

CURRICULUM VITAE

William Mark Whelan

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EDUCATION

- Ph.D.** Department of Physics and Astronomy (Medical Physics)
McMaster University, 1996.
Thesis: Dynamic Modeling of Interstitial Laser Photocoagulation in Soft Tissues
Supervisor: Dr. D. Wyman
- M.Sc.** Department of Physics and Astronomy (Health and Radiation Physics)
McMaster University, 1991.
Thesis: Laser Hyperthermia in the Vicinity of Large Blood Vessels
Supervisor: Dr. D. Wyman
- B.Sc.** Department of Physics
University of Prince Edward Island, 1988.

PROFESSIONAL CERTIFICATION

Professional Physicist, *P.Phys.*, issued by the Canadian Association of Physicists, 2003 - present.

ACADEMIC APPOINTMENTS

Full Professor, Department of Physics, University of Prince Edward Island and Department of Biomedical Sciences, Atlantic Veterinary College, 2010 – present.

Adjunct Professor, Department of Physics, Ryerson University, 2008 - present.

Canada Research Chair in Biomedical Optics, University of Prince Edward Island, 2008 – 2012.

Associate Professor, Department of Physics, University of Prince Edward Island and Department of Biomedical Sciences, Atlantic Veterinary College, 2008 – 2010.

Adjunct Professor, Medical Biophysics, Faculty of Medicine, University of Toronto, 1999 – 2009.

Associate Professor, Department of Physics, Ryerson University, 2001 - 2008.

Adjunct Professor, Medical Physics and Applied Radiation Sciences, McMaster University, 2000 - 2009.

Assistant Professor, Department of Physics, Ryerson University, 1996 - 2001.

CONSULTING

Prince Edward Island Cancer Treatment Centre, Charlottetown, 2005.

Photonics Research Ontario, Toronto, 1998 - 1999.

AWARDS / HONOURS

Distinguished Service Award, Youth Science Canada, 2020

Sovereign's Medal for Volunteers, 2016

Outstanding Service Award, Canadian Cancer Society, 2016

Dr. and Mrs. Satti Paddi and Parvati Reddy Memorial Lecturer (Inaugural), Memorial University, 2016.

Dr. Katherine Schultz Research Recognition Award, UPEI, 2014

Queen Elizabeth II Diamond Jubilee Medal, 2013.

Life Member Award, PEI Home and School Federation, 2012.

Best Poster Award, Prostate Cancer Foundation of Australia National Conference, Broad Beach, 2010.

Researcher Travel Award, Prostate Cancer Canada, 2010.

Best Poster Award, Canadian Organization of Medical Physicists Congress, Victoria, 2009.

Canada Research Chair, University of Prince Edward Island, 2008-2012.

Nomination, Sarwan Sarhota Distinguished Researcher Award, Ryerson University, 2006.

Researcher of the Month, Canadian Cancer Society (Ontario Division), September 2005.

Distinguished Service Award, Ryerson Faculty Association, Ryerson University, 2003.

Ryerson University, Merit Award for Exceptional Performance, 1998, 1999, 2001, 2002 and 2003.

Fellow, American Society for Laser Medicine and Surgery, 1998.

Nomination, by the School of Graduate Studies at McMaster University, for the 1997 Natural Sciences and Engineering Research Council of Canada Doctoral Prize.

Best Graduate Student Paper, 8th Annual Radiology Symposium, McMaster Univ. Medical Centre, 1996.

Natural Sciences and Engineering Research Council of Canada Postgraduate Scholarship, McMaster University, 1988 - 1990.

Centennial Scholarship, McMaster University, 1988 - 1990.

Natural Sciences and Engineering Research Council of Canada Summer Research Award, University of Prince Edward Island, 1987.

Full-Tuition Scholarship, University of Prince Edward Island, 1984-1988.

PROFESSION and UNIVERSITY SERVICE**External**

Chair, Canadian Association of Physicists (CAP) - NSERC Liaison Committee, 2014 - 2017.

National Director of Communications and Members, Canadian Association of Physicists, 2006 - 2009.

Professional Practice Examination Review Committee, Canadian Association of Physicists, 2006 - 2009.

