Steven A Banwart

List of Publications by Year
in descending order

111 papers	7,279 citations	38742 50 h-index	58581 82 g-index
112 all docs	112 docs citations	112 times ranked	7851 citing authors

#	Article	IF	Citations
1	Characterization of redox conditions in groundwater contaminant plumes. Journal of Contaminant Hydrology, 2000, 45, 165-241.	3.3	413
2	Biological weathering and the longâ€term carbon cycle: integrating mycorrhizal evolution and function into the current paradigm. Geobiology, 2009, 7, 171-191.	2.4	263
3	Potential for large-scale CO2 removal via enhanced rock weathering with croplands. Nature, 2020, 583, 242-248.	27.8	263
4	Mine Water. Environmental Pollution, 2002, , .	0.4	259
5	Dissolution of hydrous iron(III) oxides by reductive mechanisms. Langmuir, 1991, 7, 809-813.	3.5	224
6	Linkages between aggregate formation, porosity and soil chemical properties. Geoderma, 2015, 247-248, 24-37.	5.1	215
7	Shining Light on the Microbial World. Advances in Applied Microbiology, 2010, 70, 153-186.	2.4	185
8	Biotite dissolution at 25Â°C: The pH dependence of dissolution rate and stoichiometry. Geochimica Et Cosmochimica Acta, 1997, 61, 2779-2799.	3.9	183
9	Single cell Raman spectroscopy for cell sorting and imaging. Current Opinion in Biotechnology, 2012, 23, 56-63.	6.6	180
10	Characterization of the Cell Surface and Cell Wall Chemistry of Drinking Water Bacteria by Combining XPS, FTIR Spectroscopy, Modeling, and Potentiometric Titrations. Langmuir, 2008, 24, 4032-4040.	3.5	178
11	Dissolution of fe(iii)(hydr)oxides in natural waters; laboratory assessment on the kinetics controlled by surface coordination. Marine Chemistry, 1989, 28, 127-144.	2.3	165
12	Save our soils. Nature, 2011, 474, 151-152.	27.8	162
13	Soil engineering in vivo : harnessing natural biogeochemical systems for sustainable, multi-functional engineering solutions. Journal of the Royal Society Interface, 2011, 8, 1-15.	3.4	156
14	Resolving the Scale-Dependence of Mineral Weathering Rates. Environmental Science & Technology, 2000, 34, 1375-1378.	10.0	142
15	The structure, biological activity and biogeochemistry of cryoconite aggregates upon an Arctic valley glacier: Longyearbreen, Svalbard. Journal of Glaciology, 2010, 56, 349-362.	2.2	122
16	The reductive dissolution of iron oxides by ascorbate. Journal of Colloid and Interface Science, 1990, 138, 74-82.	9.4	120
17	The role of oxalate in accelerating the reductive dissolution of hematite (Î±-Fe2O3) by ascorbate. Colloids and Surfaces, 1989, 39, 303-309.	0.9	117
18	Processes controlling the distribution and natural attenuation of dissolved phenolic compounds in a deep sandstone aquifer. Journal of Contaminant Hydrology, 2001, 53, 233-267.	3.3	111

