Chen Wang, PhD

122 S Campus Dr, Room 217 Department of Materials Science and Engineering University of Utah, Salt Lake City, UT Email: chen.wang@utah.edu ; Office: 801-581-6597 Google Scholar link https://wang.mse.utah.edu

EDUCATION

| Ph.D. Chemical Engineering University of Colorado Boulder | 2012 - 2016 |
|--|-------------|
| M.S. Polymer Chemistry Beijing University of Chemical Technology | 2009 - 2012 |
| B.S. Polymer Materials and Eng. Beijing University of Chemical Technology | 2005 - 2009 |

PROFESSIONAL APPOINTMENTS

| Assistant Professor of MSE, University of Utah, Salt Lake City, UT20 |)22 - present |
|---|---------------|
| Postdoctoral Researcher, National Renewable Energy Laboratory, Golden, CO | 2019 - 2021 |
| Materials Scientist, Formlabs Inc., Somerville, MA | 2017 - 2019 |
| Research Assistant, University of Colorado Boulder, Boulder, CO | 2012 - 2017 |

HONORS and AWARDS

| College of Engineering Top 15 % Teacher, University of Utah, Fall 2022 | 2023 |
|---|-------------|
| Department of Energy, Energy I-Corp, Entrepreneurial Lead | 2021 |
| Outstanding Mentor for Interns and Postdocs, NREL | 2020 |
| Director's Award, NREL | 2020 |
| Recognition Award for Contributions in Photopolymerizations, by IUCRC | 2016 |
| Graduate School Student Travel Grant, University of Colorado Boulder | 2016 |
| GAANN award for Functional Materials (travel grant), University of Colorado B | oulder 2014 |
| Renmin Scholarship, Beijing University of Chemical Technology | 2007-2010 |

TEACHING EXPERIENCE

| Assistant Professor | University of Utah |
|---------------------|--------------------|
| 1 10100001 | |

2022-present

Spring 2024, *MSE 1800 Contemporary Materials Science and Engineering*, freshman MSE course, 31 attendees

Spring 2024, MSE 5050&6050 Special Topics: Polymer Materials for 3D Printing, senior/grad course, 14 attendees

Spring 2023, *MSE 1800 Contemporary Materials Science and Engineering*, freshman MSE course, 22 attendees (Student Course Feedback, SCF: 6.0/6.0)

| | Spring 2023, <i>MSE</i> 5050&7050 Special Topics: Polymer Recycling, senior/grav 14 attendees (SCF: 6.0/6.0) | d course, |
|------|---|-------------|
| | Fall 2022, <i>MSE 2010 Introduction to Materials Science and Engineering</i> , sop MSE course, 28 attendees (SCF: 5.8/6.0) | phomore |
| | Fall 2022, <i>MSE 2160 Elements of Materials Science and Engineering</i> , sophomore course, 118 attendees who attend together with MSE 2010 (SCF: 5.3/6.0) | e MechE |
| Part | -time Instructor University of Colorado Boulder | Spring 2016 |
| | <i>Chemical Engineering Reaction Kinetics,</i> undergraduate level (Faculty Courtionnaire, FCQ: 5.2/6.0) | rse Ques- |
| | Chemical Engineering Biokinetics, undergraduate level (FCQ: 5.3/6.0) | |
| Adv | anced Teaching Assistant University of Colorado Boulder | Fall 2014 |
| | Reaction Engineering, graduate level | |
| Tea | ching Assistant University of Colorado Boulder | Fall 2012 |
| | General Chemistry for Engineers, undergraduate level | |

FUNDING

| Department of Energy, \$1,997,901, my role: PI | 2024 |
|---|------|
| Department of Interior, \$100,000, my role: co-PI | 2023 |
| Gift from Meta (Fackbook), \$149,948, my role: PI | 2022 |
| University of Utah SEED2SOIL program (internal), \$31,636, my role: PI | 2022 |
| University of Utah College of Science seed grant program, \$19,000, co-PI | 2023 |