Past-Chair, Canadian Association of Physicists, Division of Medical and Biological Physics, 2003 - 2005.
Chair, Canadian Association of Physicists, Division of Medical and Biological Physics, 2001 - 2003.
Canadian Association of Physicists, Scientific Program Committee, 2002 - 2003.
Photonics Research Ontario, Steering Committee on Photonics Education, 1997 - 2000.
Member, Canadian Association of Physicists, 1997 - present.
Member, International Society for Optics and Photonics, 2007 - present.
Member, American Society for Laser Medicine and Surgery, 1998 - 2007.
Member, Canadian Organization of Medical Physicists, 1995 - 2008.

UPEI

Chair, Research and Advocacy Committee, Faculty Association, 2014 – 2015.
Member, Scholarships and Awards Committee (NSERC programs), 2014
Chair, Professor Emeritus Committee, 2013 – 2015.
Member-at-Large, Faculty Association Executive, 2013 – 2015.
Member, University Review Committee (URC), 2013 – 2014.
Co-Chair, Ad Hoc Curriculum Planning Committee, 2013 – 2014.
Director, Physics Co-op Program, 2010 – 2015.
Member, Senate Research Advisory Committee, 2010 - 2015.
Member, Faculty Promotions Committee, Department of Biomedical Sciences, 2009.
Member, Advisory Board, Atlantic Centre for Comparative Biomedical Research, 2008 - 2012.

Ryerson

University Animal Care Committee, 2006 - 2008.
University Radiation Safety Committee, 2005 - 2008.
Departmental Appointments Committee (Physics), 2006 - 2007.
Faculty of Engineering, Architecture and Science Workload Norms Committee, 2005 - 2007.
Faculty of Engineering, Architecture and Science Promotions Committee, 2005.
Biomedical Physics (MSc) Graduate Program Coordinator, 2003 - 2005.
Canada Research Chair Selection Committee, 2002 - 2003.
School of Graduate Studies, Student Services Committee, 2000.
Chair, Faculty Association Professional Affairs Committee, 1999 - 2000.
Member, Faculty Association Professional Affairs Committee, 1997 - 1999.
University Joint Committee on Intellectual Property Issues, 1999 – 2000.

SCHOLARLY SERVICE

Member, Program Committee, Photons plus Ultrasound, BIOS Conference, SPIE, 2008 - 2018.
Member, Canadian Institutes of Health Research, Medical Physics and Imaging Panel, 2018.

Member, Canadian Cancer Society Research Institute, Innovation and Impact Grant Panel, 2018.

Member, NSERC Discovery Grant Review Panel 1505, 2013.

Member, NSERC Grant Selection Committee GSC-29 (General Physics), 2008 - 2010.

Member, PEI Graduate and Post-Doctoral Fellowships Review Committee, 2009.

Member, CIHR Peer Review Panel, Institute of Musculoskeletal Health and Arthritis, 2007.

Session Chair,

Therapy Monitoring and Guidance, BIOS, SPIE, San Francisco, February 2017.

Monitoring of Therapy, BIOS, SPIE, San Francisco, February 2014.

In Vivo Preclinical Imaging, BIOS, SPIE, San Francisco, January 2012.

Translation to Therapy Monitoring, BIOS, SPIE, San Francisco, January 2011.

Molecular Imaging, BIOS, SPIE, San Jose, January 2010.

Monitoring Thermal Lesions, BIOS, SPIE, San Jose, January 2009.

Biomedical Optics, Canadian Association of Physicists Congress, St. Catherines, 2006.

Biotechnologies & Biothermophotonics I and Biomedical Imaging, Canadian Association of Physicists Congress, Vancouver, June 2005.

Medical Applications of Sound: Imaging and Beyond, Canadian Association of Physicists Congress, Winnipeg, June 2004.

Biomedical Diagnostics and Instrumentation, Canadian Association of Physicists Congress, Charlottetown, June 2003.

Medical Imaging, Canadian Assoc. of Physicists Congress, Quebec City, June 2002.

The Physics of Medical Physics presented by Dr. Ervin Podgorsak, Canadian Association of Physicists Congress, Quebec City, June 2002.

Advances in Modeling of Thermal Therapies, World Congress on Medical Physics and Biomedical Engineering, Chicago, July 2000.

Referee, *Physics in Medicine and Biology*
Journal of Biomedical Optics
Journal of Applied Physics
Lasers in Surgery and Medicine
International Journal of Hyperthermia
Optical Engineering
International Journal of Thermophysics

Grant Reviews, NSERC (Discovery, Research Tools and Strategic Programs)
CIHR (Operating Grant Program)
Fonds de recherche sur la nature et les technologies (Québec)

Invited External Reviewer, Fundamentals of Physics, 6th Ed., Halliday / Resnick / Walker, 2001.

