Zhisheng Zhao

List of Publications by Year in Descending Order

142 papers	4,274 citations	25 h-index	62 g-index
151 ext. papers	5,229 ext. citations	7.2 avg, IF	5.38 L-index

#	Paper	IF	Citations
142	Hard and tough ultrafine-grained B4C-cBN composites prepared by high-pressure sintering. *Journal of the European Ceramic Society*, **2022**, 42, 2015-2020	6	0
141	Superconductivity in graphite-diamond hybrid. *Materials Today Physics*, **2022**, 23, 100630	8	2
140	Discovery of carbon-based strongest and hardest amorphous material.. *National Science Review*, **2022**, 9, nwab140	10.8	16
139	Nanocrystalline high-entropy carbide ceramics with improved mechanical properties. *Journal of the American Ceramic Society*, **2022**, 105, 606	3.8	2
138	Extraordinary high-temperature mechanical properties in binder-free nanopolycrystalline WC ceramic. *Journal of Materials Science and Technology*, **2022**, 97, 169-175	9.1	2
137	Novel Boron Nitride Polymorphs with Graphite-Diamond Hybrid Structure. *Chinese Physics Letters*, **2022**, 39, 036301	1.8	0
136	Ultrasensitive biochemical sensors based on controllably grown films of high-density edge-rich multilayer WS2 islands. *Sensors and Actuators B: Chemical*, **2021**, 131081	8.5	0
135	Extreme mechanical anisotropy in diamond with preferentially oriented nanotwin bundles. *Proceedings of the National Academy of Sciences of the United States of America*, **2021**, 118,	11.5	1
134	Proximity Enhanced Hydrogen Evolution Reactivity of Substitutional Doped Monolayer WS. *ACS Applied Materials & Interfaces*, **2021**, 13, 19406-19413	9.5	6
133	Grain-boundary-rich polycrystalline monolayer WS film for attomolar-level Hg sensors. *Nature Communications*, **2021**, 12, 3870	17.4	11
132	Rapid fabrication of hierarchical porous SiC/C hybrid structure: toward high-performance capacitive energy storage with ultrahigh cyclability. *Journal of Materials Science*, **2021**, 56, 16068-16081	4.3	1
131	The rise of plastic deformation in boron nitride ceramics. *Science China Materials*, **2021**, 64, 46-51	7.1	3
130	Heat-treated glassy carbon under pressure exhibiting superior hardness, strength and elasticity. *Journal of Materiomics*, **2021**, 7, 177-184	6.7	4
129	Strong amorphous carbon prepared by spark-plasma sintering C60. *Journal of the American Ceramic Society*, **2021**, 104, 1655-1660	3.8	1
128	Porous bismuth antimony telluride alloys with excellent thermoelectric and mechanical properties. *Journal of Materials Chemistry A*, **2021**, 9, 4990-4999	13	8
127	Design of a Series of Metallic BN with Tunable Mechanical Properties. *Journal of Physical Chemistry Letters*, **2021**, 12, 1979-1984	6.4	0
126	Design of a Class of New sp 2 –sp 3 Carbons Constructed by Graphite and Diamond Building Blocks. *Chinese Physics Letters*, **2021**, 38, 028102	1.8	6

125	Preparation of dense B4C ceramics by spark plasma sintering of high-purity nanoparticles. *Journal of the European Ceramic Society*, **2021**, 41, 3929-3936	6	8
124	Design and theoretical study of novel multifunctional 3D-BC2N polymorphs. *Chemical Physics Letters*, **2021**, 774, 138610	2.5	1
123	Columbite-rich multiphase TiO2 nanoceramic with superior mechanical and dielectric properties. *Journal of the European Ceramic Society*, **2021**, 41, 4951-4957	6	0
