**Carlos Serratos**

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**SKILLS**

**Analytical Techniques:** Polymer characterization and testing (DSC, TGA, DMA, SEM/TEM, Optical Microscopy, Spectroscopic Ellipsometry, X-ray Diffraction, Tensile strength testing), Dielectric properties characterization

**Processing Techniques:** Polymer processing (solution casting, compression molding, film lamination, screw extrusion), 3D Printing, Laser Printing

**Software:** MATLAB, COMSOL, Aspen (ChE process simulator), ImageJ, SOLIDWORKS, Microsoft Office

**EXPERIENCE**

**Guardian Glass – Science and Technology Center** Carleton, MI

*Associate Research Engineer: Guardian Dynamic Shade Team*April 2021-October 2023

• Led polymer film and adhesive selection for electrically-automated interior shades.

• Produced, designed and conducted tests for durability and long-term performance of glass window prototypes.

• Directed down-selection process for hot melt adhesives and polyurethane sealant for window shade and units.

• Conducted scaling-up activities of polymer film-based prototypes to determine challenges of large-scale production.

• Communicated testing results to team members which guided the decision-making process for prototype development.

**Birck Nanotechnology Center** West Lafayette, IN *Graduate Student Researcher: Cakmak Lab Group* September 2017-September 2019

• Studied morphological and mechanical properties of thin polymer films for capacitor applications. • Created polymer films using solution casting processing for improved electrical and mechanical properties.

• Trained incoming students and technicians on custom lab devices which eased their transition into the lab environment. •Conducted installation, maintenance and calibration of custom lab-built film drying and data collection machinery.

**University of Michigan – MSE Department**  Ann Arbor, MI

*Research Lab Assistant: Shtein Lab:* September 2016-June 2017

• Designed kirigami-inspired structures to uncover tensile strength correlation.

• Developed laser-printed polystyrene structures based on mathematical theory.

• Arranged collaborative weekly meetings for cooperating lab groups to present updates and exchange ideas.

**University of Michigan – MSE Department** Ann Arbor, MI

*Research Lab Assistant: Green Research Group*  June 2014-December 2015

• Designed PBDTTT-C OFETs and processed with supercritical CO2 treatment to enhance polymer alignment.

• Quantified electron mobility of OFETs to determine improvements of supercritical CO2 treatments.

• Investigated the aging rate of Star-Shaped Polystyrene (SPS) using differential scanning calorimetry (DSC) and spectroscopic ellipsometry.

**LEADERSHIP**

**Purdue University**

*Teaching Assistant – Microstructural Characterization Techniques* January 2020-May 2020

• Assessed 45 students’ progress in class through assignment gradings.

• Provided biweekly office hours for students to foster intellect for class success.

**University of Michigan**

*M-STEM Academies – Program Assistant* May 2017-August 2017

• Organized events in an enrichment summer program for 125 incoming students.

• Collaborated with student organizations across campus to introduce students to campus opportunities.

**Languages:**

Fluent in Spanish - Bicultural

**EDUCATION**

**Purdue University – West Lafayette, IN** May 2020

*Master of Science in Engineering in Materials Engineering* **GPA: 3.2**

**University of Michigan – Ann Arbor, MI** May 2017 *Bachelor of Science in Engineering in Chemical Engineering – Summa Cum Laude* **GPA: 3.4**