

## *Curriculum Vitae*

### 1. Academic History

**Name:** Paul A. Schroeder

**Present Rank, proportion time assignments:** Professor (0.375 research, 0.375 instruction)

**Graduate Faculty Status:** member (also member of Honors Faculty)

**Highest Degree, Institution, date:** Ph.D., Yale University, 1992

**Other Degrees, Institution, date**

- M.Phil. Geology - Yale University, 1989
- M.S. Marine Science - University of South Florida, 1981
- B.A. Geology (*Cum Laude*) - New England College, 1978

**Academic Positions:**

- 2004 - present: **Professor**, Department of Geology, University of Georgia
- 2017-2023 : **Head** Department of Geology, University of Georgia
- 2007 - 2014: **Co-Director**, Center for Advance Ultrastructural Research, UGA
- 2006 - 2014: **Associate Head**, Department of Geology, University of Georgia
- 2004 - 2006, 2013: **Graduate Coordinator**, Department of Geology University of Georgia
- 2000 - present **Museum Adjunct** - Georgia Museum of Natural History.
- 1997 - 2004: **Associate Professor**, Department of Geology University of Georgia
- 1992 - 1997: **Assistant Professor**, Department of Geology University of Georgia
- 1991 - 1992: **Temporary Assistant Professor**, Department of Geology University of Georgia
- 1989 -1991: **Teaching Fellow**, Yale University
- 1978 - 1981: **Research Assistant**, University of South Florida
- 1978: **Laboratory Instructor**, R.S. Friedman Cobscook Bay Laboratory, Maine, Suffolk University

**Other Professional Employment and Associations:**

- 2007 - present: Registered **Professional Geologist**, State of Georgia: License # PG001892
- 2021 - present: Registered **Professional Geologist**, State of Tennessee: License # 6176
- 1987-1991: **Visiting Scientist** at Schlumberger-Doll Research Laboratory, Ridgefield, CT
- 1981-1985: **Research Geologist**, Texaco Research Center at Houston, TX
- 1978-1980: **Geologic Field Assistant**, United States Geologic Survey, St Petersburg, FL

**Awards, Elected, and Appointed positions:**

- 2025-present Association Internationale Pour l'Etude des Argiles (AIPEA) Fellow
- 2024-present Mineralogical Society of America Fellow
- 2023-present Istanbul Technical University International Advisory Board member
- 2019-present Geological Society of America Fellow
- 2018 **ASBOG** Special Materials Expert Board member
- 2014-2015 **TÜBITAK Eminent Visiting Scholar Fellowship**
- 2011-2012 **President of the Georgia Geological Society**
- 2010-2011 **President of The Clay Minerals Society**
- 2009-2010 **Vice President of The Clay Minerals Society**
- 2008-2009 **VP-Elect Clay Minerals Society**
- 2007 **Marion L. and Chrystie M. Jackson Clay Scientist Award**, Clay Minerals Society
- 2004 Distinguished Member of **The National Society of Collegiate Scholars**
- 2002 Istanbul Technical University Distinguished Lecture (Sponsored by TUBITAK)
- 2000 **University of Georgia Lothar Trösp Outstanding Honors Professor Awards**
- Travel Awards for the presentation of international papers:
  - 2025 International Clay Conference, Dublin, Ireland
  - 2023 GeoBerlin, Berlin, Germany
  - 2021 Mediterranean Geosciences Union, Istanbul, Türkiye
  - 2015 EuroClay Conference, Edinburgh, Scotland
  - 2013 Geological Society of America Southeastern Section, San Juan, Puerto Rico
  - 2011 EuroClay Conference, Antalya, Türkiye

- 2010 Trilateral Clay Meeting, Seville, Spain
- 2005 International Clay Conference, Tokyo, Japan
- 2001 International Clay Conference, Biaha Blanca, Argentina
- 1999 European Clay Groups Meeting, Krakow, Poland
- 1992 International Clay Conference, Adelaide, Australia
- 1992 International Geological Congress, Kyoto, Japan

## 2. Resident Instruction and continuing education (# of students):

- **GEOL1121/ GEOL1121H- Earth Processes and Environments or Physical Geology** Fall 1991 (25), Winter 1992 (98), Spring 1992 (99), Fall 1998 (25), Fall 1999 (20), Fall 2000 (25), Fall 2001 (14), Fall 2002 (24), Fall 2003 (24), Fall 2004 (140), Fall 2005 (130), Fall 2006 (140), Fall 2007 (140), Fall 2008 (140), Fall 2009 (138), Fall 2010 (110), Spring 2012 (88), Fall 2012 (25), Spring 2013 (23), Fall 2015 (35), Fall 2016 (20), Fall 2023 (10), Fall 2024 (10), Spring 2025 (9), Fall 2025 (10).
- **GEOL2350H - Honors Physical Geology** and/or **GEOL2360H - Honors Historical Geology** Fall 1992 (18), Summer 1993 (18), Fall 1993 (20), Summer 1994 (23), Fall 1994 (19) Summer 1995 (23), Fall 1995 (12), Summer 1996 (23), Fall 1996 (13), Fall 1997 (15), Summer 1997 (23), Summer 1998 (24), Fall 1998 (24), Fall 1999 (24), Summer 2001, (24), Fall 2001 (24), Summer 2002, (25), Summer 2003, (24), Summer 2004, (24), Summer 2005, (17), Summer 2008 (14), Summer 2010 (17), Summer 2011 (10), Summer 2012 (14), Summer 2013 (10), Summer 2014 (7), Summer 2017 (10), Summer 2018 (22), Summer 2019 (22), Summer 2024 (24), Summer 2025 (20).
- **GEOL3010 - Mineralogy and Crystallography or Earth Materials** Fall 1992 (18), Fall 1993 (26), Fall 1994 (20), Fall 1995 (26), Fall 1996 (24). Fall 1997 (20) Fall 1998 (22), Fall 1999 (16), Fall 2000 (15), Fall 2001 (14), Fall 2002 (15), Fall 2002 (12), Fall 2015 (19), Fall 2016 (20), Fall 2017 (17), Fall 2018 (20), Fall 2019 (13), Fall 2020 (13), Fall 2021 (16), Fall 2022 (15), Fall 2023 (14), Fall 2024 (11), Fall 2025 (18).
- **GEOL3020 – Surficial Processes** Fall 2004 (8), Fall 2005 (8), Fall 2005 (14), Fall 2006 (19), Fall 2007 (24), Fall 2008 (15), Fall 2009 (13), Fall 2010 (30), Fall 2011 (30), Fall 2012 (35), Fall 2013 (35), Spring 2015 (5) at ITÜ, Fall 2015 (23), Fall 2014 (25), Fall 2015 (20), Fall 2016 (24), Fall 2017 (17), Fall 2018 (22).
- **GLY4/660 - X-ray Crystallography** Winter 1994 (5), Winter 1996 (1)
- **GEOL4/6560 - Weathering, Soils and Saprolite** 2000 (5).
- **GEOL6910 - Topics in Geochemistry** Winter 1994 (1 Student), Winter 1996 (5), Winter 1998 (2), Winter 1999 (6), Spring 2000 (2), Spring 2001 (2). Spring 2003 (5), Spring 2004 (2)
- **FRES1010 / FYOS1010- Freshman Seminar / First Year Odyssey - White Gold - The Georgia billion-dollar kaolin industry** - Spring 2001 (11), Spring 2004 (10), Spring 2010 (8), Fall 2011 (12), Fall 2019 (15), Fall 2020 (18), Fall 2021 (18), Fall 2022 (18), Fall 2019 (15), Fall 2020 (15), Fall 2021 (15), Fall 2022 (15), Fall 2023 (15), Fall 2024 (10), Fall 2025 (15).
- **HONS3070H - Honors Seminar - Undergraduate Research Opportunities in the physical and biological sciences** - Spring 2002 (15), Spring 2004 (15). Spring 2005 (15), Spring 2006 (17), Spring 2007 (16), Spring 2008 (15), Spring 2009 (15), Spring 2010 (15), Spring 2011 (12).
- **GEOL8550 (formally) 4/6550 - Clay Mineralogy** Winter 1993 (6), Winter 1995 (5), Winter 1998 (6), Spring 2002 (6), Spring 2004 (5), Spring 2006 (6), Spring 2008 (7), Spring 2010 (8), Spring 2012 (9), Spring 2014 (10), Spring 2015 (10) at ITÜ, Spring 2016 (8), Spring 2018 (7), Spring 2020 (7), Spring 2022 (9), Spring 2024 (16).
- **PEDB1100 Backpacking and Hiking** - Summer 2008 (6), Summer 2010 (7), Summer 2011 (6), Summer 2012 (5)

## 3. Publications

### Books:

1. **Schroeder, Paul A.** 2018 *Clays in the Critical Zone* Cambridge University Press (Online ISBN: 9781316480083) <https://doi.org/10.1017/9781316480083>

2. **Schroeder, Paul A.** 2010 *Clays of Yellowstone National Park*, CMS Workshop Lectures, Vol. 17. The Clay Minerals Society, Chantilly, VA., 94 pp.

