Curriculum Vitae

Ian D. Gates, PEng, PhD, FCAE

Professor
Dept. of Chemical and Petroleum Engineering, Schulich School of Engineering
Associate Vice President (Research & Innovation), VPR Office
University of Calgary

For latest papers, see:
https://scholar.google.ca/citations?hl=en&user=AujhQNYAAAAJ&view_op=list_works&sortby=pubdate

I. OFFICE & CONTACT INFORMATION

Department of Chemical and Petroleum Engineering
Schulich School of Engineering
University of Calgary
2500 University Drive NW
Calgary, AB T2N 1N4
CANADA

Email: ian.gates@ucalgary.ca (preferred)

For appointment, please send me an email.

II. PROFESSIONAL RECORD (EMPLOYMENT HISTORY)

A. Academic Record

B.Sc. (with Distinction), June 1990
Chemical Engineering
University of Calgary, Calgary, Alberta, Canada

M.A.Sc., October 1992
Thesis Title: Microvascular Exchange in Human Tissue
Chemical Engineering – Transport Phenomena, Osmotic Flows, Flow in Porous Media
University of British Columbia, Vancouver, British Columbia, Canada.

Ph.D., November 1999
Thesis Title: Slot Coating: Stability, Feasibility
Chemical Engineering – Capillary Hydrodynamics, Fluid Mechanics, Stability, Computational Fluid Dynamics, Thin Film Experimentation, Mixed Finite Element Method
Minor: Mathematics
University of Minnesota, Minneapolis, MN, U.S.A.

B. Work Experience: Academic, Consulting, and Industry

July 2004 – Present

Home Department: Department of Chemical and Petroleum Engineering
Home Faculty: Schulich School of Engineering
University of Calgary (UCalgary)

May 1st, 2024 – present

- **Associate Vice President (Research & Innovation), UCalgary Vice President Research Office**
- **Professor, Department of Chemical and Petroleum Engineering**
- **Director, Global Research Initiative in Sustainable Low Carbon Unconventional Resources, UCalgary Vice President Research Office**

July 1st, 2019 – April 30th, 2024

- **Professor, Department of Chemical and Petroleum Engineering**
- **Director, Global Research Initiative in Sustainable Low Carbon Unconventional Resources, UCalgary Vice President Research Office**

July 1st, 2019 – June 30th, 2022

- **Encana/Petroleum Society Endowed Chair**

July 1st, 2018 – June 30th, 2019

- **Professor, Department of Chemical and Petroleum Engineering**
- **Director, Global Research Initiative in Sustainable Low Carbon Unconventional Resources, UCalgary Vice President Research Office**

December 1st, 2016 – June 30th, 2018

- **Professor, Department of Chemical and Petroleum Engineering**
- **Associate Dean (Innovation), Schulich School of Engineering**
- **CFREF Lead, Sustainable Low Carbon Unconventional Resources, UCalgary Vice President Research Office**

July 1st, 2014 – November 30th, 2016

- **Professor and Head of Department**

April 1st, 2013 – June 30th, 2014

- **Professor**

July 1st, 2010 – March 31st, 2013

- **Associate Professor (Tenured)**

July 1st, 2004 – June 30th, 2010

- **Associate Professor (Tenure Track)**

- **Evolving Academic Research Summary (most recent at end of paragraph):**
  Heavy oil and oil sands recovery process design, cold production of heavy oil with sand (CHOPS), thermal recovery technologies (cyclic steam stimulation, CSS, steam-assisted gravity drainage, SAGD), thermal-solvent hybrid recovery technologies, in-well flow devices for improved steam conformance and performance in SAGD, optimization of recovery processes, reservoir management, smart wells in heavy oil and oil sands fields, reactive reservoir simulation (aquathermolysis, H2S, CO2 generation in steam-based recovery processes), steam-air injection process design, thermal and conventional reservoir simulation, microbially-based heavy oil upgrading, shale gas reservoir engineering, biofilm modelling in porous media, support vector machines for reservoir characterization, fluid mechanics, computational fluids dynamics, transport phenomena, discrete fracture networks, bitumen balls and bricks, sound-based stimulation of heavy oil and oil sands, microbiological energy extraction, density functional theory, material science for energy materials, lithium extraction from brine, experiments, theory, and field studies, enhanced gas recovery, geothermal, combined carbon dioxide sequestration + geothermal, hydrogen (electrolysis, methane and bitumen pyrolysis, storage), methane, methane emissions reduction, carbon dioxide sequestration, carbon dioxide utilization

- **Academic Teaching Summary:**
  First year behaviour of fluids and solids engineering course, second year material and energy balances course and introductory fluid mechanics course, third year partial differential equations for chemical and petroleum engineers course, fourth year introductory reservoir engineering course, fourth year enhanced oil recovery course, fourth year oil & gas design courses (capstone design course), fourth year transport phenomena course, unconventional oil exploitation course, advanced thermal reservoir simulation graduate course, advanced mathematical methods graduate course, advanced heat transfer graduate course, petroleum facilities

- **Administrative Service Summary:**
  Please see list below (Section C).

July 2004 – Present

Position: Consultant (projects in Canada and international)

2004-2007: Gates Research Consulting Ltd.: >10 Oil and Gas Clients, >30 Projects

Consulting on reservoir engineering with focus on thermal recovery processes (CSS, SAGD) including field data analysis, reservoir engineering and simulation, steam scheduling, and fluid property analysis. Conducted short courses in thermal and heavy oil recovery process design, horizontal wells, and thermal reservoir simulation.
Projects:

SAGD in Clearwater Formation, SAGD in Bluesky Formation, SAGD in McMurray Formation (multiple), CSS in Clearwater Formation, CSS in Bluesky Formation, History matching of SAGD (Clearwater and McMurray

Formations) (multiple), Design of Limited Entry Perforations for Steam Injection Wells, Solvent-Aided SAGD Process Design (Patent Filed with Client), Development of Type Curves for CSS in Bluesky Formation, Steam Scheduling for CSS in Bluesky Formation

2007-2010: Gushor Inc. Chief Technology Officer / Director of Engineering: >75 Oil and Gas Clients, >350 Projects

Consulting on reservoir engineering with focus on thermal recovery processes (CSS, SAGD) including field data analysis, reservoir engineering and simulation, and optimization, steam scheduling, and fluid property analysis. Conducted short courses in thermal and heavy oil recovery process design (1, 2, 5 day and 2 week long courses), impact of geological and geochemical heterogeneity on recovery process design, and thermal reservoir simulation (2 and 5 day versions). Projects:

SAGD in Clearwater Formation (multiple), SAGD in Bluesky Formation, SAGD in McMurray Formation (multiple), SAGD in Grand Rapids Formation (multiple), SAGD in Wabiskaw Member, ES-SAGD in Clearwater Formation (multiple), ES-SAGD in McMurray Formation (multiple), Recovery Process Design for Thin Oil Columns sandwiched between top gas/water and bottom water zones, CSS in Clearwater Formation (multiple), Solvent-Aided CSS in Clearwater Formation (multiple), CSS in Bluesky Formation (multiple), Solvent-Aided CSS in Bluesky Formation (multiple), Cold Production from Bluesky Formation (multiple), Gas over Bitumen Hearing for Caribou (Clearwater Formation), History matching of physical model experiments (SAGD and Cold Solvent Process) (multiple), History matching of SAGD, CSS, & Cold Production (Clearwater, Bluesky, and McMurray Formations) (multiple), Reservoir Preconditioning for SAGD, CSS, and Cold Production, JAGD in Clearwater, Bluesky, and McMurray Formations, Hydrate Recovery Process Design, CO2 Sequestration Process Design, Development of Type Curves for SAGD and CSS in Clearwater Formation (multiple), Development of Type Curves for Cold Solvent Process in Heavy Oil Formation, Steam Scheduling for CSS in Clearwater Formation (multiple), Solvent Scheduling for Cold Solvent Process in Heavy Oil Formation, Compositional modeling of bitumen (multiple), Formation and Fate of H2S in SAGD Processes, Enhanced Oil Recovery (EOR: chemical flooding, polymer flooding, surfactant flooding, alkaline-surfactant-polymer flooding, gas displacement, thermal recovery processes)

2008-2010: Profero Inc. Chief Engineer (co-current while at Gushor Inc.)

Reservoir engineering, simulation, and optimization of methanogenic processes for conversion of heavy oil to methane by using microbial processes; lab, field, and pilot design. Projects:

Extraction of methanogenic growth rates from lab data by using reactive reservoir simulation, Methanogenic process design for Lloyminster heavy oil reservoir, Methanogenic process design for Peace River heavy oil reservoir

2010-present: Ideas for Dynamic Growth Ltd.: >20 Oil and Gas Clients, >30 Projects

Consulting on reservoir engineering with focus on thermal recovery processes (CSS, SAGD) including field data analysis, reservoir engineering and simulation, and optimization, steam scheduling, and fluid property analysis. Conducted short courses in cold production and thermal oil sands recovery process design (1, 2, 3, and 5 day long courses), thermal-solvent process design with focus on solvent choice (1 day long course), and thermal reservoir simulation (2 and 5 day long courses). Projects:

Cold Production and Cold Solvent Processes for Wabiskaw Formation, SAGD in Grand Rapids Formation, CSS in Grand Rapids Formation, CO2-SAGD Process Design, Steam Scheduling for CSS in Clearwater Formation, Economics of SAGD in Wabiskaw Formation, Cold Production in Sparky Heavy Oil Formation, Chemical Flooding in Sparky Heavy Oil Formation, CSS and SAGD in Peace River reservoir, Solvent recovery process design for Peace River reservoir, Formation and Fate of H2S in thermal recovery processes, gas recovery, enhanced gas recovery (EGR), Enhanced Oil Recovery (EOR: chemical flooding, polymer flooding, surfactant flooding, alkaline-surfactant-polymer flooding, gas displacement, thermal recovery processes)

September 2003 – April 2004

Position: Sessional Instructor (while employed at Imperial Oil)

Department of Chemical and Petroleum Engineering, Schulich School of Engineering, University of Calgary

- Taught and coordinated Fourth Year Petroleum Engineering Design Course:
  Project requirements included: log interpretation, core analysis, well test analysis, review of completion, pressure and production history; construction of appropriate maps, cross-sections; design of alternative development scenarios that included required well and facilities, production forecasts (from analytic models and reservoir simulation), capital and operating cost estimates, and an economic evaluation of the proposed development strategies

August 2000 – June 2004

Positions: Research Scientist / Specialist
Imperial Oil Resources Ltd., Oil Sands Recovery Research, Oil Sands Development & Research, Calgary

a. Reservoir Case Studies

Target: Athabasca and Cold Lake Bitumen Deposits

- Lead reservoir simulator for thermal-solvent gravity-drainage project team
- History-matched several steam-assisted gravity drainage (SAGD) field operations (ExxonMobil Celtic, Dover (UTF) B-Phase, JACOS B and H-well pairs) with CMG STARS reservoir simulator
- Predicted field-scale SAGD, vapour extraction (VAPEX), and combined thermal-solvent hybrid processes (ES-SAGD) by reservoir simulation
- Conducted extensive sensitivity studies on effect of pay, rock-fluid properties, transport and other parameters, operating protocol, on performance of SAGD, VAPEX and thermal-solvent (ES-SAGD) processes
- Evaluated and provided technical basis for expansion of ExxonMobil SAGD operation in Celtic
- History-matched Horizontal Well cyclic steam stimulation (CSS) in Cold Lake
- Compared performances of Vertical and Horizontal CSS by reservoir simulation
- Conducted sensitivity studies on effect of pay on performance of CSS
- Patent filed on novel thermal-solvent technology

b. Physical Model Experiments

Target: Recovery Technologies for Athabasca and Cold Lake Bitumen Deposits

- Designed high-pressure apparatus to conduct thermal-solvent gravity-drainage physical model experiments
- Conducted and analyzed data from 18 SAGD, SAVEX, ES-SAGD physical model experiments
- History-matched SAGD and thermal-solvent gravity-drainage physical model experiment data to estimate solvent transport properties (using CMG STARS)
- Coordinated technologists for physical model experiments and conduct post-mortem analysis of model reservoir

c. Other Activities

- Reviewer for Imperial Oil's University Research Grant Program
- Campus recruiter
- Supervised 5 Co-op undergraduate students
- Active in Junior Achievement, United Way activities each year

July 1998 - June 2000

Position: Senior Process Development Engineer
3M Company, Engineering Systems Technology Center, St. Paul, MN 55144-1000, U.S.A.

a. Computational Fluid Dynamics

- Analyzed steady and transient liquid flow in slot (and multilayer slot), slide, curtain, roll, coating dies, and other proprietary coating methods by finite element analysis
- Studied two and three-dimensional stability of liquid flows in slot coating
- Optimized geometry to avoid undesirable flow features and improve productivity
- Examined designs to achieve structured coatings (patterned coatings) by slot coating and patterned-roll coating

b. Experimental Studies

- Constructed coating operability windows on numerous laboratory-scale, pilot, and production (commercial) coating lines (slot, slide, roll, and blade coating)
- Evaluated coating equipment designs on numerous laboratory-scale, pilot, and production coating lines
- Measured surface tension and viscosity of coating liquids
- Visualized coating flow behaviour

c. Reports, Teaching, and Other

- Wrote many company reports and memoranda to document work
- Presented results to colleagues and management
- Taught Internal Courses on Die Coating, Coating Physics for two years
- Co-inventor on U.S. Patent 6666946

July 1997 - June 1998

Position: Research Fellow
On Contract to Incompressible Fluid Dynamics Department, Sandia National Labs, Albuquerque, NM

- Implemented automated continuation (arc-length continuation), linear stability analysis, and augmenting condition framework (by using bordering algorithm) into finite element free surface flow code

C. University Leadership Positions

- **Director, Global Research Initiative (GRI) in Sustainable Low Carbon Unconventional Resources, VPR Office**
  July 1st, 2018 – present
  Administer the $75M University of Calgary Canada First Research Excellence Fund (CFREF) with administrative (1 manager and 6 team members)
  Work with University of Alberta CFREF Team on the Collaborative Components of both CFREF awards as well as partnerships with SAIT, Innovate Calgary, CERI, COSIA, government, and industry
  On boarded six new GRI faculty hires (two in chemistry and four in chemical and petroleum engineering)
  Manage research and office space in the University Research Centre

- **Associate Dean (Innovation), Schulich School of Engineering**
  December 1st, 2016 – June 30th, 2018
  Promote innovation activities in Schulich School of Engineering including student and faculty activities, workshops, and project design course innovation activities

- **UCalgary CFREF Lead, Global Research Initiative (GRI) in Sustainable Low Carbon Unconventional Resources, VPR Office**
  December 1st, 2016 – June 30th, 2018
  Administer the $75M University of Calgary Canada First Research Excellence Fund (CFREF) with administrative (1 manager and 7 team members)
  Work with University of Alberta CFREF Team on the Collaborative Components of both CFREF awards as well as partnerships with SAIT, Innovate Calgary, CERI, COSIA, government, and industry

- **Head of Department of Chemical and Petroleum Engineering, Schulich School of Engineering, University of Calgary**
  July 1st 2014 – November 30th, 2016
  Administer department comprising 45 other faculty members, >15 administrative and technicians, >350 graduate students, and >550 undergraduate students; teaching and committee assignments, office and lab space assignments, faculty personnel issues and career development, new department initiatives, and external communications.

  Administrative Highlights:

  2014
  On-boarded 1 new faculty (Hemanta Sarma)
  Supported Canada Excellence Research Chair (CERC) application for Steven Bryant (successful)
  Chaired department meetings, reviewed Dept NSERC Discovery Grant Applications
  2015
  Conducted Annual Performance Reviews (including face-to-face discussions) with 37 faculty
  Hired 2 Instructors (Kazi Sumon, Kim Johnston)
  Enabled new IRC application – successful (Nader Mahinpey)
  Chaired department meetings, reviewed Dept NSERC Discovery Grant Applications
  2016
  Hired 4 Assistant Professors (Qingye Lu, Tatyana Plaksina, Roman Shor, Giovanni Natale)
  Hired Husky Endowed Chair (Martin Jasso)
  Enabled new IRC application – successful (Brij Maini)
  Enabled new CRC Tier II application – successful (Joule Bergerson)
  New CNRL Engineering Building Migration: Labs, Offices, and Teaching Spaces
  Chaired department meetings, reviewed Dept NSERC Discovery Grant Applications

  Ended Headship to start managing the UCalgary $75M Energy CFREF (GRI) program (started Dec. 1, 2016)

- **Theme Leader, Alberta Ingenuity Centre for In Situ Energy (AICISE), Advanced Reservoir Simulation Development Project 2005-2008**

  Administer about $440k of funding per year for researchers in the Advanced Reservoir Simulation Theme of Alberta Ingenuity Centre for In Situ Energy (AICISE). This involved maintaining budgets, collecting reports of research progress, summarizing them and submitting them to the AICISE Technical Advisory Committee, supporting the writing of $22M Canada Foundation for Innovation (CFI) proposal (Awarded 2006), and organizing annual AICISE student conference (2007).

D. Professional Certification and Memberships

Registered Professional Engineer (P.Eng.) in Association of Professional Engineers and Geoscientists of Alberta (APEGA, formerly known as APEGGA)

Fellow of the Canadian Academy of Engineering (FCAE)

E. Awards and Achievements, Measures of Esteem

Year	Award / Recognition	
2024	ASTECH Researcher of the Year	Recognized for outstanding research accomplishments and contributions
2023	FCAE, Fellow of the Canadian Academy of Engineering	Recognized by their peers for technical expertise and outstanding accomplishments and contributions in engineering
2022	Outstanding Research Impact Award, Schulich School of Engineering	Recognizes demonstrated excellence in achieving research impact in industry practice or society by the Schulich School of Engineering
2021	SPE Regional Award for Health, Safety, and Environment Award	Society of Petroleum Engineers Regional Award.
2019	APEGA Frank Spragins Summit Award	Awarded to Members of APEGA recognized by their peers for their integrity, technical expertise and outstanding accomplishments in fields relating to engineering or geoscience.
2018	Killam Annual Professor Award	Professorship recognizing research and teaching excellence and service to the University of Calgary and wider academic community (includes $10,000 award).
2017	SSE Graduate Educator Award	Awarded for excellence in graduate mentorship and training by the Schulich School of Engineering
2017	SPE Regional Award for Reservoir Description and Dynamics	Society of Petroleum Engineers Regional (Canada) Award
2017	Schulich School of Engineering Research Achievement Award	Faculty Award
2017	Schulich School of Engineering Teaching Achievement Award	Faculty Award
2016	Winner ASTECH Award	Category: Innovation in Oil Sands Research, Sponsored by Syncrude Canada Ltd. (includes $10,000 award)
2016	UofC Peak Scholar Patent Recognition Award	Recognized for patents awarded
2015	Recognition for Outstanding Teaching Performance for ENPE571 (Unconventional Oil)	Awarded for excellence in teaching by the Schulich School of Engineering
2014	Schulich School of Engineering Mentoring Excellence Award	Faculty Award: Awarded for excellence in providing significant, positive impact through mentoring
2014	UofC Peak Scholar: Recognition for Achievements for Entrepreneurship and Innovation	Recognized for achievements in startup ventures, commercialization and technology transfer

Year	Award / Recognition	
2014	Recognition for Outstanding Teaching Performance for ENCH501 (Transport Phenomena)	Awarded for excellence in teaching by the Schulich School of Engineering
2014	Professor of the Year, Chemical and Petroleum Engineering	Student-Elected Award: Awarded for excellence in teaching; Awarded $1,000 by Schulich School of Engineering
2013	Third and Fourth Year Engineering Students Excellence in Teaching Award	Student-Elected Award: Awarded for excellence in teaching; Elected by third and fourth year undergraduate students; Awarded $1,000 by Schulich School of Engineering
2013	Killam Innovation in Teaching Award	Awarded by the Killam Trust and the University of Calgary
2012	Achievement in Innovation	Awarded by the University of Calgary and Innovate Calgary
2011	Third and Fourth Year Engineering Students Excellence in Teaching Award	Student-Elected Award: Awarded for excellence in teaching; Elected by third and fourth year undergraduate students; Awarded $1,000 by Schulich School of Engineering
2011	Bill and Melinda Gates Foundation Grand Challenges Round 6 Winner (Jointly with Dr. Michael Kallos, Department of Chemical and Petroleum Engineering)	Awarded US$100,000 by Bill and Melinda Gates Foundation
2010	Schulich School of Engineering Departmental Teaching Award 2010	Department Award: Awarded for excellence in teaching; Awarded $1,500 by Schulich School of Engineering
2009	First and Second Year Engineering Students Excellence in Teaching Award	Student-Elected Award: Awarded for excellence in teaching ENGG201; (first year course in properties of fluids and solids); Elected by first and second year undergraduate students; Awarded $1,000 by Schulich School of Engineering
2009	Schulich School of Engineering Common Core Teaching Excellence Award	Faculty Award: Awarded for excellence in teaching;Awarded $1,500 by Schulich School of Engineering
2009	Schulich School of Engineering Outstanding Teaching Award	Faculty Award: Awarded for excellence in teaching; Awarded $3,000 by Schulich School of Engineering
2009	Winner ASTECH Award	Category: Outstanding Commercial Achievement in Alberta Science and Technology (gross sales < $25M); For Gushor Inc. (University of Calgary Spin-off Company)
2008	Dr. R.M. Butler Memorial Best Paper Award Winner; Presented 2009	Title: Impact of Steam Trap Control on Performance of Steam-Assisted Gravity Drainage; SPE/Petroleum Society of Canada, Canadian International Petroleum Conference; Awarded framed certificate
2009	Early Research Excellence Award, Schulich School of Engineering, University of Calgary	Faculty Award: Awarded for excellence in research; Awarded $2,500 by Schulich School of Engineering
2007	First and Second Year Engineering Students Excellence in Teaching Award	Student-Elected Award: Awarded for excellence in teaching ENGG201; (first year course in properties of fluids and solids); Elected by first and second year undergraduate students; Awarded $1,000 by Schulich School of Engineering
2006	Dr. R.M. Butler Memorial Best Paper Award First Runner Up	Title: The origin, prediction and impact of oil viscosity heterogeneity on the production characteristics of tar sand and heavy oil reservoirs; Petroleum Society of Canada, Canadian International Petroleum Conference; Awarded framed certificate
2004	Oil and Gas Professor of the Year	Student Elected Award: Awarded for oil and gas engineering capstone design course; Elected by undergraduate students in final year of oil and gas engineering program
1990/1991	NSERC PGS 1&2	Won NSERC post-graduate scholarship to support Masters graduate studies at UBC; Amounts: $15,500(1990)/$16,000(1991)

III. EDUCATIONAL ACTIVITIES

A. Instruction of Courses

All evaluations are out of 7 (-- indicates teaching evaluation not yet available). N/A indicates insufficient number of responses or group supervisor in design courses (ENPE511/531). Course coordinator designation is for design courses where multiple instructors teach the course (thus evaluation score not applicable). ENPE = Petroleum Engineering, ENCH = Chemical Engineering, ENGG = General Engineering, Engrg. = Engineering, ENER = Energy Engineering.

