

LAWRENCE M. CATHLES III

Personal Data:

Born February 9, 1943
Married with two children

Education:

1971 Ph.D. in Geophysics, Princeton University
1966 University of Virginia Law School
1965 B.A. in Physics, Princeton University
1961 Summa Cum Laude, Kingswood School, West Hartford, CT

Experience:

2018- Emeritus Professor, Geological Sciences, Cornell University, Ithaca, NY
1986-2018 Professor of Geological Sciences, Cornell University, Ithaca, NY
1989- Adjunct Professor, Lamont-Doherty Geological Observatory of Columbia University
1998-2006 Chief Scientist and Chairman of the Board of Geogroup Inc.
1982-1986 Senior Research Geophysicist, Chevron Oil Field Research Co., La Habra, CA
1978-1982 Associate Professor of Geosciences, The Pennsylvania State University, University Park, PA
1971-1978 Director, Mineral Technology (Section Head 1977-1978, Project Leader 1976-1977, Senior Scientist 1971-1976), Ledgemont Laboratory, Kennecott Copper Corp., Lexington, MA

Recent Cornell Professional Activities:

2010-2017 Director of Institute for the Study of the Continents (INSTOC)
2009-2013 Member Earth and Atmospheric Sciences Awards Committee
2008-2013 Thrust leader KAUST Thrust D (Nanomaterials for Oil and Gas Production)
1988-2017 Director of Master of Engineering, Geological Sciences at Cornell University

Professional Activities:

2020 Posted a hydrologic analysis of subsurface permeability needs of Cornell's Earth Source Heat project with strategy suggestions. <https://ecommons.cornell.edu/handle/1813/69956>.

2019- Co-editor (with Willy Fjeldskaar) of special issue of Geosciences entitled "Future advances in basin modeling: suggestions from current observations, analysis and simulations". https://www.mdpi.com/journal/geosciences/special_issues/basin_modelling.

2014- Posted three letters to Governor Andrew Cuomo on the safety of continued salt mining under Lake Cayuga <http://blogs.cornell.edu/cayugalakesaltmining/sample-page-1/>.

2012- Established and maintain a blog entitled: Perspectives on the Marcellus Gas Resource <http://blogs.cornell.edu/naturalgaswarming/>.

2012 Posted white paper entitled: A discussion of the proposed Lansing Sewer District. Link provided in: <http://blogs.cornell.edu/nyswri/2012/10/15/is-lansings-wastewater-management-plan-smart/>.

2012 Presentation to Basque Natural Gas Technical Conference, Vitoria-Gasteiz Spain, April 25th, (with L. Brown): The greenhouse impact of natural gas- Is gas a transition fuel?

2012 Panel Member, Hydrofacking, Soc. Environmental Journalists, Lubbock TX, Oct 19th

2012 Organized Kaufman INSTOC Symposium "When Continents Explode"

2011-2012 Member search committee for Wold Family Professorship in Environmental Balance

2011 Presentation to U.S. Senate Natural Gas Caucus, November 29, "Natural gas and air quality"

2011 Organized Kaufman INSTOC Symposium "Origin and Evolution of the Continental Crust"

2011 Member panel on the science behind hydrofracing, Law School Conference: "In my backyard, finding common ground on gas drilling, clean technology and energy policy"

2010- Established web site with Milton Taam on issues related to the Marcellus shale

2009- Consulting on natural CO₂ generation

2008- Collaborating with Adolphe Nicklas, U. of Montpellier on deep mid-ocean ridge circulation

2008 33rd IGC Session co-convener: Deep sources and signatures of ore-forming systems (with S. Cherkasov and V. Kazansky)

2008 33rd IGC Session co-convener: The Fennoscandian Uplift (with W. Fjeldskaar, N. Morner)

2007- Collaborating with International Research Institute in Stavanger on projects relating to compaction of and chemical reactions in Ekofisk Chalk

2007- Collaborating with International Research Institute in Stavanger and subsequently Tectonor Inc. on projects relating to glacial rebound

2007 Co-instructor of class project that worked with homeowners to understand TCE contamination "in their back yards".
<https://www.engineering.cornell.edu/sites/default/files/departments/main%20area/Magazine/pdf%20archives/CEM-spring-2007.pdf>

2004-2006 Chair Engineering College Nominating Committee

1999-2006 Member Engineering Policy Committee (Chair 2005-2006)

2005 Session Chair of physical factors driving and localizing fluid flow, Inorganic Geochemistry Gordon Conference, July 31-August 5, 2005.