#### Journal Articles (refereed):

1. Ünal Ercan H, **Schroeder PA**, Gençoğlu Korkmaz G, Ece ÖI, Çiftçi E. (2025) Multidisciplinary insights into zeolite and clay formation in hydrothermally altered volcanic rocks of Çubuk, Turkey. *Clays and Clay Minerals*. Published online 2025:1-56. doi:10.1017/cmn.2025.10015
2. Jones, E.C., Williams, K.A., Garrison, E.G. and **Schroeder, P.A.**, (2025). Blue Light Fluorescence in Marine Sediments. *Geosciences*, 15(6), p.231. <https://doi.org/10.3390/geosciences15060231>
3. Yavuz, Orhan, **Paul A. Schroeder**, Huseyin Demir, and Ö. Isik Ece (2025) Climatic and tectonic influences as recorded in the mineralogy of a Miocene Şile, Türkiye clay deposit. *Clay Minerals*, DOI: <https://doi.org/10.1180/clm.2025.10009>
4. Fryar , Alan E., Adam M. Milewski, Carmen T. Agouridis, Carol D. Hanley, **Paul A. Schroeder**, Mohamed Sultan, James W. Ward, Nour-Eddine Laftouhi, Nora H. Pandjaitan, Racha El Kadiri, Lahcen Benaabidate, Ahmed Fekri, Agus Suharyanto, and Koray K. Yilmaz (2024) Skills Development in Hydrologic Sciences for Cohorts of Graduate Students from Morocco, Egypt, Türkiye, and Indonesia. Universities Council on Water Resources, *Journal of Contemporary Water Research & Education*, Issue 181, Pages 11-29. <https://doi.org/10.1111/j.1936-704X.2024.3409.x>
5. **Schroeder, P.A.**, Elliott, W.C., Tang, Y., and Lemke, L., (2024), Facilitating the critical mineral future: Valorization of kaolin mining waste through partnerships: *GSA Today*, v. 34, p. 60–61, <https://doi.org/10.1130/GSATG599GW.1>
6. Salas, Simone Kilian, Katharina H.E. Meurer, Diana Boy, Elisa Díaz García, Susanne K. Woche, Jens Boy, Georg Guggenberger, Stephan Peth, **Paul. A. Schroeder**, and Hermann F. Jungkunst (2024) The “extra pinch” of pseudosand to enhance tropical biogeochemistry. *Journal of Plant Nutrition and Soil Science*. 187, 161-170. <https://doi.org/10.1002/jpln.202400090>
7. Daniel D. Richter, Sharon A. Billings, Susan L. Brantley, Jerome Gaillardet, Daniel Markewitz, William H. Schlesinger, Ronald Amundson, Gail M. Ashley, Allan R. Bacon, Roger C. Bales, Dan Binkley, Zachary Brecheisen, Julio Calvo-Alvarado, Nicolas Cassar, Chelsea Clifford, Louis A. Derry, Matt Edgeworth, Martha-Cary Eppes, Ying Fan, Terry A. Ferguson, Marie-Anne de Graaff, Jo Handelsman, Alfred E. Hartemink, Kirsten Hofmockel, Richard J. Huggett, Esteban G. Jobbagy, Hyun Seok Kim, Praveen Kumar, Louis Lu, William H. McDowell, John R. McNeill, Neung-Hwan Oh, Mary E. Prendergast, Curtis J. Richardson, Justin B. Richardson, **Paul A. Schroeder**, Kate Scow, Christina Siebe, Aaron Thompson, Anna M. Wade, Timothy White, Cathy L. Whitlock, Diana H. Wall, Marilyn Wolf, (2024) The Earth and Ecological Sciences Are Model Sciences of the Anthropocene. *Perspectives of Earth and Space Scientists*. AGU <http://dx.doi.org/10.1029/2024CN000237>
8. **Schroeder, Paul A.**, Jason C. Austin, Aaron Thompson, and Daniel D. Richter (2022) Mineralogical and elemental trends in regolith on historically managed sites in the southeastern United States Piedmont. *Clays and Clay Minerals*, <https://doi.org/10.1007/s42860-022-00202-8>.
9. Lybrand, Rebecca A.; Odeta Qafoku; Mark E. Bowden; Michael F. Hochella, Jr.; Libor Kovarik; Daniel E. Perea; Nikolla Qafoku; **Paul A. Schroeder**; Mark G. Wirth, & Dragos G. Zaharescu (2022) Fungal hyphae develop where titanomagnetite inclusions reach the surface of basalt grains. *Sci Rep* **12**, 3407. <https://doi.org/10.1038/s41598-021-04157-z>
10. Ünal Ercan, Hatice; Ömer Işık Ece; **Paul A. Schroeder**; and Fatma Gülmez (2022) Characteristics and evolution of the Etili silica sinter epithermal deposits, Çanakkale – Turkey: relation to alkali chloride vs acid-sulfate fluids. *Ore Geology Reviews*, V. 142 <https://doi.org/10.1016/j.oregeorev.2022.104726>
11. Brantley, Susan L.; Tao Wen; Deborah Agarwal; Jeffrey G. Catalano; **Paul A. Schroeder**; Kerstin Lehnert; Charuleka Varadharajan; Julie Pett-Ridge; Mark Engle; Anthony M. Castronova; Richard P. Hooper; Xiaogang Ma; Lixin Jin; Kenton McHenry; Emma Aronson; Andrew R. Shaughnessy; Louis A. Derry; Justin Richardson; Jerad Bales; Eric M. Pierce (2021). The future Low-Temperature Geochemical Data-scape Envisioned by the U.S. Geochemical Community. *Computers and Geosciences* <https://doi.org/10.1016/j.cageo.2021.104933>.
12. Lybrand, Rebecca A.; Daniel P. Veghte, Swarup China, Dragos Zaharescu, Christopher R. Anderton, Ruben Aleman, **Paul A. Schroeder**, and Odeta Qafoku (2021) Deciphering the Incipient Phases of Ice–Mineral Interactions as a Precursor of Physical Weathering. *ACS Earth and Space Chemistry*. <https://doi.org/10.1021/acsearthspacechem.0c00345>

13. Fackrell, Laura E., **Paul A. Schroeder**, Aaron Thompson, Karen Stockstill-Cahill, Charles A. Hibbitts, (2021) Development of Martian regolith and bedrock simulants: Potential and limitations of Martian regolith as an in-situ resource, *Icarus*, Volume 354, 114055, ISSN 0019-1035, <https://doi.org/10.1016/j.icarus.2020.114055>.
14. Austin, Jason C., Daniel D. Richter, and **Paul A. Schroeder** (2020) Quantification of mixed-layer clays in multiple saturation states using NEWMOD2: implications for the potassium uplift hypothesis in the SE United States. *Clays and Clay Minerals* <https://doi.org/10.1007/s42860-019-00060>
15. Cicerale D., Arslan M., Yazar E.A., Yucel C., Temizel I., Park S., **Schroeder PA.** (2020) Mineralogy, chemistry, and genesis of zeolitization in Eocene tuffs from the Bayburt area (NE Turkey): Constraints on alteration processes of acidic pyroclastic deposits *Journal of African Earth Sciences* 162:14 pages Article number ARTN 103690 01 Feb [View record in Web of Science](#)
16. Richter, D.D., Eppes, M.C., Austin, J.C., Bacon, A.R., Billings, S.A., Brecheisen, Z., Ferguson, T.A., Markewitz, D., Pachon, J., **Schroeder, P.A.** and Wade, A.M., (2019). Soil production and the soil geomorphology legacy of Grove Karl Gilbert. *Soil Science Society of America Journal*. 1-20. DOI: 10.1002/saj2.20030.
17. Qafoku, Odeta, Rebecca A. Lybrand, Vaithiyalingam Shutthanandan, Rachel E. Gallery, Jason C. Austin, **Paul A. Schroeder**, Jennifer Fedenko, Erin Rooney, and Dragos G. Zaharescu (2019) A correlative bimodal surface imaging method to assess hyphae-rock interactions. *Microscopy and Microanalysis*, 25(S2), 2436-2437.
18. Lybrand, Rebecca A., Jason C. Austin, Jennifer Fedenko, Rachel E. Gallery, Erin Rooney, **Paul A. Schroeder**, Dragos G. Zaharescu, and Odeta Qafoku (2019) A coupled microscopy approach to assess the nano-landscape of weathering, *Nature - Scientific Reports* <https://doi.org/10.1038/s41598-019-41357-0>.
19. Hochella, Jr., Michael F., David Mogk, James Ranville, Irving Allen, George Luther, Linsey Marr, E. Peter McGrail, Mitsu Murayama, Nikolla Qafoku, Kevin Rosso, Nita Sahai, **Paul A. Schroeder**, Peter Vikesland, Paul Westerhoff, Yi Yang. (2019) Natural, incidental, and engineered nanomaterials and their impacts on the Earth system. *Science* <http://dx.doi.org/10.1126/science.aau8299>
20. Karpov, G.A., **Paul A. Schroeder**, and A.G. Nikolaeva (2018) Geochemistry of rare-earth elements in thermal waters of Uzon-Geysernaya hydrothermal system (Kamchatka). *Russian Geology and Geophysics*. v59. 925-934.
21. O'Keefe, Jennifer M.K. Neace, Erika R., Hammond, III, Max L., Hower, James C., Engle, Mark A., East, Joseph, Geboy, Nicholas J., Olea, Ricardo A., Henke, Kevin R., Copley, Gregory C., Lemley, Edward, Nally, Rachel S. Hatch, Hansen, Antonia E., Richardson, Allison R., Satterwhite, Anne B., Stracher, Glenn B., Radke, Larry F., Smeltzer, Charles, Romanek, Christopher, Blake, Donald R., **Schroeder, Paul A.**, Emsbo Mattingly, Stephen D., Stout, Scott A. (2018) Gas emissions, tars, and secondary minerals at the Ruth Mullins and Tiptop coal mine fires. *International Journal of Coal Geology*. 195:304-316 DOI: 10.1016/j.coal.2018.06.012
22. Chen, Chunmei, Diego Barcellos, Daniel D. Richter, **Paul A. Schroeder**, Aaron Thompson (2018) Redoximorphic Bt horizons of the Calhoun CZO soils exhibit depth dependent iron-oxide crystallinity. *Journal of Soils and Sediments*. <https://doi.org/10.1007/s11368-018-2068-2>. <https://rdcu.be/2CRq>
23. Jason C. Austin, Amelia Perry, Daniel deB. Richter, and **Paul A. Schroeder** (2017) Modification of 2:1 clay minerals in a kaolinite dominated Ultisol under changing land-use regimes. *Clay and Clay Minerals*. 66(1), 61-73.
24. Bozkaya, Ömer, H. Yalcin, and **Paul A. Schroeder** (2017) Two-step mode of clay formation in extensional basins: An example from Cambrian-Ordovician clastic rocks of the Antalya Unite, SW Turkey. *Clay minerals - Journal of Fine Particle Research*. v. 52(3) 365-389.
25. Lars Riber, Henning Dypvik, Ronald Sørli, Syed Asmar Aal-E-Muhammad Naqvi, Kristian Stangvik, Nikolas Oberhardt, **Paul A. Schroeder**. 2017. Comparison of deeply buried paleoregolith profiles, Norwegian North Sea, with outcrops from southern Sweden and Georgia, USA - Implications for petroleum exploration. *Palaeogeography, Palaeoclimatology, Palaeoecology* 471, 82-95. DOI: 10.1016/j.palaeo.2017.01.043
26. **Schroeder, P.A.** 2016 Clays in the Critical Zone: An Introduction. *Clays and Clay Minerals*, v. 64(5) 486-486. DOI: 10.1346/CCMN.2016.064045
27. Bozkaya, Ö., A. Günel-Türkmenoğlu, M. C. Göncüoğlu, Ö. Ünlüce, İ. Ö. Yılmaz and **P. A. Schroeder** 2016. Illitization of Late Devonian-Early Carboniferous K-bentonites from Western Pontides, NW Turkey: Implications for their origin and age. *Applied Clay Science* 134: 257-274.
28. Cyle, K., N. Hill, K. Young, T. Jenkins, D. Hancock, **P.A. Schroeder** and A. Thompson 2016. Substrate quality influences organic matter accumulation in the soil silt and clay fraction. *Soil Biology and*

