

Jeffrey Tsang

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Education

Northeastern University | Boston, Ma

Expected 2027

Candidate for Bachelor of Science in Mechanical Engineering

Relevant Coursework: Dynamics, Mechanics of Materials, Thermodynamics, Material Science, Statics, Differential Equations and Linear Algebra, Statics, Calculus II & III, Physics II, Chemistry

Skills

Software: Minitab, SolidWorks, AutoCAD, Origin, Adobe Suite, Microsoft Office, Google Suite

Research and Development: ASTM Procedures, Technical Drawings, Data Analysis, Data Recording, Testing

Laboratory/Testing: Instron 34SC-5 (Tensile Testing), Admet eXpert 7600 (Coefficient of Friction & Cyclical Wear Test), Bruker Hysitron Ti Premier 980 (Micro-scratch & Nano-indent Testing), Anton Paar TRB³ (Cyclical Wear Test)

Languages: English, Cantonese, Mandarin

Work Experience

Applied Plastics | R&D Test Engineer Co-op | Norwood, Ma

Jan 2025 – June 2025

- Executed ASTM-based R&D testing on thin film polymer coatings in an ISO13485:2016 facility, generating qualification data for major medical device OEMs.
- Created preventative maintenance protocols for customer specific test, throughout fixture updates, to ensure consistency in data by identifying component life spans during use, increasing accuracy by 100%.
- Trained and certified 3 technicians on R&D test operations, ensuring accurate data collection, execution, and reporting.
- Built the baseline of product performance metrics for PTFE Natural and similar developmental product lines.
- Tested multiple PTFE based coatings used as pull wire from early-stage development to process qualification.
- Characterized coating (PTFE, PAI, PEEK) metrics vs. market competitors utilizing lab equipment. Non-normal distribution methods were used with a 95% confidence interval, and findings were reported to the R&D team consisting of management from the engineering department.
- Designed an applicator fixture, for nano-indent and micro-scratch testing, to improve sample positioning repeatability by ± 0.5 nm and improving efficiency by 33%.
- Conducted a correlation study between a customer specific wear test and the Anton Paar TRB³ (ASTM G133.) linking customer specifications to TRB³ failure conditions.
- Automated durability test comparisons by integrating customer and in-house data with a Python script, reducing processing time from 3 hours to 1 minute.
- Adopted a new method for micro-scratch applications to quantify the recovery of viscoelastic materials, such as PTFE experiencing a linearly scaling applied load, by scanning the topology of the sample using the indenter tip with a constant load.

Cold Spray Research Lab | Undergraduate Research Assistant | Boston, Ma

Sep 2024 – Dec 2024

- Defined quasi-static and high strain rate testing parameters for PDMS by referencing relevant literature, selecting aspect ratios and strain rates up to $5.5 \cdot 10^3 \text{ s}^{-1}$ to ensure valid stress-strain data.
- Engineered a 3-piece PDMS mold in SolidWorks, from V1 to V3 designs to address removability, surface roughness, and pressure regulation, enabling compression testing on a Split-Hopkinson Pressure Bar and Instron system.
- Procured and prepared necessary lab materials to formulate PDMS samples including mold materials and formulation utilities.

Projects

Data Retention Tool

Jan 2024 – April 2024

- Developed a board game that met design constraints and needs of local school children to teach the benefits of including green spaces in civic planning by incorporating a sims style city builder game.
- Created a remote system that could record data inputs to update game score and change difficulty settings using buttons and dials, with a SparkFun kit and C++.
- Designed and assembled an ergonomic case for the system using SolidWorks, laser cutting, and 3D printing.

Sailboat Building

Sep 2019 – May 2020

- Built a life size sailboat, intended to seat 2 people comfortably, across a cohort of 50