

Education

- 2027 (Expected) **Ph.D. Materials Science and Engineering**, Texas A&M, College Station, TX.
GPA: N/A
- December 2022 **M.S. Materials Science and Engineering**, Texas A&M, College Station, TX.
GPA: 3.75 | D³EM Fellow | Professional Development Certificate
Thesis: Optical Response and Stability of MA₂Z₄ and Pentagonal Two-Dimensional Materials
- May 2020 **B.S. Chemical Engineering**, Texas A&M, College Station, TX.
GPA: 3.74 | Minors: Physics, Materials Science and Engineering
Thesis: Microscopic Origin of Nonlinear Optical Properties of 2D Materials
Thesis: Novel Nanomaterial Ink Coating Method for Functional 3D-Printed Parts

Relevant Coursework

- MSEN Nanomaterials Science, Electrical and Optical Materials, Materials Informatics
- Physics Quantum Theory of Solids, Solid State Physics, Quantum Mechanics I and II, Modern Physics, Methods of Theoretical Physics I, Electricity and Optics, Mechanics

Experience

Research Internships

- May–Aug. 2020 **Condensed Matter Physics Intern**, Lawrence Berkeley National Laboratory, Berkeley, CA.
◦ Extended the Wannier Koopman Method for predicting band gap to heterostructures
- May–Dec. 2018 **Materials Science Intern**, Oak Ridge National Laboratory, Oak Ridge, TN.
◦ Developed new in-situ characterization technique of pulsed laser deposition (PLD) films
◦ Simulated laser-material interactions to support PLD growth monitoring system
◦ Metal-assisted exfoliated a novel topological 2D material
- Jan.–Aug. 2017 **Materials Science Intern**, Oak Ridge National Laboratory, Oak Ridge, TN.
◦ Assembled and coded a scanning photocurrent microscope (SPCM) worth \$300,000
◦ Synthesized and characterized 2D materials and their optoelectronic properties

Research Experience

- 2019–Present **Dr. Xiaofeng Qian's Materials Theory Group**, Materials Science & Engineering, Texas A&M University, College Station, TX.
◦ Explored microscopic origin of nonlinear photocurrents in Janus 2D materials
◦ Performed density functional theory (DFT) and nonlinear optical property calculations

2016–2018 **Dr. Micah Green's Dispersed Nanomaterials Group**, *Chemical Engineering, Texas A&M University*, College Station, TX.

- Demonstrated novel ink 3D-printing method
- Designed experiments for cross-linking an unstable polymer

Research Skills

Experimental Scanning Photocurrent Microscopy (SPCM), Chemical Vapor Deposition (CVD), Pulsed Laser Deposition (PLD), photolithography, electron beam evaporation, instrumentation, Scanning Electron Microscopy (SEM), Raman Spectroscopy, (low temperature) semiconductor characterization, Additive Manufacturing, rheometry

Computational Density Functional Theory (DFT), VASP, MATLAB, LabVIEW, Python, C#, Linux, Bash, Vim, VESTA, ASPEN, AutoLISP, LayoutEditor, L^AT_EX

Languages Spanish (limited working proficiency), Arabic (beginner)

Publications

1. H. Yu, M. Liu, Y. Luo, **A. Strasser**, X. Qian, X. Qian, and S. Ji. "QH9: A Quantum Hamiltonian Prediction Benchmark for QM9 Molecules." Accepted at The 37th Conference on Neural Information Processing Systems (NeurIPS). arXiv 2306.09549 (2023).
2. **A. Strasser**, H. Wang, X. Qian. "Nonlinear Optical and Photocurrent Responses in Janus MoS₂–MoSSe Monolayer and MoS₂–MoSSe van der Waals Heterostructure." *Nano Letters*. 2022.
3. A. A. Puzetzkyy, Y.-C. Lin, C. Liu, **A. Strasser**, Y. Yu, S. Canulescu, C. M. Rouleau, K. Xiao, G. Duscher, D. B. Geohegan. "In situ laser reflectivity to monitor and control the nucleation and growth of atomically-thin 2D materials." *2D Materials*. 2020.
4. Y.-C. Lin, C. Liu, Y. Yu, Y. Gu, E. Zarkadoula, M. Yoon, A. A. Puzetzkyy, L. Liang, **A. Strasser**, X. Kong, H. M. Meyer, M. Lorenz, M. F. Chisholm, I. Ivanov, C. M. Rouleau, G. Duscher, K. Xiao, D. B. Geohegan. "Low energy implantation into transition metal dichalcogenide monolayers to form Janus structures." *ACS Nano*. 2020.
5. W. Strasser, **A. Strasser**. "Challenging Paradigms By Optimizing Combustible Dust Separator." *ASME Journal of Fluids Engineering*. 2018.
6. C. B. Sweeney, A. Moran, J. Gruener, **A. Strasser**, M. J. Pospisil, M. A. Saed, M. J. Green. "Radio Frequency Heating of Carbon Nanotube Composite Materials." *Journal of Advanced Materials*. 2018.
7. W. Strasser, **A. Strasser**. "Investigation of Dust Separator Design and Risk Mitigation." ASME Fluids Engineering Division Summer Meeting. FEDSM2017-69097. 2017.

