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Professional Experience

Education

Ph.D., Fiber and Polymer Science | North Carolina State University anticipated Dec 2019
Dissertation: Effects of filter structural properties on particle capture and dust holding capacity

- Effect of nonwoven structural properties on filtration properties
- Characterization of nonwoven structure change during the continuous filtration process
- Effect of nonwoven structural gradient and electrostatic charging on filtration performance

Advisor: Eunkyoung Shim, Ph.D.
M.S., Textile Engineering | North Carolina State University May 2016
Thesis: Comparison between Conventional Ring Spinning and Compact Spinning
B.E., Nonwoven Materials and Engineering | Donghua University, China June 2015
Senior Design: Unidirectional Water-Penetration Spunlaced Nonwovens

Related Experience

Team-based product development project: Wipe that decreases hair frizz without soiling the user's hands

- Worked on this project in a multi-cultural team with another three students respectively from U.S., India, and Vietnam. Went through product ideation, nonwoven trial design, product testing, cost model analysis, market estimation, business plan writing, and final presentation.

Technology evaluation and commercialization project: Flushable wet toilet paper made with 100% natural fiber

- Authorized by Dr. Lucia at NC State University, evaluated his technology invention and further chose the flushable wet toilet paper as the product idea. After 10+ interviews with machinery manufacturer, product suppliers, end users, and university professors, advice towards product commercialization was given. Dr. Lucia is currently working with a paper making company to carry out consequent product development.

Team-based Six Sigma project: Zone based shipping for self-checkout lanes (Toshiba USA)

- Applied data analysis to the logistics cost of self-checkout lane product according to lean six sigma. Estimated the freight charges from NC plant to various destinations in U.S. via data visualization, enabled billing before shipment and solved the problem of long billing cycle that previously varied from weeks to months.

Patent search, review and writing: Unidirectional water-penetration spunlaced nonwovens (CN103938368A)

- Independently wrote the invention patent manuscript based on senior design experiments and submitted for patent application after the review and revise done by the advisor.

Related Skills

Nonwoven Production Trial Design: carding, melt-blown; needle punching, hydroentangling, through-air bonding
Nonwoven Testing & Characterization: Filtration properties: air permeability, filtration efficiency (TSI 3160, TSI 8130), dynamic filtration efficiency, pressure drop and dust holding capacity (Palas MFP 3000); Fluid management: pore size (PMI), hydrostatic pressure, liquid wicking; Basis properties: fiber diameter, fiber orientation, fabric hand (TSA), etc.

Certificates and Awards

Technology Entrepreneurship and Commercialization Certificate (Jenkins MBA, NC State University)
Nonwoven Science and Technology Certificate (The Nonwovens Institute, NC State University)
Provost's Doctoral Fellowship (2016-2017, NC State University)
R&D student grant (2019 Nonwoven Innovation Academy, EDANA)

Publications

1. Green and Scalable Fabrication of Nonwoven Composites Featured with Anisotropic Water-penetration (submitted to ACS Sustainable Chemistry & Engineering, **under minor revision**, 1st author)
2. Structure Characterization of Fibrous Pre-Filter Loaded with Solid Particles during the Clogging Process using X-ray Micro-Computed Tomography (to be submitted, 1st author)
3. Studying the Effects of Melt-blown Nonwoven Filter Structures on Filtration and Particle Loading Behavior Using both Experimental and X-Ray Micro-Computed Tomographic Methods (to be submitted, 1st author)