ZI-SHENG ZHANG

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EDUCATION

Southern University of Science and Technology (SUSTech) Sep 2015 - Jun 2019
Bachelor of Science, Chemistry (expected) **GPA 3.87/4.00 (Ranking: 1/75)**

University of California, Los Angeles Jul 2018 - Sep 2018
Cross-disciplinary Scholar in Science and Technology (CSST) **GPA 4.00/4.00 (Ranking: 1/101)**

PROFESSIONAL EXPERIENCE

Shenzhen HUASUAN Technology Co., Ltd Nov 2018 - Present
Computational Chemistry Consultant Shenzhen, Guangdong, China

RESEARCH EXPERIENCE

Department of Chemistry and Biochemistry, UCLA Jun 2018 - Dec 2018
Advisor: Prof. Anastassia Alexandrova CSST Summer Fellow

· Applying PSO global optimization combined with DFT calculation to investigate the structure of catalytic boride surface under realistic condition; Establishing a grand canonical ensemble to study ensemble-averaged surface free energy and Bader charge; Exploring structural fluxionality of oxidized boride surface with MD.

Department of Chemistry, SUSTech Sep 2018 - Present
Advisor: Prof. Jun Li and Prof. Yang-Gang Wang Undergraduate Researcher

· Applying DFT calculations to study the pendant group effects on the catalytic activity and stability of nickel phthalocyanine (NiPc) derivatives for selective electroreduction of CO_2 to CO.
· Modeling realistic electrochemical process from ab initio molecular dynamics.

Department of Material Science and Engineering (MSE), SUSTech Jun 2016 - Present
Advisor: Prof. Yongye Liang Undergraduate Researcher

· Applying DFT calculations to investigate the molecular engineering of FePc derivatives for oxygen reduction reaction. Constructing FePc/CNT hybrids to enhance electrocatalytic activity and stability.
· Fabricating single-atom catalysts through pyrolysis of ZIF-8 encapsulated metal phthalocyanine for metal-air batteries. Funded by the Student's Platform for Innovation and Entrepreneurship Training Program.
· Designing and synthesizing bimetallic Cu/Pd nanoparticles supported on oxidized CNT via an adopted co-strong electrostatic adsorption (SEA) method. Selective electroreduction of CO_2 to formic acid was achieved in a wide potential range. Poster presentation at Nature Conference: Materials Electrochemistry (Jan. 2018)
· Synthesizing and testing CoPc/CNT hybrids for selective electrocatalytic reduction of CO_2.

Department of Chemistry & Department of MSE, SUSTech May 2017 - Oct 2018
Advisor: Prof. Limin Huang and Prof. Meng Gu Undergraduate Researcher

· Designing and synthesizing covalent TiO_2/O-g-C_3N_4 2D/2D heterojunction through N-O-Ti covalent bonding, achieving enhanced visible-light photocatalytic activity comparing to heterojunctions fabricated by other methods. Applying DFT calculation to investigate the bonding at heterojunction interface, and performing thorough characterization of the interface via STEM, HRTEM, XPS, and EELS.

Department of Chemistry, SUSTech May 2017 - Mar 2018
Advisor: Prof. Li Dang Undergraduate Researcher

· Applying DFT calculation to study the substituent effects on electrocatalytic HER using nickel bis(dithiolene) complexes. Developed an electrocatalytic activity descriptor based on pKa of dithiolene ligands. Delivering an oral presentation on ACS publications symposium: Innovation in Energy Conversion (Sept. 2017)

PUBLICATIONS

1. Wang, Y.; Wang, M.; Jiang, Z.; Wang, Q.; Lucero, M.; Zhang, X.; **Zhang, Z.**; Li, X.; Gu, M.*; Feng, Z.*; Liang, Y.* *Iron Phthalocyanine Precursors to Construct Efficient Single Iron Site Electrocatalysts for Oxygen Reduction Reaction.* **2018**, submitted.

2. **Zhang, Z.**; Jimenez-Izal, E.; Hermans, I.; Alexandrova, A. N. *Dynamic Phase Diagram of Catalytic Surface of Hexagonal Boron Nitride in Conditions of Oxidative Dehydrogenation of Propane.* **2019**, Journal of Physical Chemistry Letters, 10, 20-25.

3. Zhong, R.; **Zhang, Z.**; Luo, S.; Zhang, Z. C.; Huang, L.*; Gu, M.* *Comparison of TiO_2 and g-C_3N_4 2D/2D Nanocomposites from Three Synthesis Protocols for Visible-light Induced Hydrogen Evolution.* **2019**, Catalysis Science & Technology, accepted, DOI: 10.1039/C8CY00965A (Front cover highlight)

4. **Zhang, Z.**; Yang, T.; Qin, P.; Dang, L.* *Nickel Bis(dithiolene) Complexes for Electrocatalytic Hydrogen Evolution: A Computational Study.* **2018**, Journal of Organometallic Chemistry, 864, 143-147.

5. Zhong, R.; **Zhang, Z.(equal contribution)**; Yi, H.; Zeng, L.; Tang, C.; Huang, L.*; Gu, M.* *Covalently Bonded 2D/2D O-g-C_3N_4/TiO_2 Heterojunction for Enhanced Visible-Light Photocatalytic Hydrogen Evolution.* **2018**, Applied Catalysis B: Environmental, 237, 1130-1138.

6. Zhang, X.; Wu, Z.; Zhang, X.; Li, L.; Li, Y.; Xu, H.; Li, X.; Yu, X.; **Zhang, Z.**; Liang, Y.* and Wang, H.* *Highly Selective and Active CO_2 Reduction Electrocatalysts Based on Cobalt Phthalocyanine/carbon Nanotube Hybrid Structures.* **2017**, Nature Communications, 8, 14675.

SCIENTIFIC SKILLS

Experimental: Nanomaterial Synthesis; XRD; TGA; DSC; BET; FL & PL spectroscopy; FT-IR; UV-vis DRS; NMR; SEM; TEM; EDX; GC; HPLC; ICP-MS; Electrochemical & photocatalytic measurements

Programming & Softwares: C, JAVA, Python, MatLab, Shell, LaTeX, SolidWorks, AutoCAD, PhotoShop

Computational Chemistry: Gaussian09 &16, ORCA, MOPAC, Molpro, Material Studio, VASP, Quantum Espresso, CP2K, i-PI, CALYPSO, Molclus, VESTA, Multiwfn, ASE, pymatgen, GaussView, VMD, Jmol

SCHOLARSHIPS & AWARDS

Selected Best Presentations Award in CSST CHEM & MSE division, UCLA	Sep 2018
Cross-disciplinary Scholar in Science and Technology (CSST) Fellowship, UCLA	Jul 2018
Outstanding Scientific Research Potential, Shuren College, SUSTech	May 2018
Merit-Based Undergraduate Scholarship, SUSTech	2016, 2017, 2018

EXTRACURRICULAR ACTIVITIES

American Chemistry Society (ACS), SUSTech Student Chapter May 2018 - Present
Vice President & Co-founder

· Organized regular seminars for ACS student members to learn about latest hot papers and discuss interdisciplinary topics in frontiers of chemistry. Invited influential guest speakers to lead forums and seminars.

Material Research Society (MRS), SUSTech Student Chapter May 2018 - Present
Academic Department Leader & Co-founder

· Organized regular seminars for MRS student members to learn about latest hot papers and conferences.

Student Union of Shuren College, SUSTech Sep 2015 - Sep 2016
Senior Member and Main Contributor, Academic Department

· Initiated a series of School-wide activities, such as public speaking contests and student-professor meetups.
· Participated in the agenda scheduling, order maintaining and press release.