



Mingxi Zheng, M.S., P.E.
Materials/Mechanical Engineer

SUMMARY

Mingxi is a Licensed Professional Mechanical Engineer in the state of California with expertise in materials development and mechanical engineering across a broad range of industries. With a specialty in metallurgy, fracture mechanics and failure analysis, she has experience in materials testing and process development in the aerospace and manufacturing industries. Prior to joining Berkeley Engineering And Research, Inc., she held engineering roles at SpaceX, Virgin Orbit, and other early-stage startups, where she worked on integrating Mil, ASTM, ISO, and NASA specifications into the product development process during transitions from R&D to production. In addition to knowledge of traditional materials and processing methods, she has developed characterization methods for additive manufacturing of metallic and polymeric materials. Her skills take a big picture approach, centering on the intersection of materials science and mechanical design, among other fields.

Projects have included reusability and fatigue analysis on structural components of the Falcon 9 launch vehicle at SpaceX, manufacturing process development of novel textile materials, process optimization for Direct Energy Deposition (DED) additive manufacturing at Virgin Orbit, and design/failure analysis of heavy machinery, mechanical fixtures, battery technology, and consumer products.

EDUCATION

M.S. Materials Science and Engineering, University of California, Berkeley
B.S. Materials Science and Engineering, University of California, Berkeley

SELECTED INDUSTRY EXPERINCES AND EXPERTISE

- Additive manufacturing
- Astro & Aerospace
- Computer Aided Design
- Consumer products
- Corrosion
- Fatigue
- Fracture mechanics
- Failure analysis
- Failure modes and effects analysis
- GD&T
- Manufacturing processes
- Metallurgy & metallography
- Microscopy
- New material development
- Polymeric materials
- R&D to Production Transitions

PROFESSIONAL AFFILIATIONS

American Society of Mechanical Engineers

Registered Engineer In Training, California, ID: 169488

Registered Professional Engineer License, Mechanical, California, ID: 40879

PROFESSIONAL EXPERIENCE

2016 – Present

Engineer, Berkeley Engineering and Research, Inc.

Lead inspections of evidence and documents for a variety of mechanical and material related cases, including the following industries: oil and gas, industrial equipment, chemical, and consumer products. Author technical reports and white papers.

2018 – 2019

Materials Engineer, Carbon Inc., Redwood City, CA

Responsible for the characterization of Carbon's custom 3D printing resins and custom additive CLIP process for applications in various industries, including aerospace, automotive, dental, industrial, medical, and sporting goods. Developed the material testing standard procedures to evaluate Carbon's hardware, software, and materials for environmental stability, aging, and mechanical behavior under various conditions. Implementation of failure analysis processes and material quality systems. Provided design consultation to customers from a variety of industries: medical, consumer product, and automotive.

2017 – 2018

Advanced Materials Development Engineer/Quality Engineer, Virgin Galactic, Long Beach, CA

Acted as company's subject matter expert in metallurgy and metallography. Owned the development of a materials development roadmap to characterize materials for additive manufacturing on the DMG Mori Lasertec 4300 3D and its application in rocket launch. Designed materials sample CAD models to meet ASTM characterization requirements. Reviewed drawings and performed vehicle quality inspections. Led weekly quality reviews.

2015 – 2016

Materials and Process Engineer, SpaceX, Hawthorne, CA

Supported return to flight efforts as a primary failure analysis specialist for structures following the 2015 anomaly. Developed a fracture and fatigue FEA tool for aluminum and steel alloys for use in reliability analysis. Standardized and executed novel test plans to define effects of coatings on fatigue. Drove corrective actions to completion with improved documentation. Developed new materials allowables in conjunction with NASA.

2016

Materials Science and Engineering Instructor, University of California, Berkeley

Instructor for the Department's Characterization lab course: MSE 104, "Materials Characterization". Conducted lectures on characterization methods and led lab sections on SEM/EDS, X-Ray diffraction, and TEM. Responsibilities also included grading homework, exams, and lab reports, and holding office hours.

2014

Fiber R&D Engineer (Co-op), Bolt Threads, Emeryville, CA

Prototyping using the company's sustainable silk polymer alternative. Developed and executed custom testing methods for characterization. Designed experiments to determine the relationship between process changes to final material properties.

2011-2012

R&D Intern, Nitto Denko Technical Co., Oceanside, CA

Analytical testing and evaluation of OLED devices for medical applications. Optimized processes to fabricate OLED devices for improved performance.

RESEARCH

2016

“Fatigue and Fracture and high strength Ni-based bulk metallic glass”, Master’s thesis with Prof. Robert Ritchie

- S/N Fatigue testing and fracture toughness testing of bulk metallic glasses.
- SEM analysis of fracture surfaces to determine failure mechanisms of different alloy formulations.

2012-2014

Undergraduate Research Assistant, UC Berkeley, Labs of Prof Luke Lee and Robert Ritchie

- Researched methods to improve photolithography process for use in lab-on-a-chip medical devices under the supervision of the lab of Prof. Luke Lee.
- Researched processing methods to create composite ceramic/metallic materials to mimic the properties of nacre under the supervision of the lab of Prof. Robert Ritchie.

PATENTS

“BONDED ASSEMBLIES HAVING LOCKING ORIFICES AND RELATED METHODS”,
Mingxi Zheng. US 20200276770 A1, February 26, 2020.