

Philip Charles Bennett  
Professor  
Dept. of Geological Sciences,  
1 University Station, C-1100, The University of Texas  
Austin, TX 78712-0254 512-471-3587  
[pbennett@mail.utexas.edu](mailto:pbennett@mail.utexas.edu); [www.geo.utexas.edu](http://www.geo.utexas.edu).

---

**FIELDS OF SPECIALIZATION:**

Geomicrobiology, aqueous geochemistry, geochemical kinetics, hydrogeology.

**EDUCATION:**

Ph.D. (1989) Syracuse University, Syracuse NY; Geology/Aqueous Geochemistry  
M.S. (1985) State University of New York, Syracuse NY; Environmental Science  
B.S. (1981) The Evergreen State College, Olympia WA; (Environmental Chemistry)

**PROFESSIONAL EXPERIENCE:**

Associate Dean (Academic Affairs), University of Texas at Austin, Jackson School of  
Geosciences (9/2009 to 2013)

Professor, University of Texas at Austin, Dept. of Geological Sciences (9/2000 to present).

Full-time (with tenure) teaching and research appointment, holding the Jackson Centennial  
Teaching Fellowship. 9/94-9/2000 Associate Professor; 1/89 – 9/94 Assistant Professor.

Research Collaborator, University of California, Los Alamos National Laboratory (1990-1996).

Research on mineral surface chemistry with CST division.

Firefighter/Medic: (1978-2001). Highest rank: District Chief, Travis Co ESD#4.

**AWARDS AND HONORS:**

National Ground Water Association *Henry Darcy Distinguished Lecturer*, 1997

Houston Oil and Minerals Faculty Excellence Award 1994

Syracuse University Graduate School Marshall, 1989

**PROFESSIONAL AFFILIATIONS:**

State of Texas Licensed Professional Geologist #2789

American Society for Microbiology, Member

Geological Society of America, Fellow;

American Geophysical Union, Member; NGWA AGWSE, Member

International Association of Hydrogeologists. Council Member: 2000-2004

Intl. Symp. Env. Biogeochemistry. Board Member: 2000-present, Council member, 2007-

**PEER REVIEWED PUBLICATIONS (SELECTED FROM MORE THAN 80 TOTAL)**

***In Print/Press:***

Jones, A.A. and **Bennett, P.C. (2016)** Revealing hidden diversity: investigating the impact of minerals  
on biofilm community structure and diversity. **Revised manuscript Accepted** *Frontiers in  
Microbiology*.

Franks, M., Omelon, C., Engel, A.S., and **Bennett, P.C. (2016)** Thermophilic archaeal diversity and  
methanogenesis from El Tatio Geyser Field, Chile. **Revised manuscript Accepted**  
*Geomicrobiology J.*

