Assistant Professor Zhongjun Li

Department of Engineering Science, Faculty of Innovation Engineering
Macau University of Science and Technology

PhD. Supervisor
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Academic Qualification:

Ph. D. in School of Computer Science and Engineering, Electronic Information Technology, Macau University of Science and Technology
Master in School of Science, Physics, Beijing University of Chemical Technology
Bachelor in School of Mathematics and Physics, Materials Physics, Shenyang University of Chemical Technology

Teaching Area

Fundamentals of Materials Science, Materials Analysis and Testing Technology

Research Area

Design and applications (water quality monitoring, biomarkers such as proteins and RNA) of photoelectrochemical materials
Design of theranostic reagents for treatment of tumors, neurodegenerative diseases, skin diseases (hair loss), etc

Working Experience

2023 – Present, Assistant Professor at Faculty of Innovation Engineering, Macau University of Science and Technology
2020 – 2022, Postdoctor at Shenzhen Second People's Hospital

Research Grants

China Postdoctoral Science Fund, Special Funding (Pre-Station), 2020 – 2022, 2020TQ0204, PI
China Postdoctoral Science Fund, General Program, 2020 – 2022, 2020M682904, PI
Science and Technology Development Fund of Macau, 2017 – 2020, 007/2017/A1, Key participant
Science and Technology Development Fund of Macau, 2018 – 2021, 132/2017/A3, Key participant

Representative publications (Complete publication refer to my webpage)

(1) **Li, Z.#***; Qiao, H.#; Liu, F.; Zhou, Y.; Zhang, Y.*; Wang, Y.; Xu, F.; Huang, G.; Yue, S.; Liu, W.; Zhao, H.; Tan, H.; Li, W.; Li, J.; Qi, X.*; Huang, Z.; Wageh, S.; Al‐Ghamdi, A. A.; Wang, B.; Zhang, H. Decorating InSe Surface by Gold Species for Improved Carrier Transport and Efficient Sunlight Harvesting Toward High‐Performance Flexible Photodetectors. *Adv. Opt. Mater.* **2022**, 2201685. DOI: 10.1002/adom.202201685
(2) **Li, Z.#**; Qiao, H.#; Guo, Z.#; Ren, X.; Huang, Z.; Qi, X.*; Dhanabalan, S. C.; Ponraj, J. S.; Zhang, D.; Li, J.; Zhao, J.; Zhong, J.; Zhang, H.* High-Performance Photo-Electrochemical Photodetector Based on Liquid-Exfoliated Few-Layered InSe Nanosheets with Enhanced Stability. *Adv. Funct. Mater.* **2018**, *28* (16), 1705237. DOI: 10.1002/adfm.201705237 **(high-cited)**
(3) Ren, X.#; **Li, Z.#**; Huang, Z.; Sang, D.; Qiao, H.; Qi, X.*; Li, J.; Zhong, J.; Zhang, H.* Environmentally Robust Black Phosphorus Nanosheets in Solution: Application for Self-Powered Photodetector. *Adv. Funct. Mater.* **2017**, *27* (18), 1606834. DOI: 10.1002/Adfm.201606834 **(high-cited)**
(4) **Li, Z.#**; Xu, H.#; Shao, J.; Jiang, C.; Zhang, F.; Lin, J.; Zhang, H.*; Li, J.*; Huang, P.* Polydopamine-functionalized black phosphorus quantum dots for cancer theranostics. *Appl. Mater.*

