

Nick Garabedian, Ph.D.

full name: Nikolay T. Garabedian

Contact Details:

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E-mail Address: Nikolay.Garabedian@kit.edu, [LinkedIn](#), [Twitter](#), [nick-garabedian.com](#)

Professional Experiences:

Karlsruhe Institute of Technology (KIT) Karlsruhe, Germany June 2019 - Present
IAM-ZM Materials Tribology Group, *Prof. Christian Greiner*

Group Leader of “Linked Tribological Data” December 2021 - Present

- Supervising a research group of 12 scientists at the master’s, doctoral and postdoctoral levels
- Focused on data-intensive experimental methods, tribotesting and machine learning

Alexander von Humboldt Research Fellow January 2021 - Present

- Machine learning analysis techniques for experimental tribology and material science
- Metals tribology and microstructural evolution of critical industrially-relevant components

Postdoctoral Researcher June 2019 - December 2020

- Full digitalization, data management of scientific lab activities for the age of data science
- *In-situ* XRD measurements of copper under tribological loads and machine learning analysis thereof

University of Delaware Newark, Delaware, USA August 2014 - June 2019

Graduate Research Assistant *Doctoral Advisor: David L. Burriss, Ph.D.*

*Doctoral research: **A direct experimental link between atomic-scale and macroscale friction***

- End-to-end design, evaluation and application of laboratory measurement equipment
- Traceable lateral force calibration techniques for AFM and tribometry across all scales
- AFM at the macroscale: methods to fabricate and calibrate probes for millinewton force measurements
- Quantifying, locating, and following asperity scale wear within macroscale contact areas

Collaborative projects:

- Predicting bearing loads in wind turbine drivetrains (**Argonne National Laboratories**)
- In-situ observations of DLC transfer film formation (**Carpick group at University of Pennsylvania**)
- Mechanical characterization of hydrogel scaffolds for tissue engineering (**Jia group at Uni. Delaware**)
- QCM-integrated microtribometry for characterization of MoS₂ (**Borowski group at St. Olaf College**)
- Mechanical characterization of hydrogel spheres for drug delivery (**Kloxin group at Uni. Delaware**)
- Durability of PEDOT coatings for biodevices (**Martin group at Uni. Delaware**)
- Tribology of polymer blend coatings (**Epps group at Uni. Delaware**)

Graduate Teaching Assistant: Materials Engineering (a 3rd-year Class) August - December 2014

IBM India Research Laboratory New Delhi, India June - August 2013

Research Assistant - Intern

- Trained algorithms to extract features from audio-visual data in real time
- Project: Artificial intelligence for mobile sensing in *Smarter Cities*

Union College Schenectady, NY, USA June 2012 - March 2013

Research Assistant

- Effect of posterior curvature on the bending strength of maxillary canines in cercopithecoid monkeys
- Effect of head-carrying on cranial deformation and morphology

Education:

University of Delaware Ph.D. in Mechanical Engineering <i>Topic: A direct experimental link between atomic-scale and macroscale friction</i> <i>Advisor: David L. Burris, Ph.D.</i>	2014 - 2019 Newark, DE, USA
Union College B.S. in Mechanical Engineering (Hon.) <i>Economics Minor</i> <i>Union Scholars Program, Cum Laude</i> <i>Pi Tau Sigma Mechanical Engineering Honorary Society</i>	2010 - 2014 Schenectady, NY, USA
Plovdiv Language High School <i>English and German Language Program</i> <i>Languages: Bulgarian (native), English (full professional proficiency), German (intermediate proficiency)</i>	2005 - 2010 Plovdiv, Bulgaria

Refereed Publications:

