

# Edgar C Buck

## List of Publications by Year in descending order

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109  
papers

3,257  
citations

201575

27  
h-index

175177

52  
g-index

145  
all docs

145  
docs citations

145  
times ranked

3098  
citing authors

#	ARTICLE	IF	CITATIONS
1	Solubility controls on plutonium and americium release in subsurface environments exposed to acidic processing wastes. <i>Applied Geochemistry</i> , 2023, 153, 105241.	1.4	0
2	A Review of Bismuth(III)-Based Materials for Remediation of Contaminated Sites. <i>ACS Earth and Space Chemistry</i> , 2022, 6, 883-908.	1.2	6
3	Interfacial Engineering with a Nanoparticle-Decorated Porous Carbon Structure on $\gamma$ -Alumina Solid-State Electrolytes for Molten Sodium Batteries. <i>ACS Applied Materials &amp; Interfaces</i> , 2022, 14, 25534-25544.	4.0	8
4	A microfluidic electrochemical cell for studying the corrosion of uranium dioxide ( $UO_2$ ). <i>RSC Advances</i> , 2022, 12, 19350-19358.	1.7	2
5	Formation and growth of cerium (III) oxalate nanocrystals by liquid-cell transmission electron microscopy. <i>Scripta Materialia</i> , 2022, 219, 114856.	2.6	5
6	Towards data-driven next-generation transmission electron microscopy. <i>Nature Materials</i> , 2021, 20, 274-279.	13.3	130
7	Stamping Nanoparticles onto the Electrode for Rapid Electrochemical Analysis in Microfluidics. <i>Micromachines</i> , 2021, 12, 60.	1.4	7
8	Thermal properties of U-Mo alloys irradiated under high fission power density. <i>Journal of Nuclear Materials</i> , 2021, 547, 152823.	1.3	6
9	Neutron irradiation induced changes in isotopic abundance of $^6Li$ and 3D nanoscale distribution of tritium in $LiAlO_2$ pellets analyzed by atom probe tomography. <i>Materials Characterization</i> , 2021, 176, 111095.	1.9	15
10	Cryo-TEM Characterization of the Early Stages of the Uranium Oxalate Growth Evolution. <i>Microscopy and Microanalysis</i> , 2021, 27, 1940-1941.	0.2	0
11	Making electrodes by particle stamping for microscopic and electrochemical analysis. <i>Microscopy and Microanalysis</i> , 2021, 27, 2504-2506.	0.2	0
12	Formation of pyrophosphates across grain boundaries induces the formation of mismatched but oriented interfaces in silver phosphate polypods. <i>Applied Surface Science</i> , 2021, 563, 149980.	3.1	1
13	Studying Corrosion Using Miniaturized Particle Attached Working Electrodes and the Nafion Membrane. <i>Micromachines</i> , 2021, 12, 1414.	1.4	3
14	Focused ion beam for improved spatially-resolved mass spectrometry and analysis of radioactive materials for uranium isotopic analysis. <i>Talanta</i> , 2020, 211, 120720.	2.9	15
15	Targeted uranium recovery from complex alloys using fluoride volatility. <i>Journal of Fluorine Chemistry</i> , 2020, 235, 109539.	0.9	0
16	Spontaneous redox continuum reveals sequestered technetium clusters and retarded mineral transformation of iron. <i>Communications Chemistry</i> , 2020, 3, .	2.0	8
17	An Atomic-Scale Understanding of $UO_2$ Surface Evolution during Anoxic Dissolution. <i>ACS Applied Materials &amp; Interfaces</i> , 2020, 12, 39781-39786.	4.0	8
18	Nanoscale Diffusion of Lead in 300Ma Old $UTi_2O_6$ Mineral. <i>Microscopy and Microanalysis</i> , 2020, 26, 172-174.	0.2	0

