David Dobson

List of Publications by Year
in descending order

115 papers	4,051 citations	101543 36 h-index	123424 61 g-index
119 all docs	119 docs citations	119 times ranked	3240 citing authors

#	Article	IF	Citations
1	Simulation of Subduction Zone Seismicity by Dehydration of Serpentine. Science, 2002, 298, 1407-1410.	12.6	260
2	The viscosity of liquid iron at the physical conditions of the Earth's core. Nature, 1998, 392, 805-807.	27.8	259
3	First-principles constraints on diffusion in lower-mantle minerals and a weak Dâ€²â€² layer. Nature, 2010, 465, 462-465.	27.8	203
4	In-situ measurement of viscosity and density of carbonate melts at high pressure. Earth and Planetary Science Letters, 1996, 143, 207-215.	4.4	201
5	Thermal expansion and crystal structure of cementite, Fe3C, between 4 and 600â€…K determined by time-of-flight neutron powder diffraction. Journal of Applied Crystallography, 2004, 37, 82-90.	4.5	186
6	Subducted banded iron formations as a source of ultralow-velocity zones at the coreâ€“mantle boundary. Nature, 2005, 434, 371-374.	27.8	144
7	Mantle dynamics in super-Earths: Post-perovskite rheology and self-regulation of viscosity. Icarus, 2013, 225, 50-61.	2.5	115
8	The effect of ferromagnetism on the equation of state of Fe 3 C studied by first-principles calculations. Earth and Planetary Science Letters, 2002, 203, 567-575.	4.4	108
9	Ironâ€“silica interaction at extreme conditions and the electrically conducting layer at the base of Earth's mantle. Nature, 2003, 422, 58-61.	27.8	108
10	In situ measurement of viscosity of liquids in the Fe-FeS system at high pressures and temperatures. American Mineralogist, 2000, 85, 1838-1842.	1.9	101
11	Ab initio calculations of the elasticity of hcp-Fe as a function of temperature at inner-core pressure. Earth and Planetary Science Letters, 2009, 288, 534-538.	4.4	97
12	Weakening of calcium iridate during its transformation from perovskite to post-perovskite. Nature Geoscience, 2009, 2, 794-797.	12.9	74
13	A new high-pressure phase of FeSi. American Mineralogist, 2002, 87, 784-787.	1.9	72
14	The electrical conductivity of the lower mantle phase magnesiowÃ¼stite at high temperatures and pressures. Journal of Geophysical Research, 2000, 105, 531-538.	3.3	67
15	Synthesis of cubic diamond in the graphite-magnesium carbonate and graphite-K₂Mg(CO₃)₂ systems at high pressure of 9â€“10 GPa region. Journal of Materials Research, 1996, 11, 2622-2632.	2.6	62
16	Effect of water in depleted mantle on post-spinel transition and implication for 660 km seismic discontinuity. Earth and Planetary Science Letters, 2013, 371-372, 103-111.	4.4	60
17	The equation of state of CsCl-structured FeSi to 40 GPa: Implications for silicon in the Earth's core. Geophysical Research Letters, 2003, 30, 14-1-14-4.	4.0	59
18	Al, Fe substitution in the MgSiO3 perovskite structure: A single-crystal X-ray diffraction study. Physics of the Earth and Planetary Interiors, 2006, 155, 96-103.	1.9	58

