

Steven D Jacobsen

List of Publications by Citations

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134
papers

5,014
citations

38
h-index

66
g-index

140
ext. papers

5,479
ext. citations

5.6
avg, IF

5.41
L-index

#	Paper	IF	Citations
134	Effective hydrostatic limits of pressure media for high-pressure crystallographic studies. <i>Journal of Applied Crystallography</i> , 2007 , 40, 26-32	3.8	364
133	Spin transition of iron in magnesiowüstite in the Earth's lower mantle. <i>Nature</i> , 2005 , 436, 377-80	50.4	286
132	Rapid magma ascent recorded by water diffusion profiles in mantle olivine. <i>Geology</i> , 2006 , 34, 429	5	217
131	Earth's interior. Dehydration melting at the top of the lower mantle. <i>Science</i> , 2014 , 344, 1265-8	33.3	214
130	The COMPRES/GSECARS gas-loading system for diamond anvil cells at the Advanced Photon Source. <i>High Pressure Research</i> , 2008 , 28, 273-292	1.6	181
129	Spin transition zone in Earth's lower mantle. <i>Science</i> , 2007 , 317, 1740-3	33.3	167
128	Cation sorption on the muscovite (001) surface in chloride solutions using high-resolution X-ray reflectivity. <i>Geochimica Et Cosmochimica Acta</i> , 2006 , 70, 3549-3565	5.5	162
127	Reduced radiative conductivity of low-spin (Mg,Fe)O in the lower mantle. <i>Science</i> , 2006 , 312, 1205-8	33.3	148
126	Elasticity of (Mg,Fe)O through the spin transition of iron in the lower mantle. <i>Science</i> , 2008 , 319, 451-3	33.3	142
125	Structure and elasticity of single-crystal (Mg,Fe)O and a new method of generating shear waves for gigahertz ultrasonic interferometry. <i>Journal of Geophysical Research</i> , 2002 , 107, ECV 4-1		123
124	Sound velocities and elastic constants of iron-bearing hydrous ringwoodite. <i>Physics of the Earth and Planetary Interiors</i> , 2004 , 143-144, 47-56	2.3	92
123	Radiative conductivity in the Earth's lower mantle. <i>Nature</i> , 2008 , 456, 231-4	50.4	80
122	A systematic study of OH in hydrous wadsleyite from polarized FTIR spectroscopy and single-crystal X-ray diffraction: Oxygen sites for hydrogen storage in Earth's interior. <i>American Mineralogist</i> , 2005 , 90, 61-70	2.9	80
121	Structural systematics of hydrous ringwoodite and water in earth's interior. <i>American Mineralogist</i> , 2003 , 88, 1402-1407	2.9	80
120	Nanocrystalline diamond synthesized from C60. <i>Diamond and Related Materials</i> , 2005 , 14, 16-22	3.5	74
119	Hydrogen solubility and speciation in natural, gem-quality chromian diopside. <i>American Mineralogist</i> , 2004 , 89, 941-949	2.9	72
118	Degassing of reduced carbon from planetary basalts. <i>Proceedings of the National Academy of Sciences of the United States of America</i> , 2013 , 110, 8010-3	11.5	71

