

Lucas C. Hanson

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Research Experience

Rutgers University Department of Physics and Astronomy
Piscataway, NJ

May 2018-August 2020

In the group of Professor Eva Y. Andrei, investigated both the development of an alternative method of bilayer graphene synthesis using chemical vapor deposition (CVD) and a novel technique for inducing uniaxial strain in graphene.

Rutgers University Microfluidics Lab
Piscataway, NJ

September 2017-May 2018

In the group of Professor German Drazer, used the LAMMPS molecular dynamics simulation to investigate transport and adsorption phenomena of colloid particles suspended at fluid-fluid interfaces in microfluidic channels.

Education

University of Pennsylvania
Philadelphia, PA

September 2020-Present

Pursuing a Phd. in Physics with a concentration in Experimental Condensed Matter Physics.

Rutgers University
New Brunswick, NJ

September 2016-May 2020

- B.S. in Physics Magna Cum Laude with Highest Honors
- Thesis titled "A Novel Technique for Inducing Uniaxial Strain In Graphene"
- Minors in Mathematics and Philosophy

Carnegie Mellon University
Pittsburgh, PA

July 2015-August 2015

Applied to and enrolled in Carnegie Mellon University's summer pre-college program and took first year university level courses in calculus and physics.

Teaching and Leadership

Society of Physics Students Chapter President
Rutgers University Society of Physics Students

May 2017-Present

Served as Society of Physics Students Treasurer for sophomore and junior year, and as President senior year. Lead the expansion of a variety of chapter initiatives, most notably outreach to local highschools, the design and construction of a student run computing cluster, and organization of a peer mentorship program for undergraduate physics majors.

Teaching Assistant
Rutgers University Department of Physics and Astronomy

September 2018-December 2018

Worked as a teaching assistant and grader for analytical physics lab II.

Talks and Poster Sessions

1. "A Novel Technique for Inducing Large Area Uniaxial Strain in Graphene", March Meeting of the American Physical Society, Denver, CO.¹ March 2020
2. "Atmospheric Pressure Chemical Vapor Deposition of Twisted Bilayer Graphene on Copper Foil Substrates", Rutgers Laboratory for Surface Modification Symposium, Rutgers University New Brunswick, NJ. April 2019
3. "Chemical Vapor Deposition of Bilayer Graphene", Rutgers Undergraduate Research Writing Symposium, Rutgers University, New Brunswick, NJ. April 2019
4. "Atmospheric Pressure Chemical Vapor Deposition of Twisted Bilayer Graphene on Copper Foil Substrates", Society of Physics Students Zone 3 Meeting, Rutgers University, New Brunswick, NJ. April 2019
5. "Atmospheric Pressure Chemical Vapor Deposition of Twisted Bilayer Graphene on Copper Foil Substrates", March Meeting of the American Physical Society, Boston, MA. March 2019
6. "Chemical Vapor Deposition of Bilayer Graphene", Rutgers University STEM Community Outreach Symposium, Rutgers University, New Brunswick, NJ. November 2018
7. "Molecular Dynamics Simulation of Nanoparticle Re-entrainment by Fluid-Fluid Interfaces and Its Application to Transport in the Vadose Zone", Aresty Research Symposium, Rutgers University, New Brunswick, NJ. April 2018

Awards and Honors

- Rutgers University School of Arts and Sciences Henry Rutgers Scholar 2020
- Rutgers University School of Arts and Sciences Paul Robson Scholar 2020
- Rutgers University Department of Physics and Astronomy Paul L. Leath Outstanding Thesis Award Winner 2020
- Rutgers University Department of Physics and Astronomy Richard J. Plano Fellowship Winner 2019
- Society of Physics Students National Leadership Scholarship Recipient 2019
- Society of Physics Students Travel Grant Recipient 2019
- Aresty Research Foundation Travel Grant Recipient 2019
- 2nd place finisher for outstanding poster presentation at the 2018 Rutgers STEM Community Outreach Symposium
- Honorable Mention for best poster at the 2018 Aresty Research Symposium
- Dean's list: F2016, F2017, S2018, F2018, S2019, F2019

Skills

- Proficiency in chemical vapor deposition of graphene
- Proficiency in heterostructure and device fabrication
- Proficiency in atomic force microscopy
- Proficiency in Raman spectroscopy
- Proficiency with Origin
- Proficiency with VMD
- Familiarity with Javascript, HTML, MATLAB, Python, Latex
- Familiarity with AutoCad and Inventor
- Familiarity with Gwydion
- Familiarity with LAMMPS
- Machine shop training

¹ Cancelled due to COVID-19, virtual presentation available