- Generating FAIR research data in tribology**, Nikolay T. Garabedian (co-lead author), Paul J. Schreiber (co-lead author), Nico Brandt, Philipp Zschumme, Ines L. Blatter, Antje Dollmann, Christian Haug, Daniel Kummel, Yulong Li, Franziska Meyer, Carina E. Morstein, Julia S. Rau, Manfred Weber, Johannes Schneider, Peter Gumbsch, Michael Selzer, Christian Greiner, *Sci Data* **9**, 315 (2022) DOI: [10.1038/s41597-022-01429-9](https://doi.org/10.1038/s41597-022-01429-9)
- Managing FAIR Tribological Data Using Kadi4Mat**, Nico Brandt, Nikolay T Garabedian, Ephraim Schoof, Paul J. Schreiber, Philipp Zschumme, Christian Greiner, Michael Selzer, *Data*, **2022**, 7, 15 DOI: [10.3390/data7020015](https://doi.org/10.3390/data7020015)
 - Selected Journal Cover Story
- Traceable lateral force calibration (TLFC) for atomic force microscopy**, Arnab Bhattacharjee (co-lead author), Nikolay T. Garabedian (co-lead author), Christopher L. Evans, David L. Burris, *Tribology Letters*, **2020**, 68:111, DOI: [10.1007/s11249-020-01349-y](https://doi.org/10.1007/s11249-020-01349-y)
- Integrated QCM-microtribometry: friction of single-crystal MoS₂ and gold from $\mu\text{m/s}$ to m/s** , Brian P Borovsky (co-lead author), Nikolay T Garabedian (co-lead author), Gabriel R McAndrews, Raymond J Wieser, David L Burris, *ACS Applied Materials & Interfaces*, **2019**, 11 (43), 40961-40969 DOI: [10.1021/acsami.9b15764](https://doi.org/10.1021/acsami.9b15764)
- Durability of Poly(3,4-ethylene dioxythiophene) (PEDOT) films on metallic substrates for bioelectronics and the dominant role of relative shear strength**, Jing Qu, Nikolay T Garabedian, David L Burris, David C Martin, *Journal of Mechanical Behavior of Biomedical Materials*, **2019**, 100, pp 103376, DOI: [10.1016/j.jmbbm.2019.103376](https://doi.org/10.1016/j.jmbbm.2019.103376)
- Quantifying, locating, and following asperity scale wear within macroscale contact areas**, Nikolay T Garabedian, Arnab Bhattacharjee, Martin N. Webster, Gary L. Hunter, Peter W. Jacobs, Andrew R. Konicek, David L. Burris, *Tribology Letters*, **2019**, 67:89, DOI: [10.1007/s11249-019-1203-6](https://doi.org/10.1007/s11249-019-1203-6)
- Spatial patterning of molecular cues and vascular cells in fully integrated hydrogel channels via interfacial bioorthogonal crosslinking**, Kevin. T. Dicker, Axel. C. Moore, Nikolay T. Garabedian, Han Zhang, Samuel L. Scinto, Robert E. Akins, David L. Burris, Joseph M. Fox, and Xinqiao Jia, *ACS Appl. Mater. Interface*, **2019**, 11 (18), 16402-16411, DOI: [10.1021/acsami.9b04383](https://doi.org/10.1021/acsami.9b04383)
- Mechanical and compositional characterization of thick tribofilms formed from silicon- and oxygen-containing hydrogenated amorphous carbon**, J.B. McClimon, A.C. Lang, Z. Milne, N.T. Garabedian,

A.C. Moore, J. Hilbert, F. Mangolini, J.R. Lukes, D.L. Burris, M.L. Taheri, J. Fontaine, R.W. Carpick, *Tribology Letters*, **2019**, 67(2), DOI: [10.1007/s11249-019-1155-x](https://doi.org/10.1007/s11249-019-1155-x)

9. **AFM at the macroscale: methods to fabricate and calibrate probes for millinewton force measurements**, Nikolay T Garabedian, Harman S Khare, Robert W Carpick, David L Burris, *Tribology Letters*, **2019** 67: 21, DOI: [10.1007/s11249-019-1134-2](https://doi.org/10.1007/s11249-019-1134-2)
10. **The cause of premature wind turbine bearing failures: overloading or underloading?**, Nikolay T Garabedian, Benjamin J Gould, Gary L Doll, David L Burris, *Tribology Transactions*, 61:5, 850-860, **2018**, DOI: [10.1080/10402004.2018.1433345](https://doi.org/10.1080/10402004.2018.1433345)
 - **2020 Wilbur Deutsch Memorial Award**, STLE Awards Committee, May 2020
 - **Editor's Choice paper in Tribology & Lubrication Technology**, July 2018, pp 60-74
11. **Exploiting feedstock diversity to tune the chemical and tribological properties of lignin-inspired polymer coatings**, Jillian A Emerson, Nikolay T Garabedian, Axel C Moore, David L Burris, Eric M Furst, Thomas H Epps III, *ACS Sustainable Chem. Eng.*, **2018**, 6 (5), pp 6856–6866, DOI: [10.1021/acssuschemeng.8b00667](https://doi.org/10.1021/acssuschemeng.8b00667)
12. **Unexpected tribological synergy in polymer blend coatings: leveraging phase separation to isolate domain size effects and reduce friction**, Jillian A Emerson, Nikolay T Garabedian, Axel C Moore, David L Burris, Eric M Furst, Thomas H Epps III, *ACS Appl. Mater. Interfaces*, **2017**, 9 (39), pp 34480–34488, DOI: [10.1021/acsami.7b10170](https://doi.org/10.1021/acsami.7b10170)
13. *In Review*: **Robust vibration-activated lubricity**, Arnab Bhattacharjee, Nikolay T Garabedian, Brian P Borovsky, David L Burris, *Tribology Letters*

