

Seth Dworkin, Ph.D., P.Eng.
Canada Research Chair (Tier II) in High Performance Computing for Sustainable Energy

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EDUCATION

Yale University – New Haven, Connecticut, USA

2009 – Ph.D., Mechanical Engineering
2005 – M.Phil., Mechanical Engineering
2004 – M.Sc., Mechanical Engineering

McMaster University – Hamilton, Ontario, Canada

2003 – B.Eng., Mechanical Engineering, *Summa Cum Laude*

EMPLOYMENT HISTORY

January 2015 – Present:

Associate Professor, Mechanical and Industrial Engineering – Ryerson University

June 2011 – December, 2014:

Assistant Professor, Mechanical and Industrial Engineering – Ryerson University

April 2009 – May, 2011:

Postdoctoral Fellow and Lecturer, Mechanical and Industrial Engineering – University of Toronto

HONOURS

Awards and Accolades

- 2017 - Canada Research Chair (Tier II) in High Performance Computing for Sustainable Energy (details in “Research Support” section)
- 2017 – McMaster University Alumni Association Arch Award, recognizing the achievements of McMaster alumni within fifteen years of graduation
- 2016 – Ontario Ministry of Research and Innovation – Early Researcher Award (details in “Research Support” section)
- 2015 – Professional Engineers of Ontario (PEO), Engineering Medal – Young Engineer, given to one recipient annually in Ontario, for exceptional achievements in career, community and professional participation before the age of 35.
- 2015 – Granted ‘Early Tenure’ and promoted to Associate Professor after three years for “Exemplary Performance” as an Assistant Professor.
- 2014 – Ryerson University Early Research Career Excellence Award, given to one Ryerson faculty annually for research achievements within five years of becoming a faculty member (\$2000 research grant, given to one recipient annually at Ryerson).
- 2013 – Canadian Society for Mechanical Engineering (CSME) “I. W. Smith Award,” given annually to one recipient in Canada, for outstanding achievement in creative mechanical engineering within ten years of undergraduate graduation.
- 2013 – Ryerson Faculty of Engineering and Architectural Science Scholarly Research and Creative Activity (SRC) Award, 2013 (\$2000), given to one recipient annually, at Ryerson.

2012 – International Conference on Clean Energy, Quebec City, Quebec, “Best Student Paper Presentation” for my co-supervised students Lele, Ekrami, and Hasib.
 2011 – Bockhorn Visiting Summer Professorship, German Aerospace Institute (DLR).
 2008 – Bernard Lewis Fellowship, The International Combustion Institute, Recognizing Research Achievements and Potential.
 2006 – Prize Teaching Fellowship, Yale University, Recognizing Excellence as a TA (\$2000).
 2000-2003 – Dean’s Honour list, McMaster University, Recognizing Academic Achievement.
 2001-2003 – Golden Key Honour Society (National), Recognizing Academic Achievement.

Scholarships and Fellowships

- NSERC Post-Doctoral Fellowship (PDF), 04/2010 – 05/2011
- Ontario Ministry of Research and Innovation Post-Doctoral Fellowship, 05/2009 – 05/2011
- American Society of Engineering Education NDSEG Research Fellowship, 2005 – 2008
- NSERC PGS-D Doctoral Research Fellowship, 2005 – 2008
- NSERC Undergraduate Summer Research Assistant (USRA), 2001, 2002, 2003
- McMaster University Senate Scholarship, 2002

SCHOLARLY AND PROFESSIONAL ACADEMIC ACTIVITIES

External Service and Professional Activities

Memberships in Professional Societies

- Combustion Institute, 2003 – present
- Professional Engineers of Ontario, 2009 – present
- SciNet Users Group, 2010 – present
- Canadian Society of Mechanical Engineering, 2011 – present

Grant Proposal Reviewer

- NSERC I2I (1 proposal)
- NSERC CRD (1 proposal)
- NSERC Discovery Grant (3 proposals)
- Chilean National Science and Technology Commission, Regular 2016 grant competition (1 proposal)

Manuscript Peer Reviewer

1. Applied Mathematical Modelling (2 reviews)
2. Applied Sciences (2 reviews)
3. Canadian Water Resources Journal (1 review)
4. Canadian Young Scientist Journal (1 review)
5. Central European Journal of Engineering (1 review)
6. Chemical Engineering Science (1 review)
7. Combustion and Flame (19 reviews)
8. Combustion Science and Technology (1 review)
9. Combustion Theory and Modelling (4 reviews)
10. Energies (3 reviews)
11. Geothermal Energy (1 review)
12. International Journal of Green Energy (3 reviews)
13. Proceedings of the Combustion Institute (11 reviews)
14. Renewable Energy (2 reviews)
15. Sustainable Cities and Society (2 reviews)
16. Sustainability (2 reviews)

Conference Session Chair

1. Combustion Institute Canadian Section Spring Technical Meeting, Saskatoon, Canada, May, 2015 (Gas Turbines)
2. 15th International Conference on Numerical Combustion, Avignon, France, April, 2015 (Soot)
3. International Symposium on Combustion, San Francisco, USA, August, 2015 (Diffusion/Soot)
4. Combustion Institute Canadian Section Spring Technical Meeting, Windsor, Canada, May, 2014 (Modelling & Chemical Kinetics I)
5. Combustion Institute Canadian Section Spring Technical Meeting, Quebec City, Canada, May, 2013 (Soot and Particulates 1)
6. Combustion Institute Canadian Section Spring Technical Meeting, Toronto, Canada, May, 2012 (Laminar Flames I)
7. 7th U.S. National Combustion Meeting, Atlanta, Georgia, March, 2011 (Soot)
8. 32nd International Symposium on Combustion, Montreal Canada, August, 2008 (Flame Vortex Interactions)
9. 11th International Conference on Numerical Combustion, Granada, Spain, April, 2006 (Laminar Flames II)

Review and Organizing Committees

- Southern Ontario Smart Computing Innovation Platform (SOSCIP) Scientific Advisory Committee (SAC) member, 2015
- International Sooting Flame Workshop, Program Leader for Pressurized Flames, 2014 – 2016 (responsible for organizing the workshop and determining session topics)
- International Sooting Flame Workshop, Program Leader for Laminar Flames, 2012 – 2014 (responsible for organizing the workshop and determining session topics)
- Compute Canada Resource Allocation Committee (RAC) member and chair for Engineering, Mathematics and Computer Science, 2014/2015 (performing scientific reviews of computational infrastructure requests from Canadian faculty, and chairing committee meetings that allocate resources)
- Compute Canada Resource Allocation Committee (RAC) member for Engineering, Mathematics and Computer Science, 2013/2014 (performing scientific reviews of computational infrastructure requests from Canadian faculty)
- Compute Canada Resource Allocation Committee (RAC) member for Engineering, Mathematics and Computer Science, 2012/2013 (performing scientific reviews of computational infrastructure requests from Canadian faculty)
- Ontario Resource Allocation Committee member, 2012/2013 (responsible for the allocation of computational resources based on scientific reviews)
- SciNet (Compute Canada) Local Resource Allocation Committee (LRAC) member, 2011/2012

Other Service to the Profession and Community

- Yale University Alumni Mentoring Program, mentor to Dhruvajyoti Das, a third-year Chemical Engineering PhD student, 2015
- Toronto Science Fair Judge, March, 2015
- Toronto Science Fair Judge, April, 2014
- High Performance Computing Symposium – Press Conference Panel Member, June 7, 2010
- University of Toronto MIE Research Symposium - Judging Panel Member, April 30, 2010
- Canada Wide Science Fair Judge, May, 2009

Internal Service Activities at Ryerson

Hiring, Appointments and Evaluation Committees

- Chair, Mechanical & Industrial Engineering Department Evaluations Committee (DEC), 2015/2016
- Faculty of Engineering and Architectural Science, Associate Dean of Graduate Studies Search Committee, 2016
- Mechanical & Industrial Engineering Chair Search/Reappointment Committee, 2015
- Mechanical & Industrial Engineering, Departmental Hiring Committee (DHC), 2014/2015
- Mechanical & Industrial Engineering, Departmental Hiring Committee (DHC), 2013/2014
- Mechanical & Industrial Engineering, Departmental Hiring Committee (DHC), 2012/2013
 - Human Resources training for the DHC (on line and in class) completed October 11, 2012

Proposal Review Committees

- Internal RTI Equipment Fund Committee, 2014 competition
- Internal RTI Equipment Fund Committee, 2013 competition
- Internal RTI Equipment Fund Committee, 2012 competition
- Mechanical & Industrial Engineering Ontario Graduate Scholarship (OGS) Committee, 2013
- RA/URO Application Review Committee, Summer, 2013
- RA Application Review Committee, Fall, 2012
- Centre for Urban Energy (CUE) Scholarship Application Review Committee, 2012

Departmental Positions and Representation

- Mechanical & Industrial Engineering Department Council Secretary, 2012/2013 and 2013/2014 academic years
- New Faculty Orientation Representative, August, 2012
- Mechanical & Industrial Engineering, Departmental Seminar Coordinator, 2012/2013
- Ryerson RFA rep's council representative, 2015/2016
- Ryerson RFA rep's council representative, 2014/2015
- Ryerson RFA rep's council representative, 2012/2013
- Ryerson RFA rep's council representative, 2011/2012
- Mechanical & Industrial Engineering Awards Night Presenter, 2011, 2012, 2013, 2014, 2015

Other Internal Service

- Accelerated Masters Development Committee Member, 2017
- Ontario Early Researcher Award Information Session Presenter, 2016
- New Faculty Orientation – Scholarly Research and Creative Activity Panel Member, 2016
- Ryerson SHAD High School Student Summer Program Organizing Committee, 2015-2017
- Organized an Information Session for Faculty on Compute Canada and SOSCIP resources available for researchers, 2015
- FEAS NSERC Discovery Grant Internal Pre-review, 2013

STUDENT SUPERVISION:

Summary

Postdoctoral fellows supervised:	2 completed, 1 in progress
Ph.D. students supervised:	4 completed, 4 in progress
MASc. students supervised:	12 completed, 3 in progress
Undergraduate students supervised:	12 completed, 1 in progress
Research assistants supervised:	2 completed, 0 in progress
Capstone projects supervised:	9 groups, 35 students

Directed studies courses given: 1 MEng., 9 MASc., 4 Ph.D.
 Graduate theses examined: 11 MASc., 2 Ph.D.