117	Thermal conductivity of lower-mantle minerals. <i>Physics of the Earth and Planetary Interiors</i> , 2009 , 174, 24-32	2.3	66
116	Compression of single-crystal magnesium oxide to 118 GPa and a ruby pressure gauge for helium pressure media. <i>American Mineralogist</i> , 2008 , 93, 1823-1828	2.9	66
115	High-pressure elasticity of a natural magnetite crystal. <i>American Mineralogist</i> , 2004 , 89, 1061-1066	2.9	62
114	Effect of Water on the Equation of State of Nominally Anhydrous Minerals. <i>Reviews in Mineralogy and Geochemistry</i> , 2006 , 62, 321-342	7.1	58
113	Pressure-induced electronic spin transition of iron in magnesiowustite-(Mg,Fe)O. <i>Physical Review B</i> , 2006 , 73,	3.3	57
112	Speciation and solubility of reduced CO ₂ /CH ₄ volatiles in mafic melt: Implications for volcanism, atmospheric evolution, and deep volatile cycles in the terrestrial planets. <i>Geochimica Et Cosmochimica Acta</i> , 2015 , 171, 283-302	5.5	55
111	Effects of hydration on the elastic properties of olivine. <i>Geophysical Research Letters</i> , 2008 , 35,	4.9	55
110	Sound velocities of hydrous ringwoodite to 16 GPa and 673 K. <i>Earth and Planetary Science Letters</i> , 2012 , 331-332, 112-119	5.3	54
109	Crystal structures and compressibilities of synthetic 2M1 and 3T phengite micas. <i>European Journal of Mineralogy</i> , 2000 , 12, 955-963	2.2	54
108	Compression of witherite to 8 GPa and the crystal structure of BaCO ₃ II. <i>Physics and Chemistry of Minerals</i> , 2000 , 27, 467-473	1.6	54
107	Elasticity of hydrous wadsleyite to 12 GPa: Implications for Earth's transition zone. <i>Geophysical Research Letters</i> , 2008 , 35,	4.9	52
106	Al, Fe substitution in the MgSiO ₃ perovskite structure: A single-crystal X-ray diffraction study. <i>Physics of the Earth and Planetary Interiors</i> , 2006 , 155, 96-103	2.3	51
105	Pressure-induced magnetization in FeO: evidence from elasticity and Mössbauer spectroscopy. <i>Physical Review Letters</i> , 2004 , 93, 215502	7.4	51
104	Shear waves in the diamond-anvil cell reveal pressure-induced instability in (Mg,Fe)O. <i>Proceedings of the National Academy of Sciences of the United States of America</i> , 2004 , 101, 5867-71	11.5	49
103	Sound velocities of ferropericlase in the Earth's lower mantle. <i>Geophysical Research Letters</i> , 2006 , 33,	4.9	47
102	Evidence for H ₂ O-bearing fluids in the lower mantle from diamond inclusion. <i>Lithos</i> , 2016 , 265, 237-243	2.9	45
101	Velocity crossover between hydrous and anhydrous forsterite at high pressures. <i>Earth and Planetary Science Letters</i> , 2010 , 293, 250-258	5.3	44
100	Effect of hydration on the single-crystal elasticity of Fe-bearing wadsleyite to 12 GPa. <i>American Mineralogist</i> , 2011 , 96, 1606-1612	2.9	41

99	Crystal structure of monoclinic hydrous wadsleyite [β -(Mg,Fe) $_2$ SiO $_4$]. <i>American Mineralogist</i> , 1997 , 82, 270-275	2.9	41
98	High pressure crystal chemistry of hydrous ringwoodite and water in the Earth's interior. <i>Physics of the Earth and Planetary Interiors</i> , 2004 , 143-144, 271-278	2.3	40
97	Sound velocities and elastic constants of ZnAl $_2$ O $_4$ spinel and implications for spinel-elasticity systematics. <i>American Mineralogist</i> , 2006 , 91, 1049-1054	2.9	38
96	Compressibility and thermal expansion of hydrous ringwoodite with 2.5(3) wt% H $_2$ O. <i>American Mineralogist</i> , 2012 , 97, 573-582	2.9	37
95	The flux growth of magnesium silicate perovskite single crystals. <i>American Mineralogist</i> , 2004 , 89, 807-811	2.9	37
94	Elasticity of cubic boron nitride under ambient conditions. <i>Journal of Applied Physics</i> , 2011 , 109, 063521	2.5	36
93	Effects of hydration on the structure and compressibility of wadsleyite, β -(Mg $_2$ SiO $_4$). <i>American Mineralogist</i> , 2008 , 93, 598-607	2.9	36
92	Temperature dependence and mechanism of hydrogen incorporation in olivine at 12.5–14.0 GPa. <i>Geophysical Research Letters</i> , 2007 , 34,	4.9	35
91	Single-crystal elasticity and sound velocities of (Mg $_{0.94}$ Fe $_{0.06}$)O ferropericlase to 20 GPa. <i>Journal of Geophysical Research</i> , 2006 , 111,		35
90	Creating Binary CuBi Compounds via High-Pressure Synthesis: A Combined Experimental and Theoretical Study. <i>Chemistry of Materials</i> , 2017 , 29, 5276-5285	9.6	34
89	Boron-oxygen complex yields n-type surface layer in semiconducting diamond. <i>Proceedings of the National Academy of Sciences of the United States of America</i> , 2019 , 116, 7703-7711	11.5	32
88	Single-crystal synchrotron X-ray diffraction study of wadsleyite and magnesiowadsleyite at lower-mantle pressures. <i>Journal of Synchrotron Radiation</i> , 2005 , 12, 577-83	2.4	32
87	Nominally Anhydrous Minerals and Earth's Deep Water Cycle. <i>Geophysical Monograph Series</i> , 2013 , 1-11	1.1	30
86	Discovery of FeBi. <i>ACS Central Science</i> , 2016 , 2, 867-871	16.8	29
85	Elastic properties of transparent nano-polycrystalline diamond measured by GHz-ultrasonic interferometry and resonant sphere methods. <i>Physics of the Earth and Planetary Interiors</i> , 2014 , 228, 47-55	2.3	27
84	Effect of H $_2$ O on upper mantle phase transitions in MgSiO $_3$: Is the depth of the seismic X-discontinuity an indicator of mantle water content?. <i>Physics of the Earth and Planetary Interiors</i> , 2010 , 183, 234-244	2.3	26
83	Comparative Crystal Chemistry of Dense Oxide Minerals. <i>Reviews in Mineralogy and Geochemistry</i> , 2000 , 41, 157-186	7.1	26
82	Minerals in cement chemistry: A single-crystal neutron diffraction and Raman spectroscopic study of thaumasite, Ca $_3$ Si(OH) $_6$ (CO $_3$)(SO $_4$) \cdot 2H $_2$ O. <i>American Mineralogist</i> , 2012 , 97, 1060-1069	2.9	25