29. Orucoglu, E. and **P. A. Schroeder** 2016. Investigating the expanding behavior and thermal stability of HDPy modified organo-bentonite by X-ray diffraction technique. *Applied Clay Science*. 132-133, 90-95.
30. Ünal Ercan, H., Ö. Işık Ece, **P. A. Schroeder** and Z. Karacık 2016. Differentiating Styles of Alteration Within Kaolin-Alunite Hydrothermal Deposits of Çanakkale, NW Turkey. *Clays and Clay Minerals* 64(3): 245-274.
31. Fitzpatrick, Stephan D., **Paul A. Schroeder**, and Dinku M. Endale. 2015 Creating deep soil core monoliths: Beyond the solum. *Southeastern Geology*, v. 51(2) V.51, no2, 85-96.
32. Austin, Jason C. and **Paul A. Schroeder**. 2014 Assessment of pedogenic gibbsite as a paleo-PCO<sub>2</sub> proxy using a modern Ultisol. *Clays and Clay Minerals*, Vol. 62, No 5, 235-266.
33. **Schroeder, Paul A** and Gary Erickson. 2014 Kaolin: From ancient porcelains to nanocomposites. *Elements* 10: 177-182.
34. Ömer I. Ece, Bala Ekinici, **Paul A. Schroeder**, Douglas Crowe, and Fahri Esenli. 2013 Origin of the Düvertepe kaolin-alunite deposits in Simav Graben, Turkey: timing and styles of hydrothermal mineralization. *Journal of Volcanology and Geothermal Research*, Vol. 255, 57-78.
35. Yahya Ozpinar, Baris Semiz, and **Paul A. Schroeder**. 2013 Zeolites in mafic pyroclastic rocks from the Sandikli-Afyonkarahisar region, Turkey. *Clays and Clay Minerals*, Vol. 61, No. 3, 177-192.
36. Mark A. Engle, Lawrence F. Radke, Edward L. Heffern, Jennifer M.K. O'Keefe, James C. Hower, Charles D. Smeltzer, Judith M. Hower, Ricardo A. Olea, Robert J. Eatwell, Donald R. Blake, Stephen D. Emsbo-Mattingly, Scott A. Stout, Gerald Queen, Kerry L. Aggen I, Allan Kolker, Anupma Prakash, Kevin R. Henke, Glenn B. Stracher, **Paul A. Schroeder**, Yomayra Román-Colón, Arnout ter Schure 2012 Gas emissions, minerals, and tars associated with three coal fires, Powder River Basin, USA *Science of The Total Environment*, Volume 420, 15 March 2012, Pages 146-159.
37. Diaz, M., Robert, J-L. **Schroeder, P. A.** and Prost, R. 2010 Far infrared study of the influence of the octahedral sheet composition on the K<sup>+</sup>-layer interactions in synthetic phlogopites. *Clays and Clay Minerals*, v. 58(2) 263-271.
38. **Schroeder, P.A.**, 2010 Natural occurrence of elevated arsenic and selenium in Georgia regolith: Implications for their relative mobility in Piedmont soils. *Southeastern Geology*, v. 47, No. 1, p. 15-26.
39. Ece, Ö.I., **Schroeder, P.A.**, Smiley, M. and Wampler, M. 2008 Acid-sulfate alteration of volcanic rocks and genesis of halloysite and alunite deposits in the Biga Peninsula, NW Turkey. *Clay Minerals* v.43, 281-315.
40. Kyle, Jennifer, **Schroeder, P.A.**, and Wiegel, J. 2007 Microbial silicification in sinters from two terrestrial hot springs in the Uzon Caldera, Kamchatka, Russia. *Geomicrobiology Journal*. v. 24, 627- 641.
41. Pone, J. Denis N., Kim A.A. Hein, Glenn B. Stracher, Harold J. Annegarn, Robert B. Finkleman, Donald R. Blake, John K. McCormack, **Paul Schroeder**. 2007 The spontaneous combustion of coal and its by-products in the Witbank and Sasolburg coalfields of South Africa, *International Journal of Coal Geology*, v. 72, 124-140.
42. Ö. Isik Ece and **Schroeder, Paul A.** 2007 Hydrothermal Alteration of Oligocene volcanic rocks and genesis of halloysite-alunite-kaolinite deposits in the Turplu area, Balıkesir, Turkey. *Clays and Clay Minerals*, 55(1), 18-36.
43. Kyle, Jennifer and **Schroeder, Paul A.** 2007 Role of smectite in siliceous sinter formation and microbial texture preservation: Octopus Spring, Yellowstone National Park, Wyoming, USA. *Clays and Clay Minerals*, v. 55(2): 189-199.
44. **Schroeder, Paul A.**, Jason C. Austin, John F. Dowd 2006 Estimating long-term soil respiration rates from carbon isotopes occluded in gibbsite, *Geochimica et Cosmochimica Acta*. v. 70/23, 5692-5697
45. Glenn B. Stracher, Anupma Prakash, **Paul A. Schroeder**, John McCormack, Xiangmin Zhang, Paul van Dijk, and Donald Blake 2005 New mineral occurrences and mineralization processes: Wuda coal-fire gas vents of Inner Mongolia. *American Mineralogists*. v. 90 1729-1739.
46. R. Scott Harris, Michael F. Roden, **Paul A. Schroeder**, Steven M. Holland, Mack S. Duncan, and Edward F. Albin 2004 An Upper Eocene Impact Horizon in East-Central Georgia, *Geology* Vol. 32, No. 8, 717-720.
47. **Schroeder, P. A.**, and R. Scott Harris, 2004 X-ray powder diffraction evidence for shocked quartz in an Upper Eocene sand deposit, Warren County, Georgia, U.S.A, *Southeastern Geology* v. 42(3) 145-150.
48. **Schroeder, P. A.**, Robert J. Pruett and Nathan D. Melear 2004 Crystal-chemical changes in an oxidative weathering front in a middle Georgia kaolin deposit. *Clays and Clay Minerals* v. 52, 212-220.
49. **Schroeder, P. A.**, Nathan D. Melear and Robert J. Pruett 2003 Quantitative analysis of anatase in Georgia kaolins using Raman spectroscopy *Applied Clay Science*, v. 23 (5-6) p. 299-308.
50. Ö. Isik Ece, Zenbe-E Nakagawa, and **P.A. Schroeder**, 2003 Alteration of volcanic rocks and Genesis of kaolin deposits in Sile region, northern Istanbul, Turkey, Part - I: Clay mineralogy, *Clays and Clay Minerals*, v. 51, No.

6, 675-688.

51. **Schroeder, P. A.**, J.J. Le Golvan and M. Roden. 2002 Weathering of ilmenite from granite and chlorite schist in the Georgia Piedmont, USA *American Mineralogists*. v. 87 (12) 1616-1625.
52. **Schroeder, P. A.**, Melear, N. D., Bierman, P., Kashgarian, M., and Caffee, M., 2001 Gibbsite growth ages for the regolith in the Georgia Piedmont: *Geochimica et Cosmochimica Acta*, v. 65 (3) p. 381-386.
53. **Schroeder, P. A.**, and Shiflet, J., 2000 Ti-bearing phases in an east Georgia kaolin deposit: *Clays and Clay Minerals*, v. 48(2) 151-158.
54. **Schroeder, P. A.**, Melear, N. D., West, L. T., and Hamilton, D. A., 2000 Meta-gabbro weathering in the Georgia Piedmont, USA: Implications for global silicate weathering rates: *Chemical Geology*, v.163, 235-245
55. **Schroeder, P. A.**, and Melear, N. D., 1999 Stable carbon isotopic signatures preserved in authigenic gibbsite from a forested granitic regolith: Panola Mt., Georgia, USA.: *Geoderma*, p. v 91 p. 261-279.
56. **Schroeder, P.A.**, Pruett, R.J., and Hurst, V.J., 1998 Effects of secondary iron phases on kaolinite  $^{27}\text{Al}$  MAS NMR spectra: *Clays and Clay Minerals*, v. 46(4), 429-435.
57. **Schroeder, P.A.** and Irby, R. 1998 Detailed X-ray diffraction characterization of illite-smectite from an Ordovician K-bentonite, Walker County, Georgia, USA. *Clay Minerals*, v. 33, 671-674.
58. **Schroeder, P.A.**, and McLain, A.A., 1998, Illite-smectites and the influence of burial diagenesis on the geochemical cycling of nitrogen: *Clay Minerals*, v. 33, 539-546.
59. Hurst, V.J., **Schroeder, P.A.**, and Styron, R.W., 1997 Accurate quantification of quartz and other phases by powder x-ray diffractometry: *Analytica Chimica Acta*, v. 337, 233-252.
60. **Schroeder, P. A.**, Kim, J. G. and Melear, N. D. 1997 Mineralogical and textural criteria for recognizing remnant Cenozoic deposits on the Piedmont: Evidence from Sparta and Greene County, Georgia, U.S.A. *Sedimentary Geology*. v. 108, 195-206.
61. **Schroeder, P.A.** and Pruett, R. 1996 Iron ordering in kaolinites: Insights from  $^{29}\text{Si}$  and  $^{27}\text{Al}$  NMR spectroscopy. *American Mineralogist*, v. 81, 26-38.
62. **Schroeder, P.A.** and Ingall E. D. 1994 A method for the determination of nitrogen in clays, with application to the burial diagenesis of shales. *Journal of Sedimentary Research*, v. A64, 694-697.
63. **Schroeder, P.A.** 1993 A chemical, XRD and  $^{27}\text{Al}$  NMR investigation of Miocene Gulf Coast shales with application to understanding illite/smectite crystal chemistry: *Clays and Clay Minerals*, v. 41(6). 668-679
64. **Schroeder, P.A.** 1992 Far infrared study of the interlayer torsional-vibrational mode of mixed-layer illite/smectite. *Clays and Clay Minerals*. v. 40(1), 81-91.
65. **Schroeder, P.A.** 1990 Far infrared, X-ray powder diffraction and chemical investigation of potassium micas, *American Mineralogist*. v. 75, 983-991.
66. Berner, R. A., E. K. Berner, **P.A. Schroeder**, T. W. Lyons, 1990 Comment and Reply on "Sodium- calcium ion exchange in the weathering of shales: Implications for global weathering budget". *Geology* v. 18(2), 190.
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9. **Schroeder, Paul A**, Jason C. Austin, Aaron Thompson, and Daniel D. Richter. (2022) Rare Earth element trends in regolith on historically managed sites in the southeastern United States Piedmont. 17<sup>th</sup> IAPCA, International Clay Conference, Istanbul, Türkiye. Abstracts with program. <https://www.clays.org/international-clay-conference>.
10. **Schroeder, Paul A.**; Huseyin Demir; Orhan Yavuz; and Ö. Isik Ece (2021) Mineral and chemical trends in a clay deposit from the Sile region north of Istanbul, Turkey. Mediterranean Geoscience Union annual meeting, Istanbul, Turkey, September 25-28. Program with abstracts. <https://www.medgu.org/index.php>
11. **Schroeder, Paul A.**, Daniel D. Richter, and Sophia C. Sanders (2020) Degradation of micas and the formation of kaolinite layers: Potential influences on potassium uplift in temperate ecosystems. Clay Minerals Society Annual Meeting, Program with abstracts. Richland WA.
12. **Schroeder, Paul A.** Daniel D. Richter, and Sophia C. Sanders (2020) The fate of degraded micas in the deep critical zone: Pathways to the formation of kaolinite and other secondary minerals in the S.E. US Piedmont. Geological Society of America Meeting, Northeastern/Southeastern section, Reston, VA.
13. **Schroeder, Paul A.** Jason C. Austin, and Daniel deB. Richter (2019) Quantification of mixed-layer clays in multiple saturation states using NEWMOD2: Implications for the potassium uplift hypothesis. EuroClay 2019 and CMS 55<sup>th</sup> annual meeting, Program with Abstracts. Paris, France.
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17. **Schroeder, Paul A.**, and Jason C. Austin. (2015) Dynamics of mineral recrystallization at the Earth's surface: Evidence from Ustisols, kaolins, and paleosols with implications for the ages of rocks. EuroClay 2015 and CMS 51<sup>st</sup> annual meeting, Edinburgh, Scotland.
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  24. **Schroeder, Paul A.** and Austin J. 2010. Reassessing atmospheric paleo-PCO<sub>2</sub> with Monte Carlo simulations and carbon isotope proxies in hydroxide soil minerals: A case for lowering paleo- atmospheric CO<sub>2</sub> estimates by factor of 10. Trilateral meeting of The Clay Mineral Society (CMS), the Clay Science Society of Japan (CSSJ) and the Spanish Clay Society (SEA). Abstracts with Programs. Seville, Spain.
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  26. **Schroeder, Paul A.** and Jennifer E. Kyle 2009 Smectite and siliceous sinter formation in Octopus Spring, Yellowstone National Park, Wyoming, USA. Clay Minerals Society Annual meeting, Abstract with programs. Billings, MT.
  27. **Schroeder, Paul A.** 2008 Naturally elevated arsenic- and selenium-bearing soils in the southeastern U.S. Piedmont. The Clay Minerals Society Annual Meeting jointly held with the American Chemical Society, New Orleans, LA. Abstract with programs.
  28. **Schroeder, Paul A.** , Elizaveta Bonch-Osmolovskaya, Albert Colman, Douglas Crowe, Gennady Karpov, Jennifer Kyle, Frank Robb, Christopher Romanek, Juergen Wiegel, Chuanlun Zhang. 2007 Microbially dominated terrestrial hot spring mineral assemblages in Kamchatka Russia: The present is the key to past. GSA Abstracts with Programs, Denver, CO.
  29. **Schroeder, Paul A.** , Elizaveta Bonch-Osmolovskaya, Elizabeth Burgess, Albert Colman, Douglas Crowe, Julie Fiser, Maggie Hodges, Elizabeth Hollingsworth, Gennady Karpov, Ilya Kublanov, Jennifer Kyle, Gary Mills, Andrew Neal, Nikolai Pimenov, Frank Robb, Christopher Romanek, Tatiana Slepova, Tatyana Sokolova, Elisabeth Spencer, Stephen Techtman, Isaac Wagner, Juergen Wiegel, Noah Wittman, Chuanlun Zhang, and Weidong Zhao. 2007 Nitrogen And Smectites From Terrestrial Hot Springs In The Uzon Caldera, Kamchatka, Far-Eastern Russia, The Clay Minerals Society Annual meeting, Santa Fe, NM. Abstract with programs.
  30. **Schroeder, Paul A.**, Austin, Jason C., and Dowd, John F. 2006 A numerical model for estimating long- term respiration rates from carbon occluded in soil gibbsite. GSA Abstracts with Programs, Paper No. 195-2, Philadelphia, PA.
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  32. **Schroeder, Paul A.** 2005 Clay mineral and hyperthermophilic microbe relationships in terrestrial hot spring deposits, American Chemical Society, 40th Midwest Regional Meeting, Joplin, MO. ACS paper #22645.
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  36. **Schroeder, Paul A.**, Kyle, Jennifer; Neal, Andrew I.; Romanek, Christopher S. 2003 High-resolution analytical approaches to characterizing bio/lithofacies in the microbial habitats of terrestrial hot springs. GSA Abstracts with Programs, abstract #59576, Seattle. WA.
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  38. **Schroeder, Paul** and Ö. Isik Ece 2003 Clay morphology, mineralogy, and crystal chemistry of hydrothermally altered Oligocene volcanic rocks in the Turplu area, Balikesir, Turkey. Clay Minerals Society

