# Christopher K. Henry

## Personal Information


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## Education

May 2019 — Ph.D. in Chemical Engineering
**Drexel University**, Philadelphia, PA
Thesis: "Methods for Controlling Crystalline Structure of Gel-Spun UHMWPE Fibers"
Advisors: Dr. Nicolas Alvarez, Dr. Giuseppe Palmese
Gpa: 3.85 | Anticipated Date and Thesis Title

May 2014 — Bachelor of Science, Chemical Engineering with a Minor in Physics
**Kansas State University**, Manhattan, KS
Gpa: 3.39

## Work Experience

*Current* / 2014–2019 — Research Assistant
**Drexel University**
Independant investigation of the gel-spinning process and it's effects on the structure and properties of UHMWPE fibers. Designed, constructed, and programmed a novel spinning apparatus for controlled production of UHMWPE fibers . Proved that Weissenberg number can be used to describe the gel-spinning process. Utilized Small and Wide angle x-ray scattering techniques, an Instron Universal Testing Machine, and various thermo-mechanical equipment to characterize and test the spun fibers.

2011–2014 — Math and Science Tutor
**Kansas State University**
Taught small groups of diverse students. Courses covered were *Algebra, Geometry, Calculus 1, Physics 1, Physics 2.* Multiple courses were tutored concurrently. Gained experience in working with students with learning disabilities.

Summer 2013 — Undergraduate Researcher
**Akron University**
Fabricated flexible meso-porous carbon thin films for supercapacitor applications. Films were made using Dip and Blade coating methods. Cyclic Voltametry was used to characterize electrical properties. Selected to present results at Case Western REU symposium.

Summer 2012 — Undergraduate Researcher
**Colorado School of Mines**
Synthesized poly 3-hexylthiophene polymer brushes for organic photovoltaic devices. Synthesized monomer, and deposited silane on silicon substrate. Polymerized via RAFT. Characterized products using both NMR and FTIR.

## Summary of skills

Fields of Interest: Polymer Physics, High-Performace Materials, Polymer Processing, Rheology, Ballistic Materials, Composite Manufacturing, X-Ray Crystallography, Thermomechanical Analysis, Fracture Mechanics, Polymer Chemistry, Process Design

Instruments: Small Angle X-ray Scattering, Wide Angle X-ray Scattering, Universal Testing Machine, Differential Scanning Calorimetry, Thermogravimetric Analysis, Dynamic Mechanical Analysis, Fourier-transform Infrared Spectroscopy, Nuclear Magnetic Resonance, Optical Microscopy

Software: SolidWorks, MATLAB, Origin, COMSOL, Datasqueeze, ImageJ, Inkscape, Photoshop, LateX, Microsoft Office

## Publications

**Henry, C. K.**, Palmese, G. R., Alvarez, N. J., *The Evolution of Crystalline Structure during Gel-Spinning of Polyethylene Fibers.* (*In Preparation*)

**Henry, C. K.**, Palmese, G. R., Alvarez, N. J., *The Evolution of Crystalline Structure during Post-Drawing of Polyethylene Fibers.* (*In Preparation*)

**Henry, C. K.**, Palmese, G. R., Alvarez, N. J., *Structural Defects Limit the Ultimate Draw-ability of UHMWPE Fibers* (*In Preparation*)

Vergara, J. H., La Scala, J. J., **Henry, C. K.**, Sadler, J. M., Yadav, S. K., Palmese, G. R. (2017). *The effect of pendant alkyl chain length on the barrier properties of epoxy/amine crosslinked networks.* Polymer, 132, 133–142.

Xue, J., **Henry, C. K.**, Lee, J., Vogt, B. D. (2014). *Large area, flexible ordered mesoporous carbon films from soft templating on polymer substrates.* RSC Advances, 4(8), 3675–3683. https://doi.org/10.1039/c3ra44723e

## Conference Presentations

**Henry, C. K.**, Palmese, G. R., Alvarez, N. J., *Impact of molecular weight distribution on crystalline morphology of gel-spun polyethylene fibers*, American Chemical Society: Colloids and Surfaces Conference, State College, PA, 2018

**Henry, C. K.**, Palmese, G. R., Alvarez, N. J., *The Evolution and Importance of Crystalline Structure during Spinning and Drawing of Polyethylene Fibers*, American Institute of Chemical Engineers Annual Conference, Minneapolis, MN, 2017

**Henry, C. K.**, Palmese, G. R., Alvarez, N. J., *Modulus increase and crystallization evolution during spinning and post drawing of UHMWPE fibers*, American Chemical Society: Colloids and Surfaces Conference, New York, NY, 2017

**Henry, C. K.**, Palmese, G. R., Alvarez, N. J., *Modulus increase and crystallization evolution during spinning and post drawing of UHMWPE fibers*, Society for the Advancement of Materials and Process Engineering Conference, Seattle, WA, 2017

**Henry, C. K.**, Palmese, G. R., Alvarez, N. J., *Modulus increase and crystallization evolution during spinning and post drawing of UHMWPE fibers*, MACH Conference, Annapolis, MD, 2017

**Henry, C. K.**, Palmese, G. R., Alvarez, N. J., *Novel Processing Apparatus for Control of Multi-Scale Morphology of UHMWPE Fibers*, Society for the Advancement of Materials and Process Engineering Conference, Long Beach, CA, 2016

**Henry, C. K.**, Palmese, G. R., Alvarez, N. J., *Novel Processing Apparatus for Control of Multi-Scale Morphology to Strengthen UHMWPE Fibers*, MACH Conference, Annapolis, MD, 2016