

Chun-Wei Yao

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Department of Mechanical Engineering
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Education

Ph.D. Texas A&M University, 2014
M.S. National Taiwan University, 2004
B.S. National Taiwan Ocean University, 2002

Appointment

Associate Professor, Department of Mechanical Engineering
Lamar University, TX 09/2022-present
Director, Materials Instrumentation Center
Lamar University, TX 09/2021-present
Assistant Professor, Department of Mechanical Engineering
Lamar University, TX 09/2016-08/2022
Visiting Research Scholar, Transportation and Hydrogen Systems Center
National Renewable Energy Laboratory, Golden, CO 07/2017-08/2017
Visiting Assistant Professor, Department of Mechanical Engineering
Lamar University, TX 09/2015-08/2016
Assistant Professor, Department of Electrical Engineering,
Georgia Southern University, GA 09/2014-05/2015

Honors and Awards

Merit Award, Lamar University, 2022
Research Enhancement Grant Award, Lamar University, 2018
Research Enhancement Grant Award, Lamar University, 2017
George Bush Presidential Library Foundation Grant, 2014

Teaching Experience

Lamar University, Beaumont, Texas

- Advanced Numerical Analysis (MEEN 5301), Lamar University, Graduate Level Course
- Manufacturing Analysis (MEEN 4366), Lamar University, Senior Level Course
- Dynamic Systems (MEEN 4317), Lamar University, Senior Level Course
- Materials Science (MEEN 4319), Lamar University, Senior Level Course
- Numerical Analysis in Engineering (MEEN 4321), Lamar University, Senior Level Course
- Engineering Analysis (MEEN 3340), Lamar University, Junior Level Course
- Fluid Mechanics (MEEN 3311), Lamar University, Junior Level Course
- Measurements Lab (MEEN 3210), Lamar University, Junior Level Course

- Mechanics of Solids (MEEN 2372), Lamar University, Sophomore Level Course
- Thermodynamics (MEEN 2374), Lamar University, Sophomore Level Course

Georgia Southern University & Texas A&M University

- Computing for Engineers (ENGR 1731), Georgia Southern University, Freshman Level Course
- Thermodynamics Lab (ENTC 370), Texas A&M University, Junior Level Course
- Fluid Mechanics and Fluid Power Lab (ENTC 303) Texas A&M University, Junior Level Course
- Statics and Particle Dynamics (MEEN 221), Texas A&M University, Sophomore Level Course
- Materials Science (MEEN 222), Texas A&M University, Sophomore Level Course

Thesis Committee Served

- Mechanical Engineering D.E. student, Divine Sebastian, "Fabrication and Corrosion Analysis of Superhydrophobic Coatings, " Graduated Spring 2021
- Mechanical Engineering D.E. student, Arash Azimi, "A Continuum Method for Modeling Surface Tension, " Graduated Fall 2020
- Mechanical Engineering M.S. student, Divine Sebastian, thesis "Fabrication and Analysis of Super Hydrophobic Metal surfaces, " Graduated Fall 2016
- Chemical Engineering Ph.D. student, Akash Kumar Jena, thesis " Weting Analysis and Surface Characterization for Different Sytems, " Graduated Summer 2021
- Chemical Engineering Ph.D. student, Sirui Tang, dissertation " Effect of the Lateral Force and Normal Force on Droplet Sliding on Solid Surfaces, " Graduated Fall 2019
- Chemical Engineering Ph.D. student, Sakshi Yadav, dissertation " A Study of Lateral and Normal Adhesion of Liquids on Solid Surfaces, " Graduated Summer 2019
- Chemical Engineering M.S. student, Akash Kumar Jena, thesis " Transition of Motion for Micro-drops Across Surfaces, " Graduated Fall 2016
- Civil Engineering D.E. student Seyedsaeid Hosseini, dissertation " Mechanochemical Treatment of Bottom Ash and Dredged Materials in Fly Ash Based Geopolymer, " Graduated Summer 2020
- Civil Engineering D.E. student Saeed Rabbanifar, dissertation "Stabilization of Argillaceous Silty Dredged Material for Beneficial Use, " Graduated Fall 2018