PUBLICATIONS at UNIVERSITY OF UTAH

- 6. Musgrave G.M.; Bishop, K.M.; Kim, J.S.; Heiner A.C.; **Wang, C.** Polyester Networks from Structurally Similar Monomers: Recyclable-by-design and Upcyclable to Photopolymers, *Polymer Chemistry*, **2023**,14, 2964
- 5. Reese C.J.; **Wang, C.** et al, Degradable Polyimide Substrates Enable Economical Processing and Recycling of Flexible Circuits, **submitted**
- 4. Reese C.J.; **Wang, C.** et al, Ductile Glassy Polymer Networks Capable of Large Plastic Deformation and Elastic Recovery, **submitted**
- 3. Heiner A.C.; **Wang, C.** et al, Soil Compostability of Ester-based Thiol-ene Photopolymer Networks, **In Preparation**
- 2. Musgrave G.M.; **Wang, C.** et al, Methacrylate-Epoxy Photopolymer Networks via Orthogonal Free-radical/Epoxy-acid Reactions in Neat Conditions, **In Preparation**
- 1. Musgrave G.M.; Wang, C. et al, Orthogonal Reactions in Neat Polymerizations, Invited Review, In Preparation

FIRST-AUTHORED PUBLICATIONS

- 7. Wang C.; Beckham G.T., et al. Synthesis, characterization, and recycling of bio-derivable polyester covalently adaptable networks for industrial composite applications, *Matter*, **In Press**
- 6. **Wang C.**; Mavila, S.; Worrell, B.T.; Xi, W.; Goldman, T.; Bowman, C. N. The Productive Exchange of Thiols and Thioesters to Form Dynamic Polythioester-Based Polymers, *ACS Macro Letters*, **2018**, 7(11), 1312
- 5. Wang C.; Goldman, T.; Worrell, B.T.; McBride, M.K.; Alim, M.; Bowman, C.N. Recyclable and repolymerizable thiol-X photopolymers, *Materials Horizons*, **2018**, 5(6), 1042
- 4. Wang C.; Zieger, M.; Schenzel, A.; Wegener, M.; Wilenbacher, J.; Barner-Kowollik, C.; Bowman, C.N. Photoinduced tetrazole-based functionalization of off-stoichiometric clickable microparticles, *Advanced Functional Materials*, **2017**, 27(7), 1605317
- 3. Wang C.; Zhang, X.; Podgorski, M.; Xi, W.; Shah, P.; Stansbury, J.; Bowman, C.N. Monodispersity/narrow polydispersity crosslinked microparticles prepared by step-growth thiol-Michael addition dispersion polymerizations, *Macromolecules*, **2015**, 48(23), 8461
- Wang C.; Chatani, S.; Podgorski, M.; Bowman, C.N. Thiol Michael addition miniemulsion polymerizations: functional nanoparticles and reactive latex films, *Polymer Chemistry*, 2015, 6(20), 3758
- 1. **Wang C.**; Podgorski, M.; Bowman, C.N. Monodisperse functional microspheres from stepgrowth "click" polymerizations: preparation, functionalization and implementation, *Materials Horizons*, **2014**, 1(5), 535

CO-AUTHORED PUBLICATIONS

- 19. McBride, M.K.; Worrell, B.T.; Brown, T.; Cox, L.M.; Sowan, N.; **Wang, C.**; Podgorski, M.; Martinez, A.M.; Bowman, C.N. Enabling Applications of Covalent Adaptable Networks (CANs). *Annual Review of Chemical and Biomolecular Engineering*, **2019**, 10, 175
- Mavila, S.; Worrell, B.T.; Culver, H.R.; Goldman, T.M.; Wang, C.; Lim, C.H.; Domaille, D.W.; Pattanayak, S.; McBride, M.K.; Musgrave, C.B.; Bowman, C.N. Dynamic and Responsive DNA-like Polymers. *Journal of the American Chemical Society*, 2018, 140(42), 13594
- 17. Worrell, B.T.; McBride, M.K.; Lyon, G.B.; Cox, L.M.; **Wang, C.**; Mavila, S.; Lim, C.H.; Coley, H.M.; Musgrave, C.B.; Ding, Y.; Bowman, C.N. Bistable and Photoswitchable States of Matter. *Nature communications*, **2018**, 9(1), 2804
- Worrell, B.T.; Mavila, S.; Wang, C.; Kontour, T.; Lim C.H.; McBride, M.K.; Musgrave, C.; Shoemaker R.K.; Bowman C.N. A User's Guide to the Thiol-Thioester Exchange in Organic Media: Scope, Limitations, and Applications in Material Science. *Polymer Chemistry*, 2018, 9(36), 4523
- 15. Zhang, D.; Liu, Z.; Konetski, D.; **Wang, C.**; Worrell, B.T.; Bowman, C.N. Liposomes formed from photo-cleavable phospholipids: in situ formation and photo-induced enhancement in permeability. *RSC Advances*, **2018**, 8(26), 14669
- Konetski, D.; Mavila, S.; Wang, C.; Worrell, B.T.; Bowman, C.N. Production of dynamic lipid bilayers using the reversible thiol-thioester exchange reaction. *Chemical Communications*, 2018, 54(58), 8108