- Warden, J.G., Casaburi, G., Omelon, C.R., **Bennett, P.C.**, Breecker, D.O., and Foster, J.S. (2016). Characterization of microbial mat microbiomes in the modern thrombolite ecosystem of Lake Clifton, Western Australia. *Frontiers in Microbiology* <http://dx.doi.org/10.3389/fmicb.2016.01064>
- Gilbert, K., Bennett, P.C., Wolfe, W., Zhang, T and Katherine D. Romanak, K.D. (2016) CO<sub>2</sub> solubility in aqueous solutions containing Na<sup>+</sup>, Ca<sup>2+</sup>, Cl<sup>-</sup>, SO<sub>4</sub><sup>2-</sup> and HCO<sub>3</sub><sup>-</sup>: the effects of electrostricted water and ion hydration thermodynamics. *Applied Geochemistry* 67, 59-67. <http://dx.doi.org/10.1016/j.apgeochem.2016.02.002>
- Kirk, M.F., Altman, S., Santillan, E.F.U., **Bennett, P.C.** (2016) Interplay between Microorganisms and Geochemistry in Geological Carbon Storage International Journal of Greenhouse Gas Control **In Press**. *Journal of Greenhouse Gas Control* 11, 133-140.
- Santillan, E.F., Shanahan, T. Omelon, C., Major, J., and **Bennett, P.C.** (2015) Isolation and characterization of a CO<sub>2</sub>-tolerant Lactobacillus strain from Crystal Geyser, Utah, U.S.A., *Frontiers in Earth Science: Biogeosciences* 3, article 41. <http://dx.doi.org/10.3389/feart.2015.00041>
- Cardenas, M.B., **P.C. Bennett**, Zamora, P.B., Befus, K.M., Rodolfo, R.S., Cabria, H.B. and Lapus, M.R. (2015) Devastation of aquifers from tsunami-like storm surge by Supertyphoon Haiyan. *Geophysical Research Letters* 42, 8, 2844–2851.
- Jones, A.A. and **Bennett, P.C.** (2014) Mineral microniches control the diversity of subsurface microbial populations. *Geomicrobiology Journal* 31 (3), 246-261
- Crystal Ng, G.H., Bekins, B.A., Cozzarelli, I.M., Baedeker, M.J., **Bennett, P.C.**, Amos, R.T. (2014) A mass balance approach to investigating geochemical controls on secondary water quality impacts at a crude oil spill site near Bemidji, MN. *J. Contaminant Hydrology*, 164, 1-15
- Bennett, P.C.**, El-Shishtawy, A., Sharp, J.M. and Atwia, M. (2014) Sources and pathways of manganese in the central Nile Delta, Egypt. *Journal of African Earth Sciences*, 96, 8-20
- Santillan, E.U. Altmann, S., Kirk, M. and **Bennett, P.C.** (2013) Mineral influence on Microbial Survival During Carbon Sequestration. *Geomicrobiology Journal*. 30, 7, 578-592.
- K. D. Romanak, **P. C. Bennett**, C. Yang, S.D. Hovorka (2012) Process-Based Approach to Soil Gas Monitoring at Geologic Carbon Storage Sites. *Geophysical Research Letters*. 39. 15, DOI: 10.1029/2012GL052426
- Bennett, P.C.** and Omelon, C. (2010) Microbial Geochemistry, in (Parker, A. and Russell, H. Eds) *Contribution of Geochemistry to the Study of the Planet*. Wiley-Blackwell.
- Linhoff, B. **Bennett, P.C.** Puntsag, T., and Gerel, O. (IN PRESS) Geochemical Evolution of Uraniferous Soda Lakes in Eastern Mongolia. *Environmental Earth Science*.
- Steinhauer, E.S., Omelon, C. and **Bennett, P.C.** (IN PRESS) Kinetics of microbial corrosion of limestone by sulfuric acid speleogenesis. *Geomicrobiology J.*
- Landrum, J.T., **Bennett, P.C.**, Engel, A.S., Pasten, P. Alseno, M. and Milliken, K. (2009) Partitioning geochemistry of Arsenic and Antimony, El Tatio Geyser Field, Chile. *Applied Geochemistry* 24, 664-676. DOI: 10.1016/j.apgeochem.2008.12.024.

- Yoon, D.W., Gross, D.E., Lynch, V.M., Lee, C.H., **Bennett, P.C.** and Sessler, J.L. (2009) Real-time determination of chloride anion concentration in aqueous-DMSO using a pyrrole-strapped calixpyrrole anion receptor. *Chem. Commun.*, DOI: 10.1039/b818077f.
- Bennett, P.C.** and Engel, A.S. (2007) Microbial Sulfur Cycling in a Sulfidic Cave. (2007) *Proceedings of the Twelfth International Symposium on Water-Rock Interaction WRI-12.* (T. Bullen and Y. Wang, Eds) Taylor and Francis Group. p. 853-857.
- Landrum, J.T, **Bennett, P.C.**, Alsina, M.A. & Pastén, P.A. (2007) Biogeochemical controls on arsenic: El Tatio Geyser Field, Chile. *Proceedings of the Twelfth International Symposium on Water-Rock Interaction WRI-12.* (T. Bullen and Y. Wang, Eds) Taylor and Francis Group. p. 875-879.
- Bennett, P.C.**, Engel, A.S., Roberts, J.A. (2007) Counting and imaging bacteria on mineral surfaces. *Clay Mineral Society Workshop Proceedings.*
- Committee on Research Priorities for Earth Science and Public Health (Skinner, C.H. Chair; **Bennett, P.C.**, and others) (2007) Earth Materials and Health, Research Priorities for Earth Science and Public Health. Board on Earth Sciences and Resources, National Research Council.
- Phoenix, V.R., **Bennett, P.C.**, Engel, A.S., Tyler, S.W., Ferris, F.G. (2006) Chilean high-altitude hot spring sinters: a model system for UV screening mechanisms by early Precambrian cyanobacteria. *Geobiology*. 4, p. 15-28
- Bennett, P.C.** and Engel, A.S. (2005) Role of Microorganisms in Karstification. In Microorganisms and Earth Systems: Advances in Geomicrobiology (GM Gadd, KT Semple, and HM Lappin-Scott, eds). p. 345-364, Society for General Microbiology.
- Engel, A.S., Porter, M.L., Stern, L.A. Quinlan, S. and **Bennett, P.C.** (2004) Bacterial diversity and ecosystem functionality of filamentous microbial mats dominated by “Epsilonproteobacteria” associated with aphotic (cave) sulfidic springs. *FEMS Microbiology Ecology*. 51, 31-53.
- Engel, A.S., Stern, L.A. and **Bennett, P.C.** (2004) Microbial contributions to cave formation: New insights into sulfuric acid speleogenesis. *Geology* 32, 369-372.
- Roberts, J.A. **Bennett, P.C.**, Gonzalez, L.A., Macpherson, G.L., Milliken, K.L. (2004) Microbial precipitation of dolomite in methanogenic groundwater *Geology*, 32, 277-280.
- Rogers, J.R. and **Bennett, P.C.** (2004) Mineral stimulation of subsurface microorganisms: Release of limiting nutrients from silicates. *Chemical Geology* 203, 91-108
- Engel, A.S., Lee, N., Porter, M.L., Stern, L., **Bennett, P.C.**, Wagner, M. (2003) Filamentous “Epsilonproteobacteria” dominate microbial mats from sulfidic cave springs. *Applied and Environmental Microbiology* 69, 5503-5511.
- Dutton, A.R., Hovorka, S.D., **Bennett, P.C.** (2002) Effect of Pleistocene depositional heterogeneity on movement of a subsurface crude-oil spill, San Patricio County, south Texas. *Gulf Coast Association of Geological Societies Transactions*, 52, 207-215.
- Stern, L.A., Engel, A.S. **Bennett, P.C.**, Porter, M. (2002) Subaqueous and subaerial speleogenesis in a sulfidic cave. *Karst Waters Institute Special Publication* 7, 89-91.
- Zimmerman, M D., **Bennett, P.C.**, Sharp, J.M. Jr. and Choi, W.C. (2002) Experimental Determination of Sorption in Fractured Flow Systems. *J. Contaminant Hydrol.*, 58, 51-77.