Term	Course	Responsibilities	Summary of Teaching Evaluation
Winter 2025	No teaching (GRI and AVPRI administrative duties)		
Fall 2024	No teaching (GRI and AVPRI administrative duties)		
Winter 2024	No teaching (GRI administrative duties)		
Fall 2023	No teaching (GRI administrative duties)		
Winter 2023	No teaching (GRI administrative duties)		
Fall 2022	No teaching (GRI administrative duties)		
Winter 2022	ENCH 619.06 Multiscale Heat Transfer	Lecturer (2.5h / week)	N/A
Winter 2021	ENCH 619.06 Multiscale Heat Transfer	Lecturer (2.5h / week)	N/A
Fall 2019	No teaching (GRI administrative duties)		
Winter 2020	ENPE 523 Reservoir Engrg.	Lecturer (2h / week), office hours (2h / week)	N/A
Fall 2019	No teaching (GRI administrative duties)		
Winter 2019	ENCH 619.72: Multiscale Heat Transfer	Lecturer (1h / week), office hours (2h / week)	N/A
Fall 2018	No teaching (GRI administrative duties)		
Winter 2018	No teaching (GRI administrative duties)		
Fall 2017	ENPE 571: Unconventional Oil Exploitation (Heavy Oil Reservoir Engrg.)	Lecturer (3h / week), office hours (2h / week)	5.77
Winter 2016	ENPE 531: Oil and Gas Design Course	Lab (supervised 1 design groups) (>3h / week)	N/A
Fall 2016	ENPE 505: Oil and Gas Separation Processes	Lecturer (3h / week), office hours (2h / week, tutorial (1h / week)	6.60
	ENPE 511: Oil and Gas Design Course I	Lab (supervised 1 design groups) (>3h / week)	N/A
Winter 2016	ENPE 531: Oil and Gas Design Course II	Lab (supervised 4 design groups) (>3h / week)	N/A
Fall 2015	ENER 480: Fluid Mechanics	Lecturer (3h / week), office hours (2h / week), tutorial (1h / week)	6.00
	ENPE 703: Advanced Mathematical Methods	Lecturer (3h / week), office hours (2h / week)	5.46
Winter 2015	No Teaching (Headship administrative duties)		

Term	Course	Responsibilities	Summary of Teaching Evaluation
Fall 2014	ENPE 571: Unconventional Oil Exploitation (Heavy Oil Reservoir Engrg.)	Lecturer (3h / week), office hours (2h / week)	6.42
Winter 2014	Research and Scholarship Leave / Sabbatical (January – June 2014)		
Fall 2013	ENPE 501: Transport Phenomena	Lecturer (3h per week), lab (1h / week), tutorial (1h / week), office hours (2h / week)	6.80
Winter 2013	ENPE 525: Enhanced Oil Recovery	Lecturer (3h per week), lab (1h / week), office hours (2h / week)	6.63
	ENPE 531: Oil and Gas Design Course II	Lab (supervised 4 design groups) (>3h / week)	N/A
Fall 2012	ENPE 429: Introduction to Reservoir Engrg.	Lecturer (3h / week), lab (>1h / week), office hours (>2h / week)	6.86
	ENPE 571: Unconventional Oil Exploitation (Heavy Oil Reservoir Engrg.)	Lecturer (3h / week), office hours (2h / week)	6.01
	ENPE 511: Oil and Gas Design Course I	Lab (supervised 3 design groups) (>3h / week)	N/A
Winter 2012	ENPE 531: Oil and Gas Design Course II	Coordinator, lecturer (3h / week), lab (>1h / week), office hours (>2h / week)	Course Coordinator
Fall 2011	ENCH 401: Analyses of Chemical, Oil and Gas Engrg. Processes	Lecturer (3h / week), tutorial (1.25h / week), lab (1h / week), office hours (2h / week)	6.74
	ENPE 511: Oil and Gas Design Course I	Coordinator, lecturer (3h / week), lab (1+h / week), office hours (>2h / week)	Course Coordinator
	ENPE 571: Unconventional Oil Exploitation (Heavy Oil Reservoir Engrg.)	Lecturer (3h / week), office hours (2h / week)	6.17
Winter 2011	ENCH 315: Material and Energy Balances	Lecturer (3h / week), tutorial (1.25h / week), office hours (2h / week)	6.28
Fall 2010	Research and Scholarship Leave / Sabbatical (July – December 2010)		
Winter 2010	ENGG 201: Behaviour of Fluids and Solids	Lecturer (3h / week), tutorial (1.25h / week), office hours (2h / week)	6.93
	ENPE 531: Oil and Gas Design Project II	Coordinator, lecturer (supervised 3 design groups) (>3h / week)	Course Coordinator
Fall 2009	ENPE 571: Unconventional Heavy Oil Exploitation	Lecturer (3h / week), lab (1.25h / week), office hours (2h / week	6.39
	ENPE 511: Oil and Gas Design Project I	Lab (supervised 3 design groups) (>3h / week)	N/A
Winter 2009	ENGG 201: Behaviour of Fluids and Solids	Lecturer (3h / week), tutorial (1.25h / week), office hours (2h / week)	6.58
Winter 2009	ENPE 531: Oil and Gas Design Project II	Lab (supervised 3 design groups) (>3h / week)	N/A
	ENCH 619.90: Advanced Thermal Reservoir Simulation	Lecturer (3h / week), office hours (2h / week)	N/A
Fall 2008	ENPE 571 (formerly 519.01): Unconventional Heavy Oil Exploitation	Lecturer (3h / week), lab (1.25h / week), office hours (2h / week	6.56
	ENPE 511: Oil and Gas Design Project I	Lab (supervised 2 design groups) (>2h / week)	N/A
	ENPE 551: Petroleum Lab	Lab (4h / week)	N/A
Winter 2008	ENGG 201: Behaviour of Fluids and Solids	Lecturer (3h / week), tutorial (1.25h / week), office hours (2h / week	6.74
	ENPE 531: Oil and Gas Design Project II	Lab (supervised 3 design groups) (>3h / week	N/A
	ENCH 619.90: Advanced Thermal Reservoir Simulation	Lecturer (3h / week), office hours (2h / week)	6.50
Fall 2007	ENPE 519.01: Unconventional Heavy Oil Exploitation	Lecturer (3h / week), lab (1.25h / week), office hours (2h / week	6.20
	ENPE 511: Oil and Gas Design Project I	Lab (supervised 2 design groups) (>2h / week)	N/A
Spring 2007	ENPE 699.90: M.Eng. Project Courses	3 M.Eng. students, meetings (>3h / week)	N/A
Winter 2007	ENGG 201: Behaviour of Fluids and Solids	Lecturer (3h / week), tutorial (1.25h / week), office hours (2h / week)	6.22

Term	Course	Responsibilities	Summary of Teaching Evaluation
	ENPE 531: Oil and Gas Design Project II	Lab (supervised 3 design groups) (>3h / week)	N/A
	ENPE 619.90: Advanced Thermal Reservoir Simulation New Course	Lecturer (3h / week), office hours (2h / week)	6.20
Fall 2006	ENPE 523: Reservoir Engrg.	Lecturer (3h / week), lab (1.25h / week), office hours (2h / week)	5.57
	ENPE 519.01: Unconventional Heavy Oil Exploitation New Course	Coordinator for Lecture Course (1h / week), office hours (2h / week)	5.01
	ENPE 511: Oil and Gas Design Project I	Lab (supervised 2 design groups) (>2h / week)	N/A
Spring 2006	ENPE 619.89: M.Eng. Project Courses	2 M.Eng. students, meetings (2+h / week)	N/A
Winter 2006	ENGG 201: Behaviour of Fluids and Solids	Lecturer (3h / week), tutorial (1.25h / week), office hours (2h / week)	6.02
	ENPE 531: Oil and Gas Design Project II	Lab (supervised 3 design groups) (>3h / week)	N/A
Fall 2005	ENPE 523: Reservoir Engrg.	Lecturer (3h / week), lab (1.25h / week), office hours (2h / week)	5.78
	ENPE 511: Oil and Gas Design Project I	Lab (supervised 3 design groups) (>3h / week)	N/A
Winter 2005	ENPE 523: Reservoir Engrg.	Lecturer (3h / week), lab (1.25h / week), office hours (2h / week)	6.22
	ENPE 531: Oil and Gas Design Project II	Lab (supervised 3 design groups) (>3h / week)	N/A
Fall 2004	ENGG 201: Behaviour of Fluids and Solids	Lecturer (3h / week), lab (3h / week), tutorial (1.25h / week), office hours (2h / week)	5.66
	ENPE 511: Oil and Gas Design Project I	Lab (supervised 3 design groups) (>3h / week)	N/A
Winter 2004	ENPE 531: Oil and Gas Design Project II	Course Coordinator (3h / week), lab (1.25h / week)	N/A
Fall 2003	ENPE 511: Oil and Gas Design Project I	Course Coordinator (3h / week), lab (1.25h / week)	6.75

B. Graduate and Undergraduate Supervision

Completed Graduate Students

41 Ph.D. students / 35 M.Sc. students / 8 M.Eng. (thesis-based) students = 84 graduated to date

Name (Role)	Degree	Thesis Title	Completion Date
1. Nan Tai (Supervisor)	Ph.D.	Cyclic CO_2 Sequestration Integrated with Geothermal Energy Production	January 2025
2. Young Hoon Lee (Supervisor)	Ph.D.	Viscous Fingering Instability of Complex Fluids in a Radial Hele-Shaw Cell	March 2024
3. Hamid Rachmanifard (Supervisor)	Ph.D.	Production Forecasting in Unconventional Reservoirs: A Workflow for Data-Driven Analysis	March 2024
4. Benedicta Nwani (Co-Supervisor, Supervisor Anne Benneker)	Ph.D.	Electrokinetic Control of Interfacial Instabilities	April 2023
5. Jianbo Liu (Supervisor)	Ph.D.	Study On Solvent-based Recovery Processes	April 2023
6. Guangyu Shi (Supervisor)	Ph.D.	Geothermal Energy and Carbon Dioxide Sequestration	April 2023
7. Mohan Sivagnanam (Supervisor)	Ph.D.	Analysis of Flow and Heat Transfer in OTSGs and Injection Wells	April 2023
8. Kellie Sim (Supervisor)	M.Sc.	Heat Transfer During the Formation of Solid Oil	March 2023
9. Hugh Macrae (Supervisor)	M.Sc.	Electrolysis in deep geothermal systems	December 2022

Name (Role)	Degree	Thesis Title	Completion Date
10. Nabeel Khan (Supervisor)	M.Eng. (thesis based)	Augmented Intelligence for SAGD Production Operations	August 2022
11. Benjamin Edafiaga (Supervisor)	Ph.D.	The Application of Fishbone Wells in Steam-Assisted Gravity Drainage	August 2022
12. Rasa Soleimani (Co-Supervisor, Supervisor: Jalel Azaeiz)	Ph.D.	Heat Transfer and Hydrodynamics of Miscible/Immiscible Systems in Microchannel Devices	August 2022
13. Ran Luo (Supervisor)	Ph.D.	Application of Machine Learning in Methane Emissions Modelling	June 2022
14. Samaneh Ashoori (Supervisor)	Ph.D.	Routes to Lower Greenhouse Gas Emission SAGD Operations	April 2022
15. Mohammad Tanvir Hossain (Co-Supervisor, Supervisor: Giovanni Natale)	Ph.D.	Dynamics of colloids at liquid-liquid interface : Insight from mesoscale and microscale simulation	March 2021
16. Nan Tai (Supervisor)	M.Sc.	Modelling of Non-Equilibrium Heavy Oil-Solvent Behaviour	December 2021
17. Andres Betancur Cano (Co-Supervisor, Supervisor: Roman Shor)	M.Sc.	Impact of Non-Condensable Gases on the Performance of Flow Control Devices.	September 2021
18. Rui Chang (Supervisor)	M.Sc.	On Charging of Oil Sands Systems Over Geological Time Scales	August 2021
19. Michael Mislan (Supervisor)	Ph.D.	Oil Sand Remediation	August 2021
20. Yinghui Guo (Supervisor)	M.Sc.	On the Stability of Aqueous Foams and the Effect of Surfactant	July 2021
21. Xuemin Huang (Supervisor)	Ph.D.	Effect of Roughness on Wetting of Solids	April 2021
22. Qian Zhou (Supervisor)	M.Sc.	Stability of Depletion Chamber Edges in Oil Sands Recovery Processes	April 2021
23. Qinwan Chong (Supervisor)	Ph.D.	On Geothermal Heat Extraction from the Basal Cambrian Sandstone Unit in Central Alberta, Canada	April 2021
24. Zheng Li (Supervisor)	Ph.D.	On Hydraulic Fracturing of Tight Rock	April 2021
25. In Young Park (Supervisor, Co-Supervisor Anne Benneker)	M.Sc.	Rheological Properties of Bitumen and Bitumen-Heptane and Bitumen-Heptanol Mixtures	January 2021
26. Wei Wei (Supervisor)	Ph.D.	In Situ Combustion for Heavy Oil: Toe-to-Heel Air Injection	December 2020
27. Jacky Wang (Supervisor)	Ph.D.	Energy Recovery from Oil Sands Reservoirs	December 2020
28. Ilia Chaikine (Supervisor)	Ph.D.	Machine Learning Applications for Production Prediction and Optimization in Multistage Hydraulically Fractured Wells	December 2020
29. Lyndon Bunio (Supervisor)	M.Sc.	An Investigation of the Evaporation Dynamics of Water Droplets and Na-Cl Water Droplets Suspended in Air by Acoustic Levitation	September 2020
30. Helen Pinto (Co-Supervisor, Supervisor: Xin Wang)	Ph.D.	Thermal Efficiency Insights from Public SAGD Information	January 2020
31. Miao Wang (Co-Supervisor, Supervisor: Md. Kibria)	M.Sc.	Comparative Techno economic Analysis of Ammonia Electrosynthesis	November 2019
32. Yidan Ni (Co-Supervisor, Supervisor: Mingzhe Dong)	M.Sc.	Conformance Control for SAGD Using Oil-in-Water Emulsions in Heterogeneous Oil Sands Reservoirs	November 2019
33. Mehrshad Parchei Esfahani (Supervisor, Co-Supervisor: Alex De Visscher)	Ph.D.	Kinetic and Mass Transfer of Peroxone Oxidation of Toluene Using Ultra Sonic Spray: Numerical Modeling and Ab Initio Calculations	November 2019

Name (Role)	Degree	Thesis Title	Completion Date
34. Young Hoon Lee (Co-Supervisor, Supervisor: Jalel Azaiez)	M.Sc.	Immiscible Radial Newtonian and non-Newtonian Flow Displacements in Porous Media	September 2019
35. Antonio Vazquez Zamora (Supervisor)	M.Sc.	In Situ Combustion Simulation for A Heavy Oil Naturally Fractured Reservoir	May 2019
36. Bhuvanesh Selvakumar (Co-Supervisor, Supervisor: Brij Maini)	M.Sc.	Numerical Simulation Study of the Effect of Solvent Composition and Pressure in ES-SAGD Process	January 2019
37. Evar Umeozor (Supervisor)	Ph.D.	Energy and Emissions of Unconventional Resources	November 2018
38. Sagar Purkayastha (Co-Supervisor, Supervisor: Milana Trifkovic)	Ph.D.	Advanced Control Optimization for the SAGD Process and Bitumen Upgrading	August 2018
39. Maureen Austin-Adigio (Supervisor)	Ph.D.	Enhancing Steam-Assisted Gravity Drainage Applications in Challenging and Non-Challenging Oil Sands Reservoirs	July 2018
40. Chongchong Wu (Supervisor, Co-Supervisor: Alex De Visscher)	Ph.D.	Computational Study on Removal of Naphthenic Acids from Petroleum-based Systems	December 2017
41. Wei Wu (Supervisor)	M.Sc.	On Effects of Wettability on Multiphase Flow in Porous Media	December 2017
42. Daniel Rivas (Supervisor)	M.Eng. (thesis based)	On Steam Circulation in SAGD	December 2017
43. Gaurav Patel (Supervisor)	M.Sc.	Acoustic Properties of Oil Sands	November 2017
44. Pachari Detpunyawat (Supervisor, Co-Supervisor: Hector Siegler)	M.Sc.	SAGD in Reservoirs with Top and Bottom Water Zones	September 2017
45. Temilola Famakinwa (Supervisor)	M.Sc.	In Situ Consolidation of Tailings Muds	September 2017
46. Mazda Irani (Supervisor)	Ph.D.	On Stability in Gravity Drainage Oil Sand Recovery Processes	September 2017
47. Mahta Vishkai (Supervisor)	Ph.D.	Modelling of Geomechanics for Informed Hydraulic Fracturing Operations	August 2017
48. Amir Hassan Karbalaei (Co-Supervisor, Supervisor: Laleh Behjat)	M.Sc.	A Visual Tool for Comparing the Life Cycles of Major Energy Sources in Alberta	July 2017
49. Carter Dziuba (Supervisor, Co-Supervisor: Steven Bryant)	M.Sc.	Cellulose Nanocrystal for Oil Recovery Applications	April 2017
50. Salim Raza (Supervisor, Co-Supervisor: Hossein Hejazi)	Ph.D.	Phase Interference in Multiphase Flow in Thin Gaps	June 2016
51. Belladonna Maulianda (Supervisor, Co-Supervisor: Ron Wong)	Ph.D.	On Hydraulic Fracturing of Tight Gas Reservoir Rock	April 2016
52. An Le (Co-Supervisor, Supervisor: Michael Kallos)	M.Sc.	CFD Modeling of Scalable Stirred Suspension Bioreactors for Pluripotent Stem Cell Expansion	January 2016
53. Yi Su (Supervisor)	Ph.D.	Impact of Point Bar Architecture on the Performance of SAGD	January 2016
54. Wei (David) Zhao (Supervisor)	M.Eng. (thesis-based)	Oil Recovery Strategies for Thin Heavy Oil Reservoirs	January 2016