Today **2019**, *15*, 297. DOI: 10.1016/j.apmt.2019.02.002
(5) Cheng, G.#; **Li, Z.#**; Liu, Y.; Ma, R.; Chen, X.; Liu, W.; Song, Y.; Zhang, Y.*; Yu, G.*; Wu, Z.*; Chen, T.* "Swiss Army Knife" black phosphorus-based nanodelivery platform for synergistic antiparkinsonian therapy via remodeling the brain microenvironment. *J. Control Release.* **2022,** *353*, 752. DOI: 10.1016/j.jconrel.2022.12.024
(6) Xiong, S.#; **Li, Z.#**; Liu, Y.; Wang, Q.; Luo, J.; Chen, X.; Xie, Z.; Zhang, Y.; Zhang, H.*; Chen, T.* Brain-targeted delivery shuttled by black phosphorus nanostructure to treat Parkinson's disease. Biomaterials. **2020**, *260*, 120339. DOI: 10.1016/j.biomaterials.2020.120339
(7) Zhang, L.#; **Li, Z.#**; Yang, J.; Zhou, J.; Zhang, Y.; Zhang, H.; Li, Y.* A Fully Integrated Flexible Tunable Chemical Sensor Based on Gold-Modified Indium Selenide Nanosheets. *ACS Sens.* **2022**, *7* (4), 1183. DOI: 10.1021/acssensors.2c00281
(8) Qiao, H.#; **Li, Z.#**; Huang, Z.; Ren, X.; Kang, J.; Qiu, M.; Liu, Y.; Qi, X.*; Zhong, J.; Zhang, H.* Self-powered photodetectors based on 0D/2D mixed dimensional heterojunction with black phosphorus quantum dots as hole accepters. *Appl. Mater. Today* **2020**, *20*, 100765. DOI: 10.1016/j.apmt.2020.100765
(9) Qiao, H.#; **Li, Z.#**; Liu, F.#; Ma, Q.; Ren, X.; Huang, Z.; Liu, H.; Deng, J.; Zhang, Y.; Liu, Y.; Qi, X.*; Zhang, H.* Au Nanoparticle Modification Induces Charge-Transfer Channels to Enhance the Electrocatalytic Hydrogen Evolution Reaction of InSe Nanosheets. *ACS Appl. Mater. Inter.* **2022**, *14* (2), 2908. DOI: 10.1021/acsami.1c21421
(10) Zhang, L.#; **Li, Z.#**; Liu, J.; Peng, Z.; Zhou, J.; Zhang, H.*; Li, Y.* Optoelectronic Gas Sensor Based on Few-Layered InSe Nanosheets for NO2 Detection with Ultrahigh Antihumidity Ability. *Anal. Chem.* **2020**, *92* (16), 11277. DOI: 10.1021/acs.analchem.0c01941
(11) Ren, X.#; **Li, Z.#**; Qiao, H.; Liang, W.; Liu, H.; Zhang, F.; Qi, X.*; Liu, Y.; Huang, Z.; Zhang, D.; Li, J.; Zhong, J.; Zhang, H.* Few-Layer Antimonene Nanosheet: A Metal-Free Bifunctional Electrocatalyst for Effective Water Splitting. *ACS Appl. Energy Mater.* **2019**, *2* (7), 4774. DOI: 10.1021/acsaem.9b00423
(12) Zhou, J.; **Li, Z.**; Ying, M.; Liu, M.; Wang, X.; Wang, X.; Cao, L.; Zhang, H.*; Xu, G.* Black phosphorus nanosheets for rapid microRNA detection. *Nanoscale* **2018,** *10* (11), 5060. DOI: 10.1039/c7nr08900g
(13) Qiu, M.; Wang, D.; Liang, W.; Liu, L.; Zhang, Y.; Chen, X.; Sang, D. K.; Xing, C.; **Li, Z.**; Dong, B.; Xing, F.; Fan, D.; Bao, S.*; Zhang, H.*; Cao, Y.* Novel concept of the smart NIR-light-controlled drug release of black phosphorus nanostructure for cancer therapy. *Proc. Natl. Acad. Sci. U.S.A.* **2018,** *115* (3), 501. DOI: 10.1073/pnas.1714421115 **(high-cited)**
(14) Xie, Z.; Peng, M.; Lu, R.; Meng, X.; Liang, W.; **Li, Z.**; Qiu, M.; Zhang, B.; Nie, G.; Xie, N.; Zhang, H.*; Prasad, P. N.* Black phosphorus-based photothermal therapy with aCD47-mediated immune checkpoint blockade for enhanced cancer immunotherapy. *Light-Sci. Appl.* **2020,** *9* (1), 161. DOI: 10.1038/s41377-020-00388-3 (**Excellent Paper**)
(15) Tao, W.; Ji, X.; Xu, X.; Islam, M. A.; **Li, Z.**; Chen, S.; Saw, P. E.; Zhang, H.*; Bharwani, Z.; Guo, Z.; Shi, J.*; Farokhzad, O. C.* Antimonene Quantum Dots: Synthesis and Application as Near-Infrared Photothermal Agents for Effective Cancer Therapy. *Angew. Chem. Int. Edit.* **2017,** *56* (39), 11896. DOI: 10.1002/anie.201703657
(16) Ji, X.; Kong, N.; Wang, J.; Li, W.; Xiao, Y.; Gan, S. T.; Zhang, Y.; Li, Y.; Song, X.; Xiong, Q.; Shi, S.; **Li, Z.**; Tao, W.*; Zhang, H.*; Mei, L.*; Shi, J. A Novel Top-Down Synthesis of Ultrathin 2D Boron Nanosheets for Multimodal Imaging-Guided Cancer Therapy. *Adv. Mater.* **2018**, *30*, 1803031. DOI: 10.1002/adma.201803031
(17) Huang, K.; **Li, Z.**; Lin, J.*; Han, G.*; Huang, P.* Two-dimensional transition metal carbides and nitrides (MXenes) for biomedical applications. *Chem. Soc. Rev.* **2018,** *47* (14), 5109. DOI: 10.1039/c7cs00838d **(high-cited)**
(18) Ren, X.#; Liao, G.#; **Li, Z.#**; Qiao, H.; Zhang, Y.; Yu, X.; Wang, B.; Tan, H.; Shi, L.*; Qi, X.*; Zhang, H.* Two-dimensional MOF and COF nanosheets for next-generation optoelectronic applications. *Coordin. Chem. Rev.* **2021**, *435*, 213781. DOI: 10.1016/j.ccr.2021.213781
(19) Chen, T.#; **Li, Z.#**; Zhang, C.#; Wang, Z.; Luo, M.; Zhang, Y.; Wang, Y.; Xiao, Q.; Zhang, H.; Liu, J.* Indium selenide for Q-switched pulse generation in a mid-infrared fiber laser. *J. Mater. Chem.*