#	Article	IF	Citations
19	The microstructure and biogeochemistry of Arctic cryoconite granules. Annals of Glaciology, 2010, 51, 87-94.	1.4	111
20	Tree-mycorrhiza symbiosis accelerate mineral weathering: Evidences from nanometer-scale elemental fluxes at the hyphaâ€“mineral interface. Geochimica Et Cosmochimica Acta, 2011, 75, 6988-7005.	3.9	110
21	Evolution of trees and mycorrhizal fungi intensifies silicate mineral weathering. Biology Letters, 2012, 8, 1006-1011.	2.3	110
22	Increased yield and CO₂ sequestration potential with the C₄ cereal Sorghum bicolor cultivated in basaltic rock dustâ€amended agricultural soil. Global Change Biology, 2020, 26, 3658-3676.	9.5	102
23	Kinetic modelling of geochemical processes at the Aitik mining waste rock site in northern Sweden. Applied Geochemistry, 1994, 9, 583-595.	3.0	100
24	Experimental study of acidity-consuming processes in mining waste rock: some influences of mineralogy and particle size. Applied Geochemistry, 1999, 14, 1-16.	3.0	99
25	Carbon dioxide mediated dissolution of Ca-feldspar: implications for silicate weathering. Chemical Geology, 2000, 163, 25-42.	3.3	98
26	Plantâ€driven weathering of apatite â€“ the role of an ectomycorrhizal fungus. Geobiology, 2012, 10, 445-456.	2.4	96
27	On the Value of Soil Resources in the Context of Natural Capital and Ecosystem Service Delivery. Soil Science Society of America Journal, 2014, 78, 685-700.	2.2	91
28	Optimization of Bacterial Whole Cell Bioreporters for Toxicity Assay of Environmental Samples. Environmental Science & Technology, 2009, 43, 7931-7938.	10.0	84
29	Biofilm formation in environmental bacteria is influenced by different macromolecules depending on genus and species. Environmental Microbiology, 2010, 12, 2496-2507.	3.8	84
30	The dissolution of biotite and chlorite at 25Â°C in the near-neutral pH region. Journal of Contaminant Hydrology, 1996, 21, 201-213.	3.3	83
31	Biological weathering in soil: the role of symbiotic root-associated fungi biosensing minerals and directing photosynthate-energy into grain-scale mineral weathering. Mineralogical Magazine, 2008, 72, 85-89.	1.4	83
32	Evaluating the effects of terrestrial ecosystems, climate and carbon dioxide on weathering over geological time: a global-scale process-based approach. Philosophical Transactions of the Royal Society B: Biological Sciences, 2012, 367, 565-582.	4.0	83
33	Soil Processes and Functions in Critical Zone Observatories: Hypotheses and Experimental Design. Vadose Zone Journal, 2011, 10, 974-987.	2.2	81
34	In situ monitoring of the biofilm formation of Pseudomonas putida on hematite using flow-cell ATR-FTIR spectroscopy to investigate the formation of inner-sphere bonds between the bacteria and the mineral. Mineralogical Magazine, 2008, 72, 101-106.	1.4	79
35	Hydrochemical modelling for preliminary assessment of minewater pollution. Journal of Geochemical Exploration, 2001, 74, 73-97.	3.2	78
36	Soil Functions: Connecting Earth's Critical Zone. Annual Review of Earth and Planetary Sciences, 2019, 47, 333-359.	11.0	78