122	Strengthening effects of penetrating twin boundary and phase boundary in polycrystalline diamond. *Diamond and Related Materials*, **2021**, 117, 108436	3.5	2
121	Narrow-gap, semiconducting, superhard amorphous carbon with high toughness, derived from C60 fullerene. *Cell Reports Physical Science*, **2021**, 2, 100575	6.1	7
120	In Situ Grown Ultrafine RuO Nanoparticles on GeP Nanosheets as the Electrode Material for Flexible Planar Micro-Supercapacitors with High Specific Capacitance and Cyclability. *ACS Applied Materials & Interfaces*, **2021**, 13, 47560-47571	9.5	1
119	High-sensitivity and versatile plasmonic biosensor based on grain boundaries in polycrystalline 1L WS films. *Biosensors and Bioelectronics*, **2021**, 194, 113596	11.8	2
118	Structural diversity, large interlayer spacing and switchable electronic properties of graphitic systems. *Journal of Materials Science*, **2021**, 56, 5509-5519	4.3	1
117	Structural Determination of a Graphite/Hexagonal Boron Nitride Superlattice Observed in the Experiment. *Inorganic Chemistry*, **2021**, 60, 2598-2603	5.1	1
116	Superhard and superconductive nondiamond-like BC structure. *Diamond and Related Materials*, **2020**, 110, 108142	3.5	
115	Pentadiamond-like Metallic Hard Carbon Nitride. *Journal of Physical Chemistry C*, **2020**, 124, 24978-24983	3.8	9
114	Ab initio study of pressure-induced metallization and superconductivity in orthorhombic LiBH2 phase under ultra-high pressure. *Physics Letters, Section A: General, Atomic and Solid State Physics*, **2020**, 384, 126525	2.3	4
113	Application of hard ceramic materials B4C in energy storage: Design B4C@C core-shell nanoparticles as electrodes for flexible all-solid-state micro-supercapacitors with ultrahigh cyclability. *Nano Energy*, **2020**, 75, 104947	17.1	21
112	Mechanochemically assisted synthesis of titanium carbonitride from metal and organic precursor. *Journal of the American Ceramic Society*, **2020**, 103, 6112-6119	3.8	0
111	Universal Phase Transitions of AlB-Type Transition-Metal Diborides. *ACS Omega*, **2020**, 5, 4620-4625	3.9	5
110	Synthesis of twin-structured nanodiamond particles. *AIP Advances*, **2020**, 10, 015240	1.5	3
109	Mechanical polishing of ultrahard nanotwinned diamond via transition into hard sp2-sp3 amorphous carbon. *Carbon*, **2020**, 161, 1-6	10.4	15
108	Influence of van der Waals epitaxy on phase transformation behaviors in 2D heterostructure. *Applied Physics Letters*, **2020**, 116, 021602	3.4	4

107	Potential high-T superconductivity in ZrB2 polymorph under pressure. *Computational Materials Science*, **2020**, 176, 109517	3.2	2
106	Superhard conductive orthorhombic carbon polymorphs. *Carbon*, **2020**, 158, 546-552	10.4	16
105	Three metallic BN polymorphs: 1D multi-threaded conduction in a 3D network. *Physical Chemistry Chemical Physics*, **2020**, 22, 489-496	3.6	3
104	High-Pressure Synthesis of cBN Nanoparticles with High-Density Nanotwin Substructures. *ACS Omega*, **2020**, 5, 650-654	3.9	1
103	Restacked melon as highly-efficient photocatalyst. *Nano Energy*, **2020**, 77, 105124	17.1	2
102	Superhard sp-sp hybridized BCN with 2D metallicity. *Physical Chemistry Chemical Physics*, **2020**, 22, 22918-22922	3.6	2
101	High-Performance Broadband Photodetectors of Heterogeneous 2D Inorganic Molecular Sb2O3/Monolayer MoS2 Crystals Grown via Chemical Vapor Deposition. *Advanced Optical Materials*, **2020**, 8, 2000168	8.1	4
