

YU Bin

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EDUCATION

Ph.D. in Materials Science and Engineering

Sep. 2019 – Dec. 2024

Shandong University, Jinan, China

Supervisor: Professor Zhonghua Zhang

Thesis title: Structural regulation and solar steam generation performance of nanoporous metal films fabricated by dealloying

B.S. in Materials Science and Engineering

Sep. 2015 – Jun. 2019

University of Jinan, Jinan, China

Supervisor: Professor Feng Yang

Thesis title: Investigation on dealloying fabrication and properties of nanoporous metals

RESEARCH EXPERIENCES

▲ Materials Synthesis

Melting and magnetron sputtering to prepare alloys

Chemical/electrochemical dealloying to fabricate nanoporous metals/alloys

▲ In-situ XRD/ex-situ SEM characterizations to unveil dealloying mechanisms

▲ Design and establishment of the performance testing system for solar steam generation

▲ Design of an interfacial evaporator with a one-dimensional waterway

▲ Synthesis and size regulation of polystyrene microspheres

▲ Study on electrodeposition and hydrogen evolution reaction

▲ Design of the thermoelectric power generation device based on the photothermal films

RESEARCH INTERESTS

Dealloying

Self-supporting nanoporous metal film

Photothermal evaporation

Seawater desalination and wastewater treatment

3D printing

Solar energy application

Thermoelectric power generation

In-situ XRD

ACADEMIC ACTIVITIES

Mar. 29 2024 | Jinan, China (Seminar on Metastable Materials and Solidification)

- ▲ Participation in the conference
Jan. 13 2024 | Jinan, China (Post-doctoral Cross-innovation Forum on "Energy Conversion and Storage Materials" of Shandong University)
- ▲ Participation in the conference
Jul. 7–10 2023 | Shenzhen, China (Chinese Materials Conference 2022-2023)
- ▲ Reporter of the conference
Nov. 29–Dec. 1 2019 | Jinan, China (Advanced Materials Interdisciplinary High-Level Forum of Shandong University)
- ▲ Conference staff

AWARDS/SCHOLARSHIP

- ▲ 2022-2023 The First Prize Scholarship
Excellent graduate student
- ▲ 2020-2021 Excellent graduate student
- ▲ 2019 **National scholarship**
Excellent graduate of Shandong Province
- ▲ 2016-2018 The First Prize Scholarship

ACADEMIC PUBLICATIONS

1. **Bin Yu**, Yan Wang, Ying Zhang, Zhonghua Zhang*, Self-supporting nanoporous copper film with high porosity and broadband light absorption for efficient solar steam generation, *Nano-Micro Lett.* 2023, 15(1), 94
2. **Bin Yu**, Ying Zhang, Yan Wang*, Zhonghua Zhang*, Recent advances and challenges of metal-based materials for solar steam generation, *Adv. Funct. Mater.* 2023, 33(51), 2307533
3. **Bin Yu**, Yan Wang, Ying Zhang, Zhonghua Zhang*, Nanoporous black silver film with high porosity for efficient solar steam generation, *Nano Res.* 2023, 16(4), 5610-5618
4. **Bin Yu**, Anqi Zheng, Kuibo Yin, Ying Zhang, Ziwei Guo, Yan Wang*, Tianyi Kou*, Zhonghua Zhang*, Multifunctional bimetallic nanoporous silver-copper films for highly efficient solar steam and thermoelectric power generation, *(submitted)*
5. Zhonghua Zhang*, **Bin Yu**, Conghui Si, Experimental design of the performance testing system for solar steam generation, *Research and Exploration in Laboratory* 2024, 43(1), 56-60
6. Zhonghua Zhang, **Bin Yu**, Yan Wang, A self-supporting porous silver-copper alloy film photothermal material and its batch preparation method and application (patent), *(submitted)*
7. Fuquan Tan, **Bin Yu**, Yan Wang*, Qingguo Bai*, Zhonghua Zhang*, Hierarchically structured nanoporous palladium with ordered/disordered channels for ultrahigh and fast strain, *Nano Lett.* 2023, 23(2), 505-513
8. Kai Zheng, **Bin Yu**, Wengsheng Ma, Xiangyu Fei, Guanhua Cheng, Meijia Song, Zhonghua Zhang*, Dealloying induced Porous Bi anodes for rechargeable magnesium-ion batteries, *J. Power Sources* 2024, 613, 234943
9. Ying Wang, **Bin Yu**, Ming He, Zhihua Zhai, Kuibo Yin*, Fangong Kong, Zhonghua Zhang*, Eutectic-derived high-entropy nanoporous nanowires for efficient and stable water-to-hydrogen conversion, *Nano Res.* 2022, 15(6), 4820-4826
10. Jiameng Sun, **Bin Yu**, Fuquan Tan, Wanfeng Yang, Guanhua Cheng*, Zhonghua Zhang*, High throughput preparation of Ni-Mo alloy thin films as efficient bifunctional electrocatalysts for water splitting, *Int. J. Hydrogen Energy* 2022, 47 (35), 15764-15774
11. Yanzhao Xu, **Bin Yu**, Yu Wang, Fuquan Tan, Guanhua Cheng, Wanfeng Yang, Hui Gao*, Zhonghua Zhang*. Dealloying-induced modulation upon porous layer depth of three-dimensional copper current collector for improving lithium plating/stripping capability, *Electrochimica Acta* 2022, 435, 141337
12. Fuquan Tan, **Bin Yu**, Xuejiao Yan, Ying Zhang, Qingguo Bai*, Jie Zhang, Zhonghua Zhang*, Electrochemical actuation behaviors of bulk nanoporous copper with a hierarchical structure. *J. Alloys Compd.* 2022, 923, 166469
13. Wensheng Ma, **Bin Yu**, Fuquan Tan, Hui Gao*, Zhonghua Zhang*, Bismuth-antimony alloy embedded in carbon matrix for ultra-stable sodium storage, *Materials* 2023, 16(6), 2189