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19	Unveiling the Early Stages of the F-element Oxalate Growth Evolution with Cryo-TEM. <i>Microscopy and Microanalysis</i> , 2020, 26, 642-644.	0.2	3
20	Studying the UO <sub>2</sub> Electrochemistry In Situ Using SEM. <i>Microscopy and Microanalysis</i> , 2020, 26, 1790-1792.	0.2	0
21	In situ liquid SIMS analysis of uranium oxide. <i>Surface and Interface Analysis</i> , 2020, 52, 454-459.	0.8	4
22	Distribution of metallic fission-product particles in the cladding liner of spent nuclear fuel. <i>Npj Materials Degradation</i> , 2020, 4, .	2.6	11
23	A new non-diffusional gas bubble production route in used nuclear fuel: implications for fission gas release, cladding corrosion, and next generation fuel design. <i>Physical Chemistry Chemical Physics</i> , 2020, 22, 6086-6099.	1.3	3
24	Nanoscale Quantification of Interstitial Oxygen in Hyperstoichiometric UO <sub>2+x</sub> . <i>Microscopy and Microanalysis</i> , 2019, 25, 1598-1599.	0.2	0
25	In Operando SEM Imaging of Electrochemical Oxidation of UO <sub>2</sub> in Liquid. <i>Microscopy and Microanalysis</i> , 2019, 25, 1578-1579.	0.2	0
26	Revisiting the Growth Mechanism of Hierarchical Semiconductor Nanostructures: The Role of Secondary Nucleation in Branch Formation. <i>Journal of Physical Chemistry Letters</i> , 2019, 10, 6827-6834.	2.1	20
27	An electrochemical technique for controlled dissolution of zirconium based components of light water reactors. <i>RSC Advances</i> , 2019, 9, 1869-1881.	1.7	1
28	Fission recoil-induced microstructural evolution of the fuel-cladding interface [FCI] in high burnup BWR fuel. <i>Journal of Nuclear Materials</i> , 2019, 521, 120-125.	1.3	11
29	Chemical and Isotopic Characterization of Noble Metal Phase from Commercial UO <sub>2</sub> Fuel. <i>Analytical Chemistry</i> , 2019, 91, 6522-6529.	3.2	9
30	Nanoscale oxygen defect gradients in UO <sub>2+x</sub> surfaces. <i>Proceedings of the National Academy of Sciences of the United States of America</i> , 2019, 116, 17181-17186.	3.3	17
31	<i>In situ</i> microscopy across scales for the characterization of crystal growth mechanisms: the case of europium oxalate. <i>CrystEngComm</i> , 2018, 20, 2822-2833.	1.3	10
32	Review of the Scientific Understanding of Radioactive Waste at the U.S. DOE Hanford Site. <i>Environmental Science &amp; Technology</i> , 2018, 52, 381-396.	4.6	130
33	Getters for improved technetium containment in cementitious waste forms. <i>Journal of Hazardous Materials</i> , 2018, 341, 238-247.	6.5	25
34	Determination of the degree of grain refinement in irradiated U-Mo fuels. <i>Heliyon</i> , 2018, 4, e00920.	1.4	3
35	Monitoring bromide effect on radiolytic yields using <i>in situ</i> observations of uranyl oxide precipitation in the electron microscope. <i>RSC Advances</i> , 2018, 8, 18227-18233.	1.7	9
36	Characterization of fission gas bubbles in irradiated U-10Mo fuel. <i>Materials Characterization</i> , 2017, 131, 459-471.	1.9	14