100	Photoluminescence and Raman Spectra Oscillations Induced by Laser Interference in Annealing-Created Monolayer WS2 Bubbles. *Advanced Optical Materials*, **2019**, 7, 1801373	8.1	14
99	Effect of layer and stacking sequence in simultaneously grown 2H and 3R WS atomic layers. *Nanotechnology*, **2019**, 30, 345203	3.4	7
98	In-Situ Observation of the Formation of Fibrous Sulfur under High Pressure. *Journal of Physical Chemistry C*, **2019**, 123, 14696-14700	3.8	4
97	Electronic structure and superconductivity in hexagonal Li3B2 and Li2B2H phases under pressure. *Journal of Applied Physics*, **2019**, 125, 223902	2.5	
96	One-Step Growth of Spatially Graded MoW S Monolayers with a Wide Span in Composition (from x = 0 to 1) at a Large Scale. *ACS Applied Materials & Interfaces*, **2019**, 11, 20979-20986	9.5	7
95	High-pressure phases of boron arsenide with potential high thermal conductivity. *Physical Review B*, **2019**, 99,	3.3	11
94	First-principles studies of superhard BC8N structures. *Journal of Applied Physics*, **2019**, 125, 175108	2.5	7
93	Direct large-scale fabrication of C-encapsulated B4C nanoparticles with tunable dielectric properties as excellent microwave absorbers. *Carbon*, **2019**, 148, 504-511	10.4	16
92	Accelerated Degradation of CrCl3 Nanoflakes Induced by Metal Electrodes: Implications for Remediation in Nanodevice Fabrication. *ACS Applied Nano Materials*, **2019**, 2, 1597-1603	5.6	7
91	Potential high-Tc superconductivity in CaYH12 under pressure. *Physical Review B*, **2019**, 99,	3.3	53
90	Small onion-like BN leads to ultrafine-twinned cubic BN. *Science China Materials*, **2019**, 62, 1169-1176	7.1	9

89	Mechanical properties of boron arsenide single crystal. *Applied Physics Letters*, **2019**, 114, 131903	3.4	15
88	Modifying Carbon Nitride through Extreme Phosphorus Substitution **2019**, 1, 14-19		7
87	Layered porous materials indium triphosphide InP3 for high-performance flexible all-solid-state supercapacitors. *Journal of Power Sources*, **2019**, 438, 227010	8.9	10
86	Tribological properties of oleylamine-modified nickel nanoparticles as lubricating oil additive. *Materials Research Express*, **2019**, 6, 105037	1.7	3
85	Lateral Bilayer MoS2/WS2 Heterostructure Photodetectors with High Responsivity and Detectivity. *Advanced Optical Materials*, **2019**, 7, 1900815	8.1	39
84	Discovery of superhard materials via CALYPSO methodology. *Chinese Physics B*, **2019**, 28, 106104	1.2	9
83	First-principles study of crystal structures and superconductivity of ternary YSH6 and LaSH6 at high pressures. *Physical Review B*, **2019**, 100,	3.3	16
82	Continuous strengthening in nanotwinned diamond. *Npj Computational Materials*, **2019**, 5,	10.9	17
81	Atomically Resolving Polymorphs and Crystal Structures of In2Se3. *Chemistry of Materials*, **2019**, 31, 10143610149	9.3	49
80	One-step synthetic route and sintering for carbon-coated B4C nanoparticles. *Journal of Alloys and Compounds*, **2019**, 782, 263-269	5.7	10
79	Prediction of Li2B novel phases and superconductivity under varying pressures. *Computational Materials Science*, **2019**, 158, 255-259	3.2	5
78	Enhanced thermoelectric performance of high pressure synthesized Sb-doped Mg2Si. *Journal of Alloys and Compounds*, **2018**, 741, 1148-1152	5.7	13
77	Grain wall boundaries in centimeter-scale continuous monolayer WS film grown by chemical vapor deposition. *Nanotechnology*, **2018**, 29, 255705	3.4	8
