

Dr. Helan Xu
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Textiles, Merchandising & Fashion Design
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Education

Ph D, Department of Textiles, Merchandising and Fashion Design, University of Nebraska-Lincoln, 2014.
Dissertation Title: Regenerated keratin fibers from chicken feathers for textile and biomedical applications

MS, College of Textiles, Donghua University, 2009.
Major: Textile Science & Engineering
Dissertation Title: Influence of absorbed moisture on anti-felting property of wool treated by atmospheric pressure plasma

BS, College of Textiles, Donghua University, 2006.
Major: Textile Science & Engineering

Academic, Government, Military and Professional Positions

Academic - Post-Secondary

University of Nebraska-Lincoln. (February 1, 2014 - Present).

Professional Memberships

American Chemical Society. (April 1, 2010 - Present).

American Association of Textile Colorists and Chemists. (August 30, 2008 - Present).

TEACHING

Directed Student Learning

Doctorate (committee member)

Doctorate (committee member), "Research Assistant," Textiles, Merchandising & Fashion Design. (May 2016 - Present).
Advised: Bingnan Mu

Doctorate (committee member), "Research Assistant," Textiles, Merchandising & Fashion Design.
Advised: Wei Li

Doctorate (committee member), "graduate assistant," Textiles, Merchandising & Fashion Design. (April 17, 2014 - Present).
Advised: Zhuanzhuan Ma

Masters (committee member)

Masters (committee member), "graduate assistant," Textiles, Merchandising & Fashion Design. (December 18, 2014 - Present).
Advised: Madhuri Palakurthi

Masters (committee member), "Graduate assistant," Textiles, Merchandising & Fashion Design.
(November 2014).
Advised: Yiling Huang

Masters (committee member), "graduate assistant," Textiles, Merchandising & Fashion Design.
(October 20, 2013 - Present).
Advised: Hazal Canisag

RESEARCH

Published Intellectual Contributions

Books

Yang, Y., Yu, J., Xu, H., Sun, B. (in press). *Porous lightweight composites reinforced with fibrous structures*. New York, NY: Springer.

Yang, Y., Xu, H., Yu, X. (2014). Lightweight Materials from Biopolymers and Biofibers. In Yiqi Yang, Helan Xu, Xin Yu (Ed.), *Lightweight Materials from Biopolymers and Biofibers* (vol. ACS Symposium Series 1175). Washington, DC: American Chemical Society.

Book Chapters

Xu, H., Yang, Y. (in press). Porous structures from fibrous proteins for biomedical applications. *Porous lightweight composites reinforced with fibrous structures*. New York, NY: Springer.

Xu, H., Yang, Y. (2014). Chapter 7. 3D electrospun fibrous structures from biopolymers. In Yiqi Yang, Helan Xu, Xin Yu (Ed.), *Lightweight Materials from Biopolymers and Biofibers* (pp. 103-126).

Refereed Journal Articles

Pan, G., Zhao, Y., Xu, H., Ma, B., Yang, Y. (2016). Acoustical and mechanical properties of thermoplastic composites from discarded carpets. *Composites Part B: Engineering*, 99, 98-105.

Zhao, Y., Xu, H., Mu, B., Xu, L., Yang, Y. (2016). Biodegradable soy protein films with controllable water solubility and enhanced mechanical properties via graft polymerization. *Polymer Degradation and Stability*, 133, 75-84.

Pan, G., Zhao, Y., Xu, H., Hou, X., Yang, Y. (2016). Compression molded composites from discarded nylon 6/nylon 6, 6 carpets for sustainable industries. *Journal of Cleaner Production*, 117, 212-220.

Zhao, Y., Pan, G., Xu, H., Yang, Y. (2016). Compressionmolded composites from waste polypropylene carpets. *Polymer Composites*.

Song, K., Xu, H., Xie, K., Yang, Y. (2016). Effects of chemical structures of polycarboxylic acids on molecular and performance manipulation of hair keratin. *RSC Advances*, 6(63), 58594-58603.

Zhao, Y., Xu, H., Mu, B., Xu, L., Hogan, R., Yang, Y. (2016). Functions of soymeal compositions in textile sizing. *Industrial Crops and Products*, 89, 455-464.

