

# Ke Cheng

PHD · CHEMISTRY

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## Education

### City University of Hong Kong

PHD, CHEMISTRY

• Advisor: Prof. Hongyan Sun

Hong Kong

2018 - 2021

### Jinan University

MS, MEDICINAL CHEMISTRY

• Advisor: Prof. Ke Ding

Guangzhou, China

2015 - 2018

### Wuhan Institute of Technology

BE, PHARMACEUTICAL ENGINEERING

• Advisor: Prof. Shuangxi Gu

Wuhan, China

2010 - 2014

## Professional Experience

2022-2023   **Postdoctoral Fellow**, School of Pharmaceutical Sciences, Sun Yat-sen University, Advisor: Prof. Wenbin Deng

2021-2022   **Postdoctoral Fellow**, Department of Chemistry, City University of Hong Kong, Advisor: Prof. Hongyan Sun

2014-2015   **Research Assistant**, WuXi AppTec (Wuhan)

## Research Interests

Chemical Biology, Medicinal Chemistry, Materials Chemistry

## Skills & Expertise

Synthetic Organic Chemistry; Chemical Analysis; Protein Biology; Chemoproteomics; Bioinformatic Analysis

Molecular Docking; Peptide Chemistry; Drug Discovery; Nanomaterials; Fluorescence Probe Development

## Awards & Fellowships

2018-2021   **Postgraduate Studentship**, City University of Hong Kong

2018   **Creative Research Award**, Jinan University

2015-2018   **Postgraduate fellowship**, Jinan University

## Research Experience

### Sun Yat-sen University - School of Pharmaceutical Sciences (Shenzhen)

ADVISORS: PROF. WENBIN DENG, PROF. LIN MEI, PROF. HONGYAN SUN

• Project: "Self-Assembled Nano-PROTAC for Targeted, Activatable, and Synergetic Cancer Photo-Chemo-Dynamic Therapy"

Shenzhen, China

2022 - present

### City University of Hong Kong - Department of Chemistry

ADVISOR: PROF. HONGYAN SUN

• Thesis: "Developing Isoxazole-Based Photo-Cross-Linkers for Chemical Proteomics and a Self-Assembly Targeted Probe for Cancer Phototherapy"

Hong Kong

2018 - 2022

## Jinan University - College of Pharmacy

ADVISORS: PROF. KE DING, PROF. ZHENGQIU LI

Guangzhou, China

2015-2018

- Thesis: "Tetrazole-Based Probes for Integrated Phenotypic Screening, Affinity-Based Proteome Profiling, and Sensitive Detection of a Cancer Biomarker"

## Wuhan Institute of Technology - College of Engineering and Pharmacy

ADVISOR: PROF. SHUANGXI GU

Wuhan, China

2013-2014

- Dissertation: Synthetic Preparation of a series of Aryl Sulfocyanic Esters

## Presentations

Winter, 2019. Conference Poster, Dutch Chemistry Conference CHAINS, The Netherlands

Summer, 2017. Invited Speaker, Annual Conference of Guangdong Pharmaceutical Society, Guangzhou, China

## Teaching Experience

2020 Principles of Organic Chemistry, Teaching Assistant

CityU

2018 Chemistry, Teaching Assistant

CityU

## Publications

**Cheng, K.**; Lee, J. S.; Hao, P.; Yao, S. Q.; Ding, K.; Li, Z., Tetrazole-Based Probes for Integrated Phenotypic Screening, Affinity-Based Proteome Profiling, and Sensitive Detection of a Cancer Biomarker. *Angew. Chem. Int. Ed.* 2017, 56 (47), 15044-15048.

**Cheng, K.**; Qi, J.; Ren, X.; Zhang, J.; Li, H.; Xiao, H.; Wang, R.; Liu, Z.; Meng, L.; Ma, N.; Sun, H., Developing Isoxazole as a Native Photo-Cross-Linker for Photoaffinity Labeling and Chemoproteomics. *Angew. Chem. Int. Ed.* 2022, 61 (47), e202209947.

**Cheng, K.**; Qi, J.; Zhang J.; Li H.; Ren X.; Wei W.; Meng L.; Jing L.; Li. Q.; Zhang H.; Deng W.; Sun H.; Mei L., Self-Assembled Nano-photosensitizer for Targeted, Activatable, and Biosafe Cancer Phototheranostics. *Biomaterials* 2022, 291, 121916.

He, F.; **Cheng, K.**; Qi J.; He F.; Chu C.; Xiong, Y.; Zhao, j.; Ding, J.; Kong, F.; Cao, Z.; Liu G.; Deng, W., Black Phosphorus Nanosheets Enhance Differentiation of Neural Progenitor Cells for Improved Treatment in Spinal Cord Injury. *Chem. Eng. J.* 2023, 472, 144977.

Chen, Q.; **Cheng, K.**; Wang, W.; Yang, L.; Xie, Y.; Feng, L.; Zhang, J.; Zhang, H.; Sun, H., A Pyrene-based Ratiometric Fluorescent Probe with a Large Stokes Shift for Selective Detection of Hydrogen Peroxide in Living Cells. *J. Pharm. Anal.* 2020, 10 (5), 490-497.

