

Curriculum Vitae

S. KAY OBENDORF

Fiber Science
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AREA OF ACADEMIC EXPERTISE: Fiber Chemistry

In the field of fiber science, analytical electron microscopy and spectroscopy are used to evaluate surface chemistry of fibers and films as related to the performance of these materials. Research projects are selected to address issues of health and safety, protective clothing, preservation of the environment, and basic science and technology of polymers and fibers.

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.

PROFESSIONAL APPOINTMENTS

2016-present Professor Emerita, Department of Fiber Science & Apparel Design, College of Human Ecology, Cornell University, Ithaca, NY.
1985-2016 Professor, Department of Fiber Science & Apparel Design, Cornell University, Ithaca, NY.
2007-2015 Senior Associate Dean, College of Human Ecology, Cornell University, Ithaca, NY.
1997-2006 Associate Dean for Research, College of Human Ecology, Cornell University, Ithaca NY.

- 1985-1995 Chair, Department of Textiles and Apparel, Cornell University, Ithaca, NY.
- 1978-1985 Associate Professor, Department of Design and Environmental Analysis, Cornell University, Ithaca, NY.
- 1975-1978 Postdoctoral Associate, Section of Biochemistry, Molecular and Cell Biology, Cornell University, Ithaca, NY.
- 1973-1975 Research Assistant, Department of Chemistry, Cornell University, Ithaca, NY.
- 1972-1973 Visiting Researcher, Department of Molecular Structure, Institute for Cancer Research, Philadelphia, PA.
- 1971 Lecturer and graduate student, Department of Design and Environmental Analysis and Graduate Field of Chemistry, Cornell University, Ithaca, NY.
- 1966-1971 Assistant Professor, Department of Design and Environmental Analysis and Department of Textiles and Clothing, Cornell University, Ithaca, NY.
- 1965-1966 Laboratory Technician, Textile Science, University of California, Davis, CA.
- 1963-1965 Instructor, Department of Clothing and Textiles, Washington State University, Pullman, WA.

PUBLICATIONS

- Allen NE, Obendorf SK, and Fan J, Polyoxometalate (POM) Grafted Grooved Nanofibrous Membranes for Improved Self-Decontamination, *RSC Adv.*, 6:85985-85993 (2016) DOI: 10.1039/C6RA04456E.
- Han Y and Obendorf SK, Reactivity and reusability of immobilized zinc oxide nanoparticles in fibers on methyl parathion decontamination. *Textile Research Journal* 86:339-349 (2016) DOI: 10.1177/0123456789123456.
- Lange LE, Obendorf SK, Functionalization of Cotton Fiber by Partial Etherification and Self-Assembly of Polyoxometalate Encapsulated in $\text{Cu}_3(\text{BTC})_2$ Metal–Organic Framework, *ACS Appl. Mater. Interfaces* 7:3974–3980 (2015) DOI.org/10.1021/am506510q
- Lange LE, Obendorf SK, Degradation Studies of Methyl Parathion when in CuBTC Metal Organic Framework, *Journal of Environmental Chemical Engineering*, 3:541–547(2015).
- Ahn C, Zeng X, Obendorf SK, HPLC-DAD-MS Analysis of major natural dyes with the application of H_2O_2 /UV treatment as a way to simulate burial degradation of textiles, *Textile Research Journal*, 85:238-250 (2015) DOI: 10.1177/0040517514545258.

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- Chan MA and S. Kay Obendorf SK. Surface Modification of Microporous Polypropylene Membrane by UV-initiated Grafting with Poly(Ethylene Glycol) Diacrylate Fibers and Polymers, 15: 2032-2039 (2014).
- Woo, DJ and Obendorf SK, MgO-embedded fibre-based substrate as an effective sorbent for toxic organophosphates, *RSC Adv.*, 4 (30): 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(2): 200-207 (2014).
- 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).
- 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 TiO₂ Nanoparticles, *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).
- Dixit, V. and Obendorf S.K., Chapter: Saponin Use as Antimicrobial in Fibrous and Consumer Products, in *Saponins: Properties, Application and Health Benefits*, Nova Science Publishers, Inc., Hauppauge, NY (2011) p. 1-13.

- 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.
- Dong Jin Woo, Nathan Hansen, Yong Lak Joo, S. Kay Obendorf, Morphological effects on self-decontamination of coaxial nanofiber containing TiO₂ and MgO, *Proceedings of the International Conference on Intelligent Textiles (ICIT2010) Seoul, Korea, June 16-18, 2010*, p.94-95 (2010) www.icit2010.org ISBN 978-89-92265-14-0.
- Vivechana Dixit, Jagdish Tewari, and S. Kay Obendorf Fungal Growth Inhibition of Regenerated Cellulose Nanofibrous Membranes Containing Quillaja Saponin, *Archive of Environmental Contamination and Toxicology* 59:417-423 (2010).
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- S. Kay Obendorf, *Personal Protection through Nanotechnology*, NANO magazine, Issue 17, April, pp. 014-017 (2010).
- V. Dixit, J.C. Tewari, and S.Kay Obendorf, Identification of degraded products of aldicarb due to the catalytic behavior of titanium dioxide/polyacrylnitrile nanofiber, *Journal of Chromatography A*, **1216**:6394–6399 (2009)
- S. Kay Obendorf, Vivechana Dixit, and Dong Jin Woo, *Microscopy Study of Laundry Fabric Softener on Cotton Fabric*, *Journal of Surfactants and Detergents*, **12**:225-230 (2009).
- S. Kay Obendorf, Haiqing Liu, Kuitian Tan, Michael J. Leonard, Timothy J. Young and Michael J. Incorvia, *Adsorption of Aroma Chemicals on Cotton Fabric in Different Aqueous Environments*, *Journal of Surfactants and Detergents*, **12**:43–58 (2009).
- Seungsin Lee and S. Kay Obendorf, *Use of Electrospun Nanofiber Web for Protective Textile Materials as Barriers to Liquid Penetration*, *Textile Research Journal*, **77**:696-702 (2007).
- Tan, K. and Obendorf, S.K., *Fabrication and evaluation of electrospun nanofibrous antimicrobial nylon 6 membranes*, *Journal of Membrane Science*, **305**:287-298 (2007).
- Obendorf, S.K., Kim, J., and Kuniz, R., *Measurement of Odor Development Due to Bacterial Action on Antimicrobial Polyester Fabrics*, *AATCC Review*, **7(7)**:35-40 (2007).
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Circle of Excellence, National Textile Center (2005)
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Man-Made Fiber Award (1986)
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