

**Dr. Jennifer J. Adams**

**Senior Petroleum Systems Analyst**

Dr. Jennifer Adams, a Senior Petroleum Systems Analyst in the OilTracers® Team, received a B.Sc. (Honors Geology, 1998) from the University of Waterloo, a M.Sc. (Hydrogeology) from the University of Alberta (2001), and a Ph.D. in Petroleum Geochemistry from the University of Calgary (2008). Jennifer worked at the Geological Survey of Alberta for two years focusing on deep basin CO<sub>2</sub> & H<sub>2</sub>S sequestration and basin fluid property prediction. Jennifer co-founded an oil and gas geochemical service company, Gushor, in Calgary in 2006 and acted as CEO of the start-up company. Gushor was a model for energy industry innovation and academic technology transfer to industry until it was purchased by Schlumberger in 2013. During this time, she was actively involved in oil sands geochemistry research including oil source and alteration studies, accurate heavy oil and bitumen fluid property measurement, production allocation and surface leakage forensic work. Gushor specialized in integrated geochemical and engineering projects focusing on fluid mobility mapping to optimize thermal recovery. Jennifer joined ConocoPhillips in 2009 where she supported domestic and international production and exploration activities for 5 years as a geochemist and basin modeler. She continued her work on microbially-enhanced oil and gas recovery from coal, heavy oil fields and light oil plays, including compositional reservoir simulation of microbial metabolism of petroleum. She was the lead on all resource geochemical and fluid property studies in the Alberta oil sands for ConocoPhillips. She worked on projects focusing on aquathermolysis kinetics, OTSG fouling, high-resolution compositional analysis of bitumen to understand SAGD sweep, evolution of produced bitumen and bitumen compositional gradients for optimized recovery. Her work on the origin of H<sub>2</sub>S in surface casing vent flows has been used as a template by oil sands operators. She provided geochemical support and basin modeling for the continued drilling in COP blocks of Bohai Bay heavy oil fields. Her exploration projects included oil quality and basin modeling studies for exploration in the Maranon basin, and offshore Gulf of Mexico seep studies for regional fluid property prediction and source rock mapping as well as prospect evaluation. In the Browse basin, she completed geochemical interpretation of gas prospects and source rock quality as well as built 2D and 3D Petromod basin models to support exploration. She was involved with early evaluation of shale gas and tight oil plays in Western Canada in the Duvernay Fm., Gordondale Member, and Horn River basin. She led a multidisciplinary team focusing on fluid mobility in tight resource plays in Alaska, Rockies basins, Western Canada and the Permian basin. She led technical exploration teams in evaluating unconventional resource plays in the Midland, Delaware and Powder River basins and the central basin platform. Jennifer has taught several internal courses on heavy oil and bitumen, biodegradation, unconventional resource fluid evaluation, and basin modeling. Jennifer may be contacted at [Jennifer.Adams@weatherfordlabs.com](mailto:Jennifer.Adams@weatherfordlabs.com).

**EDUCATION**

- Ph.D.**      *University of Calgary*, Calgary, Alberta, CA, Petroleum Geology, 2008.  
Dissertation: *The Impact of Geological and Microbiological Processes on Oil Composition and Fluid Property Variations in Heavy Oil and Bitumen Reservoirs*
- M.Sc.**      *University of Alberta*, Edmonton, Alberta, CA, Hydrogeology, 2001.  
Dissertation: *Numerical modelling of regional gravity-driven flow systems in the Alberta basin*
- B.Sc.**      *University of Waterloo*, Waterloo, Ontario, CA, Applied Earth Science, 1998.  
Dissertation: *Groundwater flow & contaminant transport model of the North Bay landfill site*

**INDUSTRY EXPERIENCE**

**ConocoPhillips, Houston, Texas:**

**Supervisor, Midland and Permian Basin Exploration:** Supervised a small drilling program in the Midland Basin Wolfcamp shale play and lead regional exploration for all tight reservoir plays in the Permian Basin (10-15 people). Supervised the sale of an asset and directed fluid mobility exploration workflow development for tight reservoirs (2014-2015)