Judge, Best Student Paper, Young Investigators in Medical and Biological Physics, Canadian Association of Physicists Congress, Victoria, June 2001.

Invited Judge, Best Student Paper Competition, World Congress on Medical Physics and Biomedical Engineering, Chicago, July 2000.

COMMUNITY SERVICE

Co-Chair, Learning Partners Advisory Council, Jan 2016 – present.
Director, STEAM PEI, 2018 - present
Vice President, Education 2020, 2015-present.
Co-Chair, Prince Edward Island Science Fair, 2015 - present.
Chair, Prince Edward Island Science Fair, 2008 - 2015.
Member, PEI Post-Secondary Transitions Working Group, 2012 - 2014.
Chair, Canadian Cancer Society - PEI Division, 2012 – 2014.
Member, Island Advance Task Force, Charlottetown Area Chamber of Commerce, 2012 - 2013.
Panelist, Governor General's Canadian Leadership Conference, 2012.
Panelist, Roundtable on Canada's Linguistic Duality, Department of Canadian Heritage, 2012.
Director, National Board, Canadian Cancer Society, 2010 - 2012.
Co-Chair, PEI Host Committee, 2012 Canada Wide Science Fair, 2010 - 2012.
Co-Chair, PEI Education Governance Commission, 2011 - 2012.
President, PEI Home and School Federation, 2008 - 2010.
Member, Board of Directors, Canadian Cancer Society (PEI Division), 2005 – 2010.
Member, Provincial Advisory Committee on Information Technology in Education, Department of Education, Government of Prince Edward Island, 2004 – 2008.
Judge, Provincial Science Fair, University of Prince Edward Island, 2005 - 2006.
Judge, Sherwood Elementary School Science Fair, Charlottetown PEI, 2004 - 2006.
Panelist, Future Expectations on Learning, Annual Meeting of the PEI Home & School Federation, 2005.
Coordinator, Grade 3 Science Club, Sherwood Elementary School, Charlottetown, PEI, 2004 - 2005.

RESEARCH SUPPORT

Current

Canadian Institutes of Health Research – Rapid Call for Coronavirus Research
LabAnywhere: Technology for Detection of Coronavirus in Remote Settings
Co-Principal Investigators: **W. Whelan and A. Trivett** Award: \$356,000 (2020-2022)

Natural Sciences and Engineering Research Council of Canada - Discovery Grant
Novel optical technologies for in-field monitoring and characterization of agricultural products
Principal Investigator: **W. Whelan** Award: \$120,000 (2019-2024)

Previous

TELUS Mobility Ride for Dad
Optoacoustic imaging and spectroscopy for prostate cancer detection
Principal Investigator: **W. Whelan** Award: \$15,000 (2015 – 2018)

Natural Sciences and Engineering Research Council of Canada - Discovery Grant
An optical and optoacoustics platform for laser therapeutics
Principal Investigator: **W. Whelan** Award: \$110,000 (2011-2018)

Canadian Food Inspection Agency

Development of a LAMP-based hand-held device for on-the-spot identification of plant disease

Principal Investigator: A. Trivett

Award: \$ 246,000 (2013-2016)

Co-Investigators: **W. Whelan**, S. Li, B. Wagner*Atlantic Innovation Fund*

Biophotonics platform for real-time assessment of cancer therapy effectiveness

Principal Investigator: **W. Whelan**

Award: \$1,999,446 (2008-2015)

Co-Investigators: M. Kolios, A. Vitkin, B. Wagner, C. Riley

Canada Research Chair Program

UPEI Research Chair in Biomedical Optics

Principal Investigator: **W. Whelan**

Award: \$500,000 (2008-2012)

Canadian Institute for Photonics Innovation

Development of integrated optical bio-sensors for continuous real-time monitoring of cancer and infection progression, and therapy efficacy in living subjects

Principal Investigator: O. Levi

Award: \$300,000 (2008-2011)

Co-Investigator: **W. Whelan**, B. Wilson, G. Zheng*Canada Foundation for Innovation – Leaders Opportunity Fund*

Integrated optical platform for advancing biomedical physics

Principal Investigator: **W. Whelan**

Award: \$71,558 (2008-2011)