81	Two proton positions in the very strong hydrogen bond of serandite, NaMn ₂ [Si ₃ O ₈ (OH)]. <i>American Mineralogist</i> , 2000 , 85, 745-752	2.9	25
80	Effect of Water on the Sound Velocities of Ringwoodite in the Transition Zone. <i>Geophysical Monograph Series</i> , 2013 , 131-145	1.1	24
79	Single-crystal elasticity of wadsleyites, Mg_2SiO_4 , containing 0.37–1.66 wt.% H ₂ O. <i>Earth and Planetary Science Letters</i> , 2008 , 266, 78-89	5.3	24
78	Water Content in the Mantle Transition Zone Beneath the North Pacific Derived from the Electrical Conductivity Anomaly. <i>Geophysical Monograph Series</i> , 2013 , 171-179	1.1	23
77	Thermal expansion of hydrated six-coordinate silicon in thaumasite, Ca ₃ Si(OH) ₆ (CO ₃)(SO ₄)·2H ₂ O. <i>Physics and Chemistry of Minerals</i> , 2003 , 30, 321-329	1.6	23
76	Radiative heat transfer in a hydrous mantle transition zone. <i>Earth and Planetary Science Letters</i> , 2012 , 357-358, 130-136	5.3	22
75	Comparative Crystal Chemistry of Orthosilicate Minerals. <i>Reviews in Mineralogy and Geochemistry</i> , 2000 , 41, 187-209	7.1	22
74	Influence of Hydrogen-Related Defects on the Electrical Conductivity and Plastic Deformation of Mantle Minerals: A Critical Review. <i>Geophysical Monograph Series</i> , 2013 , 113-129	1.1	21
73	Influence of Water on Major Phase Transitions in the Earth's Mantle. <i>Geophysical Monograph Series</i> , 2013 , 95-111	1.1	21
72	Water partitioning between bridgmanite and postperovskite in the lowermost mantle. <i>Earth and Planetary Science Letters</i> , 2016 , 454, 20-27	5.3	21
71	Ultrahard stitching of nanotwinned diamond and cubic boron nitride in C ₂ -BN composite. <i>Scientific Reports</i> , 2016 , 6, 30518	4.9	20
70	Seismic Evidence for Subduction-Transported Water in the Lower Mantle. <i>Geophysical Monograph Series</i> , 2013 , 251-261	1.1	20
69	Quantification of water in hydrous ringwoodite. <i>Frontiers in Earth Science</i> , 2015 , 2,	3.5	20
68	Spin transition of Fe ³⁺ in Al-bearing phase D: An alternative explanation for small-scale seismic scatterers in the mid-lower mantle. <i>Earth and Planetary Science Letters</i> , 2013 , 382, 1-9	5.3	19
67	Comparative compressibility of hydrous wadsleyite and ringwoodite: Effect of H ₂ O and implications for detecting water in the transition zone. <i>Journal of Geophysical Research: Solid Earth</i> , 2015 , 120, 8259-8280	3.6	19
66	Microanalysis of the iron oxidation state in (Mg,Fe)O and application to the study of microscale processes. <i>Contributions To Mineralogy and Petrology</i> , 2011 , 162, 1249-1257	3.5	19
65	Raman spectroscopy study of C-O-H-N speciation in reduced basaltic glasses: Implications for reduced planetary mantles. <i>Geochimica Et Cosmochimica Acta</i> , 2019 , 265, 32-47	5.5	18
64	Gigahertz ultrasonic interferometry at high P and T: new tools for obtaining a thermodynamic equation of state. <i>Journal of Physics Condensed Matter</i> , 2002 , 14, 11525-11530	1.8	18