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19	A High-Temperature Electrical Conduction Mechanism in the Lower Mantle Phase (Mg,Fe)1-xO. Science, 1997, 275, 1779-1781.	12.6	55
20	The melting curve of Ni to 1 Mbar. Earth and Planetary Science Letters, 2014, 408, 226-236.	4.4	55
21	Self-diffusion in liquid Fe at high pressure. Physics of the Earth and Planetary Interiors, 2002, 130, 271-284.	1.9	52
22	Seismic velocities of CaSiO3 perovskite can explain LLSVPs in Earthâ€™s lower mantle. Nature, 2019, 572, 643-647.	27.8	52
23	Self-diffusion of oxygen and silicon in MgSiO3 perovskite. Earth and Planetary Science Letters, 2008, 270, 125-129.	4.4	51
24	Electronic spin transitions and the seismic properties of ferrous iron-bearing MgSiO3post-perovskite. Geophysical Research Letters, 2006, 33, .	4.0	50
25	Variation of thermal conductivity and heat flux at the Earth's core mantle boundary. Earth and Planetary Science Letters, 2014, 390, 175-185.	4.4	48
26	The flux growth of magnesium silicate perovskite single crystals. American Mineralogist, 2004, 89, 807-811.	1.9	47
27	Enhancement of Cation Diffusion Rates Across the 410-Kilometer Discontinuity in Earth's Mantle. Science, 1999, 283, 362-365.	12.6	46
28	DFT study of migration enthalpies in MgSiO3 perovskite. Physics and Chemistry of Minerals, 2009, 36, 151-158.	0.8	46
29	Quantifying strain birefringence halos around inclusions in diamond. Contributions To Mineralogy and Petrology, 2010, 160, 705-717.	3.1	45
30	Experimental determination of Mn-Mg mixing properties in garnet, olivine and oxide. Contributions To Mineralogy and Petrology, 1994, 115, 438-448.	3.1	44
31	The FeSi phase diagram to 150 GPa. Journal of Geophysical Research, 2010, 115, .	3.3	41
32	The thermal expansion of gold: point defect concentrations and pre-melting in a face-centred cubic metal. Journal of Applied Crystallography, 2018, 51, 470-480.	4.5	41
33	Strong inheritance of texture between perovskite and post-perovskite in the Dâ€²â€² layer. Nature Geoscience, 2013, 6, 575-578.	12.9	40
34	Melting curve of copper measured to 16ÂGPa using a multi-anvil press. High Pressure Research, 2006, 26, 185-191.	1.2	39
35	Transformation textures in postâ€perovskite: Understanding mantle flow in the Dâ€³ layer of the Earth. Geophysical Research Letters, 2009, 36, .	4.0	37
36	Ferrous iron diffusion in ferro-periclase across the spin transition. Earth and Planetary Science Letters, 2011, 302, 393-402.	4.4	36

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37	The NiSi melting curve to 70GPa. Physics of the Earth and Planetary Interiors, 2014, 233, 13-23.	1.9	36
38	The stability of bcc-Fe at high pressures and temperatures with respect to tetragonal strain. Physics of the Earth and Planetary Interiors, 2008, 170, 52-59.	1.9	34
39	The electrical conductivity and thermal profile of the Earth's mid-mantle. Geophysical Research Letters, 2000, 27, 2325-2328.	4.0	33
40	Towards better analogues for MgSiO3 post-perovskite: NaCoF3 and NaNiF3, two new recoverable fluoride post-perovskites. Physics of the Earth and Planetary Interiors, 2011, 189, 171-175.	1.9	33
41	On the increase in thermal diffusivity caused by the perovskite to post-perovskite phase transition and its implications for mantle dynamics. Earth and Planetary Science Letters, 2012, 319-320, 96-103.	4.4	33
42	Earth's core problem. Nature, 2016, 534, 45-45.	27.8	31
43	Structural characterization of natural diamond shocked to 60 GPa; implications for Earth and planetary systems. Lithos, 2016, 265, 214-221.	1.4	30
44	Quantitative characterization of plastic deformation of single diamond crystals: A high pressure high temperature (HPHT) experimental deformation study combined with electron backscatter diffraction (EBSD). Diamond and Related Materials, 2012, 30, 20-30.	3.9	29
45	Oxygen ionic conduction in MgSiO3 perovskite. Physics of the Earth and Planetary Interiors, 2003, 139, 55-64.	1.9	28
46	57Fe and Co tracer diffusion in liquid Feâ€"FeS at 2 and 5 GPa. Physics of the Earth and Planetary Interiors, 2000, 120, 137-144.	1.9	27
47	Thermal expansion of CaIrO3 determined by X-ray powder diffraction. Physics of the Earth and Planetary Interiors, 2007, 162, 140-148.	1.9	26
48	Dopant control over the crystal morphology of ceramic materials. Surface Science, 2007, 601, 4793-4800.	1.9	26
49	A convenient method for measuring ferric iron in magnesiowustite (MgO-Fe (sub 1-x) O). American Mineralogist, 1998, 83, 794-798.	1.9	25
50	Deformation T-Cup: A new multi-anvil apparatus for controlled strain-rate deformation experiments at pressures above 18ÂGPa. Review of Scientific Instruments, 2014, 85, 085103.	1.3	24
51	Experimental verification of the Stokes-Einstein relation in liquid Feâ€"FeS at 5 GPa. Molecular Physics, 2001, 99, 773-777.	1.7	21
52	Simulating Diffusion. Reviews in Mineralogy and Geochemistry, 2010, 71, 201-224.	4.8	21
53	Mantle transition zone structure beneath India and Western China from migration of PP and SS precursors. Geophysical Journal International, 2014, 197, 396-413.	2.4	21
54	Fe- and C-self-diffusion in liquid Fe3C to 15 GPa. Geophysical Research Letters, 2002, 29, 2-1.	4.0	20

