



Department: School of Chemistry and Molecular Engineering

Professional field: Analytical Chemistry

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## Profile

She has been engaged in the scientific research on key challenge of the accurate measurement and real time analysis of charge transport information at the interface. Her study focused on the fabrication of single nanoparticle collision electrochemical system, the development of high-resolution single nanoparticle transient electrochemical methods, and the development of big data processing method of characteristic signals. Therefore, the dynamic and accurate information of interfacial charge can be in situ measured at micro/nano scale, realizing the real-time modulation of the interfacial charge transfer process and revealing the charge transport mechanism at the functionalized interface. Since 2011, more than 40 SCI papers have been published on related researches, among which 30 SCI papers have been published in international high-level journals such as Nature Protoc, Nature Commun, JACS, Angew Chem Int Ed, Nano Lett and Chem Sci as the first or corresponding author in the past 5 years. Authorized 5 national invention patents. She has presided over more than 10 projects, including the sub-project of Major Research Project, General Project and Youth Science Foundation Project of the National Natural Science Foundation of China, etc. She has been awarded the First Prize of Shanghai Natural Science in 2016, the Special award of Science and Technology of China Association for Analysis and Testing in 2017, the Young Talents Program of East China University of Science and Technology in 2018, the Excellent Young Female Teacher of East China University of Science and Technology in 2019, and the Shanghai Pujiang Talent Plan in 2019, etc. She is also the associate editor of BMC Chemistry, the guest editor of Frontier in Chemistry and the editorial board member of Science Journal of Chemistry.

## Research Field

Nano electrochemistry; Ultrasensitive Detection and Point of Care Testing

## Research results and selected published papers

1. Hui Ma#, Jian-Fu Chen#, Hai-Feng Wang, Pei-Jun Hu, Wei Ma\*, Yi-Tao Long\*, Exploring dynamic interactions of single nanoparticles at interfaces for surface-confined electrochemical behavior and size measurement, Nature Commun. 2020, 2307.
2. Wei Ma, Hui Ma, Yue-Yi Peng, He Tian\*; Yi-Tao Long\*, An ultrasensitive photoelectrochemical platform for quantifying photoinduced electron transfer properties of a single entity, Nature Protoc. 2019, 14, 2672-290.
3. Mahmoud Elsayed Hafez, Hui Ma, Wei Ma\*, Yi-Tao Long\*, Unveiling the intrinsic catalytic activities of single gold nanoparticle-based enzyme, Angew. Chem. Int. Ed. 2019, 131, 6393-6398.
4. Yue-Yi Peng#, Hui Ma#, Wei Ma\*, Yi-Tao Long, He Tian\*, Single nanoparticle photoelectrochemistry at a nanoparticulate TiO<sub>2</sub>-filmed ultramicroelectrode, Angew. Chem. Int. Ed. 2018, 57, 3758-3762.
5. Hui Ma#, Wei Ma#, Jian-Fu Chen, Xiao-Yuan Liu, Yue-Yi Peng, Zhe-Yao Yan, He Tian\*, Yi-Tao Long\*. Quantifying Visible-Light-Induced Electron Transfer Properties of Single Dye-Sensitized ZnO Entity for Water Splitting. J. Am. Chem. Soc. 2018, 140, 5272-5279.
6. Wei Ma, Keke Hu, QianJin Chen, Min Zhou, Michael V. Mirkin, Allen J. Bard\*, Electrochemical size measurement and characterization of electrodeposited platinum nanoparticles at nanometer resolution with scanning electrochemical microscopy. Nano Lett. 2017, 17, 4354-4358.
7. Wei Ma#, Hui Ma#, Jian-Fu Chen#, Yue-Yi Peng, Zhe-Yao Yan, Hai-Feng, Wang, Yi-Lun Ying, He Tian\*, Yi-Tao Long\*, Tracking motion trajectories of individual nanoparticles using time-resolved current traces. Chem. Sci. 2017, 8, 1854-1861.
8. Wei Ma, Yi-Tao Long\*, Quinone/hydroquinone functionalised biointerfaces for biological applications from macro- to nano-scale, Chem. Soc. Rev. 2014, 43, 30-41.
9. Wei Ma, Yi-Lun Ying, Li-Xia Qin, Zhen Gu, Hao Zhou, Da-Wei Li, Todd C. Sutherland, Hong-Yuan Chen & Yi-Tao Long\*, Investigating electron-transfer processes using a biomimetic hybrid bilayer membrane system, Nature Protoc. 2013, 8, 439-450.
10. Wei Ma, Da-Wei Li, Todd C. Sutherland, Yang Li, Yi-Tao Long\*, Hong-Yuan Chen, Reversible redox of NADH and NAD<sup>+</sup> at a hybrid lipid bilayer membrane using ubiquinone, J. Am. Chem. Soc. 2011, 133, 12366-12369.