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### Education Background:

2011.9-2015.6 Undergraduate education Anhui University (AHU), China  
2015.6-present Graduate education University of Science and Technology of China (USTC), China  
2018.11-present Research scholar Columbia University (CU), USA

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### Academic Achievements:

- Second-prize scholarship from AHU.
  - First-prize scholarship from AHU (2 times)
  - National Encouragement scholarship from AHU
  - First-prize scholarship from USTC (5 times)
  - National scholarship from USTC
  - Tang lixin scholarship from USTC
  - The scholarship for outstanding graduate students from CSC
  - And other scholarships...
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### Academic Experience:

#### Conferences attended:

7th annual meeting of Shanghai Light Source (Xiamen, 2017), Nature conference (Shenzhen, 2018), and 1<sup>st</sup> International Symposium on Electrocatalysis and Electrosynthesis (Changsha, 2018).

#### Main research skills:

Familiar with the basic characterization methods of materials, and analysis of X-ray adsorption spectroscopy (XAS). XAS, mainly including X-ray adsorption near edge structure (XANES) and extended X-ray adsorption fine structure (EXAFS) spectra, are employed to analyze the electronic and atomic structures of our materials to pursue their reality-close states. Familiar with the use of Raman, XRD, SEM, TEM, STEM, UPS, XPS, EPR, FTIR, UV-VIS, ICP, GC, BET, TPD, soft XAS... The practiced uses of these methods bring me much help to my researches.

#### Recent interests:

- i) Design of efficient nano-catalysts for ORR/CO<sub>2</sub>RR/HER/OER.
- ii) Mechanistic study of electrocatalysis based on ex-/in-situ techniques.

#### Research works:

Personal Google Research Website: <https://sites.google.com/view/qunhesresearchwebsite>

#### Selected publications:

- 1 High-Metallic-Phase-Concentration Mo<sub>1-x</sub>W<sub>x</sub>S<sub>2</sub> Nanosheets with Expanded Interlayers as Efficient Electrocatalysts  
**Qun He**,<sup>†</sup> Yangyang Wan,<sup>†</sup> Hongliang Jiang,<sup>†</sup> Chuanqiang Wu, Zhongti Sun, Shuangming Chen, Yu Zhou, Haiping Chen, Daobin Liu, Yasir A. Haleem, Binghui Ge, Xiaojun, Wu, Li Song, *Nano Res.*, 2018, *11*, 1687.
- 2 In Situ Growth of Metallic 1T-WS<sub>2</sub> Nanoislands on Single-Walled Carbon Nanotube Films for Improved Electrochemical Performance  
**Qun He**,<sup>†</sup> Weiyu Xu,<sup>†</sup> Shuangming Chen, Daobin Liu, Muhammad Habib, Qin Liu, Changda Wang, Yasir A. Haleem, Ting Xiang, Chuanqiang Wu, Adnan Khalil, Qi Fang, Zhiqiang Niu, Li Song, *RSC Adv.*, 2016, *6*, 87919.
- 3 Single Transition-Metal Atoms within One- and Two-Dimensional Carbon-Based Catalysts: Definitive Structural Identification toward Active Sites  
Hongliang Jiang,<sup>†</sup> **Qun He**,<sup>†</sup> Changda Wang, Hengjie Liu, Youkui Zhang, Yunxiang Lin, Xusheng Zheng, Shuangming Chen, Li Song, *Adv. Energy Mater.*, 2018, *8*, 1800436.
- 4 Active Sites Engineering towards Carbon-Based Catalysts Boosting Oxygen Reduction Catalysis, Sidi Wang,<sup>†</sup> **Qun He**,<sup>†</sup> Changda Wang, Hongliang Jiang, Chuanqiang Wu, Shuangming Chen, Guobin Zhang, Li Song, *Small*, 2018, *14*, 1800128.

- 5 Highly Defective Oxyhydroxides from Electrochemical Reconstruction for Efficient Oxygen Evolution Catalysis  
**Qun He**,<sup>†</sup> Hui Xie,<sup>†</sup> Zia ur Rehman, Changda Wang, Ping Wan, Hongliang Jiang, Wangsheng Chu, Li Song, *ACS Energy Letters*, 2018, 3, 861.
- 6 1T'-Mo<sub>1-x</sub>W<sub>x</sub>S<sub>2</sub>/CdS Heterostructure Enabling Robust Photocatalytic Water Splitting: Unveiling the Interfacial Charge Polarization  
**Qun He**, Yangyang Wan, Youkui Zhang, Hongliang Jiang, Hengjie Liu, Xusheng Zheng, Shuangming Chen, Xiaojun Wu, Li Song, *Solar RRL*, 2018, 2, 18000032.
- 7 Nickel Vacancies Boost Reconstruction in Nickel Hydroxide Electrocatalyst  
**Qun He**,<sup>†</sup> Yangyang Wan,<sup>†</sup> Hongliang Jiang, Ziwen Pan, Chuanqiang Wu, Mei Wang, Xiaojun Wu, Bangjiao Ye, Pulickel M. Ajayan, Li Song, *ACS Energy Lett.*, 2018, 3, 1373.
- 8 Confined Bimetallic Phosphide within P, N Co-doped Carbon Layers towards Boosted Bifunctional Oxygen Catalysis  
Shuang Yang,<sup>†</sup> **Qun He**,<sup>†</sup> Hongliang Jiang, Shuangming Chen, Li Song, *J. Mater. Chem. A*, 2018, 6, 11281.
- 9 Tracking Structural Self-reconstruction and Identifying True Active Sites toward Cobalt Oxychloride Oxygen Evolution Pre-catalyst  
Hongliang Jiang,<sup>†</sup> **Qun He**,<sup>†</sup> Xiyu Li,<sup>†</sup> Chuanqiang Wu, Youkui Zhang, Shuangming Chen, Changda Wang, Jun Jiang, Pulickel M Ajayan, Li Song, *Adv. Mater.*, 2019, 31, 1805127.
- 10 Breaking the Volcano-Plot Limits for Pt-based Electrocatalysts by Selective Tuning Adsorption of Multiple Intermediates  
Xuesi Wang,<sup>†</sup> **Qun He**,<sup>†</sup> Li Song, Mietek Jaroniec, Yao Zheng, and Shi-Zhang Qiao, *J. Mater. Chem. A*, 2019, 7, 13635.
- 11 Structural Self-Reconstruction of Catalysts in Electrocatalysis  
Hongliang Jiang, **Qun He**, Youkui Zhang, Li Song, *Acc. Chem. Res.*, 2018, 51, 2968.
- 12 Electronic Structure Reconfiguration toward Pyrite NiS<sub>2</sub> via Engineered Heteroatom Defect Boosting Overall Water Splitting  
Hengjie Liu, **Qun He**, Hongliang Jiang, Yunxiang Lin, Youkui Zhang, Muhamaad Habib, Shuangming Chen, Li Song, *ACS Nano*, 2017, 11, 11574.