76	Low-energy 3D sp carbons with versatile properties beyond graphite and graphene. *Dalton Transactions*, **2018**, 47, 6233-6239	4.3	6
75	Novel carbon polymorphs with cumulative double bonds in three-dimensional sp-sp hybrid framework. *Physical Chemistry Chemical Physics*, **2018**, 20, 15022-15029	3.6	6
74	3D hybrid carbon composed of multigraphene bridged by carbon chains. *AIP Advances*, **2018**, 8, 015019	1.5	
73	Enhanced Stability of Black Phosphorus Field-Effect Transistors via Hydrogen Treatment. *Advanced Electronic Materials*, **2018**, 4, 1700455	6.4	15
72	Enhanced thermoelectric performance of Na-doped PbTe synthesized under high pressure. *Science China Materials*, **2018**, 61, 1218-1224	7.1	20

71	First principles studies of superhard BC6N phases with unexpected 1D metallicity. *Computational Materials Science*, **2018**, 148, 157-164	3.2	9
70	Predicting the ground-state structure of sodium boride. *Physical Review B*, **2018**, 97,	3.3	16
69	Enhanced thermoelectric performance of bismuth-doped magnesium silicide synthesized under high pressure. *Journal of Materials Science*, **2018**, 53, 9091-9098	4.3	9
68	Two-dimensional boron on Pb (1 1 0) surface. *FlatChem*, **2018**, 7, 34-41	5.1	5
67	Hard three-dimensional BN framework with one-dimensional metallicity. *Journal of Alloys and Compounds*, **2018**, 731, 364-368	5.7	19
66	Investigation on the Stability of Derivative Melam from Melamine Pyrolysis under High Pressure. *Nanomaterials*, **2018**, 8,	5.4	10
65	Mechanically ductile 3D sp□p 2 microporous carbon. *Journal of Materials Science*, **2018**, 53, 4316-4322	4.3	10
64	Multithreaded conductive carbon: 1D conduction in 3D carbon. *Carbon*, **2017**, 115, 584-588	10.4	13
63	Properties of the exotic metastable ST12 germanium allotrope. *Nature Communications*, **2017**, 8, 13909	17.4	27
62	Role of plastic deformation in tailoring ultrafine microstructure in nanotwinned diamond for enhanced hardness. *Science China Materials*, **2017**, 60, 178-185	7.1	18
61	Superhard three-dimensional B3N4 with two-dimensional metallicity. *Journal of Materials Chemistry C*, **2017**, 5, 5897-5901	7.1	14
60	New hexagonal boron nitride polytypes with triple-layer periodicity. *Journal of Applied Physics*, **2017**, 121, 165102	2.5	10
59	Pressure-induced boron nitride nanotube derivatives: 3D metastable allotropes. *Journal of Applied Physics*, **2017**, 121, 165106	2.5	14
58	Strengthening mechanism of □Zr. *Computational Materials Science*, **2017**, 135, 134-140	3.2	4
57	Compressed glassy carbon: An ultrastrong and elastic interpenetrating graphene network. *Science Advances*, **2017**, 3, e1603213	14.3	77
56	Superhard sp2-sp3 hybridized BC2N: A 3D crystal with 1D and 2D alternate metallicity. *Journal of Applied Physics*, **2017**, 121, 225103	2.5	11
55	Metastable phases, phase transformation and properties of AlAs based on first-principle study. *Computational Materials Science*, **2017**, 128, 337-342	3.2	17
54	A superhard sp3 microporous carbon with direct bandgap. *Chemical Physics Letters*, **2017**, 689, 68-73	2.5	29

53	Pressure-Induced Polymerization and Disproportionation of LiC Accompanied with Irreversible Conductivity Enhancement. *Journal of Physical Chemistry Letters*, **2017**, 8, 4241-4245	6.4	11
