



Technological Innovation:
Generating Economic Results

TI:GER PhD Students - Class of 2013

Stephanie Duncanson – BME/Bioengineering

Advisor: Athanassios Sambanie

Cell-based therapy for the treatment of diabetes.

Research to develop a cell-based therapy for insulin-dependent diabetics that provides highly specific localized immune protection. This research potentially offers a long-term, highly effective therapy for diabetics, while eliminating the need for daily insulin injections.

Victor Emeli – Electrical & Computer Engineering / Robotics

Advisor: Henrik Christensen

Affordable Robotics Utilizing Cloud Computing and Social Media

Research leverages the ubiquity of the Internet and social media to develop affordable robots for sustaining meaningful long term relationships with humans. It is based on access to a cloud computing framework to enable cost effective functionality.

Jeff Gaulding – Chemistry

Advisor: Andrew Lyon

Microgel coating for medical implants

Research involves microgels, which are polymer nanoparticles composed of more than 95% water. These microgels are environmentally responsive and have applications in drug delivery, sensing, and biomaterials. Thin films, formed from assemblies of microgels, have been shown to reduce the inflammatory response associated with medical devices. Coatings of microgels may impart non-fouling and other desirable characteristics to a surface.

Jane Kang - Mechanical Engineering

Advisor: David Rosen

Medical device for hemodialysis

Research focuses on a novel filtration system for more efficient processing for portable hemodialysis machines. This renal replacement system can provide customized therapy for each patient leading to lower morbidity, longer life, and higher quality of life.

Hangue Park – Electrical and Computer Engineering

Advisor: Maysam Ghovanloo

Tongue Drive System

Research and development of a hardware and software system that can communicate and control a variety of devices (ie an electric wheelchair). The system uses magnet sensors mounted on a headset that wirelessly communicates via movements of the tongue.

Graham Sanborn – Materials Science & Engineering

Advisor: Jud Ready

Carbon nanotubes electron sources

Research on an electron source utilizing carbon nanotubes that has greater efficiency, and portability with reduced weight. Applications include spacecraft propulsion systems, portable x-ray sources (such as for medical x-ray devices) and flat panel displays.

Wei Yin Xu – Chemical & Biomolecular Engineering

Advisor: Chris Jones

Renewable biomass for chemical and fuel production

Renewable fine chemicals are produced from lignin, a component of plant matter via our researched process. In particular, our process converts lignin into aromatic bio-based chemicals that are important building blocks for our current manufacturing processes.