**ConocoPhillips, Houston, Texas:**

**Director of Petroleum Geochemistry and Basin Modeling:** Lead a technical team (9-14 people) responsible for R&D and business unit support for petroleum exploration of conventional and unconventional plays, and production geochemical applications to development project, as well as functional excellence with respect to organic geochemistry and basin modeling (2012-2014)

**ConocoPhillips, Houston, Texas:**

**Geochemist and Basin Modeler:** Managed the heavy oil geochemistry research program into geochemical applications in petroleum exploration, heavy oil characterization, microbially enhanced oil/gas recovery & CO<sub>2</sub> storage as well as basin modeling and reservoir geochemistry for selected heavy oil fields (2009-2012)

**Gushor, Calgary, Alberta (2006-2009)**

**CEO, Geoscientist, Director and Founder:** As founder and first CEO, developed corporate strategy, marketing, staffing and finances as well as management of IT and software group. Geochemical project management of heavy oil and oil sand related fluid characterization and reservoir geochemistry studies and reservoir engineering recovery strategies.

**Alberta Geological Survey, Edmonton, Alberta (2001-2002)**

Research Scientist: Worked on a team mapping suitable sites for acid gas sequestration in the Alberta basin. Focused on calculation of physical and thermal properties of CO<sub>2</sub>, water and brine to estimate storage capacity of chosen aquifers. Developed Access® database for management of acid gas disposal operations in Alberta.

## AWARDS

**2014 Medal of Merit for best paper of 2014 from the Canadian Society of Petroleum Geologists for Adams et al., 2014, *The dynamic interplay of oil mixing, charge timing and biodegradation in forming the Alberta oil sands***

**2012 Medal of Merit for best paper of 2012 from the Canadian Society of Petroleum Geologists Fustic et al., 2012, *Bitumen Geochemistry – a tool for distinguishing barriers from baffles in SAGD oil sands reservoir developments***

**2009 ASTECH award for Gushor Inc. in the category of Outstanding Commercial Achievement in Alberta Science and Technology (gross sales <\$25MM)**

**2009 Organic Geochemistry Division of the Geochemical Society, best paper award, for Jones et al., 2008, *Crude-oil biodegradation via methanogenesis in subsurface petroleum reservoirs.***

**2009 Gordon Research Conference, Hydrocarbon Resources, best poster award for *Why Heavy Oil Deposits Exist***

**2008 CSPG Annual convention best student presentation, Andrew D. Baillie Award, \$1000**

**2008 Innovator II award with video and print publication, University of Calgary**

**2008 Rising Star, top 20 up and coming in the oil and gas industry, Oil Week**

**2007 First Runner-up, Dr. Butler Memorial best paper presented at CIPC 2006 for Gates et al., 2007, *The impact of oil viscosity heterogeneity on the production characteristics of tar sand and heavy oil reservoirs***

