

James Badro

List of Publications by Citations

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96
papers

5,260
citations

39
h-index

71
g-index

103
ext. papers

5,844
ext. citations

7.8
avg, IF

5.5
L-index

#	Paper	IF	Citations
96	Synthesis and characterization of a binary noble metal nitride. <i>Nature Materials</i> , 2004 , 3, 294-7	27	464
95	Iron partitioning in Earth's mantle: toward a deep lower mantle discontinuity. <i>Science</i> , 2003 , 300, 789-91	33.3	422
94	Electronic transitions in perovskite: possible nonconvecting layers in the lower mantle. <i>Science</i> , 2004 , 305, 383-6	33.3	325
93	X-ray Imaging of Stress and Strain of Diamond, Iron, and Tungsten at Megabar Pressures. <i>Science</i> , 1997 , 276, 1242-1245	33.3	211
92	Effect of light elements on the sound velocities in solid iron: Implications for the composition of Earth's core. <i>Earth and Planetary Science Letters</i> , 2007 , 254, 233-238	5.3	193
91	A seismologically consistent compositional model of Earth's core. <i>Proceedings of the National Academy of Sciences of the United States of America</i> , 2014 , 111, 7542-5	11.5	167
90	Pressure-Induced High-Spin to Low-Spin Transition in FeS Evidenced by X-Ray Emission Spectroscopy. <i>Physical Review Letters</i> , 1999 , 82, 3284-3287	7.4	160
89	Magnetism in FeO at Megabar Pressures from X-Ray Emission Spectroscopy. <i>Physical Review Letters</i> , 1999 , 83, 4101-4104	7.4	157
88	Terrestrial accretion under oxidizing conditions. <i>Science</i> , 2013 , 339, 1194-7	33.3	150
87	Sound velocities in iron to 110 gigapascals. <i>Science</i> , 2001 , 291, 468-71	33.3	134
86	Experimental evidence for a high-pressure isostructural phase transition in osmium. <i>Physical Review Letters</i> , 2004 , 93, 095502	7.4	111
85	Composition of the Earth's inner core from high-pressure sound velocity measurements in FeNiSi alloys. <i>Earth and Planetary Science Letters</i> , 2010 , 295, 292-296	5.3	109
84	Element partitioning between magnesium silicate perovskite and ferropericlase: New insights into bulk lower-mantle geochemistry. <i>Earth and Planetary Science Letters</i> , 2008 , 269, 164-174	5.3	107
83	Elastic anisotropy in textured hcp-iron to 112 GPa from sound wave propagation measurements. <i>Earth and Planetary Science Letters</i> , 2004 , 225, 243-251	5.3	104
82	Spin crossover in ferropericlase at high pressure: a seismologically transparent transition?. <i>Science</i> , 2011 , 331, 64-7	33.3	102
81	An early geodynamo driven by exsolution of mantle components from Earth's core. <i>Nature</i> , 2016 , 536, 326-8	50.4	100
80	Metal-silicate partitioning of Ni and Co in a deep magma ocean. <i>Earth and Planetary Science Letters</i> , 2012 , 321-322, 189-197	5.3	100