- 13. Alim, M.D.; Glugla, D.J.; Mavila, S.; **Wang, C.**; Nystrom, P.D.; Sullivan, A.C.; McLeod, R.R; Bowman, C.N. High Dynamic Range (Δn) Two-Stage Photopolymers via Enhanced Solubility of a High Refractive Index Acrylate Writing Monomer. *ACS applied materials & interfaces*, **2017**, 10(1), 1217
- 12. Cox, L. M.; Sun, X.; Wang, C.; Sowan, N Killgore, J. P.; Long, R.; Wu, H.-A.; Bowman, C. N.; Ding, Y. Light-Stimulated Permanent Shape Reconfiguration in Cross-Linked Polymer Microparticles. *ACS Applied Materials & Interfaces*, **2017**, 9(16), 14422
- 11. Alimohammadi F,; **Wang, C.**; Durham, O. Z.; Norton, H. R.; Bowman C. N.; Shipp, D. A. Radical Mediated Thiol-ene/yne Dispersion Polymerizations. *Polymer*, **2016**, 105, 180
- Podgorski, M.; Wang, C.; Yuan, Y.; Konetski, D.; Smalyukh, I.; Bowman, C. N. Pristine Polysulfone Networks as A New Class of Polysulfide-derived High-performance Functional Materials. *Chemistry of Materials*, 2016, 28 (14), 5102
- Zhang, X.; Xi, W.; Wang, C.; Podgorski, M.; Bowman, C. N. Visible-Light-Initiated Thiol-Michael Addition Polymerizations with Coumarin-Based Photobase Generators: Another Photoclick Reaction Strategy. ACS Macro Letters, 2016, 5, 229
- Kaastrup, K.; Aguirre-Soto, A.; Wang, C.; Bowman, C. N.; Stansbury, J.; Sikes, H. D. UV-Vis/FT-NIR in-situ Monitoring of Visible-Light Induced Polymerization of PEGDA Hydrogels Initiated by Eosin/Triethanolamine/O₂. *Polymer Chemistry*, 2016, 7 (3), 592
- 7. Podgorski, M.; Wang, C.; Bowman, C. N. Multiple Shape Memory Polymers Based on Laminates Formed from Thiol-Click Chemistry Based Polymerizations. *Soft Matter*, **2015**, 11, 6852
- Xi, W.; Pattanayak S.; Wang C.; Fairbanks, B.; Gong, T.; Wagner, J.; Kloxin, C. J.; Bowman, C. N. Clickable nucleic acids: sequence-controlled periodic copolymer/oligomer synthesis by orthogonal thiol-X reactions, *Angewandte Chemie International Edition*, 2015, 54(48), 14462
- 5. Berg, G. J.; McBride, M. K.; Wang, C.; Bowman, C. N. New Directions in the Chemistry of Shape Memory Polymers. *Polymer*, 2014, 55, 5849
- Chatani, S.; Wang, C.; Podgorski, M.; Bowman, C. N. Triple Shape Memory Materials Incorporating Two Distinct Polymer Networks Formed by Selective Thiol-Michael Addition Reactions. *Macromolecules*, 2014, 47, 4949
- Chatani, S.; Podgorski, M.; Wang, C.; Bowman, C. N. Facile and Efficient Synthesis of Dendrimers and One-Pot Preparation of Dendritic-Linear Polymer Conjugates via a Single Chemistry: Utilization of Kinetically Selective Thiol-Michael Addition Reactions. *Macromolecules*, 2014, 47, 4894
- Peng, H.; Nair, D.P.; Kowalski, B.A.; Xi, W.; Gong, T.; Wang, C.; Cole, M.; Cramer, N. B.; Xie, X.; McLeod, R. R.; Bowman, C. N. High Performance Graded Rainbow Holograms via Two-Stage Sequential Orthogonal Thiol Click Chemistry. *Macromolecules*, 2014, 47, 2306
- Xie, J.; Wang, H.; Bai, H.; Yang, P.; Shi, M.; Guo, P.; Wang, C.; Yang, W.; Song, H. Wormlike Micelle Assisted Rod Coating: A General Method for Facile Fabrication of Large-Area Conductive Nanomaterial Thin Layer onto Flexible Plastics. *ACS Applied Materials Interfaces*, 2012, 6, 2891