Current Post-Doctoral Fellows

#	Name	Program Information	Start Date
1	Dr. Leonardo Zimmer	Combustion Studies (Ryerson), Sole Supervision	Jan 9, 2017

Current Graduate Students

#	Name	Program Information	Start Date
1	Amin Mansouri	Ph.D. (Ryerson), Sole Supervision	Sept 6, 2016
2	Hiep Nguyen	Ph.D. (Ryerson), Sole Supervision <i>Awarded NSERC Canada Graduate Scholarship (\$35,000 x 2)</i> <i>Awarded Ontario Graduate Scholarship (\$15,000)</i> <i>CUE-Enwave Energy Corporation Award (\$5000)</i>	May 4, 2015
3	Jamie Fine	Ph.D. (Ryerson), Co-supervised with J. Friedman <i>Awarded Ontario Graduate Scholarship (\$15,000)</i> <i>CUE-Enwave Energy Corporation Award (\$5000)</i> <i>MIE Graduate Excellence award (\$2000)</i>	May 5, 2014
4	Meysam Sahafzadeh	Ph.D. (Ryerson), Co-supervised with L. Kostiuk	Jan 1, 2014
5	Nemanja Ceranic	MASc. (Ryerson), Sole Supervision <i>Awarded Ontario Graduate Scholarship (\$15,000)</i>	Sept 6, 2016
6	Raymond Alexander	MASc. (Ryerson), Sole Supervision <i>Awarded Ontario Graduate Scholarship (\$15,000)</i>	Sept 8, 2015
7	Alisha Hunter	MASc. (Ryerson), Sole Supervision	Sept 8, 2015

Current Undergraduate Research Students

#	Name	Project Title and Information	Start Date
1	Bobby Anand	Numerical Study of Horizontal Directional Drilling and Coaxial Ground Heat Exchangers, Sole Supervision, <i>Awarded NSERC USRA (\$4500)</i> <i>Awarded CUE Toronto Hydro Corporation Student Assistantship Award (\$2500)</i>	May 16, 2016

Former Post-Doctoral Fellows

#	Name	Project Title and Information	Dates	Initial Position
1	Dr. Ali Khosousi	Topics in Flame Simulation and Soot Modelling, Sole Supervision	Nov 7, 2015 - Nov 30 2016	Analyst, Analytics4Life
2	Dr. Armin Veshkini	Modelling Micro-gravity Soot Formation in Coflow Diffusion Methane/Air Flames, Sole Supervision	July 20, 2015 - Dec 31, 2015	Software Developer, MAYA Heat Transfer Technologies

Former Graduate Students

#	Name	Program	Thesis	Dates	Initial Position
1	Adam Alaica	MASc. (Ryerson), Sole Supervision <i>Awarded Ontario Graduate Scholarship (\$15,000)</i>	The Development of an Off-peak Ground Pre-cool Control Strategy for Hybrid Ground Source Heat Pump Systems	May 16, 2016 - Sept 8, 2016	Enwave Corp.
2	Ying Lam Law	MASc. (Ryerson), Sole Supervision <i>Awarded Ontario Graduate Scholarship (\$15,000), QEII Graduate Scholarship in Science and Technology (\$15,000), CUE-Enwave Energy Corporation Award (\$5000)</i>	Characterization of the Effects of Borehole Layouts in Geo-exchange	May 16, 2016 - Sept 8, 2016	Provident Energy Management Inc.
3	Nick Eaves	Ph.D. (Toronto), Co- supervised by M. Thomson <i>Awarded NSERC Canada Graduate Scholarship (\$35,000 x 3)</i>	The Effect of Reversibility and High Pressure on Soot Formation	Sept 1, 2012 - June 27, 2016	Postdoctoral Fellow, University of Cambridge
4	Ali Khosousi	Ph.D. (Ryerson), Sole Supervision	Detailed Numerical Study of Soot Surface Growth and Oxidation in Laminar Diffusion Flames	Sept 1, 2011 - Nov 6, 2015	Postdoctoral Fellow, Ryerson
5	Armin Veshkini	Ph.D. (Toronto), Co- supervised by M. Thomson	Understanding Soot Particle Growth Chemistry and Particle Sizing Using a Novel Soot Growth and Formation Model	July 1, 2011 - June 22, 2015	Postdoctoral Fellow, Ryerson
6	Bijan Shahriari	M.Sc. (Toronto), Co- supervised by M. Thomson <i>Awarded NSERC Post Graduate Scholarship (\$17,500)</i>	Development and Validation of a Partially Coupled Soot Model for Turbulent Kerosene Combustion in Industrial Applications	July 16, 2012 - Sept 5, 2014	Hatch Ltd.
7	Michael Di Paolo	MASc. (Ryerson), Sole Supervision	Design of a Smart Manifold for Geothermal HVAC Installations	Sept 1, 2012 - May 5, 2014	Groundheat Systems Inc.
8	Hiep Nguyen	MASc. (Ryerson) Co- supervised by W. Leong	Analyses of the Factors Affecting Hybrid Ground Source Heat Pump Installation Potential	Sept 1, 2012 - May 2, 2014	PhD student, Ryerson

9	Sepehr Bozorgzadeh	MASc. (Ryerson), Sole Supervision	Development of a Soot Concentration Estimator for Industrial Combustion Applications	Sept 1, 2012 - Apr 29, 2014	Kepstrum Inc.
10	Levon Larson	MASc. (Ryerson) Co-Supervised by P. Walsh	Numerical Simulation of Liquid Prechamber Fuel Ignition	Sept 1, 2011 - Sept 30, 2013	Ford Motor Co.
11	Kaveh Khalilian	M.Sc. (Toronto) Co-supervised by M. Thomson	Development and Validation of a Partially Coupled, Two-Equation Soot Model for Industrial Applications	July 1, 2011 - Sept 18, 2013	FEA Training Consultants Inc.
12	Navid Ekrami	MASc. (Ryerson) Co-supervised by A. Fung and D. Naylor	Feasibility of Residential Combined Cooling, Heating, and Power Generation System in Canadian Cities	Sept 1, 2011 - Apr 30, 2013	PhD student, Ryerson
13	Zannatul Moiet Hasib	MASc. (Ryerson) Co-supervised by A. Fung and D. Naylor	Residential Micro Tri-Generation System Based on a Gas Fired Stirling Engine CHP and Thermo Chemical Accumulator (TCA)	Sept 1, 2011 - Apr 24, 2013	Virtual Engineers Inc.
14	Sanaz Arabzadeh Esfarjani	Ph.D. (Toronto) Co-supervised by J. Mostaghimi <i>Awarded Ontario Graduate Scholarship (\$15,000 x 2)</i>	A Modeling Framework for the Synthesis of Carbon Nanotubes by RF Plasma Technology	July 1, 2011 - Apr 16, 2013	Mathworks Inc.
15	Masih Alavy Ghahfarrokhy	MASc. (Ryerson) Co-supervised by W. Leong	Optimization of Hybrid Ground Source Heat Pump Systems Design	Sept 1, 2011 - Apr 1, 2013	PhD student, U. Toronto
16	Nick Eaves	M.Sc. (Toronto) Co-supervised by M. Thomson	The Effect of Pressure and Conjugate Heat Transfer on Soot Formation Modelling	July 1, 2011 - Aug 29, 2012	PhD student, U. Toronto

Former Undergraduate Research Students

#	Name	Project Title and Information	Dates
1	Talha Ansari	Predicting Particulate Emissions in CFD Simulations of Engine Conditions, Sole Supervision	May 16, 2016 - Sept 30, 2016
2	Akshay Chaudhari	Understanding Coflow Diffusion Flame Centerline Soot Formation, Sole Supervision, <i>awarded MITACS Globalink Scholarship</i>	May 5, 2015 - July 24, 2015
3	Mihai Duica	Numerical Analysis and Experimentation of Solar Powered Desalination Process, Sole Supervision	May 5, 2015 - Aug 28, 2015
4	Sana Askari	Computer Simulation of Microgravity Combustion and Soot Formation, Sole Supervision	May 5, 2015 - Aug 28, 2015

5	Nikola Kuzmic	Development of a Numerical Model for Ground Thermal Response in Geo-exchange Systems, Sole Supervision, <i>awarded NSERC USRA (\$4500)</i>	May 5, 2014 - Aug 28, 2015
6	Raymond Alexander	Development of a Numerical Model to Predict Particulate Emissions from Engines, Sole Supervision, <i>awarded NSERC USRA (\$4500)</i>	May 5, 2014 - Aug 28, 2015
7	Vivian Truong	A Study on Addressing Ground-fouling by Integration of Geo-exchange with Water Desalination, Sole Supervision	June 1, 2014 - Aug 29, 2014
8	Xiaoyan Chloe Zhou	Optimization of Ground Loop Entering and Exiting Temperature Pairs in Ground Source Heat Pumps, Sole Supervision, <i>awarded MITACS Globalink Scholarship</i>	July 1, 2013 - Sept 16, 2013
9	Ying Lam Law	A Finite Element Model for Ground Temperature Response to a Geo-exchange System, Sole Supervision, <i>awarded Ryerson URA (\$6700)</i>	Apr 28, 2013 - Apr 26, 2014
10	Adam Alaica	A Computational Model for Sizing Horizontal Ground Loops in Geo-exchange Systems, Co-supervised by W. Leong, <i>awarded NSERC USRA (\$4500)</i>	Apr 28, 2013 - Aug 16, 2013
11	Brian Reghelini	Testing and Validation of an Engine Emissions Model using Computational Fluid Dynamics, Sole Supervision	Apr 28, 2013 - Aug 23, 2013
12	Pushan Lele	Conversion of a Residential Cogeneration System to Micro Tri-generation, Co-supervised by A. Fung and D. Naylor, <i>awarded NSERC USRA (\$4500)</i>	May 7, 2012 - Aug 24, 2012

Former Research Assistants

#	Name	Project Title and Information	Dates
1	Hiep Nguyen	Studying the Impact of Varying Geographic Location on the Economic Viability of Ground Source Heat Pumps, Sole Supervision	May 2, 2014 - May 1, 2015
2	Masih Alavy Ghahfarokhy	Predicting Particulate Emissions in CFD Simulations of Engine Conditions, Co-supervised by W. Leong	Apr 2, 2013 - Aug 29, 2014

Capstone Design Projects Supervised

#	Names	Project Title	Year
1	Bobby Anand Shiva Motamidi Geoffrey Lambe Gayan Ferdinands	Automatic Sensor-controlled Residential Geothermal Heating and Cooling System	2017
2	Dao Tran Tanmay Parikh Anirban Mandal	Residential Flood Prevention System	2017
3	Rajh Balasundaram Nijanthan Thevarajah Sajjad Nasimi Shurraj Rao	Design of an Arctic Greenhouse Heating System	2016

4	Lorenzo Cortese Michael Duquette Dana Dhailieh Nathan Burrows	Design of an Automatic Sensor-Controlled Geothermal Heating and Cooling System	2016
5	Raymond Alexander Regis Joseph Juan Osorio James Dolan	Design of a Smart Vent Register for Active Control of Residential Climate Zones	2015
6	Ryan Derry Ryan Fung Alexander Jagdat Marko Stakic	Design of an Automatic Sensor-controlled Residential geothermal heating and cooling system	2015
7	Nemanja Zivkovic Dan Desroches Hari Gupta Mike Halberstadt	Design of an Automatic Sensor-Controlled Residential Geothermal Heating and Cooling System	2013
8	Piyush Sharma Maryam Urooj Pinkal Suthar Nilan Rveendran	Green Fitness Facility Package	2013
9	Wissam Kariakos Kika Ozah Ravinder Matharu Hesame Hoshmand	Automated Residential Geothermal HVAC System	2012

Directed Studies Courses Given

#	Student and Program	Course Title	Semester
1	Raymond Alexander MAsc. student	A Detailed Review of Soot Formation Modeling Techniques	Summer 2016
2	Alisha Hunter MAsc. student	Comparative Life Cycle Assessment of Ground Source Heat Pump Systems versus Conventional HVAC Systems with Applications in Ontario	Summer 2016
3	Hiep Nguyen Ph.D. student	Current State of Computational Simulation Techniques for Ground-Source Heat Pumps	Fall 2015
4	Adam Alaica MAsc. student	Intelligent Control Methodologies for Hybrid Ground Source Heat Pump Systems	Summer 2015
5	Ying Lam Law MAsc. student	A Model for Long-Term Ground Temperature Response to Geo-Exchange	Summer 2015
6	Meysam Sahafzadeh Ph.D. student	Numerical Investigation of Time-Dependent Laminar Premixed Flame,	Summer 2014
7	Hiep Nguyen MAsc. student	Understanding the Interaction between a Thermal Chemical Accumulator (TCA) and a Ground Loop	Summer 2013
8	Michael Di Paolo MEng. student	New Technologies in Ground Source Heat Pump Design	Summer 2013
9	Sepehr Bozorgzadeh MAsc. student	Predicting Soot Formation in Industrial Combustion Systems	Summer 2013
10	Nick Eaves M.Sc. student (Toronto)	Optimizing a Parallelized Numerical Model for Combustion and Soot Formation	Fall 2012