2002 Organizing Committee for 100th Anniversary Volume of the Journal of Economic Geology

1990-2005 Co-Director Global Basins Research Network

1999-2002 Member Science of Earth Systems Advisory Committee

1999 Member Geological Sciences Curriculum Committee

1996 Co-Organizer of Society of Economic Geologists Symposium on Duration of Hydrothermal Events

1993 Member, Committee to Study the Inclusion of Environmental Education within the College of Engineering Curriculum

1990 Chairman of Detailed Planning Group on Cascadia Accretionary Margin

1990 Session Chairman and Organizer for Large Scale Crustal Flow Symposia, Goldschmidt Conference, Baltimore, MD

1988-1993 Associate Editor Economic Geology

1988-1989 Member NRC Continental Margins Study Group

1988 Member of Cornell Graduate Professional Programs Committee

1988 Member of Engineering Council of Representatives, Cornell University

1987-1990 Member, Lithosphere Panel, JOIDES; 1987 Member, Fluid Circulation Working Group, Second Conference on Scientific Ocean Drilling

1988-1989 Chairman, National Research Council, Continental Margins Working Group on Post-Rifting Internal Processes in Divergent Continental Margins

1985-1987 Member, Deep Observation and Sampling of the Continental Crust Science Advisory Committee

1984-1987 Member, National Research Council Board on Earth Sciences

1984-1986 Member, Department of Energy's Science Experiments Committee for Scientific Drilling in the Salton Sea

1982-1986 Member, Board of Directors of Ocean Engineering and Mining Corp

1984-1986 Chairman, Director's Review Committee, Earth Science Division, Lawrence Berkeley Laboratory

1983 Mineral Resources Session Chairman, Oceans '83 Marine Technological Society Meeting, San Francisco

1982-1985 Member, National Research Council Continental Scientific Drilling Committee; 1980-1982 Member, Hydrology Working Group, National Research Council

1979-1981 Member, National Research Council Committee on Earth Sciences Developed a 10-year strategy for the study of the earth from space

1973-1981 Chairman, Advisory Council, Princeton University, Department of Geological and Geophysical Sciences, (Member, 1973-1976)

1979-1981 Chairman, Los Alamos Geological Advisory Committee, (Member, 1979-1980); 1976-1978 Chairman, American Geophysical Union Committee on Education and Manpower (Subcommittees on Women and Minorities reported to this committee)

1976-1979 Member, National Science Foundation (RANN) Oversight Committee on Low Grade Copper Leaching at the New Mexico Institute of Mining and Technology

1976-1979 Member, US National Committee on Geochemistry

1977-1980 Member, National Research Council study group on non-fuel mineral resources.

Current Society Memberships:

American Association of Petroleum Geologists (lapsed)
American Geophysical Union
Society of Economic Geologists
The American Association for the Advancement of Science

Honors and Awards:

2012 Plenary Speaker at Goldschmidt Conference, Montreal
2011 2011 Distinguished Lecturer of the Society of Economic Geologists
2008 2008 Adrian Smith Lecturer, University of Waterloo
1989 24th Hugh Exton McKinstry Memorial Lecturer, Harvard University
1987 Fellow of American Association of Advancement of Science
1985 Extractive Metallurgy Science Award, Metallurgical Society of AIME
1966-1968 National Science Foundation Traineeship Fellowship
1965 Sigma Xi
1965 Sigma Xi Book Award
1965 The Kusaka Memorial Prize in Physics

List of Publications:

