

S. Kay Obendorf

Web Bio

Information

Biography

Biographical Statement

S. Kay Obendorf Ph.D. (physical chemistry from Cornell University, 1976) is a Professor of Fiber Science in the College of Human Ecology at Cornell University. Her research and teaching interests are in the area of fiber science, chemistry of fibers and films and protective clothing. She was the department chair for the Department of Textiles and Apparel (now Fiber Science & Apparel Design) from 1985-95 and is now serving as the Senior Associate Dean for the College of Human Ecology (1997-present). In 2010, she received the Olney Medal for achievement in textile chemistry from the American Associate of Textile Chemists and Colorists, and in 2013 she was elected as an Honorary Member of The Fiber Society. In the field of fiber science, analytical electron microscopy and spectroscopy are used to evaluate the surface chemistry of fibers and films as related to the performance of these materials. Projects are in areas of protective clothing and air quality. Specific research projects are selected to address issues of health and safety, preservation of the environment, and basic science and technology of polymers and fibers.

Teaching

Teaching and Advising Statement

I serve as the Advising Coordinator for the Biology and Society major in the College of Human Ecology.

Professional

Current Professional Activities

- Fiber Society
- American Chemical Society
- American Association of Textile Chemists and Colorists

Research

Current Research Activities

Research seeks to limit the dermal and biological exposure of agricultural,

horticultural, and lawn care workers to pesticides, military and chemical personnel to toxins, and medical care personnel and first responders/receivers through protective clothing. Novel membranes with engineered pore structures and self decontaminating functionality are developed for use in protective clothing using microporous polymer membranes, metal oxide nanoparticles, metal organic frameworks (MOF), polyoxometalates, and electrospun fibrous membranes.

Extension

Education

Education

- Ph.D. 1976 - Cornell University Physical Chemistry
- M.S. 1974 - Cornell University Physical Chemistry
- M.S. 1963 - University of Illinois Textiles
- B.S. 1962 - Kansas State University Clothing and Textiles

Courses

Websites

Related Websites

<http://www.human.cornell.edu/bio.cfm?netid=sko3>
<http://www.umes.edu/nc170/>

Administration

Administrative Responsibilities

Senior Associate Dean

Advising Coordinator for the Biology and Society Major in the College of Human Ecology

Publications

Selected Publications

Ahn C, Zeng X, Li L, Obendorf SK, Thermal degradation of natural dyes and their analysis using HPLC-DAD-MS, Fashion and Textiles 1:22 pp 13 (2014) DOI: 10.1186/s40691-014-0022-5.

Chan MA and Obendorf SK. Surface Modification of Microporous Polypropylene Membrane by UV-initiated Grafting with Poly(Ethylene Glycol) Diacrylate Fibers

and Polymers, 15: 2032-2039 (2014).

Ahn C, Zeng X, Obendorf SK, HPLC-DAD-MS Analysis of major natural dyes with the application of H₂O₂/UV treatment as a way to simulate burial degradation of textiles, *Textile Research Journal*, 85:238-250 (2015) DOI: 10.1177/0040517514545258.

Dixit V, Cho BK, Obendorf, SK and Tewari J, Identification of household spores using mid infrared spectroscopy, *Spectrochimica Acta Part A: Molecular and Biomolecular Spectroscopy*, 123: 490–496 (2014).

Woo, DJ and Obendorf SK, MgO-embedded fibre-based substrate as an effective sorbent for toxic organophosphates, *RSC Adv.*, 4: 15727 – 15735 (2014).

Lange LE, Ochanda FO, Obendorf SK, and Hinestroza JP, Development of Polyacrylonitrile-metal organic framework (MOF) composite fibers designed to remove chemical warfare agent simulants from a solution, *Fibers and Polymers*, 15: 200-207 (2014).

Ahn C, Zeng X, Obendorf SK, Simultaneous Analysis of the Coloring Compounds in Indigo, Phellodendron bark, and Madder Dye Using HPLC-DAD-MS, *J Korean Society Clothing and Textiles*, 37 (6):827-836 (2013) <http://dx.doi.org/10.5850/JKSCT.2013.37.6.000>.

Obendorf SK and Spero EF, Destructive Adsorption for Enhanced Chemical Protection, *ASTM Performance of Protective Clothing and Equipment: 9th Volume, Emerging Issues and Technologies*, Ed. A M Shepherd, ASTM International, West Conshohocken, PA, ASTM STP 1544: 435-449 (2012).

Woo DJ, Hansen N, Joo YL, and Obendorf SK, Photocatalytic Self-Detoxification by Coaxially Electrospun Nanofiber Containing TiO₂Nanoparticles, *Textile Research Journal* 82(18):1920-1927 (2012).

Ahn C, Zeng X, and Obendorf SK, Analysis of Dye Extracted from Phellodendron Bark and Its Identification in Archaeological Textiles, *Textile Research Journal*, 82 (16): 1645–1658 (2012).

Lee S and Obendorf SK, Statistical Modeling of Water Vapor Transport through Woven Fabrics, *Textile Research Journal*, 82(3):211-219 (2012).

Lange LE and Obendorf SK, Effect of Plasma Etching on Destructive Adsorption Properties of Polypropylene Fibers Containing Magnesium Oxide Nanoparticles, *Archive of Environmental Contamination and Toxicology*, 62:185–194 (2012).

Obendorf, S. K. "Improving the functionality of clothing through novel pesticide protection/Novel pesticide protective clothing", *Functional textiles for improved performance, protection and health, Part 2: Functional textiles for improved medical and health purposes*, eds. Ning Pan and Gang Sun, Woodhead Publishing, Ltd, Cambridge, UK (2011) pp. 434-461.