- Annual meeting, Athens, GA. Abstract with programs.
39. **Schroeder, Paul A.**, R. Scott Harris, Michael F. Roden, Steven M. Holland, and Mack Duncan 2002 X- ray diffraction evidence for shocked quartz in Atlantic Coastal Plain deposits, Warren County, Georgia, U.S.A. GSA Abstracts with Programs, abstract #38959 Denver CO.
  40. **Schroeder, Paul A.**, R.J. Pruett, and J. Yuan 2001 Lateral variations in mineral properties with middle Georgia Kaolin deposits. 12th International Clay Conference, A.P.I.E.A., Biaha Blanca, Argentina. Abstract with Program.
  41. **Schroeder, Paul A.** and Le Golvan J.J. 2001 The fate of ilmenite in residual temperate to sub-tropical weathering profiles. Clay Minerals Society Annual meeting, Madison, WI. Abstract with programs.
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  43. **Schroeder, Paul A.**, Melear, Nathan D., Bierman, Paul R., Caffee, Mark W., Kashgarian, Michael. 2000 Evidence for the recrystallization of secondary soil minerals and implications for estimates of paleo-atmospheric conditions. The Geological Society of America Annual Meeting, Abstract #50472: GSA, Reno NV.
  44. **Schroeder, Paul A.**, Nathan D. Melear and Robert J. Pruett 2000 Non-anatase TiO<sub>2</sub> in a middle Georgia kaolin deposit: A Raman spectroscopic perspective. Clay Minerals Society Annual meeting, Chicago, IL. Abstract with program.
  45. **Schroeder, Paul A.** and N.D. Melear 1999 Inclusion of carbon into pedogenic gibbsite. European Clay Groups Meeting. Krakow, Poland. Abstract with programs p. 130-131.
  46. **Schroeder, Paul A.** 1999 Long-term soil respiration rates. The Geological Society of America Annual Meeting, Abstract #51470: GSA Denver Colorado.
  47. **Schroeder, Paul A.** and Jason Shiflet 1999 The distribution of Ti-bearing minerals in east Georgia kaolin. The Geological Society of America Annual Meeting, Southeastern Section Athens, GA
  48. **Schroeder, Paul A.** and Melear, Nathan D. 1998 Indicators of multi-generational mineral assemblages in the granitic-regolith at Panola Mt. research watershed, Georgia: II, stable carbon isotopic evidence. The Geological Society of America Annual Meeting, Abstract #50229 GSA Toronto, Canada.
  49. **Schroeder, Paul A.**, Nathan D. Melear, Larry T. West and Dixie A. Hamilton. 1998 Mineral assemblages derived from the weathering of a meta-gabbro in the Georgia Piedmont. Clay Minerals Society Annual meeting, Cleveland, OH. Abstract with programs.
  50. **Schroeder, Paul A.**, Douglas E. Crowe and Nathan D. Melear. 1997 Stable carbon isotope signatures preserved in authigenic minerals from a forested granitic-regolith: Panola Mt., Georgia. The Geological Society of America Annual Meeting, Abstract #13321 GSA Salt Lake City, Utah.
  51. **Schroeder, Paul A.** and Pruett, R.J. 1997 Effects of secondary iron phases on kaolinite <sup>27</sup>Al MAS NMR spectra. International Clay Conference, A.P.I.E.A., Ottawa, Canada. Abstract with programs.
  52. **Schroeder, P.A.**, David B. Wenner and Sandra Whitney. 1996 Honors geology field programs: A mechanism for increasing geology major enrollment. The Geological Society of America Annual Meeting, Abstract #50072, Denver, Colorado.
  53. **Schroeder, P.A.**, Melear, N.D., Leigh, D., West, L.T., and Kormanik, T.L. 1995 Residual versus polygenetic soil/saprolite weathering profiles on granites in the Georgia Piedmont. The Geological Society of America Annual Meeting, 27 (6). GSA, New Orleans, Louisiana.
  54. **Schroeder, P.A.** and Pruett, R. 1995 Iron ordering in kaolinites: New insights from <sup>29</sup>Si and <sup>27</sup>Al NMR spectroscopy. Clay Minerals Society Annual meeting, Baltimore, MD. Abstract with programs.
  55. **Schroeder, P.A.** 1994 Mineral and textural evidence for the extent of Cenozoic Coastal Plain onlap to the Georgia Piedmont. Geological Society of America Annual meeting, Seattle, WA. Abstract with programs.
  56. **Schroeder, P.A.** 1994 The Sparta, Georgia saprolite revisited: Mineralogical trends and implications for Cenozoic weathering rates. Clay Minerals Society Annual meeting, Saskatoon, Canada. Abstract with programs.
  57. **Schroeder, P.A.** 1993 Displaying mineral structures with the molecular modeling program SYBYL. Clay Minerals Society Annual meeting, San Diego, CA. Abstract with programs, p. 112.
  58. **Schroeder, P.A.** 1993 <sup>27</sup>Al NMR evidence for the segregation of octahedral Al and Fe sites in mixed- layer illite/smectites. Invited paper to the International Clay Conference, Adelaide, Australia, Abstract with programs p-164.
  59. **Schroeder, P.A.** 1992 Application of far infrared spectroscopy to the study of clay minerals. Invited paper to the Clay Geosciences Symposium, International Geological Congress, Kyoto, Japan. Abstract with programs.
  60. **Schroeder, P.A.** 1992 Far IR, <sup>27</sup>Al NMR and chemical evidence for the heterogeneous distribution of

octahedral Fe and Al in mixed-layer illite/smectites. The Goldschmidt Conference, The annual meeting of the Geochemical Society. Reston, VA. Abstract with programs.

61. **Schroeder, P.A.** and E. D. Ingall 1991 The Influence of burial diagenesis on the nitrogen content of illite/smectite in shales. Geological Society of America Annual Meeting, San Diego, CA. Abstracts with programs p. A222.
62. **Schroeder, P.A.** 1991 Far infrared spectroscopy of mixed-layer illite/smectite. Clay Minerals Society Annual Meeting, Houston, TX Abstracts with programs.
63. **Schroeder, P.A.** 1989 Phyllosilicate sample mounting for far infra-red absorption spectroscopy. (abs.), 9th International Clay Conference, Strasbourg, France, p. 343
64. **Schroeder, P.A.** 1988 Far infra-red spectroscopy of potassium interlayered phyllosilicates. (abs.) Annual Meeting of the Clay Minerals Society, Grand Rapids, MI., p. 88.
65. **Schroeder, P.A.** 1982 Authigenic iron minerals of the continental slope off the eastern United States, (abs.), 11th International Congress on Sedimentology (IAS), Hamilton, Ontario, Canada.
66. **Schroeder, P.A.** 1978 Baseline studies of the physical oceanography of Cobscook Bay, Maine. (abs.), New England Estuary Research Society.

#### Abstracts: (co-authored)

1. Fackrell, Laura E., Andrew G. Palmer, Rafael Loureiro, **Paul A. Schroeder**, Anna C. Simpson, Davonya Cheek, McKenna Taylor, Haley Murphy, Jared M. Long-Fox, Nitin K. Singh, Kasthuri J. Venkateswaran, Heath J. Mills, Olivia Gámez Holzhaus, and Kennda Lynch. (2025) Appropriate Regolith simulant selection and handling for robust biological sciences. American Society for Gravitational and Space Research Annual Conference. Abstract with program. <https://asgsr.org/asgsr-2025-phoenix/> Phoenix, Arizona.
2. Abdullayev, Elshan, **Paul A. Schroeder**, Elvin Alizada, Sakina Asgarova, Narinj Taghiyeva, Maxim Rudmin (2025) Alteration of 2:1 clay minerals in brine: Implications for sediments on Mars. The Geological Society Conference. <https://www.geolsoc.org.uk/events/the-impact-of-uk-planetary-geoscience/>
3. Bradley, T., **Schroeder, P.A.** and Karpov, G. (2025) Mineral mapping in Uzon Caldera for classifying surficial alteration terrains over time and implications for similar studies of Mars. International Clay Conference, Abstract with program, Dublin, Ireland. <https://icc.aiepa.org/programme/>
4. Lybrand, R. A., Morris, M. L., Collins, C., D'Amore, D., Rowland, D. J., **Schroeder, P. A.**, Varga, T., & Qafoku, O. (2024) From Arizona's Sonoran Desert to the Alaskan Coastal Rainforest: Investigating Fungal-Mineral Interactions Using a Suite of High-Resolution Analysis Techniques [Abstract]. ASA, CSSA, SSSA International Annual Meeting, San Antonio, TX. <https://scisoc.confex.com/scisoc/2024am/meetingapp.cgi/Paper/160579>
5. Bradley, Taran W., **Paul A. Schroeder**, Douglas E. Crowe, Gennady Karpov (2024) Mineral mapping in Uzon Caldera and implications for monitoring surficial alteration over time. Annual Meeting of the American Geophysical Union. Abstracts with Program. Washington, DC.
6. Jones, Emily, E. Garrison, **P.A. Schroeder**, and K.A. Williams (2024) Bluelight fluorescence of marine sediments. Geological Society of America Abstracts with Programs. Vol. 56, No. 2, 2024 doi: 10.1130/abs/2024SE-397841.
7. Fackrell, L. E. and A. C. Simpson, K. L. Lynch, R. Loureiro, A. G. Palmer, **P. A. Schroeder**, Nitin K. Singh, and K. J. Venkateswaran. (2024) What lives in regolith Simulants and why does that matter for biological ISRU research. 55<sup>th</sup> Lunar and Planetary Science Conference. Abstract with program. Woodlands, TX.
8. Adeyemi, Oluwaseun and **Schroeder, Paul A.**, (2023) Mineralogy of Per-And Polyfluoroalkyl Substances (Pfas) Contaminated Soils from Agricultural Fields in Society Hill, South Carolina. Joint Southeastern and Northeastern Section Meeting, March 17-19, Reston, VA. Abstracts with program. [https://www.geosociety.org/GSA/Events/Section\\_Meetings/GSA/Sections/se/2023mtg/home.aspx](https://www.geosociety.org/GSA/Events/Section_Meetings/GSA/Sections/se/2023mtg/home.aspx)
9. Jungkunt, H. F., Kilian Salas, S., **Schroeder, P. A.**, Boy, J., and Guggenberger, G. (2023) Are pseudo-sands internal soil biophysical reactors?, EGU General Assembly 2023, Vienna, Austria, 24–28 Apr 2023, EGU23- 17493.
10. Demir, Hüseyin and **Paul A. Schroeder** (2022) History of Sile clays: More detail provenance perspective. 17<sup>th</sup> IAPEA, International Clay Conference, Istanbul, Türkiye. Abstracts with program. <https://www.clays.org/international-clay-conference>.
11. Aronson, Holden, **Schroeder, Paul**, Darling, Andrew and Leigh, David S., (2022) Determining if and How Land Use Disturbances Affect Millennial Scale Erosion Rate In The Appalachian Piedmont Using <sup>10</sup>Be Cosmogenic Nuclides Geological Society of America Abstracts with Programs. Vol 54, No. 5, 2022 doi: 10.1130/abs/2022AM-383074