14. Jiameng Sun, **Bin Yu**, Xuejiao Yan, Jianfeng Wang, Fuquan Tan, Wanfeng Yang, Guanhua Cheng*, Zhonghua Zhang*, High throughput preparation of Ag-Zn alloy thin films for the electrocatalytic reduction of CO₂ to CO, *Materials* 2022, 15(19), 6892
15. Jiameng Sun, **Bin Yu**, Jianfeng Wang, Fuquan Tan, Wanfeng Yang, Guanhua Cheng*, Zhonghua Zhang*, High throughput preparation of Bi-Sb alloy films for the electrocatalytic reduction of CO₂ to formate, *J. Electrochem. Soc.* 2023, 170(5), 056509
16. Fuquan Tan, **Bin Yu**, Qingguo Bai*, Zhonghua Zhang*, Potentiostatic dealloying fabrication and electrochemical actuation performance of bulk nanoporous palladium, *Metals* 2022, 12(12), 2153
17. Ying Zhang, Yan Wang, **Bin Yu**, Kuibo Yin, Zhonghua Zhang*, Hierarchically structured black gold film with ultrahigh porosity for solar steam generation, *Adv. Mater.* 2022, 34(21), 2200108
18. Wenrun Cui, Meijia Song, **Bin Yu**, Fuquan Tan, Wanfeng Yang, Guanhua Cheng, Hui Gao*, Zhonghua Zhang*, Deformable triphase tin-aluminium-bismuth anodes for rechargeable magnesium ion batteries, *J. Electrochem. Soc.* 2022, 169(10), 100502
19. Zhihua Zhai, Ying Wang, **Bin Yu**, Yue Sun, Qingguo Bai*, Zhonghua Zhang*, Novel synthesis and magnetic properties of Ni@NiO nanoporous nanowires, *J. Phys. Chem. Solids* 2022, 161, 110412
20. Wensheng Ma, Weimin Wang, **Bin Yu**, Fuquan Tan, Wanfeng Yang, Guanhua Cheng, Tianyi Kou*, Zhonghua Zhang*, Two-step dealloying approach to synthesize hierarchically porous nickel–tin alloy toward long-life lithium-ion batteries, *Energy Technol.* 2023, 11(1), 2200804
21. Yunfei Ran, Jinglei Li, Jiameng Sun, **Bin Yu**, Fuquan Tan, Guanhua Cheng*, Zhonghua Zhang*, Impact of alloying on electrocatalytic hydrogenation of benzaldehyde over sputtered NiCu film catalysts, *Appl. Catal.: A-Gen.* 2024, 678, 119725
22. Hui Gao, Yan Wang, Zhiyuan Guo, **Bin Yu**, Guanhua Cheng, Wanfeng Yang, Zhonghua Zhang*, Dealloying-induced dual-scale nanoporous indium-antimony anode for sodium/potassium ion batteries, *J. Energy Chem.* 2022, 75, 154-163
23. Min Li, Wensheng Ma, Fuquan Tan, **Bin Yu**, Guanhua Cheng, Hui Gao*, Zhonghua Zhang*, Fe₃O₄@C-500 anode derived by commercial ammonium ferric citrate for advanced lithium ion batteries, *J. Power Sources* 2023, 574, 233146
24. Xiangyu Fei, Hui Gao, Yanzhao Xu, Wensheng Ma, **Bin Yu**, Fuquan Tan, Guanhua Cheng, Zhonghua Zhang*, Porous lithiophilic Cu-Sn solid solution current collector for dendrite-free lithium metal batteries, *Energy Storage Mater.* 2024, 65, 103079
25. Ying Zhang, Fakui Luo, Qingguo Bai, Chi Zhang*, **Bin Yu**, Zhonghua Zhang*, In-situ X-ray diffraction study on dealloying: A scenario of a Cu₉₀Au₁₀ alloy, *J. Phys. Chem. Solids* 2021, 150, 109879