# Neil Ramirez

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## EDUCATION

The University of California, Berkeley — Expected: May 2021
**Ph.D.** in Mechanical Engineering, Specialization: MEMS/Nano Engineering — May 2019
**M.S.** in Mechanical Engineering, Specialization: MEMS/Nano Engineering (3.5/4.0 GPA)

- Thesis: "Piezoelectret Mechanocatalyst for Direct Water Splitting via Ultrasonication"

Ohio State University — May 2017
**B.S.** in Mechanical Engineering (3.46/4.0 GPA)

## HONORS AND AWARDS

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| CITRIS & Tec de Monterrey Grant Seed Funding | 2020 |
| CITRIS COVID-19 Response Grant Seed Funding | 2020 |
| UCB Student Mentoring and Research Teams Grant | 2019 |
| National Science Foundation Graduate Research Fellow | 2017 |
| 1st Place Engineering Presenter in Ohio State Denman Undergraduate Research Forum | 2016 |
| Hispanic Scholarship Fund Male Scholar of the Year Semi Finalist | 2016 |
| Michael and Susan Dell Foundation Scholar | 2013 |

## SKILLS

- **Design:** Mechanical design, Product Design Engineering, Materials Selection/Synthesis/Validation
- **Clean-room:** Wet Etching, RCA Cleaning, ALD, PECVD, Dry Oxidation, RTP, SEM imaging, Spin Coating
- **Electrical:** High voltage discharge, general voltage and current measurements
- **Measurement:** FTIR, UV-VIS, Electrostatic Surface Potential
- **Computer**: MATLAB, MS Word, MS Excel, MS Power Point, C++, Java, Familiar SolidWorks (CAD), Familiar ANSYS (Finite Element)
- **Miscellaneous**: Technical communication (oral, written, and presentation), interpersonal skills (good with interaction and eliciting information from experts), goal planning, timeline building, leading teams, risk management, interpreting and presenting results
- **Language Proficiency**: Spanish (Fluent), English (Fluent)

## WORK AND RESEARCH EXPERIENCE

**Liwei Lin Group: University of California, Berkeley – Berkeley, CA** — August 2017 – Present

- Developing an efficiency comparison study of commercial filters to electrostatically enhanced filters for COVID-19 capture
- Developed recipe for fabrication of non-woven PVDF fibers for electrostatic filtering evaluation
- Developed PECVD protocol for micron scale $SiO_2$ and $Si_3N_4$
- Developed synthesis protocol for cellulose and PLA thin films used in pressure sensor device
- Led writing of semi-annual communication reports on MEMS energy harvester including defining objectives, developing approach, analyzing results, and graphic presentation of data
- Trained in Class 100 & 1000 clean room and Si wafer-based engineering protocol
- Utilized measurement systems such as SEM imaging and FTIR spectrum to validate performance and structure of materials
- Presented findings of MEMS device study to 700+ audience at international conference (top in field)
- Collaborated with graduate students, postdoctoral researchers, and staff scientists to optimize MEMS device mechanical design
- Responsible for training of researchers on chemical hygiene plan
- Maintains updated list of personal approved for various safety trainings and equipment use
- Maintains common research supply stock and orders supplies
- Creates reports of supply expenses and presents to principal investigator
- Manages the generation and disposal of hazardous waste and sharps through communication with external waste department

- Organizes regular maintenance and cleanliness of laboratory working space

**Prakash Group: The Ohio State University – Columbus, OH** September 2014 – May 2017

- Ran complex Voltage vs Current experiments for MEMS device characterization
- Experienced with finite element analysis of basic structures, plastic and elastic deformation
- Conducted plasma surface treatment of MEMS device for hydrophobicity
- Communicated findings at poster forum leading to 1st place prize

**Candler Group: University of California, Los Angeles – Los Angeles, CA** June – August2016

- Experienced with computer modeling of RF simulations for electromagnetic antenna
- Researched physics of magnetostriction phenomenon
- Collaborated on final group deliverables with two undergraduate peers and graduate mentor

**Ramesh Group: University of California, Berkeley – Berkeley, CA** June – August 2015

- Ran photolithography process for patterning of FeRh magnetic films
- Characterized device magnetic field and topography using AFM
- Characterized electrical response using 4-probe measurement station

## PUBLICATIONS

- N.Ramirez, K. Behrouzi, L. Lin (in preparation 2020) "Enhanced COVID-19 Droplet Filtering Study Using Corona Charged Commercial Air Filters" Journal of Microelectromechanical Systems (JMEMS)
- N. Ramirez, J. Zhong, L. Lin (2019) "Piezoelectret Mechanocatalyst for Direct Water Splitting via Ultrasonication" Proc. 32nd IEE International Conf. Micro Electro Mechanical Systems

## LEADERSHIP POSITIONS

**Laboratory Safety Coordinator –** Liwei Lin Lab, the University of California, Berkeley 2019 – Present
**Graduate Research Mentor –** Liwei Lin Lab, the University of California, Berkeley 2019 – Present
**Region 1 Graduate Student Representative** – Society of Hispanic Professional Engineers 2017 – 2018
**President –** Society of Hispanic Professional Engineers, Ohio State Chapter 2015 – 2016

## VOLUNTEER EXPERIENCE

**Mechanical Engineering Student Graduate Faculty Search Committee – Berkeley, CA** 2018 – Present

- Evaluated faculty candidates for UC Berkeley Mechanical engineering through group interviews with other students
- Evaluation was focused on faculty contributions to mentoring, teaching, research, and diversity

**Bay Area Graduate Pathways to STEM (GPS) – Stanford, CA** *Co-Speaker Recruitment Chair* 2018

- Oversaw and facilitated recruitment of 38 speakers including professors, CEO's, and research scientists from around the San Francisco Bay Area

**Hispanic Scholarship Fund (HSF) – Dallas, Texas & Washington D.C.** *Logistics Coordinator & Mentor* 2015

- Performed logistics including escorting, setup of student activities, presentations, and technical equipment
- Mentored and facilitated activities for college exploration and financing for a group of 3 high school students