Zhisheng Zhao

List of Publications by Year
in descending order

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148 papers	6,274 citations	159585 30 h-index	74163 75 g-index
151 all docs	151 docs citations	151 times ranked	5899 citing authors

#	Article	IF	Citations
1	Microscopic theory of hardness and design of novel superhard crystals. International Journal of Refractory Metals and Hard Materials, 2012, 33, 93-106.	3.8	900
2	Ultrahard nanotwinned cubic boron nitride. Nature, 2013, 493, 385-388.	27.8	662
3	Nanotwinned diamond with unprecedented hardness and stability. Nature, 2014, 510, 250-253.	27.8	611
4	Flexible Allâ€Solidâ€State Supercapacitors based on Liquidâ€Exfoliated Blackâ€Phosphorus Nanoflakes. Advanced Materials, 2016, 28, 3194-3201.	21.0	290
5	Teâ€Doped Black Phosphorus Fieldâ€Effect Transistors. Advanced Materials, 2016, 28, 9408-9415.	21.0	241
6	Novel Superhard Carbon: C-Centered Orthorhombic<mml:math xmlns:mml="http://www.w3.org/1998/Math/MathML" display="inline"><mml:msub><mml:mi mathvariant="normal">C</mml:mi><mml:mn>8</mml:mn></mml:msub></mml:math>. Physical Review Letters, 2011, 107, 215502.	7.8	225
7	Flexible all-perovskite tandem solar cells approaching 25% efficiency with molecule-bridged hole-selective contact. Nature Energy, 2022, 7, 708-717.	39.5	171
8	Tetragonal Allotrope of Group 14 Elements. Journal of the American Chemical Society, 2012, 134, 12362-12365.	13.7	170
9	Direct Band Gap Silicon Allotropes. Journal of the American Chemical Society, 2014, 136, 9826-9829.	13.7	151
10	Recent Advances in Superhard Materials. Annual Review of Materials Research, 2016, 46, 383-406.	9.3	119
11	Three Dimensional Carbon-Nanotube Polymers. ACS Nano, 2011, 5, 7226-7234.	14.6	110
12	Compressed glassy carbon: An ultrastrong and elastic interpenetrating graphene network. Science Advances, 2017, 3, e1603213.	10.3	110
13	Potential high- <mml:math xmlns:mml="http://www.w3.org/1998/Math/MathML"><mml:msub><mml:mi>T</mml:mi><mml:mi>c</mml:mi></mml:msub></mml:math> superconductivity in <mml:math xmlns:mml="http://www.w3.org/1998/Math/MathML"><mml:msub><mml:mi>CaYH</mml:mi><mml:mn>12</mml:mn></mml:msub></mml:math> under pressure. Physical Review B, 2019, 99, .	3.2	109
14	Flexible Black-Phosphorus Nanoflake/Carbon Nanotube Composite Paper for High-Performance All-Solid-State Supercapacitors. ACS Applied Materials & Interfaces, 2017, 9, 44478-44484.	8.0	89
15	Compressed carbon nanotubes: A family of new multifunctional carbon allotropes. Scientific Reports, 2013, 3, 1331.	3.3	80
16	Atomically Resolving Polymorphs and Crystal Structures of In₂Se₃. Chemistry of Materials, 2019, 31, 10143-10149.	6.7	71
17	Lateral Bilayer MoS₂â€“WS₂ Heterostructure Photodetectors with High Responsivity and Detectivity. Advanced Optical Materials, 2019, 7, 1900815.	7.3	65
18	Nanoarchitectured materials composed of fullerene-like spheroids and disordered graphene layers with tunable mechanical properties. Nature Communications, 2015, 6, 6212.	12.8	57

