

Steven A Banwart

List of Publications by Year in descending order

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111
papers

7,279
citations

38660

50
h-index

58464

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. <i>Journal of Contaminant Hydrology</i> , 2000, 45, 165-241.	1.6	413
2	Biological weathering and the long-term carbon cycle: integrating mycorrhizal evolution and function into the current paradigm. <i>Geobiology</i> , 2009, 7, 171-191.	1.1	263
3	Potential for large-scale CO ₂ removal via enhanced rock weathering with croplands. <i>Nature</i> , 2020, 583, 242-248.	13.7	263
4	Mine Water. <i>Environmental Pollution</i> , 2002, , .	0.4	259
5	Dissolution of hydrous iron(III) oxides by reductive mechanisms. <i>Langmuir</i> , 1991, 7, 809-813.	1.6	224
6	Linkages between aggregate formation, porosity and soil chemical properties. <i>Geoderma</i> , 2015, 247-248, 24-37.	2.3	215
7	Shining Light on the Microbial World. <i>Advances in Applied Microbiology</i> , 2010, 70, 153-186.	1.3	185
8	Biotite dissolution at 25Å°C: The pH dependence of dissolution rate and stoichiometry. <i>Geochimica Et Cosmochimica Acta</i> , 1997, 61, 2779-2799.	1.6	183
9	Single cell Raman spectroscopy for cell sorting and imaging. <i>Current Opinion in Biotechnology</i> , 2012, 23, 56-63.	3.3	180
10	Characterization of the Cell Surface and Cell Wall Chemistry of Drinking Water Bacteria by Combining XPS, FTIR Spectroscopy, Modeling, and Potentiometric Titrations. <i>Langmuir</i> , 2008, 24, 4032-4040.	1.6	178
11	Dissolution of fe(iii)(hydr)oxides in natural waters; laboratory assessment on the kinetics controlled by surface coordination. <i>Marine Chemistry</i> , 1989, 28, 127-144.	0.9	165
12	Save our soils. <i>Nature</i> , 2011, 474, 151-152.	13.7	162
13	Soil engineering <i>in vivo</i> : harnessing natural biogeochemical systems for sustainable, multi-functional engineering solutions. <i>Journal of the Royal Society Interface</i> , 2011, 8, 1-15.	1.5	156
14	Resolving the Scale-Dependence of Mineral Weathering Rates. <i>Environmental Science & Technology</i> , 2000, 34, 1375-1378.	4.6	142
15	The structure, biological activity and biogeochemistry of cryoconite aggregates upon an Arctic valley glacier: Longyearbreen, Svalbard. <i>Journal of Glaciology</i> , 2010, 56, 349-362.	1.1	122
16	The reductive dissolution of iron oxides by ascorbate. <i>Journal of Colloid and Interface Science</i> , 1990, 138, 74-82.	5.0	120
17	The role of oxalate in accelerating the reductive dissolution of hematite (Î±-Fe ₂ O ₃) by ascorbate. <i>Colloids and Surfaces</i> , 1989, 39, 303-309.	0.9	117
18	Processes controlling the distribution and natural attenuation of dissolved phenolic compounds in a deep sandstone aquifer. <i>Journal of Contaminant Hydrology</i> , 2001, 53, 233-267.	1.6	111

