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Protected when completed

Dr. Kevin Cecil Hewitt

Correspondence language: English
Sex: Male
Date of Birth: 11/05
Designated Group: Visible Minority
Canadian Residency Status: Canadian Citizen
Country of Citizenship: Canada

Contact Information

The primary information is denoted by (*)

Address

Courier

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Primary Affiliation (*)

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Protected when completed

Dr. Kevin Hewitt

Language Skills

Language	Read	Write	Speak	Understand	Peer Review
English	Yes	Yes	Yes	Yes	Yes
French	No	No	No	No	No

Degrees

1992/9 - 2000/2 — Doctorate, Doctor of Philosophy, Physics, Simon Fraser University
Degree Status: Completed

Supervisors: Dr. J. C. Irwin, 1992/9 - 2000/2

1986/9 - 1992/4 — Bachelor's, Bachelor of Science, Physics Specialist and Biology Major, University of Toronto
Degree Status: Completed

Supervisors: Dr. M. J. G. Lee, 1991/9 - 1992/4

Credentials

2003/4 — P. Phys., Canadian Association of Physicists
Physics

Recognitions

2025/3 — Robert J Holland Jr Award for Research and Leadership - 5,000
Research Corporation for Science Advancement
Prize / Award
International award for senior scientists with exemplary records in research, leadership, and mentoring. They join the Cottrell Scholar community as recipients of Research Corporation for Science Advancement’s Robert Holland Jr. Award. The awards, which come with a $5,000 cash prize, honor the late Robert Holland Jr., an engineer and corporate executive who served on RCSA’s Board of Directors.

2023/1 — Queen Elizabeth II's Platinum Jubilee Medal
Office of the Lieutenant Governor of Nova Scotia
Honor
Honour Canadians who have shown the same dedication to service and their communities which Her Late Majesty demonstrated throughout Her more than 70 years as Queen of Canada.

2021/5 Rosemary Gill Award for outstanding service to students
Dalhousie University
Prize / Award
In June of 1995 the President approved the establishment of the Rosemary Gill Award in memory of Dr. Rosemary Gill, Director of Student Health Services, who exemplified a high level of commitment of service to students, both in terms of her responsibilities as a physician on campus and as a member of the larger University community. Awards are presented annually to a member or members of faculty or staff of the University who have provided outstanding service, other than teaching, to students.

2021/4 Joan and Dr. Kevin Hewitt Sankofa scholarship - 48,000
Dalhousie University
Prize / Award
Dalhousie University established this scholarship, named for my mother and I, for international students from the Caribbean in honor of my service as Chair of the Dalhousie Senate. It offers mentoring, tutoring and other wrap around support to the recipient.

2021/2 - 2021/12 NSERC Award for Science Promotion (Individual) - 10,000
Natural Sciences and Engineering Research Council of Canada (NSERC)
Prize / Award
The NSERC Awards for Science Promotion honour individuals and groups that are inspirational in the way they promote science to the general public. The awards are an opportunity for Canada’s science community to recognize, support and encourage outstanding science promoters. First Dalhousie recipient, and second from Nova Scotia to be recognized.

2018/11 Nova Scotia Science champion
Discovery Centre of Nova Scotia
Prize / Award
Outstanding Achievement in Promoting Science and Technology to the Public

2017/11 Nova Scotia Discovery Centre Science Champion finalist
Discovery centre of Nova Scotia
Distinction
Provincial recognition for Outstanding achievement in promoting science and technology to the public

2014/4 Harry Jerome Award for Professional Excellence (Canadian dollar)
BBPA
Prize / Award
National recognition for significant contribution to new ideas, processes, practices and insights in a field or business; Wide-ranging impact and scope; Significant contribution to the success of the enterprise.

2012/11 Nova Scotia Discovery Centre Science Champion finalist
Discovery Centre of Nova Scotia
Distinction
Provincial recognition for outstanding achievement in promoting Science and Technology to the Public

2011/11 Nova Scotia Discovery Centre Science Champion finalist
Discovery Centre of Nova Scotia
Distinction
Provincial recognition for outstanding achievement in promoting Science and Technology to the Public

2008/11	Nova Scotia Discovery Centre Science Champion finalist Discovery Centre of Nova Scotia Distinction Provincial recognition for outstanding achievement in promoting Science and Technology to the Public
2001/11	NSERC Post-doctoral Industrial Research Fellowship Natural Sciences and Engineering Research Council of Canada (NSERC) Prize / Award Post-doctoral award tenable in an industrial research setting. I declined the award.
1999/10	Youth Community Service Award - 0 St. Vincent and the Grenadines Association of BC Prize / Award Awarded by the St. Vincent and the Grenadines Association of Greater Vancouver for community work
1996/9 - 1997/9	Graduate Research and Engineering Technology (GREAT) scholarship - 25,000 (Canadian dollar) Science Council of British Columbia Prize / Award Award applicable to research projects in the natural and applied sciences performed in cooperation with agencies (e.g., companies) outside the University.
1992/5 - 1992/8	NSERC Undergraduate summer research Award - 8,000 (Canadian dollar) Natural Sciences and Engineering Research Council of Canada (NSERC) Prize / Award Award to undertake research as an undergraduate at a post-secondary institution.
1991/5 - 1991/8	NSERC Undergraduate summer research award - 8,000 (Canadian dollar) Natural Sciences and Engineering Research Council of Canada (NSERC) Prize / Award Award to undertake research as an undergraduate at a post-secondary institution.
1990/1	University of Toronto Physics Prize University of Toronto at Scarborough Prize / Award Awarded to the top Physics student at the University of Toronto - Scarborough College campus

User Profile

Engaged in Clinical Research?: No

Research Interests: Gold and silver based nanoprobes have been created in the past year to target the Epidermal Growth Factor Receptor which is overexpressed on the cells of many cancers. In the coming year Raman spectroscopy will be used to image the distribution of these cancer biomarkers in cell culture, tissue constructs and small animal models.

Fields of Application: Biomedical Aspects of Human Health

Disciplines Trained In: Physics

Technological Applications: Medical equipment, Monitoring and diagnostic equipment, Radiology / Imaging

Areas of Research: Cancer Diagnosis and Detection, Growth Factors, Nanoparticles, Optics and Photonics, Organic Molecules and Biomolecules

Research Specialization Keywords: Raman spectroscopy, Surface Enhanced Raman Spectroscopy, Stimulated Raman Spectroscopy, Cancer imaging, Holography, Raman endoscopy, Lasers, Nanoparticle synthesis, Optical instrumentation, Combi Materials Science, Condensed matter physics, Magnetron sputtering, Superconductivity

Research Centres: Kelsey Trail Regional Health Authority

Research Disciplines: Physics, Biology and Related Sciences

Employment

2022/9
Associate Dean of Equity and Inclusion
Physics and Atmospheric Science, Science, Dalhousie University
Full-time, Professor
Tenure Status: Tenure
Develop, implement and oversee the equity, diversity and inclusion efforts of the Faculty of Science.

2018/7
Full Professor
Physics and Atmospheric Science, Faculty of Science, Dalhousie University
Full-time
Tenure Status: Tenure

2008/1
Adjunct Professor
Physics and Astronomy, Faculty of Science, Laurentian University of Sudbury
Part-time, Adjunct
Tenure Status: Tenure

2026/2 - 2030/6
Adjunct Member to the Graduate Program in Education
Graduate Program in Education, Education, York University
Part-time
Tenure Status: Tenure

2023/9 - 2028/8
Natural Sciences and Engineering Research Council of Canada - Chair for Inclusion in Science and Engineering
Physics and Atmospheric Science, Faculty of Science, Dalhousie University
Full-time, Professor
Tenure Status: Tenure
The goal of the Chairs for Inclusion in Science and Engineering (CISE) program is to support teams of natural sciences and engineering (NSE) researchers across Canada who contribute to a culture of inclusion in the NSE by catalyzing networks of supporters of this work, promoting equity and inclusion in the research ecosystem, and undertaking activities to enhance awareness and understanding of barriers and inequities faced by members of underrepresented groups in these fields.

2015/7 - 2021/6
Chair of the Dalhousie Senate
Physics, Science, Dalhousie University
Part-time, Term
Tenure Status: Tenure
Oversee the business of and chairs meetings of Senate (re-elected twice)

2006/7 - 2018/6
Associate Professor
Physics and Atmospheric Science, science, Dalhousie University
Full-time, Associate Professor
Tenure Status: Tenure

2011/9 - 2015/6
Graduate Program Coordinator
Physics and Atmospheric Science, Science, Dalhousie University
Part-time, Term, Associate Professor
Tenure Status: Non Tenure Track
Manage the Physics and Atmospheric Science graduate program

2011/10 - 2012/7 Visiting Associate Professor
School of Medicine, Faculty of Medicine, Stanford University
Full-time, Visiting Professorship
Tenure Status: Non Tenure Track
Development of nanoparticle probes for Surface enhanced Raman spectrocopy

2011/10 - 2012/7 Visiting Scientist
Integrative oncology, Imaging Unit, BC Cancer Agency
Full-time, Visiting Professorship
Tenure Status: Non Tenure Track

2012/2 - 2012/4 Visiting Professor
Laboratory of Biomedical Vibrational Spectroscopy, Institute for Research and Development, Universidade do Valedo Paraíba
Full-time, Visiting Professorship
Tenure Status: Non Tenure Track
Introduce novel nanoparticle functionalization processes.

2008/1 - 2008/8 Visiting Professor
Physics, Science, Simon Fraser University
Full-time, Visiting Professorship
Tenure Status: Non Tenure Track
Transition from condensed matter physics to bionanophotonics research areas

2001/9 - 2006/6 Assistant Professor
Physics and Atmospheric Science, Faculty of Science, Dalhousie University
Full-time, Assistant Professor
Tenure Status: Tenure Track

2004/4 - 2004/4 Visiting Professor
Physics, Science, Addis Ababa University
Full-time, Visiting Professorship, Associate Professor
Tenure Status: Non Tenure Track

2000/2 - 2001/8 Post-doctoral fellow
Physics and Atmospheric Science, Faculty of Science, Dalhousie University
Full-time, Term
Tenure Status: Non Tenure Track

Affiliations

The primary affiliation is denoted by (*)

2022/9 Associate Dean of Science, Dalhousie University

(*) 2018/7 Full Professor, Physics and Atmospheric Science, Dalhousie University

Leaves of Absence and Impact on Research

2026/3 - 2026/10 Medical, Dalhousie University
Medical leave for lung and prostate cancer surgery and treatment.

2021/7 - 2022/6	Sabbatical, Dalhousie University During the leave, I conducted research visits to Vanderbilt University, BC Cancer Agency, Institut Fresnel, Imperial College London to advance research along two directions: (1) Optical diagnostic tool for assessing Liver steatosis and (2) Molecular holography. At Vanderbilt we were able to expand the use of the tool for skin hydration studies and cemented research relationship with Andrea Locke. At Institut Fresnel and Imperial College London we advanced our understanding of stimulated optical spectroscopies. At the BC Cancer Agency we explored the use of the device for skin cancer applications.
2013/9 - 2013/12	Parental, Dalhousie University Single parental leave to care for my daughter (7 months - 11 months of age at the time)
2011/7 - 2012/6	Sabbatical, Dalhousie University Sabbatical leave to conduct research at Stanford University (Palo Alto, CA), BC Cancer Agency (Vancouver, BC) and the Universidade do Vale do Paraiba (San Jose dos Campos, Brazil) Cemented the transition of my research program from Condensed matter physics (Superconductivity) to Bio/Medical physics by: (1) conducting initial experiments with Stanford collaborators in Surface Enhanced Stimulated Raman and (2) initiating collaboration with Brazilian scientists on a therapeutic and diagnostic approach for Epidermal Growth Factor Receptor overexpressing cancers and (3) initiating a collaboration with BC Cancer agency researchers to re-envision a fibre optic medical diagnostic tool towards liver transplantation applications.
2008/1 - 2008/6	Sabbatical, Dalhousie University Sabbatical leave at Simon Fraser University to conduct research in a new area (Surface Enhanced Raman spectroscopy in living cells); transition from Condensed matter physics (Superconductivity) to Bionanophotonics.

Research Funding History

Awarded [n=13]

2026/1 - 2030/12
Co-applicant

EDIT-STEM: A technological platform for advancing equity, diversity, and inclusion in the natural sciences and engineering, Grant

Funding Sources:

Natural Sciences and Engineering Research Council of Canada (NSERC)
Alliance - Society
Total Funding - 1,671,832
Portion of Funding Received - 5,000
Funding Competitive?: Yes

Co-applicant : Chan, A; Cruickshank, CA; Hellmans, K; McQuaid, R; Melcer, E; Orji, R; Salmaso, N;

Co-knowledge User : Burke, K; Carmichael, T; Dupuis, M; Hartell, D; Poupart, J; Pulido, B; Quinn, S; Whelan, W;

Principal Investigator : Chaisson, S

2023/9 - 2029/8
Principal Investigator

NSERC Chairs for Inclusion in Science and Engineering - NSERC Post-doc funding support, Research Chair

Funding Sources:

Natural Sciences and Engineering Research Council of Canada (NSERC)
NSERC Chairs for Inclusion in Science and Engineering
Total Funding - 200,000
Portion of Funding Received - 125,000
Funding Competitive?: Yes

2023/9 - 2029/8
Principal Investigator

NSERC Chairs for Inclusion in Science and Engineering, Atlantic, Research Chair

Funding Sources:

Natural Sciences and Engineering Research Council of Canada (NSERC)
NSERC Chairs for Inclusion in Science and Engineering
Total Funding - 1,400,000
Portion of Funding Received - 700,000
Funding Competitive?: Yes

Principal Investigator : Barkanova, Svetlana; MacQuarrie, Stephanie

2023/9 - 2029/8
Principal Investigator

NSERC Chairs for Inclusion in Science and Engineering - Dalhousie Faculty of Science Post-doc matching support, Research Chair

Funding Sources:

Dalhousie University
Post-doc support - NSERC Chairs for Inclusion in Science and Engineering
Total Funding - 150,000
Portion of Funding Received - 150,000
Funding Competitive?: Yes

2023/9 - 2029/8
Principal Investigator

NSERC Chair for Inclusion in Science and Engineering - Dalhousie VP Research and Innovation support, Research Chair

Funding Sources:

Dalhousie University
VP Research and Innovation support for CISE chairs
Total Funding - 25,000
Portion of Funding Received - 25,000
Funding Competitive?: Yes

2023/9 - 2029/8
Principal Investigator

NSERC Chair for Inclusion in Science and Engineering - Dalhousie Faculty of Science support, Research Chair

Funding Sources:

Dalhousie University
CISE Atlantic support
Total Funding - 50,000
Portion of Funding Received - 50,000
Funding Competitive?: Yes

2022/4 - 2029/3
Principal Investigator

Molecular Holography: A 3D Highly Multiplexed Alternative to Fluorescence Microscopy, Grant

Funding Sources:

Natural Sciences and Engineering Research Council of Canada (NSERC)
Discovery Grant
Total Funding - 196,000
Portion of Funding Received - 196,000
Funding Competitive?: Yes

2025/4 - 2028/3
Principal Investigator

Bringing STEM to Life: Work-Integrated Learning Program in Physics - Nova Scotia Pilot Program 2025, Grant

Funding Sources:

Natural Sciences and Engineering Research Council of Canada (NSERC)
Promoscience
Total Funding - 202,500
Portion of Funding Received - 202,500
Funding Competitive?: Yes

2026/1 - 2027/12
Collaborator

Supporting SHIFTS in Research Practices: Adapting an Inclusive Research Self-Assessment Tool to Foster Inclusion & Track Progress in Academic Research

Funding Sources:

University of Toronto
Connaught Major Research Challenge for Black Researchers
Total Funding - 250,000
Portion of Funding Received - 10,000
Funding Competitive?: Yes

Principal Applicant : Andrade, M

2022/9 - 2027/8
Principal Investigator

Associate Dean of Science - Stipend, Grant

Funding Sources:

Dalhousie University
Associate Dean support
Total Funding - 25,000
Portion of Funding Received - 25,000
Funding Competitive?: No

2026/3 - 2027/2
Co-applicant

From Scholarship Reconsidered to Scholarship Recognized: Adapting Boyer’s model to integrate EDID into Canadian tenure and promotion processes, Grant

Funding Sources:

Natural Sciences and Engineering Research Council of Canada (NSERC)
Dimensions Canada Grant
Total Funding - 100,000
Portion of Funding Received - 10,000
Funding Competitive?: Yes

Co-applicant : Hindmarch, Suzanne; MacQuarrie, Stephanie; Odendaal, Tamara; Sidhu-Brar, Japna

2025/10 - 2026/9
Co-applicant

Re-imagining community, relationality, and belonging for Research Corporation for Science Advancement (RCSA) scholars, Grant

Funding Sources:

Research corporation for science advancement
2025 Cottrell Scholar Collaborative Awards
Total Funding - 25,000
Portion of Funding Received - 1,500
Funding Competitive?: Yes

Co-applicant : Alvine Kamaha; Angel Marti; Camille Avestruz; Carlos Arguelles Delgado; Charles McCrory; Javier Duarte; Jorge Munoz; Liliana Rivera Sandoval; Luisa Whittaker-Brooks; Luis Colon; Raychelle Burks; Rosario Porras-Aguilar; Victoria Villar;

Principal Investigator : Enrico Ramirez-Ruiz

2021/3 - 2022/3
Co-applicant

Spectroscopy and Artificial Intelligence to disrupt the status quo in Cervical Cancer Screening, Grant

Funding Sources:

2021/4 - 2023/3 Canadian Cancer Society
Novel Technology Applications in Cancer Prevention and Early Detection (SPARK-21)
Total Funding - 140,483 (Canadian dollar)
Portion of Funding Received - 46,224
Funding Competitive?: Yes

Completed [n=34]

2025/4 - 2026/3
Principal Investigator

Bringing STEM to Life: Work-Integrated Learning Program in Physics - Nova Scotia Pilot Program 2025, Contract

Funding Sources:

McDonald Institute for AstroParticle Physics
Bringing STEM to Life: Work Integrated Learning in Physics
Total Funding - 107,000
Portion of Funding Received - 107,000
Funding Competitive?: No

2021/3 - 2025/12
Co-investigator

Securing Black Futures: A National Partnership to Advance Youth Academic & Career Success, Contract

Funding Sources:

RBC Foundation
Future Launch
Total Funding - 1,200,000
Portion of Funding Received - 150,000
Funding Competitive?: Yes

Co-investigator : Annette Henry; Jennifer Adams; Juliet Daniel;

Principal Applicant : Carl James

2025/7 - 2025/7
Principal Investigator

Bringing STEM to life: Work Integrated Learning in Physics Nova Scotia pilot, Contract

Funding Sources:

Nova Scotia Department of Education and Early Childhood development
Bringing STEM to Life: Work Integrated Learning in Physics
Total Funding - 6,000
Portion of Funding Received - 6,000
Funding Competitive?: No

2022/1 - 2023/4
Principal Applicant

Optical device for accurate and real-time assessment of liver fat content in human subjects, Grant

Funding Sources:

InNOVAcorp (Nova Scotia)
Early Stage Commercialization Fund - Phase 2
Total Funding - 50,000
Portion of Funding Received - 50,000
Funding Competitive?: Yes

Co-investigator : Alwayn, Ian; Gala-Lopez, Boris; Zeng, Haishan

2022/8 - 2023/3
Principal Investigator

Optical device for accurate and real-time assessment of liver fat content in human subjects.