11	Ali Khosousi Ph.D. student	Modelling Combustion Emissions	Winter 2012
12	Zannatul Moiet Hasib MAsc. student	Review on Absorption, Adsorption and ClimateWell® Technology and their Application in Tri-generation Systems	Winter 2012
13	Masih Alavy Ghahfarrokhy MAsc. student	A Review of Ground Source Heat Pump Systems	Winter 2012
14	Levon Larson MAsc. student	Turbulent Combustion Simulation	Summer 2012

Graduate Theses Examined

#	Student, Degree, and Institution	Thesis Title	Date
1	Mashal Farid, MAsc., Ryerson*	Modelling Workload to Quality Using System Dynamics in Manufacturing and Healthcare	Jan 19, 2017
2	Monu Malik, Ph.D., UOIT	Investigation of New Phase Change Materials Based Thermal Management Systems for Li-ion Batteries	Dec 12, 2016
3	Afarin Amirirad, MAsc., Ryerson	A Heat Pump Water Heater for Cold Climate – Canada	Sept 13, 2016
4	Brian Battaglia, MAsc., Ryerson	Refining Field Portable Technology: Quantification of Arsenic Field Test Kits	Aug 26, 2015
5	Mayy Habayeb, MAsc., Ryerson	On the Use of Hidden Markov Model to Predict the Time to Fix Bugs	July 9, 2015
6	Alireza Sayyidmousavi, Ph.D., Ryerson	Investigation of Creep and Fatigue in High Temperature Polymer Matrix Composites Using a Micromechanical Approach	Aug 21, 2014
7	Waleed Alzahrani, MAsc., Ryerson	Experimental Study of a Vertically and Horizontally Coupled Ground Source Heat Pump System	Dec 19, 2013
8	Lam Dang, MAsc., Ryerson	Theoretical and Experimental Study of Single-Needle Thermal Conductivity Probe	Aug 23, 2013
9	Seyed Sepehr Mohaddes Foroushani, MAsc., Ryerson	A Numerical Study of the Effects of Overhangs on the Wind-Driven Rain Wetting of Building Facades	Apr 23, 2013
10	Justin Jeekee Shum, M.Sc., U. Toronto	The Development and Validation of a Simplified Soot Model for use in Soot Emissions Prediction in Natural Gas Fuelled Engine Simulations	Sept 20, 2012
11	Mohammad Reza Kholghy, M.Sc., U. Toronto	The Evolution of Soot Morphology in Laminar Co-Flow Diffusion Flames of the Surrogates for Jet A-1 and a Synthetic Kerosene	Sept 14, 2012
12	Ahmad Khoshnevis, MAsc., Ryerson	Numerical Simulation of Thermodiffusion Subjected to Different Gravity Fields	Aug 9, 2012
13	Kamyar Tanha, MAsc., Ryerson	Evaluating the performance of two solar domestic hot water systems of the archetype sustainable houses	Jan 12, 2012

*Served as committee chair

RESEARCH SUPPORT

Summary (note that values in the summary consider only my appropriated portions of shared grants)

External awards held/secured: \$1,870,455 and 6822 CPU-years¹ (total value: \$3,871,804)
 Internal awards held/secured: \$251,098 total
 External applications pending: \$331,000 total
 Internal applications pending: \$10,000 total

External Awards Held – Major Research Program Support

#	Agency and Program	Project Title (PI or CoPI)	Value (%)	Award Dates
1	Canada Research Chair (Tier II)	Canada Research Chair in High-Performance Computing for Sustainable Energy	\$500,000 (100%)	Apr 1, 2017 - Mar 31, 2022
2	Ontario Ministry of Research and Innovation – Early Researcher Award	Understanding and Mitigating Engine Emissions (PI)	\$140,000 (100%)	Apr 1, 2016 - Mar 31, 2021
3	NSERC CREATE	NSERC CREATE Program in Clean Combustion Engines (CoPI, PI is M. Thomson at U. Toronto)	\$1.65M (12.3%)	Mar 4, 2013 - Mar 31, 2019
4	NSERC Discovery	Developing Numerical Models for the Combustion and Soot Formation of Alternative Fuels (PI)	\$217,000 (7×\$31,000) (100%)	Apr 1, 2012 - Mar 31, 2019
5	Compute Canada Resource Allocations (RAC)	Parallel Simulation and Model Development of Pollutant Formation in Biofuel Combustion (PI)	2162 CPU-yrs Value: \$407,975 (50%)	April 1, 2017 - Mar 31, 2018
6	Compute Canada Resource Allocations (RAC)	Parallel Simulation and Model Development of Pollutant Formation in Biofuel Combustion (PI)	2800 CPU-yrs Value: \$781,373 (50%)	Jan 1, 2016 - Dec 31, 2016
7	Compute Canada Resource Allocations (RAC)	Parallel Simulation and Model Development for Combustion Generated Soot Particle Emissions (PI)	3000 CPU-yrs Value: \$825,000 (50%)	Jan 1, 2015 - Dec 31, 2015
8	Compute Canada Resource Allocations (RAC)	Parallel Simulation and Model Development of Pollutant Formation in Biofuel Combustion (PI)	2183 CPU-yrs Value: \$764,050 (50%)	Jan 1, 2014 - Dec 31, 2014
9	Toronto Atmospheric Fund	Evaluating and Advancing Earth Energy Systems in the Urban Context (PI)	\$75,000 (33%)	Apr 9, 2012 - Aug 31, 2014
10	Compute Canada Resource Allocations (RAC)	Parallel Solution and Model Development of Pollutant Formation in Biofuel Combustion (PI)	2152 CPU-yrs Value: \$753,200 (50%)	Jan 1, 2013 - Dec 31, 2013

¹ Compute Canada is a CFI funded computational infrastructure granting organization that grants CPU-years based on a competitive peer-reviewed application process.

11	NSERC RTI	Characterization of Combustion Generated Nano-particles, held at U. Toronto (CoPI, PI is M. Thomson at U. Toronto)	\$97,034 (25%)	Awarded Mar 28, 2013
12	Compute Canada Resource Allocations (RAC)	Parallel Solution of Particle Formation in Chemically Reacting Flow Problems (CoPI, PI is M. Thomson at U. Toronto)	1346 CPU-yrs Value: \$471,100 (50%)	Jan 1, 2012 - Dec 31, 2012
13	Ontario Research Fund – RI (CFI-LOF Match)	Application of High Performance Parallel Computing to the Numerical Simulation of Biofuel Combustion and Combustion-Generated Emissions (PI)	\$119,092 (100%)	Awarded Aug 9, 2012
14	Canadian Foundation for Innovation (CFI) - LOF	Application of High Performance Parallel Computing to the Numerical Simulation of Biofuel Combustion and Combustion-Generated Emissions (PI)	\$119,092 (100%)	Awarded Apr 15, 2012

External Awards Held – Other Research Support

#	Agency and Program	Project Title (PI or CoPI)	Value (%)	Award Dates
15	NSERC USRA for student Bobby Anand	Development of a Numerical Model for Solar Assisted Ground Source Heat Pumps (PI)	\$4500 (100%)	May, 2017 - Aug, 2017
16	NSERC Engage with Ecologix Inc.	Development of a Hybrid Solar Cascade Heat Pump Heating System (PI)	\$25,000 (100%)	Jan, 2017 - July, 2016
17	NSERC Collaborative Research and Development (CRD)	Performance Characterization and Feasibility Analysis of Natural Gas Heat Pumps for Canadian Weather Conditions: Experimental and Numerical Investigations (CoPI, PI is A. Fung, Ryerson)	\$300,000 (33.3%)	July, 2016 - June, 2019
18	NSERC USRA for student Bobby Anand	Development of a Numerical Model to Predict Particulate Emissions from Engines (PI)	\$4500 (100%)	May, 2016 - Aug, 2016
19	MITACS Cluster with Siemens Canada	Next Generation Engines (CoPI, PI is G. Bourque at Siemens Canada)	\$60,000 (25%)	Apr 1, 2016 - Aug 31, 2016
20	OCE TalentEdge with McClymont and Rak Engineers	An Assessment of the use of an Inexpensive Thermal Storage Medium to Improve Geo-exchange Technology (PI)	\$15,000 (100%)	Jan 4, 2016 - May 5, 2016
21	NSERC USRA for student Nikola Kuzmic	Development of a Numerical Model for Ground Thermal Response in Geo-exchange Systems (PI)	\$4500 (100%)	May, 2015 - Aug, 2015
22	NSERC USRA for student Raymond Alexander	Development of a Numerical Model to Predict Particulate Emissions from Engines (PI)	\$4500 (100%)	May, 2015 - Aug, 2015
23	NSERC Engage with McClymont and Rak Engineers	A Model for Long-term Ground Temperature Response to Geo-exchange (PI)	\$25,000 (100%)	Mar 31, 2015 - Sept 30, 2015

24	NSERC Engage with GeoSource Energy Inc.	Developing an Intelligent Control System for Hybrid Ground Source Heat Pumps (PI)	\$25,000 (100%)	Oct 1, 2014 - Mar 31, 2015
25	Ontario Centres of Excellence – Voucher for Innovation	Developing a Smart Manifold system with Groundheat Solar Wind Corp. (PI)	\$20,000 (100%)	Feb 15, 2014 - July 15, 2014
26	Connect Canada Internship for student Michael Di Paolo	Internship for Developing a Smart Manifold system with Groundheat Solar Wind Corp. (PI)	\$5,000 (100%)	Feb 15, 2014 - July 15, 2014
27	NSERC Engage with Groundheat Systems Inc.	A Smart Manifold Design for Ground Source Heat Pump Applications (PI)	\$25,000 (100%)	Sept 16, 2013 - Mar 16, 2014
28	Contract with Groundheat Solar Wind Corp.	A Smart Manifold for Ground Source Heat Pump Applications (PI)	\$19,000 (100%)	Sept 1, 2013 - Apr 30, 2014
29	Ontario Centres of Excellence – Market Readiness Phase 1	Hybrid Geothermal Software Systems (PI)	\$50,000 (50%)	July 1, 2013 - Feb 28, 2014
30	NSERC Engage with Westport Innovations Inc.	A Soot Particle Concentration Calculator for Industrial Combustion Applications (PI)	\$25,000 (100%)	Mar 31, 2013 - Sept 30, 2013
31	NSERC Interaction	Visit to give a technical presentation and discuss an NSERC Engage proposal by Seth Dworkin, Ryerson University at Westport Innovations Inc. (PI)	\$1800 (100%)	Awarded Nov 20, 2012
32	Contract with Hydro One	Time of Use Customer Analysis Phase I (PI)	\$3750 (50%)	Oct 1, 2012 - Jan 31, 2013
33	MITACS Cluster with Renteknik Inc.	Comprehensive Study of Tri-generation System based on ClimateWell Technology for Canadian Residential Homes (CoPI, PI is A. Fung at Ryerson)	\$44,000 (33%)	July 4, 2012 - Apr 30, 2014
34	FedDev Applied Research and Commercialization Program	Development of an Automated Software Package for the Optimization of Hybrid Ground Source Heat Pump System Design (PI)	\$71,750 (50%)	July 1, 2012 - Mar 31, 2013
35	MITACS Accelerate with Pratt and Whitney Inc.	CFD Simulation of a Gas Turbine Combustor (PI)	\$15,000 (50%)	June 1, 2012 - Aug 31, 2013
36	Union Gas Energy Research	Comprehensive Study of Residential Scale Tri-generation System based on ClimateWell Technology (CoPI, PI is A. Fung at Ryerson)	\$94,875 (33%)	Dec 1, 2011 - Apr 30, 2013
37	Contract with Pratt and Whitney Inc.	Numerical Modeling of Unsteady Combustion Processes (PI)	\$67,934 (50%)	Dec 1, 2011 - Aug 31, 2013

