Alexander Barry

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EDUCATION

Cornell University, College of Engineering **Ithaca, NY**
Mechanical Engineering – Major *Expected Graduation: May 2027* – GPA: 4.108
Relevant Coursework: Physics Mechanics (A), Intro to CS (A+), Multivariable Calculus (A+), Differential Equations (A+), Linear Algebra (A+), Statics (A+), Thermodynamics (A+), Dynamics (A), Mechanical Design (A+)
In progress: Fluid Dynamics, System Dynamics, Waves and Quantum Physics

WORK EXPERIENCE

CENTER FOR COMPOSITE MATERIALS, UNIVERSITY OF DELAWARE **Newark, DE**
Intern; Supervisor: Sai Aditya Pradeep *May 2025 – August 2025*

- Characterized effect of modifying cooling rates on interfacial shear strength of fiber reinforced thermoplastic polyolefins
- Developed and standardized a method to rapidly produce and test Single Fiber Pull-out Test specimens
- Awarded 1st place in the Undergraduate Summer Symposium

CENTER FOR COMPOSITE MATERIALS, UNIVERSITY OF DELAWARE **Newark, DE**
Intern; Supervisor: Dr. John W. Gillespie Jr. *June 2022 – August 2024*

- Reduced coefficient of thermal expansion mismatch in bonded Cu/polyimide, characterized primary bonding mechanism
- Characterized and resolved cause of void defects in TuFF carbon fiber panels, improving tensile properties by over 10%
- Validated new material model MAT213 through experimental testing, boosting simulation credibility
- Designed testing methods for difficult to measure material properties, validating new material simulation model MAT213

ACTIVITIES

CORNELL AUTONOMOUS DRONE PROJECT TEAM **Ithaca, NY**
Mechanical Subteam – Mechanical Engineer *January 2025 – Present*

- Developed and manufactured a 5" propeller quadcopter drone using CAD, 3D printing, CNC machined carbon fiber parts
- Produced 1m-long glider ducted-fan drone in CAD, designed for calculated aerodynamic properties required for lift

APPLIED TURBULENCE RESEARCH FOR PROF. G. BEWLEY **Ithaca, NY**
Undergraduate Research Assistant *September 2024 – Present*

- Implemented and developed code using PID controls for real-time autonomous quadcopter control
- Compiled and analyzed flight path data to tune system and achieve stable equilibrium

REFERENCES

PUBLICATION: CCM RESEARCH *January 2024*
S. M. Doshi, A. Barry, *et al.*, "Adhesion Characterization and Enhancement between Polyimide-Silica Composite and Nodulated Copper for Applications in Next-Generation Microelectronics," *ACS Applied Materials & Interfaces*, vol. 16, no. 2, pp. 2692–2703, Jan. 2024, doi: 10.1021/acsami.3c14434.

- Paper on improvements to Copper/Polyimide adhesion properties by modifying processing parameters, silica content

SKILLS

- 3D CAD (Fusion 360, SolidWorks, Onshape), MATLAB, Python, Microsoft Excel, Data Analysis
- Mechanical Testing (Instron Testing, DMA, DSC, TGA, SFPO), SEM imaging, MicroCT scanning, ImageJ