Centre for Bioengineering and Biotechnology

UNIVERSITY OF WATERLOO | FACULTY OF HEALTH | WATERLOO INSTITUTE FOR nanotechnology

HEALTH TECHNOLOGIES MIXER

MAY 5, 2023 | 9:00AM
QNC 1501

AGENDA

5 MAY EST

JOIN ONLINE

Start	End	Event	Location
9:00	**9:20**	**Territorial Acknowledgement and Welcoming Remarks**	**QNC 1501**
9:00	9:05	Bernard Duncker, Associate Vice President of Research and International	
9:05	9:10	Lili Liu, Dean of Faculty of Health	
9:10	9:15	Clark Dickerson, Executive Director, Centre for Bioengineering and Biotechnology	
9:15	9:20	Sushanta Mitra, Executive Director, Waterloo Institute for Nanotechnology	
9:20	**12:00**	**Technical Presentations**	**QNC 1501**
9:20	9:40	Saxion Presentation (Virtual)	
9:40	9:50	Bill McIlroy (CBB, KIN and Health Sci)	
9:50	10:00	Karen Van Ooteghem (CBB, KIN and Health Sci)	
10:00	10:10	Alfred Yu (WIN, CBB)	
10:10	10:20	Kostadinka Bizheva (CBB)	
10:20	10:30	Melanie Campbell (WIN, CBB)	
10:30	**10:45**	**Morning Break**	

AGENDA

5 MAY EST

Start	End	Event	Location
10:40	10:50	Yurii Potsiluienko (Student)	
10:50	11:00	Ehsan Zare Bidaki (Opt, SYDE)	
11:00	11:10	Omar Ramahi (CBB, ECE)	
11:10	11:20	Juewen Liu (WIN, CBB)	
11:20	11:30	Veronika Magdanz (WIN, CBB)	
11:30	11:40	Evelyn Yim (WIN, CBB)	
11:40	11:50	David Spafford (CBB, BIO)	
11:50	11:55	Abigail Conner (Student)	
11:55	12:00	David Dency (Student)	
12:00	12:10	Mahla Poudineh (WIN, CBB)	
12:10- 12:30		**Seed Announcement & Closing Remarks**	**QNC 1501**
		Sushanta Mitra, Executive Director (WIN) Clark Dickerson, Executive Director (CBB)	
12:30 - 1:30		**Networking Lunch and Student Poster Session**	**QNC 1st Floor Atrium**

PRESENTERS

Jan Jukema

Professor of Personalized Care
Saxion University of Applied Sciences
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Aurel Ymeti

Project leader, Researcher
Saxion University of Applied Sciences
a.ymeti@saxion.nl

PRESENTATION TOPIC:

Point-of-Care Technologies (POCT) initiative

SAXION UNIVERSITY OF APPLIED SCIENCES

PRESENTERS

Bill McIlroy

Professor
Department of Kinesiology and Health Sciences,
University of Waterloo

wmcilroy@uwaterloo.ca

Most recent work includes the development and implementation of wearable technologies to assess mobility, activity, sleep and cardiovascular function in daily life among older adults and those with stroke or neurodegenerative (NDD) disease.

PRESENTATION:

Enabling Innovation and Mobilization of Body-worn Health Technologies

Karen Van Ooteghem

Research Assistant Professor
Neuroscience, Mobility and Balance Lab
University of Waterloo

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Karen is interested in age-related changes in central nervous system function and the effects of these changes on balance and mobility. Currently, her primary focus is to determine what combination of measures captured during clinical balance and mobility assessment aids in the earliest possible detection of balance and mobility impairment and provides the greatest diagnostic and prescriptive utility. A key component of this work is the study and use of wireless sensor technologies as an adjunct to traditional assessment.

