

Massoud Louis Khraiche

EDUCATION

Bachelors of Science, Biomedical Engineering. College of Engineering and Applied Sciences. Arizona State University, Tempe, AZ
Master's In Engineering (Biomedical Engineering)
Arizona State University, Tempe, AZ
PhD in Bioengineering, 2009
Arizona State University, Tempe, AZ

EXPERIENCE

Research assistant, Neural Micro Systems Lab, Arizona State University. Present

- Design, development and fabrication of acoustic platform for neuron function and mechanical properties.
- Manufacturing of Microelectrode array platforms (MEA).
- Development of high frequency ultrasound for neuronal stimulation.
- Design and development of automated software for the quantitative assessment of dendritic spines.
- Design and development of systems for ECG, EMG and voice recognition for teaching purposes.
- Monitoring changes in vinculin concentration via histology and western blot in response to surface treatments.
- Design And Development of Novel Microacoustic Sensors with Optimal Electrode Dimensions for GABA detection.
- Studying neuronal disassociated culture model.

Research assistant, Neural Micro Systems Lab, Arizona State University (2002- 2004)

- Development of two types of acoustic sensors (SAW, QCM) for tracking cell substrate interactions.
- Assist in design and development of real-time GABA sensor (neurotransmitter).

Lab assistant, Neural Micro Systems Lab, Arizona State University (2001-2002)

- Assist in collection of data for chemical detection

Media Support Supervisor, Arizona State University, Tempe, AZ (2000-2002).

- Provide technical support and training
- Supervise student workers

PUBLICATIONS

Khraiche, M.L. Zhou, A. Muthuswamy, J.,
Acoustic sensors for monitoring neuronal adhesion in real-time, Annual International Conference of the IEEE, Volume: 3, page(s): 2186- 2188 Vol.3, 17-21 Sept. 2003.

Massoud Louis Khraiche, Anhong Zhou and Jit Muthuswamy, Acoustic sensor for monitoring adhesion of Neuro-2A cells in real-time, Journal of Neuroscience Methods. Volume 144, Issue 1, 15 May 2005, Pages 1-10

Massoud L. Khraiche, William B. Phillips, Nathan Jackson, Jit Muthuswamy, Ultrasound Induced Increase in Excitability of Single Neurons, 30th Annual International IEEE EMBS Conference, June 19, 2008

Massoud L. Khraiche, Christine Pauken and Jit Muthuswamy, Monitoring focal contact points and adhesion dynamics in real-time using an acoustic sensor, *Biosensors and Bioelectronics, in final stages of submission*

TEACHING

Three semesters as lead teaching assistant for BME470 (microcomputer application in bioengineering). Develop, test and build systems for medical monitoring and diagnostic purposes. Groups of students were guided to design, build and test systems for a variety of biomedical applications. The class projects were divided to three components, hardware circuit for signal conditioning, software for signal analysis and display and a set of experiments to validate system function. **The project were variation on the followings**

- Electrocardiograms (EMG)
- Electrocardiogram (ECG)
- Electro-oculography (EOG)
- Voice recognition

MENTORING

Mentored four students in the Arizona state university undergraduate bioengineering program. This effort was towards completion of capstone projects and project for the Fulton undergraduate research initiative (FURI).

Ali Alnamani, Low Cost Micro-Polymer-Fluidic Channels for Maintaining Neurons in Culture (Capstone Senior Design Project, 2008)

Siddesh Gopal and rohitrajan, Benchtop polymer for cell patterning (High school project, 2008)

Masoud sultani, Affect of RGD adhesion peptide on neuron function in-vitro model (furi, 2008)

Payal Bhavsar, Quantitative Assessment of Morphological Changes in Single Neurons using MATLAB based Image Processing Functions (Furi and Capstone Project 2007-2008)

David Hunn, Use of surface acoustic wave devices (SAW) to monitor adhesion of neuroblastoma (Capstone Senior Design Project, 2003)

SKILLS

Clean-room certified with extensive knowledge on photolithography and proficiency in using related tools, such as laser mask makers, aligners, wire bonders, oxide deposition and metal evaporators. Experience is patterning metal (gold, ITO) and etching of different substrates (parylene, quartz and silicon).

Proficient in culturing and harvesting of several cell lines including 3T3 fibroblasts, neuroblastomas and primarily neurons.

In-vitro neuronal models: extensive experience in growing, imaging, recording and data analysis of disassociated cultures.

Extensive experience in building hardware and software of instrumentation in bioengineering, which includes but not limited to physiological monitoring systems

Experience performing Immune assay experience, labeling and quantifying of specific proteins.

GUEST LECTURES Invited to lecture in several graduate and undergraduate courses.

OGANIZATIONS Cofounder of the Community of Lebanese Scientist
Member of Society for Neuroscience member

AWARDS Graduate Research Grant provided by the Graduate & Professional Student Association
at Arizona State University 2004

Finalist in the in 2003 EMBS Student Paper Competition and winner of region 6 for
work on tracking neuron adhesion using acoustic sensor technology. I was not able to
compete in the final stage of the competition due to visa issues.

COURSE WORK	Biomechanics	Macroeconomic Principle.
	Engineering Mechanics	Materials Structure and Properties.
	Engineering Design.	Physiology for Engineers
	3 Levels of Calculus	Fluid Dynamics.
	Bio-systems control	Cell biology
	Physics: Mechanics	2 Levels of General Biology
	& Physics: Electric	Thermodynamics
	and Magnetism.	Modeling of biological systems
	Advanced biomaterial	