

Curriculum Vita

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Education:

B. S. Geology (honors) University of Rochester 1979
Ph.D. Geology U. C. Davis 1985
Dissertation: Use of Tephra in Altered and Unaltered States to Study Diagenesis

Professional Experience:

ExxonMobil – retired (July 2016-present):

- Adjunct Faculty – Rice University: basin analysis
- Research Collaborator – University of Texas, Austin: petroleum systems

ExxonMobil Upstream Research Company (2008- July 2016):

- Senior Technical Consultant
 - executive level senior scientist – advised corporate management on strategic geoscience issues – ensured appropriate research was performed in support of business objectives
 - advised integrated research/exploration teams in genetic analysis of sedimentary basins and next-generation petroleum systems analysis
 - recognized at the corporate level for expertise across geoscience disciplines and business stages

ExxonMobil Exploration Company (2005-2008):

- Geoscience Recruiting Advisor/Supervisor
 - primary responsibility for hiring global geoscience candidates; advisor for internal technical skills development; developed and taught multiple field training courses for students and employees
 - excellent business and technical grasp of diverse research programs; expert in development of working relationships across multiple disciplines; strong technical depth and breadth

ExxonMobil Upstream Research Company (1985-2004):

- Expert in regional geology and integrated hydrocarbon systems analysis; technical advisor and technical team lead for multiple projects in research and operations
- 2002 - 2004: Technical team lead for New Play Concepts research group:
 - responsible for identifying/stewarding research in basin formation and evolution designed to find and exploit new business/technical opportunities for ExxonMobil
- 2000 - 2002: Member of Upstream Research Technology Transfer group: responsible for ensuring that technology developed at the research lab was effectively used by the operating groups
 - Technical Team Lead for Best Practice project in effective application and transfer of integrated fluid pressure prediction technologies
- 1990 - 2000: Technical team lead and member of Secondary Migration research group:
 - participated in and led integrated hydrocarbon systems analysis studies in multiple sedimentary basins, including West Africa (Nigeria and Angola), Eastern Mediterranean, Andean Sub-thrust, Gulf of Mexico, Central North Sea, Eastern Venezuela, U. S. Western Interior, and the Caspian
 - helped develop and apply new computer modeling technologies for hydrocarbon maturation and migration, and reservoir quality evolution; developed new technologies for analysis and interpretation of aqueous and hydrocarbon-bearing fluid inclusions
- 1985 - 1990: Member and technical team lead for Clastic Diagenesis research group:
 - performed and led integrated studies of clastic reservoir quality evolution; developed and tested new computer modeling tools for fluid flow and fluid-rock interaction

Publications:

- Lawson, M., Formolo, M.J., **Summa, L.** and Eiler, J.M., 2018. Geochemical applications in petroleum systems analysis: new constraints and the power of integration. *Geological Society, London, Special Publications*, 468(1), pp.1-21.
- **Summa, L.**, Keane, C. and Mosher, S., 2017. Meeting Changing Workforce Needs in Geoscience with New Thinking about Undergraduate Education. *GSA Today*, 27(9).