Qi, J.; Xiong, Y.; **Cheng, K.**; Huang, Q.; Cao, J.; He, F.; Mei, L.; Liu, G.; Deng, W., Heterobifunctional PEG-grafted Black Phosphorus Quantum Dots: "Three-in-One" Nano-platforms for Mitochondria-targeted Photothermal Cancer Therapy. *Asian J. Pharm. Sci.* 2021, 16 (2), 222-235.

Ma, N.; Zhang, Z.; Lee, J.-S.; **Cheng, K.**; Lin, L.; Zhang, D.; Hao, P.; Ding, K.; Ye, W.-C.; Li, Z., Affinity-based Protein Profiling Reveals Cellular Targets of Photoreactive Anticancer Inhibitors. *ACS Chem. Biol.* 2019, 14 (12), 2546-2552.

Duan, Q.; Zheng, G.; Li, Z.; **Cheng, K.**; Zhang, J.; Yang, L.; Jiang, Y.; Zhang, H.; He, J.; Sun, H., An Ultra-sensitive Ratiometric Fluorescent Probe for Hypochlorous Acid Detection by the Synergistic Effect of AIE and TBET and its Application of Detecting Exogenous/Endogenous HOCl in Living Cells. *J. Mater. Chem. B* 2019, 7 (33), 5125-5131.

Zheng, G.; Li, Z.; Duan, Q.; **Cheng, K.**; He, Y.; Huang, S.; Zhang, H.; Jiang, Y.; Jia, Y.; Sun, H., Two Quenching Groups are Better Than One: a Robust Strategy for Constructing HOCl Fluorescent Probe with Minimized Background Fluorescence and Ultra-high Sensitivity and its Application of HOCl Imaging in Living Cells and Tissues. *Sens. Actuators B Chem.* 2020, 310, 127890.

Zhang, J.; Wen, G.; Wang, W.; **Cheng, K.**; Guo, Q.; Tian, S.; Liu, C.; Hu, H.; Zhang, Y.; Zhang, H., Controllable Cleavage of C-N Bond-based Fluorescent and Photoacoustic Dual-modal Probes for the Detection of H<sub>2</sub>S in Living Mice. *ACS Appl. Bio Mater.* 2020, 4 (3), 2020-2025.

- Li, H.; Guan, C.; Zhang, J.; **Cheng, K.**; Chen, Q.; He, L.; Ge, X.; Lai, Y.; Sun, H.; Zhang, Z., Robust Artificial Interphases Constructed by a Versatile Protein-Based Binder for High-Voltage Na-Ion Battery Cathodes. *Adv. Mater.* 2022, 34 (29), 2202624.
- Zhang, J.; Shi, H.; Huang, C.; Mei, L.; Guo, Q.; **Cheng, K.**; Wu, P.; Su, D.; Chen, Q.; Gan, S.; Wing Chan, C. K.; Shi, J.; Chen, J. L.; Jonathan Choi, C. H.; Yao, S. Q.; Chen, X.-K.; Tang, B. Z.; He, J.; Sun, H., De Novo Designed Self-Assembling Rhodamine Probe for Real-Time, Long-Term and Quantitative Live-Cell Nanoscopy. *ACS Nano* 2023, 17(4), 3632–3644.
- Li, H.; Zhang, W.; Han, Z.; Sun, K.; Gao, C.; **Cheng, K.**; Liu, Z.; Chen, Q.; Zhang, J.; Lai, Y., Pseudocapacitance Enhanced by N-defects in Na<sub>3</sub>MnTi(PO<sub>4</sub>)<sub>3</sub>/N-doped Carbon Composite for Symmetric Full Sodium-ion Batteries. *Mater. Today Energy* 2021, 21, 100754.
- Wei, W.; Zhang, J.; Xu, Z.; Liu, Z.; Huang, C.; **Cheng, K.**; Meng, L.; Matsuda, Y.; Hao, Q.; Zhang, H.; Sun, H., Universal Strategy to Develop Fluorogenic Probes for Lysine Deacylase/Demethylase Activity and Application in Discriminating Demethylation States. *ACS Sens.* 2023, 8(1), 28-39.
- Li, H.; Guan, C.; Xu, M.; Guo, J.; Yuan, K.; **Cheng, K.**; Xie, Y.; Zhang, L.; Zheng, J.; Lai, Y., Organic/Inorganic Anions Coupling Enabled Reversible High-valent Redox in Vanadium-based Polyanionic Compound. *Energy Storage Mater.* 2022, 47, 526-533.
- Meng, L.; Chan, W. S.; Huang, L.; Liu, L.; Chen, X.; Zhang, W.; Wang, F.; **Cheng, K.**; Sun, H.; Wong, K. C., Mini-review: Recent Advances in Post-translational Modification Site Prediction Based on Deep Learning. *Comput. Struct. Biotechnol. J.* 2022, 20, 3522-3532.

## Patents

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- Cheng, K.**; Zhang, J.; Wei, W.; Sun, H., The Preparation and Pharmaceutical Application of Methylene Blue-Based, Cancer-targeted, and Self-assembly Probes. *CN Patent*, 2022, Priority No. 202211253483.7
- Wei W.; Zhang, J.; **Cheng, K.**; Meng, L.; Sun, H., Fluorescent Probes for Detecting Deacylation and Demethylase Activities. *CN Patent*, 2022, Priority No. 202211271510.3