

Geothermal Energy Lab

Virtual Launch Workshop

Roman Shor

Co-lead

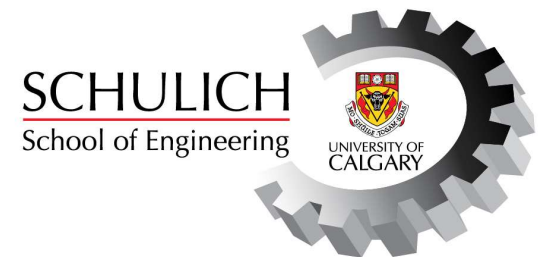
Assistant Professor & Associate Head (Undergraduate)
Department of Chemical and Petroleum Engineering
Schulich School of Engineering

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Co-lead

Professor
Department of Chemical and Petroleum Engineering
Schulich School of Engineering

May 11, 2021



We would like to acknowledge the traditional territories of the people of the Treaty 7 region in Southern Alberta, which includes the Blackfoot Confederacy (comprising the Siksika, Piikani, and Kainai First Nations), as well as the Tsuut'ina First Nation, and the Stoney Nakoda (including the Chiniki, Bearspaw, and Wesley First Nations). The City of Calgary is also home to Métis Nation of Alberta, Region 3.



Launch Workshop Agenda

Time	Topic	Speaker
9:00 am – 9:10 am	Virtual Welcome	Drs. Kantzas & Shor
9:10 am – 9:20 am	Vision and Goals of the Geothermal Energy Lab	Dr. Shor
9:20 am – 9:35 am	Exploration Geology and Geophysics	Dr. Gilbert
9:35 am – 9:50 am	Thermal & Fluid Flows in Reservoirs	Dr. Kantzas
9:50 am – 10:00 am	Break	
10:00 am – 10:15 am	Drilling & Well Construction	Dr. Shor
10:15 am – 10:30 am	Thermodynamics & Surface Facilities	Dr. Kantzas
10:30 am – 10:45 am	Sustainability and Social License	Dr. Burgart
10:45 am – 11:00 am	Geothermal Policy and Law	Dr. Ingelson
11:00 am – 11:10 am	Break	
11:10 am – 11:30 am	Break out room discussions	All
11:30 am – 11:50 am	Common discussion	
11:50 am – noon	Closing	Drs. Kantzas & Shor

Welcome & Introductions

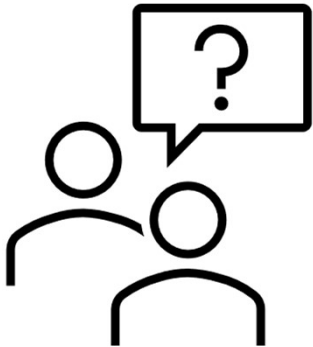
15 second introductions

- Presenters:

- Name
- Department / School
- Research area

- Attendees

- Name
- Role
- Company / Organization





“Geothermal Anywhere” through improved exploration, drilling efficiency, well layouts, reservoir management, surface facilities, energy conversion, heat re-use and close collaboration and buy-in from the community.

Goals of this workshop

- Become acquainted with the research capabilities and expertise of the university in geothermal energy
- Connect with researchers
- Explore partnerships to address open research questions, including matching funding opportunities with **NSERC**, **Mitacs** and **Alberta Innovates**
- Evaluate the possibility of a proposal for the **CRIN** (Clean Resource Innovation Network) low emissions fuels competition

Research Focus Areas

- Exploration Geology and Geophysics
- Thermal and Fluid Flows in Reservoirs
- Drilling and Well Designs
- Thermodynamics and Energy Conversions
- Sustainability, Social License and Indigenous Perspectives
- Geothermal Policy and Law

Students & their work

- Research students pursuing an M.Sc. or Ph.D. in Engineering, Geophysics and Geology
- M.Sc. students in the Sustainable Energy Development Program
- J.D. students in the Faculty of Law
- Undergraduate student capstone projects

Selected Past Projects:

Bachelor of Science (B.Sc.)

- Geothermal Energy Recovery (Chemical Engineering capstone project, 2020 and 2021)
- Rig hydraulic design to enable survival of electronics while drilling 200°C formations (Multidisciplinary capstone project, 2021)

Master of Science (M.Sc.)