- Becker, T. P., **Summa, L. L.**, Ducea, M. N., and Karner, G. D., 2014, Temporal growth of the Puna Plateau and its bearing on the post-Salta Rift system subsidence of the Andean foreland basin at 25° 30' S, GSA Memoir, 212, p. 407-434.
- **Summa, L. L.**, Becker, T. P., Gray, G. G., and Awwiller, D. N., 2014, Evolving genetic concepts and their influence on hydrocarbon systems predictions, Subandean fold belt and deformed foreland, Argentina, GSA Memoir, 212, p. 435-458.
- May, S. R., Gray, G. G., **Summa, L. L.**, Stewart, N. R., Gehrels, G. E., and Pecha, M. E., 2013, Detrital zircon geochronology from the Bighorn Basin, Wyoming, USA: Implications for tectonostratigraphic evolution and paleogeography, GSA Bulletin, v. 125, p. 1403-1422.
- May, S. R., Gray, G. G., **Summa, L. L.**, Stewart, N. R., Gehrels, G. E., and Pecha, M. E., 2013, Detrital zircon geochronology from Cenomanian-Coniacian strata in the Bighorn Basin, Wyoming USA: Implications for stratigraphic correlation and paleogeography, RMAG, v. 48, p. 41-61.
- Duce, R., Goldstein, A., Glickson, D., Banerjee, S., Curry, W., Friberg, M., Huber, J., Jackson, M., Millheim, K., Mukasa, S., Naish, T., Olsen, P., **Summa, L.**, and Trehu, A., 2011, Scientific Ocean Drilling: Accomplishments and Challenges, National Research Council, National Academies, 146 p.
- **Summa, L. L.**, Goodman, E. D., Richardson, M., Norton, I. O., and Green, A. R., 2003, Hydrocarbon systems of eastern Venezuela: plate through molecular scale-analysis of the genesis and evolution of the Eastern Venezuela Basin, Marine and Petroleum Geology, v. 20. P. 323-349.
- Symington, W. A., Green, K. E., Huang, J., Pottorf, R. J., and **Summa, L. L.**, 1998, A multidisciplinary approach to modelling secondary migration; central North Sea example, In: Duppenbecker, S. J., and Iliffe, J. E., (eds.) Basin modelling; practice and progress, Geological Society Special Publication 141; p. 169-185.
- **Summa, L. L.**, 1995, Diagenesis and reservoir quality prediction, Reviews of Geophysics, 1995 Supplement (U. S. National Report to the IUGG 1991-1994), p. 87-94.
- **Summa, L. L.**, Pottorf, R. J., Schwarzer, T. F., and Harrison, W. J., 1993, Palaeohydrology of the Gulf of Mexico Basin; development of compactional overpressure and timing of hydrocarbon migration relative to cementation. In: Dore, A. G., Augustson, J. H., Hermanrud, C., Stewart, D. J., and Sylta, O. (eds.), Basin modelling; advances and applications; proceedings of the Norwegian Petroleum Society conference. Norwegian Petroleum Society (NPF) Special Publication. 3; p. 641-656.
- Verosub, K. L., and **Summa, L. L.**, 1993, Diagenesis of magnetic minerals in lacustrine environments as determined from unaltered and altered tephra layers. In: Aissaoui-Djafar, M., McNeill, D. F., and Hurley, N. F., (eds.), Applications of paleomagnetism to sedimentary geology. Special Publication - Society of Economic Paleontologists and Mineralogists. 49; p. 29-38.
- **Summa, L. L.**, and Verosub, K. L., 1992, Trace element mobility during early diagenesis of volcanic ash; applications to stratigraphic correlation. In: Westgate, J. A., Walter, R. C., and Naeser, N., (eds.), Tephrochronology; stratigraphic applications of tephra. Quaternary International. 13-14; p 149-157.
- Harrison, W. J., and **Summa, L. L.**, 1991, Paleohydrology of the Gulf of Mexico basin. American Journal of Science. 291; 2, p 109-176.
- **Summa, L. L.**, and Verosub, K. L., 1987, A catalog of North American ashes found in altered and unaltered states for use as a data base in studying tephra diagenesis. Journal of Volcanology and Geothermal Research. 32; 4, p 321-327.

Selected Abstracts and Presentations:

- **Summa, L. L.**, Becker, S., Becker, T., Dreyfus, May, S., and Pottorf, R., 2015, From Source to Seep: New Challenges and Emerging Technologies in Petroleum Systems Analysis, abs., 2015 Goldschmidt conference, Prague (keynote paper).
- **Summa, L. L.**, Awwiller, D. N., Gray, G. G., Powell, W., and Shosa, J., 2013, Advances in Global Petroleum Systems Analysis: New Insights, New Questions, abs., International Petroleum Technology Conference, Beijing China, March 26-28, 2013.
- Gray, G., May, S., **Summa, L.**, and Stewart, B., 2012, A Test of U/Th/Pb detrital zircon ages for determining depositional ages within the Mowry and Frontier Formations, Bighorn Basin, Wyoming, Geological Society of America, Abstract with Programs, v. 44 (7), p. 174.
- **Summa, L.**, and Loudin, M., 2008, The 21st Century Workforce: Global Opportunities and Challenges in the Energy Industry, Geological Society of America, Abstracts with Programs, v. 40 (6), p. 89.