**2007 Top 40 students in the 40th Anniversary University of Calgary celebrations**

**2005 MITACS Student Internship co-sponsored by Shell Canada, \$15 000**

**2005 AAPG Grant in Aid for heavy oil property delineation in tar sands, \$2500**

**2004 One of top 25 “Brightest and Best” in Canada in Macleans magazine**

## PUBLICATIONS

- Adams, J.J., Larter, S.R., Bennett, B., Huang, H., Westrich, J. and van Kruisdijk, C. (2013) The dynamic interplay of oil mixing, charge timing and biodegradation in forming the Alberta oil sands: insights from geological modeling and biogeochemistry, in AAPG Studies in Geology 64, p. 23–102. CSPG 2014 Award of Merit.
- Bennett, B., Adams, J.J., Gray, N.D., Oldenburg, T.B.P., Larter, S.R., Sherry, A., Head, I. (2013) The controls on the composition of biodegraded oils in the deep subsurface - Part 3. The impact of microorganism distribution on petroleum geochemical gradients in biodegraded petroleum reservoirs. *Organic Geochemistry*, v. 56, p. 94-105.
- Larter, S.R., Huang, H., Adams, J.J., Bennett, B., Snowdon, L.R. (2012) A practical biodegradation scale for use in reservoir geochemical studies of biodegraded oils. *Organic Geochemistry*, v. 45, p. 66–76.
- Fustic, M., Bennett, B., Adams, J.J., Huang, H., MacFarlane, B., Leckie, D., and Larter, S.R. (2012) Bitumen Geochemistry – a tool for distinguishing barriers from baffles in SAGD oil sands reservoir developments: A case study in a reservoir with IHS in stacked large scale point bar deposits. *Canadian Bulletin of Petroleum Geology*, v. 59, no. 4, p. 295-316. CSPG 2012 Award of Merit.
- Gray, N.D., Sherry, A., Grant, R.J., Rowan, A.K., Hubert, C.R.J., Callbeck, C.M., Aitken, C.M., Jones, D.M., Adams, J.J., Larter, S.R., Head, I.M. (2011) The quantitative significance of Syntrophaceae and syntrophic partnerships in methanogenic degradation of crude oil alkanes. *Environmental Microbiology*, v. 13, no.11, p. 2957-2975.
- Jiang, C., Bennett, B., Larter, S.R., Adams, J.J. and Snowdon, L.R. (2010) Viscosity and API Gravity Determination of Solvent Extracted Heavy Oil and Bitumen. *Journal of Canadian Petroleum Technology*, v. 49, no. 7, p. 20-27.
- Head, I.M., Larter, S.R., Gray, N.D., Sherry, A., Adams, J.J., Aitken, C.M., Jones, D.M., Rowan, A.K., Huang, H., Röling, W.F.M. (2010) Hydrocarbon degradation in petroleum reservoirs. In: Timmis, K.N. ed. in chief, McGenity, T., van der Meer, J.R., de Lorenzo, V., ed. *Handbook of Hydrocarbon and Lipid Microbiology*. Heidelberg, Germany: Springer, pp. 3097-3109 (chap 54).
- Sudicky, E. A., Illman, W.A., Goltz, I.K., Adams, J.J. and McLaren, R.G. (2010) Heterogeneity in hydraulic conductivity and its role on the macroscale transport of a solute plume: from measurements to a practical application of stochastic flow and transport theory. *Water Resources Research*, 46, W01508, doi:10.1029/2008WR007558, 16pp.
- Oldenburg, T., Larter, S.R., Adams, J., Clements, M., Hubert, C., Rowan, A., Sherry, A., Head, I., Grigoriyan, A., Voordouw, G., Fustic, M. (2009) Methods for recovery of microorganisms and intact microbial polar lipids (IPLs) from oil-water mixtures-lab experiments and natural well-head fluids. *Analytical Chemistry*, v. 81, no. 10, p. 4130-4136.
- Jones, D.M., Head, I.M., Gray, N.D., Adams, J.J., Rowan A.K., Aitken, C.M., Bennett, B., Huang, H., Brown, A., Bowler, B.F.J., Oldenburg, T., and Larter, S.R. (2008) Crude-oil biodegradation via methanogenesis in subsurface petroleum reservoirs. *Nature*, v. 451, no. 7175, p. 176-179.
- Gates, I.D., Larter, S.R. and Adams, J.J. (2008) The impact of oil viscosity heterogeneity on the production characteristics of tar sand and heavy oil reservoirs. Part II: Intelligent, geotailored recovery processes in compositionally graded reservoirs. *Journal Canadian Petroleum Technology*, v. 47, no. 9, p. 45-54.
- Huang, H., Bennett, B., Oldenburg, T., Adams, J.J., Larter, S.R. (2008) Geological controls on the origin of heavy oil and oil sands and their impacts on in situ recovery. *Journal Canadian Petroleum Technology*, v. 47, no. 4, p. 1-9.
- Larter, S.R., Adams, J.J., Gates, I.D., Bennett, B. and Huang, H. (2008) The origin, prediction and impact of oil viscosity heterogeneity on the production characteristics of tar sand and heavy oil reservoirs. *Journal Canadian Petroleum Technology*, v. 47, p. 52-61.
- Adams, J.J., Riediger, C.L, Fowler, M.G. and Larter, S.R. (2006) Thermal controls on biodegradation around the Peace River tar sands: paleo-pasteurization to the west. *Journal of Geochemical Exploration*, v. 89, p. 1-4.