Peer-reviewed Journal Publications, Science Citation Index (SCI/SCI Expanded)

1. T.T.M. Nguyen, S. Rabbanifar, Z. Luo, C. Huddleston, T. O'Connor, A. Richard, M. Michel, R. Moon, **C.W. Yao**, M. Jao, P. Bernazzani, "Development of Fiber Reinforced Sustainable Dredge Bricks," *Applied Sciences*, 2023. (Impact Factor 2.838)
2. Md. Hoque, **C.W. Yao**, M. Khanal, I. Lian, "Tribocorrosion Behavior of Micro/Nanoscale Coatings," *Sensors*, 2022. (Impact Factor 3.84)
3. Md. Hoque, **C.W. Yao**, I. Lian, J. Zhou, M. Jao, Y.C. Huang, "Enhancement of Corrosion Resistance of a Hot-dip Galvanized Steel by Superhydrophobic Top Coating," *MRS Communications*, 2022. (Impact Factor 2.56)
4. A. Jena, Y. V. R. Bhimavarapu, S. Tang, J. Liu, R. Das, S. Gulec, A. Vinod, **C.W. Yao**, T. Cai, R. Tadmor, "Stages That Lead to Drop Depinning and Onset of Motion," *Langmuir*, 2022. (Impact Factor 3.88)
5. D. Sebastian, **C.W. Yao**, L. Nipa, I. Lian, G. Twu "Corrosion Behavior and Mechanical Properties of a Nanocomposite Superhydrophobic Coating," *Coatings*, 2021. (Impact Factor 2.88)
6. D. Sebastian, **C.W. Yao**, "Simultaneous Mapping of Nanoscale Topography and Surface Potential for the Study of Localized Corrosion in 2024-T3 Aluminum Alloy and Corrosion Resistance Introduced by a Superhydrophobic Coating," *MRS Communications*, 2021. (Impact Factor 2.56)
7. **C.W. Yao**, S. Tang, D. Sebastian, R. Tadmor, "Sliding of Water Droplets on Micropillar-structured Superhydrophobic Surfaces," *Applied Surface Science*, 504, 144493, **2020**. (Impact Factor 6.7)
8. D. Sebastian, **C.W. Yao**, "Effect of Poly(dimethylsiloxane) binder in a silica-based superhydrophobic coating on mechanical properties, surface roughness, and wettability," *MRS Communications*, **2020** (Impact Factor 2.56)
9. D. Sebastian, **C.W. Yao**, I. Lian, "Multiscale Corrosion Analysis of Superhydrophobic Coating on 2024 Aluminum Alloy in 3.5 wt.% NaCl Solution," *MRS Communications*, **2020**. (Impact Factor 2.56)
10. S. Tang, **C.W. Yao**, R. Tadmor, D. Sebastian, "Lateral retention of water droplets on solid surfaces without gravitational effect," *MRS Communications*, **2020**. (Impact Factor 2.56)
11. R. Tadmor, S. Tang, **C.W. Yao**, S. Gulec, S. Yadav, Comment on "Comparison of the Lateral Retention Forces on Sessile, Pendant, and Inverted Sessile Drops," *Langmuir*, 36, 475-476, **2020**. (Impact Factor 3.88)
12. P. He, **C.W. Yao**, "Simulating Contact Angle Hysteresis Using Pseudo-line Tensions," *MRS Communications*, 9(3), 1060-1066, **2019**. (Impact Factor 2.56)
13. S. Tang, Y. Bhimavarapu, S. Gulec, R. Das, J. Liu, H. N'guessan, T. Whitehead, **C.W. Yao**, R. Tadmor, "Droplets Sliding Down a Vertical Surface Under Increasing Horizontal Forces," *Langmuir* 35, 8191-8198, **2019**. (Impact Factor 3.88)
14. D. Sebastian, **C.W. Yao**, I. Lian, "Abrasion Resistance of Superhydrophobic Coatings on Aluminum Using PDMS/SiO₂," *Coatings* 8 (11), 414, **2018**. (Impact Factor 2.88)
15. A. Azimi, P. He, C. Rohrs, **C.W. Yao**, "Developing a novel continuum model of static and dynamic contact angles in a case study of a water droplet on micro-patterned hybrid substrates," *MRS Communications*, 8 (10), 1445-1454, **2018**. (Impact Factor 2.56)