PRESENTATION:

Remote Measurement and Virtual Care: Opportunities in Aging and Neurodegenerative Disease

PRESENTERS

Alfred Yu

Professer
Department of Electrical and Computer Engineering,
University of Waterloo

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Alfred Yu is an NSERC Steacie Fellow and Professor in Biomedical Engineering at UW. He leads the NSERC CREATE Program on "Next-Generation Innovations in Ultrasonics" on campus. Alfred has a long-standing research interest in ultrasound imaging and therapeutics, and his lab always welcomes collaborations at all parts of the innovation spectrum from algorithmic design to clinical translation. He is Associate Director of CBB and was previously the Co-Lead of the WIN Theranostics Theme. Within his research community, Alfred is the Editor-in-Chief of the IEEE Transactions on Ultrasonics, Ferroelectrics, and Frequency Control, the Program Chair of 2023 IEEE Ultrasonics Symposium, and a Community Leader of the AIUM Basic Science and Instrumentation Group. He is a Fellow of AIUM and EIC.

PRESENTATION:

Can We Do THAT With Ultrasound?

Ultrasound has versatile application potential in imaging and drug delivery. Where is the current technology heading towards? What is the latest state of the biomedical ultrasound innovation drive at Waterloo? I will give an overview in my mixer pitch. My talk fits well with the "Delivery Systems for Therapeutics" and "Biomedical Imaging" theme of this mixer.

PRESENTERS

Kostadinka Bizheva

Professer, Physics and Astronomy,
Cross-appointed at the School of Optometry & SYDE Deptartment,
University of Waterloo

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My research focuses on development of Optical Coherence Tomography (OCT) for biomedical and clinical applications. My group uses OCT to visualize the cellular structure of ocular tissue (retina, cornea, limbus) and investigate structural, vascular and functional changes associated with potentially blinding ocular diseases.

PRESENTATION:

Biomedical applications of ultrahigh resolution Optical Coherence Tomography

My research group develops optical imaging technology (OCT) that can be used to image in-vivo, ex-vivo and non-invasively the cellular structure of biological tissue. OCT can also be used to measure blood flow and physiological responses of neuronal cells to external stimuli.

PRESENTERS

Melanie Campbell

Professer
Physics and Astronomy,
University of Waterloo

mcampbel@uwaterloo.ca

I undertake research in and am interested in the two areas:
1) Biomedical Imaging, in particular, novel methods of imaging the retina of the eye for the diagnosis of both retinal diseases and also retinal changes (biomarkers) of brain diseases and 2) Delivery Systems for Therapeutics, in particular, the light activation of dyes for the targeted treatment of ocular diseases.

I am a professor in Physics and Astronomy and hold cross-appointments in the School of Optometry and Vision Science and Systems Design Engineering. I am interested in collaborations with researchers in Alzheimer's and other neurodegenerative diseases, who can see the potential early diagnosis of these diseases, which in turn will facilitate their research into early interventions. I wish to collaborate with those who are interested in improved screening of the sight-threatening retinal effects of diabetes. I wish to collaborate with researchers who have recent knowledge of 2-photon photodynamic drugs.

PRESENTATION:

Retinal imaging to facilitate earlier diagnosis and therapeutics in retinal and brain diseases

- Novel biomedical imaging of the retina to improve early diagnosis of retinal and brain diseases.
- Delivery Systems for Therapeutics: a novel 2 photon therapy for retinal disease.

PRESENTERS

Ehsan Zare Bidaki

Postdoctoral Fellow
School of Optometry & SYDE,
University of Waterloo

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Ehsan completed his BSc in 2006 and his MSc in 2010 in computer engineering (Image processing) at Science and Research University, Tehran, Iran. Ehsan was working as a lecturer at Islamic Azad University from 2010 to 2016. In 2017 he enrolled as a graduate student in the Optometry School and System Design Engineering departments (joint degree), at the University of Waterloo. He studied his Ph.D. under the supervision of Professor Paul Murphy and Professor Alexander Wong with a thesis entitled: "A system for ocular surface temperature measurement and tracking using infrared thermography" and he was awarded his Ph.D. in 2022. Currently, he is working as a PDF at MLEO lab investigating a novel system for ocular surface temperature measurement and tracking under the supervision of Professor Paul Murphy and Professor Alexander Wong. His research interests include Ocular surface image analysis, Ocular Surface Temperature Measurement, Machine Vision, Machine learning, and Thermal image analysis.