- Xu, H., Yang, M., Hou, X., Li, W., Su, X., Yang, Y. (2016). Industrial trial of high-quality all green sizes composed of soy-derived protein and glycerol. *Journal of Cleaner Production*, 135(1), 1-8.
- Zhao, Y., Zhao, Y., Xu, H., Yang, Y. (2015). A Sustainable Slashing Industry Using Biodegradable Sizes from Modified Soy Protein To Replace Petro-Based Poly (Vinyl Alcohol). *Environmental science & technology*, 49(4), 2391-2397.
- Mu, B., Xu, H., Yang, Y. (2015). Accelerated hydrolysis of substituted cellulose for potential biofuel production: Kinetic study and modeling. *Bioresource Technology*, 196, 332-338.
- Ma, Z., Pan, G., Xu, H., Huang, Y., Yang, Y. (2015). Cellulosic fibers with high aspect ratio from cornhusks via controlled swelling and alkaline penetration. *Carbohydrate polymers*, 124, 50-56.
- Xu, H., Shen, L., Xu, L., Yang, Y. (2015). Controlled delivery of hollow corn protein nanoparticles via non-toxic crosslinking: in vivo and drug loading study. *Biomedical microdevices*, 17(1), 1-8.
- Reddy, N., Shi, Z., Xu, H., Yang, Y. (2015). Development of wheat glutenin nanoparticles and their biodistribution in mice. *Journal of Biomedical Materials Research Part A*, 103(5), 1653-1658.
- Xu, H., Shen, L., Xu, L., Yang, Y. (2015). Low-temperature crosslinking of proteins using non-toxic citric acid in neutral aqueous medium: Mechanism and kinetic study. *Industrial Crops and Products*, 74, 234-240.
- Xu, H., Yang, Y. (2015). Nanoparticles derived from plant proteins for controlled release and targeted delivery of therapeutics. *Nanomedicine*, 10(13), 2001-2004.
- Shen, L., Xu, H., Kong, L., Yang, Y. (2015). Non-Toxic Crosslinking of Starch Using Polycarboxylic Acids: Kinetic Study and Quantitative Correlation of Mechanical Properties and Crosslinking Degrees. *Journal of Polymers and the Environment*, 23(4), 588-594.
- Liu, P., Xu, H., Mi, X., Xu, L., Yang, Y. (2015). Oxidized Sucrose: A Potent and Biocompatible Crosslinker for ThreeDimensional Fibrous Protein Scaffolds. *Macromolecular Materials and Engineering*, 300(4), 414-422.
- Xu, H., Liu, P., Mi, X., Xu, L., Yang, Y. (2015). Potent and regularizable crosslinking of ultrafine fibrous protein scaffolds for tissue engineering using a cytocompatible disaccharide derivative. *Journal of Materials Chemistry B*, 3(17), 3609-3616.
- Shen, L., Xu, H., Yang, Y. (2015). Quantitative Correlation Between CrossLinking Degrees and Mechanical Properties of Protein Films Modified With Polycarboxylic Acids. *Macromolecular Materials and Engineering*, 300(11), 1133-1140.
- Xu, H., Canisag, H., Mu, B., Yang, Y. (2015). Robust and Flexible Films from 100% Starch Cross-Linked by Biobased Disaccharide Derivative. *ACS Sustainable Chemistry & Engineering*, 3(11), 2631-2639.
- Xu, H., Yang, Y. (2014). Controlled De-Cross-Linking and Disentanglement of Feather Keratin for Fiber Preparation via a Novel Process. *ACS Sustainable Chemistry & Engineering*, 2(6), 1404-1410.

- Zhao, Y., Jiang, Q., Xu, H., Reddy, N., Xu, L., Yang, Y. (2014). Cytocompatible and water-stable camelina protein films for tissue engineering. *Journal of Biomedical Materials Research Part B: Applied Biomaterials*, 102(4), 729–736.
- Reddy, N., Shi, Z., Temme, L., Xu, H., Xu, L., Hou, X., Yang, Y. (2014). Development and characterization of thermoplastic films from sorghum distillers dried grains grafted with various methacrylates. *Journal of agricultural and food chemistry*, 62(11), 2406–2411.
- Xu, H., Ma, Z., Yang, Y. (2014). Dissolution and regeneration of wool via controlled disintegration and disentanglement of highly crosslinked keratin. *Journal of Materials Science*, 49(21), 7513–7521.
- Xu, H., Cai, S., Sellers, A., Yang, Y. (2014). Electrospun ultrafine fibrous wheat glutenin scaffolds with three-dimensionally random organization and water stability for soft tissue engineering. *Journal of biotechnology*, 184, 179-186.
- Hou, X., Xu, H., Shi, Z., Ge, M., Chen, L., Cao, X., Yang, Y. (2014). Hydrothermal pretreatment for the preparation of wool powders. *Journal of Applied Polymer Science*, 131(8), 40173 (10 pgs).
- Xu, H., Cai, S., Sellers, A., Yang, Y. (2014). Intrinsically water-stable electrospun three-dimensional ultrafine fibrous soy protein scaffolds for soft tissue engineering using adipose derived mesenchymal stem cells. *RSC Advances*, 4(30), 15451–15457.
- Xu, H., Shi, Z., Reddy, N., Yang, Y. (2014). Intrinsically Water-Stable Keratin Nanoparticles and Their in Vivo Biodistribution for Targeted Delivery. *Journal of agricultural and food chemistry*, 62(37), 9145–9150.
- Hou, X., Sun, F., Yan, D., Xu, H., Dong, Z., Li, Q., Yang, Y. (2014). Preparation of lightweight polypropylene composites reinforced by cotton stalk fibers from combined steam flash-explosion and alkaline treatment. *Journal of Cleaner Production*, 83, 454–462.
- Jiang, Q., Xu, H., Cai, S., Yang, Y. (2014). Ultrafine fibrous gelatin scaffolds with deep cell infiltration mimicking 3D ECMs for soft tissue repair. *Journal of Materials Science: Materials in Medicine*, 25(7), 1789-1800.
- Xu, H., Cai, S., Xu, L., Yang, Y. (2014). Water-stable three-dimensional ultrafine fibrous scaffolds from keratin for cartilage tissue engineering. *Langmuir*, 30(28), 8461–8470.

