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Van der Waals heterostructures

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Research on graphene and other two-dimensional atomic crystals is intense and is likely to remain one of the leading topics in condensed matter physics and materials science for many years. Looking beyond this field, isolated atomic planes can also be reassembled into designer heterostructures made layer by layer in a precisely chosen sequence. In this talk I will review our recent progress on fabrication and investigation of such heterostructures starting from ultrahigh quality graphene encapsulated in h-BN up to complex 6-layer structures comprised of several materials. Significant attention will be paid to Moiré patterns with associated Hofstadter-like states in graphene.