52	Strain Release Induced Novel Fluorescence Variation in CVD-Grown Monolayer WS Crystals. *ACS Applied Materials & Interfaces*, **2017**, 9, 34071-34077	9.5	13
51	Strengthening in high-pressure quenched Zr. *High Pressure Research*, **2017**, 37, 278-286	1.6	5
50	Flexible Black-Phosphorus Nanoflake/Carbon Nanotube Composite Paper for High-Performance All-Solid-State Supercapacitors. *ACS Applied Materials & Interfaces*, **2017**, 9, 44478-44484	9.5	69
49	Preparation of pure β-phase titanium alloys with low moduli via high pressure solution treatment. *Journal of Alloys and Compounds*, **2017**, 695, 45-51	5.7	12
48	Superhard orthorhombic phase of B2CO compound. *Diamond and Related Materials*, **2017**, 73, 87-92	3.5	13
47	Recent Advances in Superhard Materials. *Annual Review of Materials Research*, **2016**, 46, 383-406	12.8	80
46	Anomalous melting behavior of polycrystalline bismuth quenched at high temperature and high pressure. *Materials Letters*, **2016**, 168, 36-39	3.3	2
45	Flexible All-Solid-State Supercapacitors based on Liquid-Exfoliated Black-Phosphorus Nanoflakes. *Advanced Materials*, **2016**, 28, 3194-201	24	249
44	Novel high-pressure phases of AlP from first principles. *Journal of Applied Physics*, **2016**, 119, 185101	2.5	10
43	Superhard sp2–sp3 hybrid carbon allotropes with tunable electronic properties. *AIP Advances*, **2016**, 6, 055020	1.5	17
42	Interpenetrating graphene networks: Three-dimensional node-line semimetals with massive negative linear compressibilities. *Physical Review B*, **2016**, 94,	3.3	13
41	Coexistence of multiple metastable polytypes in rhombohedral bismuth. *Scientific Reports*, **2016**, 6, 20337	4.9	12
40	Novel high-pressure phases of AlN: A first-principles study. *Computational Materials Science*, **2016**, 117, 496-501	3.2	23
39	Superhard superstrong carbon clathrate. *Carbon*, **2016**, 105, 151-155	10.4	23
38	Te-Doped Black Phosphorus Field-Effect Transistors. *Advanced Materials*, **2016**, 28, 9408-9415	24	195
37	Si10: A sp3 Silicon Allotrope with Spirally Connected Si5 Tetrahedrons. *Chemistry of Materials*, **2016**, 28, 6441-6445	9.6	14
36	Deterministic Polarization Entanglement Purification of Cluster State in Multiple Degrees of Freedom. *International Journal of Theoretical Physics*, **2015**, 54, 1184-1192	1.1	

35	Is orthorhombic iron tetraboride superhard?. *Journal of Materiomics*, **2015**, 1, 45-51	6.7	23
34	Nanoarchitectured materials composed of fullerene-like spheroids and disordered graphene layers with tunable mechanical properties. *Nature Communications*, **2015**, 6, 6212	17.4	43
33	Carbon coated face-centered cubic Ru-C nanoalloys. *Nanoscale*, **2014**, 6, 10370-6	7.7	16
32	Novel three-dimensional boron nitride allotropes from compressed nanotube bundles. *Journal of Materials Chemistry C*, **2014**, 2, 7022	7.1	17
31	On implementing nondestructive triplet Toffoli gate with entanglement swapping operations via the GHZ state analysis. *Quantum Information Processing*, **2014**, 13, 2039-2047	1.6	5
30	Direct band gap silicon allotropes. *Journal of the American Chemical Society*, **2014**, 136, 9826-9	16.4	120
29	Superhard and high-strength yne-diamond semimetals. *Diamond and Related Materials*, **2014**, 46, 15-20	3.5	14
28	Nanotwinned diamond with unprecedented hardness and stability. *Nature*, **2014**, 510, 250-3	50.4	440
