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|  **Name：** | Fang Huang |  |
| **Academic Title：** | Prof. Dr. |
| **Advisor Type：** | Doctor, Master |
|  **Department：** | College of Chemistry & Chemical Engineering |
| **Research Interests：** | Protein and Enzyme Engineering, Single-molecule Fluorescence, Fluorescence Imaging |
|  **E-Mail：** | fhuang@upc.edu.cn |
|  **Telephone：** | +86-532-86981235 |
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| **◎Educational Background** |
| **2008-2009**, Investigator Scientist, MRC Centre for Protein Engineering, University of Cambridge, UK**2004-2008,** Postdoc, MRC Centre for Protein Engineering, University of Cambridge, UK **2000-2004,** Ph.D., Physical Chemistry, University of Basel, Switzerland**1997-2000,** M.Sc., Analytical Chemistry, Shandong University, China**1991-1995,** B.Sc. (Hons.), Chemistry, Shandong University, China  |
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| **◎Work Experience** |
| **2021-present**, Dean, College of International Education, China University of Petroleum**2017-present**, Director, Office of International Affairs, China University of Petroleum**2013-2017**, vice dean, College of Chemistry and Chemical Engineering, China University of Petroleum**2009- present**, Professor, College of Chemistry and Chemical Engineering, China University of Petroleum |
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| **◎Research Direction** |
| 1. Protein folding: to explore the folding mechanism of proteins, the relation of structure and functions of proteins.
2. Protein and enzyme engineering: to improve protein stability and activity of proteins and enzymes by mutating proteins.
3. Single-molecule fluorescence: to develop single-molecule fluorescence and super-resolution fluorescence imaging techniques and apply to protein structure and function studies.
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| **◎Research Project** |
| 1. Study on the orientation of single transmembrane helix peptides, 21273287.
2. Single-molecule study on the conformational change of a metamorphic protein, 21573289
3. Single-molecule study on the activation process of Moesin, 22177133
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| **◎Representative Papers and Patents** |
| 1. Wang, X.; Zhang, Z.; Liu, Z.; Ma, X.; Dai, Q.; Wang, X.; Ge, B.; He, H.; Huang, F., Spectroscopic investigation on the binding interactions between graphene quantum dots and carbonic anhydrase. *Spectrochim. Acta. A. Mol. Biomol. Spectrosc.* **2022,** *265*, 120369.2. Wang, Q.; Zhang, Q.; He, H.; Feng, Z.; Mao, J.; Hu, X.; Wei, X.; Bi, S.; Qin, G.; Wang, X.; Ge, B.; Yu, D.; Ren, H.; Huang, F., Carbon Dot Blinking Fingerprint Uncovers Native Membrane Receptor Organizations via Deep Learning. *Anal Chem* **2022,** *94* (9), 3914-3921.3. Wang, Q.; He, H.; Zhang, Q.; Feng, Z.; Li, J.; Chen, X.; Liu, L.; Wang, X.; Ge, B.; Yu, D.; Ren, H.; Huang, F., Deep-Learning-Assisted Single-Molecule Tracking on a Live Cell Membrane. *Anal Chem* **2021**.4. Wang, Q.; Feng, Z.; He, H.; Hu, X.; Mao, J.; Chen, X.; Liu, L.; Wei, X.; Liu, D.; Bi, S.; Wang, X.; Ge, B.; Yu, D.; Huang, F., Nonblinking carbon dots for imaging and tracking receptors on a live cell membrane. *Chem Commun (Camb)* **2021,** *57* (45), 5554-5557.5. Li, J.; Ding, Y.; Liu, H.; He, H.; Yu, D.; Wang, X.; Wang, X.; Yu, X.; Ge, B.; Huang, F., Oligomerization-Enhanced Receptor-Ligand Binding Revealed by Dual-Color Simultaneous Tracking on Living Cell Membranes. *J Phys Chem Lett* **2021,** *12* (34), 8164-8169.6. He, H.; Liu, L.; Chen, X.; Wang, Q.; Wang, X.; Nau, W. M.; Huang, F., Carbon Dot Blinking Enables Accurate Molecular Counting at Nanoscale Resolution. *Anal Chem* **2021,** *93* (8), 3968-3975.7. Wang, X.; Pan, M.; Shi, Z.; Yu, D.; Huang, F., Protein Nanobarrel for Integrating Chlorophyll a Molecules and Its Photochemical Performance. *ACS Applied Bio Materials* **2020,** *4* (1), 399-405.8. Wang, X.; Pan, M.; Shi, Z.; Yu, D.; Huang, F., A protein nano-barrel for integrating chlorophyll a molecules and its photochemical performance. *ACS Applied Bio Materials* **2020,** *4* (1), 399-405.9. Liu, C.; Shi, Z.; Sun, H.; Mujuni, C. J.; Zhao, L.; Wang, X.; Huang, F., Preparation and characterization of tissue-factor-loaded alginate: Toward a bioactive hemostatic material. *Carbohydr. Polym.* **2020,** *249*, 116860.10. Wang, Y. N.; Wang, X. J.; Ma, X. Q.; Chen, Q.; He, H.; Nau, W. M.; Huang, F., Coassembly of Gold Nanoclusters with Nucleic Acids: Sensing, Bioimaging, and Gene Transfection. *Particle & Particle Systems Characterization* **2019,** *36* (10), 1900281.11. Xu, Y.; Li, S.; Yan, Z.; Luo, Z.; Ren, H.; Ge, B.; Huang, F.; Yue, T., Stabilizing Effect of Inherent Knots on Proteins Revealed by Molecular Dynamics Simulations. *Biophys J* **2018,** *115* (9), 1681-1689.12. Song, Y.; Ge, B.; Lao, J.; Wang, Z.; Yang, B.; Wang, X.; He, H.; Li, J.; Huang, F., Regulation of the Oligomeric Status of CCR3 with Binding Ligands Revealed by Single-Molecule Fluorescence Imaging. *Biochemistry* **2018,** *57* (5), 852-860.13. Khan, N. U.; He, H.; Wang, X.; Ge, B.; Wang, Q.; Liu, X.; Lao, J.; Wang, Y.; Li, J.; Wang, Z.; Zhou, S.; Huang, F., A two-color fluorescence enhanced dot-blot assay for revealing co-operative expression of chemokine receptors in cells. *Chem. Commun.* **2018,** *54* (7), 778-781.14. Khan, N. U.; Feng, Z.; He, H.; Wang, Q.; Liu, X.; Li, S.; Shi, X.; Wang, X.; Ge, B.; Huang, F., A facile plasmonic silver needle for fluorescence-enhanced detection of tumor markers. *Anal Chim Acta* **2018,** *1040*, 120-127.15. Wang, X.; Wang, Y.; He, H.; Ma, X.; Chen, Q.; Zhang, S.; Ge, B.; Wang, S.; Nau, W. M.; Huang, F., Deep-Red Fluorescent Gold Nanoclusters for Nucleoli Staining: Real-Time Monitoring of the Nucleolar Dynamics in Reverse Transformation of Malignant Cells. *ACS Appl. Mater. Interfaces* **2017,** *9* (21), 17799-17806.16. Wang, X.; Wang, C.; Pan, M.; Wei, J.; Jiang, F.; Lu, R.; Liu, X.; Huang, Y.; Huang, F., Chaperonin-Nanocaged Hemin as an Artificial Metalloenzyme for Oxidation Catalysis. *ACS Appl. Mater. Interfaces* **2017,** *9* (30), 25387-25396.17. Lao, J.; He, H.; Wang, X.; Wang, Z.; Song, Y.; Yang, B.; Ullahkhan, N.; Ge, B.; Huang, F., Single-Molecule Imaging Demonstrates Ligand Regulation of the Oligomeric Status of CXCR4 in Living Cells. *J. Phys. Chem. B* **2017,** *121* (7), 1466-1474.18. Zhao, Y.; Li, L.; Wu, C.; Jiang, X.; Ge, B.; Ren, H.; Huang, F., Stable folding intermediates prevent fast interconversion between the closed and open states of Mad2 through its denatured state. *Protein Eng. Des. Sel.