

The MRS-UK chapter presents:

Dr. Bruce Hinds:



Dramatic nano-fluidic properties of carbon nanotube membranes as a platform for protein channel mimetics

Carbon nanotubes (CNT) have three key attributes that make them of great interest for novel membrane applications: 1) atomically flat graphite surface allows for ideal fluid slip boundary conditions for 10,000 fold faster fluid flow, 2) the cutting process to open CNTs inherently places functional chemistry at CNT core entrance for gatekeeper activity, and 3) CNT are electrically conductive allowing for electrochemical reactions and application of electric fields gradients at CNT tips.

These unique properties allow us to explore the hypothesis of producing 'Gatekeeper' membranes that mimic natural protein channels. Carbon nanotube membranes were employed as the active element of a switchable transdermal drug delivery device that can facilitate more effective treatments of drug abuse and addiction. This technology can help bridge the gap between the physiology and psychology of addiction treatment. Discussed are other applications of CNT protein channel mimetics, for large area robust engineering platforms, including water purification, energy storage, and biochemical separations.

Time: 2:00 pm, 02-03-2012 (Friday)

Location: CP-111, Chemistry/Physics Bldg.

Refreshments will be served.