1. Phinney, R.A., and L.M. Cathles, 1969, Diffraction of P by the Core: A Study of Long-Period Amplitudes Near the Edge of the Shadow, Jour. of Geophys. Res., 74:1556-1574.
2. Kalliokoski, J., and L.M. Cathles, 1969, Morphology, Mode of Formation, and Diagenetic Changes in Framboids, Bull. Geol. Soc. Finland, 41:125-133.
3. Norton, Denis L., and L.M. Cathles, 1973, Breccia Pipes - Products of Exsolved Vapor from Magmas, Econ. Geol., 68:540-546.
4. Cathles, L.M., H.R. Spedden, and E.E. Malouf, 1974, A Tracer Technique to Measure the Diffusional Accessibility of Matrix Block Mineralization, Chapter 9 in Proceedings of the Symposium on Solution Mining, F. F. Aplan, W. F. McKinnely and A. D. Pernicelli eds., Society of Mining Engineers AIME, p. 129-147.
5. Cathles, L.M., 1975, The Viscosity of the Earth's Mantle, Princeton University Press, Princeton, NJ, 386.
6. Cathles, L.M., and J. A. Apps, 1975, A Model of the Dump Leaching Process that Incorporates Oxygen Balance, and Air Convection, Metall. Trans., 6B:617-624.
7. Cathles, L.M., 1977, An Analysis of the Cooling of Intrusives by Ground Water Convection Which Includes Boiling, Econ. Geol., 72:804-826.
8. Cathles, L.M., DA Reese, and L.E. Murr, 1977, Dump Leaching - Theory, Experiment and Practice, American Nuclear Society Topical Meeting on Energy and Mineral Resource Recovery, CONF-770440, p. 584-595.
9. Murr, L.E., L.M. Cathles, DA Reese, JB. Hiskey, CJ Popp, J. A. Brierly, D. Bloss, V.K. Berry, WJ. Schlitt, and P.C. Hsu, 1977, Chemical Biological, and Metallurgical Aspects of Large Scale Column Leaching Experiments for Solution Mining and In Situ Leaching, In Situ, 1(3):209-233.
10. Cathles, L.M., 1978, Hydrodynamic Constraints on the Formation of Kuroko Deposits, Mining Geology, 28:257-265.
11. Fehn, U., L.M. Cathles, and HD Holland, 1978, Hydrothermal Convection and Uranium Deposits in Abnormally Radioactive Plutons, Econ. Geol., 73(8):1556-1566.
12. Fehn, U., and L.M. Cathles, 1979, Hydrothermal Convection at Slow-Spreading Mid-Ocean Ridges, Tectonophysics, 55:239-260.
13. Norton, D. L., and L.M. Cathles, 1979, Thermal Aspects of Ore Deposition, Chapter 12 in Barnes, ed., Geochemistry of Hydrothermal Ore Deposits, 2nd edition, John Wiley, New York.
14. Cathles, L.M., 1979, Predictive Capabilities of a Finite Difference Model of Copper Leaching in Low Grade Industrial Sulfide Waste Dumps, Math Geology, 11(2):175-191.
15. Cathles, L.M., 1980, Interpretation of Postglacial Isostatic Adjustment Phenomena in Terms of Mantle Rheology, in Morner, NA, ed., Earth Rheology, Isostasy, and Eustasy, John Wiley, New York, 11-43.