16. D. Sebastian, **C.W. Yao**, I. Lian, "Mechanical Durability of Engineered Superhydrophobic Surfaces for Anti-Corrosion," *Coatings* 8 (5), 162, **2018**. (Impact Factor 2.88)
17. Y. Chen, T. Li, Z. Jia, F. Scarpa, **C.W. Yao**, L. Wang, "3D printed hierarchical honeycombs with shape integrity under large compressive deformations," *Materials & Design*, 137, 226-234, **2018**. (Impact Factor 7.99)
18. **C.W. Yao**, D. Sebastian, I. Lian, Ö. Günaydın-Şen, R. Clarke, K. Clayton, C.Y. Chen, K. Kharel, Y. Chen, Q. Li, "Corrosion Resistance and Durability of Superhydrophobic Copper Surface in Corrosive NaCl Aqueous Solution," *Coatings* 8 (2), 70, **2018**. (Impact Factor 2.88)
19. **C.W. Yao**, C.L. Lai, J. Alvarado, J. Zhou, K. Aung, J. Mejia, "Experimental Study on Effect of Surface Vibration on Micro Textured Surfaces with Hydrophobic and Hydrophilic Materials," *Applied Surface Science*, 412, 45-51, **2017**. (Impact Factor 6.7)
20. T.F. Wu, Y.C. Chen, W.C. Wang, A.S. Kucknoor, C.J. Lin, Y.H. Lo, **C.W. Yao**, I. Lian, "Rapid Waterborne Pathogen Detection with Mobile Electronics," *Sensors*, 17, 1348, **2017**. (Impact Factor 3.57)
21. M.H. Liao, H.Y. Huang, F.A. Tsai, C.C. Chuang, M.H. Hsu, C.C. Lee, M.H. Lee, C. Lien, C.F. Hsieh, T.C. Wu, H.S. Wu, **C.W. Yao**, "The achievement of the super short channel control in the magnetic Ge n-FinFETs with the negative capacitance effect," *Vacuum*, 140, 63-65, **2017**. (Impact Factor 3.62)
22. **C.W. Yao**, J. Alvarado, C. Marsh, B. Jones, M. Collins, "Wetting Behavior on Hybrid Surfaces with Hydrophobic and Hydrophilic Properties," *Applied Surface Science*, 290 (0), 59-65, **2014**. (Impact Factor 6.7)
23. **C.W. Yao**, T. Garvin, J. Alvarado, C. Marsh, D. Garrett, "Fluid Dynamics of Condensed Droplets on Microscale Hybrid Surfaces," *Journal of Heat Transfer* 135, 080905, **2013**. (Impact Factor 2.02)
24. **C.W. Yao**, T. Garvin, J. Alvarado, A. Jacobi, B. Jones, C. Marsh, "Droplet Contact Angle Behavior on a hybrid surface with hydrophobic and hydrophilic properties," *Applied Physics Letters*, 101, (11), 111605-5, **2012**. (Impact Factor 3.79)
25. R. Arroyave, A. Junkaew, A. Chivukula, S. Bajaj, **C.W. Yao**, A. Garay, "Investigation of the Structural Stability of Co₂NiGa Shape Memory Alloys via Ab Initio Methods," *Acta Materialia*, 58(16), 5220-5231, **2010**. (Impact Factor 8.2)

