

ME DEPARTMENTAL SEMINAR

Friday, January 18, 2008

Time 10:30 – 11:30 AM

Location 2211 GG Brown

Mario I. Romero-Ortega, Ph.D.

Regenerative Neurobiology Research Division,
Texas Scottish Rite Hospital for Children, Dallas, TX.
Departments of Plastic Surgery and Neurology, and Biomedical Engineering Program,
University of Texas Southwestern Medical Center, Dallas, TX

Carbon Nanotube-Enhanced Neurointerfacing

The extremely high thermal and electrical conductivity, and superior mechanical stiffness of carbon nanotubes, have inspired a variety of novel uses and devices. Such unique characteristics also make nanocarbon an optimal tool for a plethora of biomedical applications such as: hypersensible electrochemical biosensing, controlled drug release, intracellular protein and/or gene delivery and tissue engineering. We have recently explored the use of carbon nanotube sheets and yarns as viable substrates for long-term cell culture. The results demonstrate the biocompatible nature of substrate nanocarbon, and uncovered unique effects of this material in directing cell migration, with possible applications in wound healing. We have now extended those studies to test the effect of carbon nanotube sheets coatings on multielectrode array recording/stimulation of murine cortical neurons. The data supports the use of carbon nanotubes as an optimal bio/abio interface material for the making of advanced neural electrodes, and underlies the potential of such electrodes in the neural control of bionic limbs.