

# Curriculum Vitae

## Personal Information

**Name:** Junyuan Xu

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**Affiliation:** Quantum Materials Department, INL, Av. Mestre Jose Veiga s/n, 4715-330 Braga, Portugal



## Education Background

✚ **Aug. 2016 – Now:** Research Fellow

Supervisor: Professor Lifeng Liu

Research subject: transition metal phosphide (TMP) for water electrolysis in both Acidic and alkaline environments

✚ **Mar. 2014 – Mar. 2016:** TingSui Kê Research Fellowship

Catalysis and Materials Division, Shenyang National Laboratory for Materials Science, Institute of Metal Research, Chinese Academy of Sciences

Supervisor: Professor Dangsheng Su

Research subject: Carbon dioxide electro-reduction on heteroatom doped nanocarbon

✚ **Sep. 2008 - Dec. 2013:** Combined PhD/Master

Department of Physical Chemistry, University of Science & Technology Beijing, Supervisor: Professor Xindong Wang

Thesis title: Synthesis of high catalytic activity anode catalyst for Proton Exchange Membrane water electrolysis

✚ **Oct. 2011 - Oct. 2012:** Visiting stay

Department of Energy Conversion and Storage, Technical University of Denmark, Supervisor: Professor Qingfeng Li & Erik Christensen

Research subject: Synthesis of functional materials with high electronic and intrinsic proton conductivity as the support for iridium oxide in Proton Exchange Membrane steam electrolysis

✚ **Sep. 2004-Jul. 2008:** B.E.

Electrochemistry, Harbin Institute of Technology

## Awards

- ✚ TingSui Kê fellowship, Shenyang National Laboratory for Materials Science, Institute of Metal Research, Chinese Academy of Sciences, 2014.
- ✚ Principal Medal, University of Science & Technology Beijing, 2014.
- ✚ National Scholarship of Doctorates, Chinese Ministry of Education, 2013.

## Finished Projects

- ✚ Project Leader, Heteroatom doped nanocarbon materials for carbon dioxide electro-reduction. TingSui Kê Research Fellowship.
- ✚ Project Participant, Study on the preparation mechanism and microstructure modulation of electro catalyst and multi-phase interface for PEM water electrolysis. National Natural Science Foundation of China (Grant No. 51274028).
- ✚ Project Participant, Preparation and performance study of electro catalyst for energy conversion and storage. National Natural Science Foundation of China (Grant No. 91010002).
- ✚ Project Participant, Medium Temperature Water Electrolysis. Danish Council for Strategic Research.
- ✚ Project Participant, Intermediate Temperature Proton Conducting Systems. Danish National Research Foundation.
- ✚ Project Participant, Preparation mechanism and performance study of supported composite oxide electro catalysts in proton exchange membrane pure water electrolysis. Natural Science Foundation of Beijing (Grant No. 2122041).
- ✚ Project Participant, Integrative power system based on Direct Methanol Fuel Cell System. 863 Program of China (Project No. 2012AA053401).

## Publications

- ✚ Guicheng Liu, **Junyuan Xu**, Tongtao Wang, Tingting Zhao, Meng Wang, Yituo Wang, Jianling Li, Xindong Wang, The performance and mechanism of multi-step activation of MEA for DMFC, **International Journal of Hydrogen Energy, 35 (2010) 12341-12345.**
- ✚ **Junyuan Xu**, Ruiying, Miao, Tingting Zhao, Jun Wu, Jianling Li, Xindong Wang, A novel catalyst layer with hydrophilic-hydrophobic meshwork and pore structure for

solid polymer electrolyte water electrolysis, **Electrochemistry Communications, 13 (2011) 437-439.**

- ✚ **Junyuan Xu**, Meng Wang, Gaoyang Liu, Jianling Li, Xindong Wang, The physical-chemical properties and electrocatalytic performance of iridium oxide in oxygen evolution, **Electrochimica Acta, 56 (2011) 10223-10230.**
- ✚ **Junyuan Xu**, Gaoyang Liu, Jianling Li, Xindong Wang, The electrocatalytic properties of an IrO<sub>2</sub>/SnO<sub>2</sub> catalyst using SnO<sub>2</sub> as a support and an assisting reagent for the oxygen evolution reaction, **Electrochimica Acta, 59 (2012) 105-113.**
- ✚ **Junyuan Xu**, Qingfeng Li, Martin Kalmar Hansen, Erik Christensen, Antonio Luis Tomás García, Gaoyang Liu, Xindong Wang, Niels J. Bjerrum, Antimony Doped Tin Oxides and Their Composites with Tin pyrophosphates as Catalyst Supports for Oxygen Evolution Reaction in Proton Exchange Membrane Water Electrolysis, **International Journal of Hydrogen Energy, 37 (2012) 18629-18640.**
- ✚ Bangsheng Ming, Jianling Li, Feiyu Kang, Guoyao Pang, Yakun Zhang, Liang Chen, **Junyuan Xu**, Xindong Wang, Microwave-hydrothermal synthesis of birnessite-type MnO<sub>2</sub> nanospheres as supercapacitor electrode materials, **Journal of Power Sources, 198 (2012) 428-431.**
- ✚ **Junyuan Xu**, Qingfeng Li, Erik Christensen, Xindong Wang, Niels J. Bjerrum, Platinum Activated IrO<sub>2</sub>/SnO<sub>2</sub> Nanocatalysts and Their Electrode Structures for High Performance Proton Exchange Membrane Water Electrolysis, **International Journal of Electrochemical Science, 8 (2013) 2388-2406.**
- ✚ Min Yin, **Junyuan Xu**, Qingfeng Li, Jens Oluf Jensen, Yunjie Huang, Lars N. Cleemann, Niels J. Bjerrum, Wei Xing, Highly active and stable Pt electrocatalysts promoted by antimony-doped SnO<sub>2</sub> supports for oxygen reduction reaction, **Applied Catalysis B: Environmental, 144 (2013) 112-120.**
- ✚ **Junyuan Xu**, David Aili, Qingfeng Li, Chao Pan, Erik Christensen, Jens Oluf Jensen, Wei Zhang, Gaoyang Liu, Xindong Wang, Niels J. Bjerrum, Antimony Doped Tin Oxide Modified Carbon Nanotubes as Catalyst Supports for Methanol Oxidation and Oxygen Reduction Reactions, **Journal of Materials Chemistry A, 1 (2013) 9737-9745.**
- ✚ **Junyuan Xu**, Qingfeng Li, Erik Christensen, Jens Oluf Jensen, David Aili, Wei Zhang, Martin Kalmar Hansen, Gaoyang Liu, Xindong Wang, Niels J. Bjerrum,