16. Cathles, L.M., and L.E. Murr, 1980, Evaluation of an Experiment Involving Large Scale Column Leaching of a Low Grade Copper Sulfide Waste: a Critical Test of a Model of the Waste Leaching Process, in W.J. Schlitt, ed., Leaching and Recovering Copper from As-Mined Minerals, Society of Mining Engineers, 29-48.
17. Cathles, L.M., and W.J. Schlitt, 1980, A Model of the Dump Leaching Process that Incorporates Oxygen Balance, Heat Balance, and Two-dimensional Air Convection, in W.J. Schlitt, ed., Leaching and Recovering Copper from As-Mined Minerals, 5-27.
18. Cathles, L.M., 1980, Modeling Hydrothermal Ore Deposit Genesis, Earth and Mineral Sciences, 49(5)
19. Cathles, L.M., 1981, Strategies for Research on Ore Deposits: in Mineral Resources: Genetic Understanding for Practical Applications, National Research Council Geophysics Study Committee, National Academy Press, 105-110.
20. Cathles, L.M., 1981, Fluid Flow and Hydrothermal Ore Deposits, Econ. Geol., 75th Anniversary Volume, 424-457.
21. Cathles, L.M., 1982, Acid Mine Drainage, Earth and Mineral Sciences Bulletin, 51(4):37-41.
22. Cathles, L.M., 1982, Mineral Deposits Research Review for Industry, Earth and Mineral Sciences Bulletin, 52(1):5-8.
23. Eary, L.E., and L.M. Cathles, 1983, The Kinetics of Uranium Dioxide Dissolution in Acidic Hydrogen Peroxide Solutions, Metallurgical Transactions, 14B:10.
24. Cathles, L.M., A. L. Guber, T. C. Lenagh, and F. O. Dudas, 1983, Kuroko Type Massive Sulfide Deposits: Products of an Aborted Island Arc Rift, Economic Geology, Monograph. #5:96-114.
25. Cathles, L.M., 1983, An Analysis of the Hydrothermal System Responsible for Massive Sulfide Deposition in the Hokuroku Basin of Japan, Econ. Geol., Monograph. #5:439-487.
26. Cathles, L.M., and A. T. Smith, 1983, Thermal Constraints on the Formation of Mississippi Valley Type Lead-Zinc Deposits and Their Implications for Episodic Basin Dewatering and Deposit Genesis, Econ. Geol., 78:983-1002.
27. Fehn, U., K. E. Green, R.P. Von Herzen, and L.M. Cathles, 1983, Numerical Models for the Hydrothermal Field at the Galapagos Spreading Center, Journal of Geophysical Research, 88(B2):1033-1048.
28. Fjeldskaar, W., and L.M. Cathles, 1984, Measurement Requirements for Glacial Uplift Detection of Non-Adiabatic Density Gradients in the Mantle, Journal of Geophysical Research, Vol. 89(B12):10115-10124.
29. Eary, L.E., H. L. Barnes, and L.M. Cathles, 1986, Acidic Rate- and Flow-Controlled Dissolution of Uranite Ores, Metall. Trans., 17B:405-413.
30. Fehn, U., and L.M. Cathles, 1986, The Influence of Plate Movement on the Evolution of Hydrothermal Convection Cells in the Ocean Crust, Tectonophysics, 125:289-312.
31. Cathles, L.M., 1986, The Geologic Solubility of Gold from 200-350°C, and its Implications for gold-base metal ratios in vein and stratiform deposits, Canada Inst. Mining and Met., Sp. Vol. 38:187-208.
32. Cathles, L.M., 1987, A Simple Analytical Method for Calculating Temperature Perturbations in a Basin Caused by Flow of Water Through Thin, Shallow-Dipping Aquifers, Applied Geochemistry, 2:649-655.
33. Cathles, L.M., 1990, Scales and Effects of Fluid Flow in the Upper Crust, Science, 248:323-229.
34. Cathles, L.M., M. Schoell, R. Simon, 1990, CO₂ Generation During Steam Flooding: A Geologically-Based Kinetic Model That Includes Carbon Isotope Effects and Application to High Temperature Steamfloods, SPE Reservoir Eng., Nov., 524-530.
35. Cathles, L.M., and Nunns, A.G., 1991, Geological Note: A temperature probe survey on the Louisiana Shelf: Effects of bottom-water temperature variations, Am. Assoc. Petrol. Geol. Bull., 75(1):180-186.
36. Cathles, L.M., and Hallam, A., 1991, Stress induced changes in plate density, Vail sequences, epeirogeny, and short-lived global sea level fluctuations, Tectonics, 10: 659-671.
37. Cathles, L.M., 1991, The importance of vein selvaging in controlling the intensity and character of subsurface alteration in Hydrothermal systems, Econ. Geol., 86:466-471.
38. Fjeldskaar, W. and Cathles, L.M., 1991, The present rate of uplift of Fennoscandia implies a low-viscosity asthenosphere, Terra Nova, 3:393-400.
39. Anderson, R.N., L.M. Cathles, and H.R. Nelson, Jr., 1991, 'Data Cube' depicting fluid flow history in Gulf Coast sediments, Oil & Gas Journal, Nov. 4, 1991.
40. Fjeldskaar, W. and Cathles, L., Rheology of mantle and lithosphere inferred from post-glacial uplift in Fennoscandia in Sabadini, R. et al., eds., Glacial isostasy, sea-level and mantle rheology, Kluwer Academic Pub., Netherlands, 1991, 1-19