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55	Ab initio lattice dynamics calculations on the combined effect of temperature and silicon on the stability of different iron phases in the Earth's inner core. Physics of the Earth and Planetary Interiors, 2010, 178, 2-7.	1.9	20
56	Metastable structural transformations and pressure-induced amorphization in natural (Mg,Fe)₂SiO₄olivine under static compression: A Raman spectroscopic study. American Mineralogist, 2016, 101, 1642-1650.	1.9	20
57	Detection and analysis of microseismicity in multi anvil experiments. Physics of the Earth and Planetary Interiors, 2004, 143-144, 337-346.	1.9	19
58	An ab initio study of nickel substitution into iron. Earth and Planetary Science Letters, 2006, 248, 147-152.	4.4	18
59	Crystal morphology and surface structures of orthorhombic MgSiO3 perovskite. Physics and Chemistry of Minerals, 2005, 31, 671-682.	0.8	17
60	The pressure medium as a solid-state oxygen buffer. Geophysical Research Letters, 1999, 26, 259-262.	4.0	15
61	Thermoelastic properties of magnesiowÃ¼stite, (Mg_{1â^’<i>x</i>}Fe_{<i>x</i>})O: determination of the Andersonâ€“GrÃ¼neisen parameter by time-of-flight neutron powder diffraction at simultaneous high pressures and temperatures. Journal of Applied Crystallography, 2008, 41, 886-896.	4.5	15
62	Relative strength of the pyropeâ€“majorite solid solution and the flow-law of majorite containing garnets. Physics of the Earth and Planetary Interiors, 2010, 179, 87-95.	1.9	15
63	The phase diagrams of KCaF3 and NaMgF3 by ab initio simulations. Physics and Chemistry of Minerals, 2018, 45, 311-322.	0.8	15
64	A new belt-type apparatus for neutron-based rheological measurements at gigapascal pressures. High Pressure Research, 2005, 25, 107-118.	1.2	14
65	Thermal diffusivity of MORB-composition rocks to 15ÂGPa: implications for triggering of deep seismicity. High Pressure Research, 2010, 30, 406-414.	1.2	14
66	Investigation of high-pressure planetary ices by cryo-recovery. II. High-pressure apparatus, examples and a new high-pressure phase of MgSO₄Â·5H₂O. Journal of Applied Crystallography, 2018, 51, 692-705.	4.5	14
67	The relative strength of perovskite and post-perovskite NaCoF₃. Mineralogical Magazine, 2012, 76, 925-932.	1.4	13
68	High-pressure phase transitions and equations of state in NiSi. I.<i>Ab initio</i>simulations. Journal of Applied Crystallography, 2012, 45, 186-196.	4.5	13
69	An Experimental Investigation of the Relative Strength of the Silica Polymorphs Quartz, Coesite, and Stishovite. Geochemistry, Geophysics, Geosystems, 2019, 20, 1975-1989.	2.5	13
70	The isothermal equation of state of CaPtO3 post-perovskite to 40GPa. Physics of the Earth and Planetary Interiors, 2010, 182, 113-118.	1.9	12
71	Diffusion of aluminium in MgO from first principles. Physics and Chemistry of Minerals, 2012, 39, 503-514.	0.8	12
72	High-pressure phase transitions and equations of state in NiSi. III. A new high-pressure phase of NiSi. Journal of Applied Crystallography, 2013, 46, 14-24.	4.5	12