Canadian Institutes of Health Research

Integrated optical platform for real-time assessment of thermal therapy for prostate cancer

Principal Investigator: **W. Whelan**

Award: \$246,456 (2007-2010)

Co-Investigators: M. Kolios, A. Vitkin, R. Weersink

Natural Sciences and Engineering Research Council of Canada - Discovery Grant

A multitasking optical delivery and guidance system for laser heating of biomaterials

Principal Investigator: **W. Whelan**

Award: \$177,500 (2006-2011)

Canada Foundation for Innovation – LEF (and Ontario Innovation Trust)

Advanced biomedical ultrasound imaging and spectroscopy laboratory: from 1 to 1000MHz

Principal Investigator: M. Kolios

Award: \$784,450 (2007-2011)

Co-Investigators: **W. Whelan**, G. Czarnota, V. Yang*Canada Foundation for Innovation – LEF (and Ontario Innovation Trust)*

Facility for advanced bioacoustophotonics and biomolecular microfluidic photoacoustics

Principal Investigator: A. Mandelis

Award: \$1,682,421 (2007-2011)

Co-Investigators: **W. Whelan** plus 5 others*Natural Sciences and Engineering Research Council of Canada - Collaborative Health Research Grant*

Functional OptoAcoustic (fOA) imaging for monitoring and guiding cancer treatments

Principal Investigators: **M. Kolios / W. Whelan**

Award: \$336,439 (2006-2009)

Co-Investigator: G. Czarnota

Canada Foundation for Innovation

Operational Fund for Thermal Therapies

Principal Investigator: **W. Whelan**

Award: \$62,500 (2005-2008)

Co-Investigators: M. Kolios, A. Vitkin

National Cancer Institute of Canada/Canadian Cancer Society Research Grant

Optical monitoring and control of thermal therapy for recurrent prostate cancer

Principal Investigator: **W. Whelan**

Award: \$225,426 (2003-2006)

Co-Investigators: M. Kolios, A.Vitkin, M. Sherar

Canada Foundation for Innovation (Innovation Fund)

Facility for fundamental research / development of minimally invasive thermal therapies

Principal Investigator: **W. Whelan** Award: \$210,869 (2002-2006)

Co-Investigators: M. Kolios, A.Vitkin

Ontario Innovation Trust

Facility for fundamental research / development of minimally invasive thermal therapies

Principal Investigator: **W. Whelan** Award: \$210,869 (2002-2006)

Co-Investigators: M. Kolios, A.Vitkin

NSERC- Research Tools and Instruments Program

Scanning electron microscope – A Ryerson institutional facility

Principal Investigator: D. Chen Award: \$150,000 (2005-2006)

Co-Investigators: **W. Whelan** plus 13 others

Natural Sciences and Engineering Research Council of Canada Research Grant

Design and implementation of feedback control for laser heating in biomaterials

Principal Investigator: **W. Whelan** Award: \$144,480 (2002-2006)

Photonics Research Ontario

Technologies and applications for photodynamic therapy

Principal Investigator: B. Wilson Award: \$120,000 (2003-2004)

Co-Investigators: **W. Whelan**, M. Sherar, L.Lilge

Ryerson University

Development of photoacoustic imaging for monitoring thermal damage in tissues

Principal Investigator: **W. Whelan** Award: \$67,250 (2002-2003)

Co-Investigator: M. Kolios

Photonics Research Ontario

Technologies and applications for photodynamic therapy

Principal Investigator: B. Wilson Award: \$329,000 (2001-2003)

Co-Investigators: M. Sherar, L.Lilge, **W. Whelan**, M. Patterson

Natural Sciences and Engineering Research Council of Canada Research Grant

Optimization methods to control laser heating in biomaterials

Principal Investigator: **W. Whelan** Award: \$81,900 (1998-2002)

National Cancer Institute of Canada/Canadian Cancer Society Research Grant

Optical monitoring and automatic control of thermal therapy for prostate cancer

Principal Investigator: M. Sherar Award: \$62,000 (2001-2002)

Co-Investigators: **W. Whelan**, M. Kolios, A.Vitkin

National Cancer Institute of Canada/Canadian Cancer Society Research Grant

Treatment optimization and control of interstitial thermal therapy for prostate cancer

Principal Investigator: M. Sherar Award: \$305,484 (1999-2001)