Name (Role)	Degree	Thesis Title	Completion Date
55. Shiva Zohrehvand (Supervisor)	M.Sc.	Performance of Steam Assisted Gravity Drainage in Thin Oil Sand Reservoirs: Well pair Configuration	December 2015
56. Yu Bao (Supervisor)	Ph.D.	On Steam Based Recovery Process Design	December 2015
57. Ajeya Karajgikar (Supervisor)	M.Sc.	Thermal Recovery of Heavy Oil using Pressure Pulses of Injected Syngas	December 2015
58. Gouthami Senthamaraikkannan (Co-Supervisor, Supervisor: Vinay Prasad)	Ph.D.	Development of Multiscale Microbial Kinetic-Transport Models for Prediction and Optimization of Biogenic Coalbed Methane Production	September 2015
59. Nkiru Onwughalu (Supervisor)	M.Sc.	Impact of Top Water on SAGD Performance	June 2015
60. Farshid Shayganpour (Supervisor, Co-Supervisor: Alex De Visscher)	M.Eng. (thesis-based)	Comparison of CSS and SAGD in Cold Lake	April 2015
61. Abhishek Batwara (Supervisor)	M.Sc.	Modelling Biogenic Coal Gas Processes	April 2015
62. Xuemin Huang (Supervisor, Co-Supervisor: Shengnan Chen)	M.Sc.	Application of Dilation-Recompaction Model in Hydraulic Fracturing Simulation	April 2015
63. Da Zhu (Supervisor, Co-Supervisor: Joule Bergerson)	M.Sc.	Stability of Interfaces in a SAGD Steam Chamber	January 2015
64. Aisha Khaleeq (Supervisor)	M.Eng. (thesis-based)	SAGD in High Water Systems	August 2014
65. Ke Cao (Co-Supervisor, Supervisor: Brij Maini)	M.Sc.	A Numerical Simulation Study of the N-Solv™ Process	June 2014
66. Matteo Picone (Supervisor)	M.Eng. (thesis-based)	Subgrid upscaling formulae for SAGD	March 2014
67. Zeinab (Bahareh) Khansari (Co-Supervisor, Supervisor: Nader Mahinpey)	Ph.D.	Low Temperature Oxidation of Heavy Crude Oil: Experimental Study and Reaction Modeling	January 2014
68. Tao (Tony) Guo (Supervisor)	M.Sc.	Automated Control of Steam Assisted Gravity Drainage	December 2013
69. Richard Chan (Supervisor)	M.Eng. (thesis-based)	Application of Field Performance Data in Developing Simple Analytical Models to Predict the Performance of Steam Assisted Gravity Drainage	September 2013
70. Ali Bozorg (Co-supervisor, Supervisor: Arin Sen)	Ph.D.	The Impact of Biofilm Growth on Porous Media Hydrogeological Properties	May 2013
71. Brent Fermaniuk (Supervisor)	M.Eng. (thesis-based)	Sand Control in Steam Assisted Gravity Drainage (SAGD) Wellbores and Process of Slotted Liner Design and Manufacture	March 2013
72. Megan Hunt (Co-supervisor, Supervisor: Michael Kallos)	Ph.D.	Process Design for Stem Cell Expansion	April 2013
73. Marya Cokar (Co-supervisor, Supervisor: Michael Kallos)	Ph.D.	Biogenic Methane Generation in Shale Gas Systems	January 2013
74. Christopher Istchenko (Supervisor)	M.Sc.	A New Fundamental Model for Cold Heavy Oil Production with Sand	December 2012

Name (Role)	Degree	Thesis Title	Completion Date
75. Ali Alturki (Co-Supervisor, Supervisor: Brij Maini)	Ph.D.	Two-Phase Flow in Smooth and Rough Walled Single Fracture	June 2012
76. Punitkumar Kapadia (Supervisor, Co-supervisor: Michael Kallos)	Ph.D.	Gasification of Athabasca Bitumen: Hydrogen Generation, Kinetics, and In Situ Process Design	May 2012
77. Kingsley Fairbridge (Supervisor, Co-supervisor: Edwin Cey)	M.Sc.	Impact of Intraformational Water Zones on SAGD	January 2012
78. Allison Van Winkle (Co-Supervisor, Supervisor: Michael Kallos)	M.Sc.	Bioprocessing of Embryonic Stem Cells	April 2011
79. Dharmesh Gotawala (Supervisor)	Ph.D.	SAGD Steam Chamber Dynamics and Control	April 2011
80. Ammal Al-Anazi (Supervisor, Co-supervisor: Jalel Azaiez)	Ph.D.	Support Vector Machines for Petrophysical Modelling and Lithoclassification	February 2011
81. Wei Wei (Supervisor)	M.Sc.	Steam Conformance Control: Reservoir versus Wells	January 2011
82. Saeed Shad (Supervisor, Co-supervisor: Brij Maini)	Ph.D.	Two-phase Flow in a Single Fracture	January 2010
83. Xiaomeng Yang (Supervisor)	M.Sc.	Hybrid Steam-Air Heavy Oil Recovery Process Design	December 2008
84. Mohamed Tamer (Supervisor)	M.Sc.	Impact of Well Configuration on Performance of Steam-based Gravity Drainage Recovery Processes	October 2008

Current Graduate Students

Student Name (Role)	Degree	Thesis Topic
85. Pachari Detpunyawat (Supervisor)	Ph.D.	Hydrogen storage and generation
86. Miao Wang (Supervisor)	Ph.D.	Methane electro-oxidation
87. Paula Zanardini (Supervisor)	Ph.D.	Methane emissions from drilling operations
88. Joel Metcalfe (Supervisor)	Ph.D.	Machine learning for optimizing SAGD operations
89. Souhila Caglayan (co-Supervisor; Supervisor: Hector Siegler)	Ph.D.	Machine learning combined with physics-based modelling to improve SAGD operations

Examination Committees

Names, titles of theses, and dates are available on request.

Year	Examiner M.Sc. Exam	Examiner Ph.D. Exam	Examiner Candidacy Exam	Neutral Chair for M.Sc. / Ph.D. Exams
2025		1		
2024		4		1
2023	2	4	3	4
2022	1	4	3	5

Year	Examiner M.Sc. Exam	Examiner Ph.D. Exam	Examiner Candidacy Exam	Neutral Chair for M.Sc. / Ph.D. Exams
2021	5	4	1	1
2020	2	5	3	2
2019	6	1	2	2
2018	2	4	2	3
2017	7 (+2 M.Eng.)	3	2	2
2016	2 (+1 M.Eng.)	4	8	2
2015	6 (+1 M.Eng.)	3	1	2
2014	3 (+2 M.Eng.)	3	4	2
2013	4 (+2 M.Eng.)	6	2	2
2012	7 (+1 M.Eng.)	6	5	2
2011	7	6	6	2
2010	1	4	3	2
2009	1	3	2	3
2008	4 (+ 2 M.Eng.)	2	1	2
2007	2 (+ 6 M.Eng.)	2	2	4
2006	8 (+ 1 M.Eng.)	3	1	2
2005	3 (+ 1 M.Eng.)	3	2	4
2004	2 (+ 3 M.Eng.)	2	6	2

External Examiner at Other Universities

Year	Exam and Where	Student Name	Thesis Title
2024	Ph.D. Defense at University of Alberta	Hossein Izadi	Inflow and Outflow Rates Control in SAGD Wells: An Integrated Approach of Data-Driven and Physical Analysis
2022	Ph.D. Defense at University of Alberta	Giovanni Di Lullo	LCA models for energy pathways including hydrogen blending with natural gas and its transport through pipelines
2019	Ph.D. Defense at University of Alberta	Xinkui Wang	Evaluation of Geomechanical Dilation and its Effects on SAGD Performance
2015	Ph.D. Defense at University of Regina	Xiaoli Li	Phase Behaviour of Alkane Solvent(s)-CO2-Water-Heavy Oil Systems at High Pressures and Elevated Temperatures
2014	Ph.D. Defense at University of Alberta	Siavash Nejadi	Re-Sampling the Ensemble Kalman Filter for Improved History Matching and Characterizations of non-Gaussian and non-Linear Reservoir models
2013	Ph.D. Defense at Norwegian University of Science and Technology (NTNU)	Mohammad Ghasemi	Optimization of Thermal Processes in Heavy Oil Reservoirs
2013	Ph.D. Defense at University of Regina	Manoochehr Akhlaghinia	Experimental and Numerical Studies of Three-Phase Relative Permeability Isoperms for Heavy Oil Systems
2013	Ph.D. Defense at University of Waterloo	Ali Shafiei	Mathematical and Statistical Investigation of Steamflooding in Naturally Fractured Carbonate Reservoirs
2012	Ph.D. Defense at University of Alberta	Ali Azad	Rapid SAGD Simulation Considering Geomechanics for Closed Loop Reservoir Optimization
2009	Ph.D. Defense at Memorial University of Newfoundland	Vitaly Khoriakov	Transient Flow Modeling in Advanced Wells
2006	Ph.D. Defense at University of Regina	Zhaowen Li	Study of Gas Diffusion in Liquid-Saturated Porous Media for Oil Recovery and CO2 Sequestration
2005	Undergraduate Thesis at Memorial University of Newfoundland	Steve Ennis	A Comparison of Computer Generated Production Forecasts for Natural Gas Wells versus Actual Production History

Supervision of Visiting/Exchange Students

2024: Visiting Research Engineer from Southwest Petroleum University, China (1 year supervision)
2022/23: Visiting Research Engineer from Southwest Petroleum University, China (1 year supervision)
2019/20: Visiting Research Engineer from Sinopec, China (1 year supervision)
2017: Visiting Research Engineers (3) from Sinopec, China (2 months supervision)
2013: Visiting undergraduate Chemical Engineering student from Madrid, Spain (4 months supervision)
2010: Visiting Research Engineer from Sinopec, China (12 months supervision)
2004-2008: 11 M.Eng. students from Petroleum University of Tehran, Iran (8 months supervision per student)

Supervision of Senior Undergraduate Students

ENPE 511/531 Oil and Gas Design Projects

- Students, in teams of four, evaluated all or part of a reservoir to recommend a development plan
- Project requirements included: log interpretation, core analysis, well test analysis, review of completion, pressure and production history; construction of appropriate maps, cross-sections; design of alternative development scenarios that included required well and facilities, production forecasts (from analytic models and reservoir simulation), capital and operating cost estimates, and an economic evaluation of the proposed development strategies
- Design Projects supervised (each project has groups of 4 students):

  SAGD at Celtic (ExxonMobil Canada), SAGD, SAP, and SAS at Senlac (EnCana), Hot Waterflooding at Senex (EnCana), Follow-up Processes for Cyclic Steam Stimulation at Cold Lake (Imperial Oil), Waterflood in Equador (EnCana), SAGD at Burnt Lake (CNRL), SAGD at Hangingstone (JACOS), SAGD at Celtic: Design Expansion (Husky), MooseWest Gas Development (Shell), Primrose CSS and SAGD (CNRL), Peace River Polymer Flood (Shell), Split-pay SAGD at Christina Lake (Suncor), ISC follow-up process to SAGD at Hangingstone (JACOS), ISC follow-up process to SAGD at Burnt Lake (CNRL), HW optimization placement in Cummings Field (Husky), Waterflood optimization in Cummings Field (Apache), Electrothermal Recovery of Oil Sand (ET Energy), SAGD at Hilda Lake (Orion, Shell), SAGD at Christina Lake (Cenovus), HWCSS at Cold Lake (Imperial Oil)

Internship Students

Have supervised and evaluated reports for over 50 internship students 2004-present

Undergraduate Researchers

Year	Name	Project	Months
2022	Shahar Assaf	Digital energy systems Funded by GRI (UCalgary CFREF program)	6
2020	Haley McKercher	Lithium Research Funded by GRI (UCalgary CFREF program)	4
2019	Ryan Baxter	Levitation research Funded by GRI (UCalgary CFREF program)	4
	Haley McKercher	Lithium Research Funded by GRI (UCalgary CFREF program)	4
2017	Lyndon Bunio	Experimental Characterization of Bitumen and Oil Sands Funded by NSERC	4
2016	Lyndon Bunio	Experimental Characterization of Bitumen and Oil Sands Funded by NSERC	4
2015	Vincent Czyz	SAGD Cogeneration Analysis Funded by NSERC	4
2014	Usman Kamran	Sound-based Energy Generators Unfunded	4
	Vincent Czyz	Winter/Summer Research Assistant, In Situ Gasification Pilots Analysis Funded by NSERC	8

Year	Name	Project	Months
2013	Vincent Czyz	Summer/Fall Research Assistant, In Situ Gasification Pilots Analysis Funded by NSERC	8
	Xiaohan (Will) Ruan	Summer Research Assistant, Heavy Oil and Oil Sands Pilots Analysis Unfunded	2
2012	Aaron Bridges	Summer Research Assistant, Artificial Kidney with STARS Funded by AI-Bio (Co-supervised with Michael Kallos)	4
	Michelle Harding	Summer Research Assistant, Poop2Power Project Funded by NSERC USRA (Co-supervised with Michael Kallos)	4
	Rajdeep Sran	Summer Research Assistant, Heavy Oil Cold Production Funded by NSERC USRA	4
2011	Ji-In Cheon	Summer Research Assistant, Bioreactor Flow Modelling (COMSOL) Funded by PURE (Co-supervised with Michael Kallos)	4
	Amanpreet Gill	Summer Research Assistant, Energetics of SAGD Co-supervised with Joule Bergerson	4
	Mohsin Khan	Summer Research Assistant, Shalegas Funded by CMC-NCE	4
2010	Kyle Mouratidis	Summer Research Assistant, Thermoelectric Device Design Funded by NSERC	4
	Michael Hauser	Summer Research Assistant, Deformable Porous Media Funded by PURE (Co-supervised with Michael Kallos)	4
	Julia Tse	Summer Research Assistant, Energetics of oil sands processes Co-supervised with Joule Bergerson	4
	Jason Sandor	Summer Research Assistant, Database of oil sands operations (Co-supervised with Joule Bergerson)	4
2009	Alex Hanna	Summer Research Assistant, Reactive Reservoir Simulation Funded by NSERC	4
	Jason Sandor	Summer Research Assistant, Thermal Processes Project Funded by NSERC	4
	Shubham Trivedi	Summer Research Assistant, Laboratory Assistant Funded by NSERC Co-supervised with Michael Kallos	4
	Taras Karpachevskyy	Summer Research Assistant, Cellular Automata Modelling Funded by NSERC	4
2008	Alex Hanna	Summer Research Assistant, Laboratory Assistant Funded by AICISE	4
	Neven Dimic	Summer Research Assistant, iGEM Competition Funded by NSERC	4
	Taras Karpachevskyy	Summer Research Assistant, iGEM Competition Funded by NSERC	4
2007	Lee Wasilenko	Summer Research Assistant, Construction of Water Lab Funded by AICISE (Co-supervised with Arin Sen)	4
	Ramez Al Hanna	Summer Research Assistant, Construction of Water Lab Funded by AICISE (Co-supervised with Arin Sen)	4
2006	Paula Pustanyk	Summer Research Assistant, Laboratory Assistant Funded by AICISE	4
2005	Roland Coombe	Summer Research Assistant, History of CSS and SAGD Funded by AICISE	4
	Dean Richert	Summer Research Assistant, Impact of Web Speed on Wetting Line in Slide Coating Funded by NSERC	4

C. Research Engineer (RE), Research Associate (RA), Research Technician (RT) and Post-Doctoral Fellow (PDF) Supervision

Year	Name	Project	RE/RA /PDF
2025	Ran Luo	Machine learning for methane emission prediction	PDF
	Mohan Sivagnanam	CFD models for methane emission prediction	PDF
	Yi Su	Tailings research	PDF
	Ranjani Kannaiyan	Methane emissions reduction	RA
	Jingyi (Jacky) Wang	Lab and simulation manager	RE
	Marwa Hanouf	Life cycle sustainability assessment	PDF
	Young Hoon Lee	Methane emission modelling using CFD	PDF
	Desta Gebremedhin	Energy poverty	PDF
2024	Ran Luo	Machine learning for methane emission prediction	PDF
	Mohan Sivagnanam	CFD models for methane emission prediction	PDF
	Yi Su	Tailings research	PDF
	Ranjani Kannaiyan	Methane emissions reduction	RA
	Jingyi (Jacky) Wang	Lab and simulation manager	RE
	Marwa Hanouf	Life cycle sustainability assessment	PDF
	Desta Gebremedhin	Energy poverty	PDF
	Tsehaye Beyene	Energy poverty	PDF
	Alejandro Padilla-Rivera	Life cycle sustainability assessment	PDF
	Young Hoon Lee	Methane emission modelling using CFD	PDF
2023	Helen Pinto	Energy in remote communities	PDF
	Nicole Calma	Methane emissions reduction	RT
	Ranjani Kannaiyan	Methane emissions reduction	RA
	Jingyi (Jacky) Wang	Lab and simulation manager	RE
	Marwa Hanouf	Life cycle sustainability assessment	PDF
	Mohan Sivagnanam	CFD models for methane emission prediction	PDF
	Alejandro Padilla-Rivera	Life cycle sustainability assessment	PDF
	Desta Gebremedhin	Energy poverty	PDF
	Tsehaye Beyene	Energy poverty	PDF
	Ran Luo	Machine learning for methane emission prediction	PDF
	Yi Su	Tailings research	PDF
2022	Helen Pinto	Energy in remote communities	PDF
	Nicole Calma	Methane emissions reduction	RT
	Ranjani Kannaiyan	Methane emissions reduction	RA
	Na Zhong	Energy storage	PDF
	Jingyi (Jacky) Wang	Lab and simulation manager	RE
	Marwa Hanouf	Social life cycle assessment of heavy oil and oil sands processes	PDF
	Wei Wei	Rich solvent recovery processes for oil sands reservoirs	PDF
	Siavash Nejadi	Detailed point bar reservoir characterization and SAGD design	PDF
	Marwa Hanouf	Social life cycle assessment of heavy oil and oil sands processes	PDF
2021	Helen Pinto	Energy in remote communities	PDF
	Nicole Calma	Methane emissions reduction	RT
	Chongchong Wu	Energy materials	PDF
	Yi Su	Tailings research	PDF
	Ranjani Kannaiyan	Ultrasonic processes for bitumen upgrading	RA
	Aarthi Muthuswamy	Oil sands recovery process design	PDF
	Vijitha Mohan	Oil sands recovery process design	PDF
	Jingyi (Jacky) Wang	Lab and simulation manager	RE
	Siavash Nejadi	Detailed point bar reservoir characterization and SAGD design	PDF
	Marwa Hanouf	Social life cycle assessment of heavy oil and oil sands processes	PDF
	Chongchong Wu	Energy materials	PDF

