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【144】 On-surface synthesis and transfer of aligned graphene nanoribbons

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The bottom-up fabrication approach allows the growth of atomically precise graphene nanoribbons (GNRs). The fascinating properties, which originate from the unique electronic structure of GNRs, motivate wide interest in its potential application. In this work we synthesized 9-atom wide armchair GNRs under UHV conditions on a Au(11 12 12) crystal, allowing the growth of aligned GNRs. GNRs were successfully transferred by the electrochemical delamination method with preservation of their structural quality and uniaxial alignment. We use polarized Raman for a detailed analysis of characteristic GNR modes and scanning tunneling microscopy and atomic force microscopy for the GNR film morphology before and after transfer. Furthermore, the influence of GNR coverage on the uniaxial alignment and transfer efficiency will be addressed.

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