

Alex Strasser

Texas A&M University

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Education

May 2020 **Bachelor's Degree**, Texas A&M University, College Station, TX.

GPA: 3.72 | Major: Chemical Engineering | Minors: Physics, Materials Science (MSEN)

Thesis (MSEN, in preparation): *Microscopic Origin of Nonlinear Optical Properties of Janus 2D Materials*

Thesis (CHEN): *Novel Nanomaterial Ink Coating Method for Functional 3D-Printed Parts*

Relevant Coursework

MSEN Nanomaterials Science, Electrical and Optical Materials, Intro to Polymer Engineering

Physics Solid State Physics, Quantum Mechanics I and II, Modern Physics

Experience

Research Internships

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**, 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**, 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), MATLAB, LabVIEW, Python, C#, Linux, Bash, Vim, VESTA, ASPEN, AutoLISP, LayoutEditor, L^AT_EX

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

Publications

1. **A. Strasser**, H. Wang, X. Qian. "Nonlinear Optical Responses and Photocurrent Generation in 2D Janus Transition Metal Dichalcogenide SMOSe." (in preparation).
2. **A. Strasser**, A. D. Oyedele, S. Das. "Effects of Crystallization on the Fabrication and the Industrial Scalability of High-Performance Perovskite Solar Cells." (in preparation).
3. A. A. Poretzky, 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." (In review, *2D Materials*).
4. Y.-C. Lin, C. Liu, Y. Yu, Y. Gu, E. Zarkadoula, M. Yoon, A. A. Poretzky, 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." (In review, *ACS Nano*).
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).

Conference Presentations

1. **A. Strasser**, H. Wang, X. Qian. APS March Meeting. "Nonlinear Optical Properties of Janus 2D Materials: A First Principles Study." 2020. (Oral).
2. **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).
3. **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).
4. (**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).
5. **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).
6. **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).
7. **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).
8. **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).
9. **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

- 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

- BP Scholar 2018
- Dean’s Excellence Award Honorable Mention 2017
- 3rd Place Aggies Invent 2017
- NAE Grand Challenge Scholar 2016-2020
- National AP Scholar 2015
- President’s Endowed Scholar 2015-2020
- Eagle Scout 2015
- University Honors, Engineering Honors 2015-2020
- National Merit Finalist 2015
- Brown Scholar (full ride merit scholarship) 2015-2020