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19	Exotic Cubic Carbon Allotropes. Journal of Physical Chemistry C, 2012, 116, 24233-24238.	3.1	53
20	First-principles study of O-BN: A sp3-bonding boron nitride allotrope. Journal of Applied Physics, 2012, 112, .	2.5	53
21	Discovery of carbon-based strongest and hardest amorphous material. National Science Review, 2022, 9, nwab140.	9.5	49
22	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.	16.0	47
23	Bulk Re₂C: Crystal Structure, Hardness, and Ultra-incompressibility. Crystal Growth and Design, 2010, 10, 5024-5026.	3.0	46
24	Nanocrystalline highâ€entropy carbide ceramics with improved mechanical properties. Journal of the American Ceramic Society, 2022, 105, 606-613.	3.8	46
25	Superhard F-carbon predicted byab initioparticle-swarm optimization methodology. Journal of Physics Condensed Matter, 2012, 24, 165504.	1.8	42
26	Grain-boundary-rich polycrystalline monolayer WS2 film for attomolar-level Hg2+ sensors. Nature Communications, 2021, 12, 3870.	12.8	42
27	Semiconducting Superhard Ruthenium Monocarbide. Journal of Physical Chemistry C, 2010, 114, 9961-9964.	3.1	40
28	A superhard sp3 microporous carbon with direct bandgap. Chemical Physics Letters, 2017, 689, 68-73.	2.6	39
29	Prediction of a Three-Dimensional Conductive Superhard Material: Diamond-like BC₂. Journal of Physical Chemistry C, 2010, 114, 22688-22690.	3.1	33
30	Superhard superstrong carbon clathrate. Carbon, 2016, 105, 151-155.	10.3	33
31	First-principles study of crystal structures and superconductivity of ternary <mml:math xmlns:mml="http://www.w3.org/1998/Math/MathML"><mml:msub><mml:mi>YSH</mml:mi><mml:mn>6</mml:mn></mml:msub></mml:math> and <mml:math xmlns:mml="http://www.w3.org/1998/Math/MathML"><mml:msub><mml:mi>LaSH</mml:mi><mml:mn>6</mml:mn></mml:msub></mml:math> at high pressures. Physical Review B, 2019, 100, .	3.2	33
32	Mechanical polishing of ultrahard nanotwinned diamond via transition into hard sp2-sp3 amorphous carbon. Carbon, 2020, 161, 1-6.	10.3	33
33	Continuous strengthening in nanotwinned diamond. Npj Computational Materials, 2019, 5, .	8.7	32
34	Porous bismuth antimony telluride alloys with excellent thermoelectric and mechanical properties. Journal of Materials Chemistry A, 2021, 9, 4990-4999.	10.3	32
35	Mechanical properties of boron arsenide single crystal. Applied Physics Letters, 2019, 114, .	3.3	31
36	Direct large-scale fabrication of C-encapsulated B4C nanoparticles with tunable dielectric properties as excellent microwave absorbers. Carbon, 2019, 148, 504-511.	10.3	30

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37	Is orthorhombic iron tetraboride superhard?. Journal of Materiomics, 2015, 1, 45-51.	5.7	29
38	Novel high-pressure phases of AlN: A first-principles study. Computational Materials Science, 2016, 117, 496-501.	3.0	29
39	Properties of the exotic metastable ST12 germanium allotrope. Nature Communications, 2017, 8, 13909.	12.8	29
40	Enhanced thermoelectric performance of Na-doped PbTe synthesized under high pressure. Science China Materials, 2018, 61, 1218-1224.	6.3	29
41	High-pressure behaviors of carbon nanotubes. Journal of Superhard Materials, 2012, 34, 371-385.	1.2	28
42	Hard three-dimensional BN framework with one-dimensional metallicity. Journal of Alloys and Compounds, 2018, 731, 364-368.	5.5	27
43	Superhard conductive orthorhombic carbon polymorphs. Carbon, 2020, 158, 546-552.	10.3	27
44	Predicting the ground-state structure of sodium boride. Physical Review B, 2018, 97, .	3.2	26
45	Pressure-induced boron nitride nanotube derivatives: 3D metastable allotropes. Journal of Applied Physics, 2017, 121, .	2.5	25
46	Preparation of dense B4C ceramics by spark plasma sintering of high-purity nanoparticles. Journal of the European Ceramic Society, 2021, 41, 3929-3936.	5.7	25
47	Proximity Enhanced Hydrogen Evolution Reactivity of Substitutional Doped Monolayer WS₂. ACS Applied Materials & Interfaces, 2021, 13, 19406-19413.	8.0	24
48	An ab initio study on the transition paths from graphite to diamond under pressure. Journal of Physics Condensed Matter, 2013, 25, 145402.	1.8	22
49	Prediction of a superconductive superhard material: Diamond-like BC7. Journal of Applied Physics, 2011, 110, 013501.	2.5	21
50	Role of plastic deformation in tailoring ultrafine microstructure in nanotwinned diamond for enhanced hardness. Science China Materials, 2017, 60, 178-185.	6.3	21
51	Photoluminescence and Raman Spectra Oscillations Induced by Laser Interference in Annealingâ€Created Monolayer WS₂ Bubbles. Advanced Optical Materials, 2019, 7, 1801373.	7.3	21
52	Novel three-dimensional boron nitride allotropes from compressed nanotube bundles. Journal of Materials Chemistry C, 2014, 2, 7022.	5.5	20
53	Superhardsp2â€“sp3hybrid carbon allotropes with tunable electronic properties. AIP Advances, 2016, 6, 055020.	1.3	20
54	Metastable phases, phase transformation and properties of AlAs based on first-principle study. Computational Materials Science, 2017, 128, 337-342.	3.0	20