63	Anomalous density and elastic properties of basalt at high pressure: Reevaluating of the effect of melt fraction on seismic velocity in the Earth's crust and upper mantle. <i>Journal of Geophysical Research: Solid Earth</i> , 2016 , 121, 4232-4248	3.6	18
62	The role of ceramic and glass science research in meeting societal challenges: Report from an NSF-sponsored workshop. <i>Journal of the American Ceramic Society</i> , 2017 , 100, 1777-1803	3.8	17
61	. <i>Geophysical Monograph Series</i> , 2006 ,	1.1	17
60	Infrared properties of ferropericlase Mg _{1-x} Fe _x O: Experiment and theory. <i>Physical Review B</i> , 2008 , 77,	3.3	15
59	Towards Mapping the Three-Dimensional Distribution of Water in the Transition Zone from P-Velocity Tomography and 660-Km Discontinuity Depths. <i>Geophysical Monograph Series</i> , 2013 , 237-249	1.1	14
58	Elastic relaxations associated with the Pm3m-R3c transition in LaAlO(3): I. Single crystal elastic moduli at room temperature. <i>Journal of Physics Condensed Matter</i> , 2010 , 22, 035403	1.8	14
57	Sound wave velocities and elastic constants for Magnesiowüstite using gigahertz interferometry. <i>Geophysical Research Letters</i> , 2000 , 27, 799-802	4.9	14
56	Quantification of water in majoritic garnet. <i>American Mineralogist</i> , 2015 , 100, 1084-1092	2.9	13
55	Hydrogen Incorporation in Natural Mantle Olivines. <i>Geophysical Monograph Series</i> , 2013 , 45-56	1.1	13
54	Stability and equation of state of post-aragonite BaCO ₃ . <i>Physics and Chemistry of Minerals</i> , 2013 , 40, 447-453	1.6	13
53	Resonant X-ray emission study of the lower-mantle ferropericlase at high pressures. <i>American Mineralogist</i> , 2010 , 95, 1125-1131	2.9	13
52	Correction to Effects of hydration on the elastic properties of olivine. <i>Geophysical Research Letters</i> , 2009 , 36,	4.9	13
51	X-ray emission spectroscopy with a laser-heated diamond anvil cell: a new experimental probe of the spin state of iron in the Earth's interior. <i>Journal of Synchrotron Radiation</i> , 2005 , 12, 637-41	2.4	13
50	First-principles investigation of hydrous post-perovskite. <i>Physics of the Earth and Planetary Interiors</i> , 2015 , 244, 42-48	2.3	12
49	High-pressure behavior of natural single-crystal epidote and clinozoisite up to 40 GPa. <i>Physics and Chemistry of Minerals</i> , 2016 , 43, 649-659	1.6	12
48	Mechanisms of anomalous compressibility of vitreous silica. <i>Physical Review B</i> , 2014 , 90,	3.3	12
47	A Water-Rich Transition Zone Beneath the Eastern United States and Gulf of Mexico from Multiple ScS Reverberations. <i>Geophysical Monograph Series</i> , 2013 , 181-193	1.1	12
46	Synchrotron Mössbauer spectroscopic study of ferropericlase at high pressures and temperatures. <i>American Mineralogist</i> , 2009 , 94, 594-599	2.9	12