27	An ab initio study on the transition paths from graphite to diamond under pressure. *Journal of Physics Condensed Matter*, **2013**, 25, 145402	1.8	13
26	Compressed carbon nanotubes: a family of new multifunctional carbon allotropes. *Scientific Reports* , **2013**, 3, 1331	4.9	73
25	A novel layer-structured PtN2: First-principles calculations. *Journal of Superhard Materials*, **2013**, 35, 339-349	0.9	2
24	Ultrahard nanotwinned cubic boron nitride. *Nature*, **2013**, 493, 385-8	50.4	519
23	Tian et al. reply. *Nature*, **2013**, 502, E2-3	50.4	10
22	Microscopic theory of hardness and design of novel superhard crystals. *International Journal of Refractory Metals and Hard Materials*, **2012**, 33, 93-106	4.1	563
21	Exotic Cubic Carbon Allotropes. *Journal of Physical Chemistry C*, **2012**, 116, 24233-24238	3.8	48
20	High-pressure behaviors of carbon nanotubes. *Journal of Superhard Materials*, **2012**, 34, 371-385	0.9	22
19	Metastable C-centered orthorhombic Si8 and Ge8. *Journal of Physics Condensed Matter*, **2012**, 24, 405803	1.8	4
18	First-principles study of O-BN: A sp3-bonding boron nitride allotrope. *Journal of Applied Physics*, **2012**, 112, 053518	2.5	44

17	Superhard F-carbon predicted by ab initio particle-swarm optimization methodology. *Journal of Physics Condensed Matter*, **2012**, 24, 165504	1.8	39
16	Tetragonal allotrope of group 14 elements. *Journal of the American Chemical Society*, **2012**, 134, 12362-5	16.4	146
15	POLARIZATION ENTANGLEMENT CONCENTRATIONS WITH LESS-HYPERENTANGLED PHOTON PAIRS IN MULTIPLE DEGREES OF FREEDOM. *International Journal of Quantum Information*, **2012**, 10, 1250075	0.8	2
14	High-pressure phases of NaAlH4 from first principles. *Applied Physics Letters*, **2012**, 100, 061905	3.4	8
13	Prediction of a superconductive superhard material: Diamond-like BC7. *Journal of Applied Physics*, **2011**, 110, 013501	2.5	20
12	Three dimensional carbon-nanotube polymers. *ACS Nano*, **2011**, 5, 7226-34	16.7	94
11	Novel superhard carbon: C-centered orthorhombic C8. *Physical Review Letters*, **2011**, 107, 215502	7.4	198
10	Universal phase transitions of B1-structured stoichiometric transition metal carbides. *Inorganic Chemistry*, **2011**, 50, 9266-72	5.1	11
9	Superconducting ultraincompressible hard cubic Re4C. *Computational Materials Science*, **2011**, 50, 1592-1596	3.2	12
8	Properties of CaB6 single crystals synthesized under high pressure and temperature. *Science China: Physics, Mechanics and Astronomy*, **2011**, 54, 1791-1795	3.6	6
7	Novel High-Pressure Phase of RhB: First-Principles Calculations. *Journal of Physical Chemistry C*, **2011**, 115, 19910-19915	3.8	16
6	Semiconducting Superhard Ruthenium Monocarbide. *Journal of Physical Chemistry C*, **2010**, 114, 9961-9964	3.8	36
5	Prediction of a Three-Dimensional Conductive Superhard Material: Diamond-like BC2. *Journal of Physical Chemistry C*, **2010**, 114, 22688-22690	3.8	31
4	Bulk Re2C: Crystal Structure, Hardness, and Ultra-incompressibility. *Crystal Growth and Design*, **2010**, 10, 5024-5026	3.5	40
3	Prediction of a conducting hard ductile cubic IrC. *Physica Status Solidi - Rapid Research Letters*, **2010**, 4, 230-232	2.5	7
2	Controllable growth of multilayered XSe2 (X=W and Mo) for nonlinear optical and optoelectronic applications. *2D Materials*,	5.9	1
1	Heterogeneous Diamond-cBN Composites with Superb Toughness and Hardness. *Nano Letters*,	11.5	0