Funding Sources:

Springboard Atlantic
Innovation Mobilisation (IM)
Total Funding - 15,563
Portion of Funding Received - 15,563
Funding Competitive?: Yes

2022/3 - 2023/3
Principal Applicant

Reviving Dalhousie's institutional links to the University of West Indies through enhanced research collaboration: Embedding a Dalhousie-created molecular characterization tool to understand the prevalence of uterine fibroids among Black women in the

Funding Sources:

Department of Foreign Affairs Trade and Development
Faculty Mobility for Partnership Building (FMPB)
Total Funding - 7,000
Portion of Funding Received - 7,000
Funding Competitive?: Yes

2022/1 - 2023/1
Principal Applicant

Molecular Holography: PI and PhD student mobility to introduce a 3D Highly Multiplexed Alternative to Fluorescence Microscopy to Photonics institutes leaders in France and Spain

Funding Sources:

Dalhousie University
Dalhousie Vice#President Research and Innovation International Seed Fund
Total Funding - 5,000
Portion of Funding Received - 5,000
Funding Competitive?: Yes

2016/4 - 2022/3
Principal Applicant

Molecular Holography, Grant, Operating
Clinical Research Project?: No
Project Description: Imagine being able to simultaneously and uniquely track hundreds of molecules or proteins in a cell in three dimensions at millisecond rates. To achieve

this goal I propose to combine a molecular-specific light scattering technique (Stimulated Raman spectroscopy - SRS) with the well-known three-dimensional imaging capability of holography, to create molecular holograms. Combining the techniques requires the integration of wavelength-tunable and fixed-wavelength lasers, pinhole, lock-in amplifier and detector; along with the requisite software, developed at Dalhousie, to reconstruct the image. Molecular holography would capture the 3D distribution of a large number of biomolecules with one exposure (holography). Unlike fluorescence imaging our technique has the potential to be label-free, thereby avoiding the perturbing effect of a foreign flurophore agent. In the long term, label-free molecular holography could supplant fluorescence imaging as the cell biologists' modality of choice.
Research Uptake: Collaboration with Holography spin-off company, Resolution Optics

Research Uptake Stakeholders: Industry/Business-Small (<100 employees)

Funding by Year:

2020/4 - 2021/3	Total Funding - 20,000 (Canadian dollar) Portion of Funding Received - 20,000 (Canadian dollar) Time Commitment: 30
2019/4 - 2020/3	Total Funding - 20,000 (Canadian dollar) Portion of Funding Received - 20,000 (Canadian dollar) Time Commitment: 30
2018/4 - 2019/3	Total Funding - 20,000 (Canadian dollar) Portion of Funding Received - 20,000 (Canadian dollar) Time Commitment: 30
2017/4 - 2018/3	Total Funding - 20,000 (Canadian dollar) Portion of Funding Received - 20,000 (Canadian dollar) Time Commitment: 30
2016/4 - 2017/3	Total Funding - 20,000 (Canadian dollar) Portion of Funding Received - 20,000 (Canadian dollar) Time Commitment: 30

Funding Sources:

2016/4 - 2021/3	Natural Sciences and Engineering Research Council of Canada (NSERC) Discovery Grants Total Funding - 132,000 (Canadian dollar) Portion of Funding Received - 132,000 (Canadian dollar) Funding Renewable?: Yes Funding Competitive?: Yes Funding Reference Number: RGPIN-2016-05018

2019/4 - 2021/3
Co-applicant

Plasmon-Enhanced Electrochemical Conversion of Nitrogen to Ammonia using Ceramic Nanoparticles, Grant

Funding Sources:

2019/4 - 2021/3	Canada Research Co-ordinating Committee, Tri-Agency Institutional Secretariat (CIHR, NSERC, SSHRC) New Frontiers in Research Fund - Exploration Total Funding - 250,000 (Canadian dollar) Portion of Funding Received - 80,000 Funding Competitive?: Yes

2020/5 - 2020/8
Principal Investigator

Optical device for accurate and real-time assessment of liver fat content in human subjects, Grant

Funding Sources:

Mathematics of Information Technology and Complex Systems (MITACS)
Accelerate Entrepreneur
Total Funding - 7,500
Portion of Funding Received - 7,500
Funding Competitive?: Yes

I-INC
Innovation and Entrepreneurship
Total Funding - 7,500
Portion of Funding Received - 7,500
Funding Competitive?: Yes

Co-applicant : Gou, Hao

2017/8 - 2019/7
Co-investigator

Use of bifunctional nanoparticles for Photodynamic therapy of breast cancer in animal models, Contract

Funding Sources:

2012/1 - 2012/12 Fundação de Amparo à Pesquisa do Estado de São Paulo (FAPESP) (State of São Paulo Research Foundation)
SPRINT – São Paulo Researchers in International Collaboration
Total Funding - 14,503 (Canadian dollar)
Portion of Funding Received - 12,500
Funding Competitive?: Yes

Co-investigator : Raniero, Leandro

2017/5 - 2018/5
Principal Applicant

Prototype optical instrument for real-time assessment of liver fat content in human subjects, Grant

Funding Sources:

2017/1 - 2018/1 Springboard Atlantic
Marketing support
Total Funding - 9,750 (Canadian dollar)
Portion of Funding Received - 9,750
Funding Competitive?: Yes

Co-applicant : Alwayn, Ian; Zeng, Haishan

2017/10 - 2018/2
Principal Applicant

Exploring multi-institutional links to St. Vincent and the Grenadines Community College, Scholarship

Funding Sources:

Department of Foreign Affairs and International Trade (Canada)
Canada-CARICOM Faculty Leadership
Total Funding - 3,000
Portion of Funding Received - 3,000
Funding Competitive?: Yes

2017/1 - 2018/1
Principal Applicant

Accurate and real-time assessment of liver fat content in human subjects using a Raman fiber optic probe, Grant

Funding Sources:

2016/9 - 2017/9 InNOVAcorp (Nova Scotia)
Early Stage commercialization fund, Phase 1
Total Funding - 32,000 (Canadian dollar)
Portion of Funding Received - 32,000
Funding Competitive?: Yes

Co-applicant : Alwayn, Ian; Zeng, Haishan

2015/11 - 2016/10
Co-investigator

Accurate and real-time assessment of liver fat content in human subjects during surgery using a high throughput Raman fiber optic probe., Grant

Funding Sources:

2015/11 - 2016/10 Springboard Atlantic
Springboard Innovation Mobilization Program P&L, PoC, MS Award Application
Total Funding - 30,000 (Canadian dollar)
Portion of Funding Received - 30,000
Funding Competitive?: Yes

Co-investigator : Haishan Zeng; Ian Alwayn

2015/7 - 2016/6
Principal Applicant

Lasers for molecular holography, Grant

Funding Sources:

2015/7 - 2016/6 Dalhousie University
University Research grant
Total Funding - 40,000 (Canadian dollar)
Portion of Funding Received - 40,000
Funding Competitive?: No

2014/1 - 2016/4
Principal Applicant

Theranostic nanoparticles for breast cancer imaging and treatment, Grant

Funding by Year:

2015/1 - 2015/12 Total Funding - 51,200
Portion of Funding Received - 51,200
Time Commitment: 30

2014/1 - 2014/12 Total Funding - 51,200
Portion of Funding Received - 51,200
Time Commitment: 30

Funding Sources:

2014/1 - 2016/4 Department of Foreign Affairs and International Trade (Canada)
Canada-Brazil awards Joint-Research Projects
Total Funding - 31,500 (Canadian dollar)
Portion of Funding Received - 31,500
Funding Competitive?: Yes

2012/6 - 2015/6
Co-investigator

Terapia fotodinâmica associadas à nanopartículas funcionalizadas para o tratamento de câncer de mama (Photodynamic therapy associated with functionalized nanoparticles for breast cancer treatment), Grant, Operating
Project Description: A motivação deste tema é a engenharia de um medicamento inteligente, capaz de identificar células tumorais, permear através de sua membrana, e ao ser excitado pela luz, reagir, induzindo a formação de citotoxinas que levem a morte celular. Para além de servir de nanossonda sinalizadoras nas análises de imagens. Este projeto reuni 3 tópicos de extremo interesse científico. Primeiramente a construção de uma nanossonda metálica composta de uma nanopartícula ligada a uma proteína seletora

e a um fotossensibilizador. O modelamento computacional matemático do conjunto possibilitará entender e estudar a forma mais estável das nanossondas, permitindo a elaboração de um protocolo eficiente para sua síntese. Aplicação das nanossondas em animais irá permitir estudar a seletividade das nanossondas e a sua eficiência no tratamento. (The motivation of this research proposal is the intelligent engineering of a drug, capable of identifying tumor cells, to permeate through the membrane and to be excit

Funding by Year:

2015/5 - 2016/4	Total Funding - 46,479 Portion of Funding Received - 21,000 Time Commitment: 50
2014/5 - 2015/4	Total Funding - 46,479 Portion of Funding Received - 21,000 Time Commitment: 50
2013/5 - 2014/4	Total Funding - 46,479 Portion of Funding Received - 21,000 Time Commitment: 50

Funding Sources:

2013/1 - 2016/1	Conselho Nacional de Desenvolvimento Científico e Tecnológico (CNPq) (Brazil) PROGRAMA CIÊNCIA SEM FRONTEIRAS (Science Without Borders) Total Funding - 139,437 (Canadian dollar) Portion of Funding Received - 63,000 Funding Competitive?: Yes

Principal Investigator : Raniero, Leandro

2012/2 - 2015/2
Principal Investigator

Imhotep Legacy Academy (ILA), Grant, Operating
Project Description: Imhotep's Legacy Academy (ILA) is an effective and successful provincial, STEM outreach organization established in 2003, built on a strong University-Community partnership. It aims to redress the under-representation of African Canadians in post-secondary STEM studies. ILA offers three programs: (1) The After School Program (ILASP) (grade 7, 8, 9) delivers STEM enrichment activities in a participatory and casual atmosphere; (2) The virtual school program (ILVSP), launched in 2009, is tailored to provide tutoring and supplemental education support in science and math to high school students; (3) The 4-month long Spring-Summer Studentship Program (SSSP) offers post-secondary students the skills building and community leadership development tools needed to succeed in today's global environment. In 2012, we hope to add, with support from Promoscience funding, First Lego League (FLL) robot design and programming activities to our suite of program offerings.

Funding by Year:

2014/2 - 2015/1	Total Funding - 16,711 Portion of Funding Received - 16,711 Time Commitment: 20
2013/2 - 2014/1	Total Funding - 16,711 Portion of Funding Received - 16,711 Time Commitment: 20
2012/2 - 2013/1	Total Funding - 16,711 Portion of Funding Received - 16,711 Time Commitment: 20

Funding Sources:

2012/2 - 2015/2 Natural Sciences and Engineering Research Council of Canada (NSERC)
Promoscience
Total Funding - 50,133 (Canadian dollar)
Portion of Funding Received - 50,133
Funding Competitive?: Yes

Principal Investigator : Kevin Hewitt

2012/2 - 2012/4
Co-investigator

Imaging breast cancer using SERS, Grant
Project Description: A number of cancers are characterized by overexpression of the Epidermal Growth Factor receptor (EGFR), a membrane tyrosine kinase which mediates cell growth, proliferation and differentiation in multiple tissues. Many epithelial tumors express high numbers of EGF receptors, and receptor levels are associated with poor clinical prognosis. Therapies that target these receptors have shown promise and a monoclonal antibody with the trade name Herceptin is currently being used to treat breast cancer. However, the treatment is also associated with cardiac arrest. We have developed a protein linker composed of EGF, the ligand for EGFR, and a molecule containing a group with high affinity for noble metals to mediate attachment to gold or silver nanoparticles, and have shown that contrast of 100:1 at 1450 cm-1 is possible. Once the protein is attached to the nanoparticles, imaging of cancer cells with Surface Enhanced Raman Spectroscopy (SERS) should become possible.

Funding by Year:

2012/2 - 2012/4 Total Funding - 14,503
Portion of Funding Received - 14,503
Time Commitment: 80

Funding Sources:

2012/2 - 2012/4 Fundação de Amparo à Pesquisa do Estado de São Paulo (FAPESP) (State of São Paulo Research Foundation)
Visiting Researcher Award
Total Funding - 14,503 (Canadian dollar)
Portion of Funding Received - 14,503
Funding Competitive?: Yes

Principal Investigator : Martin, Airton

2011/10 - 2011/11
Principal Investigator

Targeted nanomedicines for cancer detection using surface enhanced Raman spectroscopy, Grant
Clinical Research Project?: No
Project Description: Epidermal Growth Factor receptor (EGFR) is a membrane tyrosine kinase over-produced on the surface of certain cancers. We have developed a nanocarrier consisting of metal nanoparticles coupled to a protein specific to EGFR. Through collaboration with Dr. Sanjiv Gambhir and the Molecular Imaging Program at Stanford (MIPS) University, we wish to compare existing methods of cancer detection and treatment with a selective method involving surface enhanced Raman spectroscopy (SERS) of a nanocarrier. This research will study how the nanocarriers move, where they end up, and whether shining light on them enhances the light tissue interaction adequately to destroy cancerous tissue through photothermal therapy. The advancement of this cancer detection and treatment platform here could impact the lives of Nova Scotians more rapidly than new techniques developed elsewhere.

Funding by Year:

2011/10 - 2011/11
Total Funding - 2,000
Portion of Funding Received - 2,000
Time Commitment: 10

Funding Sources:

2011/10 - 2011/11
Nova Scotia Health Research Foundation (NSHRF)
Research Skills Award
Total Funding - 2,000 (Canadian dollar)
Portion of Funding Received - 2,000
Funding Competitive?: Yes

Principal Investigator : Kevin Hewitt

2010/5 - 2011/4
Principal Investigator

Enhanced imaging and photothermal therapy of cancers overexpressing EGFR, Grant, Operating

Project Description: According to the 2003 Canada census, Nova Scotians lead the country in breast cancer mortality rates. Early identification of cancers coupled with effective treatment is perhaps the most important means to reduce mortality rates. Current pre-screening methods do not provide specific biochemical information; rather it detects morphological changes which are associated with both benign and malignant tumors. Identifying non-invasive, rapid, specific techniques to detect cancers at an early stage would have an enormous impact on the health of Nova Scotians. The technique of Raman spectroscopy offers an imaging modality to address this question, as it provides a fingerprint of the molecule under study. The weak nature of the process has limited its applicability thus far. However, to enhance the process one may introduce small metal nanoparticles to the illuminated region. Gold nanoparticles tagged with a human growth factor, among others, are used to target the cells for imaging.

Funding by Year:

2010/5 - 2011/4
Total Funding - 15,000
Portion of Funding Received - 15,000
Time Commitment: 40

Funding Sources:

2010/5 - 2011/4
Nova Scotia Health Research Foundation (NSHRF)
Development/Innovation grant
Total Funding - 15,000 (Canadian dollar)
Portion of Funding Received - 15,000
Funding Competitive?: Yes

Principal Investigator : Kevin Hewitt

2003/3 - 2010/4
Principal Investigator

Low energy - high spatial resolution Raman spectroscopy, Grant, Operating

Project Description: This grant supports the operation of the T64000 microRaman spectrometer, and includes operating costs for: liquid nitrogen for the CCD detector, replacement optics (e.g. holographic notch filters, laser line filters, objective lens). In addition, it supports the salary of part-time technical support personnel.

Funding by Year:

2009/5 - 2010/4
Total Funding - 23,000
Portion of Funding Received - 23,000
Time Commitment: 20

Funding Sources:

2003/3 - 2010/4 Canada Foundation for Innovation (CFI)
Infrastructure Operating Fund
Total Funding - 42,631 (Canadian dollar)
Portion of Funding Received - 42,631
Funding Competitive?: Yes

Principal Investigator : Kevin Hewitt

2005/4 - 2010/3
Principal Investigator

Application of a novel composition spread approach to densely map the electronic properties of high temperature superconductors, Grant, Operating
Project Description: This grant supports the application of a spatial composition spread approach to densely map the electronic properties of cuprate superconductors. To a large extent, the tremendous benefits of superconducting technology has not yet been realized as the cuprate class of superconductors require cooling using liquid nitrogen. Moreover, despite eighteen years of intensive research, the mechanism of superconductivity in these materials remains unknown. To distinguish among competing theories it is necessary to have a denser map of the relationship between temperature and the number of charge carriers. We have developed a method to prepare a quasi-continuous map of phase space using magnetron sputtering combined with physical masking techniques, to make a more precise quantitative determination of the functional form of the phase transitions/ cross-overs. With a better understanding of the phase diagram and mechanism of pairing, superconductors with higher Tc's will be synthesized.

Funding by Year:

2009/4 - 2010/3 Total Funding - 25,000
Portion of Funding Received - 25,000
Time Commitment: 40

2008/4 - 2009/3 Total Funding - 25,000
Portion of Funding Received - 25,000
Time Commitment: 30

2007/4 - 2008/3 Total Funding - 25,000
Portion of Funding Received - 25,000
Time Commitment: 30

2006/4 - 2007/3 Total Funding - 25,000
Portion of Funding Received - 25,000
Time Commitment: 30

2005/4 - 2006/3 Total Funding - 25,000
Portion of Funding Received - 25,000
Time Commitment: 30

Funding Sources:

2005/4 - 2010/3 Natural Sciences and Engineering Research Council of Canada (NSERC)
Discovery grant
Total Funding - 125,000 (Canadian dollar)
Portion of Funding Received - 125,000
Funding Competitive?: Yes

Principal Investigator : Kevin Hewitt

2008/4 - 2009/3
Co-investigator

High Pressure Cell for physical property determination, Grant, Equipment
Project Description: Physical properties of materials change considerably as the conditions around them change: on lowering temperature, metals can become

superconductors; on increasing magnetic field, superconductivity can be suppressed; on increasing pressure, insulators can become metals. The new understanding of physical properties of materials gained over the last several decades can be traced to new technologies that have allowed exploration of the domains of extremes of temperature, magnetic fields and pressure. It can be argued that pressure exploration has lagged behind extreme temperatures and even behind (the somewhat more specialized) magnetic field studies, largely because of technological difficulties. The purpose of this proposal is to fund equipment that will allow determination of electrical properties of materials at pressures up to 3 GPa, and temperatures down to 2 K.

