



The Chinese University of Hong Kong



Department of Biomedical Engineering

Time: 3:00pm, 22 March 2024 (Friday)

Venue: ERB1122, William M.W. Mong Engineering Building, CUHK

Probing novel physical properties in graphitic nanocarbons



Dr. ZHAO Sihan

School of Physics, Zhejiang Province Key Laboratory of Quantum Technology and Device, State Key Laboratory of Silicon and Advanced Semiconductor Materials, Zhejiang University

Abstract

I will be presenting our work on probing and understanding new physical phenomena in low-dimensional graphitic nanocarbons such as carbon nanotubes and graphene. Our samples are ultraclean either prepared by a direct growth on substrates or encapsulated within hexagonal boron nitride. Our probing technique combines far-field spectroscopy, near-field optical nanoscopy together with the low-temperature electrical transport. I will focus on Plasmonic Doppler effect in monolayer graphene [1] and significant interlayer interactions in van der Waals-coupled one-dimensional (1D) moiré superlattices [2,3]. I will also share with you our lab construction and our recent progress in studying optical properties of carbon nanotubes as well as on-demand fabrications of novel mixed-dimensional heterostructures.

References

- [1] Zhao, W.; Zhao, S.; Li, H.; Wang, S.; Wang, S.; Utama, M. I. B.; Kahn, S.; Jiang, Y.; Xiao, X.; Yoo, S.; Watanabe, K.; Taniguchi, T.; Zettl, A.; Wang, F. (2021): Efficient Fizeau Drag from Dirac electrons in monolayer graphene. *Nature* 594, 517-521
- [2] Zhao, S., Moon, P.; Miyauchi, Y.; Nishihara, T.; Matsuda, K.; Koshino, M.; Kitaura, R. (2020): Observation of Drastic Electronic-Structure Change in a One-Dimensional Moiré Superlattice. *Physical Review Letters* 124, 106101
- [3] Zhao, S., Kitaura, R.; Moon, P.; Koshino, M., and Wang, F. (2022): Interlayer Interactions in 1D Van der Waals Moiré Superlattices. *Advanced Science* 2103460

Biography

Dr. Sihan Zhao became a faculty member from Jan. 2021 in School of Physics, Zhejiang University (ZJU). He was recruited as a ZJU 100 Young Research Professor. He previously was a postdoctoral employee (2016-2020) working with Prof. Feng Wang in the Department of Physics, University of California at Berkeley. He received his Ph.D. from Nagoya University, Japan (Dec. 2015) under the supervision of Prof. Hisanori Shinohara & Prof. Ryo Kitaura. He received his Bachelor's Degree from Jilin University, China (July 2010).

*** ALL ARE WELCOME ***

For enquiries, please contact Ms. Joyce Chan, Department of Biomedical Engineering at 3943 8278