复旦大学物理系 物质科学报告

Time: 2:00pm, Tuesday, 2019.6.25

Location: Room C108, Jiangwan Physics Building

Two-dimensional organic-inorganic hybrid systems: epitaxial growth, physics and device applications

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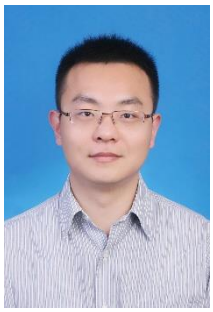
From the research on 2D materials we learn that the material properties depend strongly on thickness. On the other hand, many molecular crystals, which possess very different and complementary properties, also adopt 2D layered form and can in principle be thinned down to monolayers. In this presentation, I will show that highly crystalline molecular crystals down to monolayer can be obtained by van der Waals (vdW) epitaxy on 2D surfaces including graphene, boron nitride and transition-metal dichalcogenides. This class of materials can not only make high-performance organic thin-film transistors but also host interesting electrical and optical properties at 2D limit. Precise control of epitaxy offers new possibilities in hybrid organic-inorganic heterostructures, which can be exploited for many types of electronic devices.



Professor Xinran Wang received his B.S. in Nanjing University in 2004 and Ph.D. degree in physics from Stanford University in 2010. Between 2010 and 2011, he was a postdoctoral researcher in Prof. Hongjie Dai group at Stanford University and then in Prof. John Rogers group at University of Illinois at Urbana-Champaign. He joined Nanjing University as a professor of Electronic Science and Engineering in 2011. In 2015, he was appointed as the Chang Jiang Chaired Professor by the Ministry of Education. He is a recipient of Distinguished Young Scholars award from NSFC, Huang Kun Award for Solid State Physics and Semiconductor Physics from Chinese Physical Society, and National Youth Metal. Prof. Wang's current research interest includes synthesis, properties and device applications of low-dimensional materials. He currently serves as the associate editor of npj 2D Materials and Applications, and editorial board member of Nano Research and Journal of Semiconductors.