- Larter, S., Huang, H., Adams, J.J., Bennett, B., Jokanola, F., Oldenburg, T., Jones, M., Head, I., Riediger, C. and Fowler, M. (2006) The controls on the composition of biodegraded oils in the deep subsurface: (Part II) Geological controls on subsurface biodegradation fluxes and constraints on reservoir fluid property prediction. AAPG Bulletin, v. 90, no. 6, p. 921-938.
- Cathles, L.M. and Adams, J.J. (2005) Fluid-Flow and Petroleum and Mineral Resources in the Upper (<20-km) Continental Crust. Economic Geology 100th Anniversary Volume, p. 77-110.
- Bachu, S., Haug, K., Michael, K., Buschkuehle, B.E., and Adams, J.J. (2005) Deep Injection of Acid Gas in Western Canada. In: Chin-Fu Tsang and John A. Apps, Editor(s), Developments in Water Science, Elsevier, v. 52, Underground Injection Science and Technology, p. 623-635.
- Adams, J.J., Rostron, B.J., and Mendoza, C.A. (2004) Coupled fluid flow, heat and mass transport, and erosion in the Alberta Basin: implications for the origin of the Athabasca Oil Sands. Canadian Journal of Earth Sciences, v. 41, no. 9, p. 1077-1095.
- Talman, S.J., Adams, J.J., and Chalaturnyk, R.J. (2004) Adapting TOUGH2 for general equations of state. Computers and Geosciences, v. 30, no. 5 p. 543-552.
- Bachu, S. and Adams, J.J. (2003) Estimating CO<sub>2</sub> Sequestration Capacity in Solution in Deep Saline Aquifers. Energy Conversion and Management, v. 44, no. 20, p. 3151-3175.
- Adams, J.J., and Bachu, S. (2002) Equations of state for basin geofluids: Algorithm review and intercomparison for brines. Geofluids, v. 2, p. 257-271. (4th most downloaded paper of 2003 for Blackwell Science Publishing Company)
- Adams, J.J., Rostron, B.J. and Mendoza, C.A. (2000) Evidence for two fluid mixing at Pine Point, NWT. Journal of Geochemical Exploration, v. 69-70, p. 103-108.

## **PATENTS**

- Gates, I.D., S. Larter, and J.J. Adams (2007) In-situ Heavy Oil Recovery Process: JAGD (J-Well and gravity assisted steam stimulation process for efficient recovery of heavy oil and tar sand bitumen from reservoirs with vertical gradients in oil mobility). International Publication Number WO2008/011704 A1 (Full patent filed July 2007).
- Larter, S.R., B. Bennett, L. Snowdon, C. Jiang, J.J. Adams, I.D. Gates, and K. Noke (2007) Method for Measurement of Crude Oil and Bitumen Dead Oil Viscosity and Density (GVisc). Canadian Patent Application No. 2,597,809.
- Larter, S.R., I.D. Gates, J.J. Adams, C. Jiang, L. Snowdon, B. Bennett, H. Huang (2007) Preconditioning an Oilfield Reservoir (Brutus). PCT Patent Application No. PCT/CA2007/002249. Bulk Reservoir upgrading through utilization of slow minority phase reagent-carrying fluid floods
- Larter, S.R., C. Jiang, T. Oldenburg, J.J. Adams, K. Noke, B. Bennett, I.D. Gates, and L. Snowdon (2008) Method and Apparatus for Obtaining Heavy Oil Samples from a Reservoir Sample (Plunger). PCT Patent Application No. PCT/CA2008/000279. Mechanical displacement device and operating procedure for the rapid recovery of representative bitumen or heavy oil samples from oil reservoir core for fluid property testing and other physical or chemical analysis

## **MEMBERSHIPS IN PROFESSIONAL ORGANIZATIONS**

- American Association of Petroleum Geologists (since 2003)  
Society of Petroleum Engineers (since 2006)  
European Association of Organic Geochemists (since 2011)

**CITIZENSHIP** Canadian and US green card holder

**LANGUAGES** English; fluent

French; intermediate conversational and written