Funding by Year:

2008/4 - 2009/3 Total Funding - 76,243
Portion of Funding Received - 0
Time Commitment: 0

Funding Sources:

2008/4 - 2009/3 Natural Sciences and Engineering Research Council of Canada (NSERC)
Research Tools and Instruments
Total Funding - 76,243 (Canadian dollar)
Portion of Funding Received - 0
Funding Competitive?: Yes

Principal Investigator : White, M. A.

2006/11 - 2008/12
Co-investigator

Expansion of the Center for Excellence in Materials Discovery, Grant, Equipment
Project Description: The focus of this application is to expand the previously funded Centre of Excellence in Materials Discovery. We are requesting three pieces of equipment that will gain enable significant new interactions with industrial and government organizations and will continue to allow the applicants and their collaborators to be at the international forefront in Materials Discovery. Advances in our quality of life are closely linked to the discovery of new materials. Traditionally, the search for new materials has been made "one-by-one". Combinatorial and High Throughput Materials Science (CMS), where one prepares a wide range of functional materials, having a variety of compositions, in a single experiment, has been and is being adopted by Canada's major competitors. This method can more rapidly lead to discovery of new materials with desired properties, accelerating discovery by a factor of hundreds or even more.

Funding Sources:

2006/11 - 2008/12 Canada Foundation for Innovation (CFI)
Leading Edge Fund
Total Funding - 1,028,560 (Canadian dollar)
Portion of Funding Received - 0
Funding Competitive?: Yes

Principal Investigator : Dahn, Jeffrey R.

2008/5 - 2008/8
Principal Investigator

Spectroscopic detection of cancerous tissue, Grant
Project Description: This grant partially supports the salary of a summer co-op student who will continue research in the area of spectroscopic detection of cancerous tissues by Raman spectroscopy.The student will explore novel methods for the detection of cancerous tissue. In particular, the student will investigate spectroscopic methods to detect the human epithelial carcinoma cell line, A431, using a laser light scattering technique, Raman spectroscopy. The studies will use a T64000 Raman spectrometer, one of only two in Canada. The student will learn a variety of skills by utilizing several characterization tools: UV-VIS absorption spectrometer, Atomic Force Microscope, Electrophoresis, Transmission electron microscope, Vacuum evaporator and Raman

spectrometer. In addition, the student will develop expertise in metal nanoparticle preparation and purification using colloidal synthesis of nanoparticles and dialysis; as well as operating a tunable Ti:Sapphire and Ar-ion lasers.

Funding by Year:

2008/5 - 2008/8 Total Funding - 3,780
Portion of Funding Received - 3,780
Time Commitment: 25

Funding Sources:

2008/5 - 2008/8 Nova Scotia Economic Development
Cooperative Employment Summer 2008
Total Funding - 3,780 (Canadian dollar)
Portion of Funding Received - 3,780
Funding Competitive?: Yes

Principal Investigator : Kevin Hewitt

2007/5 - 2007/8
Principal Investigator

Spectroscopic detection of cancerous tissue, Grant
Project Description: This grant supported the salary of a summer co-op student who began research in the area of spectroscopic detection of cancerous tissues by Raman spectroscopy. The student will explore novel methods for the detection of cancerous tissue (e.g. Epithelial cancerous cell line, A431) using a laser light scattering technique, Raman spectroscopy. The studies will use a T64000 Raman spectrometer, one of only two in Canada. The student will learn a variety of skills by utilizing several characterization tools: UV-VIS absorption spectrometer, Atomic Force Microscope, Electrophoresis, Transmission electron microscope, Vacuum evaporator and Raman spectrometer.
In addition, the student will develop expertise in metal nanoparticle preparation and purification using colloidal synthesis of nanoparticles and dialysis; as well as operating a tunable Ti:Sapphire and Ar-ion lasers. Duties include the collection, analysis and interpretation of data. In addition, the successful applicant will disseminate the results in oral and/or written format and prepare a report at the end of the summer. The job is best suited to a 3rd or 4th year student in Physics, Microbiology and Immunology, Chemistry or Engineering who is hard-working and motivated to conduct experiments both independently and as part of a team in a research environment.

Funding Sources:

2007/5 - 2007/8 Nova Scotia Economic Development
Cooperative Employment Summer 2007
Total Funding - 3,738 (Canadian dollar)
Funding Competitive?: Yes

Principal Investigator : Kevin Hewitt

2005/4 - 2006/3
Co-investigator

Centre for excellence in materials discovery, Grant, Equipment
Project Description: The focus of this application is to create a Centre for Excellence in Materials Discovery. This application is lead by five innovative Materials Researchers requesting infrastructure to fuel enhanced innovation. We are requesting five pieces of equipment that will enable significant new interactions with industrial and government organizations and will allow the applicants and their collaborators to be at the international forefront in Materials Discovery. Combinatorial and High Throughput Materials Science (CMS), where one prepares a wide range of functional materials, having a variety of compositions, in a single experiment, is being adopted by Canada's major competitors. Many industrial (e.g. GE, BASF, Bayer, DuPont, Dow Chemical, 3M, Elf-Atochem, Symyx, etc.) government and academic laboratories now use CMS in their materials discovery efforts. This method can more rapidly lead to discovery of new materials with desired properties, accelerating discovery by a factor of hundreds or even more. This is of critical

importance to society because it more rapidly leads to new and improved products. One goal of our application is to enable Canadian organizations to become proficient at CMS. Some Canadian researchers are now recognizing the importance of combinatorial methods. There are four other combinatorial or high throughput synthesis facilities described in Notices of Intent in this CFI competition. Three of these are multi-million dollar proposals that focus primarily on drug and catalyst discovery. On the other hand, our proposal is much more modest because our infrastructure is primarily established, and our proposal targets functional materials, not molecules, as the primary focus. The Dalhousie Institute for Research in Materials has recognized the importance of CMS a number of years ago and has moved rapidly to implement CMS at Dalhousie University. It is our goal to build a Centre for Excellence in Materials Discovery using combinatorial methods as the pr

Funding Sources:

2005/4 - 2006/3 Canada Foundation for Innovation (CFI)
Innovation fund
Total Funding - 599,900 (Canadian dollar)
Funding Competitive?: Yes

Principal Investigator : Dahn, J. R.

2002/4 - 2005/3
Principal Investigator

Raman Scattering, combinatorial materials science & superconductivity, Grant, Operating
Project Description: From generators to transformers, transmission and distribution to motors, wire forms the basic building block of the world¿s electric power system. The principal cause of power loss is the inherent electrical resistance of the wire. When cooled to appropriately low temperatures, superconductors transmit current without resistance. In an era of increasing power demand, the development of appropriate superconductor technology will have an obvious, positive impact on energy efficiency. Recognizing this benefit, the US department of Energy announced, on September 26, 2001, a $117 million program to accelerate the demonstration of high temperature superconductor power products. To a large extent, the tremendous cost, size, weight and efficiency benefits of superconducting technology have not yet been realized as a result of two limiting factors: (1) the superconducting transition temperature (Tc) and (2) the brittle nature of these ceramics. Copper oxide based superconductors require cooling using liquid nitrogen and as such there is a heavy cost associated with isolating the superconductor from the environment. Progress has been made in the materials development phase with the introduction of appropriately processed tape. Fifteen years after the discovery of superconductivity in copper oxide based compounds (cuprates) and eight years after the record of -109 degrees Celsius was established, researchers are still searching for a complete understanding of the wealth of novel properties. Some of the most important pieces of information come from light scattering experiments such as Raman spectroscopy. While Canadian researchers have been recognized as world leaders in the field of superconductivity, a serious search for novel materials has not begun. In this regard, Combinatorial Materials Science techniques offer a means of synthesizing new materials at an accelerated rate compared with conventional preparation methods. Instead of synthesizing thousands of compositions

Funding Sources:

2002/4 - 2005/3 Natural Sciences and Engineering Research Council of Canada (NSERC)
Research Grants - Individual
Total Funding - 96,000 (Canadian dollar)
Funding Competitive?: Yes

Principal Investigator : Kevin Hewitt

2003/3 - 2004/4 Low energy - high spatial resolution Raman spectroscopy, Grant, Equipment

Principal Investigator

Project Description: This grant was used to purchase a microRaman triple grating spectrometer, the T64000, and renovate our lab. Raman spectroscopy (RS) is the measurement and study of the inelastic scattering of light. The Raman spectrum is a signature of the collective and single-particle excitations of the materials under study and, as such, RS is an excellent characterization tool. Lattice vibrations (i.e. phonons), magnetic excitations (e.g. magnons), and electronic excitations can all be detected and studied using Raman spectroscopy. Solids, liquids, gases in a variety of environments (e.g. high/low pressure, high/low temperature) can all be investigated with this unique, non-destructive probe. Thus researchers across all disciplines utilize the technique of Raman spectroscopy in elucidating material properties of interest. There are two important factors in choosing a Raman spectrometer, optimized for appropriate spatial and spectroscopic information. First, a Raman spectrometer should be able to filter the intense, elastically scattered laser light. This determines whether low frequency features of interest can be observed. When filtered efficiently, one can probe scattering at frequencies as low as 8 cm-1 = 1 meV. Of the three existing filtering methods, triple grating spectrographs offer a significant advantage over other wavelengthspecific techniques. Triple grating spectrographs use the dispersion properties of a grating. Upon being diffracted from the first grating, the spatially separated wavelength components of the elastically scattered light are filtered by the knife edge of an adjustable internal slit. Thus the slit functions as a tuneable spatial filter and is able to remove the unwanted elastically scattered wavelength in the Ultraviolet, Visible and Near-Infrared regions of the electromagnetic spectrum. A second grating is arranged in subtractive mode to undo the dispersion of the first. The last grating then disperses the light onto the CCD detector. If the secon

Funding Sources:

2003/3 - 2004/4 Canada Foundation for Innovation (CFI)
New Opportunities fund
Total Funding - 500,607 (Canadian dollar)
Funding Competitive?: Yes

Principal Investigator : Kevin Hewitt

2002/3 - 2003/3
Lasers, optical cryostat & ccd detector for raman triple spectrometer, Grant, Equipment

Principal Investigator

Project Description: Two lasers (Argon ion and Ti:Sapphire) a CCD detector and optical cryostats (2K-450K) were obtained with this grant in completing our home-made Triple grating macro Raman system. Improving the material properties of technologically relevant products usually relies on a firm understanding of the applicable physics. Technologies based on high temperature superconductors have made a modest impact on the market but have held promise for some years. A greater share of the technology market will be realised if two properties are improved: the superconducting transition temperature (Tc) and the brittle nature of these ceramics. Fifteen years after the discovery of superconductivity in copper oxide based compounds (cuprates), researchers are still searching for a complete understanding of the wealth of novel properties. Some of the most important pieces of information come from light scattering experiments. Raman spectroscopy is an inelastic light scattering technique that has proven to be an effective probe of the magnetism, charge carrier properties and ionic motion that ultimately affects the physical properties of this class of superconductors. This proposal seeks to obtain funding for components to add to a unique triple grating spectrometer, found at only one other location in the world, for use in high resolution Raman spectroscopy experiments. First, an Argon Ion Laser is required to cover the Ultraviolet and Visible regions of the spectrum. Pumping a Ti:Sapphire laser with the same Argon ion laser will allow for the production of Infrared light, tunable from 700-1000nm. Together with a CCD detector, sensitive in the 200-1000 nm range, the lasers will offer significant advantage in revealing wavelength-dependent features. For temperature dependent studies two types of helium

cryostats are needed which use - (a) a closed cycle refrigeration system for use in the temperature range 10 K-475 K and (b) a continuous flow system for use at temperatures to <2K. System (a

Funding Sources:

2002/3 - 2003/3	Natural Sciences and Engineering Research Council of Canada (NSERC) Equipment grant Total Funding - 156,656 (Canadian dollar) Funding Competitive?: Yes

Principal Investigator : Kevin Hewitt

2002/3 - 2003/3
Co-investigator

Combinatorial Materials Science Equipment, Grant, Equipment
Project Description: This grant was used to purchase equipment related to our combinatorial materials science effort.

Funding Sources:

2002/3 - 2003/3	Natural Sciences and Engineering Research Council of Canada (NSERC) Major Installation Total Funding - 136,831 (Canadian dollar) Funding Competitive?: Yes

Principal Investigator : Dahn, J. R.

2001/9 - 2002/9
Principal Investigator

Raman spectroscopy and superconductivity

Funding Sources:

2001/9 - 2002/9	Dalhousie University Start-up funds Total Funding - 90,000 (Canadian dollar) Funding Competitive?: Yes

Principal Investigator : Kevin Hewitt

Student/Postdoctoral Supervision

Bachelor's [n=20]

2026/5 - 2026/8
Principal Supervisor

Adeoye, Tomi, Dalhousie University
Thesis/Project Title: Optimizing the AuNP-based aggregation assay, including testing probe lengths, aptamer density, and experimental conditions to improve assay performance.
Present Position: 2nd year undergraduate student: Medical Sciences

2026/5 - 2026/8
Principal Supervisor

Mahendru, Namya, Dalhousie University
Thesis/Project Title: Refining the fluorescence-based sensing assay, with a focus on expanding quantitative analysis, sensitivity, and reproducibility for 25-OH-D detection.
Present Position: 4th yr undergraduate: Honours in Neuroscience with a Minor in Statistics

2025/5 - 2025/8
Principal Supervisor

Samantha Kieyele (In Progress) , Dalhousie University
Student Degree Expected Date: 2029/5
Thesis/Project Title: Point-of-need device for Vitamin D detection: Optimizing aptamer loading on nanoparticles
Present Position: Undergraduate Student - Microbiology and Immunology

2025/5 - 2025/8 Principal Supervisor	Eshaa Amer (In Progress) , Dalhousie University Thesis/Project Title: Point-of-needdevice for Vitamin D detection: Implications for mental health treatment Present Position: Undergraduate Student - Psychology
2024/8 - 2024/8 Co-Supervisor	Ahmed Galal (In Progress) , Dalhousie University Thesis/Project Title: Apatamer based biosensing of Hydroxyvitamin D3 Present Position: Undergraduate Student - Medical Physics
2024/8 - 2024/8 Co-Supervisor	Ty Martin (In Progress) , Dalhousie University Thesis/Project Title: Vitamin D detection using aptamers Present Position: Undergraduate Student - Medical Physics
2023/5 - 2023/8 Principal Supervisor	Jordan Adamski, Dalhousie University Student Canadian Residency Status: Canadian Citizen Thesis/Project Title: *A surface-enhanced Raman spectroscopy-based assay for the detection of vitamin D;* ***optical response***
2023/5 - 2023/8 Principal Supervisor	Ahmed, Ispeeta (In Progress) , Dalhousie University Thesis/Project Title: A surface-enhanced Raman spectroscopy-based assay for the detection of vitamin D; nanoparticle functionalization Present Position: BEng candidate
2023/5 - 2023/8 Co-Supervisor	Vanessa Smith (In Progress) , Dalhousie University Student Canadian Residency Status: Canadian Citizen Thesis/Project Title: Systematic Review: Vitamin D and Uterine Fibroids
2023/5 - 2023/8 Principal Supervisor	Parth Maheta (In Progress) , Dalhousie University Student Canadian Residency Status: Study Permit Thesis/Project Title: *A surface-enhanced Raman spectroscopy-based assay for the detection of vitamin D;* ***nanoparticle synthesis***
2023/5 - 2023/8 Principal Supervisor	Kate Thomson (In Progress) , Dalhousie University Student Canadian Residency Status: Canadian Citizen Thesis/Project Title: Integrating HeAlZe device into Vitamin D assay
2021/1 - 2021/4 Principal Supervisor	Caleb Galbraith (In Progress) , Dalhousie University Student Degree Expected Date: 2025/5 Thesis/Project Title: Continuous Wave Surface Enhanced Stimulated Raman Spectroscopy to Analyze Biomolecules Present Position: BSc candidate - Biochemistry/Molecular biology & Microbiology/ Immunology, Dalhousie University
2021/1 - 2021/4 Principal Supervisor	Emily Butler (In Progress) , Dalhousie University Student Degree Expected Date: 2025/5 Thesis/Project Title: Continuous Wave Surface Enhanced Stimulated Raman Spectroscopy to Analyze Biomolecule Present Position: BSc candidate - Biochemistry and Molecular Biology, Dalhousie University
2021/1 - 2021/4 Principal Supervisor	Diana Adamo (Completed) , Dalhousie University Thesis/Project Title: Continuous Wave Surface Enhanced Stimulated Raman Spectroscopy to Analyze Biomolecules Present Position: Dalhousie's 94th Rhodes Scholar, Oxford University

2020/1 - 2020/4
Principal Supervisor
Teagan Milligan (In Progress) , Dalhousie University
Student Degree Expected Date: 2024/5
Thesis/Project Title: Second-generation optical device for accurate and real-time assessment of liver fat content in humansubjects
Present Position: BSc candidate - Major in psychology & Minor in biology, Dalhousie University

2020/1 - 2020/4
Principal Supervisor
Xander Gouws (In Progress) , Dalhousie University
Student Degree Expected Date: 2024/5
Thesis/Project Title: Second-generation optical device for accurate and real-time assessment of liver fat content in human subjects
Present Position: BSc candidate - Combined Honours in Physics and Chemistry with a Minor in Mathematics, Dalhousie University

2020/1 - 2020/4
Principal Supervisor
Alex Liaukovich (In Progress) , Dalhousie University
Student Degree Expected Date: 2024/5
Thesis/Project Title: Second-generation optical device for accurate and real-time assessment of liver fat content in humansubjects
Present Position: BSc candidate - Medical Sciences program, Dalhousie University

2019/6 - 2019/7
Principal Supervisor
Lucie Maarek (Completed) , Aix-Marseille Universite
Thesis/Project Title: Medical diagnostic tool for liver fat detection [French internship student]
Present Position: BSc - Mathematics/Physics/Chemistry/Computer Science - Year 4, Centrale Supélec - 2nd engineering school in France.