Co-Investigators: **W. Whelan**, M. Kolios, A.Vitkin

Natural Sciences and Engineering Research Council of Canada Equipment Grant

Optical fiber characterization system for laser heating of biomaterials

Principal Investigator: **W. Whelan** Award: \$13,246 (2000)

Co-Investigators: M. Kolios, A.Vitkin

Ryerson Polytechnic University, Information Technology Grant

Medical Physics / Bioengineering Computer Laboratory

Principal Investigator: M. Kolios Award: \$30,000 (2000)

Co-Investigators: **W. Whelan**, G. Czarnota

Ryerson Polytechnic University Summer Research Assistant Grant,
Multiple input, multiple output PID controller for thermal therapy

Principal Investigator: **W. Whelan** Award: \$9,250 (2000)

Natural Sciences and Engineering Research Council of Canada Equipment Grant
Fluoroptic thermometry during heating of biomaterials

Principal Investigator: **W. Whelan** Award: \$38,293 (1999)

Co-Investigators: M. Kolios, A. Vitkin

Natural Sciences and Engineering Research Council of Canada Equipment Grant
Computer workstation for ultrasound modeling and visualization

Principal Investigator: M. Kolios Award: \$19,182 (1999)

Co-Investigator: **W. Whelan**

Ryerson Polytechnic University Summer and Fall Research Assistant Grant

A minimally invasive method for determining tissue optical properties

Principal Investigator: **W. Whelan** Award: \$9,250 (1999)

INDUSTRIAL RESEARCH COLLABORATIONS

Seno Medical Instruments (San Antonio, TX), "Commercialization of optoacoustic imaging system", 2006 - present.

Orthometrix Inc. (White Plains, NY), "Wholebody vibration therapies", 2006 - 2008.

Luxtron Corporation Inc. (Santa Clara, CA), "Multitasking optical probes for medical applications", 2005 – 2006.

CADMIT Inc. (Toronto ON), "Dosimetry for thermal and photodynamic therapies", 2003 – present.

TomoWave Laboratories Inc. (Houston TX), "Optoacoustic imaging of thermal damage during prostate thermal therapy", 2002 - present.

Monteris Medical Inc. (Winnipeg MB), "Treatment planning platform for laser thermal therapy", 2002 - 2004.

SUPERVISION OF STUDENTS AND RESEARCHERS

Graduate Students

Current

B. Cudmore (MSc, MMS, UPEI), Raman characterization of humulones. May 2018 – present (with D. Lawther).

Previous

S. Chauhan (MSc, MMS, UPEI), Gold nanocages as optical contrast agents for optical and optoacoustic imaging. May 2011 – present (with R. Bissessur).
(Currently, Quality Control Technician with BioVectra, PEI)

M. Patterson (Ph.D. Biomedical Sciences, Atlantic Veterinary College), Evaluation of optoacoustic frequency analysis sensitivity to discriminate healthy and neoplastic tissues and to monitor treatment-induced physiological changes. January 2009 – May 2014 (with C. Riley). AVC Graduate Student Scholarship (September 2009 – January 2011; \$31,300); Innovation PEI Scholarship (January 2011 – May 2014; \$60,000).

(Currently – Research Coordinator, UPEI Centre for Health and Biotechnology Management)

F. Che (Ph.D. Electrical and Computer Engineering, Dalhousie University), Investigation of surface plasmonic resonance of material surfaces for biomedical applications. September 2010 – December 2013 (with S. Grabtchak).

A. Laderoute (M.Sc. Physics, UPEI), Amplitude and frequency content analysis of optoacoustic signals in laser heated *ex-vivo* tissues. September 2010 – January 2013. NSERC Alexander Graham Bell Canada Graduate Scholarship (September 2010 - September 2011; \$17500); Innovation PEI Scholarship (September 2011 – September 2012; \$20,000).
(Currently - Teacher, EtonHouse Korea, South Korea)

E. Owen (M.Sc. Chemistry, UPEI), Investigations of a fluorescence based method for early detection of mastitis in dairy cows. September 2010 – October 2012 (with B. Wagner). Innovation PEI Scholarship (September 2011 – September 2012; \$20,000).
(Currently - Quality Assurance Technician, BioVectra)

R. Sadowski (M.Sc. Biomedical Physics, Ryerson University), Measuring the effects of temperature on optical propagation in heated tissues using Point Radiance Spectroscopy. September 2009 – 2011 (with R. Weersink).
(Currently - PhD Candidate, McMaster University)

