

Curriculum Vitae

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Dr. Jie Ma got his PhD degree in Physical Chemistry in University of Bristol, UK. His PhD research was mainly about using ultra-sensitive laser spectroscopy, i.e. cavity ring-down spectroscopy and tunable diode laser absorption spectroscopy, to study gas phase chemistry in diamond CVD. Later, he worked as a Postdoctoral research associate in Cornell University and Howard Hughes Medical Institute in U.S. His research then focused on using single molecule method, such as an angular optical trap, to study transcription under torsion. Now he is a full professor in Sun Yat-sen University, China. His current research interests involve developing various single molecule techniques to study DNA/RNA mechanics and important cellular processes, such as replication, transcription and DNA repair. He has published more than 30 papers including papers on *Science*, *PNAS*, *Nanoscale*, *Opt. Express*, *Cell Cycle*, *J. Phys. Chem. A*, etc.

SELECTED PUBLICATIONS

1. "Quantifying the force in flow-cell based single-molecule stretching experiments", Jialun Liang, Jiaxi Li, Zhensheng Zhong, Thitima Rujiralai, Jie Ma*, **Nanoscale** 13 (2021) 15916-15927
2. "Highly sensitive colorimetric sensing of copper(ii) ions based on "CLICK-17" DNAzyme-catalyzed azide modified gold nanoparticles and alkyne capped dsDNA cycloaddition", Weicong Yan#, Zhensheng Zhong#, Jie Ma*, Thitima Rujiralai*, **RSC Advances** 11 (2021) 24196-24205
3. "Simple way to correct the drift in surface-coupled optical tweezers using the laser reflection pattern", Wenzhao Liu, Zhensheng Zhong, Jie Ma*, **Opt. Express** 29 (2021) 18769-18780
4. "GC-Content Dependence of Elastic and Overstretching Properties of DNA:RNA Hybrid Duplexes", Dongni Yang#, Wenzhao Liu#, Xiangyu Deng, Wei Xie, Hu Chen, Zhensheng Zhong*, Jie Ma*, **Biophys. J.** 119 (2020) 852-861

5. "Fluorescence enhancement in an over-etched gold zero-mode waveguide", Meiyan Wu, Wenzhao Liu, Jinyong Hu, Zhensheng Zhong, Thitima Rujiralai, Lidan Zhou, Xinlun Cai, and Jie Ma*, **Opt. Express** 27 (2019) 19002-19018
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7. "Transcription factor regulation of RNA polymerase's torque generation capacity", J. Ma*, C. Tan#, X. Gao, R. M. Fulbright, J. W. Roberts, and M. D. Wang*, **Proc Natl Acad Sci USA**, 116 (2019) 2583-2588
8. "Single-molecule angular optical trapping for studying transcription under torsion", Ma, J., Tan, C., and Wang, M.D.*, **Methods in Molecular Biology** 1805, 301-332. (2018) (Springer)
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10. "DNA supercoiling during transcription", J. Ma and M. D. Wang, **Biophys. Rev.** 8, (2016) 75.
11. "Interplay between DNA supercoiling and transcription elongation", J. Ma, M. D. Wang, **Transcription** 5, (2014) e28636.
12. "RNA polymerase is a powerful torsional motor", J. Ma, M. D. Wang, *Cell Cycle*, 13, (2014) 337.
13. "On the move", R.A. Forties, J. Ma, and M. D. Wang, **eLife**, 2, (2013) e01414.
5. "Transcription under torsion", J. Ma, L. Bai, M. D. Wang, **Science**, 340, (2013) 1580.
14. "Spectroscopic and modeling investigations of the gas-phase chemistry and composition in microwave plasma activated B₂H₆/CH₄/Ar/H₂ mixtures", J. Ma, J.C. Richley, et al **J. Phys. Chem. A**, 114, (2010) 10076.
15. "Spectroscopic and modeling investigations of the gas-phase chemistry and composition in microwave plasma activated B₂H₆/Ar/H₂ mixtures", J. Ma, J.C. Richley, et al **J. Phys. Chem. A**, 114, (2010) 2447.
16. "Quantum cascade laser investigations of CH₄ and C₂H₂ inter-conversion in hydrocarbon/H₂ gas mixtures during microwave plasma enhanced chemical vapour deposition of diamond", J. Ma, A. Cheesman, M. N. R. Ashfold, et al, **J. Appl. Phys.**, 106, (2009) 033305.
17. "Validating optical emission spectroscopy as a diagnostic of microwave activated Ar/H₂/CH₄ plasmas used for diamond chemical vapour deposition", J. Ma, M. N. R. Ashfold and Y. A. Mankelevich, **J. Appl. Phys.**, 105, (2009) 043302.
18. "Probing the plasma chemistry in a microwave reactor used for diamond chemical vapor deposition by cavity ring-down spectroscopy", J. Ma, J. Richley, M. N. R. Ashfold and Y. A. Mankelevich, **J. Appl. Phys.**, 104, (2008) 103305.