PRESENTATION:

A Novel Computational Thermal-Visual Imaging System for Automatic Cornea Temperature Measurement and Tracking

Ocular surface temperature (OST) is affected by changes in the physiology of the eye caused by normal homeostasis, environmental changes, or systemic and local disease. OST can help a physician diagnose eye disease with improved accuracy and provide useful information for eye research. A novel system including novel hardware design and novel algorithms to measure and track OST from the cornea automatically over any period of time was proposed. The system uses an IR camera and a visible light camera to capture synchronous thermal and visible videos, respectively, from the eye surface. The frames for the two video sequences are then registered and the cornea was segmented using a semantic segmentation method. In the final step, the corneal area was localized on the registered thermal frames to extract temperature information. The mean square error for the registration was 5.03 ±1.82 and the mean Intersection over Union (IoU) was 94.6%, representing the accuracy of corneal segmentation. A system for measuring and tracking eye surface temperature over time was developed. The system is able to localize the cornea on both visible and thermal images and report temperature profiles of the cornea over the period of measurement. Experimental results show that the whole system can work as a tool for measuring and tracking OST over time. Hence, the system could be used as a useful tool for eye disease diagnosis and tear film analysis.

PRESENTERS

Omar Ramahi

Professor
Department of Electrical and Computer Engineering
University of Waterloo

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I am a faculty at UW. You can find a bio at
https://aer-laboratory.site123.me/research-team/omar-m-ramahi.

I am interested in collaboration with companies who may show interest in this work.

PRESENTATION:

Mammography using Low-Frequency Electromagnetic Fields

I would like to present our development of this system for breast cancer detection that can provide a very inexpensive and healthier modality than presently available systems. This work is about imaging which is a focus of this meeting.

PRESENTERS

Juewen Liu

Professer
Department of Chemistry,
University of Waterloo

liujw@uwaterloo.ca

Juewen Liu is interested in aptamers and biosensors. He received his Ph.D. degree from the University of Illinois at Urbana-Champaign in 2005. After postdoctoral research at Sandia National Labs and the University of New Mexico, he joined the Department of Chemistry at the University of Waterloo in 2009. Dr. Liu is currently a full professor at the University of Waterloo. I am interested in collaborating with researchers who can use aptamers.

PRESENTATION:

DNA aptamers for disease diagnosis and targeted drug delivery

The use of aptamers in biomedical applications. Nanomaterials are often conjugated to aptamers.

PRESENTERS

Veronika Magdanz

Assistant Professer
Department of Systems Design Engineering,
University of Waterloo

veronika.magdanz@uwaterloo.ca

I am currently Assistant Professor in surgical robotics at the Systems Design Engineering department, UWaterloo. I am a biotechnologist with expertise in nanotechnology, material science, microrobotics and cell biology with cutting edge projects in medical micro-and nanorobotics. I am interested in the interface of biotechnology, biomedical engineering and nanotechnology, specifically for targeted, active drug delivery, cell manipulation, diagnostics, theranostics and noninvasive surgery.

More here:
https://magdanzlab.com/
https://uwaterloo.ca/systems-design-engineering/profile/v2magdan
https://scholar.google.com/citations?user=VuA5yCQAAAAJ&hl=en

PRESENTATION:

Bioinspired and biohybrid microrobots for medical applications

I would like to present my research on sperm-nanoparticle interactions which are used to create magnetically functionalized sperm as microrobots for drug delivery in the reproductive tract, and as diagnostic tools for infertility. Further, I would like to present bioinspired approaches to fabricate artificial, flexible magnetic microrobots for minimally invasive surgery.