2019/5 - 2019/8
Principal Supervisor
Alexandria Mitchell (Completed) , Dalhousie University
Thesis/Project Title: Real-time assessment of liver fat content using a photonic crystal fiber-optic sensor.
Present Position: PhD Candidate, Medical Physics, Dalhousie University

2017/11 - 2017/12
Principal Supervisor
Mathilde Lusseau (Completed) , Aix-Marseille Université
Thesis/Project Title: Stimulated Raman spectroscopy using continuous wave lasers [French internship student]
Present Position: Diplôme d'Ingénieur degree student, Ecole des Mines

Bachelor’s Honours [n=16]

2019/9 - 2020/4
Principal Supervisor
Alexandria Mitchell (Completed) , Dalhousie University
Thesis/Project Title: Optical diagnostic tool for liver steatosis detection
Present Position: Medical Physics PhD candidate, Dalhousie University

2017/9 - 2017/12
Principal Supervisor
Ravi Rai (Completed) , Dalhousie University
Student Degree Start Date: 2014/9
Thesis/Project Title: Continuous Wave Simulated Surface Enhanced Raman Spectroscopy
Project Description: Ravi will set up and test a Stimulated Surface Enhanced Raman spectroscopy experiment and confirm the polarization, power and concentration dependence of the stimulated emission.
Present Position: MSc candidate - Mathematics, Dalhousie University

2014/9 - 2015/4
Principal Supervisor
Allan Hupman (Completed) , Dalhousie University
Student Degree Start Date: 2009/9
Student Degree Received Date: 2015/5
Thesis/Project Title: Synthesizing Silver Dimers for Surface Enhanced Raman Spectroscopy
Project Description: Core-shell silver-gold nanoparticles
Present Position: Medical Physics Resident, Sunnybrook Hospital (Toronto, ON)

2014/5 - 2014/8
Co-Supervisor

Samia Baroudi (Completed) , Dalhousie University
Student Degree Start Date: 2010/9
Student Degree Received Date: 2014/5
Student Canadian Residency Status: Canadian Citizen
Thesis/Project Title: Biodistribution of EGF nanoprobes in mice models
Project Description: The biodistribution of nanoprobes designed in our labs are tested for uptake in mice models. Following tail vein injection, urine are feces are collected over a 24 hour period, and the organs are harvested. ICPMS is used to determine the levels of gold and silver in the organs.
Present Position: MD candidate, Dalhousie University

Student Recognitions

2014 - 2014 Imhotep's Legacy Academy - Faculty of Science Summer research award - 6,500 (Canadian dollar)
Dalhousie University
Prize / Award

2014/5 - 2014/8
Co-Supervisor

Allan Hupman (Completed) , Dalhousie University
Student Degree Start Date: 2009/9
Student Degree Received Date: 2014/5
Student Canadian Residency Status: Canadian Citizen
Thesis/Project Title: Synthesis of silver-gold core-shell nanoparticles for cancer imaging applications.
Project Description: 40 nm silver-gold core-shell nanoparticles are synthesized, then bioconjugated to a growth factor receptor which binds to EGFR overexpressing cancer cells.
Present Position: PhD candidate, Medical Physics, Dalhousie University

Student Recognitions

2014 - 2014 NSERC USRA - 4,500 (Canadian dollar)
Natural Sciences and Engineering Research Council of Canada (NSERC)
Prize / Award

2013/9 - 2014/4
Principal Supervisor

Chris Lee (Completed) , Dalhousie University
Student Degree Start Date: 2009/9
Student Degree Received Date: 2014/5
Student Canadian Residency Status: Canadian Citizen
Thesis/Project Title: Raman spectroscopy and holography
Project Description: Holographic Raman imaging
Present Position: Master's candidate

2011/5 - 2011/8
Co-Supervisor

Javad Ghassemi Rad (Completed) , Dalhousie University
Student Degree Start Date: 2010/9
Student Degree Received Date: 2016/5
Thesis/Project Title: Raman spectroscopy for monitoring liver steatosis.
Project Description: Raman spectroscopy of liver
Present Position: Medical student

2011/5 - 2011/8
Co-Supervisor

Starla Talbot (Completed) , Simon Fraser University
Student Degree Start Date: 2007/9
Student Degree Received Date: 2012/5
Student Canadian Residency Status: Canadian Citizen
Thesis/Project Title: SERS, Neurotransmitter release and memory formation
Project Description: SERS and glutamate release
Present Position: Graduate student, Simon Fraser University

2010/5 - 2011/8
Principal Supervisor
Adam Forget (Completed) , Dalhousie University
Student Degree Start Date: 2009/9
Student Degree Received Date: 2013/5
Thesis/Project Title: Constructing a triple grating spectrometer (2010) RAFT and Raman spectroscopy (2011)
Project Description: Raman spectroscopy and rotating antiferromagnetism
Present Position: Graduate student, UofT

2010/5 - 2010/8
Principal Supervisor
Peter Smith (Completed) , Dalhousie University
Student Degree Start Date: 2009/9
Student Degree Received Date: 2013/5
Thesis/Project Title: Interfacing a high sensitivity triple spectrometer
Project Description: Spectrometer construction
Present Position: Graduate, Computer Science, Dalhousie

2010/1 - 2010/4
Principal Supervisor
Ivan Kostylev (Completed) , Dalhousie University
Student Degree Start Date: 2006/9
Student Degree Received Date: 2011/5
Thesis/Project Title: Densely mapping the two-magnon feature in La214
Project Description: Densely mappoing the two-magnon feature in La214
Present Position: PhD student, Kyoto University

2009/5 - 2009/8
Principal Supervisor
Ishrat Jalal (Completed) , Dalhousie University
Student Degree Start Date: 2005/9
Student Degree Received Date: 2010/5
Thesis/Project Title: SERS for quantifying neurotransmitter release.
Project Description: SERS detection of neurotransmitter release
Present Position: PhD candidate, Biosciences, U Calgary

2008/5 - 2010/8
Principal Supervisor
Leanne Lucas (Completed) , Dalhousie University
Student Degree Start Date: 2005/9
Student Degree Received Date: 2010/5
Thesis/Project Title: Spectroscopic detection of cancer cells
Project Description: EGFR-specific nanoprobe for cancer imaging and treatment
Present Position: Research Scientist, Immunovaccine

2007/9 - 2008/4
Principal Supervisor
Aaron Smith (Completed) , Dalhousie University
Student Degree Start Date: 2003/9
Student Degree Received Date: 2008/5
Thesis/Project Title: Photothermal treatment and detection of cancerous tissue
Project Description: Photothermal treatment and detection of cancerous tissue
Present Position: Research Scientist, Tesla Motors

2007/5 - 2007/8
Principal Supervisor
Jalianne Li (Completed)
Thesis/Project Title: Application of Raman spectroscopy to blood disorders
Present Position: Dance student

2006/9 - 2007/4
Principal Supervisor
Mehran Saadat (Completed)
Thesis/Project Title: Densely mapping the phase diagram of cuprates
Present Position: Small business owner

Master’s Thesis [n=7]

2024/9 - 2027/8
Co-Supervisor
Deniel Cole-Simms (In Progress) , University of Calgary
Thesis/Project Title: Improving Evaluation in STEM outreach
Present Position: MEd student, University of Calgary

2024/9 - 2027/3
Co-Supervisor

Princess Edogiawerie, York University
Thesis/Project Title: What factors influence Grade 9-12 students' pathways, access to, recruitment into and retention within the physical sciences and engineering, particularly for Black students in terms of their intersecting identities?
Present Position: Masters of Education student (Part-time)

2019/9 - 2025/5
Principal Supervisor

Benjamin Oden Hansson (In Progress) , Dalhousie University
Thesis/Project Title: Development of a synthetic DNA aptamer – gold nanoparticle biosensing platform for real-time detection of Vitamin D levels inhuman blood.
Present Position: Doctoral candidate

2014/5 - 2016/4
Principal Supervisor

Chris Lee (All But Degree) , Dalhousie University
Student Degree Start Date: 2014/5
Student Degree Expected Date: 2017/12
Student Canadian Residency Status: Canadian Citizen
Thesis/Project Title: Molecular Holography
Project Description: By using surface enhanced Raman spectroscopy, it is first shown that stimulated Raman scattering can be obtained using continuous laser sources. Then the stimulated Raman signal is used to obtain a molecular hologram.
Present Position: Unknown

Student Recognitions

2014 - 2016	Killam award - 40,000 (Canadian dollar) Dalhousie University Prize / Award
2014 - 2015	NSERC PGSM - 17,500 (Canadian dollar) Natural Sciences and Engineering Research Council of Canada (NSERC) Prize / Award

2010/9 - 2013/8
Principal Supervisor

Leanne Lucas (Completed) , Dalhousie University
Student Degree Start Date: 2010/9
Student Degree Received Date: 2013/8
Student Canadian Residency Status: Canadian Citizen
Thesis/Project Title: Development of Epidermal Growth factor receptor (EGFR) specific nanoprobes for surface enhanced Raman spectroscopy (SERS)
Project Description: Developing novel nanoprobes for cancer imaging
Present Position: Safety Advisor, Science Activities, Faculty of Science, Saint Mary's University, Immunovaccine Inc.

2007/9 - 2009/12
Principal Supervisor

Mehran Saadat (Completed) , Dalhousie University
Student Degree Start Date: 2007/9
Student Degree Received Date: 2010/6
Thesis/Project Title: Densely mapping the phase diagram of La2-xSrxCuO4
Project Description: Densely mapping the phase diagram of La2-xSrxCuO4
Present Position: President, Ariana Developments Ltd

2006/9 - 2008/8
Co-Supervisor

Elizabeth Orton (Completed) , Carleton University
Student Degree Start Date: 2007/9
Student Degree Received Date: 2008/10
Thesis/Project Title: Improved Contrast in Radiation Therapy Imaging Using Low-Z Targets and Amorphous silicon Portal Images
Project Description: Improved contrast in radiation therapy imaging using low-Z targets and amorphous silicon portal imagers.
Present Position: Medical Physicist, The Ottawa Hospital

Doctorate [n=5]

2019/9 - 2024/4 Principal Supervisor	Hao Guo (Completed) , Dalhousie University Thesis/Project Title: Portable Spectroscopic Probe for Real-time Quantification offat droplets in liver, under Ambient Light: Proof of Concept, Development, andEarly Commercialization Present Position: Clinical Medical Physics Resident, Ican School of Medicine at Mount Sinai, NY, Mount Sinai (New York, NY USA)
2013/1 - 2016/12 Co-Supervisor	Maiara Lima Castilho (Completed) , Dalhousie University Student Degree Start Date: 2012/9 Student Degree Received Date: 2016/12 Thesis/Project Title: Development of theranostic particles for EGFR overexpressing cancers Project Description: Theranostic nanoprobe for EGFR-specific cancer markers and Chlorin-e6 based photodynamic therapy Present Position: Professor, Universidade do Vale do Paraíba
2009/9 - 2013/12 Co-Supervisor	Steven Patterson (Completed) , Dalhousie University Student Degree Start Date: 2010/9 Thesis/Project Title: Alternating SSFP permits rapid, banding-artifact-free balanced SSFP fMRI Project Description: BOLD fMRI in inhomogenous susceptibility regions Present Position: Senior Data Scientist, Savormetrics
2008/9 - 2012/8 Co-Supervisor	James Rioux (Completed) , Dalhousie University Student Degree Start Date: 2008/8 Student Degree Received Date: 2012/10 Thesis/Project Title: Quantitative Magnetic Resonance Imaging of Cellular Density with TurboSPI Project Description: Contrast agents for fMRI Present Position: Assistant Professor, Dalhousie University
2002/1 - 2009/8 Principal Supervisor	Robert J. Sanderson, (Completed) , Dalhousie University Student Degree Start Date: 2002/1 Student Degree Received Date: 2009/10 Thesis/Project Title: Application of a spatial composition spread approach to the preparation of thin film cuprate superconductor libraries. Project Description: Application of a spatial composition spread approach to the preparation of thin film superconductor libraries Present Position: Sputtering Technician

Post-doctorate [n=3]

2025/3 - 2027/3 Principal Supervisor	Onur Bulut, Dalhousie University Thesis/Project Title: Develop a point-of-care diagnostic test for vitamin D detection to address uterine fibroids in Black women Present Position: Post doctoral fellow, Dalhousie University
2018/5 - 2019/5 Principal Supervisor	Yashar E. Monfared (Completed) , Dalhousie University Student Degree Start Date: 2018/5 Thesis/Project Title: Stimulated Raman Spectroscopy with Low-Power CW LasersAssisted by Gold/Silica Nanoparticles Present Position: Research Consultant, ACENET Canada, Center for Water Resources Studies @ Dalhousie & The Earth Institute @ Columbia University.

2018/1 - 2018/5 Principal Supervisor	Franklin Che (Completed) , Dalhousie University Student Degree Start Date: 2018/1 Thesis/Project Title: Surface Enhanced Stimulated Raman Spectroscopy using low power CW sources Present Position: Senior Scientist, Bluelight Analytics

Research Associate [n=1]

2015/9 - 2022/12 Co-Supervisor	Alexey Tikhomirov (In Progress) , Dalhousie University Student Degree Start Date: 2014/1 Thesis/Project Title: Raman optical diagnostic tool for liver steatosis detection Project Description: Development, testing and marketing of a Raman spectroscope for accurate detection of liver steatosis Present Position: Specialist, Optical sensing Space Science and Technology Canadian Space Agency, Dalhousie University

Staff Supervision

Event Administration

2021/5 - 2022/2	Academic program committee member, Canadian Black Scientists Network - 1st annual Black Excellence in Science, Technology, Engineering, Mathematics and Medicine) BE-STEMM) research conference, Conference, 2022/2 - 2022/2
2021/2 - 2021/6	Co-chair, National Black Canadians Summit on Education, Seminar, 2021/6 - 2021/6
2020/9 - 2020/10	Chair, Black in Canadian Physics Networking Event, Workshop, 2020/10 - 2020/10
2015/5 - 2015/5	Chair, Biomedical Spectroscopy/Imaging session, 60th International Conference on Analytical Sciences and Spectroscopy, Conference, Canadian Society of Analytical Sciences and Spectroscopy, 2015/5 - 2015/5 Conference session chair
2006/3 - 2006/3	Chair, Experimental Techniques in Biomaterials Science, American Physical Society March Meeting, Conference, American Physical Society, 2006/3 - 2006/3 Conference session chair
2004/3 - 2004/3	Co-Chair, Topics in nanoscale and cooperative phenomena, March Meeting of the American Physical Society, Conference, American Physical Society, 2004/3 - 2004/3 Conference session co-chair

Editorial Activities

2024/1 - 2024/5	Dalhousie representative (of 2) contributor, U15 Canada & U15 Germany Joint Position Paper on Equity, Diversity and Inclusion in post secondary institutions, Report
2024/1 - 2024/4	Reviewer, Council of Canadian Academics - Expert Panel report on Evidence-Based Equity, Diversity, and Inclusion Practices for Impactful Change in the Post-Secondary Research Ecosystem., Report
2021/9 - 2021/9	Co-editor, Physics in Canada - Issue 77.1: Inclusive Excellence in Physics, Journal
2021/7 - 2021/8	Reviewer, ACS Photonics, Journal
2021/1 - 2021/4	Reviewer, Journal of Biophotonics, Journal
2014/4 - 2014/8	Reviewer, Journal of Biophotonics, Journal

2012/1 - 2014/8	Reviewer, Applied Physics Letters, Journal
2010/1 - 2014/8	Reviewer, Journal of Biomedical Optics, Journal
2012/5 - 2014/7	Reviewer, PLOS One, Journal
2012/1 - 2014/3	Reviewer, Journal of Raman Spectroscopy, Journal
2013/5 - 2013/9	Reviewer, Science Translational Medicine, Journal

Mentoring Activities

2003/5 - 2013/5

Founding president, Imhotep's Legacy Academy (ILA)
Number of Mentorees: 1500
From its founding in 2003 when he directed the developmentof all the interactive science activities hosted in the Physics lab; to anorganization serving the province (HRM, Truro, Antigonish, Sydney), the ILA nowhas permanent offices in the Killam library, comprises 3 full-time, 20part-time staff, who deliver science enrichment activities to African NovaScotian students every week during their junior high years, a high schooltutoring program, scholarships for post-secondary students pursuing Medicine, HealthProfessions, Engineering or Science as well as entrance scholarships for ILAgraduates through a $1M commitment from TD Bank. He grew the ILA’s budgetover the ten years he led it from $10K to $400K/yr.

Promotion Tenure Assessment Activities

2017/8 - 2017/9

Reviewer, Dalhousie University
Number of Assessments: 2
Assessed Tenure and Promotion files in the School of Nursing

Organizational Review Activities

2015/7 - 2022/6

Chair - Senate Planning and Governance committee, Dalhousie University
I chair the Senate Planning and Governance Committee, which provides oversight of University Level Academic planning and priorities, quality assurance of the university's academic units, organizational structure of academic and research units and Senate and Committee governance. I have overseen the review of our Faculties of Agriculture, Engineering, Continuing Education, Management, Science, Architecture and Planning, Health, Arts and Social Sciences, Kings college, Computer Science, Graduate Studies

2020/5 - 2021/6

Chair - Policy on Academic unit establishment, termination, renaming or transfer, Dalhousie University
Provide guidance to the university community through the creation of a comprehensive policy for the establishment, termination, renaming or transfer of academic units.

2006/7 - 2019/6

Laser Safety for university, Dalhousie University
Established Dalhousie laser safety course with colleague Kimberly Hall. Oversaw review of the course in 2018-19.

2017/6 - 2018/6 Presidential Review Committee, Dalhousie University
reappointmentreview of the President of Dalhousie, which includesdetermining the scope of activities to be covered by the evaluation, developingappropriate evaluation criteria to be used in the review process, and inviting the President to submit a self-evaluation focused onthe evaluation criteria. The Review Committeealso sought input from a broad spectrum of internal and external stakeholders,including members of the Board, Senate officers, senior administrators, studentleaders, employee groups, representatives of equity-seeking groups, Nova Scotiauniversity presidents, representatives of all three levels of government, andmembers of the local community with knowledge of the President's performance.