Peer reviewed Conference Presentations

1. P.-Y. Lu, C. Lien, **C.W. Yao**, M.-H. Lee, M.-H. Liao, "The demonstration of Carbon Nano-Tubes (CNTs) as a promising high Aspect Ratio (>25) Through Silicon Vias (TSVs) material for the vertical connection in the high dense 3DICs," 66th IEEE International Electron Devices Meeting, San Francisco, CA, December 12-18, 2020
2. S. Rabbanifar, T. T. M. Nguyen, **C.W. Yao**, Q. Qian, P. Bernazzani, M. Jao, "Adding Value to Dredged Material Using Lime and Ash Products" Proceedings, Recent Trends in Geotechnical Geo-Environmental Engineering and Education RTG2EE International Conference, Online, Brisbane, Australia, 10-11, September, 2020
3. P. He and **C.W. Yao** " Simulating Contact Angle Hysteresis Using Pseudo-Line Tensions in a Continuum Fluid Dynamics Approach," 2019 AIChE Annual Meeting, Orlando, FL,

November 10- November 15, 2019

4. J. Alvarado, **C.W. Yao**, "Effects of acoustic vibrations on droplet shedding and dropwise condensation," ASME 16th International Conference on Nanochannels, Microchannels, and Minichannels, Dubrovnik, Croatia, June 10-13, 2018
5. Azimi, C. Rohrs, P. He, **C.W. Yao**, "Establishing a Novel Continuum Model of Static and Dynamic Contact Angles in a Superhydrophobic Case Study: A Water Droplet on Micrometer-sized Patterns of a Hybrid Hydrophobic/-philic Surface," 71th Annual Meeting of the APS Division of Fluid Dynamics, Atlanta, GA, November 18-20, 2018
6. P. He and **C.W. Yao** "Numerical Investigation of a Water Droplet on Vibrating Surface with and without Inclination." 2017 AIChE Annual Meeting, Minneapolis, MN, October 29- November 3, 2017
7. P. He, **C.W. Yao**, "Continuum Modeling of a Water Droplet sitting on a Vibrating Superhydrophobic Surface," 70th Annual Meeting of the APS Division of Fluid Dynamics, Denver, Co, November 19-21, 2017
8. J. E. Mejia, J.L. Alvarado, **C.W. Yao**, "Effects of Induced Vibration Modes on Droplet Sliding Phenomena," 69th Annual Meeting of the APS Division of Fluid Dynamics, Portland, OR, November 20-22, 2016
9. **C.W. Yao**, C.L. Lai , J.L. Alvarado, C.P. Marsh, M.K. Collins, "Effects of Induced Vibrations on Droplet Shedding on Nanoparticles-Based and Structured Hydrophobic Surfaces," ASME International Mechanical Engineering Congress & Exposition, San Diego, CA, November 15-21, 2013.
10. **C.W. Yao**, T. P. Garvin, J. L. Alvarado, C.P. Marsh, B.G. Jones, M.K. Collins, "Condensation Heat Transfer on Microscale Hybrid Surfaces," ASME Summer Heat Transfer Conference, Minneapolis, MN, July 14-19, 2013
11. **C.W. Yao**, J. Alvarado, C. Marsh, A. Jacobi, "Fluid Dynamics of Condensed Droplets on Hybrid Surfaces," 65th Annual Meeting of the APS Division of Fluid Dynamics, San Diego, CA, November 18-20, 2012
12. **C.W. Yao**, J. Alvarado, "Dropwise and Filmwise Condensation on Microscale Hybrid Surfaces," ASME International Mechanical Engineering Congress & Exposition, Houston, TX, November 9-15, 2012
13. **C.W. Yao**, T. Garvin, J. Alvarado, A. Jacobi, C. Marsh and B. Jones, "Enhanced Condensation Using Hybrid Surfaces," ECI 8th International Conference on Boiling and Condensation Heat Transfer, Lausanne, Switzerland, June 3-7, 2012

Awarded Research Grants

1. **PI** for contract funded by Biomedical Research Lab, " Superhydrophobic Materials for Biomedical Applications" \$10,000, 2022 (**external funding**)
2. **PI** for Center for Midstream Management and Science, Lamar University Research Grant (Develop Anti-corrosive Superhydrophobic Top Coating with High Mechanical Durability for Pipeline Infrastructures) \$25,000, 2020-2021
3. **PI** for Center for Midstream Management and Science, Lamar University Research Grant (A Novel Approach for Evaluating the Pitting Corrosion) \$18,000, 2020-2021
4. **Co-PI** for CytonSys Cell Biology Contract \$3,000, 2020 (**external funding**)

