

PhD Student Position in Mechanobiology and Bioelectrics

A PhD student position is available in the Department of Chemical Engineering at Rowan University, Glassboro, New Jersey, USA. Research will be conducted within the multidisciplinary BioElectroMechanical Engineering Research Laboratory (<http://www.bioelectromechanical.org>) with the guidance of Assistant Professor Gary Thompson. This position is supported by the College of Engineering at Rowan University for up to four years.

Project Description

Enhanced medical treatments of ailments such as cancer, pain and wounds are needed with continued population growth and rising medical costs. Bioelectronic medicine has advanced steadily over the past century, and mechanobiology is an important factor in the response of tissues and cells to electromagnetic field exposure. The overall research investigates the bioeffects of pulsed electromagnetic fields (PEF) on cells and tissues. Fundamental physical interactions of PEF with biomembranes depend on characteristics of the cell type. Charting the induced signaling pathways has the potential to lead to innovative medical applications. This experimental project focuses on tuning the response of neural cells and tissues to PEF by engineering chemical, material and biological systems. Immediate efforts include: hydrolysis of lipids by high-strength pulsed electric fields; preparation of implantable scaffolds from natural tissues; and delineation of second messenger pathways induced by electroporation of cell cultures. Quantitative laboratory techniques such as confocal fluorescence microscopy, scanning probe microscopy, high speed imaging, spectroscopy, and electrochemical measurements will be employed. Please consult prior publications for background information (some are listed on the faculty [advisor's departmental webpage](#)).

Stipend & Fees

The PhD student stipend will be \$24,000 per annum for up to four years. Tuition fees will be paid. The student must cover health insurance (an estimated fee of \$3,800 per annum).

Applications

To apply, submit a letter of interest, your CV, an example of your scientific writing, and names and e-mail addresses of at least two academic referees to thompson@rowan.edu before the deadline on 28 February.

Requirements & Further Information

Applications from students with a strong academic record (e.g., a 3.5/4.0 or higher) in chemical engineering, biomedical engineering, electrical engineering, material science, physics, biology, or related disciplines are encouraged. The ideal candidate will have experience in one or more of these key areas: transfection of mammalian cells, microscopy image analysis, pulsed power electronics, and modeling dynamic field effects. Systematic, creative and independent working skills are required. Excellent English is necessary. Moreover, a problem-solving mindset and an excitement for both fundamental questions and medical applications are important.

[Rowan University](#) is a public research university located in the tranquil suburbs of southern New Jersey, close to Philadelphia. It was recently designated as a [national research institute](#) in 2017. The PhD Program in Chemical Engineering is new, yet within a well-established College of Engineering that was founded in 1992. There are two medical schools associated with Rowan University – [Rowan School of Osteopathic Medicine](#) and [Cooper Medical School](#) – both located within a 20-minute drive. Here at Rowan University, you would be joining a trailblazing cohort of fellow graduate students, surrounded by growth.