- Rogers, J.R., **Bennett**, P.C. and Choi, W.J. (2001) Enhanced weathering of silicates by subsurface microorganisms: a strategy to release limiting inorganic nutrients? *Proceedings of the tenth international symposium on water-rock interaction WRI-10*, 1461-1464.
- Bennett**, P.C., Rogers, J.A., Hiebert, F.K., and Choi, W.J. (2001) Silicates, silicate weathering, and microbial ecology. *Geomicrobiology Journal*, 18, 3-19
- Bennett**, P.C., Hiebert, F.K., Rogers, J.A. (2000) Microbial control of mineral-groundwater equilibria: Macroscale to microscale. *Hydrogeology Journal*, 8, 47-62.
- Fryar, A.E., Macko, S.A., Mullican, W.F., Romanak, K.D., **Bennett**, P.C. (2000) Nitrate reduction during ground-water recharge, Southern High Plains, Texas. *J. Contaminant Hydrology* 40, 335-363
- Bennett**, P.C. and Rogers, J.R. (1999) The mineralogy of microbial ecology. In *Groundwater: Past Achievements and Future Challenges* (O. Sililo, ed). International Association of Hydrogeologists.
- Bennett**, P.C., Rogers, J.R., Hiebert, J.K. and Choi, W.J. (1999) Mineralogy and mineral weathering: Fundamental components of subsurface microbial ecology. *USGS Water Resources Investigation 99-4018C*. 169-176.
- Rogers, J. R., P. C. **Bennett**, and F. K. Hiebert. 1999. Patterns of microbial colonization on silicates. *USGS Water Resources Investigation 99-4018C*. 237-242.
- Mahler, B.J., Lynch, F.L. and **Bennett**, P.C. (1999) Mobile Sediment in an Urbanizing Karst Aquifer: Implications for Contaminant Transport. *Environmental Geology* 39, 25-38.
- Rogers, J.R., **Bennett**, P.C., and Choi, W.J. (1998) Feldspars as a source of nutrients for microorganisms. *American Mineralogist*, 83, 1532-1540.
- Nicot, J.P., **Bennett**, P.C., Romanak, K.D. (1998) Gas Phase Dynamics of Playa-Wetlands. *J. Environmental Engineering*. 124, 1038-1046.
- Mahler, B.J., Winkler, M., **Bennett**, P.C., Hillis, D.M. (1998) DNA-Labeled Clay: A Sensitive New Method for Tracing Particle Transport. *Geology* 26, 831-834.
- Mahler, B.J., **Bennett**, P.C., and Zimmerman, M. (1998) Lanthanide clays for use in characterizing sediment transport. *Groundwater* 36, 835-843.
- Lee, R. and **Bennett**, P.C. (1998) Reductive dissolution and solute transport in a sewage contaminated glacial outwash aquifer. *Groundwater* 36, 583-595.
- Glaser, P., **Bennett**, P.C., and Siegel, D.I. and E.A. Romanowicz (1996) Paleo-reversals in ground water flow and peatland development at Lost River, MN, *Holocene* 6, 413-421.
- Bennett**, P.C. Hiebert, F.K. and Choi, W.J. (1996) Rates of Microbial Weathering of Silicates in Ground Water. *Chemical Geology*, 132, 45-53.
- Bennett** P.C. and Casey, W.H. (1993) Organic acids and the dissolution of silicates, in *The role of organic acids in geological processes*. (Pittman, E.D. and Lewan, M. eds.) Springer.
- Bennett**, P.C. and Council, T. (1993) The geochemistry of ikaite formation at Mono Lake, California: Implications for the origin of tufa mounds. *Geology*, 21, p. 971-974.
- Bennett** P.C., Siegel D.I., Baedeker M.J., Cozzarelli I. and Hult M. (1993) The fate of crude oil in a sand and gravel aquifer I. Inorganic geochemistry. *Applied Geochemistry*, 8, 529-549.

