Raman Spectroscopy of 2D Materials

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Monday, 3/25, 9:55am
Room W122, Engineering Building 2

LECTURE ABSTRACT

Two-dimensional (2D) atomic crystals, such as graphene, transition metal dichalcogenides (TMDs, e.g. MoS_2), and recently discovered layered ferromagnets (e.g. CrI_3) have emerged as a new generation of materials with remarkable properties in nanoelectronic and spintronic applications. Raman spectroscopy is a powerful tool in probing the lattice, charge and spin excitations in 2D materials. In this talk, I will present our Raman studies of interlayer phonons and interactions, charge density waves, and magnetic excitations in various 2D materials and their heterostructures. Our results reveal that Raman spectroscopy is an effective tool in probing interlayer interactions and fundamental properties of 2D atomic layers.

SPEAKER BIOSKETCH

Dr. He, Rui obtained her B.S. degree from Fudan University in China in 1999. She received her Ph.D. degree in Applied Physics from Columbia University in the City of New York in 2006. After her graduation from Columbia, she joined the Hong Kong University of Science and Technology as a postdoc in the physics department and as a research assistant in the mathematics department. In 2009 she returned to Columbia University where she worked as a postdoctoral research scientist. She joined the Physics Department at the University of Northern Iowa as an assistant professor in August 2011 and became an associate professor in 2016. She joined Electrical and Computer Engineering Department at Texas Tech University as an associate professor in July 2017. Her research interests include the general area of optical studies of nanostructures, especially 2D materials and their heterostructures.

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