Exponent®
Engineering & Scientific Consulting

Erin Kirkpatrick, Ph.D.

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Professional Profile

Dr. Kirkpatrick has extensive experience in the testing and analysis of both traditional and novel fibers, yarns, fabrics, and fiber-reinforced composites. She routinely conducts failure analysis investigations on textile products, and is skilled and knowledgeable in textile production and characterization techniques.

Dr. Kirkpatrick advises clients on composition and performance aspects of technical and performance textiles, including architectural fabrics, industrial webs, slings, and ropes, personal protective equipment, performance apparel, and sustainability. She has analyzed the components of fillers, pigments, stabilizers, and resin architecture on the performance of formulated products, including reinforced materials. Dr. Kirkpatrick provides consulting services, including, but not limited to, materials characterization, assessment of structure-property relationships, process improvement, testing, product design and development, and failure analysis. Dr. Kirkpatrick is also a skilled practitioner of Agile project management and Stage-Gate product development.

Dr. Kirkpatrick's research efforts have focused on compression garments, novel functional fibers, and labeling laws and requirements for specialty textiles. She has also done extensive work on the development of stimuli-responsive nanofibers for integration into traditional garments, biomaterials, and microfluidic platforms. She is skilled in a variety of microscopy techniques, including optical and polarized microscopy, confocal microscopy and scanning electron microscopy. Prior to joining Exponent, Dr. Kirkpatrick completed her doctorate in Fiber Science from Cornell University.

Academic Credentials & Professional Honors

Ph.D., Fiber Science, Cornell University, 2011

M.Sc., Fiber Science, Cornell University, 2008

B.Sc., Materials Science and Engineering, Alfred University, 2006

Robert W. Work Award for Outstanding Graduate Student, Cornell University, 2011

Finalist in the Fiber Society Student Paper Competition, 2010

American Chemical Society Grant, 2010

Featured Image on the Cornell University Life Science Core Laboratory website, 2009

Winner in the CCMR Microscopy Image Contest, 2009

Tau Beta Bi, 2004

Keramos Honor Society, 2004

Licenses and Certifications

Certified ScrumMaster (CSM)

Prior Experience

Graduate Research Assistant, Cornell University, 2006-2011

Intern, Corning, Inc., 2005-2006

Research Assistant, Alfred University, 2004

Professional Affiliations

American Association of Textile Chemists and Colorists

Association of the Nonwoven Fabrics Industry

American Society for Testing and Materials

Industrial Fabrics Association International

Patents

U.S. Patent 043608: Polymeric materials incorporating core-shell silica nanoparticles, 2009 (Herz E, Hendrick E, Frey M, Wiesner U).

Publications

Beck, K, Rodgers, J, Anderson, D, Beckham, H, Cintron, M, ElShafei, A, Freeman, H, Kirkpatrick, E, Leucht, S, Parachuru, K., Sun, G, Szymczyk, M, Watson, J, Worthen, A. Analytical Methods for a Textile Laboratory 4th Edition. AATCC 2023.

D. Lee, E. Kirkpatrick, E. Fitzharris, A. Levitt, M. Posson, R. Siskey, M. Roberts. Standardizing Barrier Face Covering Testing. Textile World 2021.

Lee D, Kirkpatrick E, Gladman AS, Ripatti D. Microplastics and the Textile Industry.Textile World 2020.

Lee D, Kirkpatrick E, Gladman AS, Fitzharris E, Posson M, Roberts, M. Textiles and the Coronavirus: Understanding the regulations and critical characteristics or personal protective equipment. Textile World 2020.

Ellis, B., Kirkpatrick, E., Kothari Phan, S., Imler, S., & Beckham, H. Measuring compression caused by garments. International Journal of Clothing Science and Technology 2018.

Hendrick E, Frey M. Increasing surface hydrophilicity in poly(lactic acid) electrospun fibers by addition of PLA-b-PEG co-polymers. Journal of Engineered Fibers and Fabrics 2014; 9:153-164.

Hendrick E, Frey M, Herz E, Wiesner U. Cellulose acetate fibers with fluorescing nanoparticles for anti-counterfeiting and pH-sensing applications. Journal of Engineered Fibers and Fabrics 2010; 5:21-30.

DeRosa ME, DeRosa RL, Noni LM, Hendrick E. Phase separation of poly(N-isopropylacrylamide) solutions and gels using a near infrared fiber laser. Journal of Applied Polymer Science 2007; 105:2083-2090.

Presentations

Walker, M, Dosch I, Kirkpatrick E. It's Not What You Wear – But How You Wear It: A Novel 3D Scanning Approach to Understanding Clothing Microclimate, Body Positioning, and Thermal Comfort. Oral Presentation. Advanced Textiles Expo, Orlando, FL, 2023.

Smith, S, Kirkpatrick E. What you need to know about microplastics. Oral Presentation. IFAI International Conference, Charlotte, NC, 2022.

Kirkpatrick E. Breaking the rules of textile care labeling: what matters and what really matters. Oral presentation, AATCC International Conference, Greensboro, SC, 2018.

Kirkpatrick E. Labeling Laws: challenges for innovative and specialty textiles. Oral presentation, IFAI Advanced Textiles Conference, New Orleans, LA, 2017.

Kirkpatrick E. Challenges in textile labeling. Oral presentation, AATCC International Conference, Wilmington, NC, 2017.

Kirkpatrick E. Compression testing for performance apparel. Oral presentation, IFAI Advanced Textiles Conference, Anaheim, CA, 2015.

Kirkpatrick E. Measuring compression in compression garments. Oral presentation, AATCC International Conference, Savannah, GA, 2015.

Hendrick E. Introduction to nonwoven fabrics: From toilet paper to microfluidics. Oral presentation, Techtextil North American Symposium, Atlanta, GA, 2012.

Hendrick E, Wiesner U, Frey M. Stimuli-responsive electrospun fibers integrated into a prototype fluidic device. Poster presentation, Cornell Center for Materials Research Symposium, Ithaca, NY, 2011.

Hendrick E, Buttaro L, Wiesner U, Frey M. Stimuli-responsive electrospun fibers: the influence of fiber diameter and substrate. Oral and Poster presentation, Fiber Society Conference, Salt Lake City, UT, 2010.

Hendrick E, Buttaro L, Iyer S, Wiesner U, Frey M. Fiber based biohazard sensor assemblies. Poster presentation, National Textile Center Annual Conference, Greenville, SC, 2010.

Hendrick E, Buttaro L, Wiesner U, Frey M. Stimuli-responsive electrospun fibers. Poster presentation, Cornell Center for Materials Research Symposium, Ithaca, NY, 2010.

Hendrick E, Buttaro L, Iyer S, Wiesner U, Frey M. Stimuli-responsive electrospun fibers: the influence of fiber diameter and substrate. Oral presentation, American Chemical Society Conference, San Francisco, CA, 2010.

Hendrick E, Buttaro L, Iyer S, Wiesner U, Frey M. Fiber based biohazard sensor assemblies. Poster presentation, National Textile Center Annual Conference, Greenville, SC, 2009.

Hendrick E, Herz E, Wiesner U, Frey M. Cellulose acetate fibers with fluorescing nanoparticles for anti-counterfeit applications. Poster presentation, Cornell Center for Materials Research Symposium, Ithaca, NY, 2008.

Hendrick E, Herz E, Wiesner U, Frey M. Cellulose acetate fibers with fluorescing nanoparticles for anti-counterfeit applications. Oral presentation, Fiber Society Conference, Mulhouse, France, 2008.