C **2021**, *9* (18), 5893. DOI: 10.1039/d1tc00727k
(20) He, Z.#; **Li, Z.#**; Wang, Z.; Zhang, C.; Chen, T.; Zhao, T.; Xu, C.; Zhang, Y.*; Liu, J.* Two-dimensional gold decorated indium selenide for near-infrared and mid-infrared ultrafast photonics. *Opt. Laser Technol.* **2022**, *150*, 107920. DOI: 10.1016/j.optlastec.2022.107920
(21) Liu, S.#; **Li, Z.#**; Ge, Y.; Wang, H.; Yue, R.; Jiang, X.; Li, J.; Wen, Q.*; Zhang, H.* Graphene/phosphorene nano-heterojunction: facile synthesis, nonlinear optics, and ultrafast photonics applications with enhanced performance. *Photon. Res.* **2017**, *5* (6), 662. DOI: 10.1364/Prj.5.000662
(22) **Li, Z.**; Hou, Z.*; Song, W.*; Liu, X.; Cao, W.; Shao, X.; Cao, M.* Unusual continuous dual absorption peaks in Ca-doped BiFeO3 nanostructures for broadened microwave absorption. *Nanoscale* **2016**, *8* (19), 10415. DOI: 10.1039/c6nr00223d
(23) **Li, Z.**; Hou, Z.*; Song, W.; Liu, X.; Wang, D.; Tang, J.; Shao, X. Mg-substitution for promoting magnetic and ferroelectric properties of BiFeO3 multiferroic nanoparticles. *Mater. Lett.* **2016**, *175*, 207. DOI: 10.1016/j.matlet.2016.04.016
（# refers to co-first author; * refers to corresponding author）

Professional Certification and Awards

(1) November 2022, Clarivate, 2022 Global "Highly Cited Scientist"
(2) January 2023, Optical Society of China, Third-class Award in 2022 Optical Technology of Chinese Optical Society
(3) June 2020, Shenzhen Human Resources and Social Security Bureau, Overseas High-caliber Personal (Level C)
(4) May 2022, Light: Science & Applications, Excellent Paper
(5) October 2018, Macao Science and Technology Development Fund, Macao Postgraduate Science and Technology Research and Development Award (once every 2 years, the only one in this major)
(6) June 2016, Beijing University of Chemical Technology, Excellent Graduation Thesis (the only one in this major)
(7) June 2016, Beijing University of Chemical Technology, Excellent Graduate
(8) May 2010, Shenyang University of Chemical Technology, Third-class Scholarship
(9) November 2010, Shenyang University of Chemical Technology, Second-class Scholarship
(10) June 2011, Shenyang University of Chemical Technology, First-class Scholarship
(11) October 2012, Shenyang University of Chemical Technology, Second-class Scholarship
(12) December 2012, Popularization Committee of Chinese Mathematical Society, First Prize in National Collegiate Mathematics Competition

Journal Editorship

Personal Website

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https://www.webofscience.com/wos/alldb/summary/704e5956-4c28-4bbf-b001-a9499c709b87-6a015ac8/relevance/1