12. Steiner, Peter, **Schroeder, Paul**, Markewitz, Daniel and Thompson, Aaron. (2022) Red Maple (*Acer Rubrum*) Imparts Structural Changes To Soil Clay Minerals Not Observed In Soils With Loblolly Pine (*Pinus Taeda*) Geological Society of America Abstracts with Programs. Vol 54, No. 5, 2022 doi: 10.1130/abs/2022AM-380962
13. Ünal Ercan, Hatice; Ömer Işık Ece; **Paul A. Schroeder**; and Fatma Gülmez (2022) Formation model of silica sinter deposits: an example from western, Turkey. European Geophysical Union General Assembly. Abstract with program. Vienna Austria. 23-27 May 2022, EGU22-638.
14. Ünal Ercan, Hatice; Ömer Işık Ece; **Paul A. Schroeder**; and Fatma Gülmez (2021) Origin and Evolution of Silicified Rocks in the Etili - Çanakkale, Turkey. European Geophysical Union General Assembly. <https://doi.org/10.5194/egusphere-egu21-1496>.
15. Lybrand, Rebecca A., **Paul A. Schroeder**, Dragos Zaharescu, and Odeta Qafoku (2020) focused view of an incipient fungal-mineral interaction and its putative weathering product. Clay Minerals Society Annual Meeting. Program with abstracts. Richland WA.
16. Qafoku, Odeta, Rebecca A. Lybrand, Libor Kovarik, Mark E. Bowden, **Paul A. Schroeder**, Daniel E. Perea. (2020) Interfacial boundaries offer insights to assess (a)biotic mineral weathering. Goldschmidt Conference. Program with abstracts. Hawaii.
17. Austin, Jason, **Paul A Schroeder**, Daniel deB. Richter (2019) Biological Cycling of Potassium by Roots as a Control on Mixed-layer Clays. American Geophysical Union Fall Meeting, San Francisco, CA, December 9-13, 2019.
18. Austin, Jason, **Paul A. Schroeder**, Daniel deB. Richter (2019) Quantification of mixed-layer clays in multiple saturation states using NEWMOD2: Implications for the potassium uplift hypothesis. EuroClay 2019 and Clay Minerals Society annual meeting. Program with abstracts. Paris France.
19. Austin, Jason, Amelia Perry, Daniel deB. Richter, and **Paul A. Schroeder** (2018) Modifications of 2:1 Clay Minerals In a Kaolinite Dominated Ultisol Under Changing Land-Use Regimes at the Calhoun Critical Zone Observatory, South Carolina, USA Clay Minerals Society Annual Meeting, Champaign- Urbana, IL USA
20. Angi, O.S. and **Schroeder, Paul A.** (2017) Geology and Industry of granite quarries in Elberton, GA - USA. 9<sup>th</sup> International Marble and Natural Stone Congress and Exhibition. Antalya, Turkey.
21. Lybrand, Rebecca, Austin, Jason, and **Schroeder, Paul A** (2017) Cross-scale Perspectives on Mineral Weathering in the Critical Zone. GSA abstract [#303771](#) Annual meeting of the Geological Society of America, October 22-15, 2017, Seattle, WA.
22. Richter, D. deB., J. Wang, R. Bras, D. Markewitz, D. Nelson, J. Austin, P. Schroeder, S.A. Billings, K. O'Neill, J. Giesen, W.S. Holbrook, and B. Carr (2017) Calhoun CZO as an ancient geobiologic and land-use altered time machine. Critical Zone Science: Current Advances and Future Opportunities, workshop in Arlington, VA, 4-6 June, 2017.
23. Richter, Daniel deB., Jason Austin, Robert S Anderson, Allan R Bacon, Susan L Brantley, Zachary Brecheisen, Paul A Schroeder, Anna Wade, W. Steven Holbrook, Virginia Marcon, Aaron Thompson (2017) Gilbert's soil production paradigm applied to a critical zone's fractionation of particle sizes American Geophysical Union 2017 Fall Meeting, New Orleans, Louisiana, 11-15 December 2017.
24. **Moraes, Anthony, Paul A. Schroeder**, and Jason Austin (2016) Clay Mineral Concentration With Depth and Land Use History In The Critical Zone In Calhoun, South Carolina DOI: 10.1130/abs/2016AM-277182 Conference: GSA Annual Meeting in Denver, Colorado, USA
25. Austin, Jason C., and **Schroeder, Paul A.** (2015) Young C-14 age of the carbonate component of natural goethite (Fe(O,CO<sub>3</sub>)OH) from the Upper Ordovician Neda Fm., Neda, Wisconsin, USA Euroclay 2015 and CMS 52<sup>nd</sup> annual meeting, Edinburgh, Scotland.
26. Lars Riber Henning Dypvik, Ronald Sørli, Nikolas Oberhardt, Pingchuan Tan, Kristian Stangvik, Syed Asmar Aal-E-Muhammad Naqvi, **Paul A. Schroeder**, Arlindo Begonha, and Ray Ferrell (2015) Palaeoweathering profiles from the Norwegian North Sea, and their onshore analogues . Geological Society of America Annual Meeting, Baltimore, MD. Program with Abstracts. Paper no. 285-1.
27. Lars Riber Henning Dypvik, Ronald Sørli, Nikolas Oberhardt, Pingchuan Tan, Kristian Stangvik, Syed Asmar Aal-E-Muhammad Naqvi, **Paul A. Schroeder**, Arlindo Begonha, and Ray Ferrell (2015) Deeply buried Mesozoic weathering profiles from the Norwegian North Sea. Euroclay 2015 and CMS 52<sup>nd</sup> annual meeting, Edinburgh, Scotland.
28. Fackrell, Laura and **Paul A. Schroeder** (2014) Spatial versus spectral resolution: Mapping hot spring clays using meter scale data and ground truth mineralogy. Clay Minerals Society 51<sup>st</sup> annual meeting,
29. Wylie, Bill, Jubran, Ryan, Gallagher, Emily, Carnes, Caroline, Hundley, Britton, Nguyen, Thanh, Khalifa,



- Mohamed O, **Schroeder, Paul A.**, Dowd, John, And Hawman, Robert B. (2014) Shallow Geophysical Studies Of Natural Hazards And Groundwater Systems In The Southeastern U.S Geological Society of America Southeastern Section - 63<sup>rd</sup> Annual Meeting (10–11 April 2014). Program with abstracts. Paper 35-4.
30. John Harper and **Paul A. Schroeder** (2013) Anoxic conditions within the Smoky Hill Chalk Member of the Niobrara Formation and its effect on organic and inorganic C-N assemblages. The Clay Minerals Society Annual 50<sup>th</sup> Annual meeting, University of Illinois at Urbana-Champaign Program with abstracts, p. 90
  31. Austin, Jason C., and **Schroeder, Paul A.** (2013) Carbon and oxygen isotopes in pedogenic gibbsite: an emerging resource for understanding soil forming and transport processes. Geological Society of America Southeastern Section - 62<sup>nd</sup> meeting Abstracts with Programs. Paper 4-3, San Juan, Puerto Rico.
  32. Ostrowicki, Katrina and **Schroeder, Paul A.** (2013) Zeolites in the Floridan Aquifer System at Fort Pulaski National Monument, Georgia Geological Society of America Southeastern Section - 62<sup>nd</sup> meeting Abstracts with Programs. Paper 20-2, San Juan, Puerto Rico.
  33. Harris, R. Scott, Rodesney, Steven N., and **Schroeder, Paul A.**, (2012) X-ray Diffraction Characteristics of Variably Shocked, Strained, and Microcrystalline Quartz in Mixtures: Implications for Impact Petrology and Construction Aggregates, GSA Abstracts with Programs Vol. 44, No. 7, Abstract #210480, Charlotte, NC.
  34. Ballero, Deniz Z., Habura, Andrea, **Schroeder, Paul A.**, And Goldstein, Susan T., (2012) Fine Structure, Reproduction And Phylogenetic Placement of A Species of Psammophaga (Foraminifera) From Coastal Georgia, USA GSA Abstracts with Programs Vol. 44, No. 7, Abstract #208075, Charlotte, NC.
  35. Austin, Jason C., and **Schroeder, Paul A.** (2012) Assessing the viability of pedogenic gibbsite as a proxy for paleo-PCO<sub>2</sub>. GSA Abstracts with Programs Vol. 44, No. 7, Abstract #210272, Charlotte, NC.
  36. Austin, Jason C., **Schroeder, Paul A.** , and Dowd, John F. 2008 Exploring the Sensitivity of Paleo- PCO<sub>2</sub> Models Based on  $\delta^{13}\text{C}$  of Pedogenic Gibbsite to Changing Soil Variables with Depth Using Numerical Methods. GSA Abstracts with Programs, Paper No. #149128, Houston, TX.
  37. Austin, J.C., Schroeder, P.A., Dowd, J. F. 2008, Exploring the sensitivity of Paleo-PCO<sub>2</sub> models based on the  $\delta^{13}\text{C}$  of pedogenic gibbsite to changing soil variables with depth using numerical models. SoilCritZone Workshop III, Chania, Crete, Greece. Abstract with programs.
  38. Austin, Jason C., **Schroeder, Paul A.** , and Cox, Julia 2007 Radiogenic Carbon In Goethite From The Upper Ordovician Neda Formation: Implications For Re-Crystallization, The Clay Minerals Society Annual meeting, Sante Fe, NM. Abstract with programs.
  39. Austin, Jason C., **Schroeder, Paul A.**, and Dowd, John F. 2006 Aluminum substitution in goethite from the late Ordovician Neda Formation: implications for environment of formation and post-burial weathering. GSA Abstracts with Programs, Paper No. 221-12, Philadelphia, PA.
  40. Crowe, Douglas, Jordan, Thomas, Baker, M. Scott, and **Schroeder, Paul**, 2006 Mapping the distribution of alteration minerals in an active geothermal setting using satellite-based spectral reflectance: an example from the Uzon Caldera, Kamchatka, far east Russia. GSA Abstracts with Programs, Paper No. 234-5, Philadelphia, PA.
  41. Wagner, I. M. Hodges, K. Lee, D. Crowe, **P. Schroeder**, C. Romanek and J. Wiegel. The Intraspecific differences of *Clostridium uzonii* isolates obtained from the different thermal fields in the Uzon Caldera, Kamchatka Russia. Intern. Conference Thermophiles 2005. Gold Coast, Australia, Sept. 2005 Abstr. 145
  42. Kyle, Jennifer and **Schroeder, Paul A.**, and Kenneth Livi, 2005 Evidence of microbial framboidal pyrite formation in a terrestrial hot spring. Geological Society of America Annual meeting, Salt Lake City, UT. Abstracts with Programs, v. 37, No. 7, p. 205.
  43. Stracher, Glenn, B. Pone, J.D., Annegarn, H.J., McCormack, J., Blake, D.R., and **Schroeder, P.A.** 2005 Gas vent mineralogy and geochemistry: The burning Culm Banks of South Africa. Geological Society of America Annual meeting, Salt Lake City, UT. Abstracts with Programs, v. 37, No. 7, p. 453.
  44. Kyle, Jennifer and **Schroeder, Paul A.** 2004 Sinter mineralogy of terrestrial hot spring vent, Uzon Caldera, Kamchatka, Russia. Clay Minerals Society Annual meeting, Richland, WA. Abstract with programs.
  45. Kyle, Jennifer, **Schroeder, Paul A.**, Crowe, Douglas, and Romanek, Christopher. 2004 Evidence for biomineralization and preservation of microorganisms in siliceous sinter deposits from the Uzon caldera, Kamchatka, Russia. Abstract No: 76327 GSA Abstracts with Programs Vol. 36, No. 5.
  46. Stacher, Glenn B., Prakash, Anupma, **Schroeder, Paul A.**, and McCormack, John, 2004 New mineral occurrences from the Wuda coalfield fires of inner Mongolia. Abstract No: 73402 GSA Abstracts with Programs Vol. 36, No. 5.
  47. Romanek, Christopher S., Crowe, Douglas, Kyle, Jennifer, and **Schroeder, Paul A.**, 2004 Chemical and stable isotopic composition of microbial mats from hot springs of Uzon caldera, Kamchatka. Abstract No: 75001 GSA

Abstracts with Programs Vol. 36, No. 5.