Other Archival Publications:

1. **AI applications in tribology research for mechanical components**, by Nancy McGuire
An interview with Nikolay T Garabedian, *TLT Magazine*, February 2022 [Link to Story](#)
2. **Tribological experiments in the age of big data**, Nikolay T Garabedian, Paul J. Schreiber, Christian Greiner, *23rd International Colloquium Tribology 2022 - TAE* (accepted)
3. **Data science techniques applied to *in-situ* XRD measurements of copper under tribological load**, Nikolay Garabedian, Patric Gruber, Christian Greiner, *World Tribology Congress 2022* (accepted)
4. **Measuring friction at a single interface with two independent microtribometers: A model study with alumina spheres on gold or single-crystal MoS₂**, Brian P Borovsky, Nikolay T Garabedian, Gabriel R McAndrews, Raymond J Wieser, David L Burris, *Tribology Frontiers Conference 2019*
5. **Bridging the tribometry gap**, Nikolay Garabedian and David Burris, *Tribology & Lubrication Technology*, March 2019
6. **The cause of premature wind turbine bearing failures: overloading or underloading?**, Nikolay T Garabedian, Benjamin J Gould, Gary L Doll, David L Burris, *Tribology & Lubrication Technology*, pp 60-74, July 2018
7. **Effect of posterior curvature on the bending strength of maxillary canines in cercopithecoid monkeys**, Andrew J Rapoff, Nikolay T Garabedian, Scott McGraw, David J Daegling, *American Journal of Physical Anthropology*, 2013, 150 p. 229

Patents:

1. **Frictionless wedge and reference spring** for Lateral Force AFM Calibration, David L Burris and Nikolay T Garabedian, US 62/674,042, 21 May 2018, *Provisional*

ARCHIVAL ABSTRACTS:

Oral Presentations:

As a presenter:

1. **Data science techniques applied to *in-situ* XRD measurements of copper under tribological load**, Nikolay Garabedian, Patric Gruber, Christian Greiner, *World Tribology Congress 2022*, July 2022, Lyon, France
2. **Linked experimental data in tribology for machine learning applications**, Nikolay T Garabedian, Christian Greiner, *2022 STLE Annual Meeting*, Orlando FL, May 2022
3. **Tribological experiments in the age of big data**, Nikolay T Garabedian, Paul J. Schreiber, Christian Greiner, *23rd International Colloquium Tribology 2022 - TAE*, Esslingen, Germany, January 2022
4. **Data science techniques applied to *in-situ* XRD measurements of copper under tribological load**, Nikolay T Garabedian, Patric Gruber, Christian Greiner, *2021 STLE Annual Meeting*, New Orleans LA (online), May 2021
5. **Tribological experiments in the age of big data**, Nikolay T Garabedian, Paul Schreiber, Christian Greiner, *2021 STLE Annual Meeting*, New Orleans LA (online), May 2021
6. **Data science techniques applied to *in-situ* XRD measurements of copper under tribological load**, Nikolay T Garabedian, Patric Gruber, Christian Greiner, *MSE 2020*, Darmstadt (online), September 2020
7. **Sliding over 10,000 Times Faster: QCM-integrated microtribometry to probe friction fundamentals via gold and single-crystal MoS₂**, Nikolay T Garabedian, R.J. Wieser, G.R. McAndrews, Brian P. Borovsky, David L Burris, *2019 STLE Annual Meeting*, Nashville TN, May 2019
8. **Linking macro-scale and atomic-scale friction**, Nikolay T Garabedian and David L Burris, *2019 STLE Annual Meeting*, Nashville TN, May 2019
9. **Sliding over 10,000 times faster: QCM-integrated microtribometry to probe friction fundamentals via gold and single-crystal MoS₂**, Nikolay T Garabedian, Brian P. Borovsky, David L Burris, *2019 MRS Spring Meeting*, Phoenix AZ, April 2019
10. **How to Mitigate Friction and Wear?**, Nikolay T Garabedian and David L Burris, *University of Delaware Graduate Student Forum*, Newark DE, April 2019
11. **Sliding over 10,000 Times Faster: QCM-integrated microtribometry to probe friction fundamentals via gold and single-crystal MoS₂**, Nikolay T Garabedian, R.J. Wieser, G.R. McAndrews, Brian P. Borovsky, David L Burris, *2019 MRS Spring Meeting*, Phoenix AZ, April 2019
12. **A direct experimental link between atomic-scale and macroscale friction**, Nikolay T Garabedian, David L Burris, *Tribology Frontiers Conference*, October 2018
13. **A direct experimental link between atomic-scale and macroscale friction**, Nikolay T Garabedian, Harman S Khare, Robert W Carpick, David L Burris, *Tribology Gordon Research Seminar*, Lewiston ME, June 2018