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19	The microstructure and biogeochemistry of Arctic cryoconite granules. <i>Annals of Glaciology</i> , 2010, 51, 87-94.	2.8	111
20	Tree-mycorrhiza symbiosis accelerate mineral weathering: Evidences from nanometer-scale elemental fluxes at the hypha-mineral interface. <i>Geochimica Et Cosmochimica Acta</i> , 2011, 75, 6988-7005.	1.6	110
21	Evolution of trees and mycorrhizal fungi intensifies silicate mineral weathering. <i>Biology Letters</i> , 2012, 8, 1006-1011.	1.0	110
22	Increased yield and CO ₂ sequestration potential with the C ₄ cereal <i>Sorghum bicolor</i> cultivated in basaltic rock dust-amended agricultural soil. <i>Global Change Biology</i> , 2020, 26, 3658-3676.	4.2	102
23	Kinetic modelling of geochemical processes at the Aitik mining waste rock site in northern Sweden. <i>Applied Geochemistry</i> , 1994, 9, 583-595.	1.4	100
24	Experimental study of acidity-consuming processes in mining waste rock: some influences of mineralogy and particle size. <i>Applied Geochemistry</i> , 1999, 14, 1-16.	1.4	99
25	Carbon dioxide mediated dissolution of Ca-feldspar: implications for silicate weathering. <i>Chemical Geology</i> , 2000, 163, 25-42.	1.4	98
26	Plant-driven weathering of apatite - the role of an ectomycorrhizal fungus. <i>Geobiology</i> , 2012, 10, 445-456.	1.1	96
27	On the Value of Soil Resources in the Context of Natural Capital and Ecosystem Service Delivery. <i>Soil Science Society of America Journal</i> , 2014, 78, 685-700.	1.2	91
28	Optimization of Bacterial Whole Cell Bioreporters for Toxicity Assay of Environmental Samples. <i>Environmental Science & Technology</i> , 2009, 43, 7931-7938.	4.6	84
29	Biofilm formation in environmental bacteria is influenced by different macromolecules depending on genus and species. <i>Environmental Microbiology</i> , 2010, 12, 2496-2507.	1.8	84
30	The dissolution of biotite and chlorite at 25°C in the near-neutral pH region. <i>Journal of Contaminant Hydrology</i> , 1996, 21, 201-213.	1.6	83
31	Biological weathering in soil: the role of symbiotic root-associated fungi biosensing minerals and directing photosynthate-energy into grain-scale mineral weathering. <i>Mineralogical Magazine</i> , 2008, 72, 85-89.	0.6	83
32	Evaluating the effects of terrestrial ecosystems, climate and carbon dioxide on weathering over geological time: a global-scale process-based approach. <i>Philosophical Transactions of the Royal Society B: Biological Sciences</i> , 2012, 367, 565-582.	1.8	83
33	Soil Processes and Functions in Critical Zone Observatories: Hypotheses and Experimental Design. <i>Vadose Zone Journal</i> , 2011, 10, 974-987.	1.3	81
34	In situ monitoring of the biofilm formation of <i>Pseudomonas putida</i> on hematite using flow-cell ATR-FTIR spectroscopy to investigate the formation of inner-sphere bonds between the bacteria and the mineral. <i>Mineralogical Magazine</i> , 2008, 72, 101-106.	0.6	79
35	Hydrochemical modelling for preliminary assessment of minewater pollution. <i>Journal of Geochemical Exploration</i> , 2001, 74, 73-97.	1.5	78
36	Soil Functions: Connecting Earth's Critical Zone. <i>Annual Review of Earth and Planetary Sciences</i> , 2019, 47, 333-359.	4.6	78

