

عنوان مقاله:

Electrical and Mechanical Properties of Graphene

محل انتشار:

سومین کنفرانس بین المللی فیزیک، ریاضی و توسعه علوم پایه (سال: 1399)

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خلاصه مقاله:

Graphene is an exciting new atomically-thin two-dimensional (2D) system of carbon atoms organized in a hexagonal lattice structure. This "wonder material" has been extensively studied in the last few years since its first isolation in 2004. Its rapid rise to popularity in scientific and technological communities can be attributed to a number of its exceptional properties. In this research I will present several topics including fabrication of graphene devices, electrical and mechanical properties of graphene. I will start with a brief introduction of electronic transport in nanoscale system including quantum Hall effect, followed by a discussion of fundamental electrical and mechanical properties of graphene. Next I will describe how graphene devices are produced: from the famous "mechanical exfoliation" to our innovative "scratching exfoliation" method, together with the traditional lithography fabrication for graphene devices. We also developed a lithography-free technique for making electrical contacts to suspended graphene devices. Most of the suspended devices presented in this thesis are fabricated by this technique

کلمات کلیدی:

.Graphene, Carbon, Atom, Electricity, Nanotechnology, Semiconductor

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