importance of not just examining perfluorooctanoic acid (PFOA) and perfluorooctane sulfonate (PFOS) but also the polyfluorinated materials, such as the fluorotelomer sulfonates, that are also prevalent in the environment

Melissa's research assumed a new direction as a National Academy of Sciences postdoctoral associate, working with Ed Furlong at the USGS National Water Quality Laboratory. Melissa developed selective and sensitive LC/MS/MS methods for the determination of antidepressants in water, demonstrating that a range of commonly used antidepressants and antidepressant degradates were not removed during wastewater treatment and were discharge to aquatic environments. Melissa then applied and expanded this analytical technique to assess antidepressants in two intensively studied freshwater systems, demonstrating that antidepressants were ubiquitously present downstream of discharge in water, sediment and fish.

As Melissa transitioned from post-doctoral scholar to full-time academic professor at the College of Wooster, her interests expanded to include the fate and effects of antidepressants in aquatic ecosystems. She established strategic collaborations with toxicologist Heiko Schoenfuss and his students at St. Cloud State University, and several papers resulted, including one that demonstrated decreased startle response as a result of exposure to antidepressants. Additional exposure studies revealed anatomical and physiological changes in fathead minnows due to antidepressant exposure at environmentally relevant concentrations. She also expanded her research to encompass terrestrial systems, focusing her students' efforts the presence and effects of antidepressants in biosolids destined for land application. As her career and expertise evolved and expanded, Melissa collaborated with a range of fellow SETAC scientists to delineate the distribution and effects of urban wastewater derived environmental estrogens in aquatic ecosystems.

As substantial as these accomplishments were, their true importance was as a means to develop and nurture the next generation of environmental scientists, fully trained to continue to identify and assess the environmental fate and effects of contaminants. Melissa was fiercely committed to the educational paradigm of The College of Wooster of hands-on learning through mentored academic research. She supervised more than 25 undergraduate independent studies research projects, with some of these year-long projects leading to publications in top peer-reviewed publications. Melissa cared deeply about her students and had a lasting affect upon their lives and careers. Her egalitarian approach to education placed all students on equal footing, both in terms of how she challenged them to succeed and how she mentored them through the scientific process. She emphasized hands-on experiences usually reserved for graduate students, and she encouraged her students to participate in her field studies and to attend and present at scientific meetings. She set an example for her students by including her young children in her college activities, who frequently accompanied her to her office, lab and classroom. Her students revered her for her unwavering commitment to their educational development and recently planted a memorial tree for her at The College of Wooster.

To a chemist, "catalyst" has a very specific meaning. However, there is an equally important second definition, that of a person who precipitates change through the force of their personality or effort. In this sense, Melissa was a catalyst. She was very committed to her research and to effect change in the lives of her students and in society. She was as much a catalyst in the lives of her friends and colleagues. Melissa had a knack for bringing people together both inside and outside of the laboratory, and she was frequently the driving force behind activities and events that fostered community. As a student and post doc, she initiated holiday dinners, birthday celebrations, baby showers, trips to baseball games and even a ski trip. Always active, she was the pitcher on the Oregon State Chemistry Department's softball team, a constant presence at the campus fitness center, and an avid runner. Melissa's evident passion for education and science was equally reflected in her personal relationships, where she was a tireless friend and confidant and was unfailingly generous with her time. In 2014, Melissa courageously and successfully fought breast cancer, and during that difficult time, her strength of character was most evident. Day to day, Melissa reflected and amplified the love and support she received back to her husband, children, students and friends.

To honor and memorialize Melissa, a session on "Antidepressants and Perfluorochemicals: Divergent Chemistries, Convergent Environmental Persistence and Effects" has been organized in her name for the SETAC North America 36th Annual Meeting, which will take place from 1–5 November in Salt Lake City, Utah,. Melissa's work married cutting-edge contributions in both these research domains with a dedication to advancing the research and education experiences of undergraduate scientists, particularly women, at the College of Wooster. As a scientist and as a person, Melissa was of the highest caliber and we are fortunate to have known her.

Formal obituaries for Melissa can be found at the following links:
http://www.legacy.com/obituaries/twincities/obituary.aspx?pid=174114543
http://www.wooster.edu/news/releases/2015/february/obituary-melissaschultz/

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Supporting the development of principles and practices for protecting, enhancing and managing sustainable environmental quality and ecosystem integrity.

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