

# RUDY TOEPFER

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## Education

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### University of Washington

September 2021 – June 2023

*Bachelor of Science in Materials Science and Engineering*

*Seattle, Washington*

- Concentration: Materials Computation and Data Science

## Experience

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### Janicki Industries

June 2024 – Present

*Quality Engineer*

*Hamilton, Washington*

### Center for Research in Education and Simulation Technology (CREST)

January 2022 – May 2024

*Materials Science*

*Seattle, Washington*

- \* Prepared and tested human tissue, hydrogels, and synthetic materials using ASTM standards and lab developed procedures to develop design requirements for simulator devices that mimic human tissue.
- \* Diligently recorded lab notes and test results, contributed data to the Human Tissue Property Database (HTDB), and communicated results with coworkers and collaborators. Analyzed data in HTDB using MATLAB to aid in the development of the most precise simulated organs available.
- \* Designed and built surgical simulation products using 3D printing and other traditional processing techniques. Researched and investigated the use of novel materials such as hydrogels for use in simulation.
- \* Built Graphical User Interface (GUI) to control custom lab equipment and acquire data, which simplifies data collection.

### UW Materials Science and Engineering

January 2023 – June 2023

*Capstone*

*Seattle, Washington*

- \* Collaborated with PACCAR to perform streamlined Life Cycle Analysis (LCA) of Kenworth T680 to assess environmental impacts. Resulted in quantitative information to guide environmental decisions.
- \* Presented results to decision makers showing need for full LCA in Kenworth and Peterbilt vehicles manufactured by PACCAR.

### UW College of Engineering

February 2022 – June 2023

*Engineering Ambassador*

*Seattle, Washington*

- \* Selected as an ambassador to encourage students from all backgrounds to pursue STEM at UW.
- \* Collaborated with other student leaders to create new and engaging ways to reach students K-14.

### UW Bioengineering in Nepal

August 2022 – September 2022

*Student Participant*

*Dhulikhel, Nepal*

- \* Partnership with Kathmandu University to identify and analyze clinical needs based on observations and consultation with clinicians and hospital staff.
- \* Focused on identified need for improving patient return electrode technology, which would reduce costs and improve sustainability.
- \* Presented findings at Dhulikhel Hospital and University of Washington for possible future development.

## Technical Skills

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**Proficient:** MATLAB, Python, SolidWorks, Excel, Powerpoint, Word, ImageJ, Durometry, Tension/Compression testing with TA Electroforce Instruments

**Familiar:** URScript, Fusion, Azure, Quantum ESPRESSO, scikit-learn, XRD, FTIR, LSPA, TGA, DSC, SEM, EDS, XRF, UV-Vis, Metals Sample Preparation (Polishing and Etching), Hardness, Charpy Impact

## Publications

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Gong, A.T., Yau, S.-W.O., Erickson, H.B., **Toepfer, R.J.**, Zhang, J., Deschmidt, A.M., Parsey, C.J., Norfleet, J.E., Sweet, R.M. Characterizing the Suture Pullout Force for Human Small Bowel, *Journal of Biomechanical Engineering* 146(1), 014502, 2024.

Gong, A.T., Erickson, H.B., DeSchmidt, A.M., **Toepfer, R.J.**, Nguyen, E.H., Norfleet, J.E., Sweet, R.M. Quantifying the Suture Pullout Forces of Small Bowel Anastomosis for Surgical and Simulation Applications, *Journal of the American College of Surgeons* 235(5), S34, 2022.

## Relevant Coursework

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- Materials Informatics
- Big Data for MSE
- Composite Materials
- Materials and Device Modeling
- Materials Processing
- MSE Lab Series
- Failure Analysis
- Materials Characterization