PRESENTERS

Evelyn Yim

University Research Chair & Associate Professor
Department of Chemical Engineering,
University of Waterloo

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Evelyn Yim received her Ph.D. in Biomedical Engineering at Johns Hopkins University before performing undergoing her post-doctoral training at the Johns Hopkins School of Medicine and in the Department of Biomedical Engineering at Duke University. Between 2007 and 2015 Evelyn worked in Singapore, where she held a joint appointment from the National University of Singapore, as faculty in the departments of Biomedical Engineering and Surgery, and the Mechanobiology Institute Singapore, a Research Center of Excellence supported by the National Research Foundation Singapore, as a principle investigator studying how chemical and biomechanical cues influence stem cell behavior. Evelyn joined the Department of Chemical Engineering at the University of Waterloo in 2016. Experienced with nanofabrication technologies and stem cell culture, Evelyn and her group are interested to apply the knowledge biomaterial-stem cell interaction to direct stem cell differentiation and tissue regeneration for neural, vascular and corneal tissue engineering.

PRESENTATION:

Nanostructured biomaterials for regenerative medicine

The presentation will give an overview of the work of our research group on the applications of nanostructured biomaterials for various regenerative medicine and tissue engineering applications. In particular, examples of our work on stem cell differentiation, vascular and corneal applications will be discussed.

PRESENTERS

J David Spafford

Professor
Department of Biology,
University of Waterloo

spafford@uwaterloo.ca

I am J David Spafford, Associate Professor in the Dept of Biology, UW, who is looking for collaborators to develop tools to examine the unique electrophysiology and microscopy at a nano-scale, including:

a) miniaturized, highly-sensitive, low noise, multielectrode array system to measure electrical spike propagation in choanoflagellates over microns not millimeters,

b) a reverse-patch clamp approach where the living and swimming, choanoflagellate is pulled and membrane-sealed onto a glass recording chip, by strong peristaltic pump suction (instead of conventional electrophysiology, where a crafted glass recording electrode is sealed onto a cultured animal cell, affixed to a coverslip).

c) volumetric, fluorescence microscopy of living choanoflagellates at nano-scale, such as lattice light-sheet optimized for depth of less than 20 microns.

PRESENTATION:

Conservation of human electrical and calcium signaling in a choanoflagellate, a 3 x 5 micron, nano-organism and closest living non-animal ancestor to humans

The Spafford laboratory has developed a unique model for studying human physiology:

(1) We have recorded human nerve and cardiac-like electrical potentials from a 3 x 5 micron, micro-organism.

(2) We have isolated and recorded the L-type calcium current from this nano-organism using a novel reverse patch clamp approach, revealing a high affinity drug binding pocket to 1,4-dihydropyridines, at effective medicinal concentrations used for treating human hypertension.

(3) The L-type calcium channel in this micro-organism engages in human muscle and nerve signaling, including: (a) excitation-contraction coupling with ryanodine receptors in sarcoplasmic reticulum, (b) excitation-secretion coupling involving the neurotransmitter release machinery at human presynaptic nerve terminals, and (c) excitation-transcription coupling involving the post-synaptic plasticity related proteins, such as SHANK, CREB1 and CaMKII, engaged in human learning and memory in the human hippocampus.

(4) The 3 x 5 micron, micro-organism is a one-man band, carrying out the symphony of specialized functions of human muscle and nerve cells, in different non-motile, motile and colonial life stages of the choanoflagellate.

PRESENTERS

Mahla Poudineh

Assistant Professor & Director of IDEATION Lab
Department of Electrical and Computer Engineering,
University of Waterloo

mahla.poudineh@uwaterloo.ca

Mahla Poudineh is an Assistant Professor at the University of Waterloo, Department of Electrical and Computer Engineering and the founding director of IDEATION Lab (Integrated Devices for Early disease Awareness and Translational applicatIONs Laboratory) since January 2020. She received her Ph.D. degree in Electrical Engineering from the University of Toronto in 2016. Prior to joining Waterloo, Mahla completed postdoctoral training at the University of Toronto, and Stanford University, School of Medicine in 2018 and 2019, respectively. Her research interests include developing biosensing approaches for diagnostic and therapeutic purposes, continuous health monitoring and translating biomedical devices to the clinic and market. Her research has been selected as Science Translational Medicine Editor's choice article and highlighted in the Nature News&Views. She was the recipient of Waterloo, ECE Department Research Excellence Award in 2022. She has been also selected as an Inaugural Contributor to the Advanced Healthcare Materials "Rising Stars" Series and to the Nanoscale Emerging Investigators Themed Collection.