41. Cathles, L.M., 1992, Some simple models of chemical alteration caused by the movement of metamorphic fluids in the deeper parts of the crust, Earth Science Reviews, 32:133-135
42. Cathles, L.M., and Shea, M., 1992, Near-field high temperature transport: Evidence from the genesis of the Osamu Utsumi Uranium Mine Pocos de Caldas Alkaline Complex, Brazil, Journal of Geochemical Exploration, 45:565-603
43. Jowett, E.C., Cathles, L.M., and Davis, B.W., 1993, Predicting depths of gypsum dehydration in evaporitic sedimentary basins, Amer. Asso. Petrol. Geol. Bull., 77(3):402-413
44. Cathles, L.M., Oszczepalski, S., and Jowett, E.C., 1993, Mass balance evaluation of the late diagenetic hypothesis for Kupferschiefer CU Mineralization in the Lubin Basin of SW Poland, Econ. Geol., v. 88(4):948-956
46. Cathles, L.M., 1993, Oxygen isotope alteration in the Noranda Mining District, Abitibi greenstone belt, Quebec, Canada, Econ. Geol., 88(6):1483-1512
47. Cathles, L. M., 1993, Personal perspectives from attempts to model the industrial scale leaching of copper-bearing mine waste, in The Environmental Geochemistry of Sulfide Oxidation, Amer. Chem. Soc. Symposium Series, v. 550
48. Cathles, L.M., 1993, A discussion of flow mechanisms responsible for alteration and Mineralization in the Cambrian aquifers at the Ouachita-Arkoma Basin-Ozark System, in Horbury, AD and A.G. Robinson, eds., Diagenesis and Basin Development, Amer. Assoc. Petrol. Geol. Studies in Geology, #36.
49. Cathles, L.M., 1993, A capless 350° flow zone model to explain megaplumes, salinity variations, and high temperature veins in ridge axis hydrothermal systems, Econ. Geol., 88(8):1977-1988.
50. Eisenlohr, B.K., Tompkins, L.A., Cathles, L.M., et al., 1994, Mississippi Valley-type deposits: Products of brine expulsion by eustatically induced hydrocarbon generation? An example from northwestern Australia, Geology, 22:315-318.
51. Hunt, J.M., Whelan, J.K., Eglinton, LB, and Cathles, L.M., 1994, Gas Generation -a major cause of deep Gulf Coast overpressures, Oil & Gas Jour., July 18: 59-63.
52. Luo, M. Wood, JR., and Cathles, L.M., 1994, Prediction of thermal conductivity in reservoir rocks using fabric theory, Jour. of Appl. Geophys., 32:321-334.
53. Whelan, J. K., Eglinton, L. B., and Cathles, L. M., 1994, Pressure seals- interactions with organic matter, experimental observations and relation to a "hydrothermal plugging" hypothesis for pressure seal formation, in Basin Compartments and Seals, P. J. Ortoleva, Ed., AAPG Memoir 61, p. 97-117.
54. Roberts, S. J., Nunn, J. A., Cathles, L. M., and Cipriani, F. D., 1996, Expulsion of abnormally pressured fluids along faults, Journal of Geophysical Research, 101, p. 28231-28252.
55. Cathles, L. M. and W. Fjeldskaar (1997), The influence of mantle viscosity from an inversion of the Fennoscandian relaxation spectrum- Comment, Geophysical Journal International, 128(2), p. 489-492.
56. Cathles, L. M., Erendi, A. H. J., and Barrie, T., 1997, How long can a hydrothermal system be sustained by a single intrusive event? Economic Geology, 92, p.766-771.
57. Cathles, L. M., 1997, Thermal aspects of ore formation, in Barnes, H. L., Ed., Geochemistry of Hydrothermal Ore Deposits, John Wiley, New York, p. 191-227.
58. Stein, H. J. and Cathles, L. M., 1997, A special issue on the timing and duration of hydrothermal events, Preface, Economic Geology, v. 92, p.763-765.
59. Revil, A., Cathles, L. M., Shosa, J. D., Pezard, P. A., and Larouziere, F. D., 1998, Capillary sealing in sedimentary basins: A clear field example, Geophysical Research Letters, 25, p389-392.
60. Hunt, J.M., Whelan, J.K., Eglinton, LB, and Cathles, L.M., 1998, Relation of shale porosities, gas generation, and compaction in the U.S. Gulf Coast, in Law, B. E., G. F. Ulmishek, and V. I. Slavin, eds., Abnormal pressures in hydrocarbon environments: AAPG Memoir 70, p87-104.
61. Revil, A., Cathles, L. M., Losh, S., and Nunn, J. A., 1998, Electrical conductivity in shaly sands with geophysical application, Journal of Geophysical Research, v. 103, p. 23,925-23,936.
62. Meulbroek, P., Cathles, L. M., and Whelan, J., 1998, Phase fractionation in South Eugene Island Block 330, Organic Geochemistry, 29, p. 223-239.
63. Schoell, M. and Cathles, L. M., 1998, High CO2 in natural gases as a late stage high temperature component in the evolution of petroleum systems. Book of (Extended) Abstracts, 215th ACS National Meeting, Dallas.