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37	Soil carbon, multiple benefits. <i>Environmental Development</i> , 2015, 13, 33-38.	1.8	75
38	Weathering kinetics of waste rock from the Aitik copper mine, Sweden: scale dependent rate factors and pH controls in large column experiments. <i>Journal of Contaminant Hydrology</i> , 1999, 39, 59-89.	1.6	73
39	Oxalate secretion by ectomycorrhizal <i>Paxillus involutus</i> is mineral-specific and controls calcium weathering from minerals. <i>Scientific Reports</i> , 2015, 5, 12187.	1.6	72
40	Human dissemination of genes and microorganisms in Earth's Critical Zone. <i>Global Change Biology</i> , 2018, 24, 1488-1499.	4.2	71
41	Soil processes and functions across an international network of Critical Zone Observatories: Introduction to experimental methods and initial results. <i>Comptes Rendus - Geoscience</i> , 2012, 344, 758-772.	0.4	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. <i>Journal of Contaminant Hydrology</i> , 2001, 53, 199-232.	1.6	65
43	Technologies to deliver food and climate security through agriculture. <i>Nature Plants</i> , 2021, 7, 250-255.	4.7	63
44	Modeling Kinetic Processes Controlling Hydrogen and Acetate Concentrations in an Aquifer-Derived Microcosm. <i>Environmental Science & Technology</i> , 2003, 37, 3910-3919.	4.6	62
45	The role of forest trees and their mycorrhizal fungi in carbonate rock weathering and its significance for global carbon cycling. <i>Plant, Cell and Environment</i> , 2015, 38, 1947-1961.	2.8	60
46	The polymer physics and chemistry of microbial cell attachment and adhesion. <i>Faraday Discussions</i> , 2008, 139, 85.	1.6	59
47	Large-scale Intrusion of shallow water into a vertical fracture zone in crystalline bedrock: Initial hydrochemical perturbation during tunnel construction at the Åspå Hard Rock Laboratory, southeastern Sweden. <i>Water Resources Research</i> , 1994, 30, 1747-1763.	1.7	56
48	Analysis of Bacteria on Steel Surfaces Using Reflectance Micro-Fourier Transform Infrared Spectroscopy. <i>Analytical Chemistry</i> , 2009, 81, 6467-6473.	3.2	56
49	A coupled carbon, aggregation, and structure turnover (CAST) model for topsoils. <i>Geoderma</i> , 2013, 211-212, 51-64.	2.3	55
50	Ineffective Natural Attenuation of Degradable Organic Compounds in a Phenol-Contaminated Aquifer. <i>Ground Water</i> , 2000, 38, 922-928.	0.7	53
51	Adsorption of poly acrylic acid onto the surface of calcite: an experimental and simulation study. <i>Physical Chemistry Chemical Physics</i> , 2015, 17, 27357-27365.	1.3	52
52	Pore system characteristics of soil aggregates and their relevance to aggregate stability. <i>Geoderma</i> , 2020, 366, 114259.	2.3	50
53	Substantial carbon drawdown potential from enhanced rock weathering in the United Kingdom. <i>Nature Geoscience</i> , 2022, 15, 382-389.	5.4	48
54	Benefits of soil carbon: report on the outcomes of an international scientific committee on problems of the environment rapid assessment workshop. <i>Carbon Management</i> , 2014, 5, 185-192.	1.2	46

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55	Engaging with the water sector for public health benefits: waterborne pathogens and diseases in developed countries. <i>Bulletin of the World Health Organization</i> , 2010, 88, 873-875.	1.5	42
56	Effects of mineralogy, chemistry and physical properties of basalts on carbon capture potential and plant-nutrient element release via enhanced weathering. <i>Applied Geochemistry</i> , 2021, 132, 105023.	1.4	42
57	Modeling the Dynamics of Fermentation and Respiratory Processes in a Groundwater Plume of Phenolic Contaminants Interpreted from Laboratory- to Field-Scale. <i>Environmental Science & Technology</i> , 2005, 39, 8829-8839.	4.6	40
58	Ectomycorrhizal fungi and past high CO ₂ atmospheres enhance mineral weathering through increased below-ground carbon-energy fluxes. <i>Biology Letters</i> , 2014, 10, 20140375.	1.0	40
59	Organic carbon oxidation induced by large-scale shallow water intrusion into a vertical fracture zone at the ÅspÅ Hard Rock Laboratory (Sweden). <i>Journal of Contaminant Hydrology</i> , 1996, 21, 115-125.	1.6	39
60	Modeling the evolutionary rise of ectomycorrhiza on sub-surface weathering environments and the geochemical carbon cycle. <i>Numerische Mathematik</i> , 2011, 311, 369-403.	0.7	37
61	High resolution characterization of ectomycorrhizal fungal-mineral interactions in axenic microcosm experiments. <i>Biogeochemistry</i> , 2012, 111, 411-425.	1.7	35
62	Reduction of iron(III) minerals by natural organic matter in groundwater. <i>Geochimica Et Cosmochimica Acta</i> , 1999, 63, 2919-2928.	1.6	34
63	A geochemical model for removal of iron(II)(aq) from mine water discharges. <i>Applied Geochemistry</i> , 2002, 17, 431-443.	1.4	34
64	Noninvasive Quantitative Measurement of Colloid Transport in Mesoscale Porous Media Using Time Lapse Fluorescence Imaging. <i>Environmental Science & Technology</i> , 2006, 40, 5930-5936.	4.6	32
65	Simulating carbon capture by enhanced weathering with croplands: an overview of key processes highlighting areas of future model development. <i>Biology Letters</i> , 2017, 13, 20160868.	1.0	32
66	Biodegradation Processes in a Laboratory-Scale Groundwater Contaminant Plume Assessed by Fluorescence Imaging and Microbial Analysis. <i>Applied and Environmental Microbiology</i> , 2007, 73, 3865-3876.	1.4	31
67	Process-based modeling of silicate mineral weathering responses to increasing atmospheric CO ₂ and climate change. <i>Global Biogeochemical Cycles</i> , 2009, 23, .	1.9	30
68	Sediment provenance, soil development, and carbon content in fluvial and manmade terraces at Koiliaris River Critical Zone Observatory. <i>Journal of Soils and Sediments</i> , 2015, 15, 347-364.	1.5	29
69	Ecosystem CO ₂ starvation and terrestrial silicate weathering: mechanisms and global-scale quantification during the late Miocene. <i>Journal of Ecology</i> , 2012, 100, 31-41.	1.9	27
70	Accumulation and remobilization of aqueous chromium(VI) at iron oxide surfaces: Application of a thin-film continuous flow-through reactor. <i>Journal of Contaminant Hydrology</i> , 1996, 21, 141-151.	1.6	26
71	Nanoscale Observations of Extracellular Polymeric Substances Deposition on Phyllosilicates by an Ectomycorrhizal Fungus. <i>Geomicrobiology Journal</i> , 2013, 30, 721-730.	1.0	26
72	Soil Functions in Earth's Critical Zone. <i>Advances in Agronomy</i> , 2017, 142, 1-27.	2.4	26

