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Controlled growth and mechanism of carbon nanotubes and two-dimensional materials

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Abstract:

Advanced materials play important roles in our daily lives. Historically, people have spent thousands of years to improve the properties of materials by playing with their chemical compositions, structures, processing recipes, etc. Since the 1980s, dimensionality entered the horizons of condensed matter physics and materials science research and triggered rapid developments in low-dimensional (LD) materials, like one-dimensional carbon nanotubes and two-dimensional graphene and graphene-analogue materials. LD materials exhibit unique properties originating from the quantum confinement effect of their nano-scale size, which provides researchers the ability to precisely tune the material's properties at the atomic level. However, how to control the atomic structures of these LD materials are crucial for their practical applications, as the properties of LD materials are very sensitive to their atomic structures. Here, I will talk about my research in the past ten years in the controlled growth of carbon nanotubes and two-dimensional materials, and our understanding on their growth mechanisms.

Biography:

Bilu Liu is currently an Associate Professor and a Core-PI at Tsinghua-Berkeley Shenzhen Institute (TBSI), Tsinghua University, China. He received his bachelor's degree in Materials Chemistry from the University of Science and Technology of China (USTC) in 2006, and Ph.D degree in Materials Science from the Institute of Metal Research, Chinese Academy of Sciences (IMR, CAS) in 2012. He worked in the University of Southern California (USC) as a Postdoctoral Research Associate and later Research Assistant Professor between 2012 and 2016. His research interests cover the chemistry and materials science of low-dimensional materials with emphasis on carbon nanostructures, two-dimensional materials, and their heterostructures. His work relates to the controlled preparation of these materials and their applications in electronic, optoelectronics, and catalysis. He has published over 60 papers on these topics with >6500 citations and an H-index of 36.

主催：　東京大学大学院工学系研究科専攻間横断型教育プログラム 機械システム・イノベーション（GMSI）
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