PATENTS AND OTHER PUBLICATIONS

7. Wang, Reese. US Provisional Patent, 2023

- 6. Wang, Reese. US Provisional Patent, 2023
- 5. Wang, Musgrave. US Provisional Patent, 2022
- 4. Wang, Beckham. Plastics Waste-derived Polymers and Resins and Methods of Making the Same, *US Provisional Patent*, **2020**
- 3. Bowman, Worrell, Lyon, McBride, **Wang**. Network Polymers and Methods of Making and Using Same, *US Patent*, **2017**
- Bowman, Wang. Monodisperse Microspheres and Method of Preparing Same, US Patent, 2015
- 1. Senguen, F. T. and **Wang, C.** Validating Isotropy in SLA Additive Manufacturing, *RadTech UV*+*EB Technology*, Issue 2, **2018**

INVITED TALKS AND SEMINARS

- 15. **Wang, C.** American Chemical Society National Meeting Spring 2024, New Orleans, LA (Mar 2024)
- 14. Wang, C. Utah State University, Logan, UT (Feb 2024)
- 13. Wang, C. Arkema (Sartomer), King of Prussia, PA (Feb 2024)
- 12. Wang, C. Peking University, Beijing, China (2023)
- 11. Wang, C. Qingdao University of Science and Technology, Qingdao, China (2023)
- 10. Wang, C. Department of Chemical Engineering Graduate Seminar, Brigham Young University, Provo, UT (2023)
- 9. Wang, C. Chemical and Materials Engineering Department, University of Alberta, Edmonton, Alberta, Canada (2023)
- 8. Wang, C. Rocky Mountain Mechanics Symposium, Bozeman, MT (2022)
- 7. Wang, C. MSE Department Graduate Seminar, University of Utah, Salt Lake City, UT (2022)
- 6. Wang, C. MSE Department, University of Utah, remote (2021)
- 5. Wang, C. Department of Chemical Engineering, Arizona State University, remote (2021)
- 4. Wang, C. Department of Chemistry, University of Utah, remote (2021)
- 3. Wang, C. ACS Green Chemistry & Engineering Conference, remote (2020)
- 2. Wang, C. Zhejiang University, China (2019)
- 1. Wang, C. National Renewable Energy Laboratory, Golden, CO (2019)

CONFERENCE PARTICIPATION

- 19. Wang, C.. Network polyesters enable circular uses of important carboxylate and materials, ACS 2023 Fall, San Francisco, CA (2023)
- Wang, C.. Network polyesters enable circular uses of important carboxylate and materials, MRS 2023 Spring, San Francisco, CA (2023)
- 17. Grant Musgrave **Wang, C.**. High-Performance, Low-Cost, and Recyclable Photopolymers via Dual-Cure 3D-Printable Polyesters, **MRS 2023 Spring**, San Francisco, CA (2023)

