

Dr. Bruce Hart



Adjunct Professor and Lecturer
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Research Interests

My current research interests focus on applied sedimentary geology and Earth Systems Science:

- What does the sedimentary record tell us about the Earth's 4+ billion year history of life and environmental change? How does that record inform our current environmental world view?
- How can humanity use sedimentary deposits to sustain itself? (e.g., Carbon Capture and Storage)

Most of my current and previous research integrates/integrated geological, geophysical, geochemical and engineering data and concepts. Inasmuch as possible/appropriate, I integrate computer-based methods (e.g., machine learning) into my research.

Selected Honours & Admin Duties

- AAPG/SEG Distinguished Lecturer, 2017-2018
- Trustee, Gulf Coast Section SEPM, 2014 – 2018
- Distinguished Service, Gulf Coast Section SEPM, 2016
- Outstanding SEPM Poster Award, 2016 Annual Convention
- Committee Chair Award, Houston Geological Society, 2014
- Best Paper, Interpretation (SEG-AAPG), 2013
- Best Shale Paper, SW Section AAPG, 2011
- CSPG Medal of Merit 2011
- AAPG/SEG Distinguished Lecturer, 2009-2010
- CSPG Medal of Merit 2008
- Guest Lecturer, CSPG, 2006
- Distinguished Educator Award, SW Section AAPG, 2002



Current Teaching @ UWO:

ES3772A: Introduction to Petroleum Systems

- Currently being modified to focus on subsurface mapping as applied in various branches of the earth sciences (e.g., hydrogeology, hazards assessment, tectonics, mineral exploration, petroleum exploration/development)

ES4772A: Advanced Petroleum Systems

- Will be modified to focus on the geology of energy. Where does humanity's energy supply come from? What are the characteristics of these sources?



Selected Recent Publications

- Sahoo, S.K., Gilleaudeau, G.J., Wilson, K., Hart, B., Barnes, B.D., Faison, T., Bowman, A.R., Larsen, T.E., and Kaufman, A.J., 2023, Basin-scale reconstruction of euxinia and Late Devonian mass extinctions. *Nature*, 615, p. 640–645
- Hart, B.S., Hofmann, M.A., Plint, A.G., Nicolas, M., 2022, Shale Compositional Trends in the Cenomanian-Turonian Cretaceous Western Interior Seaway: Facies and Sequence Stratigraphic Models. In, J. Macquaker and J. Suter (eds.), *The Cenomanian-Turonian Stratigraphic Interval Across the Americas: Argentina to Alaska*, 38th Annual GCSSEPM Foundation Perkins-Rosen Research Conference, December 5-7, Houston, p. 105-119.
- Hart, B.S., Schieber, J., and Kalinec, J., 2022. Clay Diagenesis and Overpressure Development in Upper Cretaceous and Tertiary Shales of South Texas. *Marine and Petroleum Geology*, 147, 105978.
- Hart, B.S., and Hofmann, M.E., 2022, Reconstructing Original Total Organic Carbon Content Affects Paleoenvironmental Analyses of Organic-Rich Shale. *Organic Geochemistry*, 170, 104434.
- Plint, A.G., Vannelli, K.M., Hart, B.S., and Jiang, C., 2022, Syn-depositional oil seeps in the Late Albian Paddy Member of the Peace River Formation (Early Cretaceous), north-central Alberta. *Bulletin of Canadian Energy Geoscience*, v. 69, p. 1-20.
- Hart, B.S., 2021, Stratigraphy and hydrocarbon resources of the San Juan Basin: lessons for other basins, lessons from other basins. *The Mountain Geologist*, 58, 43-103.
- Hart, B.S., and Cooper, S.P., 2021, Mechanical stratigraphy in Mesozoic rocks of the San Juan Basin: Integration of stratigraphic and structural terms and concepts. *The Mountain Geologist*, 58, 159-204.
- Hart, B., Godet, A., Pope, M., and Griffith, C., 2020. Geologic Controls on Production, Upper Cretaceous Eagle Ford and Austin Chalk, South Texas. *SEPM Field Guidebook*, 145 p.
- Hart, B.S., and Hofmann, M.E., 2020. The Late Devonian ice age and the giant Bakken oil field. *The Sedimentary Record*, 18, 4-9.
- Landry, C., Hart, B., Prodanović, M., 2020, Comparison of Wireline Log and SEM Image-Based Measurements of Porosity in Overburden Shales. *URTeC* 3141, 16p.
- Phelps, A.S., Hofmann, M.H., and Hart, B.S., 2018. Facies and stratigraphic architecture of the Upper Devonian – Lower Mississippian Sappington Formation, southwestern Montana: a potential outcrop analog for the Bakken Formation. *AAPG Bulletin*, 102, 793-815.
- Brodie, M., Aplin, A.C., Hart, B.S., Orland, I.J., Valley, J.W., and Boyce, A.J., 2018, Oxygen isotope microanalysis by secondary ion mass spectrometry suggests continuous 300-million-year history of calcite cementation and dolomitization in the Devonian Bakken Formation. *J.Sed.Res.*, 88, 91-104.
- Hart, B.S., 2016. Marine mudstone source rocks in epicontinental basins: development of a conceptual facies model and application to Cenomanian/Turonian mudstones of the Cretaceous Western Interior Seaway, in, M. Dolan, D. Higley and P. Lillis, eds., *Hydrocarbon Source Rocks in Unconventional Plays, Rocky Mountain Region*. *Rocky Mtn Assoc. Geol. Sp.Pub.* p. 1 - 58.
- Hart, B.S., and Steen, A., 2015, Programmed Pyrolysis (“Rock-Eval”) Data and ShalePaleoenvironmental Analyses: A Review. *Interpretation*, 3, SH41-SH53.
- Hart, B.S., 2013, Whither seismic stratigraphy? *Interpretation*, 1, SA3-SA20.
- Hart, B.S., Macquaker, J., and Taylor, K.G., 2013, Mudstone (“shale”) depositional and diagenetic processes: implications for seismic analyses of source-rock reservoirs. *Interpretation*, v. 1, B7-B26.
- Hart, B. S., 2011, An introduction to seismic interpretation: AAPG Discovery Series No. 16, CD-ROM.