

BRIAN LEE

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EDUCATION

University of Texas at Austin August 2022 - present
Ph.D Material Science and Engineering

Texas A&M University August 2018 - December 2021
B.S Chemistry

EXPERIENCE

Graduate Researcher - Wang Materials Group September 2022 - present
The University of Texas at Austin, Texas Materials Institute

- Conducted research on novel computing technologies with a focus on 2D memristors
- Utilized first-principles methods (DFT) to understand resistive switching mechanisms in 2D memristors
- Investigated the adsorption energies of various transition metal adatoms on different 2D transition metal dichalcogenides (TMDs) to identify candidates for resistive switching devices
- Applied machine learning techniques (SISSO) to predict adsorption energies in 2D TMDs using energies and properties widely available
- Developed computational models to predict adsorption behavior of transition metals on 2D TMDs
- Investigated the effects of defect sites on the adsorption energies and switching behavior of 2D memristors

Chemist - American Biochemicals January 2022 - April 2022
College Station, TX

- Synthesized and purified various custom organic compounds to meet specific customer requirements, developing strong analytical and laboratory skills
- Gained experience in precision synthesis and purification techniques

Undergraduate Research Assistant - Fang Group June 2021 - December 2021
Texas A&M University, Department of Chemistry

- Researched superwetable surfaces using dual-purpose ZnO nanotetrapods
- Optimized parameters to design a mechanically/chemically robust superhydrophobic surface
- Synthesized and constructed superhydrophobic meshes to test the applicability of the method in industrial-like settings
- Developed and validated various approaches to develop more robust superhydrophobic meshes and meshes capable of emulsion separation

Aggie Research Scholar - Sukhishvili Group January 2021 - May 2021
Texas A&M University, Department of Materials Science and Engineering

- Worked in a team of 4 to research the effects of pH on star polymer growth
- Developed star polymer films via layer-by-layer deposition

Undergraduate Research Assistant - Son Group August 2019 - December 2019
Texas A&M University, Department of Chemistry

- Synthesized perovskites via hot-injection method, exploring their potential for quantum dot applications
- Researched specific parameters affecting the concentration and size of quantum dots
- Analyzed and characterized perovskite quantum dots using UV-Vis spectrometry

PUBLICATION

- Li, C.; Jiangli, B.; **Lee, B.**; Yu, G.; Zhang, W.; Chen, H.; Sanders, S.; Al-Hashimi, M.; Banerjee, S.; Fang, L. Versatile and Efficient Photopolymerization Approach to Zinc Oxide-Composed Dual Functional Membranes for Sustainable Water Treatment. *Matter* 2024, 7 (3), 1146–1160.
- Li, C.; **Lee, B.**; Wang, C.; Bajpayee, A.; Douglas, L. D.; Phillips, B. K.; Yu, G.; Rivera-Gonzalez, N.; Peng, B.; Jiang, Z.; Sue, H.-J.; Banerjee, S.; Fang, L. Photopolymerized Superhydrophobic Hybrid Coating Enabled by Dual-Purpose Tetrapodal ZnO for Liquid/Liquid Separation. *Mater. Horiz.* 2022, 9 (1), 452–461.

TECHNICAL STRENGTHS

Software & Tools	VASP, WIEN2k, QuantumESPRESSO, Python, MATLAB, LaTeX, Bash
Lab Techniques	Gas chromatography (GC), High-performance liquid chromatography (HPLC) Fourier transform infrared spectroscopy (FTIR) UV-Vis spectroscopy, Nuclear magnetic resonance spectroscopy Mass spectrometry (MS), Scanning electron microscopy (SEM) Scanning tunnelling microscopy (STM)