Year	Name	Project	RE/RA /PDF
2020	Yi Su	Tailings research	PDF
	Helen Pinto	Energy in remote communities	PDF
	Ranjani Kannaiyan	Ultrasonic processes for bitumen upgrading	PDF/RA
	Aarthi Muthuswamy	Oil sands recovery process design	PDF
	Vijitha Mohan	Oil sands recovery process design	PDF
	Jingyi (Jacky) Wang	Lab and simulation manager	RE
	Mahta Vishkai	Optimization of Oil Sands Recovery Processes	PDF
	Marwa Hanouf	Social life cycle assessment of heavy oil and oil sands processes	PDF
	Siavash Nejadi	Detailed point bar reservoir characterization and SAGD design	PDF
2019	Chongchong Wu	Energy materials	PDF
	Yi Su	Tailings research	PDF
	Ranjani Kannaiyan	Ultrasonic processes for bitumen upgrading	PDF
	Jingyi (Jacky) Wang	Lab and simulation manager	RE
	Mahta Vishkai	Optimization of Oil Sands Recovery Processes	PDF
	Chongchong Wu	Energy materials	PDF
	Yi Su	Tailings research	PDF
2018	Mohan Sivagnanam	CFD analysis of well bore flows	RE
	Ranjani Kannaiyan	Ultrasonic processes for bitumen upgrading	PDF
	Jingyi (Jacky) Wang	Lab manager and simulation manager	RE
	Mahta Vishkai	Optimization of Oil Sands Recovery Processes	PDF
	Yi Su	Tailings research	PDF
	Javad Oskouei	PVT Equilibrium and non-Equilibrium Analysis	PDF
2017	Mohan Sivagnanam	CFD analysis of well bore flows	RE
	Gouthami Senthamaraikkannan	Foam oil dynamics and modelling	PDF
	Ranjani Kannaiyan	Ultrasonic processes for bitumen upgrading	PDF
	Jingyi (Jacky) Wang	Lab and simulation manager	RE
	Javad Oskouei	PVT Equilibrium and non-Equilibrium Analysis	PDF
	Mohan Sivagnanam	CFD analysis of well bore flows	RE
	Gouthami Senthamaraikkannan	Foam oil dynamics and modelling	PDF
2016	Ranjani Kannaiyan	Ultrasonic processes for bitumen upgrading	PDF
	Experience Nduagu	Carbon free steam generation for oil sands processes	PDF
	Jingyi (Jacky) Wang	Thermal reservoir simulation/Pulsar	RE
	Chantsalmaa Dalkhaa	Hot Gas Injection for post-CHOPS Reservoirs	PDF
	Mohan Sivagnanam	CFD analysis of well bore flows	RE
	Gouthami Senthamaraikkannan	Foam oil dynamics and modelling	PDF
	Ranjani Kannaiyan	Ultrasonic processes for bitumen upgrading	PDF
2015	Zeinab (Bahareh) Khansari	Steam processes water geochemistry modeling, analysis	PDF
	Samaneh Nobakht	Computational Fluid Dynamics Model	RA
	Experience Nduagu	Carbon free steam generation for oil sands processes	PDF
	Jingyi (Jacky) Wang	Thermal reservoir simulation/Pulsar	RE
	Amin Sharifi Haddad	Hybrid processes for thin post-cold production/CHOPS reservoirs	PDF
	Ranjani Kannaiyan	Ultrasonic processes for bitumen upgrading	PDF
	Zeinab (Bahareh) Khansari	Steam processes water geochemistry modeling, analysis	PDF
	Samaneh Nobakht	Computational Fluid Dynamics Model	RA
	Megan Hunt	Modelling hydraulic fracturing	PDF
2014	Experience Nduagu	Carbon free steam generation for oil sands processes	PDF
	Jingyi (Jacky) Wang	Thermal reservoir simulation/Pulsar	RE
	Amin Sharifi Haddad	Hybrid processes for thin post-cold production/CHOPS reservoirs	PDF
	Megan Hunt	Modelling hydraulic fracturing	PDF

Year	Name	Project	RE/RA /PDF
	Experience Nduagu	Carbon free steam generation for oil sands processes	PDF
	Punitkumar Kapadia	Whitenoise processes for imaging reservoirs	PDF
	Wei (David) Zhou	Steam processes for thin post-cold production/CHOPS reservoirs	RA
2013	Cosmas Ezeuko	Steam processes for bitumen-bearing carbonate reservoirs	PDF
	Jingyi (Jacky) Wang	Thermal reservoir simulation/Pulsar	RE
	Punitkumar Kapadia	Whitenoise processes for imaging reservoirs	PDF
	Wei (David) Zhou	Steam processes for thin post-cold production/CHOPS reservoirs	RA
	Cosmas Ezeuko	Steam processes for bitumen-bearing carbonate reservoirs	PDF
	Jingyi (Jacky) Wang	Thermal reservoir simulation/Pulsar	RE
2012	Qiaohui (Holly) Lei	In situ coal gasification (until June 2012)	RE
	Alexander Grigoryan	Biofilm in porous media (until January 2012)	RA
	Cosmas Ezeuko	Pore network models for biofilm spreading in porous media	PDF
	Jingyi (Jacky) Wang	Thermal reservoir simulation	RE
	Qiaohui (Holly) Lei	In situ combustion/in situ coal gasification	RE
	Alexander Grigoryan	Biofilm in porous media	RA
2011	Cosmas Ezeuko	Pore network models for biofilm spreading in porous media	PDF
	Qiaohui (Holly) Lei	In situ combustion	RE
	Jingyi (Jacky) Wang	Thermal reservoir simulation	RE
	Qiaohui (Holly) Lei	Charging of oil sands reservoir	RE
2010	Qiaohui (Holly) Lei	Thermal reservoir simulation	RE
	Mohsen Sadeghi	In Situ Combustion	PDF
	Qiaohui (Holly) Lei	Charging of oil sands reservoirs	RE
	Qiaohui (Holly) Lei	Charging of oil sands reservoirs	RE
2009	Qiaohui (Holly) Lei	Charging of oil sands reservoirs	RE

IV. SCHOLARLY ACTIVITIES

A. Research Support

Awards are 100% to Ian Gates unless otherwise indicated. Dollars are Canadian unless otherwise indicated. Total research income directly to Ian Gates since started at the University of Calgary is equal to about $14M.

Sponsor	Title of Project	Awarded	Amount (Canadian Dollars unless otherwise indicated)
TOTAL 2024			$2,866,000
NGIF Emission Testing Centre / APEA	Emissions Testing and Research	2024	$2,800,000
Certarus	Hydrogen stratification study	2024	$11,000
UofC GRI PDF Award	Ammonia	2024	$55,000
TOTAL 2023			$639,750
Alberta Innovates NSERC DG Supplement	Zero Emissions Lithium Extraction from Underground Reservoirs	2023	$40,000
Strathcona Resources	Post-CHOPS reservoir models with wormholes	2023	$28,750
Exceed Oil Services	Simulation study for optimal spacing of ICDs in production wells	2023	$36,625
249 Inc.	Production of hydrocarbon fuels	2023	$250,000
UofC GRI PDF Award	Energy for remote communities	2023	$55,000
UofC GRI PDF Award	Solvent-based recovery process	2023	$55,000

Sponsor	Title of Project	Awarded	Amount (Canadian Dollars unless otherwise indicated)
CNRL	Butane Polishing Process for Removal of Oil from Heavy Minerals Stream	2023	$40,000
TOTAL 2022			$1,612,900
MITACS	Methane Emissions in the Upstream Natural Gas Supply Chain	2022	$960,000
Stratum	Kinetics of Aquathermolysis Reactions of Heavy Oil	2022	$53,125
PTAC	Methane slip	2022	$25,000
Solideum	Solid oil phase processing	2022	$60,000
Spartan Controls	Automatic Bypass Odorizer (ABO) for natural gas distribution to reduce errors of the existing manual system due to environmental conditions	2022	$16,875
CERIN / CGA	Emissions Testing Centre - Technician	2022	$165,000
UofC GRI PDF Award	Energy for remote communities	2022	$55,000
UofC GRI PDF Award	Solvent-based recovery process	2022	$55,000
UofC GRI PDF Award	Heavy oil recovery	2022	$55,000
Natural Resources Canada – CanMET Materials	Material Challenges for Production of Hydrogen from Oil Fields	2022	$24,150
Harvest Energy Inc.	Routes to Reduce GHG emissions and Carbon Tax for the BlackGold Oil Sands Project	2022	$143,750
TOTAL 2021			$1,919,584
Element Technical Services	Process Development for Carbon-Based High Thermal Conductivity Materials	2021	$412,500
National Science and Engineering Research Council (NSERC) Discovery Grant	Zero Emissions Lithium Extraction from Underground Reservoirs	2021	$380,000 $76,000 per year for 5 years
CERIN / CGA	Emissions Testing Centre – Data and Lab	2021	$850,000
CGA	Emissions Testing Centre - Technician	2021	$102,084
UofC GRI PDF Award	Rich solvent-based recovery processes	2021	$110,000 $55,000 for 2021 $55,000 for 2022
EnCana/Petroleum Society Endowed Chair	Oil sands historical perspectives	2021	$65,000
TOTAL 2020			$781,700
ConocoPhillips Canada Inc.	Effect of Additives on Emulsion Properties	2020	$151,700
Solideum Inc.	Low sulphur oil processes	2020	$30,000
LiEP	Electrode preparation for lithium extraction	2020	$15,000
CEDA	Gas Emissions from Spray Tailings	2020	$20,000
Chinese National Petroleum Corporation	Decarbonizing oil sands recovery processes	2020	$500,000
EnCana/Petroleum Society Endowed Chair	Oil sands historical perspectives	2020	$65,000
TOTAL 2019			$665,000

Sponsor	Title of Project	Awarded	Amount (Canadian Dollars unless otherwise indicated)
EnCana/Petroleum Society Endowed Chair	Oil sands historical perspectives	2019	$65,000
NRCan – CanMET Energy	Direct Contact Steam Generators	2019	$75,000
Alberta Energy Regulator	Emissions of Odorous Compounds in Alberta	2019	$305,000
UofC GRI PDF Award	Solvent-based recovery processes	2019	$110,000
UofC GRI PDF Award	Technology evolution in oil sands recovery processes	2019	$110,000
TOTAL 2018			$912,000
Petroleum Technology Research Centre (Saskatchewan) Grant	Non-equilibrium phenomena for Gas Exsolution (joint project with Na Jia, U.Regina)	2018	$45,000 + 45,000 (MITACS)
UofC GRI MSc Award	Beyond Steam	2018	$42,000
UofC GRI PhD Award	Reservoir Management	2018	$100,000
UofC GRI PhD Award	Energy Extraction from Petroleum Reservoirs for Hydrogen	2018	$100,000
UofC GRI PDF Award	Molecular Dynamics Catalysis	2018	$110,000
UofC GRI PDF Award	Unconventional Recovery	2018	$110,000
UofC GRI PDF Award	Reservoir Management	2018	$110,000
UofC GRI PDF Award	Energy Extraction from Petroleum Reservoirs for Hydrogen	2018	$110,000
CEDA	In Situ Consolidation Process for Oil Sands Tailings with Bitumen Recovery	2018	$25,000
NSERC i2i	Lower GHG Intensive Transport of Bitumen or Heavy Oil in Solid Phase	2018	$115,000
TOTAL 2017			$1,083,875
Perpetual Energy Inc.	Solvent-based Recovery Process Design	2017	$37,000
MITACS-Kerui Accelerate Cluster	Responsible Development of Unconventional Hydrocarbon Reserves	2017	$1,350,000 PI: Ian Gates Net to Ian Gates: $135,000
CEDA	In Situ Consolidation Process for Oil Sands Tailings with Bitumen Recovery	2017	$93,750
Suncor Energy	Breaking Rock by Resonance: Standing Wave Acoustic Shale Permeation	2017	$262,500
Suncor Energy	Electromagnetic Enzyme Extraction	2017	$265,625
UofC CFREF PhD Award	Low temperature solvent recovery processes for heavy oil reservoirs	2017	$100,000
UofC CFREF PDF Award	Energy Extraction from Petroleum Reservoirs for Hydrogen	2017	$110,000
Proton Technologies	Simulation of ISGH2 Process	2017	$80,000
TOTAL 2016			$767,335
Alberta Innovates Bio Solutions	Cellulose Nanocrystals for CNC for Steam Foam Applications in SAGD	2016	$25,000
CNPC Venezuela	EOR Technology Study of Orinoco Super Heavy Oil in Venezuela	2016	US$127,500
Suncor Energy	Sonication of Oil Sands Core	2016	$168,000
Petroleum Technology Research Centre (Saskatchewan) Grant	Solvent-Heavy Oil PVT and Flow Properties	2016	$100,000
Petroleum Technology Alliance Canada	Artificial Reservoir: Scaling, Design, and Costs	2016	$25,000

Sponsor	Title of Project	Awarded	Amount (Canadian Dollars unless otherwise indicated)
VPR Office	In Situ Gasification for H2 Production	2016	$30,000
WCIO	In Situ Gasification for H2 Production	2016	$69.690
Proton Technology Inc.	In Situ Gasification for H2 Production	2016	$175,000
EasWara Origins Corp.	Converting CO2 and Heavy Metals into Carbonates	2016	$15,000
TOTAL 2015			$1,073,508
Petroleum Technology Research Centre (Saskatchewan) Grant	Non-equilibrium Phase and Foamy Oil Behaviour in Heavy Oil Recovery Processes	2015	$190,000
National Science and Engineering Research Council (NSERC) Engage Grant	Flow Hydraulics in Wells with Inflow and Outflow Control Devices by using Computational Fluid Dynamics	2015	$25,000 + $64,000 (in-kind) from Ansys Canada Ltd.
National Science and Engineering Research Council (NSERC) Engage Grant	Converting CO2 and Heavy Metals recovered from Oil and Gas Wastewater into Carbonates	2015	$25,000 + $55,000 (in-kind) from Easwara Origins Corp.
MITACS / Accelerate (PhD Student Award) and Suncor Energy	Direct Contact Steam Generator Flue Gas Subsurface Modeling and Application	2015	$105,428 ($54,000 from MITACS and $51,428 from Suncor)
National Science and Engineering Research Council (NSERC) Discovery Accelerator Supplement Award	Reduced Emission In Situ Oil Sands Recovery Processes	2015	$120,000 $40,000 per year for 3 years
National Science and Engineering Research Council (NSERC) Discovery Grant	Reduced Emission In Situ Oil Sands Recovery Processes	2015	$285,000 $57,000 per year for 5 years
AITF/Heavy Oil	Expanding SAGD to Challenging Reservoirs	2015	$124,080
MITACS / Accelerate (PhD Student Award) and Laricina Energy	Acid Stimulation of Grosmont Formation: Reservoir and Production Engineering	2015	$90,000 ($54,000 from MITACS and $36,000 from Laricina Energy)
TOTAL 2014			$387,600
Husky Energy	Gas-Hot Water-Steam Recovery Processes for Post-CHOPS Reservoirs	2014	$57,800
Lifeview Oil and Gas	Evaluation of the PRTISP Recovery Process	2014	$79,800
University of Calgary Energy Research Strategy Grand Challenges Funding	Reassembling the Oil Sands: Innovation	2014	$350,000 Net to Ian Gates: $100,000
AITF/NanoBridge	Cellulose Nanocrystal suspensions for cold heavy oil recovery	2014	$25,000
ATCO Power	Thermal Recovery and Cogeneration: Potential for Power Generation with Thermal Recovery Expansion and Growth	2014	$25,000
University of Calgary Eyes High PhD Student Award	Heavy Oil Reservoirs as Large-scale Microbial Fuel Cells for Electricity Production	2014	$100,000

Sponsor	Title of Project	Awarded	Amount (Canadian Dollars unless otherwise indicated)
TOTAL 2013			$957,399
Petroleum Technology Research Centre (Saskatchewan) Grant	A User-Friendly Software Package for the Well-Wormhole Model	2013	$70,000
Petroleum Technology Research Centre (Saskatchewan) Grant	Steam-Solvent-CO2 Recovery Process Design for New Heavy Oil and Post-CHOPS Reservoirs	2013	$90,000
Angle Energy	Single Section Model for Angle Energy's Harmattan Cardium Operation	2013	$60,666
Chinese National Petroleum Corporation America Grant	Analysis of Cold Production Data from the MPE3 Project to determine Major Recovery Mechanisms	2013	US$100,000
Suncor Energy Inc.	Application of the Belt Ultrasonic Upgrader Concept to Diluted Bitumen: Proof of Concept Study	2013	$233,333
Suncor Energy Inc.	The Impact of Variable Geology and Completion Type on SAGD Performance	2013	$50,000
University of Calgary Eyes High Post-Doctoral Scholar Award	Carbon Capture from Flue Gas Produced from SAGD, CSS, and Oil Sands Mining Plants	2013	$100,000
OSUM Oil Sands Inc.	SAGD and CSS in the Grosmont Formation: Evaluation of Relative Roles of Geologic Features on Process Performance	2013	$80,000
University of Calgary Research Seed Grant	Biogas Bioreactor for Animal Manure Conversion into Power	2013	$18,000 Net to Ian Gates: $9,000
Convergent Bitumen Recovery Inc.	Laboratory Evaluation of the CBR Surface Extraction Process	2013	$130,400
TOTAL 2012			$415,000
Institute for Sustainable Energy, Environment, and Economy (ISEEE) Recruiting Scholarships Grant	Balance between water consumption, energy use, emissions, and oil productivity from oil sands reservoirs	2012	$30,000
S.M. Blair Foundation Grant	The Application of Microbial Processes to Enhance Oil Recovery From Reservoirs	2012	$50,000 Net to Ian Gates: $25,000
Canada School of Energy and Environment (CSEE) Grant	Underground Imaging in Real Time by using White Noise Reflection Processes: Application to Oil Sands Recovery Processes and Carbon Dioxide Sequestration	2012	$100,000
Petroleum Technology Research Centre (Saskatchewan) STEPS BLNCE Grant	Steam Flood Design for Post-CHOPS Reservoirs	2012	$110,000
National Science and Engineering Research Council (NSERC) i2i Idea to Innovation Grant	Underground Imaging in Real Time by using White Noise Reflection Processes: Application to Petroleum Recovery including Oil Sands	2012	$125,000
TOTAL 2004-2011			$3,779,300.00

Sponsor	Title of Project	Awarded	Amount (Canadian Dollars unless otherwise indicated)
Barrick Energy Ltd. Grant	Indexing for Steam-Solvent-Geomechanical Recovery of Bitumen	2011	$166,600
Chinese National Petroleum Corporation South America Grant	Analysis of Cold Production Recovery Mechanisms and the Study of EOR Technologies for MPE3 Project	2011	US$100,000
Laricina Energy Inc. Grant	Discrete Object Model for Analysis of Injection and Production Behaviour in the Grosmont Formation	2011	$136,250 $86,250 in 2012, $50,000 in 2013
Bill and Melinda Gates Foundation Grand Challenges Round 6 Winner	Anaerobic Microdigesters with Micro Combined Thermoelectric Heat and Power Generation to Convert Human Excreta to Electricity, Heat, Methane, Fertilizer, and Water	2011	US$100,000 Net to Ian Gates: US$50,000
Carbon Management Canada NCE Grant	In Situ Bioconversion of Coal by Enhanced Engineering Pathways	2011	$1,933,000 Multi-university collaboration Net to Ian Gates: $137,000
Petroleum Technology Research Centre (Saskatchewan) STEPS BLNCE Grant	New Fundamental Method to Model CHOPS and Follow-Up Cyclic Solvent Processes	2011	$120,000
Pioneer Petrotech Services Inc. Grant	Fireflood Process Design	2011	$25,000
University Technologies International (UTI) Inc. Grant	PULSAR Process Design	2010	$17,000
Carbon Management Canada NCE Grant	Rapid Routes to Carbon-Efficient Recovery of Bitumen and Heavy Oil	2010	$350,000 Net to Ian Gates: $175,000
National Science and Engineering Research Council (NSERC) Discovery Grant	Oil Sands In Situ Gasification Recovery Process Design	2010	$92,000 $23,000 per year for 4 years
Laricina Energy Inc. Grant	Multiphase Flow in Injection and Production Wellbores	2009	$76,250
S.M. Blair Foundation Grant	The Application of Microbial Processes to Enhance Oil Recovery From Reservoirs	2009	$200,000 Net to Ian Gates: $100,000
Zandmer 2008 Grant	Deformable Porous Media Laboratory Pilot Project	2008	$33,700 Net to Ian Gates: ~$16,850
ISEEE 2008 Grant	The Environmental and Production Implications of Water Flow Through Bitumen-Filled Sandstones	2008	$120,000 Net to Ian Gates: $25,000
Alberta Ingenuity Centre for In Situ Energy (AICISE) 2007 Theme Grant	Advanced Reactive Reservoir Simulation	2007	$440,000 Net to Ian Gates: $240,000
Zandmer New Faculty Grant	Investigating the Use of Microbial Processes to Enhance Oil Recovery From Reservoirs	2006	$96,000 Net to Ian Gates: ~$48,000
Shell International SmartWells Grant	Smart Well and Adaptive Process Operation for Producing Extra Heavy Oil Reservoirs	2006	$550,000

