

# JALAJ SANJAY MEHTA

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## EDUCATION

**COLUMBIA UNIVERSITY, Fu Foundation School of Engineering and Applied Science** **GPA: 3.65**  
**Major: Materials Science and Engineering** **Minor: Computer Science**

**UNIVERSITY OF PENNSYLVANIA, School of Engineering and Applied Science**  
**Program: M.S.E. Materials Science and Engineering** **GPA: 3.85**

## RESEARCH EXPERIENCE

**COLUMBIA MATERIALS SCIENCE & ENGINEERING DEPT - SENIOR DESIGN PROJECT**  
*New York, New York* *October 2024 - May 2025*  
*Research Assistant at Columbia University* *Liquid Electrolytes and Electrochemical Cells*

- Utilize qNMR and DSC to develop a phase diagram representative of organic liquid electrolytes
- Conduct a literature review to develop an understanding of the efficacy of SPAN anodes for use in electrochemical cells
- Create electrochemical cells from scratch as part of larger experiments to create lighter and more energy-dense batteries

**COLUMBIA CHEMICAL ENGINEERING DEPT & BROOKHAVEN NATIONAL LABORATORY**  
*Brookhaven and New York, New York* *February 2022 - May 2024*  
*Research Assistant in Gang Lab* *Visiting Researcher at Brookhaven National Lab*

- Establish a novel procedure to metalize DNA crystal lattices via infiltration with iron oxide
- Synthesize DNA crystals and test their mechanical capabilities via nanoindentation
- Characterize DNA crystals via SEM, TEM, FIB, optical microscopy, XRD, and EDX
- Develop a method to derive mechanical properties from raw nanoindentation data
- Interpret, organize, and convey microscopy and spectroscopy data to determine further procedural steps

**MICKEY LELAND ENERGY FELLOWSHIP AT THE NATIONAL ENERGY TECHNOLOGY LAB**  
*Virtual and Albany, Oregon* *June 2023 - August 2023*  
*Undergraduate Fellow* *Materials Engineering and Manufacturing*

- Write a sophisticated Python program for image processing of transmission electron microscopy images
- Implement 3D matrix mathematics in Python to determine crystal grain misorientation angle and axis
- Incorporate said program into an easily usable executable with a simple user interface(Tkinter library)
- Compile work conducted and results to present at a Department of Energy Symposium in Washington D.C.

**SUNY STONY BROOK UNIVERSITY, GARCIA RESEARCH PROGRAM**  
*Stony Brook, New York* *July 2019 - March 2021*  
*Researcher* *Polymer Engineering*

- Create a biodegradable hydrogel flame retardant from a physically cross-linked PVA base with particles of Starch, RDP, and RDP-coated Starch embedded inside, and the property determination of said hydrogels
- Analyze a UIO-66 metal-organic framework, through the Lattice Boltzmann model, to develop a plausible reaction mechanism for carbon capture properties and predict trends in the diffusion coefficient change.

- Enhancing the Flame Retardancy of Biodegradable Poly(vinyl alcohol) Hydrogels with Resorcinol Bis(diphenyl phosphate) Coated Starch: *Student Presentee at the Fall 2019 Materials Research Society Conference in Boston*
- Publication in the American Chemical Society Biomacromolecules Journal 2021: *Synthesis of an Effective Flame-Retardant Hydrogel for Skin Protection Using Xanthan Gum and Resorcinol Bis(diphenyl phosphate)-Coated Starch*

## **PROFESSIONAL EXPERIENCE**

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### **AUGUST**

*Remote*

*Product Developer*

*December 2025 - Present*

*Legal AI Systems*

- Review user data and AI assistant usage for bugs and provide feedback on tool improvement
- Provide guidance on programming direction for implementable feature changes
- Train and collaborate with team members to improve efficiency of product development

### **NORTHROP GRUMMAN MISSION SYSTEMS**

*Linthicum, Maryland*

*College Technical Intern*

*June 2024 - August 2024*

*Transistor Process Control*

- Integrate a virtual-source transistor model into Python and test its viability via reference to collected data
- Create a program with a user interface to analyze bulk amounts of transistor data from various file types
- Derive relevant parameters from raw data, including I-V curves, capacitance, conductance, and power
- Utilize a testing platform to measure transistor capability from various manufacturers at room temperature
- Incorporate cold-temp restrictions into the virtual source model to account for carrier freeze-out

### **COLUMBIA UNIVERSITY UNDERGRADUATE STUDENT LIFE**

*New York, New York*

*Community Events Coordinator*

*May 2023 - September 2023*

*Columbia New Student Orientation Program (NSOP)*

- Develop Columbia community building events as their lead contact and associated committee member
- Collaborate with administration and staff to implement Columbia-specific programming
- Work with the rest of the committee members to design the entirety of the orientation schedule
- Train several hundred Orientation Leaders and Crew Captains and create minute-by-minutes for all events

## **ACTIVITIES**

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### **COLUMBIA UNIVERSITY SENATE AND ENGINEERING STUDENT COUNCIL**

*New York, New York*

*SEAS Undergraduate Senator*

*October 2023 - May 2025*

*Student Affairs, Rules of University Conduct, and Structures & Operations*

- Represent the engineering undergraduates as part of Columbia University's primary body of shared governance
- Facilitate the development of new proposals to the larger University Community in tandem with other student senators
- Interface with representatives of the University Administration, Faculty, and the colleges within Columbia University
- Work with the Engineering Student Council to hear constituent concerns and host events for students in coordination with other undergraduate student councils

- Principled Action Leadership and Engagement Award

### **PERSONAL BACKGROUND**

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- Columbia University Bonomi Scholar (Summer 2022) and Columbia SEAS Dean's List [All Eligible Semesters (16+ credits taken)]
- Software and Programming Knowledge: Python, Arduino, Java, Onshape, C, SQL, Ultimaker Cura, Microsoft Excel and Powerpoint, ImageJ, LaTeX
- Languages: English, Gujarati, and Spanish