Lei Pan

(+1) 734-757-0494
leipan@umich.edu
https://planetpolly.github.io

EDUCATION

University of Michigan, Ann Arbor, USA Jan. 2019 - Dec. 2019 (expected)
***Master* in Chemistry**
Major GPA: **4.00**/4.00, Overall GPA: **4.00**/4.00

Shanghai Jiao Tong University, China Sept. 2014 - Jun. 2018
***Honors Program of Science* in Chemistry**
Member of Zhiyuan Honors Program, an elite program for top 5% of students.
Bachelor Thesis:**Low temperature Synthesized Two-Dimensional Porous Alloys for Electrochemical Catalysis**
Major GPA: **3.56**/4.00 (**87.36**/100), Overall GPA: **3.60**/4.00 (**88.00**/100)

RESEARCH INTERESTS

Artificial photosynthesis, Energy Related Nano Materials, Chemistry of Surface and Interface

RESEARCH EXPERIENCES

Self-assembled Monolayers' Desorption Behaviors Jan. 2019 - Present
Research Internship, Supervised by Prof. Charles McCrory *University of Michigan, Ann Arbor*

- Investigated the mechanism for reductive desorption behavior of the mixed thiols' system, by constructing an optimal deposition environment via electrochemical measurements, and characterizing it with X-ray photoelectron Spectra (XPS)
- Studied the composition change of mixed self-assembled monolayer after desorption, via adjusting pH values and deposition solvent recipes

Pyrochlore-Type Yttrium Ruthenate Materials for Oxygen Evolution Reaction Jul. 2017 - Jan. 2018
Research Assistant, Supervised by Prof. Hong Yang *University of Illinois at Urbana - Champaign*

- Designed an acid-stable electrocatalysts with low overpotential and improved stability for oxygen evolution reaction (OER), based on Lanthanide Contraction, via introducing heteroatoms to adjust the lattice structure
- Proposed a promising activity descriptor for OER, linking the pyrochlore structure constant and its catalysis performance, based on the aforementioned research
- Designed a high-surface-area Yttrium Ruthenium Oxide material for OER, adopting polyvinyl alcohol as scaffolds, realizing low-temperature synthesis and avoiding structural collapse

Platinum-based Two Dimensional nano-structures for Methanol Oxidation Reaction Nov. 2016 - Jul. 2018
Research Assistant, Supervised by Prof. Jianbo Wu *Shanghai Jiao Tong University*

- Designed 2D nano-structures containing elements of Platinum group and Iron group, through carbon monoxide involved ethylene glycol-thermo synthesis, and studied morphology-controllable recipes according to the LaMer Growth Model
- Developed a rational mechanism with time-controlled experiments: the ethylene glycol reduces Platinum, then forms a two-dimensional net-like polymer and induces the other metal depositing in the same plane
- Studied a descriptor for Methanol Oxidation Reaction and other electrochemical reactions, focusing on the structures' adjustment in Pt atoms by inserting Iron groups, which essentially tunes the surface capacity adsorbing some active intermediates

Total Synthesis of a Spiro Compound by Semi-Pinacol Rearrangement Jul. 2015 - Oct. 2016
Research Intern, Supervised by Prof. Shuyu Zhang *Shanghai Jiao Tong University*

- Synthesized a series of spiro compounds by semi-Pinacol rearrangement
- Revised their performance as ligands with platnium catalysts by combining various functional groups

A Novel Complex Probe for Selective Recognition of the Hydroxycarboxylate Apr. 2015 - Mar. 2016
PRP Program, Supervised by Prof. Qinghua Meng *Shanghai Jiao Tong University*

- Prepared a novel complex probe for selective recognition of the hydroxycarboxylate, which could differentiate the gluconate with other sugars
- Characterized by titration, visible spectrophotometry, calculated the structure parameters and coordination constants and computed the possible active intermediate, found chain length affected fluorescence quenching
- Proposed a fluorescence-quenching model, explained the exception on sodium gluconate

PUBLICATIONS

[1] Yanling Ma, Wenpei Gao, Jialiang Xu, Fan Li, Peter Tieu, Yi Wu, Wenlong Chen, **Lei Pan**, Xiaoqing Pan and Tao Deng, Low-temperature Surface Atomic Ordering on PtFe Nanowires for Active and Stable Oxygen Reduction Reaction, submitted to ***Nature Nanotechnology***, 2019

[2] Wenlong Chen, Yanling Ma, Fan Li, **Lei Pan**, Wenpei Gao, Tao Deng and Jianbo Wu*, Strong electronic interaction of amorphous Fe_2O_3 nanosheets with single atom Pt towards enhanced carbon monoxide oxidation, ***Advanced Functional Materials*, 2019**, 29, 1904278

PATENTS

Wenlong Chen, Qian Xiang, Fan Li, Yanling Ma, Fenglei Shi, **Lei Pan**, et al. Carbon Monoxide Involved Platinum-based Two-Dimensional Material Synthesis Method, China Patent, 2019

EXTRACURRICULAR PROJECTS

Co-organizer of *Surpass Union* student program,*The Way to Success* Sept. 2016 - Jun. 2017
- Inviting alumnus to share their experience, 5 speeches

Co-organizer of *Green Pass* student program, *The Way to Success* Sept. 2015 - Jul. 2016
- Inviting seniors to share what they have gained from study, 5 speeches

LEADERHIP AND ACTIVITIES

Trainee Journalist of *Global Science* magazine, the Chinese edition of *Scientific American* Aug. 2017 - Present
Teaching Assistant of International Course: Introduction to Spectroscopy Jun. 2018 - Aug. 2018
Teaching Assistant of International Course: Introduction to Biophysics Jun. 2018 - Aug. 2018
Tutoring in Mathematics, greatly improved students' grades Jan. 2016 - Jan. 2017
Administrative Assistant in Zhiyuan College, Shanghai Jiao Tong University Jan. 2018 - Jul. 2018
Core Member of Student Union Advocacy Center Mar. 2016 - Jun. 2017

TECHNICAL SKILLS

- **Professional Tools**: Electrochemical Measurements, MS Modeling, Gaussian 03W
- **Characterization Techniques**: TEM, SEM, XRD, XPS
- **Technology Languages**: HTML, CSS, JavaScript
- **Programming Languages**: Mathematica, Matlab
- **Others**: Blender, Adobe Series, Excel, Origin, LaTeX, Markdown

HONORS AND AWARDS

The National Inspiration Award, China (one of the highest awards for undergraduate) Oct. 2017
Academic Excellence Scholarship of Shanghai Jiao Tong University(**top 3%**) Oct. 2015 - 2017
Zhiyuan Honors Scholarship of Shanghai Jiao Tong University (**top 5%**) Oct. 2016, 2017
Suzhehu Inspiration Scholarship of Shanghai Jiao Tong University (**top 3%**) May 2017
Hanyingjuhua Inspiration Scholarship of Zhiyuan Honors Program May 2015 - 2018
Soh Bing Scholarship (**one of the oldest Privately Funded Scholarship scheme in China**) Oct. 2014 - 2016
Renwenyu Inspiration Scholarship (**top 3%**, awarded to 2 students out of 300+) May 2015 - 2018
Award for Oversea Undergraduate Research (**A-level**) May 2018