

Panyiming LIU

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Hefei, Anhui,
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EDUCATION

SEPT. 2015-
NOW | **University of Science and Technology of China**, Hefei, Anhui
B.S. in Materials Physics (expected June 2019), School of the Gifted Young,
Overall GPA: 3.68/4.30 Major GPA: 3.90/4.30
Core courses:
Solid State Physics (92) / Physical Chemistry III(Solid State Chemistry) (96)
Quantum Physics (92) / Classical Mechanics and Electrodynamics (96)

JULY 2018-
SEPT. 2018 | **Georgia Institute of Technology**, Atlanta, GA
Research Assistant, School of Chemical and Biomolecular Engineering,

PUBLICATIONS

- [1] **Liu, P.**; Cai, Z.; You, Y.; Huang, H.; Chen, S.; Gao, C.; Qi, Z.; Long, R.;* Zhu, J.; Song, L. and Xiong, Y., "Surface Modification on Pd-TiO₂ Hybrid Nanostructures towards Highly Efficient H₂ Production from Catalytic Formic Acid Decomposition," **Chem. Eur. J.** DOI: 10.1002/chem.201803267(2018).
- [2] Gao, F.; Cai, Z.; Zhao, S.; Chen, S.; **Liu, P.**; Xia, S.; Zheng, X.; Qi, Z.; Yan, W.; Jiang, Z.; Long, R.; Li, Z.; Song, L.;Zhu, J.; Xiong, Y., "Directing the Reaction Pathways of Furfural Hydrogenation by Designing Catalytic Sites with Surface Atomic Modification," (Submitted).
- [3] Wu, Y.; **Liu, P.**; Daniels D.; Zhang, Y.; Zhang, Y.; Wang T., Liu N., "A Membrane-free Zinc-Iodide Battery Using 1-Butyl-1-methylpyrrolidinium Iodide as a Complexing Agent," (Manuscript in preparation).
- [4] You, Y.; Huang, H.; Xia, S.; Cai, Z.; **Liu, P.**; Wang, C.; Long, R.; Song, L. and Xiong, Y., "Design of Pd{111}-TiO₂ Interface for Enhanced Catalytic Efficiency towards Formic Acid Decomposition," **Science China Chem.**61, 1123-1127 (2018)

RESEARCH EXPERIENCE

JULY 2018-
SEPT. 2018 | *School of Chemical and Biomolecular Engineering, Georgia Institute of Technology, Advised by Assistant Prof. Nian Liu*
High energy density membraneless zinc-iodide battery with a new complexing agent.

- Tested the efficiency of batteries with MBPI and ZnI₂ as the electrolyte under normal current and low current.
- Analysed the complexing products on the surface of the electrode.
- Increased flow battery energy density without Nafion membrane which allows the decrease in the cost and battery size.

JULY 2018-
SEPT. 2018 | *School of Chemical and Biomolecular Engineering, Georgia Institute of Technology, Request from Novelis*, Advised by Assistant Prof. Nian Liu*
Electrochemical impedance spectroscopy(EIS) measurements of coating lids for evaluating their ability to resist corrosion.

- Evaluated the ability of different coated lids to resist corrosion in various types of electrolyte by EIS measurement.
- Compared the degree of corrosion of different coated lids through the light microscope.
- Designed the reactors used for high-pressure and *in situ* measurement of EIS to test the aluminum products of the company.

*: Novelis is the leading producer of flat-rolled aluminum products.

DEC. 2016- JUNE 2018	<p><i>Nano Energy Laboratory in Hefei National Laboratory for Physical Sciences at the Microscale, Advised by Prof. Yujie Xiong</i></p> <p>Surface Modification on Pd-TiO₂ Hybrid Nanostructures towards H₂ Production from Catalytic Formic Acid Decomposition.</p> <ul style="list-style-type: none"> • Designed the surface modification strategy for Pd-TiO₂ hybrid nanostructure to catalyze the decomposition of formic acid. • Tuned the electron density of Pd sites by depositing various metals atoms in the near-surface region of Pd tetrahedrons and evaluated their performance via the conversion of H₂ production from formic acid. • Analyzed the mechanism of catalytic activity through depth-dependent XPS, HR-TEM, DRIFTS etc. • Set up a platform for manipulating the electronic state of surface Pd atoms. • Published one first-authored paper on Chemistry - a European Journal.
OCT. 2016- NOW	<p><i>Nano Energy Laboratory in Hefei National Laboratory for Physical Sciences at the Microscale, Advised by Prof. Yujie Xiong</i></p> <p>Directing the reaction pathways of furfural hydrogenation by designing catalytic sites with surface atomic modification.</p> <ul style="list-style-type: none"> • Designed the method to synthesize the Pd nanoparticles with controlled shape and modified them with Ag atoms on Pd (100) facets. • Optimized the Pd-Ag system to achieve a 91.7% selectivity for furfuryl alcohol with a conversion of 97.2%. • Resolved the spatial distribution of Pd and Ag via the characterization of HR-TEM and depth-dependent XPS etc. • Analysed the effect of surface modification on furfural adsorption by DRIFTS and NEXAFS characterization. • Submitted a paper on this work.

AWARDS

OCT. 2018	Scholarship for Outstanding Students(Silver Award)(top 10%)
OCT. 2017	Scholarship for Outstanding Students(Copper Award)(top 15%)
OCT. 2016	Scholarship for Outstanding Students(Copper Award)(top 15%)
OCT. 2015	Scholarship for Outstanding Freshmen(Copper Award)(top 15%)

SKILLS

SOFTWARE: Origin, L^AT_EX, 3ds Max, C
 INSTRUMENT: SEM, TEM, ICP-AES, UV-Vis, Raman, XRD, XPS, NEXAFS, Electrochemical Workstation, Cell-test System, GC-MS

TEACHING EXPERIENCE

SEPT. 2018- NOW	Teaching assistant of <i>Physical Chemistry Experiments</i>
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