

SÃ©bastien Merkel

List of Publications by Year in descending order

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81
papers

2,877
citations

159585

30
h-index

175258

52
g-index

86
all docs

86
docs citations

86
times ranked

2100
citing authors

#	ARTICLE	IF	CITATIONS
1	High-Pressure Creep of Serpentine, Interseismic Deformation, and Initiation of Subduction. <i>Science</i> , 2007, 318, 1910-1913.	12.6	331
2	Deformation of polycrystalline MgO at pressures of the lower mantle. <i>Journal of Geophysical Research</i> , 2002, 107, ECV 3-1-ECV 3-17.	3.3	207
3	Plastic Deformation of MgGeO ₃ Post-Perovskite at Lower Mantle Pressures. <i>Science</i> , 2006, 311, 644-646.	12.6	143
4	Deformation of (Mg,Fe)SiO ₃ Post-Perovskite and D'' Anisotropy. <i>Science</i> , 2007, 316, 1729-1732.	12.6	139
5	Raman Spectroscopy of Iron to 152 Gigapascals: Implications for Earth's Inner Core. <i>Science</i> , 2000, 288, 1626-1629.	12.6	130
6	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.	4.4	88
7	X-ray transparent gasket for diamond anvil cell high pressure experiments. <i>Review of Scientific Instruments</i> , 2005, 76, 046109.	1.3	79
8	Finite-element modeling of diamond deformation at multimegabar pressures. <i>Applied Physics Letters</i> , 1999, 74, 656-658.	3.3	75
9	Deformation of polycrystalline iron up to 30GPa and 1000K. <i>Physics of the Earth and Planetary Interiors</i> , 2004, 145, 239-251.	1.9	72
10	Single-crystal diffraction at the Extreme Conditions beamline P02.2: procedure for collecting and analyzing high-pressure single-crystal data. <i>Journal of Synchrotron Radiation</i> , 2013, 20, 711-720.	2.4	67
11	Modeling analysis of the influence of plasticity on high pressure deformation of hcp-Co. <i>Physical Review B</i> , 2009, 79, .	3.2	66
12	Dislocations and Plastic Deformation in MgO Crystals: A Review. <i>Crystals</i> , 2018, 8, 240.	2.2	62
13	Aggregate and single-crystalline elasticity of hcp cobalt at high pressure. <i>Physical Review B</i> , 2005, 72, .	3.2	59
14	Equation of state, elasticity, and shear strength of pyrite under high pressure. <i>Physics and Chemistry of Minerals</i> , 2002, 29, 1-9.	0.8	53
15	Mechanism of the ϵ - δ transformation in iron. <i>Physical Review B</i> , 2015, 91, .	2.5	44
16	Lattice preferred orientation and stress in polycrystalline hcp-Co plastically deformed under high pressure. <i>Journal of Applied Physics</i> , 2006, 100, 023510.	2.5	44
17	Experimental method for <i>in situ</i> determination of material textures at simultaneous high pressure and high temperature by means of radial diffraction in the diamond anvil cell. <i>Review of Scientific Instruments</i> , 2009, 80, 104501.	1.3	43
18	Deformation textures produced in diamond anvil experiments, analysed in radial diffraction geometry. <i>Journal of Physics Condensed Matter</i> , 2006, 18, S933-S947.	1.8	42

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19	High resolution three-dimensional X-ray diffraction study of dislocations in grains of MgGeO ₃ post-perovskite at 90 GPa. <i>Journal of Geophysical Research</i> , 2012, 117, .	3.3	42
20	Lattice preferred orientation in CaIrO ₃ perovskite and post-perovskite formed by plastic deformation under pressure. <i>Physics and Chemistry of Minerals</i> , 2007, 34, 679-686.	0.8	41
21	Effects of texture on the determination of elasticity of polycrystalline μ -iron from diffraction measurements. <i>Earth and Planetary Science Letters</i> , 2001, 194, 201-212.	4.4	40
22	Elastic anisotropy in hcp metals at high pressure and the sound wave anisotropy of the Earth's inner core. <i>Geophysical Research Letters</i> , 2006, 33, .	4.0	39
23	Axial temperature gradient and stress measurements in the deformation-DIA cell using alumina pistons. <i>Review of Scientific Instruments</i> , 2013, 84, 043906.	1.3	39
24	A new high-pressure form of KAlSi ₃ O ₈ under lower mantle conditions. <i>Geophysical Research Letters</i> , 2004, 31, .	4.0	38
25	X-ray diffraction study of the single-crystal elastic moduli of μ -Fe up to 30 GPa. <i>Journal of Geophysical Research</i> , 2005, 110, .	3.3	37
26	Equation of state and phase transition in KAlSi ₃ O ₈ hollandite at high pressure. <i>American Mineralogist</i> , 2006, 91, 327-332.	1.9	37
27	In situ radial X-ray diffraction study of texture and stress during phase transformations in bcc-, fcc- and hcp-iron up to 36 GPa and 1000 K. <i>Acta Materialia</i> , 2013, 61, 5144-5151.	7.9	37
28	Deformation Behavior across the Zircon-Scheelite Phase Transition. <i>Physical Review Letters</i> , 2016, 117, 135701.	7.8	37
29	Deformation of olivine under mantle conditions: An in situ high-pressure, high-temperature study using monochromatic synchrotron radiation. <i>Journal of Geophysical Research</i> , 2012, 117, .	3.3	34
30	A Physical Basis for Time Clustering of Large Earthquakes. <i>Bulletin of the Seismological Society of America</i> , 2001, 91, 1685-1693.	2.3	32
31	X-ray diffraction evaluation of stress in high pressure deformation experiments. <i>Journal of Physics Condensed Matter</i> , 2006, 18, S949-S962.	1.8	30
32	Texture development and elastic stresses in magnesiowÄstite at high pressure. <i>Physics and Chemistry of Minerals</i> , 2006, 33, 84-97.	0.8	29
33	Texture and elastic strains in hcp-iron plastically deformed up to 17.5 GPa and 600 K: experiment and model. <i>Modelling and Simulation in Materials Science and Engineering</i> , 2012, 20, 024005.	2.0	27
34	Microstructures and rheology of the Earth's upper mantle inferred from a multiscale approach. <i>Comptes Rendus Physique</i> , 2010, 11, 304-315.	0.9	26
35	Significance of mechanical twinning in hexagonal metals at high pressure. <i>Acta Materialia</i> , 2012, 60, 430-442.	7.9	26
36	Evidence for {100}<011> slip in ferropericlase in Earth's lower mantle from high-pressure/high-temperature experiments. <i>Earth and Planetary Science Letters</i> , 2018, 489, 251-257.	4.4	26

