Department of Systems Engineering
香港城市大學
City University of Hong Kong

Synthesis of Emerging Two-Dimensional Materials for Sustainable Energy

The development of emerging materials has advanced energy conversion technologies, particularly in electrochemical systems. I recently pioneered the scalable and controllable synthesis of ultrathin transition metal oxychalcogenides (TMOCs)—a novel family of 2D materials with unique atomic structures, tunable electrical and optical properties, high catalytic activity, and long-term stability. These earth-abundant materials, previously unexplored, are promising candidates for integration into renewable energy systems. Their implementation can not only reduce reliance on scarce and costly noble and rare-earth metals for green energy production but also mitigate the climate impact of grey energy, which is associated with substantial CO_2 emissions. In addition, I have developed other low-dimensional materials—including metal dichalcogenides, boron nitride, and graphene—via chemical vapor deposition (CVD), and engineered their heterostructures for optical and electronic applications. At CityU, I plan to build on these foundations by integrating my expertise with machine learning and robotics to address critical challenges in energy sustainability.

22 May, 2025 (Thu)

4:00 PM

SEMINAR LINK
cityu.zoom.us/j/85707377235

Speaker
Dr. Wenshuo Xu
Cambridge Graphene Centre
Department of Engineering
University of Cambridge, United Kingdom

Dr. Wenshuo Xu received her PhD from the University of Oxford and is currently a Postdoctoral Research Associate at the University of Cambridge. Her research focuses on the synthesis of emerging two-dimensional (2D) materials for sustainable energy applications. She has published more than ten first-author or corresponding-author papers—including in *Nature Synthesis*—and over twenty co-authored articles. She currently holds an h-index of 26, with approximately 2,000 citations. Dr. Xu is also the inventor of a UK patent, first author of a book chapter, and principal investigator of two independent research grants—one from the UK and one from China—and has contributed to several other successful funding proposals in both countries.

Enquiry : 3442 8422 | All are welcome

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