

Xiaoxi Zeng

Materials researcher | MPhil student in Micro and Nanotechnology Enterprise

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PROFILE

MPhil student in Micro and Nanotechnology Enterprise at the University of Cambridge, with interdisciplinary training in polymer composites, interface engineering, computational mechanism analysis, and machine-learning-assisted materials discovery. Combines experimental materials research with computational methods for understanding structure-property relationships.

EDUCATION

University of Cambridge MPhil in Micro and Nanotechnology Enterprise	2026-2027
Northwestern Polytechnical University and Queen Mary University of London Joint undergraduate programme; BEng (Hons), First Class, in Polymer Materials Science and Engineering	2022-2026
Northwestern Polytechnical University Bachelor of Management (Minor) in Business Administration	2023-2026

RESEARCH EXPERIENCE

Interface Engineering of CF/PEEK Laminates Research Assistant, School of Chemistry and Chemical Engineering, NPU - Designed and synthesised biphenyl-branched poly(arylene ether nitrile) sizing agents and fabricated CF/PEEK laminates using powder-impregnation-assisted hot pressing. - Led work from literature review, molecular design, synthesis, and process optimisation through multiscale characterisation, mechanism analysis, and manuscript preparation.	Mar 2024-May 2026
PBO-Based Wave-Transparent Composite Papers Research Assistant, School of Chemistry and Chemical Engineering, NPU - Prepared ZnO-coated PBO nanofibre composite papers through in-situ growth; conducted materials screening, fabrication optimisation, and multifunctional characterisation. - Contributed to analysis of wave-transmission and ultraviolet-resistance mechanisms, parametric modelling, and journal manuscript drafting.	Jul 2023-Dec 2024
New Materials Discovery with Machine Learning Research Workshop, University of Cambridge - Compared density functional theory, molecular dynamics, and machine-learning approaches for predictive materials modelling and energy-material screening. - Built a prototype feature-engineering and high-throughput workflow that screened more than 50 perovskite configurations and delivered an oral research report on photocatalyst optimisation.	Jul-Aug 2023

PEER-REVIEWED PUBLICATIONS

- X. Zeng**, X. Shi, Y. Lin, W. Zhu, H. Li, J. Zhang, and J. Gu. Improved interfacial compatibility of carbon fibers/PEEK laminated composites via incorporating biphenyl-branched poly(aryl-ether-nitrile). *Journal of Materials Science & Technology* 255 (2026), 259-269. doi:10.1016/j.jmst.2025.09.003
- Y. Lin, L. Tang, L. Cheng, **X. Zeng**, J. Zhang, Y. Tang, J. Kong, and J. Gu. Mechanically strong PBO wave-transparent composite papers with excellent UV resistance and ultra-low dielectric constant. *Journal of Materials Science & Technology* 225 (2025), 151-158. doi:10.1016/j.jmst.2024.12.006
- M. Jia, L. Tang, Y. Lin, **X. Zeng**, K. Ruan, M. Li, Y. Guo, M. He, Y. Tang, and J. Gu. Interfacial engineering for improving thermal conductivities of BNNS/PNF nanocomposite paper with superior electrical insulation and mechanical properties. *Journal of Materials Science & Technology* 254 (2026), 126-134. doi:10.1016/j.jmst.2025.08.020

METHODS AND TOOLS

Experimental: Organic synthesis; polymer sizing and coating; powder impregnation; hot pressing; extraction, purification, and separation.
Characterisation: FT-IR, XPS, XRD, SEM, AFM, TEM (basic), GPC, DSC/TGA, DMA, contact-angle, mechanical, thermal-conductivity, and EMI-shielding measurements.
Computational: Python (PyTorch, OpenCV), MATLAB, COMSOL, Materials Studio, Gaussian 16, Multiwfn, and Origin.
Languages: Mandarin Chinese (native); English (IELTS 7.0 overall).