Project Title: Microelectrodes for bio-medical implants

Noe T. Alvarez, Ph. D.
College of Arts and Sciences
305 Crosley Tower
Cincinnati OH 45221
alvarene@ucmail.uc.edu
Office 513 556 9370

Project Description

This research is about developing microelectrodes suitable for physiological applications such as recording extracellular activity for neuroscience research and the ability to stimulate neurons in a targeted fashion. Brain related treatments like epilepsy and Parkinson’s disease, require microelectrodes implants that are flexible, biocompatible and reliable electrodes. My Lab is focused on a bottom-up approach to develop microelectrodes that will allows us to employ carbon nanotubes into macroscopic flexible electrodes that can be adjusted to application-specific requirements. Electron transfer rates are currently under study using Electroretinogram (ERG) for signal recording and electrical stimulation. Biocompatible polymer coatings and control over their porosity and stiffness are topics of interest in neuroscience as implants to prevent damaging brain tissue.