Pre-publication Manuscripts

1. J. Tang, S. T. Ding, H. Chen, A. Gao, T. Qian, Z. Huang, Z. Sun, X. Han, **A. Strasser**, J. Li, M. Geiwitz, M. Shehabeldin, V. Belosevich, Z. Wang, Y. Wang, K. Watanabe, T. Taniguchi, D. C. Bell, Z. Wang, L. Fu, Y. Zhang, X. Qian, K. S. Burch, Y. Shi, N. Ni, G. Chang, S.-Y. Xu, and Q. Ma. "Observation of the dual quantum spin Hall insulator by density-tuned correlations in a van der Waals monolayer." Submitted to *Nature*. 2023
2. X. Zhang, L. Wang, J. Helwig, Y. Luo, C. Fu, Y. Xie, M. Liu, Y. Lin, Z. Xu, K. Yan, K. Adams, M. Weiler, X. Li, T. Fu, Y. Wang, H. Yu, Y. Xie, X. Fu, **A. Strasser**, S. Xu, Y. Liu, Y. Du, A. Saxton, H. Ling, H. Lawrence, H. Stärk, S. Gui, C. Edwards, N. Gao, A. Ladera, T. Wu, E. F. Hofgard, A. Mansouri Tehrani, R. Wang, A. Daigavane, M. Bohde, J. Kurtin, Q. Huang, T. Phung, M. Xu, C. K. Joshi, S. V. Mathis, K. Azizzadenesheli, A. Fang, A. Aspuru-Guzik, E. Bekkers, M. Bronstein,

M. Zitnik, A. Anandkumar, S. Ermon, P. Liò, R. Yu, S. Günnemann, J. Leskovec, H. Ji, J. Sun, R. Barzilay, T. Jaakkola, C. W. Coley, X. Qian, X. Qian, T. Smidt, and S. Ji. "Artificial Intelligence for Science in Quantum, Atomistic, and Continuum Systems." arXiv: 2307.08423. 2023.

3. **A. Strasser**, X. Qian. "Electronic Structure and Optical Properties of MA_2Z_4 Synthetic 2D Crystals." (In Preparation)

Conference Presentations

1. **A. Strasser**, X. Qian. MRS Fall Meeting. "First-Principles Study of Electronic Structure and Nonlinear Optical Responses of Novel Two-Dimensional Materials and Moiré Superlattices." 2023. (Poster).
2. **A. Strasser**, H. Wang, X. Qian. APS March Meeting. "Nonlinear Optical Properties of Janus 2D Materials: A First Principles Study." 2020. (Oral).
3. **A. Strasser**, H. Wang, X. Qian. Gulf Coast Undergraduate Research Symposium, Rice University. "First-Principles Study of Nonlinear Optical Properties of Janus MoSSe." 2019. (Oral).
4. **A. Strasser**, C. Rouleau, A. D. Oyedele, K. Xiao, D. Geohegan. Texas A&M University, Grand Challenge Research Program Symposium. "Probing Photocurrent Response in 2D Materials Using Scanning Photocurrent Microscopy." 2019. (Poster).
5. (Invited) **A. Strasser**, A. Moran, C. B. Sweeney, M. J. Green. Materials Technology Institute, AmeriTAC 127. "Nanomaterial Ink Coating for Functional 3D-printed Parts." 2018. (Oral).
6. **A. Strasser**, A. Moran, C. B. Sweeney, M. J. Green. Texas A&M University, Student Research Week. "Nanomaterial Ink Coating for Functional 3D-printed Parts." 2018. (Oral).
7. **A. Strasser**, C. Rouleau, A. D. Oyedele, K. Xiao, D. Geohegan. Bulletin of the American Physical Society, 85th Annual Meeting of the APS Southeastern Section. "Probing Photocurrent Response in 2D Materials Using Scanning Photocurrent Microscopy." (Poster).
8. **A. Strasser**, C. Rouleau, A. D. Oyedele, K. Xiao, D. Geohegan. Oak Ridge National Laboratory, CNMS User Meeting. "Development of a Scanning Photocurrent Microscope for Nanomaterial Characterization." 2018. (Poster).
9. **A. Strasser**, A. Moran, C. B. Sweeney, M. J. Green. American Materials Society International, Thermal Processing in Motion. "Nanomaterial Ink Coating for Functional 3D-printed Parts." 2018. (Oral).
10. **A. Strasser**, W. Strasser. American Society of Mechanical Engineers. Fluids Engineering Division Summer Meeting. 19th Symposium on Industrial and Environmental Applications of Fluid Mechanics. "Preliminary Air-Water Bottle Rocket Design." 2012. (Oral).

Extracurricular Activities

- Effective Altruism for Christians, Campus Representative
- Women in Materials Science, Member
- Undergraduate Research Ambassadors, Panelist
- American Institute of Chemical Engineers, Mentor
- Tau Beta Pi (Engineering Honors Society), Conference Co-Chair
- Christian Engineering Leaders, Mentor
- Boy Scouts of America, Eagle Scout

Awards

- Outstanding Engineering M.S. Graduate Student Award 2022
- Outstanding Scholarly Output (UT-Battelle) 2020
- Data-Enabled Discovery and Design of Energy Materials Fellowship 2020-2021
- BP Scholar 2018
- Dean's Excellence Award Honorable Mention 2017
- 3rd Place Aggies Invent 2017
- NAE Grand Challenge Scholar 2016-2020
- President's Endowed Scholar 2015-2020
- University Honors, Engineering Honors 2015-2020
- Brown Scholar (full ride merit scholarship) 2015-2020
- Eagle Scout 2015