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37	<i>In situ</i> rheological measurements at extreme pressure and temperature using synchrotron X-ray diffraction and radiography. <i>Journal of Synchrotron Radiation</i> , 2009, 16, 748-756.	2.4	25
38	Diamond anvil cell deformation of CaSiO ₃ perovskite up to 49GPa. <i>Physics of the Earth and Planetary Interiors</i> , 2009, 174, 159-164.	1.9	25
39	Deformation of MnGeO ₃ perovskite at lower mantle pressure and temperature. <i>Geophysical Research Letters</i> , 2010, 37, .	4.0	24
40	<i>Multifit</i> / <i>Polydefix</i> : a framework for the analysis of polycrystal deformation using X-rays. <i>Journal of Applied Crystallography</i> , 2015, 48, 1307-1313.	4.5	23
41	Kinetic D/H fractionation during hydration and dehydration of silicate glasses, melts and nominally anhydrous minerals. <i>Geochimica Et Cosmochimica Acta</i> , 2018, 233, 14-32.	3.9	23
42	Microstructural effects and mechanism of bcc-hcp-bcc transformations in polycrystalline iron. <i>Physical Review B</i> , 2020, 102, .	3.2	23
43	Quantitative Rietveld texture analysis of CaSiO ₃ perovskite deformed in a diamond anvil cell. <i>Journal of Physics Condensed Matter</i> , 2006, 18, S995-S1005.	1.8	21
44	Novel experimental setup for megahertz X-ray diffraction in a diamond anvil cell at the High Energy Density (HED) instrument of the European X-ray Free-Electron Laser (EuXFEL). <i>Journal of Synchrotron Radiation</i> , 2021, 28, 688-706.	2.4	21
45	Femtosecond Visualization of hcp-Iron Strength and Plasticity under Shock Compression. <i>Physical Review Letters</i> , 2021, 127, 205501.	7.8	21
46	Texturing in Earth's inner core due to preferential growth in its equatorial belt. <i>Physics of the Earth and Planetary Interiors</i> , 2011, 188, 173-184.	1.9	20
47	Elasto-viscoplastic self consistent modeling of the ambient temperature plastic behavior of periclase deformed up to 5.4 GPa. <i>Journal of Applied Physics</i> , 2017, 122, .	2.5	20
48	Shear wave anisotropy in textured phase D and constraints on deep water recycling in subduction zones. <i>Earth and Planetary Science Letters</i> , 2013, 377-378, 13-22.	4.4	17
49	Effective viscoplastic behavior of polycrystalline aggregates lacking four independent slip systems inferred from homogenization methods; application to olivine. <i>Journal of the Mechanics and Physics of Solids</i> , 2015, 83, 199-220.	4.8	17
50	Multiscale model of global inner core anisotropy induced by hcp alloy plasticity. <i>Geophysical Research Letters</i> , 2016, 43, 1084-1091.	4.0	17
51	<i>In situ</i> quantitative analysis of stress and texture development in forsterite aggregates deformed at 6â€¦GPa and 1373â€¦K. <i>Journal of Applied Crystallography</i> , 2012, 45, 263-271.	4.5	15
52	Multiscale modeling of upper mantle plasticity: From single-crystal rheology to multiphase aggregate deformation. <i>Physics of the Earth and Planetary Interiors</i> , 2014, 228, 232-243.	1.9	15
53	Is inner core seismic anisotropy a marker for plastic flow of cubic iron?. <i>Geophysical Research Letters</i> , 2015, 42, 1326-1333.	4.0	15
54	Deformation of forsterite polycrystals at mantle pressure: Comparison with Fe-bearing olivine and the effect of iron on its plasticity. <i>Physics of the Earth and Planetary Interiors</i> , 2015, 240, 95-104.	1.9	15