38	Contract with Pratt and Whitney Inc.	Altitude Emissions Control for Aviation - Contributions in Numerical Modelling (CoPI, PI is M. Thomson at U. Toronto)	\$84,000 (50%)	Sept 1, 2011 - Aug 31, 2013
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Internal Awards Held

#	Program	Project Title (PI or CoPI)	Value (%)	Dates
1	Dean's Research Fund – Undergraduate Research Experience	Development of a Numerical Model for Solar Assisted Ground Source Heat Pumps (PI)	\$6700 (100%)	Awarded Mar 28, 2017
2	Dean's Travel Fund	For travel to the 2017 International Ground Source Heat Pump Association Conference in Denver, Colorado, USA (PI)	\$1000 (100%)	Awarded Feb 26, 2017
3	Ryerson University Fall/Winter RA Program	Detailed Numerical Modelling of a Novel Underground Slurry-based Thermal Storage System (PI)	\$4000 (100%)	Sept 6, 2016 - Apr 7, 2017
4	Dean's Research Fund – Undergraduate Research Experience	Predicting Particulate Emissions in CFD Simulations of Engine Conditions (PI)	\$6700 (100%)	Awarded Apr 6, 2016
5	Matching funds to support the Early Researcher Award	Understanding and Mitigating Engine Emissions (PI)	\$50,000 (100%)	Awarded Mar 31, 2016
6	Dean's Research Fund – Postdoctoral Fellow Support	Topics in Combustion/Soot Formation Modelling (PI)	\$10,000 (100%)	Awarded Sept 7, 2015
7	Dean's Research Fund – Tools	A Thermally-driven Stand-alone Desalination Testing Rig (PI)	\$18,000 (50%)	Awarded June 1, 2015
8	Dean's Research Fund – Undergraduate Research Experience	Numerical Analysis and Experimentation of Solar Powered Desalination Process (PI)	\$6700 (100%)	Awarded Apr 30, 2015
9	Dean's Research Fund – Connector	Development and Testing of a Solar Powered Compressor System for a Photo-Voltaic/Thermal Solar powered Desalination Unit (PI)	\$10,000 (50%)	Awarded Apr 30, 2015
10	Dean's Travel Fund	For travel to the Combustion Institute Canadian Section meeting, Saskatoon, Saskatchewan (PI)	\$750 (100%)	Awarded Feb 13, 2015
11	Dean's Travel Fund	For travel to the Fifteenth International Conference on Numerical Combustion, Avignon, France (PI)	\$1000 (100%)	Awarded Oct 20, 2014
12	Ryerson University Fall/Winter RA Program	Developing an Engine Emissions Calculator for the Canadian Transportation Industry (PI)	\$4000 (100%)	Sept 2, 2014 - Apr 9 2015
13	Dean's Research Fund – Booster	The Development and Application of Computer Models of Particulate Emissions (PI)	\$10,000 (100%)	Awarded May 22, 2014

14	Dean's Travel Fund	For travel to the Combustion Institute Canadian Section meeting, Windsor, Ontario (PI)	\$750 (100%)	Awarded Feb 27, 2014
15	Dean's Travel Fund	For travel to the International Combustion Symposium, San Francisco, USA (PI)	\$1000 (100%)	Awarded Nov 6, 2013
16	Ryerson University Fall/Winter RA Program	Multidimensional Optimization of Hybrid Ground Source Heat Pump Design (PI)	\$4000 (100%)	Sept 16, 2013 - Apr 30, 2014
17	Ryerson Summer Research Opportunities Program	A Model and Assessment of the CO ₂ Emission Reduction Potential Associated with Geothermal Heating and Cooling in Ontario (PI)	\$8800 (100%)	Awarded May 22, 2013
18	Matching funds for NSERC CREATE	NSERC CREATE Program in Clean Combustion Engines (PI)	\$50,000 (100%)	Awarded Mar 4, 2013
19	Dean's Travel Fund	For travel to the Combustion Institute – Canadian Section Meeting, Quebec City, Canada (PI)	\$750 (100%)	Awarded Feb 11, 2013
20	Departmental contribution for the CFI/ORF equipment grant	Application of High Performance Parallel Computing to the Numerical Simulation of Biofuel Combustion and Combustion-Generated Emissions (PI)	\$10,000 (100%)	Awarded Oct 15, 2012
21	Dean's Travel Fund	For travel to the International Meeting on Numerical Combustion, San Antonio, USA (PI)	\$1000 (100%)	Awarded Oct 9, 2012
22	Dean's Travel Fund	For travel to the International Combustion Symposium, Warsaw, Poland (PI)	\$1000 (100%)	Awarded Oct 9, 2011
23	Faculty of Engineering and Applied Science	Start-Up Grant (PI)	\$58,948 (100%)	Awarded June 1, 2011

External Applications Pending:

#	Agency and Program	Project Title (PI or CoPI)	Value (%)	Submission Date
1	Ontario Centres of Excellence VIP II	McClymont & Rak: Nano-engineered Underground Thermal Storage for Ground Source Heat Pumps and Solar Thermal Heating	380,000 (87.1%)	May 3, 2017

Internal Applications Pending:

#	Program	Project Title (PI or CoPI)	Value (%)	Submission Date
1	Dean's Research Fund – Booster	Building a Foundation for an NSERC CREATE Program in Geo-Exchange Design, Technology and Entrepreneurship (PI)	\$10,000 (100%)	Apr 20, 2017

PUBLICATIONS AND PRESENTATIONS

Summary

Peer-reviewed journal publications: 38 published/accepted (+3 under review)
 Non-scientific publications: 1

Media features:	12
Invited seminars:	8
Conference Papers with Oral Presentations:	57 published/accepted (+4 submitted)
Published Abstracts with Oral Presentations:	26 (+0 submitted)
Poster presentations:	13 presented
Technical reports:	11
Invention Disclosures	1

Most Commonly used Journals for Publications	5-year Impact Factor as of 2016
Combustion and Flame (10 publications)	4.806
Proceedings of the Combustion Institute (8 publications)	4.303
Applied Energy (4 publications)	6.222
Renewable Energy (3 publications)	4.068
Combustion Theory and Modelling (3 publications)	2.050
Combustion Science and Technology (2 publications)	1.353

Peer-reviewed Journal Publications; Students' names underlined:

1. N. A. Eaves, M. J. Thomson, **S. B. Dworkin**, "Influence of Pressure on Near Nozzle Flow Field and Soot Formation in Laminar Co-flow Diffusion Flames," Submitted to P. Combust. Inst., *under review*.
2. R. Alexander, S. Bozorgzadeh, A. Khosousi, **S. B. Dworkin**, "Development and Testing of a Soot Particle Concentration Estimator Using Lagrangian Post-processing," Submitted to Eng. Appl. Comp. Fluid., *under review*.
3. N. A. Slavinskaya, V. Chernov, R. Whitside, J. H. Starcke, U. Riedel, D. Knyazkov, I. E. Gerasimov, O. P. Korobeinichev, **S. B. Dworkin**, M. J. Thomson, "Kinetic Study of the Effect of Ethanol Addition on PAH and Soot Formation in Ethylene Flames," Submitted to Combust. Flame, *under review*.
4. A. Veshkini, **S. B. Dworkin**, "A Computational Study of Soot Formation and Flame Structure of Coflow Laminar Methane/air Diffusion Flames Under Microgravity and Normal Gravity," Combust. Theor. Model., (2017) *Accepted, In Press DOI:10.1080/13647830.2017.1308558*.
5. M. Sahafzadeh, L. W. Kostiuik, **S. B. Dworkin**, "Transient Response of a Laminar Premixed Flame to a Radially Diverging/Converging Flow," Combust. Flame, 179 (2017) 51-62.
6. A. A. Alaica, **S. B. Dworkin**, "Characterizing the Effect of an Off-Peak Ground Pre-Cool Control Strategy on Hybrid Ground Source Heat Pump Systems," Energ. Buildings, 137 (2017) 46-59. ([Published Link](#), [Open Access Link](#))
7. J. Fine, J. Friedman, **S. B. Dworkin**, "Detailed Modeling Of A Novel Photovoltaic Thermal Cascade Heat Pump Domestic Water Heating System," Renew. Energ., 101 (2017) 500-513. ([Published Link](#), [Open Access Link](#))
8. N. A. Eaves, **S. B. Dworkin**, M. J. Thomson, "Assessing Relative Contributions of PAHs to Soot Mass by Reversible Heterogeneous Nucleation and Condensation," P. Combust. Inst., 36 (2017) 935-945.
9. N. A. Eaves, **S. B. Dworkin**, M. J. Thomson, "CoFlame: A Refined and Validated Numerical Algorithm for Modeling Sooting Laminar Diffusion Flames," Comput. Phys. Commun., 207 (2016) 464-477.

10. Y. L. E. Law, **S. B. Dworkin**, “Characterization of the Effects of Borehole Configuration and Interference with Long Term Ground Temperature Modelling of Ground Source Heat Pumps,” *Appl. Energ.*, 179 (2016) 1032-1047.
11. A. Veshkini, **S. B. Dworkin**, M. J. Thomson, “Understanding Soot Particle Size Evolution in Laminar Ethylene/Air Diffusion Flames Using Novel Soot Coalescence Models,” *Combust. Theor. Model.*, 20 (2016) 707-734. (**Cover article**)
12. A. Veshkini, N. A. Eaves, **S. B. Dworkin**, M. J. Thomson, “Application of PAH-Condensation Reversibility in Modeling Soot Growth in Laminar Premixed and Nonpremixed Flames,” *Combust. Flame.*, 167 (2016) 335-352.
13. H. V. Nguyen, Y. L. E. Law, X. Zhou, P. R. Walsh, W. H. Leong, **S. B. Dworkin**, “A Techno-economic Analysis of Heat-Pump Entering Fluid Temperatures, and CO₂ Emissions for Hybrid Ground-Source Heat Pump Systems,” *Geothermics*, 61 (2016) 24-34.
14. N. Kuzmic, Y. L. E. Law, **S. B. Dworkin**, “Numerical Heat Transfer Comparison Study of Hybrid and Non-hybrid Ground Source Heat Pump Systems,” *Appl. Energ.*, 165 (2016) 919-929. ([Published Link](#), [Open Access Link](#))
15. N. Ekrami, Z. M. Hasib, **S. B. Dworkin**, A. S. Fung, D. Naylor, “Residential Application of a Natural Gas Based Tri-generation System for Cold Climates,” *ASHRAE-Transactions* 121 (2015) 504-510.
16. A. Khosousi, **S. B. Dworkin**, “Soot Surface Reactivity during Surface Growth and Oxidation in Laminar Diffusion Flames,” *Combust. Flame*, 162:12 (2015) 4523-4532.
17. J. Fine, J. Friedman, **S. B. Dworkin**, “Transient Analysis of a Photovoltaic Thermal Heat Input Process with Thermal Storage,” *Appl. Energ.*, 160 (2015) 308-320.
18. A. Khosousi, F. Liu, **S. B. Dworkin**, N. A. Eaves, M. J. Thomson, X. He, Y. Dai, S. Shuai, J. Wang, “Experimental and Numerical Study of Soot Formation in Laminar Coflow Diffusion Flames of Gasoline/Ethanol Blends,” *Combust. Flame* 162:10 (2015) 3925-3933.
19. A. Khosousi, **S. B. Dworkin**, “Detailed Modelling of Soot Oxidation by O₂ and OH in Laminar Diffusion Flames,” *P. Combust. Inst.* 35 (2015) 1903-1910.
20. N. A. Eaves, **S. B. Dworkin**, M. J. Thomson, “The Importance of Reversibility in Modeling Soot Nucleation and Condensation Processes,” *P. Combust. Inst.* 35 (2015) 1787-1794.
21. N. Ekrami, Z. M. Hasib, P. Lele, **S. B. Dworkin**, A. S. Fung, D. Naylor, “Preliminary Test and Analysis of A Stirling Engine Based Residential Tri-generation system at TRCA Archetype Sustainable House,” *ASHRAE-Transactions* 120:2 (2014) 273-284.
22. A. Veshkini, **S. B. Dworkin**, M. J. Thomson, “A Soot Particle Surface Reactivity Model Applied to a Wide Range of Laminar Ethylene/Air Flames,” *Combust. Flame.* 161:12 (2014) 3191-3200.
23. H. V. Nguyen, Y. L. E. Law, M. Alavy, P. R. Walsh, W. H. Leong, **S. B. Dworkin**, “An Analysis of the Factors affecting Hybrid Ground-Source Heat Pump Installation Potential in North America,” *Appl. Energ.* 125 (2014) 28-38.
24. M. Alavy, **S. B. Dworkin**, W. H. Leong, “A Design Methodology and Analysis of Combining Multiple Buildings onto a Single District Hybrid Ground Source Heat Pump System,” *Renew. Energ.*, 66 (2014) 515-522.
25. V. Chernov, M. J. Thomson, **S. B. Dworkin**, N. A. Slavinskaya, U. Riedel, “Soot Formation with C₁ and C₂ Fuels using an Improved Chemical Mechanism for PAH Growth,” *Combust. Flame*, 161 (2014) 592-601.