* **2016,** *29* (1), 23-9.19. Wang, X.; He, H.; Wang, Y.; Wang, J.; Sun, X.; Xu, H.; Nau, W. M.; Zhang, X.; Huang, F., Active tumor-targeting luminescent gold clusters with efficient urinary excretion. *Chem. Commun.* **2016,** *52* (59), 9232-5.20. He, H.; Wang, X.; Cheng, T.; Xia, Y.; Lao, J.; Ge, B.; Ren, H.; Khan, N. U.; Huang, F., An Ultra-High Fluorescence Enhancement and High Throughput Assay for Revealing Expression and Internalization of Chemokine Receptor CXCR4. *Chem.--Eur. J.* **2016,** *22* (17), 5863-7.21. Wang, X.; Sun, X.; Lao, J.; He, H.; Cheng, T.; Wang, M.; Wang, S.; Huang, F., Multifunctional graphene quantum dots for simultaneous targeted cellular imaging and drug delivery. *Colloids Surf. B* **2014,** *122*, 638-44.22. Song, B.; Sun, Q.; Li, H.; Ge, B.; Pan, J. S.; Wee, A. T. S.; Zhang, Y.; Huang, S.; Zhou, R.; Gao, X.; Huang, F.; Fang, H., Irreversible Denaturation of Proteins through Aluminum-Induced Formation of Backbone Ring Structures. *Angew. Chem., Int. Ed.* **2014,** *53* (25), 6358-6363.23. Tafvizi, A.; Huang, F.; Fersht, A. R.; Mirny, L. A.; van Oijen, A. M., A single-molecule characterization of p53 search on DNA. *Proceedings of the National Academy of Sciences of the United States of America* **2011,** *108* (2), 563-8.24. Huang, F.; Ying, L.; Fersht, A. R., Direct observation of barrier-limited folding of BBL by single-molecule fluorescence resonance energy transfer. *Proc Natl Acad Sci USA* **2009,** *106* (38), 16239-44.25. Huang, F.; Rajagopalan, S.; Settanni, G.; Marsh, R. J.; Armoogum, D. A.; Nicolaou, N.; Bain, A. J.; Lerner, E.; Haas, E.; Ying, L.; Fersht, A. R., Multiple conformations of full-length p53 detected with single-molecule fluorescence resonance energy transfer. *Proc Natl Acad Sci USA* **2009,** *106*, 20758-20763.26. Huang, F.; Sato, S.; Sharpe, T. D.; Ying, L.; Fersht, A. R., Distinguishing between cooperative and unimodal downhill protein folding. *Proc Natl Acad Sci USA* **2007,** *104* (1), 123-7.27. Huang, F.; Hudgins, R. R.; Nau, W. M., Primary and secondary structure dependence of peptide flexibility assessed by fluorescence-based measurement of end-to-end collision rates. *Journal of the American Chemical Society* **2004,** *126* (50), 16665-75.28. Huang, F.; Nau, W. M., A conformational flexibility scale for amino acids in peptides. *Angew Chem Int Ed* **2003,** *42* (20), 2269-72. |
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| **◎Courses Offered** |
| Protein & Enzyme EngineeringBio-instrumental analysisProgress in Biochemical Engineering Technology |
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| **◎Student Training** |
| Accepting master and doctoral students in Chemical Engineering, Bioengineering, and Bio-chemical Engineering. |
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| **◎Part-time Academic Job** |
| Vice Chair and member of Biophysical Chemistry Committee, Chinese Chemical Society (2012-2022)Member of Single-molecular Biology Committee, Chinese Biophysical Society (2015-)Vice Chair of Biophysical Committee, Biophysical Society of Shandong Province (2015-) |
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