

# Yunfei Bu

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School of Environmental Science and Technology,  
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## Education

**2015** Ph. D. in Chemical Engineering and Technology  
School of Chemical Engineering  
Nanjing University of Science and Technology of China (NJUST)  
Material Science and Engineering  
Georgia institute of technology  
(Advisor: Prof. Qin Zhong and Prof. Meilin Liu)

## Research Opportunity

**09/2018-Present**

Professor, NUIST

**04/2016-08/2018**

Postdoctoral Research Associate, Ulsan National Institute of Science and Technology (UNIST)

(Supervisor: Prof. Guntae Kim)

## Research Interest

Design and synthesis of efficient and stable catalysts for energy related electrochemical applications.

## Publications

First, co-first author and corresponding author:

(25) Feng Li, Gao-Feng Han, Hyuk-Jun Noh, Jong-Pil Jeon, Ishfaq Ahmad, Shanshan Chen, Changduk Yang, Yunfei Bu\*, Zhengping Fu\*, Yalin Lu, Jong-Beom Baek\*. Balancing hydrogen adsorption/desorption by orbital modulation for efficient hydrogen evolution. **Nature Communications** 10, 4060 (2019).

<https://www.nature.com/articles/s41467-019-12012-z>. (IF 11.8)

(24) Juan Wang, Qin Zhong\*, Yiqing Zeng, Danyu Chen, Yongheng Xiong, Yunfei Bu\*. Rational construction of triangle-like nickel-cobalt bimetallic metal-organic framework nanosheets arrays as battery-type electrodes for hybrid supercapacitors. *Journal of Colloid and Interface Science*, 2019, 555, 42-52. (IF 6.36)

(23) Yutong Li, Fuqiang Chu, Yunfei Bu\*, Yong Kong, Yongxin Tao, Xiao Zhou, Haoran Yu, Lin Tang, Yong Qin\*. Controllable fabrication of uniform ruthenium phosphide nanocrystals for hydrogen evolution reaction. *Chem. Commun.* 2019, 55, 7828-7831. (IF 6.1)

(22) Feng Li#, Yunfei Bu#\*, Gao-Feng Han, Hyuk-Jun Noh, Seok-Jin Kim, Ishfaq Ahmad, Yalin Lu, Peng Zhang, Hu Young Jeong, Zhengping Fu, Qin Zhong, Jong-Beom Baek\*. Identifying the structure of Zn-N<sub>2</sub> active sites and structural activation. **Nature Communications** 10, Article number: 2623 (2019)

<https://doi.org/10.1038/s41467-019-10622-1> (共一, 通讯, IF 11.8)

(21) Juan Wang, Qin Zhong\*, Yongheng Xiong, Danyu Cheng, Yiqing Zeng, **Yunfei Bu\***. Fabrication of 3D Co-doped Ni-based MOF hierarchical micro-flowers as a high-performance electrode material for supercapacitors. *Applied surface science* 2019. <https://doi.org/10.1016/j.apsusc.2019.03.340>.

- (20) **Yunfei Bu\*** Seona Kim, Ohhun Kwon, Qin Zhong, and Guntae Kim\*. A Composite Catalyst Based on Perovskites for Overall Water Splitting in Alkaline Conditions. *ChemElectroChem* 2019, 6, 1520-1524. DOI: 10.1002/celec.201801775.
- (19) Haoran Yu, Fuqiang Chu, Xiao Zhou, Junling Ji, Yang Liu, **Yunfei Bu\***, Yong Kong, Yongxin Tao, Yongxin Li and Yong Qin\*. Perovskite Oxide with Tunable Pore-Size Derived from a General Salt-Template Strategy as Highly Efficient Electrocatalyst for Oxygen Evolution Reaction. *Chem. Commun.*, 2019,**55**, 2445-2448. DOI: 10.1039/C8CC10181G.
- (18) **Yunfei Bu**, Gyutae Nam, Seona Kim, Keunsu Choi, Qin Zhong, JunHee Lee, Yong Qin, Jaephil Cho, Guntae Kim.**J. Mater. Chem. A**, 2019,7, 2048-2054. DOI:10.1039/C8TA09919G
- (17) **Yunfei Bu**, Gyutae Nam, Seona Kim, Keunsu Choi, Qin Zhong, JunHee Lee, Yong Qin, Jaephil Cho, Guntae Kim. A tailored bifunctional electrocatalyst: Boosting oxygen reduction/evolution catalysis via electron transfer between n-doped graphene and perovskite oxides. **Small**. 2018. 1802767.
- (16) Zijian Lv, Qin Zhong, **Yunfei Bu\***. In-situ conversion of rGO/Ni<sub>2</sub>P composite from GO/Ni-MOF precursor with enhanced electrochemical property. *Applied Surface Science*. 2018. 439, 413-419.
- (15) Wei Cai, Qin Zhong, Dongyu Wang, Yunxia Zhao, Mindong Chen, **Yunfei Bu\***. A Rational Design for Enhanced Catalytic Activity and Durability: Strongly Coupled N-Doped CrO<sub>x</sub>/Ce<sub>0.2</sub>Zr<sub>0.8</sub>O<sub>2</sub> Nanoparticle Composites. *ACS Applied Nano Materials*. 2018, 1, 3, 1150-1163.
- (14) Yutong Li, Lei A Zhang, Yong Qin, Fuqiang Chu, Yong Kong, Yongxin Tao, Yongxin Li, **Yunfei Bu\***, Dong Ding, Meilin Liu\*. Crystallinity Dependence of Ruthenium Nanocatalyst toward Hydrogen Evolution Reaction. **ACS Catalysis**, 2018, 8, 5714-5720.
- (13) Zijian Lv, Qin Zhong, **Yunfei Bu\***. In Site Growth of Crosslinked Nickel–Cobalt Hydroxides@ Carbon Nanotubes Composite for a High-Performance Hybrid Supercapacitor. *Advanced Materials Interfaces*. 2018, 1800438.
- (12) Zijian Lv, Qin Zhong, Zhiyang Zhao, **Yunfei Bu\***. Facile synthesis of hierarchical nickel–cobalt sulfide quadrangular microtubes and its application in hybrid supercapacitors. *Journal of Materials Science: Materials in Electronics*, 2017, 28, 23, 18064-18074.
- (11) **Yunfei Bu\***, Ohhun Gwon, Gyutae Nam, Haeseong Jang, Seona Kim, Qin Zhong, Jaephil Cho, Guntae Kim. A Highly Efficient and Robust Cation Ordered Perovskite Oxide as a Bifunctional Catalyst for Rechargeable Zinc-Air Batteries. **ACS Nano**, 2017, 11, 11, 11594-11601.
- (10) Feng Li#, **Yunfei Bu#** (co-first author), Zijian Lv, Javeed Mahmood, Gao-Feng Han, Ishfaq Ahmad, Guntae Kim, Qin Zhong, Jong-Beom Baek. Porous cobalt phosphide polyhedrons with iron doping as an efficient bifunctional electrocatalyst. **Small**, 2017, 13, 40, 1701167.
- (9) Wei Cai #, **Yun Fei Bu #** (co-first author), Yun Xia Zhao, Qin Zhong. A simple seed-mediated growth method for the synthesis of highly morphology controlled CrO<sub>x</sub> / Ce<sub>0.2</sub>Zr<sub>0.8</sub>O<sub>2</sub> catalysts and their enhanced NO oxidation. *Chemical Engineering Journal*, 2017, 317, 376-385.