79	Core formation and core composition from coupled geochemical and geophysical constraints. <i>Proceedings of the National Academy of Sciences of the United States of America</i> , 2015 , 112, 12310-4	11.5	94
78	Copper isotope evidence for large-scale sulphide fractionation during Earth's differentiation. <i>Geochemical Perspectives Letters</i> , 2015 , 53-64	3	93
77	Nature of the high-pressure transition in Fe ₂ O ₃ hematite. <i>Physical Review Letters</i> , 2002 , 89, 205504	7.4	90
76	High-pressure behavior in alpha -AlPO ₄ : Amorphization and the memory-glass effect. <i>Physical Review B</i> , 1995 , 51, 11262-11269	3.3	90
75	Deformation of (Mg _{0.9} ,Fe _{0.1})SiO ₃ Perovskite aggregates up to 32 GPa. <i>Earth and Planetary Science Letters</i> , 2003 , 209, 351-360	5.3	82
74	Oxygen and silicon contents of Earth's core from high pressure metal-silicate partitioning experiments. <i>Earth and Planetary Science Letters</i> , 2011 , 310, 409-421	5.3	74
73	Numerical simulation of alpha -quartz under nonhydrostatic compression: Memory glass and five-coordinated crystalline phases. <i>Physical Review Letters</i> , 1996 , 76, 772-775	7.4	70
72	Silicon isotopes in angrites and volatile loss in planetesimals. <i>Proceedings of the National Academy of Sciences of the United States of America</i> , 2014 , 111, 17029-32	11.5	66
71	Thermodynamic properties and isotopic fractionation of calcite from vibrational spectroscopy of ¹⁸ O-substituted calcite. <i>Geochimica Et Cosmochimica Acta</i> , 1996 , 60, 3471-3485	5.5	62
70	Sound velocity in iron carbide (Fe ₃ C) at high pressure: Implications for the carbon content of the Earth's inner core. <i>Physics of the Earth and Planetary Interiors</i> , 2009 , 172, 125-129	2.3	61
69	Low argon solubility in silicate melts at high pressure. <i>Nature</i> , 1998 , 393, 352-355	50.4	61
68	Aggregate and single-crystalline elasticity of hcp cobalt at high pressure. <i>Physical Review B</i> , 2005 , 72,	3.3	57
67	Theoretical study of a five-coordinated silica polymorph. <i>Physical Review B</i> , 1997 , 56, 5797-5806	3.3	56
66	Elasticity of cobalt at high pressure studied by inelastic x-ray scattering. <i>Physical Review Letters</i> , 2004 , 93, 215505	7.4	51
65	A Strong to Fragile Transition in a Model of Liquid Silica. <i>Molecular Simulation</i> , 1997 , 20, 17-25	2	45
64	Effect of composition, structure, and spin state on the thermal conductivity of the Earth's lower mantle. <i>Physics of the Earth and Planetary Interiors</i> , 2010 , 180, 148-153	2.3	44
63	Redox state during core formation on asteroid 4-Vesta. <i>Earth and Planetary Science Letters</i> , 2013 , 373, 75-82	5.3	43
62	Oxygen as a light element: A solution to single-stage core formation. <i>Earth and Planetary Science Letters</i> , 2009 , 288, 108-114	5.3	43

61	Electronic properties of transition-metal oxides under high pressure revealed by x-ray emission spectroscopy. <i>Journal of Physics Condensed Matter</i> , 2005 , 17, S717-S726	1.8	43
60	Spin Transitions in Mantle Minerals. <i>Annual Review of Earth and Planetary Sciences</i> , 2014 , 42, 231-248	15.3	41
59	A large planetary body inferred from diamond inclusions in a ureilite meteorite. <i>Nature Communications</i> , 2018 , 9, 1327	17.4	39
58	Composition of the low seismic velocity E' layer at the top of Earth's core. <i>Geophysical Research Letters</i> , 2017 , 44, 8303-8310	4.9	39
57	Application of inelastic X-ray scattering to the measurements of acoustic wave velocities in geophysical materials at very high pressure. <i>Physics of the Earth and Planetary Interiors</i> , 2004 , 143-144, 5-18	2.3	38
56	The solubility of heat-producing elements in Earth's core. <i>Geochemical Perspectives Letters</i> , 1-5	3	37
55	Charge transfer at very high pressure in NiO. <i>Physical Review B</i> , 2003 , 67,	3.3	36
54	Spin and valence dependence of iron partitioning in Earth's deep mantle. <i>Proceedings of the National Academy of Sciences of the United States of America</i> , 2016 , 113, 11127-11130	11.5	35
53	Strength, anisotropy, and preferred orientation of solid argon at high pressures. <i>Journal of Physics Condensed Matter</i> , 2006 , 18, S963-8	1.8	35
52	Metal-ligand interplay in strongly correlated oxides: a parametrized phase diagram for pressure-induced spin transitions. <i>Physical Review Letters</i> , 2007 , 98, 196404	7.4	34
51	Magnesium Partitioning Between Earth's Mantle and Core and its Potential to Drive an Early Exsolution Geodynamo. <i>Geophysical Research Letters</i> , 2018 , 45, 13,240	4.9	34
50	Melting and pressure-induced amorphization of quartz. <i>Europhysics Letters</i> , 1998 , 42, 643-648	1.6	33
49	Carbonate stability in the reduced lower mantle. <i>Earth and Planetary Science Letters</i> , 2018 , 489, 84-91	5.3	31
48	Lattice dynamics of molybdenum at high pressure. <i>Physical Review Letters</i> , 2006 , 96, 115502	7.4	31
47	Chondritic Mn/Na ratio and limited post-nebular volatile loss of the Earth. <i>Earth and Planetary Science Letters</i> , 2018 , 485, 130-139	5.3	25
46	Anomalous pressure evolution of the axial ratio c/a in hcp cobalt: Interplay between structure, magnetism, and lattice dynamics. <i>Applied Physics Letters</i> , 2008 , 92, 111911	3.4	25
45	Redox state of Earth's magma ocean and its Venus-like early atmosphere. <i>Science Advances</i> , 2020 , 6,	14.3	25
44	Experimental determination of Zn isotope fractionation during evaporative loss at extreme temperatures. <i>Geochimica Et Cosmochimica Acta</i> , 2019 , 259, 391-411	5.5	23