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37	Soil carbon, multiple benefits. Environmental Development, 2015, 13, 33-38.	4.1	75
38	Weathering kinetics of waste rock from the Aitik copper mine, Sweden: scale dependent rate factors and pH controls in large column experiments. Journal of Contaminant Hydrology, 1999, 39, 59-89.	3.3	73
39	Oxalate secretion by ectomycorrhizal Paxillus involutus is mineral-specific and controls calcium weathering from minerals. Scientific Reports, 2015, 5, 12187.	3.3	72
40	Human dissemination of genes and microorganisms in Earth's Critical Zone. Global Change Biology, 2018, 24, 1488-1499.	9.5	71
41	Soil processes and functions across an international network of Critical Zone Observatories: Introduction to experimental methods and initial results. Comptes Rendus - Geoscience, 2012, 344, 758-772.	1.2	68
42	Assessing the natural attenuation of organic contaminants in aquifers using plume-scale electron and carbon balances: model development with analysis of uncertainty and parameter sensitivity. Journal of Contaminant Hydrology, 2001, 53, 199-232.	3.3	65
43	Technologies to deliver food and climate security through agriculture. Nature Plants, 2021, 7, 250-255.	9.3	63
44	Modeling Kinetic Processes Controlling Hydrogen and Acetate Concentrations in an Aquifer-Derived Microcosm. Environmental Science & Technology, 2003, 37, 3910-3919.	10.0	62
45	The role of forest trees and their mycorrhizal fungi in carbonate rock weathering and its significance for global carbon cycling. Plant, Cell and Environment, 2015, 38, 1947-1961.	5.7	60
46	The polymer physics and chemistry of microbial cell attachment and adhesion. Faraday Discussions, 2008, 139, 85.	3.2	59
47	Large-scale Intrusion of shallow water into a vertical fracture zone in crystalline bedrock: Initial hydrochemical perturbation during tunnel construction at the Ã„spÃ¶ Hard Rock Laboratory, southeastern Sweden. Water Resources Research, 1994, 30, 1747-1763.	4.2	56
48	Analysis of Bacteria on Steel Surfaces Using Reflectance Micro-Fourier Transform Infrared Spectroscopy. Analytical Chemistry, 2009, 81, 6467-6473.	6.5	56
49	A coupled carbon, aggregation, and structure turnover (CAST) model for topsoils. Geoderma, 2013, 211-212, 51-64.	5.1	55
50	Ineffective Natural Attenuation of Degradable Organic Compounds in a Phenol-Contaminated Aquifer. Ground Water, 2000, 38, 922-928.	1.3	53
51	Adsorption of poly acrylic acid onto the surface of calcite: an experimental and simulation study. Physical Chemistry Chemical Physics, 2015, 17, 27357-27365.	2.8	52
52	Pore system characteristics of soil aggregates and their relevance to aggregate stability. Geoderma, 2020, 366, 114259.	5.1	50
53	Substantial carbon drawdown potential from enhanced rock weathering in the United Kingdom. Nature Geoscience, 2022, 15, 382-389.	12.9	48
54	Benefits of soil carbon: report on the outcomes of an international scientific committee on problems of the environment rapid assessment workshop. Carbon Management, 2014, 5, 185-192.	2.4	46

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55	Engaging with the water sector for public health benefits: waterborne pathogens and diseases in developed countries. Bulletin of the World Health Organization, 2010, 88, 873-875.	3.3	42
56	Effects of mineralogy, chemistry and physical properties of basalts on carbon capture potential and plant-nutrient element release via enhanced weathering. Applied Geochemistry, 2021, 132, 105023.	3.0	42
57	Modeling the Dynamics of Fermentation and Respiratory Processes in a Groundwater Plume of Phenolic Contaminants Interpreted from Laboratory- to Field-Scale. Environmental Science & Technology, 2005, 39, 8829-8839.	10.0	40
58	Ectomycorrhizal fungi and past high CO₂atmospheres enhance mineral weathering through increased below-ground carbon-energy fluxes. Biology Letters, 2014, 10, 20140375.	2.3	40
59	Organic carbon oxidation induced by large-scale shallow water intrusion into a vertical fracture zone at the Ã„spÃ¶ Hard Rock Laboratory (Sweden). Journal of Contaminant Hydrology, 1996, 21, 115-125.	3.3	39
60	Modeling the evolutionary rise of ectomycorrhiza on sub-surface weathering environments and the geochemical carbon cycle. Numerische Mathematik, 2011, 311, 369-403.	1.4	37
61	High resolution characterization of ectomycorrhizal fungal-mineral interactions in axenic microcosm experiments. Biogeochemistry, 2012, 111, 411-425.	3.5	35
62	Reduction of iron(III) minerals by natural organic matter in groundwater. Geochimica Et Cosmochimica Acta, 1999, 63, 2919-2928.	3.9	34
63	A geochemical model for removal of iron(II)(aq) from mine water discharges. Applied Geochemistry, 2002, 17, 431-443.	3.0	34
64	Noninvasive Quantitative Measurement of Colloid Transport in Mesoscale Porous Media Using Time Lapse Fluorescence Imaging. Environmental Science & Technology, 2006, 40, 5930-5936.	10.0	32
65	Simulating carbon capture by enhanced weathering with croplands: an overview of key processes highlighting areas of future model development. Biology Letters, 2017, 13, 20160868.	2.3	32
66	Biodegradation Processes in a Laboratory-Scale Groundwater Contaminant Plume Assessed by Fluorescence Imaging and Microbial Analysis. Applied and Environmental Microbiology, 2007, 73, 3865-3876.	3.1	31
67	Processâ€based modeling of silicate mineral weathering responses to increasing atmospheric CO₂ and climate change. Global Biogeochemical Cycles, 2009, 23, .	4.9	30
68	Sediment provenance, soil development, and carbon content in fluvial and manmade terraces at Koiliaris River Critical Zone Observatory. Journal of Soils and Sediments, 2015, 15, 347-364.	3.0	29
69	Ecosystem CO₂ starvation and terrestrial silicate weathering: mechanisms and globalâ€scale quantification during the late Miocene. Journal of Ecology, 2012, 100, 31-41.	4.0	27
70	Accumulation and remobilization of aqueous chromium(VI) at iron oxide surfaces: Application of a thin-film continuous flow-through reactor. Journal of Contaminant Hydrology, 1996, 21, 141-151.	3.3	26
71	Nanoscale Observations of Extracellular Polymeric Substances Deposition on Phyllosilicates by an Ectomycorrhizal Fungus. Geomicrobiology Journal, 2013, 30, 721-730.	2.0	26
72	Soil Functions in Earth's Critical Zone. Advances in Agronomy, 2017, 142, 1-27.	5.2	26