14. **Linking macro-scale and atomic-scale friction**, Nikolay T Garabedian and David L Burris, *2018 STLE Annual Meeting*, Minneapolis MN, May 2018
15. **Challenges in developing more efficient and reliable tribological systems**, Nikolay T Garabedian and David L Burris, *University of Delaware Graduate Student Forum*, Newark DE, April 2018
16. **A direct experimental link between atomic-scale and macro-scale**, Nikolay T Garabedian and David L Burris, *University of Delaware Graduate Student Forum*, Newark DE, April 2017
17. **Relating wear uncertainties to material characteristics through interrupted topography measurements**, Nikolay T Garabedian and David L Burris, *2016 STLE Annual Meeting*, Las Vegas NV, May 2016
18. **Analysis of planetary bearing under-loading in wind turbines**, Nikolay T Garabedian, Benjamin J Gould, David L Burris, *University of Delaware Graduate Student Forum*, Newark DE, April 2016
19. **Quantifying wear volume uncertainty based on interrupted topography measurements**, Nikolay T Garabedian, Harman S Khare, David L Burris, *Tribology Frontiers Conference*, Denver CO, October 2015
20. **Analysis of planetary bearing under-loading in wind turbines**, Nikolay T Garabedian, Benjamin J Gould, David L Burris, *Tribology Frontiers Conference*, Denver CO, October 2015
21. **Quantifying wear volume uncertainty based on interrupted topography measurements**, Nikolay T Garabedian, Harman S Khare, David L Burris, *University of Delaware Graduate Student Forum*, Newark DE, April 2015

As a co-author:

22. **Is abrasive wear positively correlated with particle size?**, Yulong Li, Nikolay T Garabedian, Christian Greiner, Johannes Schneider, *2022 MSE*, Darmstadt, Germany, September 2022
23. **3D Metamaterials for Mimicking Cartilage Response**, Patrick Ziemke, Nikolay Garabedian, Ombeline Juteau, Abhinav Bairathi, Peter Gumbsch, David Burris, *2022 STLE Annual Meeting*, Orlando FL, May 2022
24. **Robust Vibration Induced Lubricity**, Arnab Bhattacharjee, Nikolay T Garabedian, Brian P Borovsky, David L Burris, *2021 STLE Annual Meeting*, New Orleans LA (online), May 2019
25. **Quantifying and tracking the life of an asperity subject to tribological contact**, Arnab Bhattacharjee, Nikolay T Garabedian, David L Burris, *2019 STLE Annual Meeting*, Nashville TN, May 2019
26. **Quantifying and tracking asperity scale wear during microscale wear measurements**, Arnab Bhattacharjee, Nikolay T Garabedian, David L Burris, *Tribology Frontiers Conference*, October 2018
27. **Methods to study the life of an asperity subject to tribological contact**, Arnab Bhattacharjee, Nikolay T Garabedian, David L Burris, *2019 STLE Annual Meeting*, Nashville TN, May 2019
28. **Methods to study the life of an asperity subject to tribological contact**, Arnab Bhattacharjee, Nikolay T Garabedian, David L Burris, *2018 STLE Annual Meeting*, Minneapolis MN, May 2018
29. **Evaluating transfer film wear rates of polymeric solid lubricants**, Kazi I Alam, Diana R Haidar, Jiaxin Ye, Nikolay T Garabedian, David L Burris, *2017 STLE Annual Meeting*, Atlanta, GA, May 2017

