Exponent®
Engineering & Scientific Consulting

Brian Jing, Ph.D.

Senior Scientist | Polymers & Chemistry
Natick
+1-508-652-8532 | bjing@exponent.com

Professional Profile

Dr. Jing specializes in the chemistry, physics, transport capabilities, and mechanical behavior of polymeric materials. His expertise focuses on the design of dynamic polymer networks for functional applications by using a combination of synthesis and characterization techniques to elucidate structure-property relationships.

Trained as a polymer scientist, Dr. Jing is well versed in small molecule synthesis, polymerization methods, nuclear magnetic resonance (NMR), Fourier-transform infrared spectroscopy (FTIR), gel-permeation chromatography (GPC), small/wide-angle X-ray scattering (SAXS/WAXS), differential scanning calorimetry (DSC), thermogravimetric analysis (TGA), impedance spectroscopy, and rheology. With his diverse skillset and broad polymer science knowledge, Dr. Jing aims to assist clients with complex problems relating to the mechanical, conductive, and recycling performance of materials.

Prior to joining Exponent, Dr. Jing was a graduate research assistant at the University of Illinois Urbana-Champaign in the Department of Materials Science and Engineering. His research focused on expanding the capabilities of dynamic polymer networks beyond self-healing and recycling to include ion conduction and energy dissipation. He synthesized polyethylene glycol networks with reversible covalent crosslinks and investigated how parameters such as linker length and crosslinker chemistry influenced Li-ion transport and mechanical properties. Additionally, Dr. Jing developed polydimethylsiloxane dynamic networks and demonstrated that these materials are highly efficient at dissipating energy generated by a shockwave.

Academic Credentials & Professional Honors

Ph.D., Materials Science and Engineering, University of Illinois, Urbana-Champaign, 2021

B.S., Chemistry, University of Massachusetts, Amherst, 2015

Racheff-Intel Award, University of Illinois Urbana-Champaign, 2021

Outstanding Graduate Student Teaching Award, University of Illinois Urbana-Champaign, 2021

Languages

Mandarin Chinese

Publications

Porath, L., Soman, B., Jing, B. B., & Evans, C. M. (2022). Vitrimers: Using Dynamic Associative Bonds to Control Viscoelasticity, Assembly, and Functionality in Polymer Networks. ACS Macro Letters, 11(4), 475-483.

Jing, B. B., & Evans, C. M. (2019). Catalyst-free dynamic networks for recyclable, self-healing solid polymer electrolytes. Journal of the American Chemical Society, 141(48), 18932-18937.

Jing, B. B., Mata, P., Zhao, Q., & Evans, C. M. (2021). Effects of crosslinking density and Lewis acidic sites on conductivity and viscoelasticity of dynamic network electrolytes. Journal of Polymer Science.

Lee, J., Jing, B. B., Porath, L. E., Sottos, N. R., & Evans, C. M. (2020). Shock Wave Energy Dissipation in Catalyst-Free Poly (dimethylsiloxane) Vitrimers. Macromolecules, 53(12), 4741-4747.

Shen, C., Zhao, Q., Shan, N., Jing, B. B., & Evans, C. M. (2020). Conductivity–modulus–T g relationships in solvent-free, single lithium ion conducting network electrolytes. Journal of Polymer Science, 58(17), 2376-2388.

Presentations

Jing, B. B., Mata, P., Shen, C., & Evans, C. M. Effects of crosslink density, salt, and bond selection on conductivity and relaxation in dynamic network electrolytes. Oral Presentation, ACS Spring 2021

Jing, B. B., Mata, P., Shen, C., & Evans, C. M. Effects of salt addition on viscoelasticity in conductive dynamic networks. Oral presentation, APS Spring 2021

Jing, B. B., & Evans, C. M Ionic Conductivity of Salt in Dynamic Polymer-Network Electrolytes. Oral presenation, MRS Fall 2019