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73	Using FTIR spectroscopy to characterise the soil mineralogy and geochemistry of cryoconite from Aldegondabreen glacier, Svalbard. <i>Applied Geochemistry</i> , 2011, 26, S206-S209.	1.4	25
74	In situ atomic force microscopy measurements of biotite basal plane reactivity in the presence of oxalic acid. <i>Geochimica Et Cosmochimica Acta</i> , 2011, 75, 6870-6881.	1.6	25
75	A spatial investigation of the environmental controls over cryoconite aggregation on Longyearbreen glacier, Svalbard. <i>Biogeosciences</i> , 2014, 11, 5365-5380.	1.3	25
76	Effect of extracellular polymeric substances on the mechanical properties of <i>Rhodococcus</i> . <i>Biochimica Et Biophysica Acta - Biomembranes</i> , 2015, 1848, 518-526.	1.4	25
77	Nanoscale channels on ectomycorrhizal-colonized chlorite: Evidence for plant-driven fungal dissolution. <i>Journal of Geophysical Research</i> , 2012, 117, .	3.3	24
78	SoilTrEC: a global initiative on critical zone research and integration. <i>Environmental Science and Pollution Research</i> , 2014, 21, 3191-3195.	2.7	24
79	Peer Reviewed: A Testbed for Underground Nuclear Repository Design. <i>Environmental Science & Technology</i> , 1997, 31, 510A-514A.	4.6	23
80	Weathering by tree-root-associating fungi diminishes under simulated Cenozoic atmospheric CO ₂ decline. <i>Biogeosciences</i> , 2014, 11, 321-331.	1.3	23
81	Hydrological and reactive processes during rapid recharge to fracture zones. <i>Applied Geochemistry</i> , 1999, 14, 873-892.	1.4	22
82	Persistence of Fermentative Process to Phenolic Toxicity in Groundwater. <i>Journal of Environmental Quality</i> , 2006, 35, 2021-2025.	1.0	21
83	Diversity of Planktonic and Attached Bacterial Communities in a Phenol-Contaminated Sandstone Aquifer. <i>Microbial Ecology</i> , 2013, 66, 84-95.	1.4	21
84	Real-Time Gamma Imaging of Technetium Transport through Natural and Engineered Porous Materials for Radioactive Waste Disposal. <i>Environmental Science & Technology</i> , 2013, 47, 13857-13864.	4.6	21
85	Coating a polystyrene well-plate surface with synthetic hematite, goethite and aluminium hydroxide for cell mineral adhesion studies in a controlled environment. <i>Applied Geochemistry</i> , 2014, 42, 60-68.	1.4	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. <i>Applied Geochemistry</i> , 2006, 21, 352-376.	1.4	17
87	Dynamic changes in microbial community structure and function in phenol-degrading microcosms inoculated with cells from a contaminated aquifer. <i>FEMS Microbiology Ecology</i> , 2010, 71, 247-259.	1.3	17
88	High-resolution imaging of biotite dissolution and measurement of activation energy. <i>Mineralogical Magazine</i> , 2008, 72, 115-120.	0.6	16
89	Adhesive and conformational behaviour of mycolic acid monolayers. <i>Biochimica Et Biophysica Acta - Biomembranes</i> , 2010, 1798, 1829-1839.	1.4	14
90	The kinetics of O ₂ (aq) reduction by structural ferrous iron in naturally occurring ferrous silicate minerals. <i>Applied Geochemistry</i> , 2005, 20, 2003-2016.	1.4	13