H. Assi (MSc, Biomedical Physics, Ryerson University), A new CEM₄₃ thermal dose model based on Vogel-Tammann-Fulcher kinetics. September 2007 – September 2009 (with C. Kumaradas).
(Currently - PhD Candidate, Electrical Engineering, University of Toronto)

B. Lloyd (MSc, Medical Biophysics, University of Toronto), Characterization of non-homogeneous turbid media with spectroscopic radiance measurements from a single location. September 2005 - January 2009 (with I.A. Vitkin).
(Currently - Biomedical Engineer, Kardium)

M. Rodrigues (MSc, Biomedical Physics, Ryerson University), The potential of Raman spectroscopy as a monitoring tool for thermal therapy. September 2006 – July 2008.
(Currently - PhD Candidate, Laurentian University)

R. Castelino (MAsc, Electrical Engineering, Ryerson University), Biomedical applications of photoacoustics for thermal therapy. September 2005 - January 2008 (with M. Kolios).
(Currently - Ph.D. Candidate Medical Biophysics, University of Toronto)

L. Chin (PhD, Medical Biophysics, University of Toronto), Interstitial point radiance spectroscopy of turbid media. September 2000 – November 2007 (with I.A. Vitkin).
(Currently - Clinical Physicist, Sunnybrook Odette Cancer Centre)

M. Jain (MAsc, Electrical Engineering, Ryerson University), A thermal dose controller for laser interstitial thermal therapy. September 2004 - November 2006 (with C. Kumaradas).
(Currently - Research Engineer, Mathworks, Boston)

G. Spirou (MSc, Medical Biophysics, University of Toronto), An investigation of pulsed and frequency domain photoacoustics and their applicability to biomedical studies. September 2002 – November 2005 (with I.A. Vitkin).
(Currently - Postdoctoral Fellow, University of Ontario Institute of Technology)

M. Jarvi (MSc, Medical Biophysics, University of Toronto), In vitro and in vivo investigations of mild hyperthermic modulation of palladium-bacteriopheophorbide (WST09)-mediated photodynamic therapy doses. September 2001 – December 2004 (with B.C. Wilson).
(Currently - Ph.D. Candidate Medical Biophysics)

V. Choy (MSc, Medical Biophysics, University of Toronto), Real-time on-line fuzzy-logic controller for

laser interstitial thermal therapy. August 2000 – October 2003.
(Currently - DVM Candidate, University of Guelph)

Undergraduate Thesis

Previous

J. Mezger (Medical Technology, Furtwangen University), Development of a dynamic brain phantom for functional near-infrared spectroscopy. September 2019 – May 2020.

E. Goodwin (Biology, UPEI), Functional near-infrared spectroscopy of the brain during motor activity. September 2019 – May 2020 (with Joel Ross)

Q. Zhu (Physics, UPEI), Optical payload design for UPEI CubeSat, September 2018 – April 2019.

Y. Shen (Physics, UPEI), Raman spectroscopy study of the carotenoid biosynthesis pathway in Komeet tomatoes ripened on and off the vine, September 2015-April 2016 (with D. Lawther).

C. Darrach (Physics, UPEI), Localization of Methemoglobin in a Biologically-Relevant Tissue Phantom Using Point Radiance Spectroscopy. September 2011 - September 2012.

T. Palmer (Physics, UPEI), Development of an integrated optical bio-sensor for continuous real-time monitoring of infection progression. September 2010 – April 2011.

A. Laderoute (Physics, UPEI), Bone characterization using optoacoustic methods. Sept 2009 - April 2010.

J. McInnis (Chemistry, UPEI), Fluorescence detection of matrix metallo-proteins as a biomarker for bovine mastitis. September 2009 - April 2010 (with B. Wagner).

M. MacPhee (Physics, UPEI), Quantitative assessment of saddle fit using thermography. Sept 2007 – April 2008.

R. Sharma (Electrical and Computer Engineering, Ryerson), Experimental set-up for obtaining optical fluence measurements in biomaterials. September 2000 – April 2001.

N. Malhotra (Electrical and Computer Engineering, Ryerson), Design of closed loop feedback controller for interstitial laser thermal therapy. September 1999 - April 2000.

P. Kelcey (School of Computer Science, Ryerson), Treatment planning software for thermal therapy. September 1998 - April 1999.

