Majd Iskandarani

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Education

University of California San Diego | La Jolla, CA
NanoEngineering | 06/2026

- GPA: 3.5
- Relevant Coursework: Nano 168 Semiconductors, MAE190 EUV Lithography, Nano 112 Photolithography/Depositon, Nano 107 Electronic Devices and Circuits for NanoEngineers, Nano 111 Characterization (SEM/TEM)
- Completed Engineering Math, Physics, and Chemistry Series

Experience

UCSD Dr. Wang NanoBioElectronics Lab | La Jolla, CA
Undergraduate Researcher – Nanofabrication Focus | 02/2023 - Present
Lithography & Nanofabrication

- Designed microfluidic channels in KLayout/LayoutEditor
- Fabricated microfluidic channels through e-beam lithography using Heidelberg MLA150 with wafer preparation, spin coating, baking, and exposure, then transferred patterns onto PDMS substrates for microfluidic testing
- Conducted thin-film sputtering (Denton 18) on glass for Mg–Au nanoparticle synthesis to be used as nanomotors for drug delivery applications
- Performed sputtering on microneedle arrays with conformal Cr/Pt coatings to enhance conductivity for biosensing

Characterization

- Operated SEMs (ZEISS Sigma 500, FEI Apreo, FEI Quanta) to capture high-resolution images of surface morphology and feature sizes
- Optimized SEM parameters (acceleration voltage, working distance, detection mode, current) to reveal nanoscale features on Mg–Au coatings and microneedle tips

Performance Evaluation & Simulation

- Utilized a MATLAB script to compute Mean Squared Displacement (MSD) for tracking nanomotor propulsion efficiency
- Designed and implemented Python scripts to rank algae nanomotor speeds from x-y tracking data and to encode/reconstruct images using DNA base-pair sequences, leveraging AI-assisted code generation to accelerate development.
- Simulated fluid flow in microfluidic devices using ANSYS Fluent to evaluate channel performance before fabrication

Technical Skills

Fabrication & Characterization:

- E-beam Lithography, Thin-Film Sputtering, SEM/AFM Imaging, Wet Chemistry, Microfluidic Device Fabrication
- Authorized to independently operate: Heidelberg MLA150, Denton Discovery 18 and 635 Sputtering System, ZEISS Sigma 500 SEM, FEI Apreo SEM, FEI Quanta 250 SEM, Park NX20 AFM, DEKTAK XT

Software & Simulation:

- MATLAB, ANSYS Fluent, KLayout, LayoutEditor, Excel

Publications

Iskandarani, M., *et al.* “Sublingual Microrobotic Pills for Rapid and Efficient Drug Delivery.” *Nanoscale Advances*, 2025