5. **PI** for Center for Advances in Port Management, Lamar University Research Grant (Eco-friendly Anti-corrosion Coatings for Offshore Operation Facilities, Marine Pipeline, and Ship Structures) \$20,000, 2019
6. **PI** for Lamar University Research Enhancement Grant (Mechanical Durability of Superhydrophobic Coatings with Enhanced Corrosive Resistance - Fabrication, Analysis, and Testing): \$5,000, 2018-2019
7. **Co-PI** for Lamar University Research Enhancement Grant (Developing a Novel Numerical Model for the Analysis of Effective, Superhydrophobic Coatings: Predicting Dynamic Contact Angles, and Adhesion Force on the Original or Coated Substrates): \$15,000, 2018-2019
8. **PI** for Lamar University Research Enhancement Grant (Effects of Superhydrophobic Coating on Corrosion Resistance): \$5,000, 2017-2018
9. **Senior Personnel** for National Science Foundation MRI grant: Acquisition of a Nanoindenter for Advanced Materials Research and Education at Lamar University, \$395,805, 2017 (**external funding**)
10. **PI** for Center for Advances in Port Management, Lamar University Research Grant (Development of Durable Superhydrophobic Coatings for Anti-corrosion and Anti-biofouling) \$32,000, 2017
11. **PI** for Center for Advanced Water and Air Quality, Lamar University Research Grant (Development of Innovative Engineering Surfaces for Water Harvesting) \$25,000, 2016-2017

Undergraduate Research Grants

1. Advisor for Office of Undergraduate Research OUR Award, Lamar University (2022-23): \$1,500
2. Advisor for Office of Undergraduate Research OUR Award, Lamar University (2019-20): \$1,500
3. Advisor for Office of Undergraduate Research OUR Award, Lamar University (2018-19): \$1,500
4. Advisor for Office of Undergraduate Research OUR Award, Lamar University (2017-18): \$1,500
5. Advisor for Office of Undergraduate Research OUR Award, Lamar University (2016-17): \$1,500

Service

Lamar University

- Faculty Advisory Board Member -Office of Undergraduate Research, 2021-Present
- Faculty Advisory Board Member -Center for Midstream Management and Science 2020-Present
- Faculty Senate Member, 2019-Present
- Lamar University's Strategic Planning Committee Member, 2019
- Lamar University Undergraduate Research Proposal Reviewer, 2019-2022
- Texas STEM Conference Judge, 2019-2022
- Lamar University Undergraduate Research and Creative Exposition Judge, 2017-2022
- McNair Scholars Program Committee Member, 2017

Department

- Mechanical Engineering Department Undergraduate Advisor, 2020-2022
- Mechanical Engineering Department representative for COE Students Faculty Relations Committee, 2020-2023
- Mechanical Engineering Department Website and Magazine Editor, 2019-2022
- Cardinal View-Mechanical Engineering Department Presenter, 2018-2023

College of Engineering

- K-12 Outreach: BISD CCMR FAIR-Mechanical Engineering Department Presenter, 2020
- K-12 Outreach: Warren High School Career Fair-Mechanical Engineering Department Presenter, 2020
- K-12 Outreach: Lumberton High School “Mission to Space” Proposal Reviewer, 2019
- K-12 Outreach: High School Students Touring COE-Mechanical Engineering Department Host, 2019
- College of Engineering Inside View-Mechanical Engineering Department Presenter, 2018-2022
- K-12 Outreach: Southeast Texas Youth Career Expo-Mechanical Engineering Department Presenter, 2018-2023
- K-12 Outreach: Project Engineer Summer Camp-Mechanical Engineering Department host and Presenter, 2018

Faculty Advisor of Student Organizations

- Society of Asian Scientists and Engineers-Lamar University (2017- Present)
- American Society of Mechanical Engineers-Lamar University (2017- 2022)