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73	The effect of pressure on thermal diffusivity in pyroxenes. Mineralogical Magazine, 2011, 75, 2597-2610.	1.4	11
74	The anisotropic signal of topotaxy during phase transitions in <mml:math xmlns:mml="http://www.w3.org/1998/Math/MathML" altimg="si23.gif" overflow="scroll"><mml:mrow><mml:msup><mml:mrow><mml:mtext>D</mml:mtext></mml:mrow><mml:mrow><mml:mo>â€³</mml Physics of the Earth and Planetary Interiors, 2018, 276, 159-171.	1.9	11
75	The top-down crystallisation of Mercury's core. Earth and Planetary Science Letters, 2019, 528, 115838.	4.4	11
76	Thermoelastic properties and crystal structure of CaPtO₃post-perovskite from 0 to 9â€…GPa and from 2Âto 973â€…K. Journal of Applied Crystallography, 2011, 44, 999-1016.	4.5	10
77	High-pressure phase transitions and equations of state in NiSi. II. Experimental results. Journal of Applied Crystallography, 2012, 45, 726-737.	4.5	10
78	Comment on physical properties of carbonatite magmas inferred from molten salt data, and application to extraction patterns from carbonatite-silicate magma chambers. Geological Magazine, 1995, 132, 121-121.	1.5	9
79	Reaction of iron and silica at coreâ€“mantle boundary conditions. Physics of the Earth and Planetary Interiors, 2004, 146, 243-247.	1.9	9
80	Three-dimensional location and waveform analysis of microseismicity in multi-anvil experiments. Geophysical Journal International, 0, 171, 1282-1294.	2.4	9
81	An icy mineralogy package (IMP) for in-situ studies of Titanâ€™s surface. Advances in Space Research, 2009, 44, 124-137.	2.6	9
82	Deformation of olivine at 5GPa and 350â€“900Â°C. Physics of the Earth and Planetary Interiors, 2009, 172, 84-90.	1.9	8
83	The development of shape- and crystallographic-preferred orientation in CaPtO3 post-perovskite deformed in pure shear. American Mineralogist, 2011, 96, 1630-1635.	1.9	8
84	The kinetics of the reaction of majorite plus ferropericlase to ringwoodite: Implications for mantle upwellings crossing the 660 km discontinuity. Earth and Planetary Science Letters, 2014, 408, 110-118.	4.4	8
85	The phase diagram of NiSi under the conditions of small planetary interiors. Physics of the Earth and Planetary Interiors, 2016, 261, 196-206.	1.9	8
86	Diffusion Profiles Around Quartz Clasts as Indicators of the Thermal History of Pseudotachylytes. Geochemistry, Geophysics, Geosystems, 2018, 19, 4329-4341.	2.5	8
87	High-temperature equation of state of vanadium. High Pressure Research, 2016, 36, 16-22.	1.2	7
88	Note: Modified anvil design for improved reliability in DT-Cup experiments. Review of Scientific Instruments, 2017, 88, 126106.	1.3	7
89	Anisotropic diffusion creep in postperovskite provides a new model for deformation at the coreâ˜'mantle boundary. Proceedings of the National Academy of Sciences of the United States of America, 2019, 116, 26389-26393.	7.1	7
90	The Earth's deep interior: advances in theory and experiment. Philosophical Transactions Series A, Mathematical, Physical, and Engineering Sciences, 1999, 357, 3335-3357.	3.4	6