43	Composition of the core from gallium metal-silicate partitioning experiments. <i>Earth and Planetary Science Letters</i> , 2015 , 427, 191-201	5.3	22
42	On the high-pressure phase transition in. <i>European Physical Journal B</i> , 1998 , 1, 265-268	1.2	21
41	Chemical imaging with NanoSIMS: A window into deep-Earth geochemistry. <i>Earth and Planetary Science Letters</i> , 2007 , 262, 543-551	5.3	21
40	Ab Initio Molecular Dynamics Investigation of Molten FeSiO ₃ in Earth's Core. <i>Geophysical Research Letters</i> , 2019 , 46, 6397-6405	4.9	19
39	Earth and Terrestrial Planet Formation. <i>Geophysical Monograph Series</i> , 2015 , 49-70	1.1	17
38	The Earth's Lower Mantle and Core. <i>Elements</i> , 2008 , 4, 177-182	3.8	17
37	A combined XAS and XRD study of the high-pressure behaviour of GaAsO ₄ berlinite. <i>Europhysics Letters</i> , 1997 , 40, 533-538	1.6	16
36	Seconds after impact: Insights into the thermal history of impact ejecta from diffusion between lechatelierite and host glass in tektites and experiments. <i>Geochimica Et Cosmochimica Acta</i> , 2018 , 241, 69-94	5.5	15
35	Spin state transition and partitioning of iron: Effects on mantle dynamics. <i>Earth and Planetary Science Letters</i> , 2015 , 417, 57-66	5.3	14
34	Constraining compositional proxies for Earth's accretion and core formation through high pressure and high temperature Zn and S metal-silicate partitioning. <i>Geochimica Et Cosmochimica Acta</i> , 2018 , 235, 21-40	5.5	14
33	Late Accretion and the Late Veneer. <i>Geophysical Monograph Series</i> , 2015 , 71-82	1.1	14
32	Composition dependence of spin transition in (Mg,Fe)SiO ₃ bridgmanite. <i>American Mineralogist</i> , 2015 , 100, 2246-2253	2.9	12
31	Thermal conductivity near the bottom of the Earth's lower mantle: Measurements of pyrolite up to 120 GPa and 2500 K. <i>Earth and Planetary Science Letters</i> , 2020 , 536, 116161	5.3	12
30	Thermochemical State of the Lower Mantle: New Insights from Mineral Physics. <i>Geophysical Monograph Series</i> , 2005 , 241-260	1.1	12
29	Early Differentiation and Core Formation. <i>Geophysical Monograph Series</i> , 2015 , 83-102	1.1	11
28	Fractional Melting and Freezing in the Deep Mantle and Implications for the Formation of a Basal Magma Ocean. <i>Geophysical Monograph Series</i> , 2015 , 123-142	1.1	10
27	Blocked radiative heat transport in the hot pyrolitic lower mantle. <i>Earth and Planetary Science Letters</i> , 2020 , 537, 116176	5.3	9
26	Investigating Earth's Formation History Through Copper and Sulfur Metal-Silicate Partitioning During Core-Mantle Differentiation. <i>Journal of Geophysical Research: Solid Earth</i> , 2018 , 123, 8349-8363	3.6	9

