Ziying Feng

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QUALIFICATIONS & SKILLS

- **More than 4 years experience with semiconductor materials fabrication and characterization in nanoscale with the goal of realizing novel optoelectronic device**
- **Maintain the CVD, EBL and Raman spectroscopy (laser system) in the lab**
- **Have experience in data analysis with R and Python, responsive web design, and IOS application development with Objective-C**
- **Proficient:** Chemical Vapor Deposition (CVD), E-beam Evaporator, Thermal Evaporation, Electron Beam Lithography (EBL), Spin Coating, Optical Microscopy, SEM, XRD, EDX, Raman Spectroscopy
- **Familiar:** Python, R, Electrochemical Workstation, UV-visible-near-infrared spectrophotometer

EDUCATION

- **University of California, Los Angeles (UCLA)** **Los Angeles, CA**

Ph.D candidate in Physical Science GPA: 3.7/4.0 *2016 - 2019 (expected)*
M.S. in Chemistry *2014 - 2015*
Awards: University Fellowship, Research Assistantship, Teaching Assistantship
Courses: Solid State Chemistry, Quantum Chemistry, Nanoscience and Chemistry
Invited Manuscript Reviewer: Material Science in Semiconductor Processing, Optics Letters, Optical Materials Express, AIP Advances, Nano & Micro Letters, Progress in Electromagnetic Research, *etc.*

- **Sun Yat-Sen University (SYSU)** **Guangzhou, China**

B.S. in Optical Informatics GPA: 3.9/4.0 *2010 - 2014*
Awards: National Scholarship (Top 5%)

RESEARCH

UCLA, Research Assistant (Advisor: Xiangfeng Duan)

- **2D Materials heterostructure and its Optical Properties** 2015 - present
  - Utilize CVD to grow the 2D materials including graphene, h-BN and MoS_2
  - Stack or align the 2D material with the assist of PMMA
  - Perform Raman and PL measurement on the as-fabricated heterostructure
- **CVD Grow Graphene, Boron Nitride** 2015 - 2016
  - Methane as the gas source to grow the graphene
  - Adjust parameters including the flow rate and the pressure to grow graphene in different substrates
  - Ammonia borane as the solid source to grow boron nitride on copper foil
- **Protection Layer for the PEC Water Splitting** 2014 - 2015
  - Transfer graphene onto the doped silicon substrate
  - Electroplate Iridium as the catalyst layer
  - Perform photoelectrochemical (PEC) measurement of the silicon based photoanode

SYSU, Research Assistant

- **Electrochromic Device Based on Plasmonic Nanoparticles (Advisor: Prof. Sheng Chu)** 2013 - 2014
  - Fabricate the nanohole array with the application reactive ion etching (RIE), and anodic aluminum oxide template

- Form the gold-silver nanoparticles with the metal deposition and electrochemical deposition
- Perform finite difference time domain (FDTD) simulation to the optical properties of the structure
- Realize electrochromic device by packaging the structure in the solution and controlling electrochemical deposition voltage

- **Gas Sensor Based on Photonic Crystal Microcavity (Advisor: Prof. Chongjun Jin)** 2012 - 2013
  - Design a stainless steel sealed container for the measurement of the photonic crystal microcavity gas sensor
  - Improve and adjust the optical system for the measurement
- **Silicon Nanowires and the Solar Cell (Advisor: Prof. Hui Shen)** 2012 - 2013
  - Fabricate the silicon nanowire array with metal-assisted chemical etching (MACE)
  - Perform the optical measurement including the reflectivity and Raman spectrum
  - Assemble the nanowire array into solar cell with the conductive polymer PEDOT:PSS and the indium tin oxide (ITO) as the transparent electrode, silver deposition in vacuum as the back electrode

DATA ANALYSIS & CODING (Github: https://github.com/ZiyingFeng/)

- **Financial simulation in Python**
  - Apply Monte Carlo method to simulate the European options with the Black–Scholes–Merton model
  - Perform dimension reduction with principal component analysis (PCA) to simulate the German DAX index
- **Cleaning and plotting data in R**
  - Rearrange and transform the data with dplyr and tidyr package
  - Generate plots for the selected data with base plot and ggplot2 package
- **IOS application development in Objective-C**
  - Develop the unit converter app with UITextField and UISegmentControl
  - Build the currency converter app with the application of CocoaPods to fetch real-time currency rate online
- **Modeling Competitions**
  - 2013 Mathematical Contest in Modeling (MCM result: Honorable Mention): Optimize the shape and the size of baking pan with two-dimensional heat conduction model and multi-objective programming
  - 2012 Interdisciplinary Contest in Modeling (ICM result: Honorable Mention): Search the suspect in a crime with Dijkstra algorithm and clustering analysis

TEACHING

- **Teaching Assistant, UCLA** 2014 - present
  - Teach fundamental chemistry concepts and lab techniques for groups of 20 students through interactive instruction in weekly labs, written assignments and discussion in office hours

PUBLICATIONS

- **Feng Z.**, Jiang C., He Y., Chu S., Chu G., Peng R., Li D., "Widely Adjustable and Quasi-Reversible Electrochromic Device Based on Core-Shell Au-Ag Plasmonic Nanoparticles", ***Advanced Optical Mateials***, 2014
- Li K., Li J., Song Y., Fang G., Li C., **Feng Z.**, Su R., Zeng B., Wang X., Jin C., "Ln Slot Photonic Crystal Microcavity for Refractive Index Gas Sensing", ***IEEE Photonics Journal***, 2014
- **Feng Z.**, Jiang C., Zeng Y., Jin Y., Li Z., Xu S., Shen H., "Light-Trapping Structure and Raman Spectra of SINWs Prepared by MACE", ***Acta Energiae Solaris Sinica***, 2015
- Yao B., Rao Y., Huang S., Wu Y., Wu Y., **Feng Z.**, Choi C., Liu H., Qi H., Duan X., Peng G., Wong C., "Graphene Q-switched distributed feedback fiber lasers with narrow linewidth approaching the transform limit", ***Optics Express***, 2017
- Fan Z., Xiao H., Wang Y., Zhao Z., Lin Z., Cheng H., Lee S., Wang G., **Feng Z.**, Goddard W., Huang Y., Duan X., "Layer-by-Layer Degradation of Methylammonium Lead Tri-iodide Perovskite Microplates", ***Joule: Cell press***, 2017