PRESENTATION:

Advanced Technologies for Diagnosis, Monitoring, and Understanding of Diseases

Detection of molecular analytes and biomarkers for disease diagnosis and physiological monitoring requires new technologies to interrogate different body fluids such as whole blood and interstitial fluid (ISF). These technologies should be highly sensitive, specific, and able to continuously analyze biomarkers in real-time. Molecular probes, material chemistry, and polymer engineering, as well as nanotechnology and micro/nanofabrication, are crucial tools to generate such technologies. At IDEATION Lab, we employ Microneedles and Microfluidics as the main technologies to develop innovative engineering solutions that advance disease diagnosis and monitoring and explore the fundamental aspects of disease manifestation. In the first part of my talk, I will present our new transdermal biosensing technologies powered by engineered hydrogel microneedles (HMNs), nucleic acid probes, and in-situ metallic nanoparticle synthesis for minimally invasive, on-needle, and real-time measurement of clinically important biomarkers in ISF. Our HMN assays expect to pave the way for the next-generation of flexible, polymeric-based wearable biosensors. In the second part, I will discuss a universal real-time biosensor driven by microfluidic techniques that continuously measures specific biomolecules' fluctuating concentration levels with picomolar sensitivity directly in whole blood. For the first time, our microfluidic assay enables measuring the dynamic changes in blood insulin and glucagon, two hormones that balance the glucose levels. Understanding the kinetics of diabetes-related hormones can provide valuable information about hormonal links between obesity, prediabetes, and progression to type 2 diabetes The new advances reported in this talk, enrich the level of information that can be collected from different body fluids, and offer new detection systems applicable to the diagnosis and monitoring of a variety of disease states. As a result, these advancements have the potential to revolutionize the way patient health is managed.

STUDENT PRESENTERS

Abigail Conner | aaconner@uwaterloo.ca

Graduate Student
Department of Chemical Engineering,
University of Waterloo

The Combined Effects Of Topography And Stiffness On Neuronal Maturation And Differentiation Using A Hydrogel Platform

A key barrier in neural tissue engineering and regeneration is the low yield of mature neuronal cells from neural progenitor cells (NPCs). Biophysical cues derived from the extracellular matrix (ECM), such as topography and stiffness, and can be harnessed to design biomimetic materials for neuronal differentiation in vitro. Substrate topography and stiffness have been shown to elicit profound effects on NPC lineage commitment but have rarely been studied in combination. The optimization of numerous biophysical cues can increase neuronal yield from NPCs. Here, we use topographically enhanced polyacrylamide and N-aminoaproic acid (PAA-ACA) hydrogels with varying stiffness to evaluate the combined effect or interaction between topography and stiffness on mouse and human NPCs differentiation and rate of maturation. This works aligns with the research theme “Advanced Healthcare Platforms” as it is a novel platform that utilizes biophysical parameters to promote the regeneration and recovery of neural tissue.

Dency David | d4david@uwaterloo.ca

Graduate Student
Department of Chemical Engineering,
University of Waterloo

Modulation of vascular smooth muscle cell behaviour by micro and nano-topographical patterning

Micro- and nano-scale surface topography has been proven to affect cell fate and has attracted researchers to evaluate the topographic influence on different cell behaviours. Vascular smooth muscle cells (VSMCs) play an active role in the pathogenesis of cardiovascular diseases. Proliferation and migration of VSMCs result in atherosclerosis and intimal hyperplasia formation and have been identified as one of the main contributors to stent and bypass graft re-stenosis. The modulation behaviours of topographies on the VSMC responses have been previously demonstrated, but many focused on limited types and dimensions of topographies. In this study, we hypothesized that by changing the geometry, isotropy and size of topographies, VSMC fate, especially proliferation, migration and contractile-synthetic phenotype changes, could be directed. This study applies to research theme-'advanced healthcare platforms' and provide guidance on the design of a more durable small-diameter vascular graft for cardiovascular disease application.