Presentations Published in Proceedings

- Xu, H. (Presenter & Author), Zhao, Y. (Author Only), Yang, Y. (Author Only), AATCC 2015 International Conference, "Textile size from soyprotein for high speed weaving," American Association of Chemists and Colorists, Savannah, GA. (March 2015).
- Xu, H., Ma, Z., Yang, Y., 248th ACS National Meeting & Exposition, "Controlled in vivo Biodistribution of Zein Nanoparticles with Crosslinking," American Chemical Society, San Francisco, CA. (August 2014).
- Ma, Z. (Presenter & Author), Pan, G., Huang, Y., Xu, H., Yang, Y., 248th ACS National Meeting & Exposition, "Tetramethylammonium Hydroxide Treated Cornhusk Fibers for Potential Industrial Applications," American Chemical Society, San Francisco, CA. (August 2014).

Presentations Given

- Xu, H. (Presenter & Author), Liu, P., Mi, X., Xu, L., Yang, Y., 10th Corn Utilization and Technology Conference, "POTENT AND CONTROLLABLE CROSSLINKING OF ULTRAFINE FIBERS FROM ZEIN CROSSLINKED WITH DISACCHARIDE DERIVATIVE," National Corn Growers Association, St. Louis, MO. (June 2016).
- Xu, H. (Presenter & Author), Liu, P., Mi, X., Xu, L., Yang, Y., 10th Corn Utilization and Technology Conference, "THREE DIMENSIONAL FIBROUS CORN PROTEIN SCAFFOLDS WITH CITRIC ACID CROSSLINKING FOR BIOMEDICAL APPLICATIONS," National Corn Growers Association, St. Louis, MO. (June 2016).
- Zhao, Y. (Author Only), Xu, H. (Author Only), Zhao, Y. (Author Only), Xu, L. (Author Only), Yang, Y. (Presenter & Author), The Fiber Society's Fall 2015 Meeting and Technical Conference, "Soyprotein based biochemicals to replace PVA for high speed weaving," the Fiber Society, Raleigh, North Carolina. (October 2015).
- Zhao, Y. (Author Only), Xu, H., Zhao, Y. (Author Only), Xu, L. (Author Only), Yang, Y. (Presenter & Author), 250th ACS National Meeting & Exposition, "Biodegradable Slashing Agents from Soy Protein for Textile Industry," American Chemical Society, Boston. (August 2015).
- Zhao, Y. (Author Only), Xu, H. (Author Only), Zhao, Y. (Author Only), Yang, Y. (Presenter & Author), Fibers & Thermoplastics Technical Advisory Panel (TAP) meeting, "Evaluate the use of soy proteins as warp sizing agent," the United Soybean Board, Charlotte, NC. (August 2015).
- Xu, H. (Author Only), Mi, X. (Author Only), Yang, Y. (Presenter & Author), The 13th International Wool Research Conference (IWRC-13) and AATCC Sustainability Symposium, "Three-dimensional electrospun ultrafine fibers from keratin," American Association of Chemists and Colorists, Hangzhou, China. (June 2015).
- Zhao, Y. (Author Only), Xu, H. (Author Only), Zhao, Y. (Author Only), Yang, Y. (Presenter & Author), Symposium on Textile Chemicals: Risk Assessment and Green Alternatives, "Protein based sizing for a more sustainable textile industry," Shanghai, China. (May 2015).
- Xu, H., Mi, X. (Author Only), Yang, Y. (Presenter & Author), The Fiber Society's Spring 2015 Conference (FS Spring 2015) in conjunction with the 2015 International Conference on Advanced Fibers and Polymer Materials (ICAFPM 2015 Functional Fibers and Textiles), "Regenerated keratin fibers and their potential applications in textile and biomedical industries," Fiber Society, Shanghai, China. (May 2015).
- Xu, H. (Presenter & Author), Zhao, Y. (Author Only), Yang, Y. (Author Only), AATCC 2015 International Conference, "Textile size from soyprotein for high speed weaving," American Association of Chemists and Colorists, Savannah, GA. (March 2015).
- Ferrari, E. (Presenter & Author), Xu, H., Yang, Y., Carlson, M. A., Oupicky, D., 12th International Nanomedicine and Drug Delivery Symposium (NanoDDS'14), "Development of dichloroacetate biomaterials for prevention of postoperative adhesions," NanoDDS and University of North Carolina Chapel Hill, Chapel Hill, NC. (October 2014).
- Xu, H., Ma, Z., Yang, Y., 248th ACS National Meeting & Exposition, "Controlled in vivo Biodistribution of Zein Nanoparticles with Crosslinking," American Chemical Society, San Francisco, CA. (August 2014).
- Ma, Z. (Presenter & Author), Pan, G., Huang, Y., Xu, H., Yang, Y., 248th ACS National Meeting & Exposition, "Tetramethylammonium Hydroxide Treated Cornhusk Fibers for Potential Industrial Applications," American Chemical Society, San Francisco, CA. (August 2014).