- Baedecker M.J., Cozzarelli I., **Bennett** P.C. and Siegel D.I. (1993) The fate of crude oil in a sand and gravel aquifer III. Geochemical processes. *Applied Geochemistry*, 8, 569-586.
- Hiebert, F. and **Bennett** P.C. (1992) Microbial control of silicate weathering in organic-rich ground water. *Science*, 258, 278-281.
- Bennett**, P.C. and Hiebert, F.K. (1992) Microbial mediation of silicate diagenesis in organic-rich waters. In *Proceedings of the 7th Internat. Symp. on Water Rock Interaction, Park City, Utah* (Y. Kharaka, ed.), A.A. Balkema, p. 267-271.
- Bennett** P.C. (1991) The chemistry of silica-organic complexation in a petroleum-contaminated aquifer. *USGS Water-Resources Investigation Report 91-4720*, p. 638-640.
- Bennett** P.C. (1991) Quartz dissolution in organic-rich aqueous systems. *Geochimica et Cosmochimica Acta*, 55, 1781-1797.
- Bennett** P.C., Siegel D.I., Hill B. and Glaser, P. (1991) The fate of silicate minerals in a peat bog. *Geology* 19, 328-331.
- Siegel, D.I., Stoner, D.W., Byrnes, T.R. and **Bennett**, P.C. (1990) A geochemical process approach to identify inorganic and organic ground water contamination. *GW Management*, 2, 1291-1306.
- Bennett**, P., Melcer, M., Siegel, D.I. and Hassett, J. (1988) The dissolution and solubility of quartz in dilute aqueous solutions of organic acids at 25°C. *Geochim. et Cosmochim. Acta*, 52, 1521-1530.
- Bennett**, P.C. 1989. Silica mobility in a petroleum-contaminated aquifer. U.S. Geological Survey, *Water-Resources Investigations Report 88-4220*, p. 5-12.
- Bennett**, P. and Siegel, D.I. (1987). Increased solubility of quartz in water due to complexation by dissolved organic compounds. *Nature*, 326, 684-687.
- Bennett**, P.C., Siegel, D.I. (1989) Silica-organic complexes and enhanced quartz dissolution in water by organic acids. in *Proceedings of the 6th Inter. Symp. on Water Rock Interaction, Malvern, UK* (D.L. Miles, ed.), 69-72.

#### **1997 HENRY DARCY DISTINGUISHED LECTURESHIP**

The Henry Darcy Distinguished Lecturer is selected annually by the Association of Ground Water Scientists and Engineers of the National Ground Water Association. During 1997, I was invited by 70+ academic and research institutions to present the lecture *Water, Microbes, and Rocks: The Geochemical Ecology of Contaminated Ground Water*. I visited 52 of these locations in the U.S., Canada, Australia, Germany, England and Ireland.

#### **GRADUATE COURSES TAUGHT**

- Geomicrobiology
- Aqueous Geochemistry
- Biogeochemical Kinetics
- Contaminant Organic Geochemistry
- Case Studies in Hydrogeology
- Physical Hydrogeology
- Analytical Geochemistry

#### **UNDERGRADUATE COURSES:**

- Field Methods in Hydrogeology

Chemical Hydrogeology

Physical Geology

Introduction to Physical and Chemical Hydrogeology

Origin and Early Evolution of Life (UT Signature Seminar)