Invited Presentations

30. **Launch on a long-term digital path**, Nikolay Garabedian, Christian Greiner, *Fraunhofer IWM Wissenschaftstag*, online, April 2022

31. **Tribological experiments in the age of big data**, Nikolay Garabedian, Christian Greiner, *Fraunhofer IWM Geschäftsrunde*, online, March 2022
32. **FAIR data in tribology: the key to scalable machine learning**, Nikolay T Garabedian, Christian Greiner, *AI and Machine Learning in Tribology Session, 2022 STLE Annual Meeting*, Orlando FL, May 2022
33. **A direct experimental link between atomic-scale and macroscale friction**, Nikolay T Garabedian, David L Burris, *Philadelphia STLE Section Meeting*, Oreland PA, September 2018

Poster Presentations:

As a presenter:

34. **Tribology in the Age of Big Data**, Nikolay T. Garabedian, *H³ Helmholtz Herbst Hackathon*, Gummersbach, Germany, September 2021
35. **Sliding over 10,000 Times Faster: QCM Integrated Microtribometry to Probe Friction Fundamentals via Gold and Single-Crystal MoS₂**, Nikolay T Garabedian, R.J. Wieser, G.R. McAndrews, Brian P. Borovsky, David L Burris, *Tribology Frontiers Conference*, Chicago IL, October 2018
36. **A direct experimental link between atomic-scale and macroscale friction**, Nikolay T Garabedian, Harman S Khare, Robert W Carpick, David L Burris, *Tribology Gordon Research Conference*, Lewiston ME, June 2018
37. **A direct experimental link between atomic-scale and macroscale friction**, Nikolay T Garabedian, Harman S Khare, Robert W Carpick, David L Burris, *Tribology Gordon Research Seminar*, Lewiston ME, June 2018
38. **A direct experimental link between atomic-scale and macroscale friction**, Nikolay T Garabedian and David L Burris, *2018 STLE Annual Meeting*, Minneapolis MN, May 2018 – **Gold Poster Presentation Award Winner**
39. **A new experimental approach to study micro and nano-scale friction**, Nikolay T Garabedian and David L Burris, *2017 STLE Annual Meeting*, Atlanta GA, May 2017
40. **Low wind speed as a paradoxical driver of premature bearing failure in wind turbines**, Nikolay T Garabedian, Benjamin J Gould, David L Burris, *2017 STLE Annual Meeting*, Atlanta GA, May 2017
41. **Quantifying wear volume uncertainty based on interrupted topography measurements**, Nikolay T Garabedian, Harman S Khare, David L Burris, *Tribology Frontiers Conference*, Denver CO, October 2015
42. **Quantifying wear volume uncertainty based on interrupted topography measurements**, Nikolay T Garabedian, Harman S Khare, David L Burris, *2015 STLE Annual Meeting*, Dallas TX, May 2015

As a co-author:

1. **Does atomic stick-slip contribute to practical friction?**, Nikolay T Garabedian, Arnab Bhattacharjee, Brian Borovsky, David L Burris, *Tribology Gordon Research Conference*, Lewiston ME, June 2022
2. **Traceable Lateral Force Calibration (TLFC) for Atomic Force Microscopy**, Arnab Bhattacharjee, Nikolay T Garabedian, David L Burris, *Tribology Frontiers Conference*, Chicago IL, November 2020 (online)
3. **Measuring friction at a single interface with two independent microtribometers: A model study with alumina spheres on gold or single-crystal MoS₂**, Brian P Borovsky, Nikolay T Garabedian, Gabriel R McAndrews, Raymond J Wieser, David L Burris, *Tribology Frontiers Conference 2019*, Chicago IL, October 2019