2014/10 - 2015/12 Co-chair - University Senate principles and values, Dalhousie University
Working group for the development of general principles and values for Senate: THAT the Senate Planning and Governance Committee undertake a broadly consultative exercise to explore and identify principles and values that will guide Senate in carrying out its responsibilities, for adoption by Senate. And THAT the SPGC recommend to Senate any appropriate amendments(s) to the preamble (Background) to the Senate Constitution arising out of these principles and values.

2014/5 - 2015/12 Co-chair - Access and Retention if Indigenous and African Canadian students, Dalhousie University
Improving Access and Retention of African Canadian and Aboriginal Students - Advise the Vice President - Academic on how funding can be used most effectively to improve aboriginal and African Canadian student access and retention.

2008/10 - 2014/11 Chair, Dalhousie University
Mathematics and Statistics chair advisory committee - Advise the dean on the appointment of a chair for the Department of Mathematics and Statistics

Community and Volunteer Activities

2008/4 President, Imhotep's Legacy Academy
The ILA, which in its infancy (2003) was delivered from the Physics lab to 5 students down the hall from my office, is now a province wide program serving 80 students on a weekly basis with administrative offices in the Killam Library, 3 full-time and 20 part-time staff to support our junior high after-school STEM enrichment, high school tutoring, summer student internship, and summer scholarship programs; all supported by an annual budget in 2011-12 of $300K from national, provincial and corporate sponsorship. My vision is one of maximizing contact hours, to positively impact the academic choices of program participants. Learners are exposed to 600 hours of STEM enrichment - 100 hrs/year over 6 years - during the crucial junior high-to- high school years. No other STEM outreach program offers such long term contact with its participants.

Knowledge and Technology Translation

2021/2 - 2022/2 Knowledge provider, Technology Transfer and Commercialization
Group/Organization/Business Serviced: Novo Corporation
Target Stakeholder: Healthcare Personnel
Outcome / Deliverable: Minimum viable product (MVP) for our Optical device for rapid, accurate assessment of liver steatosis
References / Citations / Web Sites: https://www.fromnovo.com/en/
Activity Description: Engage device manufacturer Novo Corp to design a minimum viable product meeting Health Canada standards

2020/3 - 2020/6
Start-up lead, Technology Transfer and Commercialization
Group/Organization/Business Serviced: HeAlZe Optics and Photonics
Target Stakeholder: Healthcare Personnel
Outcome / Deliverable: Created a start-up company named after co-inventors Hewitt, Alwayn and Zeng (HeAlZe) Optics and Photonics
Activity Description: Registered company HeAlZe Optics and Photonics

2013/1 - 2015/6
Knowledge provider, Technology, Product, Process, Service Improvement/Development
Group/Organization/Business Serviced: Clinicians
Target Stakeholder: Patients
Outcome / Deliverable: A technology which delivers the rapid and accurate quantification of hepatic fat content, based on Raman spectroscopy, is being developed to increase the liver donor pool by preventing inappropriate discards.
Evidence of Uptake/Impact: Investment by innovation and entrepreneurship funding bodies: Innovacorp, Springboard Atlantic, and incubators - Lab2Market, Ready2Launch, Design2Build
Activity Description: Collaborate with Ian Alwayn, Surgical Lead Multi Organ Transplant Program QEII Health Sciences Center to develop a spectroscopic tool to assess the fat content of liver.

2013/5 - 2014/12
Technology provider, R&D Collaboration with Industry
Group/Organization/Business Serviced: DVS Sciences
Target Stakeholder: Industry/Business-Small (<100 employees)
Outcome / Deliverable: Reagents for single cell analysis.
Evidence of Uptake/Impact: Olga Ornatsky, principal scientist, from DVS Sciences Inc signed a Materials Transfer Agreement (MTA) to test our EGFR-specific probes for inclusion into their reagents catalogue.
References / Citations / Web Sites: http://www.dvssciences.com/
Activity Description: Signed a Material Transfer Agreement (Nov. 8, 2014) for our EGFR-specific probes. Comparison of our nanoprobes to standards (spring 2014) revealed the need to reduce non-specific binding. Following presentation of the results (May 15, 2014), an Engage grant is being sought to address the limitations of the technology.

International Collaboration Activities

2017/6 - 2022/6
Collaborator, Netherlands
Develop medical diagnostic tool for liver transplantation applications with Dr. Ian Alwayn, head of transplantation at Leiden University Medical Centre.

2011/10 - 2019/9
Collaborator, United States of America
Molecular imaging of cancer markers using the multimodal imaging facility of Dr. Sanjiv Gambhir. Development of continuous wave surface enhanced Stimulated Raman spectroscopy (cwSESRS) for Raman holographic microscopy.

2019/3 - 2019/3
Global Affairs Canada Faculty mobility grant recipient, Saint Vincent and the Grenadines
Visit St. Vincent and the Grenadines Community college to explore opportunities for educational links to Dalhousie University.

2013/10 - 2017/8
Group leader, Superconductivity, United States of America
Interdisciplinary Consortium for Research and Educational Access in Science and Engineering (INCREASE) http://www.increaseonline.org/ I led the superconductivity focus area, coordinating activities within the group.

2013/1 - 2016/3
Co-investigator, Brazil
Use of our EGFR specific nanoprobes, combined with photodynamic therapy agent for breast cancer detection and treatment, with Leandro Ranierio (UNIVAP, Brazil)

Committee Memberships

2021/10	Committee Member, National Killam Program Advisory Board, National Research Council Canada Provide strategic advice to the Killam Trusts and the National Killam Program Office aligned with Dorothy J. Killam's vision of *building of Canada's future by encouraging advanced study*.
2021/9	Committee Member, Employment Equity Plan Senior Working Group, Dalhousie University To create an employment equity plan for the university, including defining priorities for action.
2021/3	Committee Member, Sankofa Scholarships selection committee, Dalhousie University Three new annual scholarships offered by Dalhousie offer financial support, mentorship and more to students of Black and African descent, one of several ways the university is moving forward on recommendations laid out in the Lord Dalhousie Report. One of these is named the Joan and Dr. Kevin Hewitt scholarship.
2019/10	Committee Member, Tri-Agency - Canada Research coordinating committee, New Frontiers in Research Fund (NFRF) multidisciplinary review panel, Tri-Agency Institutional Secretariat Participate in the review process for the New Frontiers in Research Fund competition (2019)
2019/3	Committee Member, National Judging panel, Youth Science Canada Judging panel member for the projects presented at the Canada Wide Science fair. Established National panel in 2019 that will be adjudicate all future fairs.
2017/10	Committee Member, Canadian Association of Physicists, Equity Diversity and Inclusion committee, Canadian Association of Physicists Founding member: The mandate of the EDI Committee is to implement anEDI program which will: · Ensurethat the CAP is managed and operated in a manner that complies with all legalrequirements and reflects the principles of equity, diversity and inclusion toits members, stakeholders and the public, and · Promotethe values of equity, diversity and inclusion in the practice of Physics. TheEDI Committee assists the Board in providing long term vision for EDI, and inprotecting the reputation and values of CAP.
2011/4	Committee Member, Nova Scotia Black and First Nations Students Graduate Student Scholarship Committee, Dalhousie University
2020/11 - 2022/6	Chair, Discovery Instititues Support Grant committee, Natural Sciences and Engineering Research Council of Canada (NSERC) As the inaugural chair of theDiscovery Institute Support Grants Selection Committee, my role is to: maintain NSERC's high quality peer review process, provideleadership to ensure the orderly and complete evaluation of applications, help to ensure aconsistent and equitable approach during the peer review meetings, provide advice toNSERC on balancing the budget based on the committee's funding recommendations,and assist with the preparation and review of committee feedback to applicants.

2021/2 - 2021/6 Co-chair, National Black Canadians summit on Education planning committee, Fondation Michaëlle Jean Foundation
Leading up to theNational Black Canadians Summit Education event host Jayde Tynes speaks witheducation leaders Carl E. James, Professor, Jean Augustine Chair in Education,Community & Diaspora at York University and Kevin Hewitt, about thesystemic changes needed to redress the issues faced by Black learners in alllevels of education across Canada. This is an opportunity to listen and addresshow all Canadians have a role to play in ensuring education is equitable andaccessible for our most vulnerable populations.

2016/9 - 2021/6 Chair, Dalhousie Alumni Association Faculty Award of Excellence for Teaching, Dalhousie University
The most prestigious teaching award granted at the university.

2016/3 - 2021/6 Committee Member, Arthur B McDonald Chair of Excellence selection committee, Dalhousie University
The Arthur B. McDonald Chairs have been created to recognize and retain professors of high-calibre at Dalhousie University. A Chair carries with it a 50k/year cash award and extends for a period of up toseven years (or retirement). It is the most prestigious internal research award granted by Dalhousie.

2015/7 - 2021/6 Committee Member, Board of Governors Executive, Dalhousie University
ex-officio voting member

2015/7 - 2021/6 Committee Member, Board of Governors, Dalhousie University
Ex-officio voting member

2015/7 - 2021/6 Chair, Senate, Dalhousie University
Responsible for leading the body responsible for internal regulation of the academic matters of the university

2021/1 - 2021/3 Co-chair, New Frontiers in Research Fund (NFRF) 2020 Exploration Multidisciplinary Review Committee, Tri-agency Institutional Programs Secretariat
As a co-chair, I was required to:· attend a co-chair orientation session the morning of Thursday March 4 2021; · lead assigned deliberations in my virtual room; · review the message to applicants (MTAs) for unsuccessful applications deliberated in my virtual room; · participate in a final co-chair policy discussion held on Friday March 12 where I provided feedback on the process and receive the results of the competition; · review a co-chair report based on feedback from the policy session.

2019/5 - 2020/4 Committee Member, Discovery centre awards for science and technology, Award selection committee, Nova Scotia Discovery Centre
During the first round, the panel determines the three finalists in each of four categories. These finalists are selected in July. The recipients are subsequently determined during the second round in early October. The categories are: Science Champion, Professional of Distinction, Innovation, and Emerging Professional.

2017/9 - 2019/11 Committee Member, National Advisory Committee on Equity, Diversity and Inclusion Policy (ACEDIP), Tri-Agency Institutional Programs Secretariat (TIPS), Tri-Agency Institutional Secretariat
Invited by the president of the TIPS, SSHRC President Ted Hewitt, to help inform the Equity, Diversity and Inclusion aspects of all TIP's programs inclusive of Canada Research Chairs, Canada Excellence Research Chairs, Canada First Excellence Research Support Fund, and Research Support Fund. • Providing strategic advice and direction on policy and procedural issuesrelated to equity, diversity, and inclusion withinthe programs; • Providing strategic advice and directionon how to measure the success of equity, diversity and inclusion practiceswithin the programs; • Evaluating thetransparency and openness of the recruitment and hiring processes ofinstitutions within the annual monitoring and evaluation exerciseand recommending areas for improvement; and • Evaluating theproposals submitted to the Canada Research Chairs program's Annual Equity,Diversity and Inclusion Award and recommending which applicant institutionshould be recognized.

2018/10 - 2019/5 Committee Member, Canada Research Chair Tier 1 in Social Dimensions of Clean Technology search commtitee, Dalhousie University
Search committee for Canada Research Chair Tier 1 in Social Dimensions of Clean Technology

2018/9 - 2019/5 Committee Member, Presidential Search committee, Dalhousie University
Search committee for Dalhousie's president

2019/1 - 2019/1 Committee Member, Global Affairs Canada, Faculty Mobility Program - Emerging Leaders in the Americas Program (ELAP), Selection committee, Global Affairs Canada
Select recipients of the Faculty Mobility Program - Emerging Leaders in the Americas Program (ELAP)

2015/7 - 2016/6 Chair, Senate Planning and Governance Committee, Dalhousie University
Lead the committee which provides oversight of the University-level academic planning and priorities, quality assurance of the University's academic units, organizational structure of academic and research units, and Senate and Committee governance.

2015/8 - 2015/11 Committee Member, Search Committee for the Executive Director of Diversity and Inclusion, Dalhousie University
To conduct a search for Dalhousie's first Executive Director of Diversity and Inclusion.

2014/10 - 2015/10 Co-chair, Working group for the development of general principles and values for Senate, Dalhousie University
THAT the Senate Planning and Governance Committee undertake a broadly consultative exercise to explore and identify principles and values that will guide Senate in carrying out its responsibilities, for adoption by Senate. And THAT the SPGC recommend to Senate any appropriate amendments(s) to the preamble (Background) to the Senate Constitution arising out of these principles and values.

2014/5 - 2015/10 Co-chair, Improving access and retention of African Canadian and Aboriginal students, Dalhousie University
Advise the VP Academic on how funding can be used most effectively to improve access and retention of African Canadian and Aboriginal students

2014/9 - 2015/8 Chair, Academic Innovation Award, Dalhousie University
chaired a Teaching and Learning ad hoc committee to select an individual who has developed an innovation that has resulted in a sustained impact on student learningat Dalhousie. It may include innovations in course or curriculum design; development or application of tools or technologies; or the development or application of innovative methods or learning experiences to enhance student learning.

2013/6 - 2015/6 Committee Member, Senate Planning and Governance Committee, Dalhousie University

2010/9 - 2015/6	Committee Member, Senate, Dalhousie University
2012/10 - 2014/10	Committee Member, Executive Committee, Nova Scotia Institute of Science
2014/2 - 2014/5	Committee Member, Decanal review committee, Dalhousie University To consider the re-appointment, for a second term, of the Dean of Science.
2003/4 - 2014/3	Committee Member, Faculty of Science Outreach Committee, Dalhousie University
2010/9 - 2013/4	Committee Member, Medical School Admissions Committee, Dalhousie University
2006/5 - 2013/4	Committee Member, Dalhousie Radiation Safety Committee - Laser Safety officer, Dalhousie University
2004/4 - 2011/3	Committee Member, First Nations & Indigenous Black Students Entrance Scholarship, Dalhousie University
2008/4 - 2009/3	Chair, Mathematics and Statistics Chair Advisory Committee, Dalhousie University

Presentations

1. (2025). Social Justice, Injustice and STEM: Connecting these ideas for better health outcomes and increased participation. The Dr. Agnes Calliste African Heritage Lecture, Antigonish, Canada
   Main Audience: General Public
   Invited?: Yes, Keynote?: Yes
2. (2025). Legacy in Action: Celebrating Black Brilliance. Emera lecture, Halifax, Canada
   Main Audience: Knowledge User
   Invited?: Yes, Keynote?: Yes
3. (2025). Leadership: Provincial Perspective. Federal Public Service Executive Leadership Development Program, Halifax, Canada
   Main Audience: Decision Maker
   Invited?: Yes, Keynote?: Yes
4. Dr. Rachel Zellars and Hantz Prosper. (2025). Leadership, resilience and overcoming systemic barriers. Black History Month at the National Research Council – Ask me Anything Session with Black Leaders, Halifax, Canada
   Main Audience: Decision Maker
   Invited?: Yes, Keynote?: Yes
5. (2024). Assessment of liver steatosis using an ambient light-compatible Raman system: enhancing specificity with supplementary reflectance information. SPIE Photonics West, San Francisco, United States of America
   Main Audience: Researcher
   Invited?: No, Keynote?: No
6. (2024). Young, Gifted and Black Future Physicists program. Canadian Association of Physicists Congress, London, Canada
   Main Audience: Researcher
   Invited?: Yes, Keynote?: No
7. (2024). Quantification of Liver Fat: Size and Content Assessment via Combination of Raman Scattering and Reflectance in Human Specimens. International Conference of Raman spectroscopy, Rome, Italy
   Main Audience: Researcher
   Invited?: No, Keynote?: No

8. Stephanie MacQuarrie, Svetlana Barkanova, Japna Sidhu-Brar. (2024). Advancing Inclusion in STEM: The NSERC Chairs for Inclusion in Science and Engineering. Canadian Association of Physicists Conference 2024, London, Canada
   Main Audience: Researcher
   Invited?: Yes, Keynote?: No

9. (2024). Social justice, STEM and academia. EDIT-STEM symposia @ Carleton University, Ottawa, Canada
   Main Audience: Knowledge User
   Invited?: Yes, Keynote?: Yes

10. Eden Hennessey, Shohini Ghose. (2024). Canadian Physics Counts: The First Survey of Equity, Diversity, and Inclusion in Physics in Canada. Canadian Coalition of Women in Engineering, Science, Trades and Technology (CCWESTT) conference, Victoria, Canada
    Main Audience: Researcher
    Invited?: No, Keynote?: No

11. (2023). Portable Ambient Light-compatible Spectroscopic Approach Applied to Non-invasive Real-time Quantification of Steatosis in Donor Liver. St. Francis Xavier colloquium, Antigonish, Canada
    Main Audience: Researcher
    Invited?: Yes, Keynote?: Yes

12. (2023). Social justice and my work as a physicist. Mount Allison University colloquium, Sackville, Canada
    Main Audience: Researcher
    Invited?: Yes, Keynote?: Yes

13. (2023). Portable Ambient Light-compatible Spectroscopic Approach Applied to Non-invasive Real-time Quantification of Steatosis in Donor Liver. Saint Mary's University colloquium, Halifax, Canada
    Main Audience: Researcher
    Invited?: Yes, Keynote?: Yes

14. (2022). Molecular Holography: A 3D Highly Multiplexed Alternative to Fluorescence Microscopy. University of Victoria, Physics department colloquium series, Victoria, Canada
    Main Audience: Researcher
    Invited?: Yes, Keynote?: Yes

15. (2022). Molecular Holography: A 3D Highly Multiplexed Alternative to Fluorescence Microscopy. University of Manitoba, Department of Physics Seminar Series, Winnipeg, Canada
    Main Audience: Researcher
    Invited?: Yes, Keynote?: Yes

16. (2022). Enhancing representation and retention of BIPoC identifying physicists. Trent Undergraduate Physics Society (TUPhS) - Equity, Diversity, and Inclusion (EDI) Workshop Series, Peterborough, Canada
    Main Audience: Knowledge User
    Invited?: Yes, Keynote?: Yes

17. (2022). Social Justice and my work as a physicist. Dalhousie Convocation ceremonies 2022, Canada
    Main Audience: General Public
    Invited?: Yes, Keynote?: Yes

18. Dina Al-khooly, Dr. Eugenia Duodu, Dr. André McDonald. (2022). Community-Centered Innovation and Practice: What will it take to make science and technology truly equitable?. Canadian Science Policy Conference, Ottawa, Canada
    Main Audience: Knowledge User
    Invited?: Yes, Keynote?: No