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55	Discovery of superhard materials via CALYPSO methodology*. Chinese Physics B, 2019, 28, 106104.	1.4	20
56	Enhanced Stability of Black Phosphorus Fieldâ€Effect Transistors via Hydrogen Treatment. Advanced Electronic Materials, 2018, 4, 1700455.	5.1	19
57	Superhard and high-strength yne-diamond semimetals. Diamond and Related Materials, 2014, 46, 15-20.	3.9	18
58	Superhard orthorhombic phase of B 2 CO compound. Diamond and Related Materials, 2017, 73, 87-92.	3.9	18
59	Narrow-gap, semiconducting, superhard amorphous carbon with high toughness, derived from C60 fullerene. Cell Reports Physical Science, 2021, 2, 100575.	5.6	18
60	Extraordinary high-temperature mechanical properties in binder-free nanopolycrystalline WC ceramic. Journal of Materials Science and Technology, 2022, 97, 169-175.	10.7	18
61	Carbon coated face-centered cubic Ruâ€“C nanoalloys. Nanoscale, 2014, 6, 10370-10376.	5.6	17
62	Multithreaded conductive carbon: 1D conduction in 3D carbon. Carbon, 2017, 115, 584-588.	10.3	17
63	Strain Release Induced Novel Fluorescence Variation in CVD-Grown Monolayer WS₂ Crystals. ACS Applied Materials & Interfaces, 2017, 9, 34071-34077.	8.0	17
64	Enhanced thermoelectric performance of high pressure synthesized Sb-doped Mg2Si. Journal of Alloys and Compounds, 2018, 741, 1148-1152.	5.5	17
65	Investigation on the Stability of Derivative Melam from Melamine Pyrolysis under High Pressure. Nanomaterials, 2018, 8, 172.	4.1	17
66	Layered porous materials indium triphosphide InP3 for high-performance flexible all-solid-state supercapacitors. Journal of Power Sources, 2019, 438, 227010.	7.8	17
67	Highâ€Performance Broadband Photodetectors of Heterogeneous 2D Inorganic Molecular Sb₂O₃/Monolayer MoS₂ Crystals Grown via Chemical Vapor Deposition. Advanced Optical Materials, 2020, 8, 2000168.	7.3	17
68	Novel High-Pressure Phase of RhB: First-Principles Calculations. Journal of Physical Chemistry C, 2011, 115, 19910-19915.	3.1	16
69	Interpenetrating graphene networks: Three-dimensional node-line semimetals with massive negative linear compressibilities. Physical Review B, 2016, 94, .	3.2	16
70	Coexistence of multiple metastable polytypes in rhombohedral bismuth. Scientific Reports, 2016, 6, 20337.	3.3	16
71	Si₁₀: A sp³ Silicon Allotrope with Spirally Connected Si₅ Tetrahedrons. Chemistry of Materials, 2016, 28, 6441-6445.	6.7	16
72	Superhard three-dimensional B3N4 with two-dimensional metallicity. Journal of Materials Chemistry C, 2017, 5, 5897-5901.	5.5	16