- Coffey, J. R. (2020). Characterization of the southern Rocky Mountain Trench near Valemount, British Columbia, using receiver functions
- Omusi, D. (2019). Optimal Energy Management of a SAGD Microgrid Participating in a Volatile Electricity Market
- Skripkin, E. (2015). Effective Thermal Conductivity in Porous Media: An Integrated Approach

Master of Science (M.Sc.) in Sustainable Energy Development

- Adepoju, Y. O. (2020). Business Case for Geothermal Energy Development to power LNG Project in BC
- Lea, E. (2020). A Step Towards A Lower Carbon Future: Integrating Closed Loop Geothermal Technology in District Cooling Applications
- Moazami, S. (2020). Feasibility Analysis on Geothermal Heat Storage Capacity and Recovery of Alberta's Decommissioned Wells

Funding Opportunities

- **NSERC**

- **Alliance:** 1:1 or 2:1 matching of industry cash contributions for fundamental and applied research & development for 1-5 year projects



- **Alberta Innovates**

- **Campus Alberta Small Business Engagement Program** matches NSERC contributions for Alliance projects with partner companies with <\$50M in revenue
- **NSERC/AI Advance** provides up to \$150,000 / year for two years to advance technologies currently in TRL 2-4



- **Mitacs**

- **Accelerate:** Provides matching funding for 4-month internships for students (\$7,500 / 4 month term)
- **Elevate:** Matching funding for a dedicated postdoctoral fellow for 2 years (\$30,000 / year; 2 year commitment)



Funding Opportunities



- **Low Emission Fuels and Products Technology Competition (\$25 million)**
 - Focus areas include (but not limited to) innovative products from hydrocarbons such as carbon fibre; carbon capture and utilization; hydrogen and **geothermal** and low carbon intensity alternatives and new fuels
 - Maximum \$10 million to any one project
 - EOI application window March 31 – June 9, 2021 with contracting and award expected December 2021 - January 2022
 - Information webinar April 21, 2021, 9:00 a.m. PT – **(recording available)**
 - Competition coordinator: [Foresight Cleantech Accelerator Centre](#) (Foresight CAC) and The Delphi Group

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Breakout Rooms *(initial interest)*

Exploration Geology and Geophysics

First Name	Last Name	Company
Dan	Palombi	AER/Alberta Geological Survey
Matt	Grobe	Alberta Geological Survey
Katherine	Huang	Alberta No. 1
Bez	Hoxha	Baker Hughes
Alison	Thompson	Borealis GeoPower
Alex	Filstein	ConocoPhillips
Julian	Ortiz	ConocoPhillips
Srishti	Pahel	ConocoPhillips
David	Garcia	Emerson
Dennis	Ellison	Emerson E&P Software Canada
Stephen	Grasby	Geological Survey of Canada
Phil	Harms	GEOSEIS Inc.

Sustainability, Social License and Indigenous Perspectives

First Name	Last Name	Company
Julian	Ortiz	ConocoPhillips
Srishti	Pahel	ConocoPhillips
Robert	Mugo	COSIA
Ariel	Torre	Eavor Technologies inc.
Dennis	Ellison	Emerson E&P Software Canada
Chioma	Izgbokwe	Government of Yukon

Drilling and Completions

First Name	Last Name	Company
Bez	Hoxha	Baker Hughes
John	Macpherson	Baker Hughes
Alex	Filstein	ConocoPhillips
Julian	Ortiz	ConocoPhillips
Srishti	Pahel	ConocoPhillips
Stephen	Arseniuk	COSIA
Ariel	Torre	Eavor Technologies inc.
Dennis	Ellison	Emerson E&P Software Canada
Chioma	Izgbokwe	Government of Yukon
Harish	Kumar	ConocoPhillips

Geothermal Policy and Law

First Name	Last Name	Company
Manjot	Klair	CanGEA
Alex	Filstein	ConocoPhillips
Julian	Ortiz	ConocoPhillips
Srishti	Pahel	ConocoPhillips
Ariel	Torre	Eavor Technologies inc.
Chioma	Izgbokwe	Government of Yukon
Julia	Ciccaglione	Kalina Distributed Power Northwest Territories Geological Survey
Viktor	Terlaky	Survey

Combined

Thermodynamics and Surface Facilities

First Name	Last Name	Company
Alex	Filstein	ConocoPhillips
Julian	Ortiz	ConocoPhillips
Srishti	Pahel	ConocoPhillips
Javier	Sanchez	ConocoPhillips
Abby	Trigg	ConocoPhillips
Stephen	Arseniuk	COSIA
Ariel	Torre	Eavor Technologies inc.
David	Garcia	Emerson
Dennis	Ellison	Emerson E&P Software Canada
Duke	Anderson	Energi Simulation
Hamed	Motahhari	Imperial Oil
Harish	Kumar	ConocoPhillips

Thermal and Fluid Flows in Reservoirs

First Name	Last Name	Company
Alex	Filstein	ConocoPhillips
Gustavo	Gomez	ConocoPhillips
Julian	Ortiz	ConocoPhillips
Srishti	Pahel	ConocoPhillips
Javier	Sanchez	ConocoPhillips
Ariel	Torre	Eavor Technologies inc.
David	Garcia	Emerson
Dennis	Ellison	ENERGYminute Education Foundation
Phil	Harms	GEOSEIS Inc.
Hamed	Motahhari	Imperial Oil
Mark	Mirolli	Kalina Distributed Power
Kathy	Cheung	Suncor Energy Inc.
Harish	Kumar	ConocoPhillips

Thank you