Sponsor	Title of Project	Awarded	Amount (Canadian Dollars unless otherwise indicated)
Small Equipment Grants Program (SEGP) Grant	Novel Reservoir Simulation By Using Parallel and Hardware Acceleration	2006	$168,000
Canada Foundation for Innovation (CFI) Leaders Opportunity Fund Grant	Novel Reservoir Simulation By Using Parallel and Hardware Acceleration	2006	$242,000
Silicon Graphics Incorporated (SGI) Grant	Novel Reservoir Simulation By Using Parallel and Hardware Acceleration	2006	Total In-Kind Award: ~$400,000
Shell International Vogon Grant	Oil Geochemical Mapping in Peace River Area	2006	$571,000 Net to Ian Gates: ~$100,000
Alberta Ingenuity Centre for In Situ Energy (AICISE) 2006 Theme Grant	Advanced Reactive Reservoir Simulation	2006	$242,000 Net to Ian Gates: $180,000
NorskHydro Methmax Grant	Assessment of Biodegradation in Brazilian Reservoir	2005	$300,000 Net to Ian Gates: ~$100,000
Alberta Ingenuity Centre for In Situ Energy (AICISE) 2005 Support Grant	Advanced Reactive Reservoir Simulation	2005	$65,000
National Science and Engineering Research Council (NSERC) Discovery Grant	Enhanced Oil Recovery Technologies by using Alkaline-Surfactant-Polymer Systems	2005	$100,000 $25,000 each year for 4 years

B. Invited Talks / Short Courses

1. MITACS 2005 Conference Plenary Lecture. "Reservoir Simulation: Physics, Strengths, Limitations, and Visualization", Calgary, Alberta, Canada, May 2005.
2. MITACS 2005 Conference Natural Resources Workshop. "Some Thoughts on Key Uncertainties of Thermal-Solvent Recovery Processes", Calgary, Alberta, Canada, May 2005.
3. Netera Days 2005. "Modelling Our Natural Resources: Oil & Gas Reservoir Engineering", Calgary, Alberta, October 2005.
4. Shell / Pacific Institute of Mathematical Sciences (PIMS) Invited Talk. "On the Operating Strategy in Solvent Aided Steam-Assisted Gravity Drainage", Calgary, Alberta, Canada, December 2005.
5. Petroleum and Geosystems Engineering, University of Texas at Austin Seminar Series. "On the Operating Strategy in Solvent Aided Steam-Assisted Gravity Drainage", Austin, Texas, U.S.A., February 2006.
6. CMG Technical Symposium 2006. "Design of the Steam and Solvent Injection Strategy in Expanding-Solvent Steam-Assisted Gravity Drainage", Calgary, Alberta, Canada, July 2006.
7. CMG Technical Symposium 2006. "Steam Injection Strategy and Energetics of Steam-Assisted Gravity Drainage", Calgary, Alberta, Canada, July 2006.
8. Laracina Energy Invited Talk to the Board of Directors. "Optimization of SAGD and ES-SAGD", Calgary, Alberta, Canada, October 2006.
9. Alberta Ingenuity / Alberta Venture Magazine Invited Panel Member. "Alberta Ingenuity Centre for In Situ Energy", Calgary, Alberta, Canada, December 2006.
10. SPE Lecture, SPE Edmonton Section Technical Dinner Meeting. "Solvent and Steam Assisted Gravity Drainage". Edmonton, Alberta, Canada, January 2007.
11. AICISE-AICOSI Reservoir Characterization Workshop. "Impact of Reservoir and Fluid Heterogeneities on In Situ Recovery Processes", Lake Louise, Alberta, Canada, May 2007.
12. Nexen Lunch'n'Learn Seminar. "Geotailored Recovery Process Design: Beyond SAGD", Calgary, Alberta, Canada, May 2007.
13. Nexen Lunch'n'Learn Seminar. "Geotailored Recovery Process Design: Beyond SAGD: Part 2", Calgary, Alberta, Canada, June 26, 2007.
14. Invited Lecturer to Graduate Petroleum Engineering Course at Peking University, "Thermal Oil Recovery", Beijing, China, July 13, 2007.
15. Schulich School of Engineering, Engineering Associates Program. "Design of Heavy Oil Recovery Processes", Calgary, Alberta, Canada, November 13, 2007.

16. Chevron Lunch'n'Learn Seminar. "Design of Heavy Oil and Bitumen Recovery Processes: Part 1", Calgary, Alberta, Canada, May 1, 2008.
17. Petroleum Society Invited Lecture. "Design of Solvent-Aided Steam-Assisted Gravity Drainage", Calgary, Alberta, Canada, April 22, 2008.
18. StatOilHydro Invited Seminar. "REAR Processes: Design of Solvent-Aided Steam-Assisted Gravity Drainage", Calgary, Alberta, Canada, June 9, 2008.
19. Chevron Lunch'n'Learn Seminar. "Design of Heavy Oil and Bitumen Recovery Processes: Part 2", Calgary, Alberta, Canada, September 16, 2008.
20. Korean National Oil Corporation Lunch'n'Learn Seminar. "Design of Heavy Oil and Bitumen Recovery Processes", Calgary, Alberta, Canada, September 24, 2008.
21. Nexen Lunch'n'Learn Seminar. "Sulfur Generation and SAGD", Calgary, Alberta, Canada, May 27, 2009.
22. CSPG Breakfast Seminar. "Sulfur Generation and SAGD", Calgary, Alberta, Canada, May 28, 2009.
23. Chinese National Petroleum Corporation Seminar. "Introduction to Thermal and Thermal-Solvent Recovery", Beijing, China, January 12, 2010.
24. Schlumberger Information Systems Technical Symposium Invited Talk. "The Need for Large Multi-Million Cell Thermal Models". Calgary, Alberta, Canada, October 27, 2010.
25. Schulich School of Engineering, Engineering Associates Program Invited Talk. "Technology Evolution in Oil Sands: What's Happened and What's New?". Calgary, Alberta, Canada, October 29, 2010.
26. PRH-24 10 Year Celebration Short Course. "Heavy Oil and Oil Sands: Recovery and Processing", Curitiba, Brazil, May 4, 2011.
27. PRH-24 10 Year Celebration Invited Seminar. "Thermal and Thermal-Solvent Recovery Process Design", Curitiba, Brazil, May 5, 2011.
28. Chinese National Petroleum Corporation Seminar. "Air Injection and In Situ Combustion Recovery Processes for Heavy Oil Reservoirs", Beijing, China, June 14, 2011.
29. Chinese National Petroleum Corporation Seminar. "Analysis of SAGD Performance in the Field", Liaohe Oil Field, China, June 16, 2011.
30. Dow Chemical Seminar. "Design of Thermal Oil Recovery Processes", Clute, Texas, U.S.A., August 18, 2011.
31. Chinese National Petroleum Corporation America Seminar. "Design of Heavy Oil and Oil Sands Processes: Follow-Up Recovery Processes for Cold Produced Reservoirs", Caracas, Venezuela, September 6, 2011.
32. Devon Canada Seminar. "Design of Thermal Solvent Oil Sands Processes", Calgary, Alberta, Canada, October 12, 2011.
33. Devon Canada Seminar. "Cold Heavy Oil Recovery Processes", Calgary, Alberta, Canada, November 24, 2011.
34. Dow Chemical Seminar. "Fundamentals of SAGD", Clute, Texas, U.S.A., May 8, 2012.
35. Chinese National Petroleum Corporation America Seminar. "Heavy Oil Cold Production", Caracas, Venezuela, August 27, 2012.
36. Repsol YPF 3 day Seminar. "Heavy Oil Recovery Processes Analysis and Design", Madrid, Spain, September 4-6, 2012.
37. SPE Heavy Oil Process Analysis and Design Two-Day Shortcourse, Xi'an, China, September 22-23, 2012.
38. Grosmont : Process Design For Recovering Bitumen In Carbonates Two-Day Short Course, Calgary, Alberta, Canada, December 3-4, 2012.
39. SPE Heavy Oil Process Analysis and Design Two-Day Shortcourse, Villahermosa, Mexico, December 10-12, 2012.
40. Gates, I.D. and Kallos, M.S. The Joy of Converting Human Excreta to Power, Water, and Fertilizer – Invited Presentation to the Engineering Associates Program (EAP) of the Schulich School of Engineering, University of Calgary, Calgary, Alberta, Canada, January 25, 2013.
41. APEGA SAGD Forum Session 3 - Oil Sands 101 - CSS/SAGD/VAPEX and other technologies, Calgary, Alberta, Canada, January 28, 2013.
42. APEGA SAGD Forum Session 10 - Future of Oil Sands - The Game Changers, Calgary, Alberta, Canada, January 29, 2013.
43. Imperial Oil Ltd. Heavy Oil Process Analysis and Design Two-Day Short Course, Calgary, Alberta, Canada, February 26-27, 2013.
44. Devon Canada: Heavy Oil Process Analysis and Design Two-Day Short Course, Calgary, Alberta, Canada, July 15-16, 2013.
45. APEGA SAGD Forum Session 4 - Oil Sands 101 - CSS/SAGD/VAPEX and other technologies, Edmonton, Alberta, Canada, September 4, 2013.
46. ACAMP Seminar Series, Conventional Energy 2013, Focus: Sensors, Monitoring and Remediation Technologies: Technology for Heavy Oil and Oil Sands, Calgary, Alberta, Canada, September 18, 2013.
47. Canadian Institute Alberta Power Symposium 2013, Understanding the Benefits and Challenges of SAGD Implementation on Alberta's Power Supply, Calgary, Alberta, Canada, September 24-25, 2013.
48. Saskatchewan Land Surveyors Association - Education Seminar Presentation: Heavy Oil Recovery Process Design, Regina, Saskatchewan, Canada, November 18, 2013.
49. Husky Energy: Grosmont and Oil Sands Recovery Process Design Two-Day Short Course, Calgary, Alberta, Canada, November 21-22, 2013.

50. SPE Shortcourse on Steam Additive Recovery Processes for Heavy Oil and Oil Sands One Day Short Course, Canmore, Alberta, Canada, May 12, 2014.
51. University of Calgary China University of Petroleum Beijing Petroleum Capacity Development Three Week Short Course for PetroChina, Calgary, Alberta, Canada, September 8-25, 2014.
52. SPE Basic Reservoir Engineering Four Day Short Course for Cenovus, Calgary, Alberta, Canada, September 29 - October 2, 2014.
53. Schulich School of Engineering, Engineering Associates Program Invited Talk. "Energy Research Strategy and Innovation in Heavy Oil and Oil Sands". Calgary, Alberta, Canada, October 31, 2014.
54. Heavy Oil Reservoir Engineering Two Day Short Course for Cenovus, Calgary, Alberta, Canada, October 30 - October 31, 2014.
55. Basic Reservoir Engineering Four Day Short Course for Cenovus, Calgary, Alberta, Canada, January 27 - 30, 2015.
56. SPE Heavy Oil Process Analysis and Design One-Day Shortcourse, Calgary, Alberta, Canada, June 9, 2015.
57. Imperial Oil Ltd. Heavy Oil Process Analysis and Design Two-Day Short Course, Calgary, Alberta, Canada, May 19-20, 2015.
58. Imperial Oil Ltd. Heavy Oil Process Analysis and Design Two-Day Short Course, Cold Lake, Alberta, Canada, May 25-26, 2015.
59. RIPED, Chinese National Petroleum Corporation. Gates Research Group: Unconventional Oil Simulation & Labwork: CHOPS and Flow Control Devices for Thermal Recovery Processes, Beijing, China, October 15, 2015.
60. Invited Speaker, Recent Progress on Heavy Oil Recovery Process Analysis and Design, Canadian Heavy Oil Association Fall Conference, Calgary, Alberta, Canada, November 2, 2015.
61. Invited Speaker, On Heavy Oil and Oil Sands Recovery Process Analysis and Design, Chinese University of Petroleum Beijing, Beijing, China, May 26, 2016.
62. Invited Speaker, On History of Heavy Oil and Bitumen in Alberta, Presentation to CNPC VPs and Directors, Calgary, Alberta, Canada, September 18, 2016.
63. Invited Speaker, On Heavy Oil and Oil Sands Recovery Process Analysis and Design, Presentation to CNPC VPs and Directors, Calgary, Alberta, Canada, September 19, 2016.
64. Keynote Speaker, Oil Sands Now, Soon, and Future, Presentation at CERI Annual Oil and Gas Conference, Calgary, Alberta, Canada, March 6, 2017.
65. Invited Speaker, Oil Sands Technology and the Future, Presentation at APEGA Annual Conference, Calgary, Alberta, Canada, April 28, 2017.
66. Invited Speaker, Oil Sands Technology and the Future, Presentation Spartan Controls, Calgary, Alberta, Canada, May 3, 2017.
67. Invited Speaker, On History of Heavy Oil and Bitumen in Alberta, Presentation to CNPC Engineering and Geologists, Calgary, Alberta, Canada, November 29, 2017.
68. Invited Plenary Speaker, Design of Thermal Recovery Processes Minimizing Emissions and Maximizing Energy Efficiency, Presentation at Thermal EOR International Workshop III, held in Chengdu, China, October 16, 2018.
69. Invited Speaker, Gates Research Group: Unconventional Oil and Simulation and Labwork, Presentation to SPE Student Chapter at Southwest Petroleum University, Chengdu, China, October 15, 2018.
70. Invited Speaker (jointly with Jingyi Wang), Heavy Oil and Bitumen Transport: Solid Phase Transport, Presentation to the CHOA Slugging It Out Annual Conference, Calgary, Alberta, Canada, April 16, 2019.
71. Invited Speaker, Conversion of Heavy Oil and Bitumen into Pellets, Presentation to NB Power, Fredericton, New Brunswick, Canada, May 6, 2019.
72. Invited Speaker, Conversion of Heavy Oil and Bitumen into Pellets, Presentation to CRIN and Government of Canada, Ottawa, Ontario, Canada, May 8, 2019.
73. Invited Speaker, The UofC CFREF Program and Gates Research Activities, Presentation to Junior Oil and Gas Executives at the Petroleum Club, Calgary, Alberta, Canada, May 16, 2019.
74. Invited Speaker, On New Developments for Energy Extraction from Heavy Oil Reservoirs: Hydrogen, Presentation at the Thermal Heavy Oil Exploration and Development Forum, Liaohe, China, October 11-13, 2019.
75. Invited Speaker, On Thermal Recovery of Heavy Oil – Technology Evolution, Presentation at the Xinjiang Heavy Oil Development Technical Summit, Karamay, Xinjiang, China, October 15-16, 2019.
76. Invited Speaker, Hydrogen and Carbon from Oil Sands Reservoirs, Presentation to the Canadian Prairies Group of Chartered Engineers, Calgary, Alberta, Canada, November 13, 2019.
77. 6 virtual talks in 2020
78. 4 virtual talks in 2021
79. Invited Speaker, On unconventional oil recovery: environmental emissions, reductions, constraints, and options, Presentation to the Emeriti Society of the University of Calgary, Calgary, Alberta, Canada, April 13, 2022.
80. Invited Panelist, Alberta Innovates Inventure$ Conference, Calgary, Alberta, Canada, June 2, 2022.
81. Roughly 3-5 per year; no longer listing

C. Peer-Reviewed Journal Papers

2006 (1)

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2. Gates, I.D., Kenny, J., Hernandez-Hdez, I. L., and Bunio, G. L. Steam Injection Strategy and Energetics of Steam-Assisted Gravity Drainage. Paper SPE 97742 presented at the 2005 SPE International Thermal Operations and Heavy Oil Symposium held in Calgary, Alberta, Canada, 1-3 November, 2005.
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83. Dong, X., Xu, Z., Badamchi Zadeh, A., Jia, N., and Gates, I.D. A novel experimental method CCEC and modelling of methane dissolution and exsolution in heavy oil. SPE Canada Heavy Oil Conference held virtual, 29 September - 2 October, 2020.
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E. Books and Chapters in Books

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2. Gates, I.D. 2011. Basic Reservoir Engineering. Kendall-Hunt Publishing Company. ISBN**:** 978-0-7575-9062-7, 323 Pages, Book released August 2011.
3. Gates, I.D. and Wang, J. 2012. The Evolution and Future of In Situ Oilsands Recovery Technology. In Canadian Heavy Oil Association: The first quarter century of knowledge sharing and business networking, 1986-2011, published by JuneWarren Nickle's Energy Group in Partnership with the Canadian Heavy Oil Association, 74 p.
4. Gates, I.D., Cokar, M., and Kallos, M.S. 2012, Fundamentals of heat transport at the edge of steam chambers in cyclic steam stimulation and steam-assisted gravity drainage, in F. J. Hein, D. Leckie, S. Larter, and J. Suter, eds., Heavy-oil and oil-sand petroleum systems in Alberta and beyond: American Association of Petroleum Geologists Studies in Geology 64, p. 1–15.
5. Hunt, M.M., Meng, G., Rancourt, D.E., Gates, I.D., Kallos, M.S. 2013. Image Analysis Method for Evaluating Heterogeneous Growth and Differentiation of Embryonic Stem Cell Cultures, Chapter 10 in Developments in Biotechnology and Bioprocessing. 2013, American Chemical Society. p. 165-181. Chapter DOI: 10.1021/bk-2013-1125.ch010, ACS Symposium Series, Vol. 1125, ISBN13: 9780841229105 eISBN: 9780841229112, Publication Date (Web).
6. Al-Anazi, A.F. and Gates, I.D. 2015. On Support Vector Regression to Predict Poisson's Ratio and Young's Modulus of Reservoir Rock, Chapter 5 in Cranganu et al. (eds.), Artificial Intelligent Approaches in Petroleum Geosciences. Springer International Publishing, DOI 10.1007/978-3-319-16531-8_5.
7. Siahrostami, S., Stoyanov, S.R., Gusarov, S., Gates, I.D., Karamad, M. 2022. Artificial intelligence for catalysis. Chapter 2 in De Luna (ed.), Accelerated Materials Discovery, Walter de Gruyter GmbH, Berlin/Boston, ISBN 978-3-11-073804-9.
8. Gates, I.D., Wang, J., Gates, T.D., Su, Y., Kannaiyan, R., and Luo, R. 2023. Heavy Oil and Extra Heavy Oil (Bitumen) Recovery. Chapter 9 in Q. Wang, Volume III Recovery Improvement, (Oil and Gas Chemistry Management Series), Gulf Professional Publishing, ISBN 978-0-12-823363-4. https://doi.org/10.1016/B978-0-12-823363-4.00008-X.

F. Other Non-Reviewed Publications – Conference Presentations

1. Gates, I.D., Adams, J., and Larter, S. Impact of Oil Viscosity Heterogeneity on Production by Thermal Processes such as SAGD and CSS. Presentation at CHOA Slugging It Out 2006.
2. Larter, S., Adams, J.J., Gates, I.D, Bennett, B., Huang, H., and Coombe, D. The origin and impact of fluid heterogeneity on production characteristics of heavy oilfields. Presentation at CSPG Annual Meeting Calgary, Alberta, May 15-17, 2006.
3. Larter, S., Adams, J., Gates, I.D., Bennett, B., Huang, H., Koksalan, T., Fustic, M. Reservoir Fluid Characterisation of Tar Sand and Heavy Oil Reservoirs – Impact of Fluid Heterogeneity on Production Characteristics. Presentation at AAPG Annual Meeting, Houston, TX, U.S.A., April 9-12, 2006.
4. Gates, I.D., Kallos, M., Sen, A. A Growth Model for a Stem Cell Aggregate Experiencing Hydrodynamic Shear. Presentation at 56th Canadian Society for Chemical Engineering Annual Conference, Sherbrooke, Quebec, October 15-18, 2006.
5. Adams, J., Gates, I.D., and Larter, S. The Impact of Viscosity Heterogeneity on Production Characteristics of Tar Sand and Heavy Oil Reservoirs Part II: Geotailored Recovery Processes in Compositionally Graded Reservoirs. Presentation at CHOA Slugging It Out 2007.
6. Larter, S., Adams, J.J., Gates, I.D. The Impact Of Oil Viscosity Heterogeneity On Production Characteristics Of Heavy Oil and Tar Sand (HOTS) Reservoirs. Part III: The Origin of Highly Non Linear Oil Viscosity Gradients And The Design Of Geotailored Recovery Processes Suitable for Such Compositionally Graded Reservoirs. Presentation at CSPG-CSEG Annual Meeting May 14-17, Calgary, Alberta, 2007.
7. Adams, J., Bennett, B., Huang, H., Koksalan, T., Jiang, D., Fay, M., Gates, I.D. and Larter, S. Controls On The Variability Of Fluid Properties Of Heavy Oils And Bitumens In Foreland Basins: A Case History From The Albertan Oil Sands. AAPG

Hedberg Conference, "Basin Modeling Perspectives: Innovative Developments and Novel Applications", The Hague, The Netherlands, May 6-9, 2007.