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73	Using FTIR spectroscopy to characterise the soil mineralogy and geochemistry of cryoconite from Aldegondabreen glacier, Svalbard. Applied Geochemistry, 2011, 26, S206-S209.	3.0	25
74	In situ atomic force microscopy measurements of biotite basal plane reactivity in the presence of oxalic acid. Geochimica Et Cosmochimica Acta, 2011, 75, 6870-6881.	3.9	25
75	A spatial investigation of the environmental controls over cryoconite aggregation on Longyearbreen glacier, Svalbard. Biogeosciences, 2014, 11, 5365-5380.	3.3	25
76	Effect of extracellular polymeric substances on the mechanical properties of Rhodococcus. Biochimica Et Biophysica Acta - Biomembranes, 2015, 1848, 518-526.	2.6	25
77	Nanoscale channels on ectomycorrhizalâ€colonized chlorite: Evidence for plantâ€driven fungal dissolution. Journal of Geophysical Research, 2012, 117, .	3.3	24
78	SoilTrEC: a global initiative on critical zone research and integration. Environmental Science and Pollution Research, 2014, 21, 3191-3195.	5.3	24
79	Peer Reviewed: A Testbed for Underground Nuclear Repository Design. Environmental Science & Technology, 1997, 31, 510A-514A.	10.0	23
80	Weathering by tree-root-associating fungi diminishes under simulated Cenozoic atmospheric CO₂ decline. Biogeosciences, 2014, 11, 321-331.	3.3	23
81	Hydrological and reactive processes during rapid recharge to fracture zones. Applied Geochemistry, 1999, 14, 873-892.	3.0	22
82	Persistence of Fermentative Process to Phenolic Toxicity in Groundwater. Journal of Environmental Quality, 2006, 35, 2021-2025.	2.0	21
83	Diversity of Planktonic and Attached Bacterial Communities in a Phenol-Contaminated Sandstone Aquifer. Microbial Ecology, 2013, 66, 84-95.	2.8	21
84	Real-Time Gamma Imaging of Technetium Transport through Natural and Engineered Porous Materials for Radioactive Waste Disposal. Environmental Science & Technology, 2013, 47, 13857-13864.	10.0	21
85	Coating a polystyrene well-plate surface with synthetic hematite, goethite and aluminium hydroxide for cell mineral adhesion studies in a controlled environment. Applied Geochemistry, 2014, 42, 60-68.	3.0	21
86	Rate controls on the chemical weathering of natural polymineralic material. I. Dissolution behaviour of polymineralic assemblages determined using batch and unsaturated column experiments. Applied Geochemistry, 2006, 21, 352-376.	3.0	17
87	Dynamic changes in microbial community structure and function in phenol-degrading microcosms inoculated with cells from a contaminated aquifer. FEMS Microbiology Ecology, 2010, 71, 247-259.	2.7	17
88	High-resolution imaging of biotite dissolution and measurement of activation energy. Mineralogical Magazine, 2008, 72, 115-120.	1.4	16
89	Adhesive and conformational behaviour of mycolic acid monolayers. Biochimica Et Biophysica Acta - Biomembranes, 2010, 1798, 1829-1839.	2.6	14
90	The kinetics of O2(aq) reduction by structural ferrous iron in naturally occurring ferrous silicate minerals. Applied Geochemistry, 2005, 20, 2003-2016.	3.0	13