45	Electronic spin transition of iron in the Earth's deep mantle. <i>Eos</i> , 2007 , 88, 13	1.5	12
44	Elasticity of ferropericlase and seismic heterogeneity in the Earth's lower mantle. <i>Journal of Geophysical Research: Solid Earth</i> , 2016 , 121, 8488-8500	3.6	11
43	HyMaTZ: A Python Program for Modeling Seismic Velocities in Hydrous Regions of the Mantle Transition Zone. <i>Geochemistry, Geophysics, Geosystems</i> , 2018 , 19, 2308-2324	3.6	11
42	Water in Transition Zone and Lower Mantle Minerals. <i>Geophysical Monograph Series</i> , 2013 , 57-68	1.1	11
41	Elasticity of franklinite and trends for transition-metal oxide spinels. <i>American Mineralogist</i> , 2013 , 98, 601-608	2.9	11
40	Towards Mapping the Three-Dimensional Distribution of Water in the Upper Mantle from Velocity and Attenuation Tomography. <i>Geophysical Monograph Series</i> , 2013 , 225-236	1.1	10
39	High-pressure discovery of ENiBi . <i>Chemical Communications</i> , 2017 , 53, 11241-11244	5.8	10
38	A gigahertz ultrasonic interferometer for the diamond anvil cell and high-pressure elasticity of some iron-oxide minerals 2005 , 25-48		10
37	Computationally Directed Discovery of MoBi. <i>Journal of the American Chemical Society</i> , 2021 , 143, 214-226	2.4	9
36	Exploring the High-Pressure Materials Genome. <i>Physical Review X</i> , 2018 , 8,	9.1	9
35	Elastic and mechanical softening in boron-doped diamond. <i>Scientific Reports</i> , 2017 , 7, 42921	4.9	8
34	Crystal structure, thermal expansivity, and elasticity of OH-chondrodite: trends among dense hydrous magnesium silicates. <i>Contributions To Mineralogy and Petrology</i> , 2015 , 169, 1	3.5	8
33	Crystal chemistry, thermal expansion, and Raman spectra of hydroxyl-clinohumite: implications for water in Earth's interior. <i>Contributions To Mineralogy and Petrology</i> , 2013 , 165, 563-574	3.5	8
32	Diamonds and the Mantle Geodynamics of Carbon 2019 , 89-128		7
31	Thermal Equation of State of Natural Ti-Bearing Clinohumite. <i>Journal of Geophysical Research: Solid Earth</i> , 2017 , 122, 8943-8951	3.6	7
30	14. Effect of Water on the Equation of State of Nominally Anhydrous Minerals 2006 , 321-342		7
29	Crystal structure, Raman and FTIR spectroscopy, and equations of state of OH-bearing MgSiO_3 akimotoite. <i>Contributions To Mineralogy and Petrology</i> , 2013 , 166, 1375-1388	3.5	6
28	Anelasticity of Fe_xO at high pressure. <i>Applied Physics Letters</i> , 2008 , 93, 034106	3.4	6

