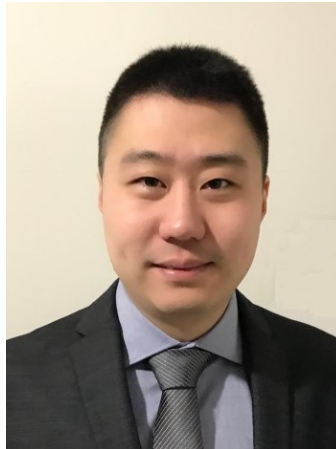




Applications of Liquid Crystals Beyond Display Technology

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Tuesday, October 22nd, 2024
4:00 PM to 5:00 PM
Room 2540 GGB

[ME Seminar Link](#)
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Abstract:

Liquid crystals (LCs), a representative class of structured fluids that exhibit properties

commonly associated with crystalline solids (long-range orientational ordering) and simple fluids (high molecular mobility), have been widely used in display technology. However, considering the tremendous switch from liquid crystal displays (LCDs) to light emitting diode (LED) displays, my research aims to broaden the applicability of LCs beyond display technology. In my presentation, I will initially discuss the development of an LC-based sensor for detecting COVID-19 virus RNA, highlighting the inherent long-range ordering and stimuli-responsiveness of LCs. Next, I will show how LCs can be used to manipulate the release of confined objects in response to external stimuli. Specifically, the impact of droplets induces shear forces, prompting structural changes in the LC that facilitate chemical release, with potential applications in additive manufacturing. Finally, I will explore the innovative use of LCs as a new solvent for aligning polymer chains of intrinsically amorphous polymers during polymerization, which offers unprecedented control over their properties and unlocks their potential in shape-changing polymers.

Bio:

Xiaoguang (William) Wang is an Assistant Professor in the Department of Chemical and Biomolecular Engineering at The Ohio State University. He received his B.S. in Chemical Engineering in 2008 and M.S. in 2011 from Zhejiang University, China, with a focus on controlled/living free radical emulsion polymerization. He obtained his Ph.D. in Chemical Engineering from University of Wisconsin- Madison in 2016, under the supervision of Prof. Nicholas Abbott. Before joining The Ohio State University, Dr. Wang did his postdoc study with Prof. Joanna Aizenberg at Harvard University. His research interests center around the innovative design of soft materials, including polymers and liquid crystals, and nanomaterials, including single-atom structures. His contributions have received recognition, including NSF CAREER Award (DMR Polymers) and ACS PMSE Early Investigator Award.

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