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73	Effect of layer and stacking sequence in simultaneously grown 2H and 3R WS₂ atomic layers. Nanotechnology, 2019, 30, 345203.	2.6	16
74	Enhanced thermoelectric performance of bismuth-doped magnesium silicide synthesized under high pressure. Journal of Materials Science, 2018, 53, 9091-9098.	3.7	15
75	High-pressure phases of boron arsenide with potential high thermal conductivity. Physical Review B, 2019, 99, .	3.2	15
76	Small onion-like BN leads to ultrafine-twinned cubic BN. Science China Materials, 2019, 62, 1169-1176.	6.3	15
77	Design of a Class of New sp ² â€“ sp ³ Carbons Constructed by Graphite and Diamond Building Blocks. Chinese Physics Letters, 2021, 38, 028102.	3.3	15
78	Pressure-Induced Polymerization and Disproportionation of Li₂C₂ Accompanied with Irreversible Conductivity Enhancement. Journal of Physical Chemistry Letters, 2017, 8, 4241-4245.	4.6	14
79	Preparation of pure Î±â€³-phase titanium alloys with low moduli via high pressure solution treatment. Journal of Alloys and Compounds, 2017, 695, 45-51.	5.5	14
80	Grain wall boundaries in centimeter-scale continuous monolayer WS₂ film grown by chemical vapor deposition. Nanotechnology, 2018, 29, 255705.	2.6	14
81	First-principles studies of superhard BC8N structures. Journal of Applied Physics, 2019, 125, .	2.5	14
82	Superconducting ultraincompressible hard cubic Re4C. Computational Materials Science, 2011, 50, 1592-1596.	3.0	13
83	New hexagonal boron nitride polytypes with triple-layer periodicity. Journal of Applied Physics, 2017, 121, .	2.5	13
84	Superhard sp2-sp3 hybridized BC2N: A 3D crystal with 1D and 2D alternate metallicity. Journal of Applied Physics, 2017, 121, .	2.5	13
85	First principles studies of superhard BC6N phases with unexpected 1D metallicity. Computational Materials Science, 2018, 148, 157-164.	3.0	13
86	Modifying Carbon Nitride through Extreme Phosphorus Substitution. , 2019, 1, 14-19.		13
87	One-step synthetic route and sintering for carbon-coated B4C nanoparticles. Journal of Alloys and Compounds, 2019, 782, 263-269.	5.5	13
88	Strengthening effects of penetrating twin boundary and phase boundary in polycrystalline diamond. Diamond and Related Materials, 2021, 117, 108436.	3.9	13
89	High-sensitivity and versatile plasmonic biosensor based on grain boundaries in polycrystalline 1L WS2 films. Biosensors and Bioelectronics, 2021, 194, 113596.	10.1	13
90	One-Step Growth of Spatially Graded Mo_{1â€“x}W_xS₂ Monolayers with a Wide Span in Composition (from x = 0 to 1) at a Large Scale. ACS Applied Materials & Interfaces, 2019, 11, 20979-20986.	8.0	12