48. Kyle, Jennifer; Neal, Andrew I.; Romanek Christopher S., and **Schroeder, Paul A.**, 2003 Does microbial activity confer structure (biosignatures) to siliceous hot-spring deposits? International Thermophile meetings, Exeter, UK. Abstract with programs.
49. Ö. Isik Ece and **Schroeder, Paul A.** 2003 Acid-sulfate alteration and genesis of alunite-halloysite deposit at Turplu mine, Balıkesir, Turkey. Clay Minerals Society Annual meeting, Athens, GA. Abstract with programs.
50. R. Scott Harris, Mack S. Duncan, Steven M. Holland, Michael F. Roden, **Paul A. Schroeder** 2003 Evidence of impact-generated deposition on the Late Eocene shores of Georgia. Clay Minerals Society Annual meeting, Athens, GA. Abstract with programs.
51. Stracher, Glenn B. Taylor, Tammy P., Baughman, Dick, **Schroeder, Paul A.**, Fleisher, Christopher and McCormack, John. 2003 Coal Fire Condensates: Collection Procedure, P-T Stability Diagrams, Environmental Pollution. AAAS Annual Meeting, Feb. 2003, Denver, CO.
52. Harris, R.S., Duncan, M.S., Holland, S. M., Roden, M. F., and **Schroeder, P. A.** 2002 Probable shocked quartz as evidence for an Upper Eocene impact horizon in coastal plain strata, Warren County, Georgia, USA GSA Abstracts with Programs, abstract #41931 Denver CO.
53. Melear, Nathan D., **Schroeder Paul A.**, and Robert J. Pruett 2000 X-ray diffraction mineralogy of minor phases in crude kaolin clays from Georgia, USA. Clay Minerals Society Annual meeting, Chicago, IL. Abstract with program.
54. Ams, D., D. Cornell, J.R. Huffman, C.M. Jones, Y.J. Lee, M.R. Miller, B.J. Muller, P.A. Maurice, N. Melear, **P.A. Schroeder**, and R. Pruett, 2000 Comparison of the surface chemical characteristics of natural kaolinites as a foundation for understanding microbially mediated kaolinite dissolution. Clay Minerals Society Annual meeting, Chicago, IL. Abstract with program.
55. Bierman, Paul R., Clapp, Erik M., Caffee, Marc and **Schroeder, Paul A.** 1999 Understanding earth surface processes with <sup>10</sup>-Be (and a little <sup>26</sup>-Al). The Geological Society of America Annual Meeting, Abstract # 51432: GSA Denver Colorado.
56. Melear, N.D. and **Schroeder, Paul A.** 1999 Clay Mineral and crystal properties of goethite and hematite from three residual weathering profiles of the Georgia Piedmont, USA. European Clay Groups Meeting. Krakow, Poland. Abstract with programs p. 111.
57. Melear, Nathan D. and **Schroeder, Paul A.** 1998 Indicators of multi-generational mineral assemblages in the granitic-regolith at Panola Mt. research watershed, Georgia: I, Crystal chemical evidence. The Geological Society of America Annual Meeting, Abstract #11958 GSA Toronto, Canada.
58. Melear, Nathan D. and **Schroeder, Paul A.**, 1998 Crystal chemistry of goethites from deep weathering profiles developed on granitic rocks of the Georgia Piedmont. Clay Minerals Society Annual meeting, Cleveland, OH. Abstract with programs.
59. Shiflet, Jason E. and **Schroeder, Paul A.**, 1998 Ti-bearing phases in an east Georgia kaolin. Clay Minerals Society Annual meeting, Cleveland, OH. Abstract with programs.
60. Mclain, A. A., and **Schroeder, P. A.** 1996 Fixed-Nitrogen in clay minerals of an offshore Texas, Brazo Block Gulf of Mexico well. The Geological Society of America Annual Meeting, Abstract #50300 Denver, Colorado.
61. Pruett, R. and **Schroeder, P.A.** 1995 Well and poorly ordered kaolinites from Georgia, USA. Clay Minerals Society Annual meeting, Baltimore, MD. Abstract with programs.
62. Ingall, E., J.C. Duchamp., **P. Schroeder** and K.W. Zilm 1992 <sup>31</sup>P NMR characterization of organic phosphorus in marine organic matter. Chemical Society, Division of Environmental Chemistry, Denver, CO. Abstract with programs.
63. Dahl, H.M., and **Schroeder P.A.** 1984 Mud Mounds - indicators of upward transport of fine-grained sediments, offshore Louisiana. SEPM Research Conference "Origin transport and deposition of fine- grain sediments", Convener D.S. Goresline, San Jose, CA.
64. Dahl, H.M., C.A. Callender and **Schroeder P.A.** 1983 Geologic factors influencing reservoir performance at Texaco's Salem Tertiary Recovery Project, Marion Co., Illinois., (abs.) AAPG Bull., v 67(3), p 445-446

#### Book Reviews:

1. EMU Notes in Mineralogy - Volume 11, Layered mineral structures and their Application in Advanced Technologies (M.F. Brigatti and A. Mottana, editors) in *Elements* (2012) v8(5) p 395.
2. Chemical Equilibria and Kinetics in Soils. (1994) Pp. 268. Oxford University Press, 200 Madison Avenue,

- New York, NY 10016. in *Economic Geology*, v.90. Review written by **P.A. Schroeder**.
3. Soil Microscopy and Micromorphology. (1995) by E.A. FitzPatrick. pp. 304. John Wiley and Sons, in *Journal of Sedimentary Research*, v.A65, p. 588. Review written by **P.A. Schroeder**.
  4. X-ray Diffraction and the Identification and Analysis of Clay Minerals. (1989) by Duane M. Moore and Robert C. Reynolds, Jr. pp. 332. Oxford University Press Inc., 200 Madison Avenue, New York, NY 10016. in *Economic Geology*, v. 84(8). p. 2321-2322. Review written by **P.A. Schroeder**.
  5. Clay Minerals for the Petroleum Geologists and Engineers. (1988) by D. Peaver and E. Eslinger. SEPM Short Course Notes No. 22, Pp. 343, Tulsa, OK 74159. in *Economic Geology*, v.84(2), p. 464-465. Review written by **P.A. Schroeder**.
  6. Diagenesis (Geoscience Canada Reprint Series; 4). (1990) Edited by Ian A. McIlreath and David W. Morrow. Pp. 338. Geological Association of Canada, Runge Press Ltd. Ottawa, Canada. in *Economic Geology*, Vol.86(4). Review written by **P.A. Schroeder**.
  7. Introduction to the Petrology of Soils and Chemical Weathering. (1991) by Daniel B. Nahon. Pp. 313. John Wiley & Sons Inc., New York in *Economic Geology*, Vol. 87. p. 1372. Review written by **P.A. Schroeder**.
  8. Prediction of Reservoir Quality Through Chemical Modeling. (1990) Edited by I.D. Meshri and P.J. Ortoleva. AAPG Memoir 49, The American Association of Petroleum Geologists, Pp.175. in *Geochimica et Cosmochimica Acta*. Vol. 55, p. 2705. Review written by **P.A. Schroeder**.

### **Creative contributions other than formal publications:**

1. 2025 Organize and advocate for thematic session: Teaching, history, and future of clay mineralogy (in honor of Dewey Moore and Bruce Velde). 18<sup>th</sup> International Clay Conference, Dublin, Ireland. Program with abstracts: <https://icc.aipea.org/sessions-list/> , July 13-18, 2025.
2. 2025 Organize and advocate for thematic session: Critical Minerals in Clay-rich deposits: processes, occurrences, and resource potential. 18<sup>th</sup> International Clay Conference, Dublin, Ireland. Program with abstracts: <https://icc.aipea.org/sessions-list/> , July 13-18, 2025.
3. 2024 Organizer and co-convenor for workshop: Georgia Partnerships for Critical Mineral Resources (GEMs-2). In collaboration with the Georgia Mining Association, Georgia Institute of Technology and Georgia State University. September 12, 2024, Atlanta, GA. <https://gems.research.gatech.edu/>.
4. 2024 Top of the Rocks. Video production of series aired on <https://www.arte.tv/en>. Appeared and provided content for episode on Clays.
5. 2023-2024 Organizer and co-convenor for workshop: Georgia Partnerships for Critical Mineral Resources (GEMs-1). In collaboration with the Georgia Mining Association, Georgia Institute of Technology and Georgia State University. February 1, 2024, Athens, GA. <https://gems.research.gatech.edu/>
6. 2021-22 Organize and advocate for thematic session. The role of clays in critical zone architecture and function. 17<sup>th</sup> International Clay Conference, Istanbul, Türkiye. Programs with Abstracts: [icc.aipea.org, https://dekgroupp.com/iccthematicsessions/files/downloads/TS-24.pdf](https://dekgroupp.com/iccthematicsessions/files/downloads/TS-24.pdf)
7. 2020 Pulse of the Planet: Daily audio program: Clays – Incredible Useful : It come in Many Guises: A Trojan horse made of clay : Window into the past.
8. 2020 Organizer and advocate for thematic session: Incipient weathering of primary minerals to clay minerals: Biological and Physical factors. 56<sup>th</sup> annual meeting of the Clay Minerals Society, Richmond, WA.
9. 2019 Organizer and advocate for thematic session: Mixed layer clays in the Critical Zone. EuroClay 2019 and 55<sup>th</sup> annual meeting of the Clay Minerals Society, Paris, France.
10. 2018 Organizer and advocate for thematic session: Intensively Managed Clays in the Critical Zone. Annual Meeting of the Clay Minerals Society, Champaign-Urbana, Illinois. USA.
11. 2017 Clay minerals and the historical influence of human land use. Invited Lectures given at Istanbul Technical University, Istanbul, Türkiye and Middle East Technical University, Ankara, Türkiye. Sponsored by ERASMUS+ (European Union exchange program). 2016 Future Uses of Kaolins: Invited Speaker present to Society of Mining Engineers meeting in Milledgeville, GA.
12. 2016 Organizer and advocate for: Clays in the Critical zone thematic session. Annual Meeting of the Clay minerals Society, Atlanta, GA.
13. 2015 and 2016 International Critical Zone Observatory Workshop. National Science Foundation Sponsored activity in association with annual America Geophysical Union meeting. San Francisco, CA.
14. 2015 Organizer and advocate for theme session: Clays in the Critical Zone: soils weathering and elemental

- cycling, EuroClay 2015 and annual meeting of the Clay Minerals Society. Edinburgh, Scotland.
15. 2012 Triple Point in Elements magazine.
  16. 2011 Organizer and advocate for Clay Minerals Society Theme session – “Crystal Chemistry of Clays”. Convened in Lake Tahoe, NV.
  17. 2010-11 President’s Corner Column in Elements magazine. V6n5, V6n6, V7n1, V7n2, V7n3, V7n4, v7n5.
  18. 2008 Organizer and advocate for joint meeting of the Geological Society of America and Soil Science Society of America - Topical Session, " Soil Respiration on Human and Geologic time scales", Houston, TX.
  19. 2007 Organizer and advocate for Clay Minerals Society theme session "Clays in Extreme Environments", Santa Fe, NM.
  20. 2005 Co-convenor of theme session "Clays and Geology" International Clay Conference. Convened in Tokyo, Japan.
  21. 2005 Organizer and advocate for Clay Minerals Society Theme session – “Clay minerals as biominerals”. Convened in Burlington, VT.
  22. 2004 Organizer and advocate for Geological Society of America - Topical Session Number 46, "Biomineralization in Terrestrial Hot Springs: The Preservation of Thermophiles in Past and Present-Day Systems " convened in Denver, CO.
  23. 2003 General Chair for Joint meeting of The Clay Minerals Society and the Mineralogical Society of America. Convened in Athens, GA.
  24. 2001 Organizer and advocate for Geological Society of America - Topical Session Number 110, "Paleosols, Soils and the Composition of Ancient Atmospheres " convened in Reno, NV.
  25. "Ask a Clay Scientist" Web site of the Clay Minerals Society. This is a public outreach resource to help people better understand the role of clays in our world. The URL is <http://cms.lanl.gov/askclay.htm> and has been chosen as a Key Resource in the Geosciences by Links2Go.
  26. 1996 Litterville - an environmental geology scenario for the urban waste problem. An interactive computer-based exercise designed for introductory environmental geology classes. Created using Authorware® by **P.A. Schroeder** and B.C. Carter. ©1996. Created under contract with Times-Mirror Corporation, New York.
  27. 1996 Guest expert speaker on Radio News magazine: Maritime Noon Host: Costas Halavrezos CBC Radio. Producer: Janet Irwin Production Location: Halifax, Kaolin Clay special. Airtime: April 10, 1996. Tape available upon request.