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91	Time-of-flight neutron powder diffraction with milligram samples: the crystal structures of NaCoF₃and NaNiF₃post-perovskites. Journal of Applied Crystallography, 2014, 47, 1939-1947.	4.5	6
92	Grain-boundary enrichment of iron on magnesium silicate perovskite. European Journal of Mineralogy, 2007, 19, 617-622.	1.3	5
93	Between a rock and a hot place: the coreâ€“mantle boundary. Philosophical Transactions Series A, Mathematical, Physical, and Engineering Sciences, 2008, 366, 4543-4557.	3.4	5
94	Measurement of thermal diffusivity at high pressures and temperatures using synchrotron radiography. Mineralogical Magazine, 2008, 72, 653-658.	1.4	5
95	The thermal expansion of (Fe_{1âˆ’<i>y</i>}Ni_{<i>y</i>})Si. Journal of Physics Condensed Matter, 2017, 29, 335701.	1.8	5
96	Corrigendum to â€œEffect of water in depleted mantle on post-spinel transition and implication for 660 km seismic discontinuityâ€•[Earth Planet. Sci. Lett. 371â€“372 (2013) 103â€“111]. Earth and Planetary Science Letters, 2013, 382, 85-86.	4.4	4
97	Investigation of high-pressure planetary ices by cryo-recovery. I. An apparatus for X-ray powder diffraction from 40 to 315 K, allowing `cold loading' of samples. Journal of Applied Crystallography, 2018, 51, 685-691.	4.5	4
98	The acoustic emissions signature of a pressure-induced polytypic transformation in chlorite. American Mineralogist, 2007, 92, 437-440.	1.9	3
99	10. Simulating Diffusion. , 2010, , 201-224.		3
100	Slotted carbide anvils: improved X-ray access for synchrotron-based multi-anvil experiments. High Pressure Research, 2012, 32, 532-536.	1.2	3
101	Impact of Coseismic Frictional Melting on Particle Size, Shape Distribution and Chemistry of Experimentally-Generated Pseudotachylite. Frontiers in Earth Science, 2020, 8, .	1.8	3
102	Acoustic detection of phase transitions at high pressure: Bismuth, chlorite and zinc sulphide. High Pressure Research, 2008, 28, 9-17.	1.2	2
103	High-resolution neutron-diffraction measurements to 8 kbar. High Pressure Research, 2017, 37, 486-494.	1.2	2
104	Incorporation of tetrahedral ferric iron into hydrous ringwoodite. American Mineralogist, 2021, 106, 900-908.	1.9	2
105	Characteristics of cast magnesium oxide as a pressure-transmitting medium for a multi-anvil device for high pressure experiments in the 10 GPa region. High Temperatures - High Pressures, 1995, 27/28, 365-369.	0.3	2
106	The equation of state of thePmmnphase of NiSi. Journal of Applied Crystallography, 2015, 48, 1914-1920.	4.5	2
107	Deformation of Postâ€Spinel Under the Lower Mantle Conditions. Journal of Geophysical Research: Solid Earth, 2022, 127, .	3.4	2
108	Habitable Planets: Interior Dynamics and Long-Term Evolution. Proceedings of the International Astronomical Union, 2012, 8, 339-349.	0.0	1

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109	The discontinuous effect of pressure on twin boundary strength in MgO. Physics and Chemistry of Minerals, 2020, 47, 1.	0.8	1
110	Peritectic Melting of Mica in Faultâ€Related Pseudotachylite Melts and Potassium Mass Balance as an Indicator of Fluidâ€Absent Source Conditions.. Geochemistry, Geophysics, Geosystems, 2021, 22, e2020GC009217.	2.5	1
111	Improving grain size analysis using computer vision techniques and implications for grain growth kinetics. American Mineralogist, 2021, , .	1.9	1
112	The tungsten carbideâ€"carbon monoxideâ€"tungsten buffer and its use for synthesizing iron-bearing silicates in muffle furnaces. Review of Scientific Instruments, 2021, 92, 055101.	1.3	1
113	Deformation of NaCoF₃ perovskite and post-perovskite up to 30â€‰GPa and 1013â€‰K: implications for plastic deformation and transformation mechanism. European Journal of Mineralogy, 2021, 33, 591-603.	1.3	1
114	GASPARIK, T. 2003. Phase Diagrams for Geoscientists. An Atlas of the Earth's Interior. xi+462 pp. Berlin, Heidelberg, New York: Springer-Verlag. Price Euros 149.95 (plus VAT at local rate), SFr 242.50, Â£105.00, US $ 169.00 (hard covers). ISBN 3 540 00248 0. Geological Magazine, 2005, 142, 225-225.	1.5	0
115	New techniques for high pressure falling sphere viscosimetry in DIA-type large volume presses. High Pressure Research, 2014, 34, 345-354.	1.2	0