19. Shohini Ghose. (2021). Role of the individual in Physics: Canada's National Arts Centre (NAC) panel discussion on the virtual-reality theatre piece, Frequencies.Theatre and Physics: A symposia of Canada's National Arts Centre (NAC), engaging three theatre pieces - Frequencies, Copenhagen and Entangled, Halifax, Canada
    Main Audience: General Public
    Invited?: Yes, Keynote?: Yes
20. (2021). Panelist - Careers in Physics. Atlantic Undergraduate Physics Conference., Halifax, Canada
    Main Audience: Researcher
    Invited?: Yes, Keynote?: No
21. (2021). Panelist - Racism & Discrimination Guided Discussion. Canadian Conference for Undergraduate Women in Physics (Virtual)., Halifax, Canada
    Main Audience: Researcher
    Invited?: Yes, Keynote?: No
22. (2021). Innovation through action: Diversity's inspiration of paradigm shifts. Nova Scotia's public service Innovation Festival 2021, Halifax, Canada
    Main Audience: General Public
    Invited?: Yes, Keynote?: Yes
23. A. Smolina. (2021). Results of the First Canada-Wide Equity, Diversity, and Inclusion in Physics Survey. University of Victoria, Physics department colloquium, Victoria, Canada
    Main Audience: Researcher
    Invited?: Yes, Keynote?: Yes
24. Anastasia Smolina. (2021). The First Canada-Wide Equity, Diversity, and Inclusion in Physics Survey.2021 Virtual Canadian Association of Physics Congress, Halifax, Canada
    Main Audience: Researcher
    Invited?: Yes, Keynote?: Yes
25. (2020). Workshop - Combatting Racism & Other Forms of Discrimination. University of Toronto. Canadian Conference for Undergraduate women in Physics, Toronto, Canada
    Main Audience: Researcher
    Invited?: Yes, Keynote?: No
26. (2019). Count us in! Science, Technology, Engineering and Mathematics success for African Nova Scotian Learners: The Imhotep's Legacy Academy model. Nova Scotia Institute of Science public lecture series, Halifax, Canada
    Main Audience: General Public
    Invited?: Yes, Keynote?: Yes
27. (2019). Coherent Raman signal generation for Molecular Holography. VI Brazilian Raman Spectroscopy Conference (VI Encontro Brasileiro de Espectroscopia Raman), Belém, Brazil
    Main Audience: Researcher
    Invited?: Yes, Keynote?: Yes
28. (2019). Equity, Diversity and Inclusion in Physics Research. Canadian Undergraduate Physics Conference, Montreal, Canada
    Main Audience: Researcher
    Invited?: Yes, Keynote?: Yes
29. Monfared Y, Shaffer T. M., Gambhir S. S. (2019). Stimulated Raman Spectroscopy with Low-Power CW Lasers Assisted by Gold/Silica Nanoparticles. International Conference on Enhanced Spectroscopies, London, Canada
    Main Audience: Researcher
    Invited?: No, Keynote?: No

30. (2018). First Demonstration of CW Stimulated Surface Enhanced Raman Spectroscopy. Canadian Association of Physicists Annual Congress, Canada
Main Audience: Researcher
Invited?: Yes, Keynote?: No

31. (2017). First demonstration of CW Stimulated Surface Enhanced Raman spectroscopy. v Brazilian Raman Spectroscopy conference, Campos do Jordao, Brazil
Main Audience: Researcher
Invited?: Yes, Keynote?: Yes, Competitive?: Yes
Description / Contribution Value: Using commercially available nanoparticles, continuous wave Surface-Enhanced Stimulated Raman spectroscopy (CW SE-SRS) is demonstrated for the first time using two Ti:Sapphire lasers producing a pump beam (785 nm, 100 mW) and appropriately 2 varying probe/Stokes beams (860–870 nm, 120 mW). The Ti-Sapphire lasers are copumped by a 10 W low noise 532 nm Spectra Physics Millennia laser. Pulsed SE-SRS is also demonstrated using a Coherent Chameleon Ultra laser for the Stokes/probe (863– 871 nm) beam and a Coherent Ultra II as the pump laser (785 nm). In both cases lock-in techniques are used to extract the small signal (1 in 109) successfully. These experiments convincingly demonstrate that SRS with CW sources is possible using appropriate nanoparticles, and this realization creates opportunities for a wider range of stimulated Raman spectroscopy applications.

32. K. Brewer K, Marignani P, Lee CLD, Fashir SB, Castilho ML, Hupman MA, Raniero LJ, and Alwayn I. (2016). Nanobiophotonics for molecular imaging of cancer markers. Gordon Research Conference on Plasmonics and Nanophotonics, Newry, United States of America
Main Audience: Researcher
Invited?: No, Keynote?: No

33. Christopher Lee. (2015). EGFR-specific nanoprobe biodistribution in mouse models. International Conference on Analytical Sciences and Spectroscopy., Halifax, Canada
Main Audience: Researcher
Invited?: Yes, Keynote?: Yes

34. (2015). Molecular Imaging of Cancer Biomarkers. University of Campinas (UNICAMP), Brazil
Main Audience: Researcher
Invited?: Yes, Keynote?: Yes

35. (2015). Molecular Imaging of Cancer Markers. University of Campinas (UNICAMP), Campinas, Brazil
Main Audience: Researcher
Invited?: Yes, Keynote?: Yes

36. (2015). Engineering nanoparticles for cancer imaging and treatment. DUPS Lecture series, Halifax, Canada
Main Audience: General Public
Invited?: Yes, Keynote?: Yes

37. (2014). Molecular Imaging for early cancer detection. Atlantic Undergraduate Physics Conference, Halifax, Canada
Main Audience: Knowledge User
Invited?: Yes, Keynote?: Yes, Competitive?: Yes

38. (2013). Nanobiophotonics for molecular imaging of cancer markers: Development of Epidermal Growth Factor Receptor (EGFR) Specific Nanoprobes for Surface Enhanced Raman Spectroscopy (SERS). Workshop Nanociencia e nanotechnologica, desafios para O seculo XXI (Workshop on Nanoscience and nanotechnology, challenges for the XXI century), Sao Jose dos Campos, Brazil
Main Audience: Researcher
Invited?: Yes, Keynote?: Yes, Competitive?: No

39. (2013). Molecular Imaging for early detection of cancer. Dalhousie University, Physics and Atmospheric Science Seminar series, Halifax, Canada
Main Audience: Researcher
Invited?: Yes, Keynote?: Yes, Competitive?: No

40. (2013). Nanobiophotonics for molecular imaging of cancer markers: Development of Epidermal Growth Factor Receptor (EGFR) Specific Nanoprobes for Surface Enhanced Raman Spectroscopy (SERS). Universidade do Vale do Paraíba, Sao Jose dos Campos, Brazil
Main Audience: Knowledge User
Invited?: Yes, Keynote?: Yes, Competitive?: No

41. (2013). Nanobiophotonics for molecular imaging of cancer markers: Development of Epidermal Growth Factor Receptor (EGFR) Specific Nanoprobes for Surface Enhanced Raman Spectroscopy (SERS). Center for lasers and applications, University of São Paulo, Sao Paulo, Brazil
Main Audience: Researcher
Invited?: Yes, Keynote?: Yes, Competitive?: No

42. (2012). Nanobiophotonics for Raman molecular imaging of cancer markers. St. Francis Xavier, Seminar series, Antigonish, Canada
Main Audience: Researcher
Invited?: Yes, Keynote?: Yes, Competitive?: No

43. (2012). Nanobiophotonics for Molecular Imaging of Cancer Markers. ASPIRE (Applied Science in Photonics and and Innovative Research in Engineering) Conference., Halifax, Canada
Main Audience: Knowledge User
Invited?: Yes, Keynote?: No, Competitive?: No

44. (2012). Outreach to the African-Canadian community. American Physical Society March Meeting, Boston, United States of America
Main Audience: Knowledge User
Invited?: Yes, Keynote?: Yes, Competitive?: Yes

45. (2012). Nanobiophotonics for molecular imaging of cancer markers. University of Prince Edward Island, Seminar Series, Charlottetown, Canada
Main Audience: Researcher
Invited?: Yes, Keynote?: Yes, Competitive?: No

46. (2012). Molecular imaging of Cancer. James Robinson Johnson Distinguished Lecture Series, Halifax, Canada
Main Audience: General Public
Invited?: Yes, Keynote?: Yes, Competitive?: No

47. (2011). Nanobiophotonics for molecular imaging of cancer markers. Mount Allison University, Seminar series, Sackville, Canada
Main Audience: Researcher
Invited?: Yes, Keynote?: Yes, Competitive?: No

48. (2010). Spectroscopy of Cancer cell markers: Imaging EGFR distribution and tracking thermal effects using SERS. Vancouver Island Cancer Clinic, Seminar Series, Victoria, Canada
Main Audience: Researcher
Invited?: Yes, Keynote?: Yes, Competitive?: No

49. (2010). Plasmonics for spectroscopic imaging of cancer markers. University of Victoria, Seminar series, Victoria, Canada
Main Audience: Researcher
Invited?: Yes, Keynote?: Yes, Competitive?: No

50. (2009). Imaging EGFR distribution using Surface Enhanced Raman spectroscopy. Winston Salem State University, Seminar series, Winston-Salem, United States of America
Main Audience: Researcher
Invited?: Yes, Keynote?: Yes, Competitive?: No

51. (2009). Imaging cancer using Surface Enhanced Raman spectroscopy. University of New Brunswick, Seminar Series, Fredericton, Canada
Main Audience: Researcher
Invited?: Yes, Keynote?: Yes, Competitive?: No

52. (2009). Imaging EGFR distribution using Surface Enhanced Raman spectroscopy. Centre for excellence for the Elimination of Health disparities, Winston-Salem, United States of America
Main Audience: General Public
Invited?: Yes, Keynote?: Yes, Competitive?: No

53. (2009). Imaging EGFR distribution using Surface Enhanced Raman spectroscopy. Vanderbilt University, Seminar series, Nashville, United States of America
Main Audience: Researcher
Invited?: Yes, Keynote?: Yes, Competitive?: No

54. (2009). The application of Surface Enhanced Raman spectroscopy to problems in Biology, Chemistry and Physics. Dalhousie University, Seminar Series, Halifax, Canada
Main Audience: Researcher
Invited?: Yes, Keynote?: Yes, Competitive?: No

55. (2008). Imaging EGFR distribution using Surface-Enhanced Raman spectroscopy. Dalhousie university, Seminar series, Halifax, Canada
Main Audience: Researcher
Invited?: Yes, Keynote?: Yes, Competitive?: No

56. (2008). Imaging EGFR distribution using Surface Enhanced Raman spectroscopy. SPEC 2008 - Shedding Light on Disease: Optical diagnosis for the new millenium, Sao Jose Dos Campos, Brazil
Main Audience: Researcher
Invited?: Yes, Keynote?: No, Competitive?: Yes

57. (2008). Imaging EGFR distribution using Surface Enhanced Raman spectroscopy. St. Francis Xavier University, Seminar Series, Antigonish, Canada
Main Audience: Researcher
Invited?: Yes, Keynote?: Yes, Competitive?: No

Broadcast Interviews

2023/10/26 - 2023/10/26	Episode 35 - Kevin Hewitt, Physicist, Dalhousie Faculty of Science - Sciographies podcast, CKDU 88.1 FM Faculty of Science https://soundcloud.com/sciographies/kevin-hewitt
2019/02/01 - 2022/02/02	Cool Black North: a film which explores the unique and vibrant Canadian Black Community and its role in our country's contemporary identity., http://coolblacknorth.com/ and https://vimeo.com/320358350, Rogers; DC Black Film Festival, Sept. 20, 2020; San Antonio Black International Film Festival, October 2, 2020;Charlotte Black Film Festival June 15, 2020, National Black Film Festival & San Francisco Black Film Festival.
2021/11/07 - 2021/11/07	The role of the individual in Physics, Panel discussion following Theatre and Physics symposium performances of three plays: Frequencies - a virtual-reality Halifax-based theatre piece, Copenhagen and Entangled., Canada's National Arts Centre (NAC) English Theatre
2021/09/14 - 2021/09/14	The use of lasers for health and the importance for STEM education for everyone., Brian Crombie Radio Hour - Epi 479 - Dr. Kevin Hewitt, https://soundcloud.com/user-412306973/dr-kevin-hewitt-lasers-for-health

2021/06/15 - 2021/09/13	Breaking Barriers in Education with Carl E. James and Dr. Kevin Hewitt: A discussion leading up to the National Black Canadians Education Summit, Black Canadians Strong Podcast. Episode 2: https://black-canadians-strong.simplecast.com/episodes/breaking-barriers-in-education, Host Jayde Tynes and the Michaelle Jean Foundation
2021/02/17 - 2021/02/17	The importance of representation in STEM, conversation with Co-founders of the Canadian Black Scientists Network, Mainstreet Halifax, CBC Radio
2011/02/15 - 2011/02/15	Bringing diversity to the laboratory, CBC Information morning, CBC Halifax (90.5 FM)
2007/06/07 - 2007/06/07	Imhotep's Legacy closing ceremonies, Maritime News, CTV
2006/07/07 - 2006/07/07	Imhotep's Legacy, Live at Five, CTV
1999/06/04 - 1999/06/04	Imhotep’s Legacy: African Canadians in Science, VTV Breakfast Television program, CTV

Text Interviews

2021/08/06	Compassion and commitment to students: Meet the 2020 and 2021 Rosemary Gill Award winners, DalNews (https://www.dal.ca/news/2021/08/06/rosemary-gill-awards-2020-and-20211.html)
2021/07/14	NSERC Award for Science promotion, NSERC https://www.nserc-crsng.gc.ca/Prizes-Prix/SciencePromotion-PromotionScience/Past-Anciens_eng.asp
2021/07/13	Science’s Champion: Kevin Hewitt recognized by NSERC with its Science Promotion Award., DalNews - https://www.dal.ca/news/2021/07/13/science-s-champion--kevin-hewitt-recognized-by-nserc-with-its-sc.html Digichat - https://digichat.info/science-champion-dal-news/
2021/04/13	Introducing the Sankofa Scholarships: Breaking down barriers for students of African Decent., DalNews: https://www.dal.ca/news/2021/04/13/introducing-the-sankofa-scholarships--breaking-down-barriers-for.html
2021/02/23	Spotlight on Black scientists at McGill and beyond., McGill Tribune. 40 (19): http://www.mcgilltribune.com/sci-tech/spotlight-on-black-scientists-at-mcgill-and-beyond-02232021/ in the 'print' version: https://issuu.com/mcgill_tribune/docs/mcgilltribunevol40issue19
2021/01/12	The Fairness Doctrine: Kevin Hewitt reflects on six years as Senate chair as he announces his departure., DalNews - https://www.dal.ca/news/2021/01/12/the-fairness-doctrine--kevin-hewitt-reflects-on-six-years-as-sen.html
2020/11/19	Professor encouraging Black students in science studies., Share 43(14) pg 7, 14: https://www.sharenews.com/november-19-december-22020-vol-43-no-14/
2020/11/18	Dr. Kevin Hewitt overcomes hurdles to excel in science studies, Ron Fanfair: https://www.ronfanfair.com/home/2020/11/18/heyks0aulo3uqxgewh81iwlzh31k2g
2017/02/28	Forging pathways for African Nova Scotian youth - Imhotep's Legacy Academy's community impact, Dal news https://www.dal.ca/news/2017/02/28/forging-pathways-to-university-for-african-nova-scotian-youth.html
2015/11/26	Dal report considers how to improve Aboriginal and Black/African-Canadian student access and retention, Dal News https://www.dal.ca/news/2015/11/26/dal-report-considers-how-to-improve-aboriginal-and-black-african.html?utm_source=dalnewsRSS&%3Butm_medium=RSS&%3Butm_campaign=dalnews

2013/05/30	From Promise to Potential - A look at the work of the Imhotep's Legacy Academy., Dalhousie News https://www.dal.ca/news/2013/05/30/from-promise-to-potential.html
2012/05/17	Leaving a lasting legacy for African Nova Scotian Youth - TD Bank Opportunity Scholarships for Imhotep Legacy Academy Graduate, Dalhousie News https://www.dal.ca/news/2012/05/17/leaving-a-lasting-legacy-for-african-nova-scotian-youth.html
2011/07/06	Evoking Imhotep, DalNews https://www.dal.ca/news/2011/07/06/evoking-imhotep-.html
2011/04/05	Imhotep's Virtual School program, Dal news https://www.dal.ca/news/2011/04/05/imhotep.html
2011/02/16	Imagining where they can be - TD Bank Opportunity Scholarships for African Nova Scotians, Dalhousie News https://www.dal.ca/news/2011/02/16/opportunitygrant1.html
2011/02/16	Stepping up - introducing and showcasing some of the 50 innovative projects in development at Dalhousie - the TD Bank Opportunity Scholarships, Dalhousie News https://www.dal.ca/news/2011/02/16/opportunitygrant2.html
2010/10/14	Ancient Egyptian Legacy Inspires Future Scientists -, Dalhousie Magazine, Vol. 26, No. 3, pg. 7
2009/04/01	Imhotep's Legacy, Dalhousie News https://www.dal.ca/news/2009/04/01/imhotep.html
2006/07/12	Leaving a Legacy, Dalhousie News https://www.dal.ca/news/2006/07/12/legacy.html

Publications

Journal Articles

1. Hennessey E;Smolina A; Hennessey S; Tassone A; Jay A; Ghose S; Hewitt K. (2025). Canadian physics counts: an exploration of the diverse identities of physics students and professionals in Canada.Facets. 10: 1-16.
   Published,
   Refereed?: Yes, Open Access?: Yes

2. Whelan W interviews Hewitt KC, Barkanova S; MacQuarrie S; Sidhu-Brar J; White K. (2025). From Underrepresented to Unstoppable: Building Inclusive STEM Communities. Physics in Canada. 80(1): 52-60.
   Published,
   Refereed?: Yes, Open Access?: Yes

3. *Guo, H; Gala Lopez, B; Alwayn, I; Hewitt, K. (2025). Liver discard rate attributable to conservative estimations of steatosis: an inference-based approach. Transplantation. 109(10): e609-e618.
   Published,
   Refereed?: Yes, Open Access?: Yes

4. *Guo H; Zions V; Law B; Hewitt K. (2024). Potential of Raman-reflectance combination to quantify liver steatosis and fat droplet size: evidence from Monte Carlo simulations and phantom studies. Journal of Biophotonics. e202400156: e202400156.
   Published,
   Refereed?: Yes, Open Access?: Yes

