

# BUSRA OZDEMIR

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## EDUCATION

- North Carolina State University**, Raleigh, North Carolina Exp. Dec 2024
  - Ph.D. Fiber and Polymer Science, GPA: 3.93/4.00*
- Istanbul Technical University**, Istanbul, Turkey
  - Bachelor of Science in Industrial Engineering, GPA: 3.67 | Dean's Honor List* 2016-2020
  - Bachelor of Science in Textile Engineering, GPA: 3.46 | Ranked 1<sup>st</sup> in Class | Dean's High Honor List* 2013-2018

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## SKILLS

- Material Characterization: SEM, XRD, Macro-Nano CT, DSC, TGA, Optical microscopy
- Data Analysis: JMP, R, Minitab, SQL, Python, Microsoft Power BI
- Graphic Illustration: Origin, Inkscape, JMP, MATLAB, Tecplot, MS Office Suite
- Lean Six Sigma: DMAIC, Kaizen, SPC, SIPOC, FMEA, MSA, Control Charts, Process Analysis, DOE, PM
- Polymer Science and Engineering: Polymer Structure-Process-Performance Relationships, Nonwovens and Textile, Electrostatics and Dielectrics, Flexible Sensors, Wearable Technology, Composites, Nanotechnology, Filtration

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## WORK EXPERIENCE

- The Nonwovens Institute, Research Assistant** – Raleigh, NC August 2021 – Present
  - Specialized in melt blown technology to enhance aerosol filtration efficiency, breathability, and comfort by investigating the correlation between electrostatic charging process parameters and filter media performance under nanoparticle conditions. Applied advanced sensors and optimization techniques to drive improvements through targeted process optimizations and structural modifications
  - Developed a comprehensive methodology for evaluating the aging impact on composite filter media, addressing critical limitations related to temperature and humidity to preserve structural morphology and performance.
  - Improved filter media efficiency through the exploration of additives, optimization of process parameters, and refinement of composite designs, uncovering the relationship between polymer structure, processing parameters, and filter media performance.
  - Played a pivotal role in assessing and correlating the effectiveness of various electrostatic charge-measurement devices with filter media efficiency, conducting in-depth analyses of charging behavior and material structure to enhance filtration performance.
  - Developed a MATLAB based model to estimate the reliable characterization of particle penetration through the filter media, providing a precise tool for filter evaluation.
- A101.com, Data Analyst**– Istanbul, TR December 2019 - June 2021
  - Collaborated cross-functionally with E-commerce and Customer Relations teams to lead impactful Segmentation and Basket analysis projects by utilizing SQL and Python to uncover actionable customer insights, driving informed decision-making.
  - Conducted market segmentation and customer profiling, delivering targeted strategies, and proactively resolved inventory management irregularities for streamlined operations and optimized inventory levels.
- Istanbul Technical University, Research Assistant** – Istanbul, TR June 2018 - September 2019
  - Conducted Research on HCV Eradication Model and Cost Analysis:** Created a MATLAB-based Susceptible Infection and Recovery model to project WHO's 2030 global HCV eradication goal for Turkey. Conducted a cost analysis of innovative treatments for Turkish PWID, revealing that optimized strategies could reduce treatment costs. Identified Viekirax Exviera and Mavyret as the most cost-effective options. Highlighted the potential to meet WHO targets by 2030 in Turkey through increased treatment coverage.
  - Innovative Work with Silver Nanowire-Coated Wool Fabrics:** Pioneered the synthesis of silver nanowires and their innovative application through drop-casting onto knitted wool fabrics, unveiling the fabric's versatility as a flexible electrode and capacitor. Achieved groundbreaking results, with 20 wt% AgNW exhibiting nearly 200 times superior electrical conductivity compared to conventional 20 wt% steel fiber yarn, unlocking new horizons for wearable electronics.

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## PUBLICATIONS

- Gurarslan A., Ozdemir B., Bayat I., Yelten M., Kurt G. **Silver nanowire coated knitted wool fabrics for wearable electronic applications.** *Journal of Engineered Fibers and Fabrics.* Published: June 2019
- Yaylali E., Ozdemir B., Lacin N., Ceyil S. **Modelling Hepatitis C infection among people who inject drugs in Turkey: Is HCV Elimination Possible?** Published: September 2019

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## CERTIFICATIONS

- Lean Six Sigma Black Belt and Examination Training**, North Carolina State University May 2023
- The Nonwovens Certificate**, North Carolina State University Dec 2023