### **Grants, Contracts, and Agreements Received:**

1. 2025-2026 [Elemental Awards UK-US Critical Minerals Research Travel Grant](#) \$6,200.
2. 2025-2026 NSF 2431238 - EA: Upgrade to X-ray Diffraction Multiuser Facility. National Science Foundation. \$37,863.
3. 2023-2025 Mineralogy and cation ion exchange capacity of F-Area Aquifer Sediments. U.S. Department of Energy. \$16,108.
4. 2022-2023 Travel support for students and early career scientists to The Clay Minerals Society Conference, National Science Foundation. Istanbul, Türkiye. \$30,000.
5. 2021-2023 Mineral studies of PFAS contamination in soils near Darlington South Carolina. U.S. Environmental Protection Agency. In collaboration with Dr. John Washington, Region 4, Athens, GA. \$15,000.
6. 2022 BIO-VOLCANO: Rocks, soils, and bio-accumulators as predictors of volcanic eruptions. [University of Georgia interdisciplinary research pre-seed program](#).
7. 2020-Present ERASMUS+ Collaborative agreement between the University of Georgia and Istanbul Technical University, Istanbul, Türkiye. Program funds student and faculty exchange between geoscience programs at respective institutions.
8. 2016-Present ERASMUS+ Collaborative agreement between the University of Georgia and Middle Eastern Technical University, Ankara, Türkiye. Program funds student and faculty exchange between geoscience programs at respective institutions.
9. 2013-2021 Human and Natural Forcings of Critical Zone Dynamics and Evolution at The Calhoun Critical Zone Observatory. National Science Foundation. Co-PI. EAR-GEO-1331846 \$284,012.
10. 2013-2015 [Civilian Research and Defense Fund](#) - Geochemistry of rare-earth elements and polymetals in

- hydrothermal solutions and argillic metasomatites of modern Kamchatka thermal fields. RUG1- 7086-PK-13 \$15,000.
11. 2012-2014 Building Opportunities Out of Science and Technology (BOOST): Energizing Young Scientists. BOOST H2O (Helping Hydrologic Outreach) in Indonesia and Türkiye. U.S. State Department \$85,234.
  12. 2009-2010 National Science Foundation - "Acquisition of an X-ray Powder Diffractometer for research in geological, archeological, and geomicrobiological sciences". PI EAR-IF 0929912 - \$155,400.
  13. 2005-2006 National Science Foundation - SGER: A test for modern carbon in Paleozoic paleosols. PI EAR-0501690 - \$20,149
  14. 2003 - 2004 National Science Foundation - International Division Research Experience for Undergraduates (REU) "Hydrothermal alteration and genesis of halloysite deposits along the active southern segments of north Anatolian Fault Zone, NW Turkey". PI INT-0138023 \$5,400.
  15. 2002-2003 National Science Foundation EAR-BE: Coupled Biogeochemical Cycles - "Geomicrobiological Interactions and Carbon Flow in Extreme Thermal Springs: Kamchatka, Russia". Incubation Grant: Co-PI, EAR-BE-0221905. \$30,000.
  16. 2002 - 2004 - National Science Foundation - International Division "Hydrothermal alteration and genesis of halloysite deposits along the active southern segments of north Anatolian Fault Zone, NW Turkey". PI INT-0138023 \$27,000.
  17. 2000-2002- National Science Foundation - EAR/IF and University of Georgia Research Foundation "Upgrading of the X-ray diffraction and FTIR facilities for mineralogical research". PI EAR-99911501 \$82,784.
  18. 2000-2001 University of Georgia Research Foundation - Between grants support for data acquisition and technical support. \$12,000.
  19. 1996-2000 - National Science Foundation "A modern test of the assumptions used for determining paleo-atmospheric carbon dioxide from goethite-bound carbon. PI EAR-9628035 \$87,776.
  20. 1998-2000 English China Clay International. Discriminating short- and long-range iron ordering in kaolinite using vibrational spectroscopy. Contract: \$88,792 .
  21. 1996-1998J.M. Huber Corporations. Studies of impurity phases associated with East-Georgia kaolin deposits. Contract: \$29,628.
  22. 1997 University of Georgia Research Foundation Equipment Research Grant. Isotope facility vacuum upgrade. \$4000
  23. 1996 University of Georgia Research Foundation Faculty Research Grant. "Understanding Kaolinite Crystal-Chemistry through application of  $^{29}\text{Si}$  NMR Spectroscopy." \$3,000.
  24. 1995 - English China Clay International, Inc. Collaborative agreement to study effects of Fe on  $^{29}\text{Si}$  and  $^{27}\text{Al}$  MAS NMR signal of kaolinites. ECCI paid for \$8000 of analytical and NMR services.
  25. 1995 - W.C. Brown Publishers, Boston MA. "Development of an interactive multimedia program to supplement introductory non-science major Environmental Geology laboratory sections." \$5,000.
  26. 1995/97 - Petroleum Research Fund " Study of nitrogen in clays during burial diagenesis." PI ACS-PRF 29072-G2, \$20,000.
  27. 1994 University of Georgia Instructional Technology Grant. Geoscience Learning Center phase II. \$99,995.
  28. 1994 University of Georgia Instructional Improvement Grants for "Computer video output devices and overhead projection system". \$4000.
  29. 1993 University of Georgia Instructional Technology Grant. Geoscience Learning Center. \$27,500.
  30. 1993 - Equipment award, Fourier Transform Infrared Spectrometer dedicated to the study of clay minerals from Schlumberger-Doll Research. Estimated value \$60,000.
  31. 1987-90 - Texaco Exploration and Production Research unrestricted grant-in-aid for the study "Characterization and kinetics of 2:1 clay mineral transformations during burial diagenesis". \$82,080.
  32. 1987 - Geological Society of America Research Grant,(#3870-87). \$1000.
  33. 1977 - National Science Foundation Undergraduate Research Program, (#SMI76-83524).

#### **Other recognition and outstanding achievements:**

2025 – Keynote speaker, Clay in the Critical Zone, International Clay Conference, Dublin, Ireland



2024 – Elected Fellow to Mineralogical Society of America  
 2023 – Invited Lecture University of California “Clay Minerals in Exogenic Cycles”  
 2023 – Colloquium presentation University of Georgia, “Clay Mineral feedback to Exogenic Cycles”  
 2023 – Invited Lecture to Texas Tech University “Clay Mineral production and the Critical Zone”  
 2022 – [UGA Outstanding Instruction UGA First Year Odyssey Award](#)  
 2022 – [UGA Student Career Success Influencer Award.](#)  
 2021 - TÜBITAK visiting lecture award at Istanbul Technical University  
 2020 – ERASMUS+ visiting scholar workshop Middle Eastern Technical University  
 2019 -TÜBITAK visiting lecture award at Istanbul Technical University  
 2014 - TÜBITAK distinguished visiting scholar award at Istanbul Technical University  
 2008 - [College of Marine Science Fall Lecturer](#)  
 2007 - [Marion L. and Chrystie M. Jackson Clay Scientist Award](#), Clay Minerals Society  
 2004 - Distinguished Scholar - National Society of Collegiate Scholars  
 2000 - Lothar L. Tresp Outstanding Honors Professor - University of Georgia  
 1992 - Philip M. Orville Prize for outstanding dissertation at Yale University.  
 1990 - William E. Ford Prize for excellence in mineralogy, Yale University.

## **Supervision of student research:**

### **Ph.D. Thesis Supervision**

- Taran Bradley, Ph.D. Remote and Ground truth spectroscopy of clay minerals.
- Laura E. Fackrell, Ph.D. 2021. Applications of Critical zone Science in the Exploration of Mars.
- Dan Bulger, Ph.D. 2014 - The geochemical mineralogic expression of sequence boundaries Mississippian carbonates of the Appalachian Basin, Georgia and Tennessee
- Jason Austin, P Ph.D. 2012 - Soil CO<sub>2</sub> efflux simulations using Monte Carlo method and implications for recording paleo-atmospheric PCO<sub>2</sub> in pedogenic gibbsite
- Nathan Melear, Ph.D. 1998 - Mineral transformations and soil genesis at Panola Mountain Research Watershed, Georgia

### **M.S. Thesis Supervision**

- Shannon Ellis, M.S. Rare Earth Elements in Georgia Kaolins
- Holden Aronson, M.S. 2023. Determining long-term denudation rates, using *in situ*-produced <sup>10</sup>Be cosmogenic nuclides
- Oluwaseun Adeyemi, M.S. 2023. Mineralogy of Per- and Polyfluoroalkyl Substances (PFAS) Contaminated Soils from agricultural fields in Society Hill, South Carolina
- Peter Steiner, M.S. 2021. Potassium uplift in soils from the S.E. Piedmont
- Huseyin Demir, M.S. 2021. Clay mineralogy of the Sile deposits, Turkey
- Barrett Jordan, M.S. 2020. Geologic Mapping of the Sedilia Quadrangle, South Carolina
- Laura E. Fackrell, M.S., 2015 Understanding Thermophilic Ammonia-Oxidizing Archaea Environments Across Extreme Redox Gradients
- Katrina Ostrowicki, M.S., 2012 Saline aquifers in coastal Georgia: assessment using borehole geophysical logs at the Fort Pulaski core site, Chatham County, Georgia
- Jennifer Kyle, M.S., 2005 Biomineralization of hot springs in the Uzon Caldera, Kamchatka, Russia
- John LeGolván, MS., 2001, The fate of ilmenite and magnetite in the weathering profile
- Jason Shiflet, M.S., 1999, Impurities in East Georgia kaolin deposits
- Angela McLain, M.S., 1997, Fixed-nitrogen in clay mineral of an offshore Texas, Brazos Block Well
- Buford Boyd Pollet, M.S. 1995, M.I.B. 1993, Application of the Rietveld method for the determination of mineral abundances in East-Central Georgia kaolin deposits.
- Jae-Gon Kim, M.S. 1994, FTIR, XRD, SEM and chemical study of biotite weathering from the Sparta Granite, GA

### **B.S. Project Supervision**

- Greta Mayberry BS Expected 2026 Alteration of micas in Worm cultures
- Hugh Carny BS Expected 2027 Rare Earth Element study of Cornwall kaolins

