

## Marshall J. Allen

PhD, McKetta Department of Chemical Engineering University of Texas at Austin

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### Education

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| <b>University of Texas at Austin</b> , Ph.D. Chemical Engineering                       | 2023      |
| -Research: Light-based control over polymer network structure and mechanical properties |           |
| -NSF Graduate Research Fellow; Thrust 2000 Fellow, Cockrell School of Engr.             | 2018-2023 |
| <b>Oregon State University</b> B.S. Chemical Engineering, BS Chemistry                  | Mar 2018  |
| -Academic Achievement Award in Chemical Engineering                                     | 2017      |
| -Oregon State University Presidential Scholar                                           | 2013-2017 |

### Research Experience

**Ph.D. Candidate University of Texas at Austin** 2018-Present

McKetta Department of Chemical Engineering Advisors: Benny Freeman and Zak Page

**Undergraduate Research Assistant, Oregon State University** 2013- 2018  
Departments of Chemistry and Chemical Engineering

- Explored research in three research groups working on natural product total synthesis, inkjet printing of thin film transistors, and preparation and characterization of activated carbon for energy storage applications. Resulted in five co-authored publications

### Publications

#### Graduate School

- (11) **Allen M. J.**, Kim J.-W., Cater, H., Freeman B. D., Page Z. A., "Hybrid Epoxy-Acrylate Resins for Wavelength-Selective Multimaterial 3D Printing" *In Preparation*
- (10) **Allen M. J.**, Lien H.-M., Prine N., Burns, C., Adrian R., Gu X., Mangolini F., Cox L., Freeman B. D., Page Z. A., "Multimorphic Materials: Spatially Tailoring Mechanical Properties via Selective Initiation of Interpenetrating Polymer Networks." *Advanced Materials* **2022**, 2210208
- (9) Rylski A. K., Cater H. L., Mason K. S., **Allen M. J.**, Arrowood A. J., Freeman B. D., Sanoja G. E., and Page Z. A., "Polymeric multimaterials by photochemical patterning of crystallinity." *Science* **2022**, 378, 6616, 211-215
- (8) Cater H. L. Balynska I., **Allen M. J.**, Freeman B. D., and Page Z. A. "User Guide to Ring-Opening Metathesis Polymerization of endo-2 Norbornene Monomers with Chelated Initiators." *Macromolecules*. **2022**, 55, 15, 6671–6679
- (7) Wang H., Jones L. O., Hwang I., **Allen M. J.**, Tao D., Lynch V. M., Freeman B. D., Khashab N. M., Schatz G. C., Page Z. A., and Sessler J. L. "Selective Separation of Lithium Chloride by Organogels Containing Strapped Calix[4]pyrroles." *Journal of The American Chemical Society*. **2021**, 143, 48, 20403–20410
- (6) **Allen, M. J.**, Sujanani, R., Chamseddine, A., Freeman, B., Page, Z. "Mechanically robust hydrophobized double network hydrogels and their fundamental salt transport properties." \* *Journal of Polymer Science* **2021**; 59:2581-2589

#### Undergraduate

- (5) Ju, X., **Allen, M.**, Zhao, P., Salvo, P., Dryer F.B., and Beaudry, C. "Synthetic Studies toward Bazzanin K: Regioselective and Chemoselective Three-Component Suzuki Coupling." *The Journal of Organic Chemistry* **2019** 84 (18), 12246-12252
- (4) Choi, C., David, M., Gao, Z., Chang, A., **Allen, M.**, Wang, H., Chang, C. "Large-scale Generation of Patterned Bubble Arrays on Printed Bi-functional Boiling Surfaces." **2016** *Scientific Reports*, 6, 23760.
- (3) Choi, C., Gorecki, J., Fang, Z., **Allen, M.**, Li, S., Lin, L., Chang, C. Low-temperature, inkjet printed p-type copper(i) iodide thin film transistors. **2016** *Journal of Materials Chemistry C*, 4(43), 10309-10314
- (2) Luo, W., **Allen, M.**, Raju, V., Ji, X. (2014). An Organic Pigment as a High-Performance Cathode for Sodium-Ion Batteries. *Advanced Energy Materials*, 4(15) 1400554.
- (1) Luo, W., Wang, B., Heron, C., **Allen, M. J.**, Morre, J., Maier, C., Ji, X. Pyrolysis of cellulose under ammonia leads to nitrogen-doped nanoporous carbon generated through methane formation. **2014** *Nano Letters*, 14(4), 2225-9.

### **Presentations**

- "Spatial control over mechanical properties of polymer networks from single resin feedstocks." Fall 2023 ACS National Meeting, San Francisco CA, Oral Presentation. General topics award winner
- "Macro to Micro: Emulating Natural Toughening Mechanisms in Multimorphic Soft Materials Via Orthogonal Interpenetrating Polymer Networks." 2022 AIChE Annual Meeting, Phoenix AZ. Oral Presentation
- "Mechanically robust hydrophobized double network hydrogels and their fundamental salt transport properties." Tosoh Polymer Conference Hollywood CA, June 2022. Poster Presentation

### **Professional Experience**

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| <b>Chemical Engineering Intern</b> W.R. Grace, Albany OR                  | Jun-Dec 2017 |
| <b>Process Engineering Intern</b> Maxim Integrated Products, Beaverton OR | Mar-Sep 2016 |
| <b>Material Evaluation Intern</b> Bend Research Inc, Bend OR              | Jun-Sep 2015 |

### **Leadership and Mentorship**

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| <b>Graduate Student Assembly Chemical Engineering Representative</b>       | 2022-     |
| <b>MRSEC Research Experience for Teachers Mentor</b>                       | 2021-2022 |
| <b>Teaching Assistant, The University of Texas at Austin,</b>              | 2019-2020 |
| <b>Center for Materials for Water and Energy Systems Student Site Lead</b> | 2019-2021 |
| <b>Material Research Society-Vice President of OSU Chapter</b>             | 2015-2017 |