25	Partitioning of Si and platinum group elements between liquid and solid FeSi alloys. <i>Geochimica Et Cosmochimica Acta</i> , 2014 , 132, 94-100	5.5	8
24	Geochemical Constraints on the Size of the Moon-Forming Giant Impact. <i>Geophysical Research Letters</i> , 2017 , 44, 11,770-11,777	4.9	8
23	Early Differentiation and Its Long-Term Consequences for Earth Evolution. <i>Geophysical Monograph Series</i> , 2015 , 143-172	1.1	7
22	Constraining the behavior of gallium isotopes during evaporation at extreme temperatures. <i>Geochimica Et Cosmochimica Acta</i> , 2020 , 286, 54-71	5.5	7
21	Publisher's Note: Experimental Evidence for a High-Pressure Isostructural Phase Transition in Osmium [Phys. Rev. Lett. 93, 095502 (2004)]. <i>Physical Review Letters</i> , 2004 , 93,	7.4	6
20	A New Reference for the Thermal Equation of State of Iron. <i>Minerals (Basel, Switzerland)</i> , 2020 , 10, 100	2.4	6
19	Contrasting opacity of bridgmanite and ferropericlase in the lowermost mantle: Implications to radiative and electrical conductivity. <i>Earth and Planetary Science Letters</i> , 2021 , 562, 116871	5.3	6
18	The Earth's Building Blocks. <i>Geophysical Monograph Series</i> , 2015 , 27-47	1.1	5
17	Determination of Phonon Dispersion Curves at Gigapascal Pressures by Inelastic X-ray Scattering. <i>High Pressure Research</i> , 2002 , 22, 73-77	1.6	5
16	Fe-Ni ideality during core formation on Earth. <i>American Mineralogist</i> , 2018 , 103, 1707-1710	2.9	5
15	Reversal of carbonate-silicate cation exchange in cold slabs in Earth's lower mantle. <i>Nature Communications</i> , 2021 , 12, 1712	17.4	4
14	High pressure partitioning behavior of Mo and W and late sulfur delivery during Earth's core formation. <i>Geochimica Et Cosmochimica Acta</i> , 2021 , 310, 19-31	5.5	4
13	XAS Study of the High Pressure Behaviour of Quartz-Like Compounds. <i>European Physical Journal Special Topics</i> , 1997 , 7, C2-987-C2-989		3
12	The niobium and tantalum concentration in the mantle constrains the composition of Earth's primordial magma ocean. <i>Proceedings of the National Academy of Sciences of the United States of America</i> , 2020 , 117, 27893-27898	11.5	3
11	Investigating Magma Ocean Solidification on Earth Through Laser-Heated Diamond Anvil Cell Experiments. <i>Geophysical Research Letters</i> , 2021 , 48, e2021GL092446	4.9	2
10	Constraints on the composition and temperature of LLSVPs from seismic properties of lower mantle minerals. <i>Earth and Planetary Science Letters</i> , 2021 , 554, 116685	5.3	2
9	Low Velocity Zones in the Martian Upper Mantle Highlighted by Sound Velocity Measurements. <i>Geophysical Research Letters</i> , 2021 , 48, e2021GL093977	4.9	2
8	Electron Energy Loss Near Edge Structures as a Tool to Elucidate Natural and Artificial Minerals Structures. <i>Microscopy and Microanalysis</i> , 2017 , 23, 2154-2155	0.5	1

7	An Experimental Geochemistry Perspective on Earth's Core Formation. <i>Geophysical Monograph Series</i> , 2015 , 103-121	1.1	1
6	Composition and Pressure Effects on Partitioning of Ferrous Iron in Iron-Rich Lower Mantle Heterogeneities. <i>Minerals (Basel, Switzerland)</i> , 2021 , 11, 512	2.4	1
5	Valence state analysis on iron in minerals of Earth's lowermost mantle by electron energy loss spectroscopy 2016 , 1196-1196		
4	STEM EDS/EELS for Phase Analysis of Deep-Mantle Rock Assemblages Supported by Machine Learning. <i>Microscopy and Microanalysis</i> , 2019 , 25, 2474-2475	0.5	
3	Reply to Comment by Jennings et al. on Investigating Earth's Formation History Through Copper and Sulfur Metal-Silicate Partitioning During Core-Mantle Differentiation <i>Journal of Geophysical Research: Solid Earth</i> , 2019 , 124, 12845-12853	3.6	
2	Experimental investigation of elemental and isotopic evaporation processes by laser heating in an aerodynamic levitation furnace. <i>Comptes Rendus - Geoscience</i> , 2021 , 353, 101-114	1.4	
1	3D analytical investigation of melting at lower mantle conditions in the laser-heated diamond anvil cell 2016 , 1180-1181		