Allen Xie

8875 Costa Verde Blvd, San Diego, 92122 | (213) 662-2356 | xie_allen2005@outlook.com

EDUCATION

The University of California San Diego — **San Diego, CA**
Bachelor of Science — **Expected Graduation: 2027**

- **Major:** NanoEngineering

TECHNICAL SKILLS

- **Laboratory & Cleanroom Skills:** Cleanroom protocol and micro/nano fabrication procedures, probe station, Vacuum Chamber, Soldering Station, Scanning Electron Microscopy (SEM), Transmission Electron Microscopy (TEM), UV-Vis Spectroscopy, Dynamic Light Scattering (DLS), Optical Microscopy, Nanomaterial characterization and sample preparation
- **Engineering & Design:** SolidWorks, Autodesk 3ds Max
- **Programming:** MATLAB
- **Software:** Microsoft Office (Word, Excel, PowerPoint), Adobe Lightroom, Adobe Premiere Pro

RESEARCH EXPERIENCE

Columbia University BioMEMS Laboratory - Prof. Qiao Lin — **New York ,NY**
Research Assistant — **June 2026 – Oct 2026**

- Assisted PhD researchers in evaluating aptamer-functionalized graphene field-effect transistor biosensors for **everolimus detection in human blood**, including centrifugation-based sample preparation and blood handling.
- Conducted a literature review on antifouling surface functionalization, selective aptamer attachment, and CNT- and 2D-material alternatives to graphene to **improve sensor sensitivity, stability, and performance in physiological media.**
- Contributed to the design of **an integrated sensing platform combining microfluidic sample exchange**, miniaturized fluid-control components, and biosensor readout within a compact device.
- Investigated **whole-blood filtration and plasma-separation strategies** to convert untreated blood into sensor-compatible samples for **direct testing**.
- Contributed to a **research proposal** for an integrated **everolimus monitoring device** incorporating novel sensing materials, **blood-sample preprocessing**, and automated microfluidic control.

Stanford University - Prof. Christos Constantinou — **Stanford, CA**
Research Assistant — **Jan 2026 – Mar 2026**

- Conducted a comprehensive review of **graphene** and **two-dimensional material-based FET biosensors**, focusing on their **operating principles, material properties, and biomedical applications**.
- Analyzed key challenges, including Debye screening, device stability, and fabrication limitations, while contributing to **literature synthesis**, **theoretical analysis**, **academic discussions**, and **technical writing**.
- Authored and **published the review article** "Graphene and Two-Dimensional Material-Based Field-Effect Transistor Biosensors." **DOI: 10.70693/qe95gn98**

Tsinghua University Laboratory of Prof. Kaili Jiang — **Beijing, CHINA**
Research Assistant — **June 2025 – Sep 2025**

- Conducted research on single-walled carbon nanotubes, focusing on field-emission behavior, physical properties, and **potential sensing applications**.
- Participated in **experimental design, nanotube synthesis**, sample preparation, data analysis, and academic discussions.
- Used SEM and probe stations for nanotube characterization and single-nanotube transfer, while gaining hands-on experience with **cleanroom procedures, EBL, vacuum systems, and TEM** sample handling.

Selected Courses

Course Name	Term	Grade
Physical Properties of Materials Laboratory	SP 26	A+
NanoEngineering Laboratory	SP 26	A+
Physics: Fluids, Waves, Thermodynamics, and Optics	SP 26	A-
Introduction to Data Science	WI 26	A+
Electronic Devices and Circuits for NanoEngineering	WI 26	A
Modeling of Nanoscale Systems	WI 26	A+
Multi-scale Transport	WI 26	A
Environmental Justice	FA 25	A+
Characterization of NanoEngineering Systems	FA 25	A
Thermodynamics of Materials	FA 25	A-
Engaging and Changing the Planet	FA 25	A
Synthesis and Fabrication of NanoEngineering Systems	SP 25	A-
The Cell	WI 25	A
Foundations of NanoEngineering: Physical Principles	WI 25	A-
Introduction to Nanomaterial Synthesis Laboratory	FA 24	A
Inquiring and Changing the Planet	SU I 24	A
Communicating and Changing the Planet	SP 24	A
Calculus for Science and Engineering	WI 24	A
Engineering Computation Using MATLAB	FA 23	A