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91	High-Resolution Measurement of Pore Saturation and Colloid Removal Efficiency in Quartz Sand Using Fluorescence Imaging. Environmental Science & Technology, 2007, 41, 8288-8294.	10.0	12
92	Rate controls on the chemical weathering of natural polymineralic material. II. Rate-controlling mechanisms and mineral sources and sinks for element release from four UK mine sites, and implications for comparison of laboratory and field scale weathering studies. Applied Geochemistry, 2006, 21, 377-403.	3.0	11
93	Measurement of Colloid Mobilization and Redeposition during Drainage in Quartz Sand. Environmental Science & Technology, 2009, 43, 5769-5775.	10.0	11
94	Nature-based solutions: business. Nature, 2017, 543, 315-315.	27.8	11
95	Predicting mineral weathering rates at field scale for mine water risk assessment. Geological Society Special Publication, 2002, 198, 137-157.	1.3	10
96	Mineralogical, numerical and analytical studies of the coupled oxidation of pyrite and coal. Mineralogical Magazine, 2003, 67, 381-398.	1.4	10
97	Plant and mycorrhizal driven silicate weathering: Quantifying carbon flux and mineral weathering processes at the laboratory mesocosm scale. Applied Geochemistry, 2011, 26, S314-S316.	3.0	8
98	The Role of Extracellular DNA in Microbial Attachment to Oxidized Silicon Surfaces in the Presence of Ca²⁺ and Na⁺. Langmuir, 2021, 37, 9838-9850.	3.5	6
99	Technetium-99m Transport and Immobilisation in Porous Media: Development of a Novel Nuclear Imaging Technique. Materials Research Society Symposia Proceedings, 2013, 1518, 123-129.	0.1	5
100	The kinetics of O2(aq) reduction during oxidative weathering of naturally occurring fracture minerals in groundwater. Mineralogical Magazine, 2003, 67, 399-414.	1.4	4
101	Economic Valuation of Earthâ€™s Critical Zone: A Pilot Study of the Zhangxi Catchment, China. Sustainability, 2020, 12, 1699.	3.2	3
102	Recovery of technologically critical lanthanides from ion adsorption soils. Minerals Engineering, 2021, 168, 106921.	4.3	3
103	Economic valuation of Earth's critical zone: Framework, theory and methods. Environmental Development, 2021, 40, 100654.	4.1	3
104	Anorthite Surface Speciation and Weathering Reactivity in Bicarbonate Solutions at 25Â°C. , 1994, , 305-316.		3
105	Physicochemical and Biological Assessment and Characterization of Contaminated Sediments. , 2006, , 83-136.		3
106	Protecting the redox stability of a deep repository: concepts, results and experience from the Ã„spÃ¶ hard rock laboratory. Geological Society Special Publication, 1999, 157, 85-99.	1.3	2
107	In Situ Bioremediation by Natural Attenuation: from Lab to Field Scale. AIP Conference Proceedings, 2007, , .	0.4	2
108	Surface Processes in Water Technology. , 1994, , 307-335.		1

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109	Modelling natural attenuation processes of phenol degradation in groundwater. Developments in Water Science, 2002, , 827-834.	0.1	0
110	Development of a novel in situ aquifer assessment tool: The dipole flow and reactive tracer test. , 2004, , 523-527.		0
111	Novel passive treatment for mine water discharges. Water Management, 2008, 161, 367-374.	1.2	0