R. Marra (School of Computer Science, Ryerson), Treatment planning software for thermal therapy. September 1998 - April 1999.

Research Assistants / Co-op Students

Previous

P. Chowdry (Physics, UPEI), Raman spectroscopy study of the carotenoid biosynthesis pathway in Komeet tomatoes, May 2016 - August 2016 (with D. Lawther).

S. Pitre (Physics, UPEI), Assessing tissue coagulation using Raman Spectroscopy. May - August 2015.

N. Palmer (Chemical Engineering, UNB), Development and testing of a microfluidic fluorescence device for DNA detection of crop diseases. May - August 2014.

J. Horrocks (Mathematics, UPEI), 3D visualization of tissue optical properties using radiance

spectroscopy. May - August 2014 (NSERC-USRA).

K. Callaghan (Physics, UPEI), Assessing tissue coagulation using amplitude and frequency based photoacoustics. May - August 2013 (NSERC-USRA).

L. Carr (Engineering, UPEI), Development and testing of a microfluidic device for DNA detection. May - August 2013 (NSERC-USRA - with A. Trivett).

J. Horrocks (Mathematics, UPEI), Characterization of gold nanocage contrast agents using optical spectroscopy. May - August 2013 (NSERC-USRA).

L. Montgomery (Physics, UPEI), Detecting tissue coagulation using point radiance spectroscopy. May - August 2013 (NSERC-USRA).

V. Stajic (Engineering, UPEI), Evaluation of a new laboratory process for amplifying and detecting DNA in plant samples. May - August 2013 (NSERC-USRA - with A. Trivett).

B. Hatheway (Co-op, Mechanical Engineering, Dalhousie), VCSEL sensor characterization for bovine mastitis detection. January – April 2011.

T. Palmer (Co-op, Physics, UPEI), Development of an integrated optical bio-sensor for continuous real-time monitoring of infection progression. May - August 2010.

C. Darrach (Co-op, Physics, UPEI), Developing a radiance approach for optical property determination. January – April, 2010.

B. Hopkins (Chemistry, UPEI), Fabrication of gold nanoshells as optoacoustic contrast agents. May 2009 – December 2009 (with R. Bissasseur).

A. Laderoute (Co-op, Physics, UPEI), Bone characterization using optoacoustic imaging. May - Aug 2009 and NSERC-USRA May-Aug 2010.

M. MacPhee (Physics, UPEI), Characterization of a new optoacoustic imaging system. May - Aug 2008 (NSERC-USRA).

K. Lund (Physics, UPEI), Characterization of a new optoacoustic imaging system. May - Aug 2008.

B. MacEwen (Co-op, Physics, UPEI), Thermographic analysis of foot ulcer potential in diabetics. May - Aug 2006.

M. Brookshaw (Engineering/Physics, UPEI), Rotational radiance probe for monitoring laser thermal therapies. May 2004 - April 2006 (NSERC-USRA). Breast thermography: a phantom study, May - Aug 2005 (NSERC-USRA).

M. Hennessey (Physics, UPEI), Strategy to locate optical sensors in tissues. January - April 2004, February 2005 - April 2005.

J. Ma (Physics, UPEI), Estimating source-sensor positions during laser therapy. February - April 2005.

M. MacPhee (Physics, UPEI), Measuring tissue emissivity. February - April 2005.

S. Cousins (Engineering, UPEI), LABVIEW interface for rotational radiance probe. February - April 2005.

E. Martin (Co-op Waterloo), Reflectance / Transmission system for determining optical properties of tissues. Sept - Dec 2004.

G. Robertson (Physics, UPEI), Experimental studies of tissue charring during thermal therapy. July - December 2004.

A. Hughes (Physics, UPEI), Conceptual design of multitasking optical-thermal probe for laser thermal therapy. January- April 2004.

P. Murphy (Physics, UPEI), Conceptual design of multitasking optical-thermal probe for laser thermal therapy. January – April 2004.

P. Chun (Electrical and Computer Engineering, Ryerson), A minimally invasive method for determining tissue optical properties. October 2001 - May 2002.

O. Falou (School of Computer Science, Ryerson), Software development for translation system, May 2001 - Aug 2001.

T. Schaer (Electrical and Computer Engineering, Ryerson), Hardware development for translation system. May 2001 – Aug 2001.