- (8) **Yunfei Bu**, Yu Chen, Tao Wei, Samson Lai, Dong Ding, Haibin Sun, Dongxin Zhen, Xunhui Xiong, Qin Zhong, Composites of Single/Double Perovskites as Cathodes for Solid Oxide Fuel Cells, *Energy Technology*, 2016, 4: 1-3.
- (7) Yu Chen#, **Yunfei Bu**# (co-first author), Yanxiang Zhang#, Ruiqiang Yan, Dong Ding, Bote Zhao, Seonyoung Yoo, Dai Dang, Renzong Hu, Chenghao Yang, Meilin Liu, A Highly Efficient and Robust Nanofiber Cathode for Solid Oxide Fuel Cells, *Advanced Energy Materials*, 2016,1601890
- (6) **Yunfei Bu**, Qin Zhong, Dongchang Chen, Yu Chen, Samson Yuxiu Lai, Tao Wei, Haibin Sun, Dong Ding, Meilin Liu, A High-performance, Cobalt-free Cathode for Intermediate-temperature Solid Oxide Fuel Cells with Excellent CO<sub>2</sub> Tolerance, *Journal of Power Sources*, 2016, 319:178-184.
- (5) **Yunfei Bu**, Dong Ding, Samson Yuxiu Lai, Dongchang Chen, Xunhui Xiong, Tao Wei, Qin Zhong, Evaluation of La<sub>0.4</sub>Ba<sub>0.6</sub>Fe<sub>0.8</sub>Zn<sub>0.2</sub>O<sub>3-δ</sub>+Sm<sub>0.2</sub>Ce<sub>0.8</sub>O<sub>1.9</sub> as a Potential Cobalt-free Composite Cathode for Intermediate Temperature Solid Oxide Fuel Cells, *Journal of Power Sources*, 2015, 275: 808-814.
- (4) **Yunfei Bu**, Dong Ding, Lu Gan, Xunhui Xiong, Wei Cai, Wenyi Tan, Qin Zhong. New Insights into Intermediate-temperature Solid Oxide Fuel Cells with Oxygen-ion Conducting Electrolyte act as a Catalyst for NO Decomposition. *Applied Catalysis B: Environmental*, 2014, 158: 418-425.
- (3) **Yunfei Bu**, Qin Zhong, Dandan Xu, Xiaolu Zhao, Wenyi Tan, Performance of Y<sub>0.9</sub>Sr<sub>0.1</sub>Cr<sub>0.9</sub>Fe<sub>0.1</sub>O<sub>3-δ</sub> as a Sulfur-tolerant Anode Material for Intermediate Temperature Solid Oxide Fuel Cells. *Journal of Power Sources*, 2014, 250: 143-151.
- (2) **Yunfei Bu**, Qin Zhong, Wenyi Tan, Renjie Zhou, Yang Song, Wei Cai, Synthesis and Properties of Samaria-doped Ceria Electrolyte via Ultrasound-microwave assisted Sol-gel Method, *Materials Science in Semiconductor Processing*, 2013, 16: 2058-2062
- (1) **Yunfei Bu**, Qin Zhong, Dandan Xu, Wenyi Tan, Redox stability and sulfur resistance of Sm<sub>0.9</sub>Sr<sub>0.1</sub>CrxFe<sub>1-x</sub>O<sub>3-δ</sub> perovskite materials, *Journal of Alloys and Compounds*, 2013, 578: 60-66