4. **Methods to study the life of an asperity subject to tribological contact**, Arnab Bhattacharjee, Nikolay T Garabedian, David L Burris, *2019 STLE Annual Meeting*, Nashville TN, May 2019
5. **A Microscale Study of Friction on Single-Crystal Molybdenum Disulfide Using a Combined Indenter Probe and Quartz Crystal Microbalance**, Gabriel McAndrews, Raymond Wieser, Nikolay T Garabedian, David L Burris, Brian Borovsky, *Tribology Frontiers Conference*, Chicago IL, October 2018
6. **Investigating Microscale Friction at High Sliding Speeds Using a Combined Indenter Probe and Quartz Crystal Microbalance** Brian Borovsky, Gabriel McAndrews, Raymond Wieser, Nikolay T Garabedian, David L Burris, *Tribology Frontiers Conference*, Chicago IL, October 2018
7. **Quantifying and Tracking Asperity Scale Wear During Microscale Wear Measurements**, Arnab Bhattacharjee, Nikolay T Garabedian, David L Burris, *Tribology Frontiers Conference*, Chicago IL, October 2018
8. **Investigating Microscale Friction at High Sliding Speeds Using a Combined Indenter Probe and Quartz Crystal Microbalance** Brian Borovsky, Gabriel McAndrews, Raymond Wieser, Nikolay T Garabedian, David L Burris, *AVS 65th International Symposium & Exhibition*, Long Beach CA, October 2018
9. **Lubricity of SiO_x-containing hydrogenated amorphous carbon (a-C:H:Si:O) probed at several lengthscales**, J.B. McClimon, A.C. Lang, Z. Milne, N. T. Garabedian, A.C. Moore, F. Mangolini, J.R. Lukes, D.L. Burris, J. Fontaine, R.W. Carpick, *Tribology Gordon Research Conference*, Lewiston ME, June 2018
10. **Quantifying the relationship between durability and adhesion of PEDOT on metallic substrates**, Jing Qu, Nikolay T Garabedian, David L Burris, David C Martin, *BioInterface Workshop & Symposium*, San Diego CA, October 2017

Awards and Fellowships:

1. **Early Career Award, Postdoctoral Researcher, 2022**, STLE: *Tribology in the age of big data*
2. **Alexander von Humboldt Postdoctoral Fellowship, January 2021 – December 2022**, Research Fellowship, Alexander von Humboldt Foundation, *Topic: Metals Tribology Revisited*
3. **Goethe Institut German Language Fellowship, September 2020 – December 2020**, Alexander von Humboldt Foundation, declined due to COVID-19 related amendments
4. **Robert W. Gore Fellowship, September 2018 – May 2019**, Dissertation Research Fellowship, College of Engineering, University of Delaware
5. **Philadelphia STLE Scholarship, July 2018**, STLE Local Chapter Award, *A direct experimental link between atomic-scale and macroscale friction*
6. **Elmer E. Klaus Fellowship, May 2018**, STLE Presidential Award, *A direct experimental link between atomic-scale and macroscale friction*
7. **Gold Poster Presentation Award, STLE Annual Meeting, May 2018**, *A direct experimental link between atomic-scale and macroscale friction*
8. **Professional Development Award, March 2018**, University of Delaware, Office of Graduate and Professional Education, *A direct experimental link between atomic-scale and macroscale friction*
9. **Poster Presentation Award, STLE Annual Meeting, May 2015**, *Quantifying Wear Volume Uncertainty Based on Interrupted Topography Measurements*
10. **Union College Presidential Scholarship, August 2010 – June 2014**, Union College

11. **Donald C. Brate '45 Scholarship, August 2010 – June 2014**, Union College

12. **International Scholarship, August 2010 – June 2014**, Union College

Awarded Project Funding:

1. **MetaCook: The Metadata Cookbook**, Helmholtz Metadata Collaboration, 400,000€ over 2 years

Academic Involvement:

- **Funded Scientific Proposals**

- Helmholtz Metadata Collaboration Platform February, 2022 – January, 2024
 - Topic: *The Metadata Cookbook (MetaCook)*

- **Graduate Teaching**

- Assistant Instructor for *Tribology Practicum* KIT (Karlsruhe, Germany)
 - SS2021
- Co-Lecturer for *Data Science and Scientific Workflows* KIT (Karlsruhe, Germany)
 - SS2022

- **Undergraduate Teaching**

- Substitute Instructor for *Materials Engineering* University of Delaware
 - Fall 2014