26. N. A. Eaves, M. J. Thomson, **S. B. Dworkin**, “The Effect of Conjugate Heat Transfer on Soot Formation Modelling at Elevated Pressures,” *Combust. Sci. Technol.*, 85 (2013) 1799-1819.
27. M. Alavy, H. V. Nguyen, W. H. Leong, **S. B. Dworkin**, “A Methodology and Computerized Approach for Optimizing Hybrid Ground Source Heat Pump System Design,” *Renew. Energ.*, 57 (2013) 404-412.
28. M. Saffaripour, M. Kholghy, Q. Zhang, **S. B. Dworkin**, M. J. Thomson, “A Numerical and Experimental Study of Soot Formation in a Laminar Coflow Diffusion Flame of a Jet A-1 Surrogate,” *P. Combust. Inst.*, 34 (2013) 1057-1065.
29. S. A. Esfarjani, **S. B. Dworkin**, J. Mostaghimi, K. S. Kim, C. T. Kingston, B. Simard, G. Soucy, “Detailed Numerical Simulation of Single-Walled Carbon Nanotube Synthesis in a Radio-Frequency Induction Thermal Plasma System,” *J. Phys.: Conf. Ser.*, 406 (2012) 012011.
30. F. Liu, **S. B. Dworkin**, M. J. Thomson, G. J. Smallwood, “Modeling DME Addition Effects to Fuel on PAH and Soot in Laminar Coflow Ethylene/air Diffusion Flames using two PAH Mechanisms,” *Combust. Sci. Technol.*, 184 (2012) 966-979.
31. N. A. Eaves, A. Veshkini, C. Riese, Q. Zhang, **S. B. Dworkin**, M. J. Thomson, “A Numerical Study of High Pressure, Laminar, Sooting, Ethane-Air Coflow Diffusion Flames,” *Combust. Flame*, 159:10 (2012) 3179-3190.
32. V. Chernov, Q. Zhang, M. J. Thomson, **S. B. Dworkin**, “Numerical Investigation of Soot Formation Mechanisms in Partially-premixed Ethylene-air Co-flow Flames,” *Combust. Flame*, 159:9 (2012) 2789-2798.
33. N. A. Slavinskaya, U. Riedel, **S. B. Dworkin**, M. J. Thomson, “Detailed Numerical Modelling of PAH Formation and Growth in Non-Premixed Ethylene and Ethane Flames,” *Combust. Flame*, 159:3 (2012) 979-995.
34. **S. B. Dworkin**, Q. Zhang, M. J. Thomson, N. A. Slavinskaya, U. Riedel, “Application of an Enhanced PAH Growth Model to Soot Formation in a Laminar Coflow Ethylene/Air Diffusion Flame,” *Combust. Flame*, 158:9 (2011) 1682-1695.
35. M. Saffaripour, P. Zabeti, **S. B. Dworkin**, Q. Zhang, H. Guo, F. Liu, G. J. Smallwood, M. J. Thomson, “A Numerical and Experimental Study of a Laminar Sooting Coflow Jet-A1 Diffusion Flame,” *P. Combust. Inst.*, 33 (2011) 601-608.
36. **S. B. Dworkin**, J. A. Cooke, B. A. V. Bennett, M. D. Smooke, R. J. Hall, M. B. Colket, “Distributed-Memory Parallel Computation of a Forced, Time-Dependent, Sooting, Ethylene/Air Coflow Diffusion Flame,” *Combust. Theor. Model.*, 13:5 (2009) 795-822. (**Cover article**)
37. **S. B. Dworkin**, M. D. Smooke, V. Giovangigli, “The Impact of Detailed Multicomponent Transport and Thermal Diffusion Effects on Particulate Formation in Ethylene/Air Flames,” *P. Combust. Inst.*, 32:1 (2009) 1165-1172.
38. **S. B. Dworkin**, A. M. Schaffer, B. C. Connelly, M. B. Long, M. D. Smooke, M. P. Puccio, B. McAndrews, J. H. Miller, “Measurements and Calculations of Formaldehyde Concentrations in a Methane/N₂/Air, Non-Premixed Flame: Implications for Heat Release Rate,” *P. Combust. Inst.*, 32:1 (2009) 1311-1318.
39. **S. B. Dworkin**, B. C. Connelly, A. M. Schaffer, B. A. V. Bennett, M. B. Long, M. D. Smooke, M. P. Puccio, B. McAndrews, J. H. Miller, “Computational and Experimental Study of a Forced, Time-Dependent, Methane-Air Coflow Diffusion Flame,” *P. Combust. Inst.*, 31:1 (2007) 971-978.

40. **S. B. Dworkin**, B. A. V. Bennett, M. D. Smooke, “A Mass-Conserving Vorticity-Velocity Formulation with Application to Nonreacting and Reacting Flows,” *J. Comput. Phys.*, 215:2 (2006) 430-447.
41. **S. B. Dworkin**, T. J. Nye, “Image Processing for Machine Vision Measurement of Hot Formed Parts,” *J. Mater. Process. Tech.*, 174:1-3 (2006) 1-6.

Non-scientific Publications

1. “Clearing the Air: How HPC is Helping Improve our Air Quality,” written by **S. B. Dworkin**, *SciNet Portal Quarterly Newsletter* 1 (2010) p.10.

Media Features

1. Quoted in “Biofuel mixture could cut jet particle emissions by more than half, study suggests” <http://www.cbc.ca/news/technology/biofuels-reduce-effects-climate-change-1.4026752>
2. “Partnering to improve output of geothermal systems,” Ryerson Innovation Newsletter, Dec 13, 2016 <http://www.ryerson.ca/research/publications/newsletter/nov-dec-2016/#6>
3. “CTV Toronto: Lights out for Earth Hour,” CTV Toronto News,” March 29, 2014, <http://toronto.ctvnews.ca/video?clipId=315890>
4. “Super-Computing to Save the Planet,” *The Eyeopener*, April 3, 2013, <http://theeyeopener.com/2013/04/supercomputing-to-save-the-planet/>
5. “Supercomputing Greener Energy,” *Ryerson Today*, March 22, 2013, http://www.ryerson.ca/news/news/Research_News/20130322_dworkin.html
6. “Bellair Ventures Inc. Announces the Collaboration of Clean Energy Developments Corp. and Ryerson University to Develop Cleantech Software,” *MarketWire.com*, August 7, 2012, <http://www.marketwire.com/press-release/bellair-ventures-inc-announces-collaboration-clean-energy-developments-corp-ryerson-tsx-venture-bvi-1687647.htm>
7. “Avoiding the Next Big Blackout,” *Ryerson Today*, May 18, 2012, http://www.ryerson.ca/ryersontoday/stories/20120518_cue.html
8. “CUE Showcase: Avoiding the Next Big Blackout,” *Ryerson Centre for Urban Energy, E-Newsletter* May 11, 2012
9. “Micro Tri-Generation of Electricity, Building Heating and Cooling from Natural Gas,” *Ryerson Centre for Urban Energy*, Fall, 2011, http://www.cue.ryerson.ca/cue/research/efficiency_microtrigen.html
10. “Canadian Supercomputers Assigned Homework”, *SciNet Computing Consortium*, March, 2011, <https://www.scinethpc.ca/canadian-supercomputers-assigned-their-homework-on-global-problems/>
11. “Largest Supercomputer Simulations of Bio-jet-fuel Will Help Make Fuels Clean and Green”, *Newswire*, June, 2010, <http://www.newswire.ca/en/story/583603/largest-supercomputer-simulations-of-bio-jet-fuel-will-help-make-fuels-clean-and-green>
12. “Largest Supercomputer Simulations Yet of Bio-Jetfuel Will Help Identify Optimal Mixtures”, *GreenCarCongress*, June, 2010, <http://www.greencarcongress.com/2010/06/dworkin-20100608.html>

Invited Seminars

1. “Hybrid Geothermal Solutions: The Ryerson Method for Analyzing Geothermal Potential” *McMaster Innovation Park, McMaster University*, Hamilton, Canada, April 14, 2016.
2. “HVAC Design using Hybrid Geothermal Systems” *MCW Consultants Ltd.*, Toronto, Canada, March 8, 2015.

3. "Addressing Atmospheric Emissions Through the Development of Novel Numerical Algorithms and High-Performance Computation" Lassonde School of Engineering, *York University*, Toronto, Canada, February 26, 2013.
4. "Development of a Solar and Natural Gas Powered Air Conditioner: a Micro Tri-generation System" Centre for Urban Energy Hosts the Ontario Minister of Energy, *Ryerson University*, Toronto, Canada, March 22, 2012.
5. "Recent Advances in the Modelling and Understanding of Soot Formation in Combustion: An Application of Large-Scale Computation" Mechanical and Mechatronics Engineering, *University of Waterloo*, Waterloo, Canada, August 19, 2011.
6. "Recent Developments in Flame and Soot Modelling: An Application of Large-Scale Computation" The *German Aerospace Center (DLR)*, Stuttgart, Germany, June 27, 2011.
7. "Computational Combustion: Toward the use of Sustainable and Alternative Fuels" SciNet Computing Consortium, *University of Toronto*, Toronto, Canada, February 9, 2011.
8. "Computational and Experimental Study of Sooting and Nonsooting Forced, Time-Dependent, Coflow Diffusion Flames," Department of Propulsion and Thermofluid-Dynamics, *Universidad Carlos III de Madrid*, Madrid, Spain, September 26, 2008.

