

Graphene: Status and Prospects

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Graphene - single atomic plane pulled out of graphite - is a wonder material. It has many superlatives to its name. It is the thinnest material one can imagine and the strongest one ever measured. Its charge carriers have zero effective mass and can travel micron distances without scattering under ambient conditions. Graphene can sustain current densities thousands times higher than copper, shows record thermal conductivity and stiffness, is impermeable to gases and liquids. It reconciles such conflicting qualities as brittleness and ductility. Electrons in graphene behave in such a way that this allows the investigation of relativistic quantum phenomena in a bench-top experiment. I will overview fascinating properties of graphene and outline some applications.