- **Research Supervisor**

- Postdoctoral research assistants:
 - Michael Seitz, Ph.D.
 - Topic: *Non-destructive testing of metals*
- Doctoral thesis adviser:
 - Yulong Li, M.Sc.
 - Topic: *Abrasive wear of laser-textured surfaces*
- Master's thesis adviser: KIT (Karlsruhe, Germany)
 - Julius Heinrich, M.Sc.
 - Topic: *Development of a reciprocating tribometer for studying in-situ wear and microstructural evolution of copper under a variable load*
 - Max Gorenflo, M.Sc.
 - Topic: *Plastic Deformation of Copper under Variable Tribological Load*
 - Ombeline Juteau, B.Sc.
 - Topic: *Designing a metamaterial mimicking the mechanics of cartilage*
- Bachelor's thesis adviser: KIT (Karlsruhe, Germany)
 - Jakob Biesinger
 - Topic: *Systematic study of copper under industrially-relevant tribological load conditions*

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- Benedikt Stoll
 - Topic: *Semi-automatic conversion of SKOS vocabularies into OWL ontologies for FAIR data collection*
- Research assistant supervisor: KIT (Karlsruhe, Germany)
 - Mauriz Poggemann
 - Topic: *Software development*
 - Nuoyao Ye
 - Topic: *Software development*
 - Floriane Bresser, B.Sc.
 - Topic: *Software development*
 - Jakob Biesinger
 - Topic: *Metals tribology*
 - Malte Flachmann, B.Sc.
 - Topic: *Tribometer digitalization*
 - Manfred Weber, M.Sc.
 - Topic: *Development of a reciprocating tribometer for studying in-situ wear and microstructural evolution of copper under a variable load*
 - Abhinav Bairathi, B.Sc.
 - Topic: *Numerical investigations for cartilage-inspired metamaterials*
 - Moritz Götz KIT (Karlsruhe, Germany)
 - Topic: *Numerical investigations for cartilage-inspired metamaterials*
 - Brian Bell, B.Sc. University of Delaware
 - Topic: *Precision mechanical design of tribometers*

Outreach and Other Professional Involvements:

- STLE Early Career Committee 2022 – Current
- H³: Helmholtz Herbst Hackathon Gummersbach, Germany September 2021
 - Was accepted to a coding event where “Young Helmholtz researchers solve scientific data challenges and start filling the pandemic communication vacuum” ([Link](#))
- GO FAIR Initiative
 - Partner in GO Inter Implementation Network ([Link](#))
- Journal Reviewer for:

MDPI Machines	2021 – Current
Extreme Mechanics Letters	2021 – Current
MDPI Symmetry	2021 – Current
MDPI Lubricants	2021 – Current
MDPI Applied Sciences	2021 – Current
MDPI Materials	2021 – Current

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| | MDPI Energies | 2021 – Current |
| | MDPI Measurement | 2020 – Current |
| | Journal of Materials Engineering and Performance | 2020 – Current |
| | ASTM Journal of Testing and Evaluation | 2019 – Current |
| | Tribology Letters | 2018 – Current |
| | Tribology Transactions | 2018 – Current |
- STLE Nanotribology Committee 2017 – Current
 - Vice-Chair
 - Paper Solicitation Chair
 - My tasks included organizing the marketing, presentation decisioning along with scheduling, and communication with invited speakers for the nanotribology session at the 2022 STLE Annual Meeting in Orlando, Florida.
 - Vice Paper Solicitation Chair
 - Collaborated in organizing the joint sessions with the Materials Tribology track in Tribochemistry and 2D Materials/Superlubricity.
 - Volunteer

 - Academic Opportunity Program 2011 - 2013
 Engineering Tutor Schenectady, NY, USA
 - The Academic Opportunity Program at Union College is aimed at supporting students who otherwise would not attend college. I tutored and advised in all engineering-related subjects for two years. Becoming a tutor in the program is based on recommendations and academic achievements.

 - Engineers Without Borders 2011 - 2013
Schenectady, NY, USA
 - Event Coordinator
 - Scheduled, promoted and coordinated volunteering trips aimed at servicing the local community.

 - ASME at Union College 2012 - 2013
Schenectady, NY, USA
 - Help Center Manager

 - SAE Aero at Union College 2013 - 2014
Schenectady, NY, USA
 - Team Captain