findings revealed that the conductivity inside the boundaries is significantly suppressed for both electrons and holes. Furthermore, graphene grain boundaries can give rise to n-type inversion channels within the overall p-doped graphene sheets, providing p-n junctions with sharp interfaces on the nanometer scale. These properties were found to be robust against structural disorder and to persist for grain boundaries of various atomic configurations. We compare these findings to the results of wave packet dynamical simulations on the charge carrier propagation and scattering across graphene grain boundaries.

THU 30
Reducing the diameter of vertically aligned single walled carbon nanotubes by Nitrogen doping: Synthesis and Spectroscopy study

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Chirality control is one of the major challenging goals to achieve unique properties of SWNTs. This can be indirectly sorted out through controlling the tube diameter to minimize number of chiralities. However, it requires the use of supporting materials which needs post-treatment to purify, and can also damage SWNTs. The growth on flat substrate is also required for some applications. The mean diameter of SWNTs synthesized on flat substrate is reduced significantly from 2.1 nm to 0.7 nm by using acetonitrile-mixed ethanol without changing the vertical alignment. Upon adding marginal amount of acetonitrile (1%), the 1 at.% incorporated substitutional graphitic sp^2 N content is detected and found to correlate with catalyst morphology independent diameter reduction and more likely for small-diameter SWNTs [1]. The absorption, Raman spectra and TEM clearly portrays the vast differences in the tube diameter.

[1] T. Thurakitseree et al. Carbon, submitted

THU 31
Wide range optical study on double-walled carbon nanotubes prepared from separated outer tubes

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Carbon nanotube chemistry continues to present intriguing possibilities in the nanoscience field. One of these is the encapsulation of small molecules or another nanotube in single-walled carbon nanotubes, another is the application of tubes