

JUNHENG XING

Postdoc Research Associate, Florida International University

◇ EC2656, 10555 W Flagler St, Miami, FL 33174 ◇ 248-795-9831 ◇ jxing@fiu.edu

RESEARCH INTERESTS

- advanced ceramic materials, energy storage, electrocatalysis, fuel cells
- electrochemistry, photoelectrochemistry, solar fuels
- nanocrystals, 2D materials, 3D inverse opals, transition metal based materials

EDUCATION

Doctor of Philosophy, Chemical Engineering Sep 2009-July 2014

South China University of Technology, Guangzhou, China

Bachelor of Engineering, Chemical Engineering Sep 2003-July 2007

Qingdao University of Science & Technology, Qingdao, China

RESEARCH EXPERIENCE

Postdoctoral Research Associate

Florida International University, Miami, FL Jan 2017-present

- Research in economical manufacturing of nano-sized high temperature and ultrahigh temperature ceramic solid solution powders funded by NSF

Postdoctoral Research Associate

Wayne State University, Detroit, MI Feb 2015-Dec 2016

- Research in design of advanced Li-S batteries with high energy density and long cycle life via protected Li anode and high sulfur loading metal oxide/sulfide/nitride cathode.
- Research in developing of bimetallic phosphates for high efficiency electrocatalytic water splitting.
- Research in *in-situ* nanomechanical characterization of electrochemical cycles in Li-ion batteries supported by Nissan North America, Inc.
- Research in design of transition metal based 3D inverse opals for energy storage and photoelectrocatalysis applications.
- Research in developing nanoscale cathode materials for high energy density and low cost nickel metal hydride (NiMH) batteries funded by ARPA-E of US Department of Energy.

Graduate Research Assistant

South China University of Technology, Guangzhou, China Sep 2009-July 2014

- Research in modification of anodic TiO₂ nanotubes with semiconductor quantum dots or metallic nanoparticles for enhanced visible-light photocatalytic activities.
- Research in electrochemical fabrication of smooth and highly ordered TiO₂ nanotubes in a new HBF₄-based electrolyte for enhanced morphology and photocatalytic activities.
- Research in understanding of the growth progress and crystallization mechanisms of anodic titanium films funded by National Natural Science Foundation of China (NO. 20976058).

JOURNAL PAPERS

Submitted or in preparation:

1. **J. Xing**, H. Li, M. M. Cheng, S. M. Geyer, K.Y. S. Ng. Highly active water splitting electrocatalyst based on bimetallic cobalt-iron phosphate nanoparticles. manuscript submitted
2. W. Zeng, **J. Xing**, K.Y. S. Ng, M. M. Cheng. Design of advanced electrode by adding a

graphite/polymer buffer layer for Li-ion battery: an in-situ stress mechanical measurement. manuscript submitted

3. **J. Xing**, J. Chen, H. Li, Z. Xia, Y. Zhang, L. Zhong. Improvement of morphology and properties of TiO₂ nanotube arrays with specific additives to unique NH₄BF₄-based electrolyte. manuscript submitted
4. H. Li, C. Lu, C. Duan, **J. Xing**, S. Adhikari, K.Y. S. Ng, S. M. Geyer. Rational design of cobalt phosphide/carbon fiber coaxial nanowires as a pH-universal electrocatalyst for the hydrogen evolution reaction. manuscript submitted

Published:

5. **J. Xing**, H. Li, M. M. Cheng, S. M. Geyer, K.Y. S. Ng. Electro-synthesis of 3D porous hierarchical Ni-Fe phosphate film/Ni foam as high-efficiency bifunctional electrocatalyst for overall water splitting. **J. Mater. Chem. A**, 2016, 4, 13866-13873.
6. Y. Ming, J. Hu, **J. Xing**, M. Wu, J. Qu. Preparation of polyurea/melamine formaldehyde double-layered self-healing microcapsules and investigation on core fraction. **Journal of Microencapsulation**, 2016, 33, 307-314.
7. **J. Xing**, S. Wu, K.Y. S. Ng. Electrodeposition of ultrathin nickel-cobalt double hydroxide nanosheets on nickel foam as high-performance supercapacitor electrodes. **RSC Advances**, 2015, 5, 88780-88786.
8. H. Li, **J. Xing**, Z. Xia, J. Chen. Preparation of coaxial heterogeneous grapheme quantum dot-sensitized TiO₂ nanotube arrays via linker molecule binding and electrophoretic deposition. **Carbon**, 2015, 81 (26), 474-487.
9. H. Li, Z. Xia, J. Chen, L. Lei, **J. Xing**. Constructing ternary CdS/reduced graphene oxide/TiO₂ nanotube arrays hybrids for enhanced visible-light-driven photoelectrochemical and photocatalytic activity. **App. Catal. B: Environ.**, 2015, 168, 105-113.
10. H. Li, Z. Xia, J. Chen, **J. Xing**. Microwave-assisted preparation of self-doped TiO₂ nanotube arrays for enhanced photoelectrochemical water splitting. **J. Mater. Chem. A**, 2015, 3, 699-705.
11. **J. Xing**, H. Li, Z. Xia, J. Chen, Y. Zhang, L. Zhong. Fabrication of hierarchical TiO₂ nanotubes in a new HBF₄-based electrolyte for enhanced morphology and photocatalytic activities. **Ind. Eng. Chem. Res.**, 2014, 53 (26), 10667-10672.
12. **J. Xing**, H. Li, Z. Xia, J. Chen, Y. Zhang, L. Zhong. Influence of substrate morphology on the growth and properties of TiO₂ nanotubes in HBF₄-based electrolyte. **Electrochim. Acta**, 2014, 134, 242-248.
13. H. Li, **J. Xing**, Z. Xia, J. Chen. Double-walled TiO₂ nanotubes fabricated with NH₄BF₄ based electrolyte and their photoelectrochemical performance. **RSC Advances**, 2014, 4, 23214-23217.
14. H. Li, **J. Xing**, Z. Xia, J. Chen. Preparation of extremely smooth and boron-fluorine co-doped TiO₂ nanotube arrays with enhanced photoelectrochemical and photocatalytic performance. **Electrochim. Acta**, 2014, 139, 331-336.
15. G. Cao, Z. Xia, L. Lei, Y. Zhang, **J. Xing**. Crystallinity evolution of soft segments during the synthesis of polyester-based waterborne polyurethane, **J. Appl. Polym. Sci.**, 2014, 131, 40270-40278.
16. **J. Xing**, Z. Xia, J. Hu, Y. Zhang, L. Zhong. Growth and crystallization of titanium oxide films at different anodization modes. **J. Electrochem. Soc.**, 2013, 160 (6), C239-C246.
17. **J. Xing**, H. Li, Z. Xia, J. Hu, Y. Zhang, L. Zhong. Formation and crystallization of anodic oxide films on sputter-deposited titanium in potentiostatic and potential-sweep modes. **J. Electrochem. Soc.**, 2013, 160 (10), C503-C510.
18. **J. Xing**, Z. Xia, J. Hu, Y. Zhang, L. Zhong. Time dependence of growth and crystallization of anodic titanium oxide films in potentiostatic mode. **Corrosion Sci.**, 2013, 75, 212-219.

19. **J. Xing**, Z. Xia, H Li, Y. Wang, L. Zhong. Growth and crystallization behaviors of anodic oxide films on sputter-deposited titanium at very low potentials. *Trans. Nonferrous Met. Soc. China*, 2013, 23 (11), 3286-3292.
20. **J. Xing**, Z. Xia, Y. Zhang, L Zhong. Effect of anodic oxidation parameters on crystallization behavior of TiO₂ films. *Chemical Industry and Engineering Progress*, 2013, 32 (3), 592-598. (in Chinese)
21. **J. Xing**, Z. Xia, Y. Zhang, L Zhong. Effect of accumulation of Ti⁴⁺ in 0.1 M H₂SO₄ electrolyte on growth and crystallization of anodic titanium oxide films. *Inter. J. Electrochem. Sci.*, 2012, 7 (12), 12808-12816.
22. D. Wei, Z. Xia, **J. Xing**, Y. Wang, L Zhong. Formation and crystallization characteristics of anodic oxide film on pure titanium in potentiostatic mode. *Journal of South China University of Technology*, 2012, 40 (3), 30-36. (in Chinese)

SKILLS

- Hands-on experience in electrochemical research, material preparation and battery characterization.
- Proficient in operating Maccor/Arbin Battery cycler, Gamry Potentiostats.
- Hands-on experience in with in-situ XRD, SEM, EDS, TEM, AFM, Raman, ICP-OES, BET, TGA, FTIR, XPS etc.
- Computer Skills: Microsoft Office, AutoCAD, Origin, Photoshop, 3D MAX.

SCIENTIFIC ACTIVITIES

- **Journal Review Activities:** Journal of Material Chemistry A, Journal of Power Sources, Energy Storage Materials, Applied Surface Science, Russian Journal of Electrochemistry, Chinese Journal of Chemical Engineering.