- Michael Petersen BS Expected 2026 Raman Spectroscopy of a Martian meteorite
- Maddie Pierce – BS Expected 2026 Cryo-SEM study of bio-mineral relations mesh bag experiment in the Calhoun CZO.
- Rita Dwivedi BS Expected 2026 Microbial sequencing of bio-mineral relations mesh bag experiment in the Calhoun CZO.
- William Phillips BS Expected 2026 Clay mineralogy of Pleistocene dune material from south Georgia.
- William Bell – BS 2025. Mineral Alteration of Lunar Soil Simulants
- Sali Boyer – BS 2025. Mineral analysis of newly discovered granitic pegmatite: What it tells us about the Geologic history of the Elberton granite?
- Sierra Wermuth – BS 2025. Crystal Revelations: Unraveling Major Minerals of Elberton Granitic Pegmatite via XRD Analysis
- Grace Lang – BS 2026. Elberton Granite: Classifying Pegmatite Anomaly with Photo-Microscopy
- Olivia Francois – BS 2024 Accessory minerals and rare earth elements of Granitic Pegmatite from Elberton, GA.
- Kade McClain – BS 2023. Mineralogy and texture of a paleochannel in the Calhoun Critical Zone Observatory, SC.
- Mark Mann – BS 2022. Mineralogy of sand dunes derived from volcanics in Hawaii.
- Beth Watters – BS 2023. Provenance of heavy minerals on beaches along the Georgia Coast.
- Alexander S. Smith – BS 2022. Iron concretions and clay mineralogy of the Hell Creek Formation.
- Emma Patterson – BS 2021. Cosmogenics in regolith of the Calhoun Critical Zone Observatory, SC.
- Caitlyn Holmes – BS 2021. Cosmogenics in regolith of the Calhoun Critical Zone Observatory, SC.
- Tyler Candida - BS 2018 Petrography of the gneisses from the Mary Lou Quarry, Clinton, SC: Implications for quantifying mineral compositions in the Critical Zone.
- Barrett Jordan - BS 2018 Changes in clay mineral assemblages of legacy sediments in the Calhoun Critical Zone Observatory, Clinton, SC: Evidence for anthropogenic landscape change.
- Sophia Sanders - BS expected 2019 The fate of degraded micas in the deep critical zone: Implications for the K-uplift hypothesis.
- Sam Svoboda - BS 2017 Clay Abyss: Underclays of the Sile Regions Critical Zone
- Tony Moraes - BS 2017 Clay minerals concentration with depth and land use history in the Calhoun Critical Zone Observatory, Calhoun, SC
- David Richards - BS 2017 Rare Earth Elements and their association with deeply weathered saprolite in the Calhoun Critical Zone Observatory, Calhoun, SC
- Amelia Perry - BS 2015 Clay minerals studies of Calhoun Critical Zone Observatory soils in differently managed watersheds
- Adam Jones - BS 2014 Isotope studies of kaolins at sequence boundaries in the Georgia Coastal Plain
- Phillipe Bauchau - BS 2014 Thermodynamic models of clinoptilolite in the Lower Floridan aquifer from the Fort Pulaski core site, Chatham County, Georgia
- John R. Harper - BS 2013 Anoxic Transition within the Smoky Hill Chalk Member of the Niobrara Formation and its Effect on Organic and Inorganic C-N Assemblages
- Maggie Hodges - BS 2006 Isolation of novel anerobic, thermophilic bacteria from Uzon Caldera, Kamchatka, Russia
- Matt Hastings - BS 2002 X-ray diffraction study of coal fire vapor deposits, Centralia, Pennsylvania
- Michael Smiley -BS 2000 Genesis of alunite in the Turplu halloysite mine, NW Turkey
- Jennifer Kyle - BS 2006 Bio/litho facies of sinter from Yellowstone National Park, Wyoming
- Alison Mote - BS 1999 X-ray diffraction of unknown gem materials
- Nancy Chapman - BS 1999 Isotopic analysis of pedogenic gibbsite
- Terri Blandenbergl - BS 1998 A mid- and near-IR spectral atlas of gem quality minerals.
- Ian Stubbs -BS 1998 Factors causing physical differences in three kaolin samples
- Chris Young - BS 1998 Stable sulfur isotopes of pyritized *Ophiomorpha* in Tertiary East Georgian kaolin deposits.
- Richard Irby - BS 1998 Comparative clay mineralogy of Ordovician K-bentonites from North Georgia

Editorship or editorial board member:

**Associate Editor**, *American Mineralogist* 2007 - 2010

**Series Editor**, *Clay Minerals Society Workshop Lectures*. 2000 – 2007

**Associate Editor**, *Geology*, 1995 - 1997.

**Abstractor**, *Mineralogical Abstracts*, 1994 - 1997.

**Reviewer**: Critically reviewed manuscripts for the journals listed below.

- *American Journal of Science*
- *American Mineralogist*
- *Analytica Chimica Acta*
- *Applied Clay Minerals*
- *Astrobiology Journal*
- *Aquatic Geochemistry*
- *BioGeosciences*
- *Bulletin of Mineral Research and Exploration*
- *Canadian Mineralogist*
- *Chemical Geology*
- *Economic Geology*
- *Environmental Science and Technology*
- *Extremophiles*
- *Clays and Clay Minerals*
- *Clay Minerals*
- *Geochimica et Cosmochimica Acta*
- *Geoderma*
- *Geologica Carpathica*
- *Global Biogeochemical Cycles*
- *International Journal of Coal Geology*
- *Journal of Geological Education*
- *Journal of Geophysical Research*
- *Journal of Sedimentary Research*
- *Journal of Soil Science of Society of America*
- *Journal of Synchrotron Radiation*
- *Marine Geology*
- *Mathematical Geology*
- *MTA - Bulletin of Turkish Minerals Research and Exploration*
- *Nature*
- *Proceedings of the National Academy of Sciences*

#### 4. Public services:

##### Societal Services

- 2025 Convenor, Teaching Clay Mineralogy, International Clay Conference, Dublin, Ireland
- 2025 Convenor, Critical Minerals in Clay Deposits, International Clay Conference, Dublin, Ireland
- 2024-25 Convenor, Georgia Essential Minerals Workshops, (I) Athens, GA (II) Atlanta, GA, and (III) Macon, GA
- 2023 to present, Chair Policy and Administration Committee, Clay Minerals Society.
- 2022 General Chair for International Clay Conference, Istanbul, Türkiye.
- 2020 Co-organizer for CMS theme session, "Incipient weathering of primary minerals to clay minerals: Biological and Physical factors". Richland, WA.
- 2019 Organizer and advocate for EuroClay - CMS theme session "Mixed layer clays in the critical zone", Paris, France.
- 2018 NanoEarth Workshop 2018 (invitation only), Virginia Tech, Blacksburg, VA.
- 2018 Organizer and advocate for Clay Minerals Society theme session "Clays in intensively managed landscapes", Champaign-Urbana, IL.
- 2017 Chapman Conference planning Committee: "Porosity and architecture of the critical zone".

- 2016 The Clay Minerals Society annual meeting Field Trip coordinator, Atlanta, GA.
- 2015-2021 Treasurer of The Clay Minerals Society.
- 2015 Scientific Organizing Committee EuroClay - CMS 2015 Edinburgh Scotland.
- 2011-2012 President of Georgia Geological Society.
- 2010-2011 President of The Clay Minerals Society.
- 2009 Vice President of The Clay Minerals Society.
- 2009 Workshop organizer for Clay Minerals Society annual workshop lecture series "Clays of Yellowstone National Park", Billings, MT.
- 2007 Organizer and advocate for Clay Minerals Society theme session "Clays in Extreme Environments", Santa Fe, NM.
- 2006 NSF Research Coordination Network workshop, "Geothermal Biology and Geochemistry in Yellowstone National Park", Thermal Biology Institute, Montana State University, Bozeman MT.
- 2005 Organizer and advocate for Clay Minerals Society theme session "Clay minerals as biominerals", Convened in Burlington VT.
- 2004 Organizer and advocate for Geological Society of America - Topical Session Number 46, "Biomineralization in Terrestrial Hot Springs: The Preservation of Thermophiles in Past and Present Day Systems " convened in Denver, CO.
- 2003 General Chair for 40<sup>th</sup> annual meeting of the Clay Minerals Society and the Mineralogical Society of America, held in Athens, GA.
- 2000 Geological Society of America Theme Session "Paleosols, Soils and Composition of Ancient Atmospheres". Annual Meeting in Reno, NV.
- 1998 to Present - Clay Minerals Society Special Publications Editor
- 1997 to 1998 - Clay Minerals Society Bailey Award (Chair)
- 1995 to 1998 - Clay Minerals Society (Council Member, \*Elected position).
- 1995 to 1998 - Clay Minerals Society Nominations Committee (Chair 1996)
- 1994 - Georgia Alliance of Geochemists (Organizer and Convener of Annual Meeting)
- 1993 to Present - Clay Minerals Society Education Committee (Member).
- 1992 to 1995 - Mineralogical Society of America Tellers Committee - (Chair).
- 1991 Petroleum Geology Section, Annual meeting of the Geological Society of America. (Session Chair)
- 1988 Seismic verification of nuclear tests Symposium, Yale University. (Conference Chair).

#### Community Services

- 2024 Expert Witness testimony in U.S. Federal Tax Court, Atlanta GA.
- 2023 Georgia Kaolins: History and applications. Georgia Enquiring Minds Club.
- 2023 Geology of the Okefenokee Swamp and Trail Ridge. Athens Rotary Club.
- 2022 Creating Martian soils for growing plants: Outreach to public schools.
- 2016 Athens Science Cafe "What the Frack?" General public talk in geologic insights to hydraulic fracturing practices
- 2006 to 2008 "Hot times in volcanoes, minerals and life of Kamchatka Russia" to various local schools.
- 2000 to 2009 "Ask a Clay Scientist" resource for the Clay Minerals Society web site.
- 1998 to present - Franklin College Outreach Program "Georgia Minerals".
- 1994 to 2011 - Georgia State Science Fair Judge.
- 1995 Initiated and judged special Geosciences Award at State Science Fair.
- 1994 - Public tours of Geology of State Botanical Gardens
- Guest Geology presentation at Athens-Clarke 4<sup>th</sup> Street School and Oconee Primary School.
- 1992 to Present - X-ray diffraction identification of unknown materials for Georgia citizens and businesses.
- 1995 to Present - Started Athens-Area Parents of Hearing-Impaired Children Support Group.

#### 5. Other services:

University- and College-wide committees:

- 2023 Search Committee for Georgia Electron Microscopy Director
- 2022-2023 Franklin College Service Equity Survey Committee
- 2020 Senior Director of Development Search Committee
- 2020 Director of Center for Applied Isotope Studies Search (Chair)
- 2019 Geography Head Search Committee (Chair)
- 2015-2017 University PRAC committee
- 2015-2017 - Franklin College Review Committee (Promotion and Tenure)
- 2010-2012 - University Council
- 2009 to 2010 - Senator for Franklin College Arts and Science Senate
- 2009 to 2010 - Chair Program Review Committee for Physics and Astronomy Department
- 2005 to 2008 - University Review Committee (Promotion and Tenure)
- 2000 to 2001 - Program Review Team for Geography Department
- 1993 to Present - Member of Electron Microscopy Review Committee
- 1992 to 1996 - Member of Campus-wide Information Technology Forum
- 1996 to 1996 - Member of Molecular Graphics Lab Advisory Committee
- 1992 to 1996 - Franklin College Computer Committee.

Department-wide committees:

- 2024-2025 Search Committee for faculty position in Critical Minerals (Chair)
- 2023, 2024, 2025 AAPG International Barrel Award faculty mentor
- 2023 PRAC Department Self Study.
- 2015 - 2017 Undergraduate Advisor
- 2009 Governance Committee
- 2004 to 2006 – Graduate Coordinator
- 2004, 2006, 2007 - Wheeler-Watts Award Committee
- 2002, 3, 4, 7, 8, 24, 25 Graduate Admissions Committee
- 1999 to 2004 - Undergraduate Advisor
- 1992 to 2000, 2009-2010 - Computer Committee.
- 1992 to Present - Curator of Mineralogy collection (1800 specimens).
- 1992 to Present - Oversee Departmental X-ray diffraction and FTIR facilities.
- 2001 to 2002 - Program Review Team for Geology Department
- 1996-1999 Liaison for Georgia Center Program.
- 1996 - Member of Semester Conversion committee for physical geology curriculum.
- 1993 to 1995 Building Computer Network Liaison.
- 1992 to 1993 Department of Geology GLY115/116 Committee.
- 1992 - Member of Search Committee for position in hydrogeology.