

Graphene fixed-end beam arrays based on mechanical exfoliation

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Abstract

A low-cost mechanical exfoliation method is presented to transfer graphite to graphene for free-standing beam arrays. Nickel film or photoresist is used to peel off and transfer patterned single-layer or multilayer graphene onto substrates with macroscopic continuity. Free-standing graphene beam arrays are fabricated on both silicon and polymer substrates. Their mechanical properties are studied by atomic force microscopy. Finally, a graphene based radio frequency switch is demonstrated, with its pull-in voltage and graphene-silicon junction investigated.