- **Summa, L. L.**, Barboza, S. A., Bohacs, K. M., Mankiewicz, P. J., Neal, J., and Advocate, D., 2006 Issues and approaches for integrated hydrocarbon systems analysis in Tertiary Deltas: what we have learned, Abstracts, 9th Simposio Bolivariano
- **Summa, L. L.**, Barboza, S. A., Bohacs, K. M., Mankiewicz, P. J., Neal, J., and Advocate, D., 2005 Issues and approaches for integrated hydrocarbon systems analysis in Tertiary Deltas: what we have learned, AAPG Distinguished Lecture.
- **Summa, L. L.**, Awwiller, D. N., Fitts, T. G., Pottorf, R. J., and Olgaard, D., 2004, Fluids, Diagenesis and Deformation; invited lecture for 2004 Gordon Conference on Role of Water in Rock Deformation.
- Fitts, T. G., and **Summa, L. L.**, 2002, The relationship of the smectite-illite conversion to pore water salinity trends, deep water offshore Niger Delta, Eos, Transactions, American Geophysical Union.
- Goodman, E. D., **Summa, L. L.**; Richardson, M., Norton, I. O., Green, A. R., 2002, Genetic approach to understanding a complex hydrocarbon system; Caribbean colossus of East Venezuela, AAPG distinguished lectures; AAPG Bulletin. 86, 10, Pages 1848-1849.
- Green, K. E., Huang, J., Pottorf, R. J., **Summa, L. L.**, and Symington, W. A., 1998, Timing and pathways of oil and gas leakage at Puffin structure, central North Sea, In: Fluid flow through faults and fractures in argillaceous formations; proceedings of a joint NEA/ EC workshop, p. 155.
- Awwiller, D. N., and **Summa, L. L.**, 1998, Constraining maximum paleotemperature using quartz cement abundances; applications to the hydrocarbon systems of South American fold and thrust belts, AAPG Bulletin, 82, 10, p. 1888.
- Goodman, E. D., **Summa, L. L.**, Richardson, M., Koch, P. S., Green, A. R., and Norton, I. O., 1998, Structural framework of northern South America and hydrocarbon systems analysis of eastern Venezuela Basin; an integrated approach, AAPG Bulletin, 82, 10, p. 1918-1919.
- Gray, G. G., Pottorf, R. J., **Summa, L. L.**, May, S. R., and Holl, J. E., 1996, Fluid flow and the Cashin Fault, Paradox Basin, Colorado. Geol. Soc. Am., Abstracts with Programs. 28; 7, p. 254.
- Goodman, E. D., Green, A. R., Yurewicz, D. A., Stone, G. C., Walker, P. E., Norton, I. O., Koch, P. S., and **Summa, L. L.**, 1996, Paleogeographic evolution of foldbelts adjacent to petroleum basins of Venezuela and Trinidad. AAPG Bulletin. 80; 8, p. 1297.
- Pottorf, R. J., and **Summa, L. L.**, 1994, Interactions between hydrocarbons, water, and sandstones; implications for reservoir quality and secondary migration timing. Annual Meeting Abstracts - American Association of Petroleum Geologists and Society of Economic Paleontologists and Mineralogists. 1994; p. 237.
- **Summa, L. L.**, Symington, W. A., and Pottorf, R. J., 1994, Recent advances in evaluation of secondary migration; an example from the central North Sea basin. Annual Meeting Abstracts - American Association of Petroleum Geologists and Society of Economic Paleontologists and Mineralogists. 1994, p. 266.
- Verosub, K. L., and **Summa, L. L.**, 1992, Effect of diagenesis on magnetic minerals as determined from unaltered and altered tephra layers. Eos, Transactions, American Geophysical Union. 73; 14, special supplement, p 94.
- Pottorf, R. J., **Summa, L. L.**, Schwarzer, T. F., and Harrison, W. J., 1991, Modeling the interactions of fluids and rocks to predict reservoir quality; applications to the Gulf Coast Frio Formation. AAPG Bulletin. 75; 3, p. 656.
- **Summa, L. L.**, and Verosub, K. L., 1986, Rapid alteration of primary magnetizations in Tertiary and Quaternary tephra from the Western United States. Eos, Transactions, American Geophysical Union. 67; 44, p. 924. .

Service

- National Academy of Sciences Committee on Future Directions for the U.S. Geological Survey's Energy Resources Program -- 2017-2018
- AAPG Education Committee Chair 2013 – 2018
- Organizing Committee, NSF Conference on Future of Undergraduate Education, Jan. 2014 – 2017
- Program Committee, AAPG International Conference, Istanbul, Sept. 2014
- Program Committee, IPTC Beijing, 2013
- Energy Theme Chair, Goldschmidt Conference, 2013
- NSF GeoPrisms Steering Committee 2010 -- 2013

- NRC Panel on Scientific Contributions of the IODP – 2010-2011
- IODP USSAC Panel 2008-2010
- IODP SSEPS Panel 2005-2008
- AAPG Distinguished Lecture committee 2005-2009
- AAPG Education Committee 2005-
- GSA Short Course and Field Course Sponsor/Instructor 2007 – 2015

Awards

- 2005 – AAPG Distinguished Lecturer
- 2006 -- 9th Annual Simposio Bolivariano, Best Paper Award
- 2014 – Fellow, Geological Society of America
- 2015 – ExxonMobil Upstream Research Co. lifetime award for Innovation, Creativity, Excellence
- 2016 – GSA Distinguished Service Award