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37	Effects of hydrated lime on radionuclides stabilization of Hanford tank residual waste. <i>Chemosphere</i> , 2017, 185, 171-177.	4.2	3
38	Performance evaluation and post-irradiation examination of a novel LWR fuel composed of UO <sub>2</sub> ZrHf1.6 fuel pellets bonded to Zircaloy-2 cladding by lead bismuth eutectic. <i>Journal of Nuclear Materials</i> , 2017, 486, 391-401.	1.3	2
39	Importance of interlayer H bonding structure to the stability of layered minerals. <i>Scientific Reports</i> , 2017, 7, 13274.	1.6	42
40	Formation of Technetium Salts in Hanford Low-Activity Waste Glass. <i>Journal of the American Ceramic Society</i> , 2016, 99, 3924-3931.	1.9	9
41	Sequestration of radioactive iodine in silver-palladium phases in commercial spent nuclear fuel. <i>Journal of Nuclear Materials</i> , 2016, 482, 229-235.	1.3	13
42	Synthesis and preservation of graphene-supported uranium dioxide nanocrystals. <i>Journal of Nuclear Materials</i> , 2016, 475, 113-122.	1.3	15
43	Can Cr substitute for Al in the structure of boehmite?. <i>RSC Advances</i> , 2016, 6, 107628-107637.	1.7	15
44	Identification of Uranyl Minerals Using Oxygen K-Edge X-Ray Absorption Spectroscopy. <i>Geostandards and Geoanalytical Research</i> , 2016, 40, 135-148.	1.7	9
45	Correlative Microscopic, Spectroscopic, and Computational Analysis of the Nucleation and Growth of Europium (III) Oxalate Nanoparticles. <i>Microscopy and Microanalysis</i> , 2016, 22, 1396-1397.	0.2	0
46	Time-Resolved Infrared Reflectance Studies of the Dehydration-Induced Transformation of Uranyl Nitrate Hexahydrate to the Trihydrate Form. <i>Journal of Physical Chemistry A</i> , 2015, 119, 9996-10006.	1.1	27
47	Dehydration of uranyl nitrate hexahydrate to uranyl nitrate trihydrate under ambient conditions as observed via dynamic infrared reflectance spectroscopy. <i>Proceedings of SPIE</i> , 2015, , .	0.8	3
48	Nanostructure of metallic particles in light water reactor used nuclear fuel. <i>Journal of Nuclear Materials</i> , 2015, 461, 236-243.	1.3	25
49	Thermal properties of U-Mo alloys irradiated to moderate burnup and power. <i>Journal of Nuclear Materials</i> , 2015, 464, 331-341.	1.3	33
50	On the mechanical stability of uranyl peroxide hydrates: implications for nuclear fuel degradation. <i>RSC Advances</i> , 2015, 5, 79090-79097.	1.7	46
51	Conditions for Critical Effects in the Mass Action Kinetics Equations for Water Radiolysis. <i>Journal of Physical Chemistry A</i> , 2014, 118, 12105-12110.	1.1	4
52	Development and Validation of Capabilities to Measure Thermal Properties of Layered Monolithic U-Mo Alloy Plate-Type Fuel. <i>International Journal of Thermophysics</i> , 2014, 35, 1476-1500.	1.0	8
53	The solubility of <sup>242</sup> PuO <sub>2</sub> in the presence of aqueous Fe(II): the impact of precipitate preparation. <i>Radiochimica Acta</i> , 2014, 102, 861.	0.5	0
54	Nature of nano-sized plutonium particles in soils at the Hanford Site. <i>Radiochimica Acta</i> , 2014, 102, 1059-1068.	0.5	13