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91	Pentadiamond-like Metallic Hard Carbon Nitride. Journal of Physical Chemistry C, 2020, 124, 24978-24983.	3.1	12
92	Heat-treated glassy carbon under pressure exhibiting superior hardness, strength and elasticity. Journal of Materiomics, 2021, 7, 177-184.	5.7	12
93	Universal Phase Transitions of B1-Structured Stoichiometric Transition Metal Carbides. Inorganic Chemistry, 2011, 50, 9266-9272.	4.0	11
94	Novel high-pressure phases of AlP from first principles. Journal of Applied Physics, 2016, 119, .	2.5	11
95	The rise of plastic deformation in boron nitride ceramics. Science China Materials, 2021, 64, 46-51.	6.3	11
96	In Situ Grown Ultrafine RuO₂ Nanoparticles on GeP₅ Nanosheets as the Electrode Material for Flexible Planar Micro-Supercapacitors with High Specific Capacitance and Cyclability. ACS Applied Materials & Interfaces, 2021, 13, 47560-47571.	8.0	11
97	Highâ€pressure phases of NaAlH4 from first principles. Applied Physics Letters, 2012, 100, 061905.	3.3	10
98	Tian et al. reply. Nature, 2013, 502, E2-E3.	27.8	10
99	Mechanically ductile 3D spâ€“sp 2 microporous carbon. Journal of Materials Science, 2018, 53, 4316-4322.	3.7	10
100	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, .	7.1	10
101	Accelerated Degradation of CrCl₃ Nanoflakes Induced by Metal Electrodes: Implications for Remediation in Nanodevice Fabrication. ACS Applied Nano Materials, 2019, 2, 1597-1603.	5.0	9
102	Universal Phase Transitions of AlB₂-Type Transition-Metal Diborides. ACS Omega, 2020, 5, 4620-4625.	3.5	9
103	Hard and tough ultrafine-grained B4C-cBN composites prepared by high-pressure sintering. Journal of the European Ceramic Society, 2022, 42, 2015-2020.	5.7	9
104	Heterogeneous Diamond-cBN Composites with Superb Toughness and Hardness. Nano Letters, 2022, 22, 4979-4984.	9.1	9
105	Prediction of a conducting hard ductile cubic IrC. Physica Status Solidi - Rapid Research Letters, 2010, 4, 230-232.	2.4	8
106	Strengthening in high-pressure quenched Zr. High Pressure Research, 2017, 37, 278-286.	1.2	8
107	In-Situ Observation of the Formation of Fibrous Sulfur under High Pressure. Journal of Physical Chemistry C, 2019, 123, 14696-14700.	3.1	8
108	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.	3.7	8

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109	Low-energy 3D sp²carbons with versatile properties beyond graphite and graphene. Dalton Transactions, 2018, 47, 6233-6239.	3.3	7
110	Novel carbon polymorphs with cumulative double bonds in three-dimensional spâ€“sp² hybrid framework. Physical Chemistry Chemical Physics, 2018, 20, 15022-15029.	2.8	7
111	Two-dimensional boron on Pb (1 1 0) surface. FlatChem, 2018, 7, 34-41.	5.6	7
112	Restacked melon as highly-efficient photocatalyst. Nano Energy, 2020, 77, 105124.	16.0	7
113	Influence of van der Waals epitaxy on phase transformation behaviors in 2D heterostructure. Applied Physics Letters, 2020, 116, .	3.3	7
114	Superconductivity in graphite-diamond hybrid. Materials Today Physics, 2022, 23, 100630.	6.0	7
115	Properties of CaB6 single crystals synthesized under high pressure and temperature. Science China: Physics, Mechanics and Astronomy, 2011, 54, 1791-1795.	5.1	6
116	Tribological properties of oleylamine-modified nickel nanoparticles as lubricating oil additive. Materials Research Express, 2019, 6, 105037.	1.6	6
117	Prediction of Li2B novel phases and superconductivity under varying pressures. Computational Materials Science, 2019, 158, 255-259.	3.0	6
118	Structural Determination of a Graphite/Hexagonal Boron Nitride Superlattice Observed in the Experiment. Inorganic Chemistry, 2021, 60, 2598-2603.	4.0	6
119	On implementing nondestructive triplet Toffoli gate with entanglement swapping operations via the GHZ state analysis. Quantum Information Processing, 2014, 13, 2039-2047.	2.2	5
120	Strengthening mechanism of Ï‰-Zr. Computational Materials Science, 2017, 135, 134-140.	3.0	5
121	Superhard sp²â€“sp³ hybridized B₂C₃N₂ with 2D metallicity. Physical Chemistry Chemical Physics, 2020, 22, 22918-22922.	2.8	5
122	Ab initio study of pressureâ€“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.	2.1	5
123	Potential high-T superconductivity in ZrB2 polymorph under pressure. Computational Materials Science, 2020, 176, 109517.	3.0	5
124	Ultrasensitive biochemical sensors based on controllably grown films of high-density edge-rich multilayer WS2 islands. Sensors and Actuators B: Chemical, 2022, 353, 131081.	7.8	5
125	Novel Boron Nitride Polymorphs with Graphite-Diamond Hybrid Structure. Chinese Physics Letters, 2022, 39, 036301.	3.3	5
126	Nanocrystalline high-entropy hexaboride ceramics enable remarkable performance as thermionic emission cathodes. Fundamental Research, 2023, 3, 979-987.	3.3	5