Yurii Potsiluienko | ypotsilu@uwaterloo.ca

Graduate Student
Department of Physics and Astronomy,
University of Waterloo

Effect of corneal birefringence on polarimetric images of retinal amyloid deposits

Novel retinal imaging method for diagnosing Alzheimer's disease.

AUDIENCE MEMBERS

Eihab Abdel-Rahman | eihab@uwaterloo.ca

Professor
Department of Systems Design Engineering,
University of Waterloo

Eihab Abdel-Rahman is Professor of System Design Engineering at the University Waterloo. A nonlinear dynamicist by training, his research interests are in micro & nano sensors & actuators and energy harvesters. He has co-authored more than 250 journal and conference papers. Prof. Abdel-Rahman is a member of the American Society of Mechanical Engineers and the European Society of Mechanics, associate editor for the ASME journal “Computational and Nonlinear Dynamics”, and section editor-in-chief for the MDPI journal “Actuators”.

Jason Au jason.au@uwaterloo.ca

Assistant Professor
Department of Kinesiology and Health Sciences,
University of Waterloo

I am an Assistant Professor in KHS. My major research area is cardiovascular exercise physiology with a focus on how complex hemodynamic environments influence vascular function and cardiovascular disease risk factors. Our lab is at the nexus of ultrasound technology application and cardiovascular discoveries and are seeking collaborations with both technology developers and diagnosticians interested in novel vascular biomarkers.

Geoff Bardwell | gbardwel@uwaterloo.ca

Assistant Professor
School of Public Health Sciences,
University of Waterloo

My research is on substance use and related harms, with a focus on the use of unregulated drugs and targeted public health interventions, especially in rural, remote, and Indigenous communities. I am interested in the ways in which technologies can improve the delivery of services and the health and well-being outcomes of marginalized communities. I have researched a variety of technologies including biometric prescription opioid dispensing machines, overdose monitoring technologies, as well as drug-checking technologies. I am keen to collaborate with individuals in other faculties who have a shared interest in addressing challenging public health issues and the knowledge and expertise to develop technological interventions that will have meaningful impact.

AUDIENCE MEMBERS

Zahid Butt | zahid.butt@uwaterloo.ca

Assistant Professor
School of Public Health Sciences,
University of Waterloo

I am a physician and infectious disease epidemiologist. I am an Assistant professor in the School of Public Health Sciences at the University of Waterloo. My research applies a 'syndemic' framework to examine inter-relationships between epidemics of infectious diseases, social disparities, co-morbidities, and substance use, using epidemiological, statistical, spatial and machine learning methods. My other areas of interest include digital public health, global health, and spatial epidemiology. My research activities to date have led to 186 peer-reviewed publications and 98 presentations at scholarly meetings in the domain of public health, big data analytics and spatial epidemiology, including papers in high impact peer-reviewed journals such as The Lancet, Lancet infectious diseases, Nature, BMJ, Lancet Global Health etc. I am interested in advanced health care platforms.

Jeremy Cohen | jncohen@uwaterloo.ca

Graduate Student
Department of Kinesiology and Health Sciences,
University of Waterloo

PhD student. Human cardiovascular physiology. Interested in biomedical imaging techniques.

Chris Czarnecki | cczarnecki@uwaterloo.ca

Graduate Student
Department of Systems Design Engineering,
University of Waterloo

I've completed my Bachelor's degree in Biotechnology and as a Master Student at the Department of Systems Design Engineering, I am interested in applying new technologies (in particular AI-based systems) in healthcare.