5. *Guo H; Stueck;A; Doppenberg J; Chae Y; *Tikhomirov A; Zeng H; Engelse M; Gala-Lopez B; Mahadevan-Jansen A; Alwayn I; Locke A; Hewitt K. (2024). Evaluation of minimum-to-severe global and macrovesicular steatosis in human liver specimens: a portable ambient light-compatible spectroscopic probe. Journal of Biophotonics. 17: e202400292, 11 page.
   Published,
   Refereed?: Yes

6. *Guo, H; *Tikhomirov, AB; *Mitchell, A; Alwayn, I PJ; Zeng, H; Hewitt, KC. (2022). Real-time assessment of liver fat content using a filter-based Raman system, operating under ambient light through lock-in amplification.Biomedical Optics Express. 13(10): 5231-5245.
Published,
Refereed?: Yes, Open Access?: Yes

7. M. L. Castilho, V. P. S. Jesus, P. F. A. Viera, K. C. Hewitt and L. Raniero. (2021). Nanomedicine based onChlorin e6-EGF conjugated gold nanoparticles as a therapeutic agent for triple negative breast cancer.Photodiagnosis and Photodynamic therapy. 33: 102186.
Published,
Refereed?: Yes, Open Access?: No

8. *Monfared, YE; Shaffer, TM; Gambhir, SS; Hewitt, KC. (2019). Continuous-Wave Coherent Raman Spectroscopy via Plasmonic Enhancement. Scientific Reports (Nature). 9: 12092-1-7.
Published,
Refereed?: Yes, Open Access?: Yes

9. T. Bhattacharjee, *M. L. Castilho; I. Oliveira, V. Jesus; K. C. Hewitt and L. Raniero. (2018). FTIR study of secondary structure changes in Epidermal Growth Factor by gold nanoparticle conjugation. Biochimica et Biophysica Acta (BBA) – General Subjects. 1862(3): 495-500.
Published,
Refereed?: Yes, Open Access?: No

10. Vieira L, *Castilho ML, Ferreira I, Ferreira-Strixino J, Hewitt KC and Raniero L. (2017). Synthesis and characterization of gold nanostructured Chorin e6 for Photodynamic Therapy. Photodiagnosis and Photodynamic Therapy. 18: 6-11.
Co-Author
Published,
Refereed?: Yes, Open Access?: No
Number of Contributors: 7

11. *Lee C; Hewitt K. (2017). First Demonstrationof Surface Enhanced - Stimulated Raman Spectroscopy (SE-SRS) using low-power CW sources. Faraday Discussions. 205: 227-232.
Last Author
Published,
Refereed?: Yes, Open Access?: Yes
Number of Contributors: 2

12. Aizpurua, J ; Arnolds, H ; Baumberg, J ; Bruzas, I ; Chikkaraddy, R ; Chisanga, M ; Dawson, P ; Deckert, V ; Delfino, I ; de Nijs, B ; Di Martino, G ; Edel, J ; Fleming, H ; Gawinkowski, S ; Giorgis, F ; Goodacre, R ; Graham, D ; Hardy, M ; Heck, C ; Heeg, S ; Hewitt, K ; Jamieson, L ; Keeler, A ; Krolikowska, A ; Kuttner, C ; Lidgi-Guigui, N ; Lightner, C ; Lombardi, J ; Mahajan, S ; Sabanes, NM ; Masson, JF ; Mueller, NS ; Muhamadali, H ; Murakoshi, K ; Popp, J ; Porter, M ; Reich, S ; Schatz, G ; Tian, ZQ ; Tripathi, A ; Van Duyne, R ; Wang, XP ; Wark, A ; Willets, K ; Willner, M. (2017). Ultrasensitive and towards single molecule SERS: General discussion. Faraday Discussions. 205: 291-330.
Published,
Refereed?: Yes

13. *Castilho ML; Hewitt, KC; Raniero, L. (2017). FT-IR characterization of a theranostic nanoprobe for photodynamic therapy and Epidermal Growth Factor Receptor targets. Sensors & Actuators: B. Chemical. 240: 903-908.
Co-Author
Published,
Refereed?: Yes, Open Access?: No
Number of Contributors: 3

14. *Lee, C; *Fashir S; *Castilho M; *Hupman, M; Raniero, L; Alwayn, IPJ; Hewitt, KC. (2016). Epidermal Growth Factor Receptor-specific nanoprobe biodistribution in mouse models.Journal of Pharmaceutical Sciences. 105(1): 25-30.
Last Author
Published,
Refereed?: Yes, Open Access?: No
Number of Contributors: 7
Contribution Percentage: 91-100
Description of Contribution Role: Supervisor

15. *Lucas L, Tellez C, *Castilho M, *Lee C, *Hupman M , Vieira L, *Ferreira I, Raniero L, and Hewitt K. (2015). Development of a sensitive, stable and EGFR-specific molecular imaging agent for Surface Enhanced Raman spectroscopy. Journal of Raman Spectroscopy. 46: 434-446.
Last Author
Published,
Refereed?: Yes, Open Access?: No
Number of Contributors: 9

16. Hewitt K, *Rad J, McGregor H, Browers E, Sapp H, Short M, *Fashir S, Zeng H and Alwayn I. (2015). Accurate assessment of liver steatosis in animal models using a high throughput Raman fiber optic probe.Analyst. 140: 6602-6609.
Last Author
Published,
Refereed?: Yes, Open Access?: No
Number of Contributors: 9

17. *Lucas L, Chen X, *Smith A, Korbelik M, Zeng H, Lee P and Hewitt K. (2015). Aggregation of nanoparticles in endosomes and lysosomes produce Surface Enhanced Raman Spectroscopy [Featured Article]. Journal of Nanophotonics. 9: 9030094-1-14.
Last Author
Published,
Refereed?: Yes, Open Access?: No
Number of Contributors: 7

18. *Lucas L and Hewitt K. (2012). Nanobiophotonics for molecular imaging of cancer: Au- and Ag-based Epidermal Growth Factor receptor (EGFR) specific nanoprobes.Proceeding of SPIE. 8234: 82340C-1-15.
Last Author
Published,
Refereed?: Yes, Open Access?: No
Number of Contributors: 2

19. Gullekson C , *Lucas L, Hewitt K and Kreplak L. (2011). Surface-sensitive Raman spectroscopy of collagen I fibrils.Biophysical journal. 100(7): 1837-1845.
Co-Author
Published,
Refereed?: Yes, Open Access?: No
Number of Contributors: 4

20. *Saadat M, *George A and Hewitt K. (2010). Densely mapping the phase diagram of cuprate superconductors using a spatial composition spread approach. Physica C. 470: 559-561.
Last Author
Published,
Refereed?: Yes, Open Access?: No
Number of Contributors: 3

21. Azzouz M, Hewitt K and Saadaoui H. (2010). Dichotomy and Pseudogap signature in the Raman response of high Tc cuprates. Physical Review B. 81: 174502-1-4.
Co-Author
Published,
Refereed?: Yes, Open Access?: No
Number of Contributors: 3

22. *Lucas L, Chen X, *Smith A, Korbelik M, Zeng H, Lee P and Hewitt K. (2009). Imaging EGFR distribution using surface-enhanced Raman spectroscopy. Proceedings of SPIE. 7192: 719206.
Last Author
Published,
Refereed?: Yes, Open Access?: No
Number of Contributors: 7

23. J. Li, L. Christensen, M.N. Obrovac, K.C. Hewitt and J.R. Dahn. (2008). Effect of heat treatment on Si electrodes using polyvinylidene fluoride binder. Journal of the Electrochemical Society. 155: A234-A238.
Co-Author
Published,
Refereed?: Yes, Open Access?: No
Number of Contributors: 5

24. Sanderson R. J. and Hewitt K. C. (2007). Magnetron sputter deposition of a 48-member cuprate superconductor library: Bi2Sr2Ca1-xYxCu2Oy (0.5 < x < 1) linearly varying in steps of 0.01.Applied Surface Science. 254(3): 760-764.
Last Author
Published, Elsevier - Amsterdam, The Netherlands,
Refereed?: Yes, Open Access?: No
Number of Contributors: 2

25. Hewitt KC. (2006). NanoRaman spectroscopy: Instrument design and techniques. Physics in Canada. 62(2): 49-54.
First Listed Author
Published,
Refereed?: No, Open Access?: Yes
Number of Contributors: 1

26. (2005). Stoichiometry control of magnetron sputtered Bi2Sr2Ca1-xYxCu2Oy (0<x<0.5) thin film, composition spread libraries: Substrate bias and gas density factors. Physica C - Superconductivity. 425: 52-61.
Last Author
Published,
Refereed?: Yes
Number of Contributors: 2

27. (2005). High Throughput resistivity apparatus for thin film combinatorial libraries.Review of Scientific Instruments. 76: 093906.
First Listed Author
Published,
Refereed?: Yes
Number of Contributors: 5

28. (2004). Hole concentration and phonon renormalization in Ca-doped YBa2Cu3Oy (6.75<y<7.0).Physical Review B. 69: 064514.
First Listed Author
Published,
Refereed?: Yes
Number of Contributors: 9

29. (2004). Electrochemical and In Situ XRD studies of the Li reaction with combinatorially sputtered Mo10xSnx (0<x<0.5) thin films. Journal of the Electrochemical Society. 151: A470-A483.
Co-Author
Published,
Refereed?: Yes
Number of Contributors: 4

30. (2003). Anomalous, high-voltage irreversible capacity in tin electrodes for Lithium batteries. Journal of the Electrochemical society. 150: A701-A705.
Co-Author
Published,
Refereed?: Yes
Number of Contributors: 5

31. (2003). Combinatorial synthesis and rapid characterization of Mo1-xSn1 (0<x<1) thin films. Thin Solid Films. 440: 11-18.
Co-Author
Published,
Refereed?: Yes
Number of Contributors: 5

Journal Issues

1. Mainhood, L; Gonsalves, A; Chestnutt, H; Basu, S; Chimuka, V; Zanon, T; Mendes, M; Ghiasi, G; Jasmin, A; Wilson, C; Salzmann, I; hite, L; Goodleaf, D; Tajmel, T; Muise, J; Barkanova, S; Day, S; Hayden, V; Kilfoil, M; Payne, A; Penney, J; Pohl, R; Porter, A; Warren, K; Dawson, S; Lee, C; Kirby, W; Whithtman, J; Pillsworth, R; Pereg-Barnea, T; Boyce, H; Cruz-Vinaccia, C; Haggard, D; Lee, E; Martz-Oberlande, T; Lincoln, J; Clegg, C; Bardouille, T; Hill, I; Omonibo, O; Taylor, W; Desjardina, R; Pahud, D; Hennessey, E; Ghose, S; Tassone, A; Zhang, E; Rodrigo, C; Stang, J; Altiere, E; Dubois, P; Egorova, Y; Goedhart, C; Ives, J; Smith, K; Stewart, J; Trotter, D; Akyea, T; Carswell, H; Carswell, A. (2021). Inclusion for excellence in the Physics community in Canada. Physics in Canada. (77.1)
In Press,
Refereed?: Yes, Open Access?: No
Editors: Smolina, A and Hewitt, K

Book Chapters

1. Kevin C. Hewitt, Robert J. Sanderson* and Mehran Saadat*. (2011). Preparation of Existing and Novel superconductors using a Spatial Composition spread approach. Adir Luiz. Applications of High Tc superconductivity. : 219-236.
First Listed Author
Published, In Tech, United States of America
Refereed?: No

2. Hewitt K, Chen X, Roch C, Altendorf E and Irwin J. (2003). Doping dependence of Phonon renormalization in YBa2Cu3Oy.Vincenzini P and Cerasara S. Advances in Science and Technology 38 - Science and Engineering of HTC Superconductivity. 38(4): 237-244.
Published, Techna, United States of America

Thesis/Dissertation

1. DEVELOPMENT OF EPIDERMAL GROWTH FACTOR RECEPTOR (EGFR) SPECIFIC NANOPROBES FOR SURFACE ENHANCED RAMAN SPECTROSCOPY (SERS). (2013). Dalhousie University. Master's Thesis.
   Number of Pages: 178 Supervisor: Kevin Hewitt
   Contribution Percentage: 81-90
   Description of Contribution Role: Supervisor
2. Densely mapping the phase diagram of La2-xSrxCuO4. (2009). Dalhousie University. Supervisor: Hewitt, Kevin
3. Application of a Spatial composition spread approach to the preparation of thin film superconductor libraries. (2009). Dalhousie University. Supervisor: Hewitt, Kevin

Reports

1. German U15 - Canada U15 working group on Equity Diversity and Inclusion. (2024). Equity, Diversity and Inclusion in Science and Society: Mapping Common Ground, Shared Commitments and Future Partnership Joint Position Paper. 9. Germany U15; Canada U15 group of universities.
2. Co-Author. Bombay, A and Hewitt, K. (2015). A Report from the Committee on Aboriginal and Black/African Canadian Student Access and Retention: A Focus on Financial support. 99. Dalhousie University
   Number of Contributors: 2
   Contribution Percentage: 91-100
   Description of Contribution Role: Co-author of report
   Description / Contribution Value: While Dalhousie has experienced an increase in the number of self-identified Aboriginal and Black/African-Canadian students attending the university in recent years, these groups collectively still make up only about 2 per cent of Dalhousie's more than 18,000 students, well below the 4-to-5 per cent that they represent as part of Canada's total population.The *Report from the Committee on Aboriginal and Black/African Canadian Student Access and Retention*, was commissioned by the Provost's Office and led by Kevin Hewitt and Amy Bombay, Following extensive consultation, including focus groups and the first comprehensive survey of these students, the report makes 23 recommendations — from changes to the structure and funding of scholarships to providing additional non-financial supports — aimed at boosting the pool of students in these populations to eight per cent of the overall student body.
3. Hewitt, K. (2014). Physics and Atmospheric Science Graduate program self-study. 57. Dalhousie University

Online Resources

1. Dalhousie laser safety training course. (2013).

Conference Publications

1. Hewitt KC. The Equity Ethic in Action: From Need to Innovation in Research and Access to STEM (on the award of my RCSA Robert J Holland Award for Excellence in Research and Leadership). Research Corporation for Science Advancement (RCSA), 2025 Cottrell Scholar Conference, Tuscon, United States of America,
   Conference Date: 2025/7
   Abstract
   Refereed?: Yes, Invited?: Yes

2. Guo H; Gala-Lopez BL; Alwayn IPJ; Hewitt KC. Liver discard rate due to conservative estimations of steatosis: an inference-based approach. European Society for Organ Transplantation (ESOT), London, United Kingdom,
Conference Date: 2025/6
Abstract
Refereed?: Yes, Invited?: No

3. Guo H; Stueck HE; Zions VS; Doppenberg JB; Chae YS; Tikhomirov AB; Law BA; Zeng H; Gala-Lopez BL; Mahadevan-Jansen A; Engelse MA; Alwayn IPJ; Locke AK; Hewitt KC. Quantification of Liver Fat: Size and Content Assessment via Combination of Raman Scattering and Reflectance in Human Specimens. International Conference of Raman Spectroscopy (ICORS) 2025, Rome, Italy,
Conference Date: 2024/7
Abstract
Refereed?: Yes, Invited?: No

4. Guo H; Stueck AE; Doppenberg JB; Chae YS; Tikhomirov AB; Zeng H; Gala-Lopez BL; Mahadevan-Jansen A; Engelse MA; Alwayn IPJ; Locke AK; Hewitt KC. Assessment of liver steatosis using an ambient light-compatible Raman system: enhancing specificity with supplementary reflectance information. SPIE BIOS 2024 Biomedical Vibrational Spectroscopy 2024: Advances in Research and Industry, San Francisco, United States of America,
Conference Date: 2024/1
Abstract
Refereed?: Yes, Invited?: No

5. Hewitt KC. Social Justice and my work as a physicist. Atlantic Undergraduate Physics and Astronomy Conference, Halifax, Canada,
Conference Date: 2023/2
Abstract
Refereed?: No, Invited?: Yes

6. Guo H; Tikhomirov AB; Mitchell A; Alwayn IPJ; Zeng H; Hewitt KC. A Raman filter-based system, operating in ambient light through lock-in amplification for real-time, accurate assessment of disease markers. International Conference of Raman Spectroscopy, Long Beach, United States of America,
Conference Date: 2022/8
Abstract
Refereed?: Yes, Invited?: No

7. Hewitt KC. Combatting Racism and Other Forms of Discrimination. Canadian Conference for Undergraduate Women in Physics, Toronto, Canada,
Conference Date: 2020/1
Abstract
Refereed?: No, Invited?: Yes

8. Bhattacharjeea TT; Castilho ML; Jesus VPS; Rosta NCV; Hewitt KC; Raniero L. Study of secondary structural changes in Epidermal Growth Factor during nanoparticle functionalization. 10th International Conference on Nanophotonics (ICNP 2017), Recife, Brazil,
Conference Date: 2017/7
Abstract
Refereed?: Yes, Invited?: No

9. *Y. Monfared, T. M. Shaffer, S. S. Gambhir and K. C. Hewitt. (2019). Stimulated Raman Spectroscopy with Low-Power CW Lasers Assisted by Gold/Silica Nanoparticles. International Conference on Enhanced Spectroscopies, London, Canada,
Conference Date: 2019/6
Abstract
Published
Refereed?: Yes, Invited?: No

10. *C. L. D. Lee, F. Che and K. C. Hewitt. (2018). First Demonstration of Surface Enhanced – StimulatedRaman Spectroscopy (SE-SRS) using low-power CW sources. International Conference on Raman Spectroscopy 2018, jeju, Korea, South,
    Conference Date: 2018/8
    Abstract
    Published
    Refereed?: Yes, Invited?: No

11. K. C. Hewitt, P. Marignani, K. Brewer, I. Alwayn, *M. L. Castilho, L. J. Raniero, *S. Fashir. (2017). Nanoprobes for molecular imaging of EGFR overexpressing cancers.Canadian Cancer Research conference, Vancouver, Canada,
    Conference Date: 2017/11
    Poster
    First Listed Author
    Published
    Refereed?: Yes, Invited?: No

12. *C. L. D. Lee and K. C. Hewitt. (2017). First Demonstration of Surface Enhanced - Stimulated Raman Spectroscopy (SE-SRS)using low-power CW sources.Faraday Discussions. Royal Society of Chemistry - SERS Faraday Discussions, Glasgow, United Kingdom. Royal Society of Chemistry, United Kingdom
    Conference Date: 2017/8
    Paper
    Last Author
    In Press
    Refereed?: Yes, Invited?: No
    Number of Contributors: 2