Conference Papers with Oral Presentations

1. "Soot Concentration Estimation Using Lagrangian Post-Processing for Laminar Flames of Varying Dilution and Pressures," R. Alexander, **S. B. Dworkin**, *Combustion Institute Canadian Section Spring Technical Meeting*, Montreal Quebec, Canada, May 15-18, 2017, *Submitted*.
2. "Numerical Investigation of Transfer Function Models of a Laminar Premixed Flame Using Frequency Response Analysis," M. Sahafzadeh, **S. B. Dworkin**, L. W. Kostiuk, *Combustion Institute Canadian Section Spring Technical Meeting*, Montreal Quebec, Canada, May 15-18, 2017, *Submitted*.
3. "Soot Particle Concentration Estimator Applied to a Transient Sooting Ethylene/air System," L. Zimmer, R. Alexander, **S. B. Dworkin**, *Combustion Institute Canadian Section Spring Technical Meeting*, Montreal Quebec, Canada, May 15-18, 2017, *Submitted*.
4. "Numerical Simulation of Laminar Diffusion Flames with Aliphatic Collision Inception," N. Ceranic, **S. B. Dworkin**, *Combustion Institute Canadian Section Spring Technical Meeting*, Montreal Quebec, Canada, May 15-18, 2017, *Submitted*.
5. "Modelling of Alternative Borehole Configurations for Geo-Exchange," Y. L. E. Law, **S. B. Dworkin**, *International Ground Source Heat Pump Association Technical Research Conference and Expo 2017*, Denver, Colorado, USA ([Link](#)).
6. "Effect of an Off-peak Ground Pre-cool Control Strategy on Hybrid Ground-source Heat Pump Systems," A. A. Alaica, **S. B. Dworkin**, *International Ground Source Heat Pump Association Technical Research Conference and Expo 2017*, Denver, Colorado, USA ([Link](#)).
7. "Analysis of a Photovoltaic Thermal Domestic Water Heating System," J. P. Fine, J. Friedman, **S. B. Dworkin**, *CSME International Congress 2016*, Kelowna, British Columbia, Canada, June 26-29, 2016.
8. "The Effect of an Off-Peak Ground Pre-Cool Control Strategy on a Hybrid Ground Source Heat Pump System," A. A. Alaica, **S. B. Dworkin**, *CSME International Congress 2016*, Kelowna, British Columbia, Canada, June 26-29, 2016.

9. "A Study of the Effect of Borehole Configurations on Ground Temperature in Ground Source Heat Pumps," Y. L. E. Law, **S. B. Dworkin**, *CSME International Congress 2016*, Kelowna, British Columbia, Canada, June 26-29, 2016.
10. "Analysis and Comparison of a Photovoltaic Thermal Domestic Water Heating System with an Evacuated Tube System," J. P. Fine, J. Friedman, **S. B. Dworkin**, *Energy and Water Symposium and Industry Summit*, Windsor, Ontario, Canada, June 22-23, 2016.
11. "Assessing Relative Contributions of PAHs to Soot Mass by Reversible Heterogeneous Nucleation and Condensation," N. A. Eaves, **S. B. Dworkin**, M. J. Thomson, *Combustion Institute Canadian Section Spring Technical Meeting*, Waterloo, Ontario, Canada, May 10-12, 2016.
12. "An Investigation on the Effect of Positive and Negative Stretch on the Structure of Laminar Premixed Flame," M. Sahafzadeh, L. W. Kostiuk, **S. B. Dworkin**, *Combustion Institute Canadian Section Spring Technical Meeting*, Waterloo, Ontario, Canada, May 10-12, 2016.
13. "Development of a Soot Particle Concentration Estimator Using Lagrangian Post-processing for Industrial Combustion Applications," R. Alexander, **S. B. Dworkin**, *Combustion Institute Canadian Section Spring Technical Meeting*, Waterloo, Ontario, Canada, May 10-12, 2016.
14. "Development and Validation of a Partially Coupled Soot Model for Turbulent Kerosene Combustion in view of Application to Gas Turbines," B. Shahriari, **S. B. Dworkin**, M. J. Thomson, *ASME Turbo Expo 2015*, Montreal, Quebec, Canada, June 15-19, 2015.
15. "Role of PAH-Soot Equilibrium on Predicting Soot Particle Size Distributions in Laminar Premixed Flames," A. Veshkini, N. A. Eaves, **S. B. Dworkin**, M. J. Thomson, *9th U.S. National Combustion Meeting*, Cincinnati, Ohio, May 17-20, 2015.
16. "Transient Response of a Laminar Premixed Flame to a Radially Diverging/converging Flow," M. Sahafzadeh, L. W. Kostiuk, **S. B. Dworkin**, *Combustion Institute Canadian Section Spring Technical Meeting*, Saskatoon, Saskatchewan, Canada, May 11-14, 2015.
17. "Refinement and Analysis of a Soot Particle Concentration Estimator," R. Alexander, S. Bozorgzadeh, A. Khosousi, **S. B. Dworkin**, *Combustion Institute Canadian Section Spring Technical Meeting*, Saskatoon, Saskatchewan, Canada, May 11-14, 2015.
18. "Development of a Unique Function for Soot Surface Reactivity during Oxidation and Surface Growth in Laminar Diffusion Flames," A. Khosousi, **S. B. Dworkin**, *Combustion Institute Canadian Section Spring Technical Meeting*, Saskatoon, Saskatchewan, Canada, May 11-14, 2015.
19. "Numerical Simulation of Ground Temperature from Long Term Operation of Ground Source Heat Pumps," Y. L. E. Law, N. Kuzmic, **S. B. Dworkin**, *International Conference & Exhibition on Clean Energy*, Quebec City, Quebec, Canada, October 20-22, 2014.
20. "Preliminary Analysis of a Hybrid Solar Desalination System," J. Fine, J. Friedman, **S. B. Dworkin**, *International Conference & Exhibition on Clean Energy*, Quebec City, Quebec, Canada, October 20-22, 2014.
21. "Feasibility Analysis of a Natural Gas Based Tri-generation system In Cold Climate" N. Ekrami, Z. M. Hasib, **S. B. Dworkin**, A. S. Fung, D. Naylor, *ASHRAE annual Conference*, Seattle, USA, June 28-July 2, 2014.
22. "A Techno-economic Analysis of CO₂ Emissions for Hybrid Ground-Source Heat Pumps," H. V. Nguyen, Y. L. E. Law, X. Zhou, W. H. Leong, **S. B. Dworkin**, *CSME International Congress*, Toronto, Ontario, June 1-4, 2014.

23. "Experimental and Numerical Study of Soot Formation in Laminar Coflow Gasoline/Ethanol Diffusion Flames," A. Khosousi, **S. B. Dworkin**, F. Liu, N. A. Eaves, M. J. Thomson, X. He, Y. Dai, S. Shuai, J. Wang, *Combustion Institute Canadian Section Spring Technical Meeting*, Windsor, Ontario, May 12-15, 2014.
24. "Effect of Nucleation Reversibility on Predicting Soot Particle Size Distributions in Premixed Flames," A. Veshkini, N. A. Eaves, **S. B. Dworkin**, M. J. Thomson, *Combustion Institute Canadian Section Spring Technical Meeting*, Windsor, Ontario, May 12-15, 2014.
25. "Development of a Soot Model for Gas Turbine Applications," B. Shahriari, M. J. Thomson, **S. B. Dworkin**, *Combustion Institute Canadian Section Spring Technical Meeting*, Windsor, Ontario, May 12-15, 2014.
26. "The Importance of Reversibility in Modeling Soot Nucleation and Condensation Processes," N. A. Eaves, **S. B. Dworkin**, M. J. Thomson, *Combustion Institute Canadian Section Spring Technical Meeting*, Windsor, Ontario, May 12-15, 2014.
27. "A Soot Particle Concentration Estimator for Industrial Combustion Applications," S. Bozorgzadeh, A. Khosousi, **S. B. Dworkin**, *Combustion Institute Canadian Section Spring Technical Meeting*, Windsor, Ontario, May 12-15, 2014.
28. "Detailed Modelling of Soot Oxidation by O₂ and OH in Laminar Diffusion Flames," A. Khosousi, **S. B. Dworkin**, *Combustion Institute Canadian Section Spring Technical Meeting*, Windsor, Ontario, May 12-15, 2014.
29. "An Experimental and Modeling Study of Soot Formation in Laminar Coflow Diffusion Flames of Conventional and Alternative Jet Fuel," M. Saffaripour, A. Veshkini, M. Kholghy, **S. B. Dworkin**, M. J. Thomson, *European Combustion Meeting Flames Workshop*, Lund, Sweden, June 25-28, 2013.
30. "Modeling Soot Formation in Coflow Flames at Elevated Pressures," N. A. Eaves, **S. B. Dworkin**, M. J. Thomson, *European Combustion Meeting*, Lund, Sweden, June 25-28, 2013.
31. "Conversion of a Residential Cogeneration System to Micro Tri-generation," P. Lele, N. Ekrami, Z. M. Hasib, **S. B. Dworkin**, A. S. Fung, D. Naylor, *3rd Climate Change Technology Conference*, Montreal, Quebec, May 27-29, 2013.
32. "Understanding Optimization Factors in Sizing Ground-Source Heat Pumps in Hybrid Systems," H. V. Nguyen, M. A. Ghahfarokhy, W. H. Leong, **S. B. Dworkin**, *3rd Climate Change Technology Conference*, Montreal, Quebec, May 27-29, 2013.
33. "Modeling Soot Particle Nucleation as a Rare Event," N. A. Eaves, M. J. Thomson, **S. B. Dworkin**, *Combustion Institute Canadian Section Spring Technical Meeting*, Quebec City, Quebec, May 13-16, 2013.
34. "Detailed Study of Soot Oxidation in Laminar Diffusion Flames by O₂ and OH," A. Khosousi, M. J. Thomson, **S. B. Dworkin**, *Combustion Institute Canadian Section Spring Technical Meeting*, Quebec City, Quebec, May 13-16, 2013.
35. "Conversion of a Residential Cogeneration System to Micro Tri-generation," P. Lele, N. Ekrami, Z. M. Hasib, **S. B. Dworkin**, A. S. Fung, D. Naylor, *ICCE 2012: International Conference on Clean Energy*, Quebec City, Quebec, September 10-11, 2012. (***)Students Lele, Ekrami and Hasib were awarded "Best Student Paper Presentation" for this contribution(***)
36. "Numerical Methodology for Optimum Ground Source Heat Pump Systems Design," M. A. Ghahfarokhy, H. V. Nguyen, **S. B. Dworkin**, W. H. Leong, *11th International Conference on Sustainable Energy technologies (SET-2012)*, Vancouver, British Columbia, September 2-5, 2012.