- 16. Amelia (Millie) Heiner, Jeffery Bates, **Wang, C.** Compostability Study of Polycaprolactone Photopolymer Networks, **MRS 2023 Spring**, San Francisco, CA (2023)
- 15. Grant Musgrave **Wang, C.**. Structural Similarity in Network Polymers, **ACS 2022 Fall**, Chicago, IL (2022)
- 14. Wang, C.; Henson, W. R. Bio-derived Carboxylic Acids. Oral Presentation, Radtech 2020, Orlando, FL (2020)
- 13. Wang, C. Click Polymerizations *en route* to Advanced Materials. Poster Presentation, AICHE National Meeting, San Francisco, CA (2016)
- 12. **Wang, C.**; Goldman T. M.; Worrell, B. T.; McBride, M. K.; Bowman, C. N. Recyclable and Repolymerizable Thiol-X Photopolymers. Poster Presentation, **Photopolymerization Symposium**, Esters Park, CO (2016)
- Wang, C.; McBride, M. K.; Worrell, B. T.; Lyon, G. B.; Bowman, C. N. Thioesters in Photopolymerizations: A Route to Reconfigurable and Low Stress Polymers. Oral Presentation, IUCRC Photopolymerization Meeting, Esters Park, CO (2016)
- 10. Wang, C.; Bowman, C. N. Step-growth Clickable Micro/nano-Particles. Oral Presentation, RadTech Annual Meeting, Chicago, IL (2016)
- 9. Wang, C.; Bowman, C. N. Step-growth Clickable Micro/nano-particles. Oral Presentation, ACS National Meeting, San Diego, CA (2016)
- 8. Wang, C.; Bowman, C. N. Step-growth Clickable Micro/nano-particles. Oral Presentation, ACS Colloidal and Surface Science Symposium, Boston, MA (2016)
- Wang, C.; Barner-Kowollik, C.; Bowman, C. N. Polymer μNetwork: Preparation and Photoinduced Functionalization. Poster Presentation, Photopolymerization Fundamentals, Boulder, CO (2015)
- Wang, C.; Chatani, S.; Podgórski, M.; Bowman, C. N. Functional Nanoparticles from Thiol-Michael Addition Miniemulsion Polymerizations. Poster Presentation, IUCRC photopolymerization meeting, Seattle, WA (2015)
- Wang, C.; Podgórski, M.; Bowman, C. N. Heterogeneous Thiol-Michael Addition Polymerization for the Design of Functional Microparticles. Oral Presentation, ACS National Meeting, Denver, CO (2015)
- 4. Wang, C.; Bowman, C. N. Monodisperse Microspheres from Step-growth Click Polymerization. Poster Presentation, IUCRC photopolymerization meeting, Rocky Hill, CT (2014)
- 3. Wang, C.; Bowman, C. N. Monodisperse Microspheres from Step-growth Click Polymerization. Poster Presentation, Hangzhou Polymer International Forum, Hangzhou, China (2014)
- 2. Wang, C.; Gong, T.; Bowman, C. N. Polymer Networks formed by Simultaneous Photo-Induced Atom Transfer Radical Polymerization and Copper(I) Catalyzed Alkyne-Azide Cycloaddition. Poster Presentation, Photopolymerization Fundamentals, Jackson, WY (2013)
- Wang, C.; McBride, M. K.; Gong, T.; Bowman, C. N. Novel Polymer Networks from Copper(I) Catalyzed Alkyne-Azide Cycloaddition. Poster Presentation, IUCRC photopolymerization meeting, Chicago, IL (2013)

MENTORING EXPERIENCE at University of Utah

Caleb Reese, Postdoc, University of Utah (2022-present) Grant Musgrave, PhD Student, University of Utah (2021-present) Kara Iverson, MSE undergraduate, University of Utah (2023-present) Tyler Kirk, MSE undergraduate, University of Utah (2023-present) James Fetzer, MSE undergraduate, University of Utah (2023-present) Michael Thompson, ChemE undergraduate, University of Utah (2023-present) Anna Huber, MSE undergraduate, University of Utah (2022-present) Eden Yau, MechE undergraduate, University of Utah (2022-present) Raymond Lunde, MechE undergraduate, University of Utah (2022-2023) Barnali Sutradhar, PhD Student, University of Utah (2022-2023) John Kim, REU student, University of Utah (2022) Katie Bishop, REU student, University of Utah (2022) Radhika Bhakta, Chemistry undergraduate, University of Utah (2022) Amelia Heiner, MS Student, University of Utah (2022-2023)

SYNERGISTIC ACTIVITIES

Departmental Service Director of Undergraduate Study, MSE Department, 2023present

Societal Service Symposium organizer for the American Chemical Society national meeting Spring 2024 and Fall 2024, 2023

Societal Service Invited Panelist Speaker in Photopolymer Additive Manufacturing Alliance (PAMA) 2023 Workshop, Boulder, CO, 2023

Proposal Panelist National Science Foundation, 2022 & 2023

Proposal Reviewer Environmental Research Education Foundation, 2022

Proposal Reviewer Small Business Innovation Research grant, Department of Energy, 2021

Journal Referee Materials Horizons, Nature Communication Physics, Polymer Chemistry, Polymer, Chemical Communication, Journal of Materials Chemistry, Progress in Organic Coatings, Journal of Applied Polymer Science, Current Organic Chemistry, Polymer International, Polymers, Materials, Technologies, Polymer Reviews

Editorial Board RadTech UV+EB Magazine, 2017-present

Judge MIT Polymer Day, 2018 & 2019

Volunteer Tutoring immigrant students at Somerville High School, 2019

Member Sustainable Packaging Coalition, American Chemical Society, American Institute of Chemical Engineers, 2014-present

Organizer StARs Symposium, CU-Boulder Chemical and Biological Engineering Department, 2014