Inorganic/TcSUH Seminar

Texas Center for Superconductivity at the University of Houston

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Scientific and Technological Opportunities of Ultra-High Density Nanowire Arrays

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Room 634, University of Houston Science and Research One
11:00 a.m. – 12:00p.m.

Abstract

With their dimensions exceeding conventional lithographic methods limit, semiconductor nanowires have attracted intensive research efforts as building blocks for future electronics. While various individual nanowire-based devices are demonstrated to outperform existing MOSEFT, successful integration into complex functional units is still missing. The fundamental distinction between current semiconductor technology and nanowire-based electronics is that the latter requires regular device structures for optimum performance, whereas the former relies on fabricating arbitrary ones based on functionalities. This imposes great challenge of nanowire research in terms of arrangement and integrations. I will present our recent advancements in this area using ultra-high density nanowire arrays with excellent arrangement for electronic applications. A wide range of topics will be covered and they include controlled placement of p- and n-type nanowires in a single array; understandings of the surface effects on nanowire electrical properties; statistically significant high performance field effect transistors and monolithic Si-only nanowire networks. Integrated nanowire circuitries with complementary symmetry are therefore enabled for energy efficient applications and they are amenable to high degree of integrations. Furthermore, our studies shed light on nanoscale sciences and technologies in general and will pave ways toward many applications in relevant scales such biological sensing and energy conversions.

Persons with disabilities who require special accommodations in attending this lecture should call (713) 743-8210 as soon as possible.

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