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127	Metastable C-centered orthorhombic Si₈and Ge₈. Journal of Physics Condensed Matter, 2012, 24, 405803.	1.8	4
128	Three metallic BN polymorphs: 1D multi-threaded conduction in a 3D network. Physical Chemistry Chemical Physics, 2020, 22, 489-496.	2.8	4
129	Synthesis of twin-structured nanodiamond particles. AIP Advances, 2020, 10, 015240.	1.3	4
130	Anomalous melting behavior of polycrystalline bismuth quenched at high temperature and high pressure. Materials Letters, 2016, 168, 36-39.	2.6	3
131	Design of a Series of Metallic BxNx+1 with Tunable Mechanical Properties. Journal of Physical Chemistry Letters, 2021, 12, 1979-1984.	4.6	3
132	Design and theoretical study of novel multifunctional 3D-BC2N polymorphs. Chemical Physics Letters, 2021, 774, 138610.	2.6	3
133	Structural diversity, large interlayer spacing and switchable electronic properties of graphitic systems. Journal of Materials Science, 2021, 56, 5509-5519.	3.7	3
134	Hard nanocrystalline gold materials prepared via high-pressure phase transformation. Nano Research, 0, , .	10.4	3
135	Prediction of a series of superhard BC4N structures. Diamond and Related Materials, 2022, 127, 109192.	3.9	3
136	POLARIZATION ENTANGLEMENT CONCENTRATIONS WITH LESS-HYPERENTANGLED PHOTON PAIRS IN MULTIPLE DEGREES OF FREEDOM. International Journal of Quantum Information, 2012, 10, 1250075.	1.1	2
137	A novel layer-structured PtN2: First-principles calculations. Journal of Superhard Materials, 2013, 35, 339-349.	1.2	2
138	High-Pressure Synthesis of cBN Nanoparticles with High-Density Nanotwin Substructures. ACS Omega, 2020, 5, 650-654.	3.5	2
139	Mechanochemically assisted synthesis of titanium carbonitride from metal and organic precursor. Journal of the American Ceramic Society, 2020, 103, 6112-6119.	3.8	2
140	Controllable growth of multilayered XSe₂ (X = W and Mo) for nonlinear optical and optoelectronic applications. 2D Materials, 2022, 9, 015012.	4.4	2
141	Publisher's Note: Interpenetrating graphene networks: Three-dimensional node-line semimetals with massive negative linear compressibilities [Phys. Rev. B 94, 245422 (2016)]. Physical Review B, 2017, 95, .	3.2	1
142	Strong amorphous carbon prepared by sparkâ€plasma sintering C 60. Journal of the American Ceramic Society, 2021, 104, 1655-1660.	3.8	1
143	Columbite-rich multiphase TiO2 nanoceramic with superior mechanical and dielectric properties. Journal of the European Ceramic Society, 2021, 41, 4951-4957.	5.7	1
144	Research Progress in Novel In-situ Integrative Photovoltaic-Storage Tandem Cells. Wuji Cailiao Xuebao/Journal of Inorganic Materials, 2019, , 342.	1.3	1

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145	Deterministic Polarization Entanglement Purification of Cluster State in Multiple Degrees of Freedom. International Journal of Theoretical Physics, 2015, 54, 1184-1192.	1.2	0
146	3D hybrid carbon composed of multigraphene bridged by carbon chains. AIP Advances, 2018, 8, 015019.	1.3	0
147	Electronic structure and superconductivity in hexagonal Li3B2 and Li2B2H phases under pressure. Journal of Applied Physics, 2019, 125, 223902.	2.5	0
148	Superhard and superconductive nondiamond-like BC structure. Diamond and Related Materials, 2020, 110, 108142.	3.9	0