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91	High-Resolution Measurement of Pore Saturation and Colloid Removal Efficiency in Quartz Sand Using Fluorescence Imaging. <i>Environmental Science & Technology</i> , 2007, 41, 8288-8294.	4.6	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. <i>Applied Geochemistry</i> , 2006, 21, 377-403.	1.4	11
93	Measurement of Colloid Mobilization and Redeposition during Drainage in Quartz Sand. <i>Environmental Science & Technology</i> , 2009, 43, 5769-5775.	4.6	11
94	Nature-based solutions: business. <i>Nature</i> , 2017, 543, 315-315.	13.7	11
95	Predicting mineral weathering rates at field scale for mine water risk assessment. <i>Geological Society Special Publication</i> , 2002, 198, 137-157.	0.8	10
96	Mineralogical, numerical and analytical studies of the coupled oxidation of pyrite and coal. <i>Mineralogical Magazine</i> , 2003, 67, 381-398.	0.6	10
97	Plant and mycorrhizal driven silicate weathering: Quantifying carbon flux and mineral weathering processes at the laboratory mesocosm scale. <i>Applied Geochemistry</i> , 2011, 26, S314-S316.	1.4	8
98	The Role of Extracellular DNA in Microbial Attachment to Oxidized Silicon Surfaces in the Presence of Ca ²⁺ and Na ⁺ . <i>Langmuir</i> , 2021, 37, 9838-9850.	1.6	6
99	Technetium-99m Transport and Immobilisation in Porous Media: Development of a Novel Nuclear Imaging Technique. <i>Materials Research Society Symposia Proceedings</i> , 2013, 1518, 123-129.	0.1	5
100	The kinetics of O ₂ (aq) reduction during oxidative weathering of naturally occurring fracture minerals in groundwater. <i>Mineralogical Magazine</i> , 2003, 67, 399-414.	0.6	4
101	Economic Valuation of Earth's Critical Zone: A Pilot Study of the Zhangxi Catchment, China. <i>Sustainability</i> , 2020, 12, 1699.	1.6	3
102	Recovery of technologically critical lanthanides from ion adsorption soils. <i>Minerals Engineering</i> , 2021, 168, 106921.	1.8	3
103	Economic valuation of Earth's critical zone: Framework, theory and methods. <i>Environmental Development</i> , 2021, 40, 100654.	1.8	3
104	Anorthite Surface Speciation and Weathering Reactivity in Bicarbonate Solutions at 25°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 Åspå hard rock laboratory. <i>Geological Society Special Publication</i> , 1999, 157, 85-99.	0.8	2
107	In Situ Bioremediation by Natural Attenuation: from Lab to Field Scale. <i>AIP Conference Proceedings</i> , 2007, , .	0.3	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. <i>Developments in Water Science</i> , 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. <i>Water Management</i> , 2008, 161, 367-374.	0.4	0