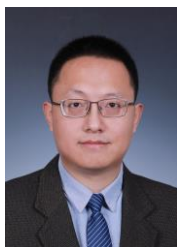

Single-Molecule Localization Super-Resolution Microscopy and Its Applications

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The integration of physics and biology has greatly expanded how we analyze and understand life phenomena. Super-resolution microscopy has rapidly become indispensable method in cell biology research owing to their nanoscale spatial resolution, native sample preparation and so on. Among variety of super-resolution imaging techniques, single-molecule localization super-resolution microscopy (SMLM) with straightforward principle and excellent spatial resolution gain more and more attention from researchers. Recently, based on SMLM, we revealed an ~80-nm spectrin tetramer length in native erythrocyte cytoskeleton, thus resolving a long-standing controversy that has puzzled researchers for many years. Furthermore, by combination of ultrastructure expansion microscopy (U-ExM) with SMLM, we developed a method of ultrastructure expansion single molecule localization microscopy (U-ExSMLM) with 6 nm molecular resolution, further revealing the cytoskeleton asymmetry of human erythrocytes. We also elucidated a novel, hypotonic stress-induced reversible disassembly mechanism of the vimentin cytoskeleton at the nano-scale. In brief, our results could provide innovative method and new map for investigating cytoskeleton.



Short Bio:

Leiting Pan received his PhD degree in Optics from Nankai University, China. He is the full professor of School of Physics at Nankai University, as well as PI of State Key Laboratory of Medicinal Chemical Biology. He currently works on nano/micro-scale cell imaging and manipulation including super-resolution microscopy, cell patterning and microfluidic chip assay for cell detection. He has published 40 SCI/EI papers as the first or corresponding author in *Light: Science & Applications*, *Advanced Science*, *Cell Reports*, etc. He is the Deputy Secretary-General of Biomedical Photonics Committee of the Chinese Optical Society.