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55	Separation of metallic residues from the dissolution of a high-burnup BWR fuel using nitrogen trifluoride. <i>Journal of Fluorine Chemistry</i> , 2014, 162, 1-8.	0.9	24
56	Chemical stabilization of Hanford tank residual waste. <i>Journal of Nuclear Materials</i> , 2014, 446, 246-256.	1.3	14
57	Single-pass flow-through test elucidation of weathering behavior and evaluation of contaminant release models for Hanford tank residual radioactive waste. <i>Applied Geochemistry</i> , 2013, 28, 119-127.	1.4	10
58	Formation of Tc metal in 12M HCl using Zn as a reductant. <i>Journal of Radioanalytical and Nuclear Chemistry</i> , 2013, 298, 1315-1321.	0.7	2
59	Spectroscopic studies of the several isomers of UO <sub>3</sub> . , 2013, , .		3
60	Technetium Incorporation into C14 and C15 Laves Intermetallic Phases. <i>Materials Research Society Symposia Proceedings</i> , 2013, 1518, 117-122.	0.1	0
61	Heterogeneous reduction of <sup>239</sup> PuO <sub>2</sub> by aqueous Fe(II) in the presence of hematite. <i>Radiochimica Acta</i> , 2013, 101, 701-710.	0.5	3
62	Sensitivity of UO <sub>2</sub> Stability in a Reducing Environment on Radiolysis Model Parameters. <i>Materials Research Society Symposia Proceedings</i> , 2012, 1444, 3.	0.1	4
63	Biotic and Abiotic Reduction and Solubilization of Pu(IV)O <sub>2</sub> ·xH <sub>2</sub> O(am) as Affected by Anthraquinone-2,6-disulfonate (AQDS) and Ethylenediaminetetraacetate (EDTA). <i>Environmental Science &amp; Technology</i> , 2012, 46, 2132-2140.	4.6	20
64	Controls on Soluble Pu Concentrations in PuO <sub>2</sub> /Magnetite Suspensions. <i>Environmental Science &amp; Technology</i> , 2012, 46, 11610-11617.	4.6	7
65	Investigations into the polymorphs and hydration products of UO <sub>3</sub> . , 2012, , .		0
66	Imaging Hydrated Microbial Extracellular Polymers: Comparative Analysis by Electron Microscopy. <i>Applied and Environmental Microbiology</i> , 2011, 77, 1254-1262.	1.4	168
67	Immobilization of <sup>99</sup> -Technetium (VII) by Fe(II)-Goethite and Limited Reoxidation. <i>Environmental Science &amp; Technology</i> , 2011, 45, 4904-4913.	4.6	124
68	Heterogeneous Reduction of PuO <sub>2</sub> with Fe(II): Importance of the Fe(III) Reaction Product. <i>Environmental Science &amp; Technology</i> , 2011, 45, 3952-3958.	4.6	38
69	Verifying the presence of low levels of neptunium in a uranium matrix with electron energy-loss spectroscopy. <i>Micron</i> , 2010, 41, 65-70.	1.1	10
70	Spectroscopic characterization of actinide materials. <i>MRS Bulletin</i> , 2010, 35, 889-895.	1.7	7
71	Uranium*. , 2010, , 253-698.		30
72	Influence of Dynamical Conditions on the Reduction of U <sup>VI</sup> at the Magnetite-Solution Interface. <i>Environmental Science &amp; Technology</i> , 2010, 44, 170-176.	4.6	110

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73	Characterization of High Phosphate Radioactive Tank Waste and Simulant Development. Environmental Science & Technology, 2009, 43, 7843-7848.	4.6	15
74	Uranium. , 2008, , 253-698.		71
75	Radiation damage effects in candidate titanates for Pu disposition: Zirconolite. Journal of Nuclear Materials, 2008, 372, 16-31.	1.3	52
76	Radiolytic microscale power generation based on single chamber fuel cell operation. Journal of Micromechanics and Microengineering, 2007, 17, S250-S256.	1.5	3
77	Observation of aqueous Cm(III)/Eu(III) and UO <sub>2</sub> <sup>2+</sup> nanoparticulates at concentrations approaching solubility limit by laser-induced fluorescence spectroscopy. Journal of Alloys and Compounds, 2006, 418, 166-170.	2.8	6
78	Incorporation of cerium and neodymium in uranyl phases. Journal of Nuclear Materials, 2006, 353, 147-157.	1.3	17
79	Radiation damage effects in candidate titanates for Pu disposition: Pyrochlore. Journal of Nuclear Materials, 2005, 345, 109-135.	1.3	86
80	Determination of the uranium valence state in the brannerite structure using EELS, XPS, and EDX. Physics and Chemistry of Minerals, 2005, 32, 52-64.	0.3	83
81	Corrosion of commercial spent nuclear fuel. 2. Radiochemical analyses of metastudtite and leachates. Radiochimica Acta, 2005, 93, 169-175.	0.5	45
82	Microscale characterization of uranium(VI) silicate solids and associated neptunium(V). Radiochimica Acta, 2005, 93, .	0.5	33
83	Neptunium(V) Partitioning to Uranium(VI) Oxide and Peroxide Solids. Environmental Science & Technology, 2005, 39, 4117-4124.	4.6	49
84	Comment on "Extended electron energy loss fine structure simulation of the local boron environment in sodium aluminosilicate glasses containing gadolinium" by M. Qian, H. Li, L. Li and D.M. Strachan [J. Non-Cryst. Solids 328 (2003) 90]. Journal of Non-Crystalline Solids, 2005, 351, 184-185.	1.5	1
85	Corrosion of commercial spent nuclear fuel. 1. Formation of studtite and metastudtite. Radiochimica Acta, 2005, 93, .	0.5	89
86	The geochemical behaviour of Tc, Np and Pu in spent nuclear fuel in an oxidizing environment. Geological Society Special Publication, 2004, 236, 65-88.	0.8	14
87	Evidence for Neptunium Incorporation into Uranium (VI) Phases. Materials Research Society Symposia Proceedings, 2004, 824, 538.	0.1	3
88	Electron energy-loss spectroscopy of anomalous plutonium behavior in nuclear waste materials. Micron, 2004, 35, 235-243.	1.1	31
89	Precipitation of Nitrate <sup>2-</sup> Cancrinite in Hanford Tank Sludge. Environmental Science & Technology, 2004, 38, 4432-4438.	4.6	27
90	Synthesis, Characterization, and Manipulation of Helical SiO <sub>2</sub> Nanosprings. Nano Letters, 2003, 3, 577-580.	4.5	198