8. Carruthers, D., Chen, Z., Larter, S., Adams, J. and Gates, I.D. Coupled reservoir simulation and basin models – reservoir charging and fluid mixing. AAPG Hedberg Conference, "Basin Modeling Perspectives: Innovative Developments and Novel Applications", The Hague, The Netherlands, May 6-9, 2007.
9. Larter, S., Adams, J. and Gates, I.D. The Impact of Oil Viscosity Heterogeneity on Production Characteristics of Heavy Oil and Tar Sand (HOTS) Reservoirs. Part III: The Origin of Highly Non Linear Oil Viscosity Gradients and the Design of Geotailored Recovery Processes Suitable for such Compositionally Graded Reservoirs. 2007 CSPG CSEG CWLS Convention, Calgary, Alberta, Canada, May 14-17, 2007.
10. Adams, J.J., Bennett, B., Huang, H., Koksalan, T., Jiang, D., Fay, M., Gates, I.D. and Larter, S. (2007) Controls on the variability of fluid properties of heavy oils and bitumens in foreland basins: A Case History from the Albertan Oil Sands. AAPG Hedberg Conference, "Heavy Oil and Bitumen in foreland Basins – From Processes to Products", Sept. 30-Oct 3, Banff, Alberta. Search and Discovery Article #40275 (2008), Posted March 10, 2008.
11. Marcano, N., Samimi, H., Larter, S., Gates, I.D., Mayer, B., Huang, H., Bennett, B., Adams, J. and Spencer, R. Integration of Chemical Data into Reservoir Simulation – A Case Study from Western Canada. AAPG Hedberg Conference, Heavy Oil and Bitumen in foreland Basins – From Processes to Products, Banff, Alberta, Sept. 30-Oct 3, 2007.
12. Gates, I.D., Larter, S. and Adams, J. Design of Geotailored Recovery Processes to Produce Oil Sand Reservoirs. AAPG Hedberg Conference, Heavy Oil ad Bitumen in foreland Basins – From Processes to Products, Banff, Alberta, Sept. 30-Oct 3, 2007.
13. Hubbard, S.M., Fustic, M., Spender, R., Gates, I.D. and Larter, S. Interpreting Reservoir Geometries and Assessing Reservoir Qualities from Oil Sands Cores – Challenges during Exploration and Development. AAPG Hedberg Conference, Heavy Oil and Bitumen in foreland Basins – From Processes to Products, Banff, Alberta, Sept. 30-Oct 3, 2007.
14. Gates, I.D. Hybrid GA-SA Methods to Optimize Thermal Recovery Processes in Heavy Oil and Bitumen Reservoirs. Presentation at Computational Methods in Geosciences Workshop July 5-7, Xi'an, China, 2007.
15. Gates, I.D. Operating Strategy Design of Steam-Solvent Gravity Drainage Processes in Heavy Oil Reservoirs. Presentation at First Inaugural Conference on Computational Methods in Energy and Environment, July 9-12, Beijing, China, 2007.
16. Gotawala, D., and Gates, I.D. Steam Fingering in Steam-Assisted Gravity Drainage. Presentation at 57th Canadian Society for Chemical Engineering Annual Conference, Edmonton, Alberta, October, 2007.
17. Yang, X., Sadeghi, M., and Gates, I.D. Hybrid SAGD-ISC Bitumen Recovery Processes for Athabasca Reservoir. Presentation at 57th Canadian Society for Chemical Engineering Annual Conference, Edmonton, Alberta, October, 2007.
18. Gates, I.D., Adams, J.J., and Larter, S.R. Design of Geotailored Recovery Processes to Produce Oil Sand Reservoirs. Presentation at AAPG Hedberg 2007 Conference, Banff, Alberta, September 30 - October 3, 2007.
19. Adams, J.J., Larter, S.R., Gates, I.D., Huang, H. and Bennett, B. Reading the rocks and fluids to design geotailored and geotolerant strategies for heavy oil and bitumen recovery: The need for high resolution fluid mobility logs. 2008 CSPG CSEG CWLS Convention, Calgary, Alberta, Canada, May 12-15, 2008.
20. Larter, S., Adams, J.J. and Gates, I.D. Improving the Efficiencies of Insitu Energy Production from the Oil Sands and Did the Formation of the Oil Sands Contribute to Global Warming at the Paleocene/Eocene Thermal Maximum 55Ma ago? 2008 Gussow-Nuna Geoscience Conference, Banff, Alberta, October 20-23, 2008.
21. Larter, S., Adams, J.J., Bennett, B., Huang, H., Jiang, D., Fay, M., and Gates, I.D. The physics of the confusing organic geochemistry of subsurface petroleum biodegradation. Gordon Research Conference, Organic Geochemistry, Holderness, New Hampshire, August 3-8, 2008.
22. Larter, S., Gates, I.D., and Adams, J., Application of High Resolution Oil Composition and Viscosity Logs to Solving Production Problems in Alberta Bitumen and Heavy Oil Reservoirs at CHOA Slugging It Out, April 6, 2009.
23. Adams, J.J., Jiang, C., Bennett, B., Snowdon, L., Gates, I.D., and Larter, S.R. Heavy oil and super heavy oil viscosity measurement and estimation: Getting representative samples. Presentation at 2009 CSPG CSEG CWLS Convention, Calgary, Alberta, May 4-8, 2009.
24. Larter, S., Adams, J. Gates, I. and Larter, S.R. Improving the Efficiencies of In Situ Energy Production The Quick Win on Emission Reduction in Oil Sands. Frontiers and Innovations 2009 CSPG CSEG CWLS Convention, Calgary, Alberta, Canada, May 4-8, 2009.
25. Larter, S., Adams, J.J., Gates, I.D., and Snowdon, L. Tunnels and Barriers in Energy Technology Innovation. Or Why is the oil industry so conservative when dramatic technological change is needed? Frontiers and Innovations 2009 CSPG CSEG CWLS Convention, Calgary, Alberta, Canada, May 4-8, 2009.
26. Larter, S., Head, I., Gates, I.D., Santosham, P., Rafter, D., Adams, J., Zhang, X., Fay, M., Cherry, A., Jones, M. and Gray, N. Low Emission Microbial Upgrading and Recovery (LEMUR) A potential route to low or zero emission energy recovery from oilfields. Frontiers and Innovations 2009 CSPG CSEG CWLS Convention, Calgary, Alberta, Canada, May 4-8, 2009.
27. Larter, S.R., Adams, J.J., Gates, I.D., and Snowdon, L. Economic and Human Aspects of Innovation in E & P (Peter Drucker Session) Tunnels and Barriers in Energy Technology Innovation. Or, Why is the oil industry so conservative when dramatic technological change is needed? Presentation at 2009 CSPG CSEG CWLS Convention, Calgary, Alberta, May 4-8, 2009.

28. Gotawala, D. and Gates, I.D. Correlation between SAGD Steam Chamber Growth and Geological Heterogeneity. 15th EAGE European Symposium on Improved Oil Recovery - Paris, France, April 27-29, 2009.
29. Gotawala, D. and Gates, I.D. SAGD Subcool Control with Smart Injection Wells. SPE Paper 122014 presented at the 71st EAGE Conference & Exhibition incorporating SPE EUROPEC 2009, Amsterdam, Netherlands, June 8-11, 2009.
30. Kapadia, P., Kallos, M.S., Leskiw, C., and Gates, I.D. Potential for Hydrogen Generation during In Situ Combustion of Bitumen. SPE Paper 122028 presented at the 71st EAGE Conference & Exhibition incorporating SPE EUROPEC 2009, Amsterdam, Netherlands, June 8-11, 2009.
31. Al-Anazi, A., Gates, I.D., and Azaiez, J. Innovative Workflow for Data-Driven Porosity & Permeability Prediction Optimized Model in Fractured Reservoirs. SPE Paper 121159 presented at the 71st EAGE Conference & Exhibition incorporating SPE EUROPEC 2009, Amsterdam, Netherlands, June 8-11, 2009.
32. Adams, J.J., Larter, S., Jiang, C., Bennett, B., Huang, H., Oldenburg, T., Noke, K., Snowdon, L. and Gates, I.D. (2009). Determination and Statistical Estimation of Heavy Oil and Bitumen Viscosity. Presentation at the AAPG Annual Convention & Exhibition; Denver, Colorado, U.S.A., June 7-10, 2009.
33. Wei, W. and Gates, I.D. Optimization of SAGD in Bottom Water Reservoir. Presentation at the 8th World Congress of Chemical Engineering, Montreal, Quebec, Canada, August 23-27, 2009.
34. Sharma, J., and Gates, I.D. Impact of Convective Heat Transfer at the Edges of a Steam Chamber. Presentation at the 8th World Congress of Chemical Engineering, Montreal, Quebec, Canada, August 23-27, 2009.
35. Al-Anazi, A. and Gates, I.D. Support Vector Regression for Porosity Prediction in a Heterogeneous Reservoir: A Comparative Study. Presentation at the IAMG 2009 Conference, Stanford, California, U.S.A., August 23-28, 2009.
36. Gates, I.D. and Larter, S. Geoviscothermal Efficiency of SAGD Projects; Energy Efficiency and Emissions. Presentation at the CSPG Gussow Conference, Banff, Alberta, Canada, October 5-7, 2009.
37. Oldenburg, T., Clements, M., Gates, I.D. and Larter, S. Beyond petroleomics-petroleum geochemistry for the 21st century. Presentation at the AAPG Annual Convention & Exhibition, New Orleans, Louisiana, U.S.A., April 11-14, 2010.
38. Taylor, S.E., Pedersen, P.K., Laycock, D.P., Spencer, R., Huang, H., Larter, S. and Gates, I.D. Bedforms and Stratigraphic Architecture of Colorado Group Shales as an Indicator of Shallow Shelf Depositional Setting of the Carlile and Niobrara Formations, Southeastern Alberta - Southwestern Saskatchewan. Presentation at GeoCanada 2010, Calgary, Alberta, Canada, May 10-14, 2010.
39. Laycock, D.P., Pedersen, P.K., Taylor, S.E., Spencer, R., Huang, H., Larter, S. and Gates, I.D. A Sedimentological and Stratigraphic Approach to Correlating Clinoforms within Shale Dominated Clastic Wedges and Implications for Shale Gas Exploration: Upper Colorado Group Shales, Wildmere Area, Central Alberta. Presentation at GeoCanada 2010, Calgary, Alberta, Canada, May 10-14, 2010.
40. Gates, I.D. Heat and Solvent Transport at the Edge of a Depletion Chamber in an In Situ Bitumen Recovery Process. Presentation at the 3rd International Conference on Porous Media and its Applications in Science, Engineering and Industry, Montecatini, Italy, June 20-25, 2010.
41. Bennett, B., Snowdon, L.R., Larter, S.R. and Gates, I.D. Water film modification of reservoir properties in heavy oil and bitumen reservoirs. Presentation at the 11th International Symposium on Evaluation of Wettability and Its Effect on Oil Recovery, Calgary, Alberta, Canada, September 6-9, 2010.
42. Gates, I.D., Larter, S.R., Lei, H., Huang, H. Impact of Oil Viscosity Variations and Mixing on SAGD Performance. Presentation at the AAPG International Conference and Exhibition, Calgary, Alberta, September 12-15, 2010.
43. Laycock, D.P., Pedersen, P.K., Spencer, R., Huang, H., Larter, S. and Gates, I.D. A Sedimentological and Sequence Stratigraphic Approach to Correlating Clinoforms within Shale Dominated Clastic Wedges and Implications for Shale Gas Exploration: Upper Colorado Group Shales, Wildmere Area, Central Alberta. Presentation at the AAPG International Conference and Exhibition, Calgary, Alberta, September 12-15, 2010.
44. Taylor, S.E., Pedersen, P.K., Laycock, D.P., Spencer, R., Huang, H., Larter, S. and Gates, I.D. Using Bedforms and Stratigraphic Architecture to Indicate a Shallow Shelf Depositional Setting of Carlile and Niobrara Formations, SW Saskatchewan and SE Alberta. Presentation at the AAPG International Conference and Exhibition, Calgary, Alberta, September 12-15, 2010.
45. Kapadia, P., Kallos, M.S., Gates, I.D. Process Design for In-situ Gasification of Athabasca Bitumen. Presentation at the 10th European Gasification Conference, Amsterdam, Netherlands, October 4-6, 2010.
46. Bozorg, A., Sen, A., Gates, I.D. A New Approach to Model the Effects of Biofilm Growth and Spreading in Porous Media. Presentation at the 60th Canadian Chemical Engineering Conference, Saskatoon, Saskatchewan, Canada, October 24–27, 2010.
47. Van Winkle, A., Gates, I.D., and Kallos, M. Mass Transfer in Human Embryonic Stem Cell Embryoid Bodies. 11th Annual Alberta BME Conference, Banff, Alberta, Canada, October 22-24, 2010.
48. Larter, S.R. and Gates, I.D. Reservoir machines, life in Earth and cleaning the end of the fossil fuel era. Presentation SPE Paper 137131 presented at the CSUG/SPE Canadian Unconventional Resources & International Petroleum Conference held in Calgary, Alberta, Canada, October 19-21, 2010.

49. Cokar, M., Kallos, M.S., and Gates, I.D. Biogenic Potential of Shale Gas and Processes that Stimulate Methanogenesis in Shales. Presentation at the 3rd International Symposium on Applied Microbiology and Molecular Biology in Oil Systems (ISMOS-3), Calgary, Alberta, Canada, June 13-15, 2011.
50. Ezeuko, C., Sen, A., and Gates, I.D. The Impact of Biofilm on Porous Media Permeability and Implications for MEOR. Presentation at the 3rd International Symposium on Applied Microbiology and Molecular Biology in Oil Systems (ISMOS-3), Calgary, Alberta, Canada, June 13-15, 2011.
51. Bozorg, A., Sen, A., and Gates, I.D. A New Modelling Approach To Simulate Biofilm Phase Growth and Evolution in Porous Medium. Presentation at the 3rd International Symposium on Applied Microbiology and Molecular Biology in Oil Systems (ISMOS-3), Calgary, Alberta, Canada, June 13-15, 2011.
52. Grigoryan, A., Sen, A., Ezeuko, C., and Gates, I.D. Problems and Opportunities of Microbial Methane Production in Oil Reservoirs. Presentation at the 3rd International Symposium on Applied Microbiology and Molecular Biology in Oil Systems (ISMOS-3), Calgary, Alberta, Canada, June 13-15, 2011.
53. Larter, S., Head, I., and Gates, I.D. Microbes or mass transport - what are the real barriers to production scale microbial gasification of oil or coal to produce methane or hydrogen in subsurface reservoirs? Presentation at the 3rd International Symposium on Applied Microbiology and Molecular Biology in Oil Systems (ISMOS-3), Calgary, Alberta, Canada, June 13-15, 2011.
54. Wang, J. and Gates, I.D. Cold Production Followed by Cyclic Steam Stimulation in Thin Oil Sands Reservoirs. Presentation at the First International Unconventional Oil and Gas Conference, Qingdao, China, July 4-5, 2011.
55. Gates, I.D., Bunio, G., Wang, J., and Robinson, W. Impact of Carbon Dioxide Co-Injection on the Performance of SAGD. Presentation at the First International Unconventional Oil and Gas Conference, Qingdao, China, July 4-5, 2011.
56. Gates, I.D. The Need for Large Multi-Million Cell Thermal Models. Presentation at the Gussow Geoscience Conference on Advances in Applied Geomodeling for Hydrocarbon Reservoirs, Banff, Alberta, Canada, October 3-5, 2011.
57. Hunt, M., Gates, I.D., and Kallos, M.S. Fractal Methods for Evaluating Growth of Embryonic Stem Cells in Static Culture. Presentation at the 12th Annual Alberta Biomedical Conference, Banff, Canada, October 21-23, 2011.
58. Cokar, M., Kallos, M.S., and Gates, I.D. Multiscale Probabilistic Mass Transport in Shallow Organic Matter Rich Shales. Presentation at the 61st Canadian Chemical Engineering Conference, London, Ontario, Canada, October 23-26, 2011.
59. Hunt, M., Gates, I.D., and Kallos, M.S. Fractal Methods for Evaluating Growth and Differentiation of Embryonic Stem Cells in Static Culture Conditions. Presentation at the 61st Canadian Chemical Engineering Conference, London, Ontario, Canada, October 23-26, 2011.
60. Bozorg, A., Sen, A., and Gates, I.D. A New Approach to Model Biofilm Phase Development in Porous Media. Presentation at the 61st Canadian Chemical Engineering Conference, London, Ontario, Canada, October 23-26, 2011.
61. Bozorg, A., Gates, I.D., and Sen, A. Experimental Investigation of Biofilm Growth and Evolution in Porous Medium and Impact on Porous Medium Hydraulic Properties. Presentation at the 61st Canadian Chemical Engineering Conference, London, Ontario, Canada, October 23-26, 2011.
62. Hunt, M., Meng, G., Rancourt, D.E., Gates, I.D., Kallos, M.S. Image Analysis Method for Evaluating Heterogeneous Growth and Differentiation of Embryonic Stem Cell Cultures. Presentation at the 243rd Spring 2012 ACS Meeting & Exhibition, San Diego, California, U.S.A., March 25-29, 2012.
63. Gates, I.D. SAGD and CSS. Discussion leader in Thermal Processes Session, Presentation at the Society of Petroleum Engineers Applied Technology Workshop on Heavy Oil held in Xi'an, China, September 23-26, 2012.
64. Hunt, M.M., Gates, I.D., Kallos, M.S., Morphological Evaluation and Quantification of Human Embryonic Stem Cell Cultures and the Impact of Spatial Distribution on Oxygen Transport. Presentation at the 62st Canadian Chemical Engineering Conference. Vancouver, British Columbia. October 14-17, 2012.
65. Hunt, M.M., Gates, I.D., Kallos, M.S., Effect of Spatial Distribution of Human Embryonic Stem Cells on Mass Transfer in Static Culture. Presentation at the 13th Annual Alberta Biomedical Engineering Conference. Banff, Alberta, October 19-21, 2012.
66. Senthamaraikkannan, G., Prasad, V., and Gates, I.D. Coal Bed Methane Reservoir Simulation: Scale-up from Laboratory Scale and Uncertainty Quantification using Polynomial Chaos Expansion. Presentation at the 62st Canadian Chemical Engineering Conference. Vancouver, British Columbia. October 14-17, 2012.
67. Hunt, M.M., Meng, G.L., Rancourt, D.E., Gates, I.D., Kallos, M.S. Significant Interaction Effects Between Inoculation Density and Agitation Rate in Stirred Suspension Bioreactor Cultures of Human Embryonic Stem Cells, Presentation at the Scale-Up and Manufacturing of Cell-Based Therapies II Conference, San Diego, California, USA, January 21-23, 2013.
68. Le, A., Rancourt, D.E., Gates, I.D., Kallos, M.S. Hydrodynamics in stirred suspension bioreactors from CFD models for Expansion of induced pluripotent stem cell. Presentation at the 4th International Conference on Stem Cell Engineering, Coronado, CA, March 2014.
69. Le, A., Rancourt, D.E., Gates, I.D., Kallos, M.S. Hydrodynamic control of induced pluripotent stem cells in suspension bioreactors. Presentation at the 7th Annual Regenerative Medicine Symposium. Toronto, ON, April 2014.
70. Su, Y., Wang, J., and Gates, I.D. SAGD Pad Performance in a Point Bar Deposit with a Thick Sandy Base. Presentation at Geoconvention 2014 in Calgary, Alberta, Canada, May 12-16, 2014.