Ma, Z., Huang, Y. (Presenter & Author), Pan, G. (Author Only), Xu, H., Yang, Y., 9th Corn Utilization and Technology Conference, "Chemical & biological treated cornhusk fibers for potential textile applications," National Corn Growers Association, Louisville, Kentucky. (June 2014).

Xu, H., Reddy, N., Ma, Z. (Presenter & Author), Yang, Y., 9th Corn Utilization and Technology Conference, "Potential of zein nanoparticles for biomedical applications: in vitro and in vivo studies," National Corn Growers Association, Louisville, Kentucky. (June 2014).

Contracts, Grants and Sponsored Research

Contract

Yang, Y. (Principal Investigator), Yang, Y. (Investigator), Xu, H. (Investigator), "reactive dyeing cotton solvent sys," Sponsored by Cotton Incorporated, Industry.

Yang, Y. (Principal Investigator), Yang, Y. (Investigator), Xu, H. (Investigator), "waterless cotton dyeing," Sponsored by Cotton Incorporated, Industry.

Grant

Xu, H. (Principal Investigator), "2015 AATCC International Conference," Sponsored by Internal.

Xu, H. (Principal Investigator), "Electrospinning of nano-/submicron fibers from sorghum protein for enhanced bioavailability of veterinary antibiotics," Sponsored by Internal.

Yang, Y. (Principal Investigator), Yang, Y. (Investigator), Xu, H. (Investigator), "Low-discharge reactive dyeing," Sponsored by Wal-Mart Foundation, Associations/Foundation.

Yang, Y. (Principal Investigator), Yang, Y. (Investigator), Xu, H. (Investigator), "Low-discharge reactive dyeing," Sponsored by Wal-Mart Foundation, Associations/Foundation.

Yang, Y. (Principal Investigator), Xu, H. (Investigator), Yang, Y. (Investigator), "Low-cost vehicles from-sorghum," Sponsored by Dept of Agriculture-AFRI, Federal.

Yang, Y. (Principal Investigator), Yang, Y. (Investigator), Xu, H. (Investigator), "Recycling of nylon in waste carpets," Sponsored by Ne Environmental Trust, State Agencies.

Yang, Y. (Principal Investigator), Yang, Y. (Investigator), Xu, H. (Investigator), "Zero discharge cotton dyeing," Sponsored by Wal-Mart Foundation, Associations/Foundation.

Yang, Y. (Principal Investigator), Xu, H. (Investigator), Yang, Y. (Investigator), "nanoparticles from plant proteins," Sponsored by Dept of Agriculture-NIFA, Federal.

Yang, Y. (Principal Investigator), Yang, Y. (Investigator), Xu, H. (Investigator), "Crosslinked sorghum fibers," Sponsored by Dept of Agriculture-AFRI, Federal.

Yang, Y. (Principal Investigator), Xu, H. (Investigator), Yang, Y. (Investigator), "Composites from Waste Textiles," Sponsored by Environmental Rsch & Educ Fdn, Associations/Foundation.

Yang, Y. (Principal Investigator), Yang, Y. (Investigator), Xu, H. (Investigator), "Low-cost carbon fiber from proteins," Sponsored by Dept of Energy, Federal.

SERVICE

University Service

Committee Chair, TMFD safety committee. (August 2016 - Present).