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91	Neptunium Incorporation into Uranium(VI) Compounds formed During Aqueous Corrosion of Neptunium-Bearing Uranium Oxides. Materials Research Society Symposia Proceedings, 2002, 713, 1.	0.1	3
92	Investigation of the Oxidation State of Uranium in Nuclear Materials and their Alteration Products. Materials Research Society Symposia Proceedings, 2002, 713, 1.	0.1	0
93	Lithium-Assisted Self-Assembly of Aluminum Carbide Nanowires and Nanoribbons. Nano Letters, 2002, 2, 105-108.	4.5	45
94	10. Uranium Mineralogy and the Geologic Disposal of Spent Nuclear Fuel. , 1999, , 475-498.		25
95	Oxidative Corrosion of Spent $UO_2$ Fuel in Vapor and Dripping Groundwater at 90°C. Materials Research Society Symposia Proceedings, 1999, 556, 431.	0.1	98
96	Microanalysis of colloids and suspended particles from nuclear waste glass alteration. Applied Geochemistry, 1999, 14, 635-653.	1.4	53
97	Physical and Chemical Characterization of Actinides in Soil from Johnston Atoll. Environmental Science & Technology, 1997, 31, 467-471.	4.6	27
98	A new uranyl oxide hydrate phase derived from spent fuel alteration. Journal of Nuclear Materials, 1997, 249, 70-76.	1.3	73
99	EELS analysis of redox in glasses for plutonium immobilization. Ultramicroscopy, 1997, 67, 77-81.	0.8	63
100	Detecting low levels of transuranics with electron energy loss spectroscopy. Ultramicroscopy, 1997, 67, 69-75.	0.8	26
101	Contaminant Uranium Phases and Leaching at the Fernald Site in Ohio. Environmental Science & Technology, 1996, 30, 81-88.	4.6	157
102	The chemistry of the light rare-earth elements as determined by electron energy loss spectroscopy. Applied Physics Letters, 1996, 68, 3817-3819.	1.5	69
103	Solution-Borne Colloids from Drip Tests using actinide-Doped and Fully-Radioactive Waste Glasses. Materials Research Society Symposia Proceedings, 1996, 465, 165.	0.1	4
104	Grain Boundary Corrosion and Alteration Phase Formation During the Oxidative Dissolution of $UO_2$ Pellets. Materials Research Society Symposia Proceedings, 1996, 465, 519.	0.1	11
105	Ten-year results from unsaturated drip tests with $UO_2$ at 90°C: implications for the corrosion of spent nuclear fuel. Journal of Nuclear Materials, 1996, 238, 78-95.	1.3	258
106	Uranium-contaminated soils: Ultramicrotomy and electron beam analysis. Microscopy Research and Technique, 1995, 31, 174-181.	1.2	11
107	Effects of electron irradiation of barium titanate. Radiation Effects and Defects in Solids, 1995, 133, 15-25.	0.4	10
108	Long-Term Comparison of Dissolution Behavior Between Fully Radioactive and Simulated Nuclear Waste Glasses. Nuclear Technology, 1993, 104, 193-206.	0.7	23

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109	Waste Glass Weathering. Materials Research Society Symposia Proceedings, 1993, 333, 41.	0.1	6