37. "Feasibility Study of Residential Tri-generation System based on LiCl-H₂O Adsorption Chiller," N. Ekrami, Z. Moiet Hasib, **S. B. Dworkin**, A. S. Fung, D. Naylor, *11th International Conference on Sustainable Energy technologies (SET-2012)*, Vancouver, British Columbia, September 2-5, 2012.
38. "Feasibility Study of Residential Tri-generation System based on LiCl-H₂O Adsorption Chiller," N. Ekrami, Z. M. Hasib, **S. B. Dworkin**, A. S. Fung, D. Naylor, *CSME International Congress*, Winnipeg, Manitoba, June 4-6, 2012.
39. "Developing of a Numerical Model to Predict Smoking and Non-Smoking Behaviour in Laminar Diffusion Flames," A. Khosousi, M. J. Thomson, **S. B. Dworkin**, *Combustion Institute Canadian Section Spring Technical Meeting*, Toronto, Ontario, May 13-16, 2012.
40. "A Numerical and Experimental Study of Soot Formation in a Laminar Coflow Diffusion Flame of a Jet A-1 Surrogate," M. Saffaripour, M. Kholghy, Q. Zhang, **S. B. Dworkin**, M. J. Thomson, *Combustion Institute Canadian Section Spring Technical Meeting*, Toronto, Ontario, May 13-16, 2012.
41. "Numerical Predictions of Soot Volume Fractions in Partially-premixed Ethylene-air Coflow Flames," V. Chernov, Q. Zhang, **S. B. Dworkin**, M. J. Thomson, *Combustion Institute Canadian Section Spring Technical Meeting*, Toronto, Ontario, May 13-16, 2012.
42. "The Effect of Pressure and Conjugate Heat Transfer on Soot Formation Modelling," N. A. Eaves, **S. B. Dworkin**, M. J. Thomson, *Combustion Institute Canadian Section Spring Technical Meeting*, Toronto, Ontario, May 13-16, 2012.
43. "A Numerical Investigation on of a Simplified Two-Equation Soot Model in Methane/Air Co-flow Laminar Diffusion Flames at 1 to 40 atmospheres for use in Natural Gas Engine Simulations," J. J. Shum, M. J. Thomson, Q. Zhang, **S. B. Dworkin**, J. Huang, *Combustion Institute Canadian Section Spring Technical Meeting*, Toronto, Ontario, May 13-16, 2012.
44. "A Soot Particle Surface Ageing Model Applied to Laminar Ethylene/Air Diffusion Flames," A. Veshkini, **S. B. Dworkin**, M. J. Thomson, *Combustion Institute Canadian Section Spring Technical Meeting*, Toronto, Ontario, May 13-16, 2012.
45. "CFD Simulation of Single-walled Carbon Nanotube Growth in an RF Induction Thermal Plasma Process with a Chemistry Model," S. A. Esfarjani, **S. B. Dworkin**, J. Mostaghimi, K. S. Kim, B. Simard, *42nd AIAA Thermophysics Conference*, Honolulu, Hawaii, June 27-30, 2011.
46. "Application of a PAH Growth Mechanism to Soot Formation in Laminar Diffusion Flames," **S. B. Dworkin**, Q. Zhang, M. J. Thomson, N. A. Slavinskaya, U. Riedel, *Combustion Institute Canadian Section Spring Technical Meeting*, Winnipeg, Manitoba, May 8-11, 2011.
47. "Modelling Soot Particle Surface Oxidation in Laminar Flames," **S. B. Dworkin**, Q. Zhang, M. J. Thomson, *Combustion Institute Canadian Section Spring Technical Meeting*, Winnipeg, Manitoba, May 8-11, 2011.
48. "Numerical Analysis of PAH Growth Mechanisms in a Sooting Laminar Methane-air Diffusion Flame," V. Chernov, **S. B. Dworkin**, Q. Zhang, M. J. Thomson, *Combustion Institute Canadian Section Spring Technical Meeting*, Winnipeg, Manitoba, May 8-11, 2011.
49. "Numerical Study of DME Addition to Fuel on PAHs and Soot Formation in a Laminar Coflow Ethylene/Air Diffusion Flame," F. Liu, **S. B. Dworkin**, M. J. Thomson, G. J. Smallwood, *Combustion Institute Canadian Section Spring Technical Meeting*, Winnipeg, Manitoba, May 8-11, 2011.

50. "Development of a Numerical Model for Soot Particle Ageing in Laminar Flames," A. Veshkini, **S. B. Dworkin**, M. J. Thomson, *Combustion Institute Canadian Section Spring Technical Meeting*, Winnipeg, Manitoba, May 8-11, 2011.
51. "Application of a Semi-Detailed PAH Growth Mechanism to Soot Formation in Laminar Diffusion Flames," **S. B. Dworkin**, Q. Zhang, M. J. Thomson, N. A. Slavinskaya, U. Riedel, *7th U.S. National Combustion Meeting*, Atlanta, Georgia, March 20-23, 2011.
52. "Distributed-Memory Parallel Computation of a Laminar Sooting Coflow Jet-A1 Diffusion Flame," M. Saffaripour, P. Zabeti, **S. B. Dworkin**, Q. Zhang, H. Guo, F. Liu, G. J. Smallwood, M. J. Thomson, *High Performance Computing Symposium HPCS2010*, Toronto, Ontario, June 6-9, 2010.
53. "A Numerical and Experimental Study of a Laminar Sooting Coflow Jet-A1 Diffusion Flame," M. Saffaripour, P. Zabeti, **S. B. Dworkin**, Q. Zhang, M. J. Thomson, H. Guo, F. Liu, G. J. Smallwood, *Combustion Institute Canadian Section Spring Technical Meeting*, Ottawa, Ontario, May 9-12, 2010.
54. "Numerical Modelling of PAH Formation and Soot Inception in the Central/Pyrolysis Region of a Laminar Ethylene/Air Diffusion Flame," **S. B. Dworkin**, Q. Zhang, H. Guo, F. Liu, G. J. Smallwood, M. J. Thomson, *Combustion Institute Canadian Section Spring Technical Meeting*, Ottawa, Ontario, May 9-12, 2010.
55. "Parallel Computation of a Forced, Time-Dependent, Sooting, Ethylene/Air Coflow Diffusion Flame," **S. B. Dworkin**, J. A. Cooke, B. A. V. Bennett, M. D. Smooke, R. J. Hall, M. B. Colket, *6th US National Combustion Meeting*, Ann Arbor, Michigan, May 17-20, 2009.
56. "The Impact of Detailed Multicomponent Transport and Thermal Diffusion Effects on Soot Formation in Ethylene/Air Flames," **S. B. Dworkin**, B. A. V. Bennett, V. Giovangigli, M. D. Smooke, *Eastern States Section, Combustion Institute, Technical Meeting*, Charlottesville, Virginia, October 21-24, 2007.
57. "A Mass-Conserving Vorticity-Velocity Formulation with Application to Axisymmetric Laminar Methane Flames," **S. B. Dworkin**, B. A. V. Bennett, M. D. Smooke, *Eastern States Section, Combustion Institute, Technical Meeting*, Orlando, Florida, November, 13-15, 2005, pp. 239-242.
58. "Computational and Experimental Study of Molecular Growth in Forced, Time-Varying Flames," B. C. Connelly, B. A. V. Bennett, **S. B. Dworkin**, M. D. Smooke, M. B. Long, J. H. Miller, M. A. Puccio, J. D. Herdman, *Eastern States Section, Combustion Institute, Technical Meeting*, Orlando, Florida, November 13-15, 2005, pp. 259-262.
59. "Comparison of Rotational and Translational Diffusion in Supercooled Liquids of Rigid Dimers," **S. B. Dworkin**, N. Xu, C. O'Hern, *American Physical Society, March Meeting*, Montreal, Quebec, March 22-26, 2004.
60. "Analysis of Insulating Panels for Hot Water Radiator Heating Systems," J. Woods, K. Celeste, **S. B. Dworkin**, M. F. Lightstone, *SESCI 2004 Conference* University of Waterloo, Waterloo, Ontario, August 21-25, 2004.
61. "Image Processing for Machine Vision Measurement of Hot Formed Parts," **S. B. Dworkin**, T. J. Nye, *CSME International Congress*, Kingston, Ontario, May 16-18, 2002. (***)**Awarded Best Student Paper Presentation of the CSME, \$400**(***)

Published Abstracts with Oral Presentations

1. "Numerical Simulation of Soot Formation in Diffusion Flames," N. Ceranic, **S. B. Dworkin**, *16th International Conference on Numerical Combustion*, Orlando, Florida, USA, April 2-5, 2017.

2. "Nonlinear Frequency Response Analysis of Laminar Premixed Flames," M. Sahafzadeh, L. W. Kostiuk, **S. B. Dworkin**, *16th International Conference on Numerical Combustion*, Orlando, Florida, USA, April 2-5, 2017.
3. "Development of a Soot Particle Concentration Estimation Library for Industrial Combustion Applications," R. Alexander, **S. B. Dworkin**, *16th International Conference on Numerical Combustion*, Orlando, Florida, USA, April 2-5, 2017.
4. "Development of a Unique Function for Soot Surface Reactivity for Oxidation and Surface Growth in Laminar Diffusion Flames," A. Khosousi, **S. B. Dworkin**, *15th International Conference on Numerical Combustion*, Avignon, France, April 19-22, 2015.
5. "Heterogeneous PAH dimerization as an Important contributor to soot nucleation," N. A. Eaves, M. J. Thomson, **S. B. Dworkin**, *15th International Conference on Numerical Combustion*, Avignon, France, April 19-22, 2015.
6. "Transient Response of a Laminar Premixed Flame to a Radially Diverging/converging Flow," M. Sahafzadeh, L. W. Kostiuk, **S. B. Dworkin**, *15th International Conference on Numerical Combustion*, Avignon, France, April 19-22, 2015.
7. "Residential Application of a Natural Gas Based Tri-generation System for Cold Climates," N. Ekrami, Z. M. Hasib, **S. B. Dworkin**, A. S. Fung, D. Naylor, ASHRAE Winter Conference, Chicago, January 24-28, 2015.
8. "Preliminary Test and Analysis of A Stirling Engine Based Residential Tri-generation system at TRCA Archetype Sustainable House," N. Ekrami, Z. M. Hasib, P. Lele, **S. B. Dworkin**, A. S. Fung, D. Naylor, ASHRAE Annual Conference, Seattle, June 28-July 2, 2014.
9. "The Contribution of Nucleation and Condensation to Soot Morphology," N. A. Eaves, M. J. Thomson, **S. B. Dworkin**, *14th International Conference on Numerical Combustion*, San Antonio, Texas, April 8-10, 2013.
10. "Detailed Numerical Study of the Effects of OH and O₂ Oxidation Rates on Soot Formation in Flames," A. Khosousi, M. J. Thomson, **S. B. Dworkin**, *14th International Conference on Numerical Combustion*, San Antonio, Texas, April 8-10, 2013.
11. "A Numerical and Experimental Study of Soot Formation in a Laminar Coflow Diffusion Flame of a Jet A-1 Surrogate," M. Saffaripour, M. Kholghy, Q. Zhang, **S. B. Dworkin**, M. J. Thomson, *34th International Symposium on Combustion*, Warsaw, Poland, July 29-August 3, 2012.
12. "Detailed Numerical Simulation of Single-Walled Carbon Nanotube Synthesis in a Radio-Frequency Induction Thermal Plasma System," S. A. Esfarjani, **S. B. Dworkin**, J. Mostaghimi, K. Kim, B. Simard, *12th European Plasma Conference*, Bologna, Italy, June 24-29, 2012.
13. "Progress in Understanding Combustion Generated Emissions using High Performance Computing," **S. B. Dworkin**, V. Chernov, M. J. Thomson, *The 18th Annual Meeting of ScicomP, the IBM HPC Systems Scientific Computing User Group*, Toronto, Ontario, May 14-18, 2012.
14. "Feasibility of Residential Micro Tri-generation System by Ryerson University," N. Ekrami, Z. M. Hasib, **S. B. Dworkin**, A. S. Fung, D. Naylor, *Das Haus 2012*, Toronto, Ontario, April 20, 2012.
15. "Modelling DME Addition Effects on PAHs and Soot in Laminar Coflow ethylene/Air Diffusion Flames using two PAH Mechanisms," F. Liu, **S. B. Dworkin**, M. J. Thomson, G. J. Smallwood, *Seventh Mediterranean Combustion Symposium*, Chia Laguna, Cagliari, Sardinia, Italy, September 11-15, 2011.