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55	<i>In situ</i> monitoring of phase transformation microstructures at Earth's mantle pressure and temperature using multi-grain XRD. <i>Journal of Applied Crystallography</i> , 2015, 48, 1346-1354.	4.5	15
56	Three-dimensional X-ray diffraction in the diamond anvil cell: application to stishovite. <i>High Pressure Research</i> , 2014, 34, 158-166.	1.2	14
57	Evolution of grain sizes and orientations during phase transitions in hydrous Mg ₂ SiO ₄ . <i>Journal of Geophysical Research: Solid Earth</i> , 2016, 121, 7161-7176.	3.4	14
58	X-ray Free Electron Laser-Induced Synthesis of μ -Iron Nitride at High Pressures. <i>Journal of Physical Chemistry Letters</i> , 2021, 12, 3246-3252.	4.6	14
59	Polycrystalline olivine rheology in dislocation creep: Revisiting experimental data to 8.1GPa. <i>Physics of the Earth and Planetary Interiors</i> , 2014, 228, 211-219.	1.9	13
60	An improved setup for radial diffraction experiments at high pressures and high temperatures in a resistive graphite-heated diamond anvil cell. <i>Review of Scientific Instruments</i> , 2020, 91, 045121.	1.3	11
61	Seismic response and anisotropy of a model hcp iron inner core. <i>Comptes Rendus - Geoscience</i> , 2014, 346, 148-157.	1.2	10
62	Effect of lattice preferred orientation on lattice strains in polycrystalline materials deformed under high pressure: Application to hcp-Co. <i>Journal of Physics and Chemistry of Solids</i> , 2006, 67, 2119-2131.	4.0	9
63	Kinetics and detectability of the bridgmanite to post-perovskite transformation in the Earth's D ϵ^3 layer. <i>Nature Communications</i> , 2019, 10, 5680.	12.8	8
64	Amorphous boron composite gaskets for <i>in situ</i> high-pressure and high-temperature studies. <i>High Pressure Research</i> , 2016, 36, 564-574.	1.2	7
65	Reliability of multigrain indexing for orthorhombic polycrystals above 1 ϵ Mbar: application to MgSiO ₃ post-perovskite. <i>Journal of Applied Crystallography</i> , 2017, 50, 120-130.	4.5	7
66	Detecting seismic anisotropy above the 410 ϵ km discontinuity using reflection coefficients of underside reflections. <i>Physics of the Earth and Planetary Interiors</i> , 2018, 274, 170-183.	1.9	7
67	High-pressure yield strength of rocksalt structures using quartz Raman piezometry. <i>Comptes Rendus - Geoscience</i> , 2019, 351, 71-79.	1.2	4
68	Radial Diffraction in the Diamond Anvil Cell: Methods and Applications. <i>NATO Science for Peace and Security Series B: Physics and Biophysics</i> , 2010, , 111-122.	0.3	4
69	The mantle deformed. <i>Nature</i> , 2004, 428, 812-813.	27.8	3
70	Textures in deforming forsterite aggregates up to 8 ϵ GPa and 1673 ϵ K. <i>Physics and Chemistry of Minerals</i> , 2016, 43, 409-417.	0.8	2
71	The equation of state of TaC _{0.99} by X-ray diffraction in radial scattering geometry to 32 ϵ %GPa and 1073 ϵ %K. <i>Journal of Applied Physics</i> , 2019, 126, .	2.5	2
72	Olivine intergranular plasticity at mantle pressures and temperatures. <i>Comptes Rendus - Geoscience</i> , 2019, 351, 80-85.	1.2	2

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73	High pressure exploration in the Liâ€“Lnâ€“Vâ€“O system. Dalton Transactions, 2020, 49, 13663-13670.	3.3	2
74	Plastic deformation of minerals at high pressure. , 0, , 339-355.		2
75	Deformation of NaCoF<sub>3</sub> 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
76	Deformation of Polycrystalline MgO Up to 8.3ÂGPa and 1270ÂK: Microstructures, Dominant Slip-Systems, and Transition to Grain Boundary Sliding. Frontiers in Earth Science, 2022, 10, .	1.8	1
77	Corrigendum to â€œDeformation of polycrystalline iron up to 30â€“GPa and 1000â€“Kâ€“[Phys. Earth Planet Inter. 145 (2004) 239â€“251]. Physics of the Earth and Planetary Interiors, 2005, 150, 351-352.	1.9	0
78	Earth's inner weakness. Nature Geoscience, 2013, 6, 514-515.	12.9	0
79	Earth's inner core. Comptes Rendus - Geoscience, 2014, 346, .	1.2	0
80	Ultrafast X-ray Diffraction Study of a Shock-Compressed Iron Meteorite above 100 GPa. Minerals (Basel, Switzerland), 2021, 11, 567.	2.0	0
81	Deformation and slip systems of CaCl_2 and MnO under high pressure. Physical Review Materials, 2022, 6, .	2.4	0