71. Bao, Y., Wang, J., Ezeuko, C., and Gates, I.D. Grosmont geology, steam stimulation, and fluid response – types curves for carbonates. Presentation at Geoconvention 2014 in Calgary, Alberta, Canada, May 12-16, 2014.
72. Huang, X., Chen, S.C., and Gates, I.D. Application of Dilation-Recompaction Model in Hydraulic Fracturing Simulation. Presentation at Geoconvention 2014 in Calgary, Alberta, Canada, May 12-16, 2014.
73. Batwara, A., Wang, J., and Gates, I.D. Ultrarefined Geological and Reservoir Simulation Models of a Mannville Coal Reservoir for Optimized Methane Production. Presentation at Geoconvention 2014 in Calgary, Alberta, Canada, May 12-16, 2014.
74. Zhu, D. and Gates, I.D. Instabilities That Enhance Steam Chamber Growth in SAGD. Presentation at Geoconvention 2014 in Calgary, Alberta, Canada, May 12-16, 2014.
75. Gates, I.D. A Review of Steam Additives – What's Happened and What's New. Presentation at the SPE Workshop on Steam-Solvent, Solvent and Steam-Additive Processes for Heavy Oil Recovery held in Canmore, Alberta, Canada, May 12-14, 2014.
76. Gates, I.D. Modeling of Grosmont Geology (Multiobjects), Steam Stimulation, and Fluid Response. Presentation at the SPE Unlocking Alberta's Carbonate Reservoirs Workshop, Banff, Alberta, Canada, September 16-17, 2014.
77. Gates, I.D. Timescales and Oil Mobilization and Delivery from Different Rock Types in Oil Sands and Carbonate Systems. Presentation at the Gussow Geoscience Conference on *Closing the GAP II:* Advances in Applied Geomodeling for Hydrocarbon Reservoirs, Banff, Alberta, Canada, September 22-24, 2014.
78. Gates, I.D. In-Well Control Devices and Geology for SAGD Wells. Presentation at the CSPG 2014 Oil Sands and Heavy Oil Symposium, Calgary, Alberta, Canada, October 14-16, 2014.
79. Nduagu, E.I., and Gates, I.D. An Ultra-low Emissions Enhanced Thermal Recovery Process for Oil Sands. The 12th International Conference on Greenhouse Gas Control Technologies (GHGT), Austin, US, 5-9 October, 2014.
80. Nduagu, E.I., and Gates, I.D. Opportunities and challenges of industry-wide adoption of cogeneration in new and operating oil sands facilities. 18th Annual Energy, Utility & Environment Conference (EUEC), San Diego, 16-18 February, 2015.
81. Gates, I.D. Modelling of Microbial Biodegradation Processes in Heterogeneous Oil Reservoirs. Presentation at the International Symposium on Applied Microbiology and Molecular Biology in Oil Systems, ISMOS2015. Stavanger, Norway, 2-5 June, 2015.
82. Nduagu, E.I., and Gates, I.D. Energy and economic analysis of natural gas decarbonization for oil sands emissions reduction via carbon black production. The 13th International Conference on Carbon Dioxide Utilization (ICCDU), University Town (NUS), Singapore, 5-9 July, 2015.
83. Wu, C., De Visscher, A., and Gates, I.D. Theoretical Study of the Reaction of Hydroxyl Radicals with Benzoic Acid in Gas and Aqueous phases. Paper presented at the Spring ACS Meeting, San Francisco, California, USA, April 2-6, 2017.
84. Wu, C. and Gates, I.D. On Interactions of Diazepam/Flumazenil and γ-Aminobutyric Acid. Paper presented at the XXIX Interamerican Congress of Chemical Engineering Incorporating the 68th Canadian Chemical Engineering Conference, Toronto, Ontario, Canada, October 28-31, 2018.
85. Detpunyawat, P., Wang, J., Su, Y., De la Hoz Siegler, H., and Gates, I.D. On Solvent and Non-Condensable Gas Additives to SAGD Operated in a Thin Reservoir with Top and Bottom Water. Paper presented at the Global Petroleum Show Technical Conference, Calgary, Alberta, Canada, June 12-14, 2018.
86. Vishkai, N. and Gates, I.D. Multi-stage hydraulic fracturing modelling in in naturally fractured Montney Formation. Paper presented at the Global Petroleum Show Technical Conference, Calgary, Alberta, Canada, June 12-14, 2018.
87. Wei, W., Wang, J., and Gates, I.D. An Analysis of the Kerrobert THAI Project. Paper presented at the Global Petroleum Show Technical Conference, Calgary, Alberta, Canada, June 12-14, 2018.
88. Gates, I.D., Wang, J., & Bond, T. Non-equilibrium phase and foamy oil behaviour in heavy oil recovery processes: in-situ synchrotron-based X-Ray imaging of foamy oil. The 39th Annual Workshop and Symposium of the International Energy Agency (IEA) on Enhanced Oil Recovery IEA-EOR, Copenhagen, Denmark, September 3-7, 2018.
89. Su, Y., Wang, J., and Gates, I.D. ES-SAGD versus Warm Solvent in point bars: Solvent hold-up and Performance. Paper presented at the Thermal EOR International Workshop III held in Chengdu, China, October 15-19, 2018.
90. Wei, W., Wang, J., and Gates, I.D. An Analysis of THAI at the Kerrobert Operation in Saskatchewan. Paper presented at the Thermal EOR International Workshop III held in Chengdu, China, October 15-19, 2018.
91. Guo, R., Wang, J., and Gates, I.D. Mechanisms of Flue Gas EOR in Heavy Oil / Oil Sands Systems. Paper presented at the Thermal EOR International Workshop III held in Chengdu, China, October 15-19, 2018.
92. Wang, J. and Gates, I.D. In situ Gasification for H2 Production from Laboratory to Field. Paper presented at the Thermal EOR International Workshop III held in Chengdu, China, October 15-19, 2018.
93. Mendiratta, S., Hejazi, H., De la Hoz Siegler, H., Natale, G., Lu, Q., Gates, I.D. Synthesis, Characterization, and Functionalization of Hydroxyapatite Nanoparticles, Paper P-195 presented at the International Conference on Advances in Nanomaterials and Devices for Energy and Environment (ICAN-2019), Gwalior, India, January 27-29 2019. Awarded Best Oral Presentation Award.
94. Mislan, M. and Gates, I.D. The Novel Dissolution of Bitumen by Commercial Enzymes. Paper 19214 presented at the International Petroleum Technology Conference held in Beijing, China, March 26-28, 2019.

95. Plus 5 more 2020-2021
96. Nwani B. Gates, I.D., Benneker, A.M. Impact of Ionic Surfactants on the Electrokinetic Control of Viscous Fingering: An Experimental Approach. Paper presented at the American Physical Society March Meeting 2023 held virtually in Las Vegas, Nevada, March 20-22, 2023.
97. Rosi, G., Zhu, D., Izadi, H., Mahmoudi, M., Fattahpour, V., Roostaei, M., Tuttle, A., Stevenson, J., Sutton, C., Gates, I.D. An Analytical Approach for Optimizing the Subcool of Non-Condensable Gas (NCG) Assisted Heavy Oil Production: Predictions & Limitations. Paper presented at the SPE Canadian Energy Technology Conference and Exhibition held in Calgary, Alberta, March 15-16, 2023.

G. Other Non-Reviewed Publications – Conference Posters

1. Gates, I.D., and Leskiw, C. On Expanding-Solvent Steam-Assisted Gravity Drainage. Poster at 57th Canadian Society for Chemical Engineering Annual Conference, Edmonton, Alberta, October, 2007.
2. Adams, J.J., Bennett, B., Huang, H., Jiang, D. Fay, M., Gates, I.D. The Physics of the Confusing Organic Geochemistry of Subsurface Petroleum Biodegradation. Gordon Research Conference Organic Geochemistry, 2008.
3. Gates, I.D., Adams, J.J., and Larter, S.R. Optimal Well Placement for Heavy Oil and Bitumen Reservoirs with Vertical and Lateral Oil Mobility Distributions. Poster presentation at 15th EAGE European Symposium on Improved Oil Recovery - Paris, France, April 27-29, 2009.
4. Larter, S., Head, I., Gates, I., Santosham, P., Rafter, D., Adams, J., Zhang, X., Fay, M., Cherry, A., Jones, M., Gray, N. Low Emission Microbial Upgrading and Recovery (LEMUR) A potential route to low or zero emission energy recovery from oilfields. Frontiers and Innovations 2009 CSPG CSEG CWLS Convention, Calgary, Alberta, Canada, May 4-8, 2009.
5. Adams, J., Jiang, D., Bennett, B., Snowdon, L., Gates, I., Larter, S. Heavy oil and super heavy oil viscosity measurement and estimation: getting representative samples. Frontiers and Innovations 2009 CSPG CSEG CWLS Convention, Calgary, Alberta, Canada, May 4-8, 2009.
6. Adams, J., Larter, S., Jiang, D., Bennett, B., Huang, H., Oldenburg, T., Noke, K., Snowdon, L., Gates, I. Determination and Statistical Estimation of Heavy Oil and Bitumen Viscosity Heavy oil and super heavy oil viscosity measurement and estimation: getting representative samples. AAPG Annual Convention & Exhibition, Denver Colorado, June 7-10, 2009.
7. Van Winkle, A., Gates, I.D., Kallos, M.S. Human Embryonic Stem Cell Differentiation and Mass Transfer of Oxygen. Annual Scientific Meeting, Stem Cell Network, Calgary, Alberta, November 22-24, 2010.
8. Gates, I.D., Cokar, M., Larter, S., Pedersen, P.K., Huang, H., Laycock, D., Taylor, S., Spencer, R., Allen, N., Thomas, M., Zhao, X., Adamu, M. and Aplin, A. Gas Generation and Transport in Shallow Organic-Matter-Rich Shales. AAPG Hedberg Research Conference "Critical Assessment of Shale Resource Plays", Austin, Texas, December 5-10, 2010.
9. Pedersen, P.K., Larter, S., Huang, H., Laycock, D., Taylor, S., Cokar, M., Gates, I.D., Spencer, R., Allen, N., Thomas, M., Zhao, X., Adamu, M. and Aplin, A. Colorado Group, Western Canada Sedimentary Basin: Controls on a Working Biogenic Shale Gas System. AAPG Hedberg Research Conference "Critical Assessment of Shale Resource Plays", Austin, Texas, December 5-10, 2010.
10. Gates, I.D., Larter, S., and Wang, J. Rapid Routes to Carbon-Efficient Recovery of Bitumen & Heavy Oil. CMC Annual Conference, Calgary, Alberta, May 3-6, 2011.
11. Bao, Y., Wang, J., Gates, I.D., and Larter, S. Reservoir Production Machines: CSS + SAGD in Liaohe Oil Field. CMC Annual Conference, Calgary, Alberta, May 3-6, 2011.
12. Van Winkle, A., Hunt, M., Gates, I.D., Kallos, M.S. Mass Transfer Limitations in Embryonic Stem Cell Derived Embryoid Bodies During Differentiation. International Society for Stem Cell Research (ISSCR) 9th Annual Meeting, Toronto, ON, Canada, June 15-18, 2011.
13. Cheon, J., Gates, I.D., and Kallos, M.S. Modeling the Hydrodynamics in Bioreactors for the Expansion of Embryonic Stem Cells. Poster at the 12th Annual Alberta Biomedical Conference, Banff, Canada, October 21-23, 2011.
14. Hunt, M., Meng, G., Rancourt, D.E., Gates, I.D., Kallos, M.S. Image Analysis for Evaluation of Growth and Differentiation of Embryonic Stem Cells, Society for Biological Engineering, 3rd International Conference on Stem Cell Engineering, Seattle, Washington, April 29-May 2, 2012.
15. Bao, Y., Wang, J., Gates, I.D., Larter, S., and Huang, H. Reservoir Production Machines: CSS + SAGD in Liaohe Oil Field. CMC Annual Conference, Gatineau, Quebec, May 23-25, 2012.
16. Gates, I.D. and Wang, J. Heat Pathways in SAGD. CMC Annual Conference, Gatineau, Quebec, May 23-25, 2012.
17. Hunt, M.M., Meng, G.L., Rancourt, D.E., Gates, I.D., Kallos, M.S. Significant Interaction Effects Between Inoculation Density and Agitation Rate in Stirred Suspension Bioreactor Cultures of Human Embryonic Stem Cells, Poster Presentation at the Scale-Up and Manufacturing of Cell-Based Therapies II Conference, San Diego, California, USA, January 21-23, 2013. Winner Poster Award
18. Batwara, A., Wang, J., and Gates, I.D. Bioconversion of Coal Enhanced Engineering Pathways into Fuel products: Towards Field Scale Biogeochemical Coal Reservoir Simulation Models. CMC Annual Conference, Calgary, Alberta, June 3-5, 2013.

19. Bao, Y., Guo, T., Wang, J., Huang, H., Larter, S., and Gates, I.D. Reservoir Production Machine for CSS/SAGD Hybrid Processes: Reduction of Energy and Emissions Intensities. CMC Annual Conference, Calgary, Alberta, June 3-5, 2013.
20. Batwara, A., Wang, J., and Gates, I.D. Bioconversion of Coal Enhanced Engineering Pathways into Fuel products: Ultrarefined Geological Models of Mannville Coal Reservoirs. CMC Annual Conference, Calgary, Alberta, May 27-29, 2014.
21. Senthamaraikkannan, G., Prasad, V., Gates, I.D., Budwill, K., Mitra, S. Bioconversion of Coal Enhanced Engineering Pathways into Fuel products: Ultrarefined Geological Models of Mannville Coal Reservoirs. CMC Annual Conference, Calgary, Alberta, May 27-29, 2014.
22. Zhu, D., Bergerson, J., and Gates, I.D. On the Stability of Interfaces in Steam-based Oil Recovery Processes. Poster at the Gussow Geoscience Conference on *Closing the GAP II:* Advances in Applied Geomodeling for Hydrocarbon Reservoirs, Banff, Alberta, Canada, September 22-24, 2014.
23. Posters (2) at GPS 2018 – need to add in
24. Poster at Thermal conference in Chengdu 2018
25. Poster at H2 conference in Edmonton 2022
26. Bararpour, F., Hejazi H., Gates, I.D. Surfactant-induced instability of foam in a radial Hele-Shaw cell. Poster at the 75th Annual Meeting of the Division of Fluid Dynamics, Indianapolis, Indiana, November 20-22, 2022.

H. Technical Reports and other Publications

1. Patton, W., Gates, I.D., Harding, T., Lowey, M., Schlenker, R. A Unique Alberta Success Story with Implications for Future Investment in Energy Innovation. Paper No. 20 of the Alberta Energy Futures Project. Institute for Sustainable Energy, Environment and Economy (ISEEE), University of Calgary, 2006.
   Available at: http://www.iseee.ca/files/iseee/ABEnergyFutures-20.pdf
2. Gates, I.D., Adams, J.J., and Larter, S.R. The impact of oil viscosity heterogeneity on production from heavy oil and bitumen reservoirs: Geotailoring recovery processes to compositionally graded reservoirs. CSEG Recorder, pages 42-48, September 2008.
3. Gates, I.D., Wang, J., Detpunyawat, P., Gates, T.D., Kannaiyan, R., Sivagnanam, M., Macrae, H. Material Challenges for Production of Hydrogen from Oil Fields: Gaps and Recommendations for Further Research. Technical Report for NRCan, 66 pages, March 2022.
4. Many technical reports (> 70 so far) written during consultancy tasks. Due to confidentiality, the titles and companies not listed here.

I. Communications

1. "From Mapping to Methane University of Calgary creates spinoffs to revolutionize heavy oil and oil sands production", Heavy Oil & Oil Sands Guidebook & Directory III, published by June Warren Publishing, 2008 – articles on Gushor Inc., Profero Inc., and AICISE
2. "Heavy Oil's New Best Friend", *the PEGG*, Vol. 37, No. 10, November 2009 – article on Gushor Inc. and how its technology is changing how the oil sands industry extracts and analyzes oil sands samples. Ian Gates interviewed and quoted on Gushor technologies for heavy oil and oil sands reservoir characterization
3. "Calgary researchers digging into $100000 grant to research excrement", April 29, 2011, appeared in *Calgary Herald, Vancouver Province, Vancouver Sun, Regina Leader post, Montreal Gazette, Victoria Times Colonist, Ottawa Citizen, Windsor Star, Saskatoon Star Phoenix, India Times*) (Title in Calgary Herald: "Turning Waste Into Energy: $100,000 Gates Foundation grant boosts U of C Research" in Section B)
4. "Turning human excrement into electricity", *UToday*, University of Calgary, April 29, 2011
5. "Researchers Receive $100,000 Grant to Turn Human Feces Into Energy", geekosystem.com, April 29, 2011
6. Interview with Mike Kallos and Ian Gates on the Alberta Weekend Morning Show with Peter Watts, QR77 Radio, May 1, 2011
7. "Energy from poop? Gates Foundation funds research", *Seattle Post Intelligencer* blog, May 3, 2011
8. "Bill Gates Gives a Shit About Crap Research", *Seattle Weekly* blog, May 4, 2011
9. "Eight Frontiers of Engineering: No. 3 Oil Sands", *Schulich Engineer*, Spring 2011 – Ian Gates' research on smart wells for heavy oil and oil sands reservoirs
10. "University of Calgary researchers look into the toilet and win grant", *Metro News*, May 9, 2011
11. "Will Better Toilets Save Lives? Gates-Funded Challenge Hopes So", *PEG*, June, 2011
12. "Waste Not", *U Magazine*, University of Calgary, Calgary, Alberta, Fall 2011
13. "beyond steam", New Technology Magazine, September 2011 – Ian Gates interviewed and quoted in article on electric methods to heat oil sands reservoirs including radio frequency methods

14. "Innovative Ideas and Gadgets from Local Scientists and Inventors – Turning Poop Into Power", *Avenue Magazine*, Calgary, Alberta, December 2011
15. "APEGGA Members think smart to improve lives around the globe", APEGA supplement in *Calgary Herald* and *Edmonton Journal*, March 1, 2012
16. "Merging cellphone technology with the oil sands", *Business in Calgary Magazine*, to come out June 2012 – Ian Gates interviewed and quoted in article on whitenoise reflection processes to visualize oil reservoirs
17. "Finding a New Way To Go, The flush toilet was a transformative invention, but experts say its time may be past and are pioneering ways to recover energy and nutrients from human waste", Special Section in Science, Vol. 337, Page 673, August 10, 2012.
18. "Faces in the Oil Sands, Individuals driving change in the bitumen belt: Ian Gates, the Researcher", Cover Story in *oilsands* review, September 2012.
19. Hunt, MM., Meng, G., Rancourt, DE., Gates, ID., Kallos, MS. Image Analysis Method for Evaluating Heterogeneous Growth and Differentiation of Embryonic Stem Cell Cultures. Best of BIOT award, American Chemical Society, Division of Biochemical Technology, Online Webinar (presented August 24, 2012).
20. Interviewed on CBC Radio Calgary on the EyeOpener: Cold Production of Heavy Oil with Sand, February 20, 2013.
21. Interviewed on CBC Radio Edmonton: Cold Production of Heavy Oil with Sand, February 20, 2013.
22. Featured in article in the Financial Post, Energy Section "Alberta seeks to win over oil sands critics with new technologies", April 13, 2013. Also was published in Calgary Herald.
23. Featured in article in the SPE Journal of Petroleum Technology (JPT) on Recovery of Bitumen from the Grosmont Formation, July, 2013.
24. Featured on CBC and various newspapers for joint project with Canada Light Source and Petroleum Technology Research Centre, November 20, 2015.
25. Oil and Gas Magazine 2015
26. Oil Week 2016
27. CTV May 2016
28. BNN Interview May 2016
29. Bitumen Pellets September 2017 – CTV interview, BNN interview, CBC interview, City interview, ~4,300 news outlets picked up this story globally
30. Bitumen Pellets May 2019 – The Ryan Jespersen Show, 660 Radio
31. Plus >15 others – no longer listing them

J. Technology Transfer

Patents

Issued

1. Canadian Patent 2,462,359
2. Canadian Patent 2,553,297
3. Canadian Patent 2,593,585
4. Canadian Patent 2,666,148
5. Canadian Patent 2,751,186
6. Canadian Patent 2,917,238
7. Canadian Patent 2,983,975
8. Canadian Patent 3,009,932
9. Canadian Patent 3,013,875
10. US Patent 6,666,946
11. US Patent 7,464,756
12. US Patent 8,056,624
13. US Patent 8,235,110
14. US Patent 8,336,370
15. US Patent 8,495,921
16. US Patent 8,568,320
17. US Patent 8,925,632
18. US Patent 9,187,687
19. US Patent 10,246,979

20. US Patent 10,815,763
21. US Patent 11,148,959
22. US Patent 11,214,740
23. US Patent 11,530,603
24. US Patent 11,708,744
25. US Patent 11,753,593
26. US Patent 11,851,619
27. European Patent 1,379,339
28. W.O. Patent 2,002,074,450
29. China Patent CN 110461995B
30. India Patent 389921
31. Plus 5 others