64. Revil, A., Schwaiger, H., Cathles, L. M., and Manhardt, P. D., 1999, Streaming potential in porous media. 2. Theory and Application to Geothermal Systems, Journal of Geophysical Research, v. 104, p. 20,033-20,048.
65. Revil, A. , and Cathles, L. M., 1999, Permeability of shaley sands, Water Resources Research, **35(3)**, p. 651-662
66. Barrie, C. T., L. M. Cathles, et al., 1999, Heat and fluid flow in volcanic-associated massive sulfide-forming hydrothermal systems: Volcanic-associated massive sulfide deposits; processes and examples in modern and ancient settings Reviews in Economic Geology, v. 8, p. 201-219.
67. Barrie, C. T., Cathles, L. M., and Erendi, A. E. 1999, Finite element, heat flow and fluid flow computer simulations for a deep ultramafic sill model for the giant Kidd Creek VMS deposit, Abitibi Subprovince, Canada: In Economic Geology Monograph 10, "The Giant Kidd Creek Volcanogenic Massive Sulfide Deposit, Western Abitibi Subprovince, Canada", Hannington, M. D., and Barrie, C. T., eds., p. 201-219
68. Barrie, T., Erendi, A., and Cathles, L. M., 2001, Paleo-seafloor volcanic-associated massive sulfide mineralization related to a cooling komatiite flow, Abitibi subprovince, Economic Geology, **96**, p. 1695-1700.
69. Cathles, L. M., 2001, Capillary seals as a cause of pressure compartmentation in sedimentary basins: Petroleum Systems of Deep-Water Basins: Global and Gulf of Mexico Experience, Houston, Texas, GCSSEPM, p. 561-571.
70. Shosa, J. D. and L. M. Cathles, 2001, Experimental investigation of capillary blockage of two phase flow in layered porous media: Petroleum Systems of Deep-Water Basins: Global and Gulf of Mexico Experience, Houston, Texas, GCSSEPM, p. 721-740.
71. Revil, A. and L. M. Cathles, 2001, The porosity-depth pattern defined by 40 wells in Eugene Island South Addition, Block 330 Area, and its relation to pore pressure, fluid leakage, and seal migration: Petroleum Systems of Deep-Water Basins: Global and Gulf of Mexico Experience, Houston, Texas, GCSSEPM, p. 687-712.
72. Erendi, A. and L. M. Cathles, 2001, Gas capillary inhibition to oil production: Petroleum Systems of Deep-Water Basins: Global and Gulf of Mexico Experience, Houston, Texas, GCSSEPM, p. 607-618.
73. Sassen, R., Losh, S., Cathles, L., Roberts, H., Whelan, J., Milkov, A., Sweet, S., DeFreitas, B., 2001, Massive vein-filling gas hydrate: relation to ongoing gas migration from the deep subsurface in the Gulf of Mexico; Mar. Petrol. Geol., **V. 18**, p. 551-560
74. Losh, S. D., Cathles, L. M., Meulbroek, P., 2002, Gas washing of oil along a regional transect, offshore Louisiana: Organic Geochemistry, v. 33, p. 655-663.
75. Losh, S., L. Walter, Martini, A., Meulbroek, P., Cathles, L. M., Whelan, J., 2002, Reservoir fluids and their migration into the South Eugene Island Block 330 reservoirs, offshore Louisiana: AAPG Bulletin, v. 86, p. 1463-1488.
76. A. Revil and L. M. Cathles III, 2002, Fluid transport by solitary waves along growing faults. A field example from the South Eugene Island basin, Gulf of Mexico, EPSL, **202**, 321-335.
77. Barrie, C. T., L. M. Cathles, et al., Eds., 2002, Finite element heat and fluid-flow computer simulations of a deep ultramafic sill model for the giant Kidd Creek volcanic-associated massive sulfide deposit, Abitibi Subprovince, Canada, Economic Geology Publishing Co., Lancaster, PA, 529-540 p.
78. Cathles, L. M., 2002, Executive summary, Volume I in Cathles, L. M., Ed., Seal control of hydrocarbon migration and its physical and chemical consequences, Gas Research Institute Report GRI-03/0065, 29p.
79. Cathles, L. M., Wizevich, M., and Losh, S. L., 2002, Geology, Geophysics, Geochemistry and GoCAD data base, Volume II in Cathles, L. M., Ed., Seal control of hydrocarbon migration and its physical and chemical consequences, Gas Research Institute Report GRI-03/0065, 51p.
80. Losh, S. L. and Cathles, L. M., Gas washing of oil and its consequences, 2002, Volume IV in Cathles, L. M., Ed., Seal control of hydrocarbon migration and its physical and chemical consequences, Gas Research Institute Report GRI-03/0065, 74p.
81. Cathles, L. M., and Losh, S. L., 2002, A modeling analysis of the hydrocarbon chemistry and gas washing, hydrocarbon fluxes, and reservoir filling, Volume V in Cathles, L. M., Ed., Seal control of hydrocarbon migration and its physical and chemical consequences, Gas Research Institute Report GRI-03/0065, 63p.
82. Cathles, L. M. and Shosa, J. D., 2002, A theoretical analysis of the inorganic alteration by flow of brine through seals, Volume VI in Cathles, L. M., Ed., Seal control of hydrocarbon migration and its physical and chemical consequences, Gas Research Institute Report GRI-03/0065, 69p.
83. Cathles, L. M., 2003, Gas: A messenger form subsurface resources, GasTIPS, **9(2)**, p. 25-27.