B. Balasingan (Electrical and Computer Engineering, Ryerson), PID control of interstitial thermal therapy. May 2000 - August 2000

R. Sharma (Electrical and Computer Engineering, Ryerson), Experimental set-up for obtaining optical fluence measurements in biomaterials. May 2000 - August 2000.

P. Chun (Electrical and Computer Engineering, Ryerson), A minimally invasive method for determining tissue optical properties. May 1999 - May 2000.

P. Ariyanayagam (Electrical and Computer Engineering, Ryerson), Modification and evaluation of temperature reconstruction algorithms for on-line control of thermal therapy. May 1998 - April 1999.

P. Chak (Electrical and Computer Engineering, Ryerson), Finite element modeling of thermal propagation in biomaterials. September 1997 - March 1998.

Engineering Design Students

Previous

H. MacDonald, C. Morgan and T. Sole (Engineering, UPEI), Design and fabrication of an endoscopic optical probe for the characterization of human prostate tissues. September 2013 – April 2014.

K. Baker, A. Doiron, C. O'Neill, and T. Speelman (Engineering, UPEI), Design and fabrication of a housing and delivery module for the optical detection of bovine mastitis. September 2012 – April 2013.

Research Scientists / Post Doctoral Fellows / Technicians

Previous

Dr. Serge Grabtchak, University of Prince Edward Island, November 2008 – August 2015.

Mr. Arthur Worthington, Ryerson University, September 2003 – June 2010.

Dr. Behrouz Soroushian, Ryerson University, January 2009 – June 2010.

Mr. M. Arsenault University of Prince Edward Island, July 2008 - October 2009.

Dr. Mark Gertner, Ryerson University, September 2005 - February 2006.

Dr. Reina Lamothe, University of PEI, July 2005 – May 2006.

Mr. Sean Davidson, Ontario Cancer Institute, September 2001 – May 2006.

Graduate Thesis Supervisory / Examination CommitteesPrevious (all MSc.)

- R. Pinto, Medical Biophysics, Ryerson University, 2016.
- B. Mc Keown, Human Biology, University of Prince Edward Island, 2015.
- B. Deziel, Department of Biology, University of Prince Edward Island, 2011.
- M. Tabibi, Biomedical Physics, Ryerson University, 2010.
- N. Davies-Shawhyde, Department of Medical Biophysics, University of Toronto, 2006.
- C. McCann, Institute of Biomaterials and Biomedical Engineering, University of Toronto, 2002.
- M. Iizuka, Department of Medical Biophysics, University of Toronto, 1998.

RESEARCH CONTRIBUTIONS (students are underlined)**Invited Talks**

- “Optoacoustic Imaging and Spectroscopy” Institut für Lasertechnologien in der Medizin und Meßtechnik, University of Ulm, Germany, 2016.
- “Optoacoustic imaging: lightning and thunder in tissues”, Memorial University, St John's, 2016.
- “Spectroscopy toolbox for cancer detection and therapy guidance”, Department of Physics and Physical Oceanography, Memorial University, 2016.
- “Optoacoustic imaging: lightning and thunder in tissues”, Department of Physics, St Francis Xavier University, 2015.
- “Optoacoustic imaging: lightning and thunder in tissues”, Department of Biomedical Engineering, Dalhousie University, 2015.
- “Optoacoustic Imaging: Lightning and Thunder in Tissues”, Canadian Association of Physicists National Lecture Tour, Ryerson University, University of British Columbia, University of the Fraser Valley, University of Northern British Columbia, Trinity Western University, 2015.
- “Optoacoustic Imaging and Spectroscopy for Biomedical Diagnostics”, 3rd International Conference Frontiers in Diagnostic Technologies, Frascati, Italy, 2013.
- “Listening to cancers with optoacoustics”, Department of Physics and Atmospheric Science, Dalhousie University, March 2013.
- “Listening to cancers with optoacoustics”, Physics Department, Mount Allison University, November 2012.
- “An optical toolbox for guiding laser therapeutics”, Shanghai Jiao Tong University, Shanghai, China, 2011.
- “Functional Photoacoustic Imaging in Biomedicine” Department of Biomedical Engineering, Dalhousie University, November 2009.
- “Non-invasive characterization of turbid media using optoacoustics”, 6th International SAOT (School of Advanced Optical Technologies) Workshop on Optics in Medicine, Erlangen, Germany, June 2009.

“Optoacoustic detection of tissue damage during thermal therapy”, Canadian Association of Physicists Congress, University of Moncton, June 2009.

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