Graphene: from bench-top particle-physics Laboratory to Revolutionary Micro-electronics

By

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Host: Prof Alfred Huan

Abstract:

The isolation of graphene in 2004, a one atom thick form of carbon, completes a saga that started with the invention of the pencil from graphite in 1564, and continued through the synthesis of one-dimensional carbon nanotubes, and then of buckyballs. The electrons in graphene behave as relativistic particles, albeit with a velocity of propagation 300 times smaller than the speed of light, allowing the use of graphene as a testbed for many strange effects predicted in the theory of quantum relativity. Because of its robust structural and electrical properties, graphene can be considered the natural evolution of the silicon-based technology that permeates the modern world. It is believed that graphene may replace silicon in electronic devices because of its amazing potential for miniaturization and extraordinary electric properties.