Oxygen evolution Catalyst with 3-D Ordered Array Structure and Intrinsic Proton Conductivity Support for Hydrogen Generation in Proton Exchange Membrane Steam Electrolysis, **Energy & Environmental Science, 7 (2014) 820-830.**

- ✚ Gaoyang Liu, **Junyuan Xu**, Juming Jiang, Bingshaung Peng, Xindong Wang, Nanosphere-structured composites consisting of Cs-substituted phosphotungstates and antimony doped tin oxides as catalyst supports for proton exchange membrane liquid water electrolysis, **International Journal of Hydrogen Energy, 39 (2014) 1914-1923.**
- ✚ Gaoyang Liu, **Junyuan Xu**, Yituo Wang, Juming Jiang, Xindong Wang, A novel catalyst coated membrane embedded with Cs-substituted phosphotungstates for proton exchange membrane water electrolysis, **International Journal of Hydrogen Energy, 39 (2014) 14531-14539.**
- ✚ Gaoyang Liu, **Junyuan Xu**, Yituo Wang and Xindong Wang, Oxygen evolution catalyst on antimony doped tin oxide nanowire structured support for proton exchange membrane liquid water electrolysis, **Journal of Materials Chemistry A, 3 (2015) 20791-20800.**
- ✚ Xiaoyan Sun, **Junyuan Xu**, Yuxiao Ding, Dr. Bingsen Zhang, Zhenbao Feng, Dangsheng Su, The Effect of Different Phosphorus Chemical States on an Onion-like Carbon Surface for the Oxygen Reduction Reaction, **ChemSusChem, 8 (2015) 2872-2876.**
- ✚ Rui Huang, **Junyuan Xu**, Jia Wang, Xiaoyan Sun, Wei Qi, Changhai Liang, Dangsheng Su, Oxygen breaks into carbon nanotubes and abstracts hydrogen from propane, **Carbon, 96 (2016) 631-640.**
- ✚ Bingsen Zhang, Yiming Niu, **Junyuan Xu**, Xiaoli Pan, Cheng-Meng Chen, Wen Shi, Marc-Georg Willinger, Robert Schlögl, Dang Sheng Su, Tuning the surface structure of supported PtNi<sub>x</sub> bimetallic electrocatalysts for methanol electro-oxidation reaction. **Chemical Communications, 2016, 52, 3927-3930.**
- ✚ **Junyuan Xu**, Yuhe Kan, Rui Huang, Bingsen Zhang, Bolun Wang, KuangHsu Wu, Yangming Lin, Xiaoyan Sun, Qingfeng Li, Gabriele Centi, Dangsheng Su, Revealing the origin of activity in nitrogen doped nanocarbon for electrocatalytic reduction of carbon dioxide. **ChemSuschem, 2016, DOI: 10.1002/cssc.201600202.**

- ✚ Wei Li, Xuefei Gao, Dehua Xiong, Fang Wei, Wei-Guo Song, **Junyuan Xu**, Lifeng Liu, Hydrothermal Synthesis of Monolithic Co<sub>3</sub>Se<sub>4</sub> Nanowire Electrodes for Oxygen Evolution and Overall Water Splitting with High Efficiency and Extraordinary Catalytic Stability, **Advanced Energy Materials**, **DOI:10.1002/aenm.201602579**.
- ✚ **Junyuan Xu**, Bingsen Zhang, Bolun Wang, KuangHsu Wu, Zhangquan Peng, Qingfeng Li, Gabriele Centi, Dang Sheng Su, Decisive intermediates responsible for the carbonaceous products of CO<sub>2</sub> electro-reduction on nitrogen doped sp<sup>2</sup> nanocarbon catalysts in NaHCO<sub>3</sub> aqueous electrolyte. **ChemElectroChem**, **DOI:10.1002/celec.201700104**.
- ✚ Wei Li, Xuefei Gao, Dehua Xiong, Fang Xia, Jian Liu, Wei-Guo Song, **Junyuan Xu**, Sitaramanjaneya Mouli Thallur, M. Fátima Cerqueira, Xiuli Fu, Lifeng Liu, Vapor-Solid Synthesis of Monolithic Single-Crystalline CoP Nanowire Electrodes for Efficient and Robust Water Electrolysis, **Chemical Science**, **DOI:10.1039/C6SC05167G**.