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Electronic properties and applications of quasi-one-dimensional graphene-based systems

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A number of emerging areas are being driven by a fusion of ideas and techniques from a variety of disciplines. In particular, a fusion of ideas from the physical, chemical, and even biological sciences is being utilized to develop novel materials for new technology and applications. Of the various materials under investigation, none have received more attention than graphene-based materials --- carbon nanotubes, fullerenes, and, more recently graphene sheets. These materials have a wealth of interesting and useful properties --- they raise a number of fascinating questions in the fundamental sciences, and they hold promise for countless applications. In this talk, I will describe some of our recent investigations of the electronic properties of graphene-based materials; I will discuss phenomena/applications which derive from their unique electronic properties, ranging from scanning tunneling microscopy, to molecular electronics, and also terahertz photonics.

Biography

Eugene H. Kim received his Ph.D. in Physics from the University of California at Santa Barbara in 1999. Upon completing a postdoctoral fellowship at the University of Toronto, he joined the faculty at the University of Windsor in 2003 as a SHARCNET Research Chair. Dr. Kim's work is in condensed matter theory, where he has made contributions in the areas of high-temperature superconductivity, low-dimensional magnetism, quantum impurity problems, and nanoscale electronics. His present research interests are in nanoscale electronics, as well as disordered electronic systems and nanoscale superconductivity.

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