Mike Keating

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 github | linkedin

EXPERIENCE

Becton Dickinson and Company   Apr 2024 – Present

Engineer II – Digital Engineering, Simulation & Testing   *Durham, NC*

- Performed mechanical testing and material characterization of rigid plastics, elastomers, and metals to generate high-quality data supporting physics-based simulation, material selection, and root-cause analysis across BD product lines, including medical devices such as syringes, infusion pumps, and nonwovens wound dressings.

- Designed and executed statistical studies (e.g., ANOVA, regression) to quantify material property differences across varying resin formulations, colorants, and sterilization conditions to inform global BD product teams.

- Collaborated with internal injection molding department for creation of high-quality standardized test specimens (ASTM D638, ISO 20753) including review of viscosity studies, capacity planning, and resin procurement.

- Utilized custom testing configurations according to each material's form and context of use, including various load cells, grips, platens, and custom fixtures.

- Led redesign and implementation of materials data management solution using Ansys Granta MI, integrating backend schema overhaul, SQL Server deployment, and IT compliance to create a single-source-of-truth for over 1,500 mechanical tests.

- Created Python-based GUI applications to automate data transfer, test archiving, and notification workflows, streamlining collaboration across distributed testing teams.

The Nonwovens Institute   Aug 2022 – Apr 2024

Research Specialist – Process Development   *Raleigh, NC*

- Oversaw R&D pilot lab for filament spinning of elasto-ester polymers, managing extrusion and testing workflows on pilot-scale equipment (filament extrusion line, winders, finish applicators, material testing equipment).

- Coordinated supply and supported evaluation of raw materials and spinning finishes for yarn product development, supporting multiple circular knit and quality improvement trials.

- Developed lab tracking systems to monitor inventory, maintenance, and R&D sample creation, supporting transition toward GMP/ISO 9001 standards.

- Performed fiber quality testing (denier, tenacity, elongation) per ASTM D3822 standard, ensuring data integrity for process validation and material comparisons.

- Applied ANOVA in JMP to attribute tensile property variation to lot-to-lot polymer differences, improving understanding of raw material consistency in filament production.

- Scripted a user-friendly plot overlay tool in Python using Tkinter and pandas, allowing stakeholders to compare filament stress–strain data across DOE treatments.

- Developed semi-automated ETL pipeline using R and Google Apps Script to streamline lab data ingestion and automate generation of quality control charts.

Unifi Manufacturing, LLC   May 2022 – Aug 2022

Dye Lab Intern   *Reidsville, NC*

- Conducted yarn dyeing trials to evaluate the necessity of specific cleaning programs, increasing dye machine availability by 10%.

- Analyzed color difference and cost tradeoffs between new light-fast dye formulations and existing colorways, creating Excel-based tools to aid colorists in formulation decisions.

- Gained hands-on experience in color development, shade matching, textile chemistry formulation, and quality assurance within a production environment.

EDUCATION

Master of Industrial Engineering   Aug 2022 – Aug 2025

North Carolina State University   *Raleigh, NC*
Graduate coursework focused on analytical models, machine learning, and materials science.
GPA: 3.9/4.0

Bachelor of Science - Polymer and Color Chemistry (ACS Certified)   Jan 2020 – Dec 2022

North Carolina State University   *Raleigh, NC*
Summa Cum Laude, WCOT Dean's Award
GPA: 4.0/4.0

SKILLS

Textiles & Materials	Polymer Development	Fiber Spinning (Melt/Filament)	Mechanical Testing (Instron)	Color Science
Programming & Data	Python	R	MATLAB/Kornucopia	JMP	Machine Learning (scikit-learn, PyTorch)	Minitab
Tools & Systems	SolidWorks	Abaqus	Ansys Granta MI	Bluehill Universal	Microsoft SQL Server
Other	Technical Communication	Lab Automation	Statistical Analysis	Process Development