13. *M. L. Castilho, V. P. S. Jesus, T. T. Bhattacharjee, T. S. Veriato, K. C. Hewitt and L. Raniero. (2017). Improved Photodynamic Therapy efficacy using a bifunctional EGF-Ce6 nanoprobe.Gordon Research conference on Cancer Nanotechnology: Multimodal Nano-Therapies against cancer., West Dover, United States of America,
    Conference Date: 2017/6
    Poster
    Co-Author
    Published
    Refereed?: Yes, Invited?: No
    Number of Contributors: 6

14. K. Brewer, P. Marignani, *C. L. D. Lee, *S. B. Fashir, *M. L. Castilho, *M. A. Hupman, L. J. Raniero, I. Alwayn and K. C. Hewitt. (2016). Nanobiophotonics for molecular imaging of cancer markers.Gordon Research Conference on Plasmonics and Nanophotonics., Newry, United States of America,
    Conference Date: 2016/7
    Poster
    Last Author
    Published
    Refereed?: Yes, Invited?: No
    Contribution Percentage: 71-80

15. *C. L. D. Lee and K. C. Hewitt. (2016). Coherent light emission from Oxonica(TM) nanoparticle dimers.Institute of Physics, Nanotechnology conference, London, United Kingdom,
Conference Date: 2016/7
Poster
Last Author
Published
Refereed?: No, Invited?: No
Number of Contributors: 2
Contribution Percentage: 71-80

16. *C. L. D. Lee, *S. Fashir, *M. L. Castilho, *M. A. Hupman, L. J. Raniero, I. P. Alwayn and K. C. Hewitt. (2015). EGFR-specific nanoprobe biodistribution in mouse models.Vancouver nanomedicine day, Vancouver, Canada,
Conference Date: 2015/11
Poster
Last Author
Published
Refereed?: Yes, Invited?: No
Number of Contributors: 7
Contribution Percentage: 71-80

17. Samia A. Fashir; Maiara L. Castilho; Michael A. Hupman; Christopher L. D. Lee; Leandro J. Raniero; Ian Alwayn; Kevin C. Hewitt. (2015). EGFR-Specific nanoprobe biodistribution in mouse models.PRoceedings of SPIE. SPIE Biophotonics South America, Rio de Janeiro, Brazil (95310E). SPIE, United States of America
http://dx.doi.org/10.1117/12.2180997
Conference Date: 2015/6
Paper
Last Author
Published
Refereed?: Yes, Invited?: No
Number of Contributors: 7
Contribution Percentage: 91-100

18. L. S. Vieira, I. Ferreira, J. Ferrerira-Stricina, K. C. Hewitt and L. Raniero. (2014). Efficiency of the functionalized metalnanoparticles with photsensitizer.Brazilian Condensed Matter Physics Meeting., Costa do Sauipe, Brazil,
Conference Date: 2014/5
Poster
Co-Author
Published
Refereed?: Yes, Invited?: No
Contribution Percentage: 11-20

19. I. Ferreria, G. B. Costa, L. Vieira, *M. L. Castilho, L. C. S. da Cruz, J. Ferreria-Strixino, K. C. Hewitt and L. J. Raniero. (2014). FT-IR Analysis of photodynamic therapy biochemicaleffects in cell line of human breast carcinoma.Brazilian Condensed Matter Physics Meeting, Costa do Sauipe, Brazil,
Conference Date: 2014/5
Poster
Co-Author
Published
Refereed?: Yes, Invited?: No
Number of Contributors: 8
Contribution Percentage: 11-20

20. K. C. Hewitt and L. Lucas. (2013). Nanobiophotonics for molecular imaging of cancer markers: Development of Epidermal Growth Factor Receptor (EGFR) Specific Nanoprobes for Surface Enhanced Raman Spectroscopy (SERS). Gordon Research Conference on Cancer Nanotechnology, West Dover, United States of America,
Conference Date: 2013/7
Poster
First Listed Author
Published
Refereed?: Yes, Invited?: No

21. L. Lucas and K. C. Hewitt. (2012). Nanobiophotonics for molecular imaging of cancer markers: Development of Epidermal Growth Factor Receptor (EGFR) Specific Nanoprobes for SERS. SPEC 2012 – Shedding New Light on Disease, Chiang Mai, Thailand,
Conference Date: 2012/11
Abstract
Last Author
Published
Refereed?: Yes, Invited?: No

22. L. Lucas and K. C. Hewitt. (2012). EGF Conjugated nanoparticles for imaging EGFR over-expressing cells using Surface Enhanced Raman spectroscopy. Proceedings of SPIE. SPIE BiOS Plasmonics in Biology and Medicine IX (San Francisco, CA), San Francisco, United States of America (82340C). SPIE, United States of America
http://dx.doi.org/10.1117/12.906794
Conference Date: 2012/1
Paper
Last Author
Published
Refereed?: Yes, Invited?: No
Number of Contributors: 2

23. K. C. Hewitt, M. Saadat and R. J. Sanderson. (2011). Preparation of novel and existing superconductors using a spatial composition spread approach. Gordon Research Conference on Superconductivity (Waterville Valley, NH), Waterville Valley, United States of America,
Conference Date: 2011/6
Poster
First Listed Author
Published
Refereed?: Yes, Invited?: No

24. S. Livingstone, L. Lucas, J. Parker, D. Woodhall, H. Sapp, K. C. Hewitt and I. Alwayn. (2011). The Application of Raman spectroscopic analysis for the evaluation of Hepatic Steatosis. Dal Surgery Research Day, Halifax, Canada,
Conference Date: 2011/4
Poster
Co-Author
Published
Refereed?: No, Invited?: No

25. K. C. Hewitt, M. Saadat and R. J. Sanderson. (2010). Densely mapping the phase diagram of the cuprate superconductor La2-xSrxCuO4 (0<x<0.18) using a spatial composition spread approach.Canadian Association of Physics Annual Congress (Toronto, ON), Toronto, Canada,
Conference Date: 2010/6
Abstract
First Listed Author
Published
Refereed?: No, Invited?: No

26. L. Lucas, M. X. Chen, A. Smith, M. Korbelik, H. Zeng, P. W. K. Lee and K. C. Hewitt. (2009). Imaging cellular EGFR distribution using SERS. Canadian Undergraduate Physics Conference (Edmonton, AB), Edmonton, Canada,
Conference Date: 2009/10
Abstract
Last Author
Published
Refereed?: No, Invited?: No

27. M. Saadat and K. C. Hewitt. (2009). Densely mapping phase space of cuprate superconductors using a spatial composition spread approach. Physica C - Superconductivity and Applications. 9th international conference on Materials and Mechanisms of Superconductivity (Tokyo, Japan), Tokyo, Japan (559-561). Elsevier, Netherlands
Conference Date: 2009/9
Poster
Last Author
Published
Refereed?: No, Invited?: No

28. L. Lucas, M. X. Chen, A. Smith, M. Korbelik, H. Zeng, P. W. K. Lee and K. C. Hewitt. (2009). Imaging Epidermal Growth Factor receptor (EGFR) overexpression using SERS. Institute for Research in Materials Research Day (Halifax, NS), Halifax, Canada,
Conference Date: 2009/6
Poster
Last Author
Published
Refereed?: No, Invited?: No

29. K. C. Hewitt, M. X. Chen, L. Lucas, A. Smith, M. Korbelik, H. Zeng, and P. W. K. Lee. (2009). Imaging Cancerous cells using surface enhanced Raman spectroscopy. Canadian Association of Physics Congress (Moncton, NB), Moncton, Canada,
Conference Date: 2009/6
Abstract
First Listed Author
Published
Refereed?: No, Invited?: No

30. M. Saadat and K. C. Hewitt. (2009). Densely mapping phase space of cuprate superconductors using a spatial composition spread approach. Gordon Research Conference on Superconductivity (Hong Kong), Hong Kong,
Conference Date: 2009/6
Poster
Last Author
Published
Refereed?: Yes, Invited?: No

31. L. Lucas, X. K. Chen, A. Smith, M. Korbelik, H. Zeng, P. W. K. Lee and K. C. Hewitt. (2009). Imaging EGFR distribution using surface-enhanced Raman spectroscopy. Proceedings of SPIE. SPIE Photonics West - Plasmonics in Biology and Medicine VI (San Jose, CA), San Jose, United States of America (719206-1-719206-8). SPIE, United States of America
Conference Date: 2009/1
Paper
Last Author
Published
Refereed?: Yes, Invited?: No
Number of Contributors: 7

32. L. Lucas, M. X. Chen, A. Smith, M. Korbelik, H. Zeng, P. W. K. Lee and K. C. Hewitt. (2008). SERS imaging of Cancerous cells overexpressing EGFR. Canadian Undergraduate Physics Conference (Toronto, ON), Toronto, Canada,
Conference Date: 2008/10
Paper
Last Author
Published
Refereed?: No, Invited?: No

33. L. Lucas, M. X. Chen, A. Smith, M. Korbelik, H. Zeng, P. W. K. Lee and K. C. Hewitt. (2008). SERS imaging of cancerous cells overexpressing EGFR. Proceedings of the XXIst International Conference on Raman Spectroscopy. XXIst International conference on Raman Spectroscopy (London, UK), London, United Kingdom (496-498). IMPublications, United Kingdom
Conference Date: 2008/8
Poster
First Listed Author
Published
Refereed?: Yes, Invited?: No
Editors: R. Withnall and B. Z. Chowdhry

34. K. C. Hewitt, J. Li, and J. St. Aubin. (2008). Mechanically roughened copper/gold surfaces as an inexpensive SERS substrate. Proceedings of the XXIst International Conference on Raman Spectroscopy. XXIst international Conference on Raman Spectroscopy, London, United Kingdom (473-474). IMPublications, United Kingdom
Conference Date: 2008/8
Poster
First Listed Author
Published
Refereed?: Yes, Invited?: No
Number of Contributors: 3
Editors: R. Withnall and B. Z. Chowdhry

35. R. J. Sanderson and K. C. Hewitt. (2008). Magnetron Sputter deposition of a 48-member cuprate superconductor library: Bi2Sr2YxCa1-xCu2O8+y (0.5<x<1) linearly varying in steps of 0.01.Bull. Amer. Phys. Soc. 53 (2). American Physical Society March Meeting (New Orleans, LA), New Orleans, United States of America,
Conference Date: 2008/3
Abstract
Last Author
Published
Refereed?: No, Invited?: No

36. R. J. Sanderson and K. C. Hewitt. (2007). Magnetron Sputter deposition of a 48-member cuprate superconductor library: Bi2Sr2YxCa1-xCu2O8+y (0.5<x<1) linearly varying in steps of 0.01.Institute of Physics Superconductivity group meeting (London, UK), London, United Kingdom,
Conference Date: 2007/11
Poster
Last Author
Published
Refereed?: No, Invited?: No

37. (2006). Densely mapping phase space of cuprate superconductors using a spatial composition spread approach. Applied Surface Science. 4th international workshop on Combinatorial Materials Science (San Juan, Puerto Rico), San Juan, Puerto Rico (760-764). Elsevier, Netherlands
Poster
First Listed Author
Published

38. (2006). Surface-Enhanced Raman scattering of a hydrophilic ligand (tiopronin) adsorbed on gold nanoparticles. Bull. Amer. Phys. Soc.American Physical Society March Meeting, Baltimore, United States of America (B28.4). American Institute of Physics, United States of America
Abstract
Last Author
Published
Refereed?: No, Invited?: No

39. (2006). A novel and simple method for preparing SERS active substrates. International Conference on Raman Spectroscopy (Yokohama, Japan), ,
Poster
First Listed Author
Published

40. *R. J. Sanderson and K. C. Hewitt. (2006). The effect of process gas pressure, target composition, Ar:O2 ratio and substrate bias on the preparation of thin films of the superconductor Bi2Sr2YxCa1-xCu2O8+y. Bull. Amer. Phys. Soc.American Physical Society March Meeting (Baltimore, MD), Baltimore, United States of America. American Institute of Physics, United States of America
Conference Date: 2006/3
Abstract
Last Author
Published
Number of Contributors: 2

41. (2005). High-Throughput resistivity apparatus for characterization of combinatorial libraries. American Physical Society March Meeting (Los Angeles, CA), ,
Abstract
First Listed Author
Published

42. (2005). Crystallization of Bi2Sr2YxCa1-xCu2O8+y (0.5<x<1) thin films prepared by a spatial composition spread approach. Canadian Association of Physics Annual Congress (Vancouver, BC), ,
Paper
Last Author
Published

43. (2004). Continuous map of the phase diagram of high temperature superconductors using a spatial composition spread approach. Gordon Research Conference on Superconductivity (Oxford, UK), ,
Poster
First Listed Author
Published

44. K. C. Hewitt and *R. J. Sanderson. (2004). Continuous map of the phase diagram of high temperature superconductors using a spatial composition spread approach. Bull. Amer. Phys. Soc. 49 (1). American Physical Society March Meeting (Montreal, QC), Montreal, Canada (370). American Institute of Physics, United States of America
Abstract
First Listed Author
Published
Refereed?: No, Invited?: No
Number of Contributors: 2

45. (2004). Hole concentration and phonon renormalization in Ca-doped YBa2Cu3Oy (6.76<y<7.00). Gordon Research Conference on Superconductivity (Oxford, UK), ,
Poster
First Listed Author
Published

46. (2004). Continuous map of the phase diagram of high temperature superconductors using a composition spread approach. CAP/CASCA/COMP/BSC Congress (Winnipeg, MB), ,
Paper
First Listed Author
Published

Intellectual Property

Patents

1. Analyzer system and method for real-time synchronous detection of the characteristic near-infrared wavelength features of optically active substances. China. 202380018110.8. 2023/01/20.
Patent Status: Pending
Inventors: Alwayn IPJ, Hewitt KC, Zeng H
An optical system has been developed forreal-time synchronous detection of vibration modes in biotic (e.g., fat, glyceride,vitamins, bilirubin, etc.) and abiotic systems (e.g., alcohol content). The system has been shown to provide aquantitative estimate of the fat content quickly and accurately, demonstrating a strong linear correlation (r2> 0.9) between output voltage signal intensity, MRI intensity, integrated FT Raman spectralintensity, and fat content in the clinically relevant range.The present disclosed invention allows transplant surgeons to obtainaccurate measurements of liver fat content during donor surgeries. These resultswill be immediate and will guide the surgeon in deciding whether the liver issafe to use for transplantation. This will lead to fewer discarded livers,reduced waitlists for liver transplantation and improved quality of life formany individuals with end-stage liver disease.

2. Analyzer system and method for real-time synchronous detection of the characteristic near-infrared wavelength features of optically active substances. United States of America. 18/728,810. 2023/01/20.
Patent Status: Pending
Inventors: Alwayn I, Hewitt K, Zeng H, Guo H, Tikhomirov A
An optical system has been developed forreal-time synchronous detection of vibration modes in biotic (e.g., fat, glyceride,vitamins, bilirubin, etc.) and abiotic systems (e.g., alcohol content). The system has been shown to provide aquantitative estimate of the fat content quickly and accurately, demonstrating a strong linear correlation (r2> 0.9) between output voltage signal intensity, MRI intensity, integrated FT Raman spectralintensity, and fat content in the clinically relevant range.The present disclosed invention allows transplant surgeons to obtainaccurate measurements of liver fat content during donor surgeries. These resultswill be immediate and will guide the surgeon in deciding whether the liver issafe to use for transplantation. This will lead to fewer discarded livers,reduced waitlists for liver transplantation and improved quality of life formany individuals with end-stage liver disease.

3. Methods of detection of steatosis. Canada. WO2016201572. 2016/12/22.
   Patent Status: Lapsed
   Inventors: K. C. Hewitt, I. P. Alwayn and H. Zeng (equally)
   There is currently a shortage of livers for transplantation. Some are discarded because they are deemed to be too fatty for that purpose. Accurate and real-time intra-operative assessment of the fat content of livers is lacking. Our invention provides real-time and immediate spectral information on the tissue it is in contact with and has been validated in animal studies (Hewitt et al. Analyst ***140*** *, 6602 - 6609 (2015)). It is handheld, relative inexpensive and its interpretation is not operator dependent. Use of this tool will identify livers that may be successfully transplanted and will reduce the number of patients who die on the wait-list for transplantation.*

Disclosures

1. ANALYZER SYSTEM AND METHOD FOR REAL-TIME SYNCHRONOUS DETECTION OF THE CHARACTERISTIC NEAR-INFRARED WAVELENGTH FEATURES OF OPTICALLY ACTIVE SUBSTANCES
   Disclosed
   Filing Date: 2023/01/20
   An optical system has been developed forreal-time synchronous detection of vibration modes in biotic (e.g., fat, glyceride,vitamins, bilirubin, etc.) and abiotic systems (e.g., alcohol content). The system has been shown to provide aquantitative estimate of the fat content quickly and accurately, demonstrating a strong linear correlation (r2> 0.9) between output voltage signal intensity, MRI intensity, integrated FT Raman spectralintensity, and fat content in the clinically relevant range.The present disclosed invention allows transplant surgeons to obtainaccurate measurements of liver fat content during donor surgeries. These resultswill be immediate and will guide the surgeon in deciding whether the liver issafe to use for transplantation. This will lead to fewer discarded livers,reduced waitlists for liver transplantation and improved quality of life formany individuals with end-stage liver disease.

2. ANALYZER FOR REAL-TIME SYNCHRONOUS DETECTION OF THE CHARACTERISTIC NEAR-INFRARED WAVELENGTHS OF OPTICALLY ACTIVE SUBSTANCES
   Disclosed
   Filing Date: 2023/01/20
   An optical system has been developed forreal-time synchronous detection of vibration modes in biotic (e.g., fat, glyceride,vitamins, bilirubin, etc.) and abiotic systems (e.g., alcohol content). The system has been shown to provide aquantitative estimate of the fat content quickly and accurately, demonstrating a strong linear correlation (r2> 0.9) between output voltage signal intensity, MRI intensity, integrated FT Raman spectralintensity, and fat content in the clinically relevant range.The present disclosed invention allows transplant surgeons to obtainaccurate measurements of liver fat content during donor surgeries. These resultswill be immediate and will guide the surgeon in deciding whether the liver issafe to use for transplantation. This will lead to fewer discarded livers,reduced waitlists for liver transplantation and improved quality of life formany individuals with end-stage liver disease.

3. Handheld Raman spectroscope for intra-operative quantification and qualification of hepatic fat
   Protected
   Filing Date: 2015/06/16
   Currently livers are discarded because they are deemed too fatty for transplantation. Accurate and real-time intra-operative assessment of the fat content of livers is lacking. Use of this tool will identify livers that may be successfully transplanted and will reduce the number of patients who die on the waitlist for transplantation.