

SUMMARY

Polymer materials engineer with proven track record of product launches, formulation development and industrial scale-up experience. Chemical formulation experience comprises two-part polyurethanes, silicones, epoxies and acrylates. Analytical testing skills include mechanical, thermal, and chemical instruments. Experienced user of DOE and FMEA methodologies for engineering projects.

EDUCATION

University of Texas at Austin, Austin, TX

2020 - Present

M.S. in Computer Science

The University of Akron, Akron, OH

M.S. in Polymer Engineering

Carnegie Mellon University, Pittsburgh, PA

B.S. in Materials Science and Engineering

TECHNICAL SKILLS

Instruments: TGA, DMA, DSC, FTIR, SEM, XRD, AFM, GPC, EDS, Mechanical / Impact Testing, Internal / Double Planetary Mixing, Compression Molding, Rheometry, Ram/Profile/Screw Extrusion, High Shear Disperser, microCT, Additive Manufacturing

General: FMEA, JHA, HazMat, Wet Lab, Continuous Improvement, Lab/Pilot/Commercial Scaleup, Contract / Toll Manufacturing Relations

Applications/Languages: JMP, MS Office, QAD ERP, Minitab, SQL, Python

WORK EXPERIENCE

OPT Industries, Cambridge, MA

June 2020 – August 2021

Senior Polymer Developer

- Led materials development initiatives for a new proprietary 3D printing company spun off from MIT Media Lab
- Filed several patents covering novel chemistries for 3D printing
- Managed a team of scientists in developing 3D printing resins for high temperature, fatigue resistant and color matching applications
- Managed supplier relationships for successful scaleup and commercialization of in-house resin products

Align Technologies, San Jose, CA

July 2019 – February 2020

Senior 3D Process Engineer, Materials

- Served as lead engineer for additive manufacturing process development and transfer on Prefabricated Attachments project along with the Direct Fabrication Aligners project
- Performed scale-up activities across a disparate fleet of 3D printers
- Initiated product requirement studies including shelf life, pot life, batch-to-batch variability and supplier qualification in preparation for limited market release

Carbon, Inc., Redwood City, CA

July 2015 - July 2019

Senior Process Engineer, Materials

- Developer of Adidas Futurecraft 4D polymer resin platform utilizing Design of Experiments to rapidly screen and optimize material formulations for two-part polyurethanes
- Developer of UMA 90, a photopolymer with improved toughness and EH&S characteristics
- Formulated DPR 10, a photopolymer for Dental markets and a method for fine-tuning photocuring properties for extremely high accuracy specifications
- Conducted Design of Experiments to study effect of raw material variability on printability, and accelerate materials formulation work
- Installed Carbon's pilot scale mixing capabilities and performed equipment scoping activities
- Developed a constant color formulation theory for adidas Futurecraft 4D, reducing batch-to-batch color variability to below human perception thresholds

- Scaled resin production from 15kg per batch up to 5000kg per batch and trained technicians on manufacturing best practices
- Saved over \$600K by salvaging non-compliant product caused by CMO error
- Performed cycle time analysis on Futurecraft 4D production processes to reduce C/T, labor and derived necessary equipment specifications
- Actively discussed potential scale-up issues with Materials team, and coordinated with Quality to implement document control on critical process procedures, SOPs, and FMEAs
- Implemented 5S as an Area Lead for Carbon's main laboratory

Laird – Performance Materials, Cleveland, OH

Aug 2013-July 2015

Process Engineer, Performance Materials Division

- Developed EcE118, a MIL-DTL Type-A silver/copper conductive silicone for military markets
- Formulated Form-In-Place silicone products to improve shipping stability in Asian markets
- Launched Non-Conductive-Elastomer products: NcE240, NcE241, NcE242 and NcE245
- Successfully scaled-up manufacturing capabilities of Form-In-Place products in Belgium and trained technicians in production, quality control and shipping procedures
- Reduced batch variability in Thermal product lines by tightening raw material specifications using Design Of Experiments
- Coordinated research activities in a multinational corporation comprising teams from China, Czech Republic, Belgium, and Mexico