27	Structure determination by single-crystal X-ray diffraction (SXD) at megabar pressures. <i>Journal of Synchrotron Radiation</i> , 2005 , 12, 547-548	2.4	6
26	High-pressure synthesis of the BiVO ₃ perovskite. <i>Physical Review Materials</i> , 2019 , 3,	3.2	6
25	MnBi ₂ : A Metastable High-Pressure Phase in the MnBi System. <i>Chemistry of Materials</i> , 2019 , 31, 3083-3088	3.6	5
24	Single-crystal neutron diffraction and Raman spectroscopic study of hydroxylherderite, CaBePO ₄ (OH,F). <i>Mineralogical Magazine</i> , 2014 , 78, 723-737	1.7	5
23	Seismological Constraints on Earth's Deep Water Cycle. <i>Geophysical Monograph Series</i> , 2013 , 13-27	1.1	5
22	Correction to Bound velocities of ferropericlase in the Earth's lower mantle. <i>Geophysical Research Letters</i> , 2007 , 34,	4.9	5
21	Powder neutron diffraction of wüstite (Fe _{0.93} O) to 12 GPa using large moissanite anvils. <i>High Pressure Research</i> , 2004 , 24, 247-253	1.6	5
20	Highly volatile element (H, C, F, Cl, S) abundances and H isotopic compositions in chondrules from carbonaceous and ordinary chondrites. <i>Geochimica Et Cosmochimica Acta</i> , 2021 , 301, 230-258	5.5	5
19	Transition metals in the transition zone: Crystal chemistry of minor element substitution in wadsleyite. <i>American Mineralogist</i> , 2016 , 101, 2322-2330	2.9	5
18	High-pressure high-temperature Raman spectroscopy of kerogen: Relevance to subducted organic carbon. <i>American Mineralogist</i> , 2017 , 102, 391-403	2.9	4
17	Impact of Pressure on Magnetic Order in Jarosite. <i>Journal of the American Chemical Society</i> , 2018 , 140, 12001-12009	16.4	4
16	Stability, composition, and crystal structure of Fe-bearing Phase E in the transition zone. <i>American Mineralogist</i> , 2019 , 104, 1620-1624	2.9	4
15	A gigahertz ultrasonic interferometer for the diamond anvil cell and high-pressure elasticity of some iron-oxide minerals 2005 , 25-25		4
14	Controlling Dimensionality in the NiBi System with Pressure. <i>Chemistry of Materials</i> , 2019 , 31, 955-959	9.6	4
13	Goldschmidtite, (K,REE,Sr)(Nb,Cr)O ₃ : A new perovskite supergroup mineral found in diamond from Koffiefontein, South Africa. <i>American Mineralogist</i> , 2019 , 104, 1345-1350	2.9	3
12	High-pressure phase transitions of clinoenstatite. <i>American Mineralogist</i> , 2019 , 104, 897-904	2.9	3
11	Raman Spectroscopic Studies of Hydrous and Nominally Anhydrous Deep Mantle Phases. <i>Geophysical Monograph Series</i> , 2013 , 69-93	1.1	3
10	Optical reflectivity of solid and liquid methane: Application to spectroscopy of Titan's hydrocarbon lakes. <i>Geophysical Research Letters</i> , 2012 , 39, n/a-n/a	4.9	3

9	Discovery of CuPb. <i>Angewandte Chemie - International Edition</i> , 2018 , 57, 12809-12813	16.4	3
8	STRUCTURE AND CATION ORDER IN MANGANILVAITE: A COMBINED X-RAY-DIFFRACTION, NEUTRON-DIFFRACTION AND MOSSBAUER STUDY. <i>Canadian Mineralogist</i> , 2005 , 43, 1043-1053	0.7	2
7	Fast identification of mineral inclusions in diamond at GSECARS using synchrotron X-ray microtomography, radiography and diffraction. <i>Journal of Synchrotron Radiation</i> , 2019 , 26, 1763-1768	2.4	2
6	Discovery of Cu ₃ Pb. <i>Angewandte Chemie</i> , 2018 , 130, 12991-12995	3.6	2
5	Transition metals in the transition zone: partitioning of Ni, Co, and Zn between olivine, wadsleyite, ringwoodite, and clinoenstatite. <i>Contributions To Mineralogy and Petrology</i> , 2018 , 173, 1	3.5	1
4	High-pressure crystal structure and equation of state of ferromagnesian jeffbenite: implications for stability in the transition zone and uppermost lower mantle. <i>Contributions To Mineralogy and Petrology</i> , 2021 , 176, 1	3.5	0
3	Pressure-Induced Collapse of Magnetic Order in Jarosite. <i>Physical Review Letters</i> , 2020 , 125, 077202	7.4	0
2	Nixonite, Na ₂ Ti ₆ O ₁₃ , a new mineral from a metasomatized mantle garnet pyroxenite from the western Rae Craton, Darby kimberlite field, Canada. <i>American Mineralogist</i> , 2019 , 104, 1336-1344	2.9	0
1	Pressure-induced dehydration of diopside: A single-crystal X-ray diffraction and Raman spectroscopy study. <i>Comptes Rendus - Geoscience</i> , 2019 , 351, 121-128	1.4	