84. Cornelius, R. R., Cathles, L. M., and Erendi, A., 2003, An automated method for inferring 3-D salt movement from the suprasalt sedimentation pattern, in S. J. Duppenbecker and R. W. Marzi eds., *Multidimensional basin modeling*, *AAPG Discovery Series*, 7, p. 197-216.
85. Cathles, L. M., Colling, E. L., Erendi, A., Wach, G. D., Hoffman, M. W., Manhardt, P. D., 2003, 3D flow modeling in complex fault networks; illustration of new methods with an exploration application in offshore Nigeria, in S. J. Duppenbecker and R. W. Marzi eds., *Multidimensional basin modeling*, *AAPG Discovery Series*, 7, p. 177-195.
86. Cathles, L. M., Cherkasov, S. V., Vishnevskaya, N. A., 2003, Convective modeling based on geophysical imaging of deep crustal intrusions- A new foundation for mineral exploration?, *Global Tectonics and Metallogeny*, v. 8, p 1-4.
87. Chen, D. and Cathles, L.M., 2003, A kinetic model that predicts the pattern and amounts of hydrate precipitated beneath the Bush Hill vent site, Green Canyon Block 185, Gulf of Mexico: *Jour. Geophys. Res.*, v. 108 (B1), 14p.
88. Chen, D. F., Cathles, L. M. and Roberts, H. H., 2003, The chemical signatures of variable gas venting at hydrate sites, *Mar. Pet. Geol.*, v. 21, p 317-326.
89. Hannington, M. D., Santaguida, F., Kjarsgaard, I. M., Cathles, L. M., 2003, Regional-scale hydrothermal alteration in the Central Blake River Group, western Abitibi subprovince, Canada: implications for VMS prospectivity, *Mineralium Deposita*, v. 38, p. 393-422.
90. Cathles, L. M. and Chen, D. F., 2004, A compositional kinetic model of hydrate crystallization and dissolution, *J. Geophys. Res.*, v. 109, B08102, doi:10.1029/2003JB002910, 10 p.
91. Cathles, L. M., 2004, Hydrocarbon generation, migration, and venting in a portion of the offshore Louisiana Gulf of Mexico Basin, *The Leading Edge*, August, 7 p.
92. Meulbroek, P., Cathles, L.M. and Goddard, W. A. (2004) , in J. M. Cubitt, W. A. England, and S. R. Larter eds. *Understanding petroleum reservoirs; towards an integrated reservoir engineering geochemical approach*, Geological Society Special Publications, 237, p 89-98.
93. Chen, D., F., and Cathles, L. M., 2005, On the thermal impact of gas venting and hydrocarbon crystallization, *J. Geophys. Res.*, v. 110, B11204, doi:1029/204/JB003533, 13p.
94. Chen, D. F., Y. Y. Huang, X. L. Yuan, L. M. Cathles , 2005, Seep carbonates and preserved methane oxidizing and sulfate reducing bacteria fossils suggest recent gas venting on the seafloor in the northeastern South China Sea, *Marine and Petroleum Geology* 22(5), p. 613-621.
95. Chen, Duofu, Dong, F., Chen, G, Chen, X, and Cathles, L.M. (2005) Evolution of a marine gas venting system and its impact on gas hydrate crystallization, *Acta Sedimentologica Sinica*, 23(2), p. 323-328.
96. Whelan, J., L. Eglinton, L. Cathles, S. Losh, and H. Roberts, 2005, Surface and subsurface manifestation of gas movement through a N-S transect of the Gulf of Mexico, *Marine and Petroleum Geology*, 22(4), p. 479-497.
97. 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 Anniv. Vol., p. 77-110.
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3. Francis Mulcahy, 2010-11, Inter-diffusion of CO₂ and CH₄ in a Hele Shaw cell
4. Mussadiq Akram Arain, 2010-11, Nanoparticle surfactancy
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Recent Undergraduate Students Supervised:

1. Travis Duran, Applied physics project, 2012-2013, capillary blockage experiments
2. Tim Gao, Applied Physics undergrad thesis, 2012, streamline modeling
3. Dan Katz, 2010-2011, EAS undergrad thesis, Adsorption of gases on shale
4. Sonja Gabrielsen, 2009-2011, research assistant, Sea level changes and glacial rebound

Recent Committee Memberships:

1. Melissa Rice, -2012 , Space Sciences Ph.D., Sulfate and silica alteration on Mars
2. Adrian Harpold, -2009, BEE Ph.D., Runoff flowpaths in Catskill Mts.
3. Seifu A. Tilahun, -2009, BEE MS
4. Katherine Meek, -2014, EAS MS
5. Laura Sinton, ChemE Ph.D.-2018

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Recent Teaching:

1. EAS 4010/5010 Energy and Mineral Resources of the Earth, Fall
2. EAS 6920/BEE6940 Special Topics Section 202: Multicomponent Tracer Methods (Fall 2014)
3. EAS 6920 Special Topics Section 202: Fluid Rock Interaction (Spring 2014)
4. EAS 7970 Multiphase subsurface fluid flow and geochemical modeling, Spring
5. CHEME 6665 Geological carbon sequestration, two lectures plus attendance, new, Spring
6. CHEME 6666 Unconventional natural gas development from shale formations, two lectures plus attendance, new Spring
7. EAS/BEE 4710 Introduction to ground water hydrology, spring alternate years, with Walters and Steenhuis
8. EAS 7990/BEE 7710 Hydrology Seminar
9. EAS 5050 Fluid dynamics in the earth sciences, spring alternate years, with Mark Wysocki

Patents and Disclosures:

1. Cathles, L.M. and R.A. Hard, Method of Explosive Fracturing of a Formation at Depth. (patent)
2. Cathles, L.M., P.J. Lingane, and L. Hsueh, Acid Preinjection as Part of a Solution (patent)
3. Cathles, L. M., Archer, L., and Giannelis, E. P., Using nanoparticles to characterize and manage subsurface fluid flow (disclosure)
4. Cathles, L. M., Measuring the CO₂ storage potential of shale (disclosure)
5. Zhou, Y., and Yao, C., A nanoparticle method for evaluating flow remediation in heterogeneous laboratory columns (Provisional Patent filed 2014).