16. "Modelling of Soot Formation in Co-flow Laminar Diffusion Flames," N. A. Eaves, C. Riese, Q. Zhang, **S. B. Dworkin**, M. J. Thomson, *2011 UofT Mechanical & Industrial Engineering Research Symposium*, Toronto, Ontario, May 13, 2011.
17. "Application of an Enhanced PAH Growth Model to Soot Formation in Laminar Ethylene Diffusion Flames," **S. B. Dworkin**, Q. Zhang, M. J. Thomson, N. A. Slavinskaya, U. Riedel, *13th International Conference on Numerical Combustion*, Corfu, Greece, April 27-29, 2011.
18. "A Numerical and Experimental Study of a Laminar Sooting Coflow Jet-A1 Diffusion Flame," M. Saffaripour, P. Zabeti, **S. B. Dworkin**, Q. Zhang, H. Guo, F. Liu, G. J. Smallwood, M. J. Thomson, *33rd International Symposium on Combustion*, Beijing, China, August 1-6, 2010.
19. "The Impact of Detailed Multicomponent Transport and Thermal Diffusion Effects on Soot Formation in Ethylene/Air Flames," **S. B. Dworkin**, M. D. Smooke, V. Giovangigli, *32nd International Symposium on Combustion*, Montreal, Quebec, August 3-8, 2008.
20. "Measurements and Calculations of Formaldehyde Concentrations in a Methane/N₂/Air, Non-Premixed Flame: Implications for Heat Release Rate," **S. B. Dworkin**, A. M. Schaffer, B. C. Connelly, M. B. Long, M. D. Smooke, M. P. Puccio, B. McAndrews, J. H. Miller, *32nd International Symposium on Combustion*, Montreal, Quebec, August 3-8, 2008.
21. "The Impact of Multicomponent Transport and Thermal Diffusion Effects on Soot Formation in Coflow Ethylene/Air Diffusion Flames," **S. B. Dworkin**, M. D. Smooke, V. Giovangigli, *12th International Conference on Numerical Combustion*, Monterey, California, March 31-April 2, 2008.
22. "The Impact of Detailed Multicomponent Transport and Thermal Diffusion Effects on Particulate Formation in Ethylene/Air Flames," **S. B. Dworkin**, V. Giovangigli, M. D. Smooke, *Mini-Symposium on Transport Phenomena and Nonequilibrium Thermodynamics*, Yale University, New Haven, Connecticut, July 30, 2007.
23. "Application of a Modified Vorticity-Velocity Formulation to Steady and Unsteady Laminar Diffusion Flames," **S. B. Dworkin**, B. C. Connelly, B. A. V. Bennett, A. M. Schaffer, M. B. Long, M. D. Smooke, M. P. Puccio, B. McAndrews, J. H. Miller, *Journée des Doctorants du CMAP*, Palaiseau, France, March 7, 2007.
24. "Computational and Experimental Study of a Forced, Time-Dependent, Methane-Air Coflow Diffusion Flame," **S. B. Dworkin**, B. C. Connelly, B. A. V. Bennett, A. M. Schaffer, M. B. Long, M. D. Smooke, M. P. Puccio, B. McAndrews, J. H. Miller, *31st International Symposium on Combustion*, Heidelberg, Germany, August 6-11, 2006.
25. "Computational and Experimental Investigation of Soot and NO_x Formation in Coflow Diffusion Flames," M. D. Smooke, M. B. Long, B. C. Connelly, **S. B. Dworkin**, R. J. Hall, M. B. Colket, *11th International Conference on Numerical Combustion*, Granada, Spain, April 23-26, 2006.
26. "Application of a Modified Vorticity-Velocity Formulation to Steady and Unsteady Laminar Diffusion Flames," **S. B. Dworkin**, B. C. Connelly, B. A. V. Bennett, A. M. Schaffer, M. B. Long, M. D. Smooke, M. P. Puccio, B. McAndrews, J. H. Miller, *11th International Conference on Numerical Combustion*, Granada, Spain, April 23-26, 2006.

Theses

1. S. B. Dworkin (2009), "Serial and Distributed-Memory Parallel Computation of Sooting, Steady and Time-Dependent, Laminar Flames using a Modified Vorticity-Velocity Formulation," Ph.D. Thesis, Yale University, New Haven, Connecticut, USA.

Poster Presentations

1. “Transient Response of a Laminar Premixed Flame to a Radially Diverging/Converging Flow,” M. Sahafzadeh, L. W. Kostiuk, **S. B. Dworkin**, *International Summer School on Clean Combustion Engines*, Toronto, Canada, May 30-June 3, 2016. (***)**Awarded 3rd Place for Best Student Poster at the Workshop, \$100**(***)
2. “Development of Soot Concentration Estimator for Industrial Combustion Applications,” R. Alexander, **S. B. Dworkin**, *International Summer School on Clean Combustion Engines*, Toronto, Canada, May 30-June 3, 2016.
3. “On the Importance of Conjugate Heat Transfer on Soot Formation Modelling in High Pressure Flames,” N. A. Eaves, **S. B. Dworkin**, M. J. Thomson, *34th International Symposium on Combustion*, Warsaw, Poland, July 29-August 3, 2012.
4. “Predicting Soot Particle Size Distributions in Flames Considering Sectional Particle Tracking and Liquid-Like Coalescence,” A. Veshkini, M. J. Thomson, **S. B. Dworkin**, *34th International Symposium on Combustion*, Warsaw, Poland, July 29-August 3, 2012.
5. “Detailed Numerical Modelling of Soot Oxidation in Flames,” A. Khosousi, M. J. Thomson, **S. B. Dworkin**, *International Sooting Flame Workshop*, Warsaw, Poland, July 29, 2012.
6. “Investigation of soot reduction tendency in oxygenated premixed and non-premixed ethylene flames,” N. A. Slavinskaya, U. Riedel, D. A. Knyazkov, S. A. Yakimov, A. G. Shmakov, O. P. Korobeinichev, V. Chernov, M. J. Thomson, **S. B. Dworkin**, J. Yang, F. Qi, *34th International Symposium on Combustion*, Warsaw, Poland, July 29-August 3, 2012.
7. “A Numerical Methodology for Optimum Hybrid Ground Source Heat Pump System Design,” H. V. Nguyen, M. Alavy, W. H. Leong, **S. B. Dworkin**, *The Centre for Urban Energy at Ryerson hosts the Deputy Minister of Energy*, Toronto, Ontario, July 5, 2012.
8. “Residential Micro Tri-Generation Study,” Z. M. Hasib, N. Ekrami, A. Fung, **S. B. Dworkin**, D. Naylor, *The Centre for Urban Energy at Ryerson hosts the Deputy Minister of Energy*, Toronto, Ontario, July 5, 2012.
9. “Residential Micro Tri-Generation Study,” Z. M. Hasib, N. Ekrami, A. Fung, **S. B. Dworkin**, D. Naylor, *Ontario Centres of Excellence; OCE Discovery*, Toronto, Ontario, May 14-15, 2012.
10. “Application of a PAH Growth Mechanism to Soot Formation in Laminar Diffusion Flames,” **S. B. Dworkin**, Q. Zhang, M. J. Thomson, N. A. Slavinskaya, U. Riedel, *German Aerospace Centre (DLR) Industrial Research Symposium*, Stuttgart, Germany, July 22, 2011.
11. “Radio Frequency Thermal Plasma Technology in Production of Single-Walled Carbon Nanotubes,” S. A. Esfajani, **S. B. Dworkin**, J. Mostaghimi, A. Shahverdi, G. Soucy, K. S. Kim, B. Simard, *2011 UoT Mechanical & Industrial Engineering Research Symposium*, Toronto, Ontario, May 13, 2011.
12. “Experimental and Numerical Studies of a Laminar Sooting Coflow Bio & Synthetic Jet Fuel Diffusion Flames: A Preliminary Study of Jet-A1,” P. Zabeti, M. Saffaripour, **S. B. Dworkin**, M. J. Thomson, *Conference of the Agricultural Biorefinery Innovation Network for Green Energy, Fuels and Chemicals (ABIN)*, London, Ontario, March 14 – 16, 2010.
13. “Computational and Experimental Study of Sooting Time-Varying Flames,” B. C. Connelly, **S. B. Dworkin**, M. D. Smooke, and M. B. Long, *International Discussion Meeting and Workshop 2008: Laser-Induced Incandescence, Quantitative Interpretation, Modelling, Application*, Ottawa, Canada, July 31 – August 1, 2008.

14. “Measurements and Calculations of Formaldehyde Concentrations in a Methane/N₂/Air, Non-Premixed Flame: Implications for Heat Release Rate,” J. H. Miller, B. McAndrews, M. P. Puccio, **S. B. Dworkin**, A. M. Schaffer, B. C. Connelly, M. B. Long, and M. D. Smooke, *31st International Symposium on Combustion*, Heidelberg, Germany, August 6-11, 2006.

Technical Reports

1. Consulting Report for Ontario 2059710 Inc. assessing the potential for geo-exchange system, “Analysis of a Potential Geo-exchange System for Private Residence, 3372 Mamquam Road, Squamish, BC,” S. B. Dworkin, M. Alavy, H. V. Nguyen, (2016).
2. Technology Development Report for McClymont and Rak Engineers Inc., “A Study of Alternative Borehole Configurations and Thermal Storage Medium (TSM) in Geo-Exchange,” Y. L. E. Law, **S. B. Dworkin**, (2016)
3. Consulting Report for the York Catholic District School Board, assessing the potential for geo-exchange system, “Analysis of a Potential Geo-exchange System for Our Lady of Good Council Catholic School,” **S. B. Dworkin**, H. V. Nguyen (2016).
4. Consulting Report for the York Catholic District School Board, assessing the potential for geo-exchange technology in their schools, “HGS Exploratory Assessment for the YCDSB,” **S. B. Dworkin**, H. V. Nguyen (2015).
5. Consulting Report for Stantec Architecture Ltd., “Analysis of a Potential Geo-exchange System for the Etobicoke General Hospital and Associated West Expansion,” **S. B. Dworkin**, W. H. Leong, M. Alavy, H. V. Nguyen (2015).
6. Consulting Report for Groundheat Systems Inc., “Analysis of a Potential Geo-exchange System for a 75-unit Residential Building (Dupont and Landsdowne),” **S. B. Dworkin**, M. Alavy, H. V. Nguyen (2014).
7. Technology Development Report for Groundheat Solar Wind Inc., “Design of a ‘Smart Manifold’ for Geothermal HVAC Installations,” by M. Di Paolo, **S. B. Dworkin**, (2014).
8. Toronto Atmospheric Fund Interim Report, “Geo-Cities Initiative: Supporting the Development of Earth Energy Systems in Urban Applications,” by **S. B. Dworkin**, W. H. Leong, P. R. Walsh, H. V. Nguyen, M. Ayala, R. Hossain, M. Schlitt, A. Alaica, Y. L. E. Law, M. Alavy, X. Zhou (2013).
9. Time of Use Customer Analysis, prepared for Hydro One Networks Ontario, by H. V. Nguyen, A. Fung, and **S. B. Dworkin** (2013).
10. Analysis of Insulating Panels for Hot Water Radiator Heating Systems, prepared for Natural Resources Canada, by **S. B. Dworkin**, J. Woods, M. F. Lightstone (2003).
11. Validation of Conjugate Heat Transfer Modeling in CFX-TASCflow, prepared for Pratt and Whitney Canada, by **S. B. Dworkin**, M. F. Lightstone (2002).

Invention Disclosure

1. Ryerson University Invention Disclosure “A Mathematical Framework for Optimizing the Design Geothermal System Ground Loops Considering Engineering and Economic Analysis, which can be Implemented into a Software Format,” **S. B. Dworkin**, W. Leong, M. A. Ghahfarrokhy, March 1, 2012.

TEACHING

Courses Taught at Ryerson University

W2016 – MEC810: Thermal Power Generation

F2015 – MEC514: Applied Thermodynamics

W2015 – MEC810: Thermal Power Generation
F2014 – MEC817/ME8151: Combustion Engineering
F2013 – MEC817: Combustion Engineering
W2013 – MEC817: Combustion Engineering
W2013 – ME8112: Computational Fluid Dynamics and Heat Transfer
F2012 – MEC514: Applied Thermodynamics
W2012 – MEC810: Thermal Power Generation
F2011 – MEC514: Applied Thermodynamics

Courses Taught at University of Toronto as a Sessional Instructor

W2011 – MIE1210: Computational Fluid Mechanics and Heat Transfer
W2010 – MIE1210: Computational Fluid Mechanics and Heat Transfer
F2009 – AER334: Numerical Methods, Course Coordinator and Instructor

Guest Lectures

1. Combustion, Ryerson University, March, 2012, on the subject of “Computational Combustion”
2. Combustion and Fuels, University of Toronto, March, 2010, on the subject of “Droplet Combustion”
3. Transport Processes, Yale University; May 2007, on the subject of “Computational Combustion”

LANGUAGES

- English – Native Speaker
- French – Basic Conversational