Pending

1. Gates, I.D., Larter, S.R., Adams, J.J. In Situ Heavy Oil and Bitumen Recovery Process (JAGD, Formerly Known as JAGASS). Filed in PCT, Gulf Cooperation, and Venezuela. 2007.
2. Gates, I.D., Larter, S.R., and Adams, J.J. Methods and Systems of Gas Production from a Reservoir (LEMUR) U.S. Full Patent Filed 2008.
3. Larter, S.R., Jiang, C., Oldenburg, T., Adams, J.J., Noke, K., Bennett, B., and Gates, I.D. Method and Apparatus for Obtaining Heavy Oil Samples from a Reservoir Sample. Canadian Full Patent Filed 2007. Filed in Brazil, China, Russia, and Norway. 2009.
4. Gates, I.D. and Bunio, G. In Situ Process to Recover Heavy Oil and Bitumen. U.S. Patent Application 11/490,257 Filed 2008.
5. Gates, I.D., Wang, J., Larter, S.R., Adams, J.J., Lennox, R., Brunelle, P. Method to Sequester Acid Gases in Aquifers. U.S. Provisional Patent Filed 2008. Abandoned 2009.
6. Larter, S.R., Jiang, C., Oldenburg, T., Adams, J.J., Noke, K., Bennett, B., and Gates, I.D. Method and Apparatus for Obtaining Heavy Oil Samples from a Reservoir Sample (PLUNGER). European Patent Application 2,113,082, 2009.
7. Larter, S.R., Bennett, B., Snowdon, L.R., Jiang, C., Adams, J.J., Gates, I.D., Noke, K.J. Method for Determining a Value of a Property of Oil Extracted from a Sample. Filed: August 5, 2008. PCT/CA2008/001428. Publication Info: WO2009/023953 A1. National phase application filed February 12, 2009 in Canada.
8. Larter, S., Jiang, C., Oldenburg, T., Adams, J., Noke, K., Bennett, B., Gates, I.D., Snowdon, L.R. Method and Apparatus for Obtaining Heavy Oil Samples from a Reservoir Sample. Filed: February 12, 2008. PCT/CA2008/000279. Publication Info: WO/2008/ 098359 A1. National phase applications filed August 2009 in Canada, United States, China, Brazil, and Russia Patent Offices.
9. Gates, I.D., Larter, S.R., and Adams, J.J. Methods and Systems of Gas Production from a Reservoir (LEMUR) W.O. Patent 2,010,012,093 Filed 2010.
10. Gates, I.D., Larter, S.R., and Adams, J.J. Methods and Systems of Gas Production from a Reservoir (LEMUR) European Patent Application 2,321,495 Filed 2011.
11. Leskiw, C. and Gates, I.D. System and Method for using Orthogonally-Coded Active Source Signals for Reflected Signal Analysis. W.O. Patent WO/2011/107,879, Filed 2011.
12. Head, I.M., Larter, S.R., Gates, I.D. Methods for increasing methanogenesis in subsurface reservoirs. WO Patent Application 2,011,080,518, Filed 2011.
13. Bunio, G.L., Gates, I.D., Sudlow, P., Anderson, R.E., Propp, M.E., Zero Emission Steam Generation Process. U.S. Patent Application 13/221,975 Filed 2011.
14. Gates, I.D., Bunio, G.L., Wang, J. In Situ Process to Recover Methane Gas from Hydrates. W.O. Patent 2,012,075,569, Filed 2012.
15. Bunio, G.L., Gates, I.D., Sudlow, P., Anderson, R.E., Propp, M.E. Zero Emission Steam Generation Process. W.O. Patent 2,012,087,349, Filed 2012.
16. Leskiw, C. and Gates, I.D. System and Method for using Orthogonally-Coded Active Source Signals for Reflected Signal Analysis. E.P. Patent 2,542,914, Filed 2013.
17. Nduagu, E. and Gates, I.D. U.S. Patent Application, Filed 2013. Abandoned.
18. Khansari, Z. and Gates, I.D. Use of Produced Water to detect Reservoir Heterogeneity. Canadian Patent Application, Filed May 2015. Abandoned.
19. US patent application 20190071323
20. US patent application 20200407645
21. US patent application 20210189856
22. US patent application 20210154592

23. US patent application 20210139785
24. US patent application 20210047905
25. US patent application 20220340823
26. US patent application 20220298427
27. US patent application 20230311020
28. Plus 9 others.

K. Start-Up Companies

1. **MAT Inc. Founder, COO.** 2022-present

2. **ForScent Inc. Founder, Technical Advisor.** 2022-present

3. **TOSSA Sustainability Solutions Inc. Founder, Technical Advisor.** 2022-present

4. **ProtonH2 Inc. Founder, Technical Advisor.** 2015-present

5. **Solideum Inc. COO/Founder.** 2017-present

6. **Gushor Inc. Chief Engineer/Director of Engineering/Founder.** 2007-2010
   Very successful start-up that provides geochemical to reservoir engineering and simulation solutions to the heavy oil and bitumen industry. Current clients include nearly all of the supermajors as well as many smaller and junior heavy oil producers (over 75 clients and 350 projects). Winner ASTECH 2009 Award, Category: Outstanding Commercial Achievement in Alberta Science and Technology (gross sales < $25M).
   Gushor Inc. was sold to Schlumberger June 2013.

7. **Profero Energy Inc. Chief Engineer/Founder.** 2008-2010
   Biological recovery of energy assets, a new start-up company being formed jointly by the University of Calgary (UTI), University of Newcastle, several researchers and investors. The research and development of the technology will be done in parallel at the Universities of Calgary and Newcastle. This effort will represent a major initiative of both Universities and will lead to new "green" methods to recovery energy from conventional oil reservoirs. In 2013, Profero was re-structured into a set of companies where the technology is being looked at for use in the North Sea and Nigeria.

V. SERVICE ACTIVITIES

A. Selected University Service

2004

1. Reviewer, NSERC PGS Applications to be submitted to School of Engineering 2004
2. Reviewer, NSERC/GPX Applications 2004

2005

3. Presenter, Department of Chemical and Petroleum Engineering Presentation to First Years 2005
4. Reviewer, NSERC PGS Applications to be submitted to School of Engineering 2005
5. Member, Schulich School of Engineering Internship Committee 2005
6. Reviewer, NSERC/GPX Applications 2005

2006

7. Presenter, Department of Chemical and Petroleum Engineering Presentation to First Years 2006
8. Member, Schulich School of Engineering Internship Committee 2006
9. Member, ACCESS Academic Search Committee in Dept. of Chemical and Petroleum Engineering 2006

2007

10. Presenter, Department of Chemical and Petroleum Engineering Presentation to First Years 2007
11. Member, Schulich School of Engineering Internship Committee 2007
12. Chair, Department of Chemical and Petroleum Engineering Marketing Committee 2007
13. Member, Schulich School of Engineering Halls and Walls Committee 2007
14. Member, ACCESS Academic Search Committee in Dept. of Chemical and Petroleum Engineering 2007
15. Member, CMG Chair Academic Search Committee in Dept. of Chemical and Petroleum Engineering 2007
16. Member, Academic Search Committee in Dept. of Geoscience 2007

2008

17. Presenter, Department of Chemical and Petroleum Engineering Presentation to First Years 2008
18. Member, Schulich School of Engineering Internship Committee 2008
19. Chair, Department of Chemical and Petroleum Engineering Marketing Committee 2008
20. Member, Schulich School of Engineering Halls and Walls Committee 2008
21. Member, Academic Search Committee in Dept. of Geoscience 2008

2009

22. Presenter, Department of Chemical and Petroleum Engineering Presentation to First Years 2009
23. Member, Schulich School of Engineering Internship Committee 2009

2010

24. Presenter, Department of Chemical and Petroleum Engineering Presentation to First Years 2010
25. Member, Schulich School of Engineering Information Technology Advisory Committee 2010
26. Reviewer, CRC Tier 1 Chair Renewal 2010
27. Reviewer, 2 NSERC CRD Grant Applications 2010
28. Member, Schulich School of Engineering Faculty Appeals Committee 2010

2011

29. Member, Schulich School of Engineering Information Technology Advisory Committee 2011
30. Presenter, Department of Chemical and Petroleum Engineering Presentation to First Years 2011
31. Member, Schulich School of Engineering Faculty Appeals Committee 2011
32. Member, Dept. of Chemical and Petroleum Engineering Funding Cuts Recommendation Committee 2011
33. Preparer/Grader for Ordre Des Ingénieurs Du Québec (Quebec Professional Engineers Association) Exam 04-GEOL-B7 Petroleum Development 2011
34. Reviewer, Department Graduate Student Scholarships 2011
35. Member, Schulich School of Engineering Research and Scholarship Leave Committee 2011

2012

36. Presenter, Department of Chemical and Petroleum Engineering Presentation to First Years 2012
37. Member, Schulich School of Engineering Information Technology Advisory Committee 2012
38. Member, Schulich School of Engineering Mobile Computing Committee 2012
39. Co-lead, Process Improvement & Modeling subtheme in the Potential Research Collaborations between Total and the UofC Workshop, May 2012
40. Technical Lead, University of Calgary Canada Excellence Research Chair (CERC) Proposal Team (Materials Science for Reservoir Engineering) 2012
41. Member, University of Calgary General Faculties Council Research and Scholarship Committee 2012
42. Member, Schulich School of Engineering Vision In Action Task Force 2012
43. Reviewer, University Eyes High Postdoctoral Fellowship Recruitment initiative 2012

2013

44. Member, Department of Chemical and Petroleum Engineering CPE-NT-CAT Hiring Committee 2012/2013
45. Member, University of Calgary General Faculties Council Research and Scholarship Committee 2013
46. Member, Schulich School of Engineering Vision In Action Task Force 2013
47. Reviewer, NSERC Discovery Grant Application 2013
48. Member, Schulich School of Engineering Strategic Plan 2013-2018 Working Committee 2013 – Team Leader for People Pillar
49. Member, Presidential CERC Advisory Committee 2013

2014

50. Member, University of Calgary General Faculties Council Research and Scholarship Committee 2014
51. Member, Presidential CERC Phase 2 Proposal Technical Team 2014
52. Reviewer, NSERC Discovery Grant Application 2014
53. Reviewer, New Faculty Awards, Department of Chemical and Petroleum Engineering 2014
54. Reviewer, Mature Faculty Awards, Department of Chemical and Petroleum Engineering 2014
55. Member, University of Calgary United States Regional Advisory Council 2014
56. Member, Schulich School of Engineering Dean's Executive Committee 2014
57. Member, Schulich School of Engineering Head's Forum 2014
58. Chair, Department of Chemical and Petroleum Engineering Selection Committee Incremental Position for IRC 2014
59. Coordinator and Lecturer, Chinese University Petroleum Beijing Shortcourse: Petroleum Capacity Development 2014
60. Technical Lead, Polish training program in unconventional energy for the Polish Dept of Innovation and Development in their Ministry of Science and Higher Education 2014
61. Member, University of Calgary Project Cheetah Team 2014

2015

62. Member, Schulich School of Engineering Dean's Executive Committee 2015
63. Member, Schulich School of Engineering Head's Forum 2015
64. Reviewer, MITACS partnership grants 2015
65. Member, Presidential CFREF First Round Proposal Technical Team 2015
66. Member, Presidential CFREF Second Round Proposal Technical Team 2015
67. Member, Beijing Research Site Governance Committee 2015
68. Chair, Department of Chemical and Petroleum Engineering Selection Committee Instructor 1 2015
69. Chair, Department of Chemical and Petroleum Engineering Selection Committee Instructor 2 2015
70. External Member, Department of Geosciences Head Search Committee 2015
71. Chair, Department of Chemical and Petroleum Engineering Selection Committee Husky Chair 2015

2016

72. Member, Schulich School of Engineering Dean's Executive Committee 2016
73. Member, Schulich School of Engineering Head's Forum 2016
74. Reviewer, MITACS partnership grants 2016
75. Chair, Department of Chemical and Petroleum Engineering Selection Committee ENCH Position 2016
76. Chair, Department of Chemical and Petroleum Engineering Selection Committee ENPE Position 1 2016
77. Chair, Department of Chemical and Petroleum Engineering Selection Committee ENPE Position 2 2016
78. Chair, Department of Chemical and Petroleum Engineering Selection Committee Incremental Position for IRC 2016
79. Member, Presidential CFREF Proposal Technical Team 2016
80. Reviewer, AI-BS Bioindustrial Research Program Grants 2016
81. Member, Beijing Research Site Governance Committee 2016
82. Moderator, The Future of Oil Sands SSE Alumni Chapter Distinguished Panel 2016
83. Chair, Department of Chemical and Petroleum Engineering Selection Committee Husky Chair Position 2016

2017

84. Chairperson, Petroleum Engineering Education Forum Program Committee, 16 Mar 2016 to 01 Aug 2017
85. Reviewer, MITACS partnership grants 2017
86. Member, Beijing Research Site Governance Committee 2017
87. Member, Department of Chemical and Petroleum Engineering Awards Committee 2017

88. Reviewer, Nazarbayev University Proposals 2017 (administered by Oak Ridge Associated Universities (ORAU))

2018

89. Member, U.Calgary GRI New Faculty Search Committees (6 positions) 2018
90. Member, Hunter Hub Internal Advisory Committee 2018
91. Member, Beijing Research Site Governance Committee 2018
92. Member, Institute of Energy Donor Project 2018

2019

93. Reviewer, NSERC Discovery Grants 2019
94. Member, Beijing Research Site Governance Committee 2019
95. Member, Hunter Hub Internal Advisory Committee 2019
96. Reviewer, MITACS partnership grants 2019
97. UCalgary Lead, NGIF Methane Emissions Reduction Training and Testing, Proposal to CERIN (AI+NRCan) 2019
98. Member, SSE Student Recruitment Committee 2019
99. Member, Energy Research Strategy International Review Coordination and Organization Team, 2019

2020

100. Reviewer, NSERC Discovery Grants 2020
101. Member, Hunter Hub Internal Advisory Committee 2020
102. Reviewer, MITACS partnership grants 2020
103. UCalgary Lead, NGIF Methane Emissions Reduction Training and Testing, Proposal to CERIN (AI+NRCan) 2020
104. Taskforce Chair, CPE Oil and Gas Program Taskforce 2020
105. Reviewer, Nazarbayev University Proposals 2020 (administered by Oak Ridge Associated Universities (ORAU))
106. Lead, Energy Research Strategy 2.0 Team, 2020

2021

107. Lead, Energy Research Strategy 2.0 Team, 2021
108. UCalgary Lead, Emissions Testing Centre, CERIN (AI+NRCan), 2021
109. Lead, NGIF Venture Fund co-locate at UCalgary, 2021

2022

110. Lead, Energy Research Strategy 2.0 Team, 2022
111. UCalgary Lead, Emissions Testing Centre, CERIN (AI+NRCan), 2022
112. New CFREF proposal with UAlberta, UCalgary lead contributor
113. Hydrogen CERC proposal Search Committee Co-Chair, 2022
114. UCalgary Killam Doctoral Awards Adjudication Committee, 2022
115. Reviewer, One Child Every Child CFREF proposal, 2022
116. Reviewer, CFI proposal on hydrogen infrastructure, 2022
117. Reviewer, CFI Major Science Initiatives proposal on Bamfield Marine Science Centre, 2022
118. Reviewer, Nazarbayev University Proposals 2022 (administered by Oak Ridge Associated Universities (ORAU))
119. Reviewer, MITACS grant application (UBC)
120. Reviewer, NSERC Discovery Grant

2023

121. Lead, UCalgary-CurtinU-UAberdeen Global Energy Institute, 2023
122. UCalgary Lead, Emissions Testing Centre, CERIN (AI+NRCan), 2023
123. UCalgary Lead, NSF Energy Transitions Global Centres proposal, 2023
124. Co-Lead, Oil and Gas Program Task Force, Chemical and Petroleum Engineering Department, 2023

2024

125. Lead, UCalgary-CurtinU-UAberdeen Global Energy Institute, 2024
126. UCalgary Lead, Emissions Testing Centre, CERIN (AI+NRCan+PrairiesCan), 2024
127. MITACS Research and Innovation Council, 2024
128. Co-Lead, Oil and Gas Program Task Force, Chemical and Petroleum Engineering Department, 2023

Other

Faculty Sponsor for University of Calgary Student Petroleum and Energy Club 2004-2011

Guide and mentor students in the Petroleum and Energy Club, help students to organize field trips to Ft. McMurray, oil, gas, and oil sands plants, field operations, and the mines in Ft. McMurray. SPE Faculty representative 2004-2011. SPE Petrobowl competition faculty member 2012.

B. Professional Service

Reviewer for about 20-30 papers per year from various Chemical Engineering and Petroleum Journals

1. Technical Editor for SPE Reservoir Evaluation and Engineering 2003-2006
2. Session Co-Chair for CIPC 2004 Conference (in Calgary, Alberta, Canada)
3. Reviewer for CIPC 2005 Conference (in Calgary, Alberta, Canada)
4. Session Co-Chair for CIPC 2005 Conference (in Calgary, Alberta, Canada)
5. Session Chair for CDEN 2005 Conference (in Banff, Alberta, Canada)
6. Session Co-Chair for ITOHOS 2005 Conference (in Calgary, Alberta, Canada)
7. Session Co-Chair for CIPC 2006 Conference (in Calgary, Alberta, Canada)
8. Session Co-Chair for WHOC 2006 Conference (in Beijing, China)
9. Session Co-Chair for CIPC 2007 Conference (in Calgary, Alberta, Canada)
10. Symposium Organizer and Co-Chair for Oil Sands 2009 at the World Chemical Engineering Congress (in Montreal, Quebec, Canada)
11. Session Chair for Gussow 2009 Conference (in Banff, Alberta, Canada)
12. Session Chair for 11th International Symposium on Evaluation of Wettability and Its Effect on Oil Recovery 2010 Conference (in Calgary, Alberta, Canada)
13. Technical Program Committee member and Session Chair for SPE Heavy Oil Conference 2011 (in Kuwait City, Kuwait)
14. Session Co-Chair for CSChE Oil Sands Symposium 2012, two sessions (in Vancouver, British Columbia, Canada)
15. Member of Council of Canadian Academies Expert Panel on the Potential for New and Emerging Technologies to Reduce the Environmental Impacts of Oil Sands Development 2013/2014
16. Session Co-Chair for GeoConvention 2013 (in Calgary, Alberta, Canada)
17. Session Co-Chair for SPE Heavy Oil Conference 2013 (in Calgary, Alberta, Canada)
18. Technical Program Committee Member and Session Chair for SPE Steam Solvents Workshop 2014 (in Canmore, Alberta, Canada)
19. Session Co-Chair for Gussow Conference 2014 (in Banff, Alberta, Canada)
20. Session Co-Chair for CSPG & AAPG Oil Sands and Heavy Oil Symposium: A Local to Global Multidiscliplinary Collaboration 2014 (in Calgary, Alberta, Canada)
21. Participant, Total Energy Education Seminar, 2014 (in Paris, France)
22. Technical Co-Chair for SPE Emerging Analytical Techniques in the Oil and Gas Industry Workshop 2017 (in Calgary, Alberta, Canada)
23. Session Co-Chair for Thermal EOR Conference 2018 (in Chengdu China)
24. Panel Moderator, YPAC x AVATAR Innovation Program, 2020.
25. Panel member, Natural Gas Dialogues Webinar October 28th, 2020.
26. Other conferences – no longer listing them

CIPC = Canadian International Petroleum Conference
WHOC = World Heavy Oil Congress
CDEN = Canadian Design Engineering Network
SPE = Society of Petroleum Engineers
CSChE = Canadian Society of Chemical Engineering

C. Other Public Service

1. United Way Coordinator for Dept. of Chemical and Petroleum Engineering 2005 (total time ~24h), 2006 (total time ~30h), 2007 (total time ~24h).
2. Science Network for Alberta Learning 2005 (total time ~24h).
3. Science Alberta Foundation. Added Reservoir Engineering component to Grade 7 Alberta Science Curriculum 2007 (total time ~12h).
4. Science Fair Judge 2006, 2007, 2012 (time ~ 8h each time).
5. Member, Youth Science Fair Steering Committee 2012/2013 (total time ~24h).
6. Member, Youth Science Fair Steering Committee 2013/2014 (total time ~24h).
7. Member, Youth Science Fair Steering Committee 2014/2015 (total time ~24h).
8. Member, Youth Science Fair Steering Committee 2015/2016 (total time ~24h).
9. Board Member, Canadian Energy Research Institute (CERI), 2017/2018 (total time ~24h).
10. Board Member, Canadian Energy Research Institute (CERI), 2018/2019 (total time ~24h).
11. Board Member, Canadian Energy Research Institute (CERI), 2019/2020 (total time ~36h).
12. Board Member, Canadian Energy Research Institute (CERI), 2020/2021 (total time ~36h).
13. Board Member, Canadian Energy Research Institute (CERI), 2021/2022 (total time ~36h).