Andrea Edginton | aedginto@uwaterloo.ca

Professor; Hallman Director; Associate Dean
Faculty of Science,
University of Waterloo

Prof. Edginton's academic research focuses on the development and application of physiologically-based pharmacokinetic (PBPK) models and simulation techniques in both the areas of pharmaceuticals and human health risk assessment. Her research examines how the physiology of sub-populations such as children and patients with disease affect the pharmacokinetics of drugs and how this information can be integrated into PBPK models for the optimization of drug therapy. Prof. Edginton also heads the modeling component of the Web-Accessible Population Pharmacokinetics Service – Hemophilia (WAPPS-Hemo.org) project that uses population pharmacokinetic modeling and Bayesian forecasting for tailoring treatment prophylaxis in persons with hemophilia.

AUDIENCE MEMBERS

Kaylena Ehgoetz Martens | kaehgoet@uwaterloo.ca

Professor; Hallman Director; Associate Dean
Department of Kinesiology and Health Sciences,
University of Waterloo

Dr Ehgoetz Martens interests are in how the brain controls movement, particularly walking behaviour, and how this process fails with disease. Her research combines movement kinematics, functional neuroimaging, psychophysiology and cognitive neuroscience to uncover the neural basis of gait and cognitive-emotional interactions in health and disease.

Nadine Furtado | nfurtado@uwaterloo.ca

Associate Clinic Professor
School of Optometry and Vision Science,
University of Waterloo

Associate Clinical Professor at the University of Waterloo School of Optometry and Vision Science - Head, Ocular Disease and Imaging Service (UW Optometry Clinic). Research interests include telehealth, ophthalmic imaging, health informatics, ocular disease and public health.

Jennifer Hunter | jjhunter@uwaterloo.ca

Associate Professor
School of Optometry and Vision Science,
University of Waterloo

I have over 16 years of experience in retinal imaging including adaptive optics instrument design and its uses. My research aims to develop two-photon and single-photon excited fluorescence imaging to observe retinal structure and function with the unique capability to measure fluorescence lifetimes in the living eye. I am always looking for the next technique to pursue for application to retinal imaging.

Okey Igboeli | oigboeli@uwaterloo.ca

Continuing Lecturer, Director
Science and Business Program and Biology,
University of Waterloo

Interested in collaborating on the application of emerging technologies especially 5G, machine learning, AI, and data analytics in smart healthcare and mobile health scenario.

Mohammad Kohandel | kohandel@uwaterloo.ca

Professor of Applied Mathematics
Head of Mathematical Medicine Lab,
University of Waterloo

AUDIENCE MEMBERS

Afarin Khabbazian | akhabbaz@uwaterloo.ca

Graduate Student
Department of Mechanical and Mechatronics Engineering,
University of Waterloo

I am a master's student starting my research in small-scale soft robots co-supervised in the MME and SYDE department. I will attend this mixer with my supervisor, Prof. Veronika Magdanz.

Andrew Laing | actlaing@uwaterloo.ca

Associate Professor
Department of Kinesiology and Health Sciences,
University of Waterloo

In-vivo physiologic measurement of tissue properties. Imaging technologies. Musculoskeletal health.

Vivek Maheshwari | vmaheshw@uwaterloo.ca

Associate Professor
Department of Chemistry,
University of Waterloo

Wearable devices for measurement of vitals such as ECG, EMG, EEG and EOG, pulse rate and neural interfaces Biomedical imaging using X-ray sensors.

Chau Phan | c2phan@uwaterloo.ca

Research Assistant Professor
Centre for Ocular Research and Education; School of Optometry and Vision Science,
University of Waterloo

I am a Research Assistant Professor at the Centre for Ocular Research and Education, where I work on developing innovative ophthalmic technologies for commercialization. My research interests primarily focus on developing biomaterials for ocular drug delivery, in vitro eye models, microfluidics, and 3D printing. I am looking for collaborations to expand my lab-on-a-chip technology.

David Wulff | dwulff@uwaterloo.ca

Research Associate
School of Optometry and Vision Science,
University of Waterloo

My background is in chemical engineering and drug delivery, and my current work focuses on creating a 3D printed hydrogel model of the eye with the first goal being to use it for drug delivery testing. Potential collaborations could be to improve this system together, or to adapt our bioprinting capabilities for other applications.