Zhigang Zak Fang

List of Publications by Year
in descending order

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120	6,182	66343	74163
papers	citations	42 h-index	75 g-index

130	130	130	4817
all docs	docs citations	times ranked	citing authors

#	Article	IF	Citations
1	A lithiumâ€“oxygen battery based on lithium superoxide. Nature, 2016, 529, 377-382.	27.8	633
2	Synthesis, sintering, and mechanical properties of nanocrystalline cemented tungsten carbide â€“ A review. International Journal of Refractory Metals and Hard Materials, 2009, 27, 288-299.	3.8	586
3	Powder metallurgy of titanium â€“ past, present, and future. International Materials Reviews, 2018, 63, 407-459.	19.3	339
4	Hydrogen Storage Properties of Nanosized MgH₂â^'0.1TiH₂ Prepared by Ultrahigh-Energyâ^'High-Pressure Milling. Journal of the American Chemical Society, 2009, 131, 15843-15852.	13.7	245
5	Review of the Methods for Production of Spherical Ti and Ti Alloy Powder. Jom, 2017, 69, 1853-1860.	1.9	169
6	Grain growth during the early stage of sintering of nanosized WCâ€“Co powder. International Journal of Refractory Metals and Hard Materials, 2008, 26, 232-241.	3.8	158
7	Correlation of transverse rupture strength of WCâ€“Co with hardness. International Journal of Refractory Metals and Hard Materials, 2005, 23, 119-127.	3.8	132
8	Effect of Ti Intermetallic Catalysts on Hydrogen Storage Properties of Magnesium Hydride. Journal of Physical Chemistry C, 2013, 117, 12973-12980.	3.1	132
9	Hydrogenation of Nanocrystalline Mg at Room Temperature in the Presence of TiH₂. Journal of the American Chemical Society, 2010, 132, 6616-6617.	13.7	121
10	A new method for production of titanium dioxide pigment. Hydrometallurgy, 2013, 131-132, 107-113.	4.3	120
11	Thermodynamic and Kinetic Destabilization of Magnesium Hydride Using Mgâ€“In Solid Solution Alloys. Journal of the American Chemical Society, 2013, 135, 10982-10985.	13.7	103
12	A novel method for production of spherical Ti-6Al-4V powder for additive manufacturing. Powder Technology, 2016, 301, 331-335.	4.2	99
13	Coarsening, densification, and grain growth during sintering of nano-sized powdersâ€”A perspective. International Journal of Refractory Metals and Hard Materials, 2017, 62, 110-117.	3.8	95
14	Life cycle assessment comparison of emerging and traditional Titanium dioxide manufacturing processes. Journal of Cleaner Production, 2015, 89, 137-147.	9.3	84
15	Hydrogen assisted magnesiothermic reduction of TiO2. Chemical Engineering Journal, 2017, 308, 299-310.	12.7	84
16	A review of liquid phase migration and methods for fabrication of functionally graded cemented tungsten carbide. International Journal of Refractory Metals and Hard Materials, 2013, 36, 2-9.	3.8	82
17	A powder metallurgy method for manufacturing Ti-6Al-4V with wrought-like microstructures and mechanical properties via hydrogen sintering and phase transformation (HSPT). Scripta Materialia, 2015, 107, 103-106.	5.2	82
18	Titanium for Automotive Applications: Challenges and Opportunities in Materials and Processing. Jom, 2012, 64, 553-565.	1.9	80

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19	An experimental study of the (Tiâ€“6Alâ€“4V)â€“xH phase diagram using in situ synchrotron XRD and TGA/DSC techniques. Acta Materialia, 2015, 84, 29-41.	7.9	78
20	Sinter-ability of nanocrystalline tungsten powder. International Journal of Refractory Metals and Hard Materials, 2010, 28, 312-316.	3.8	77
21	A novel chemical pathway for energy efficient production of Ti metal from upgraded titanium slag. Chemical Engineering Journal, 2016, 286, 517-527.	12.7	77
22	The chemical vapor synthesis of inorganic nanopowders. Jom, 2007, 59, 44-49.	1.9	72
23	An investigation of the microstructure and ductility of annealed cold-rolled tungsten. Acta Materialia, 2019, 162, 202-213.	7.9	69
24	Kinetics of cobalt gradient formation during the liquid phase sintering of functionally graded WCâ€“Co. International Journal of Refractory Metals and Hard Materials, 2007, 25, 286-292.	3.8	66
25	Metal Hydrides for High-Temperature Power Generation. Energies, 2015, 8, 8406-8430.	3.1	65
26	Thermodynamic Destabilization of Ti-O Solid Solution by H₂ and Deoxygenation of Ti Using Mg. Journal of the American Chemical Society, 2016, 138, 6916-6919.	13.7	65
27	Liquid phase sintering of functionally graded WC?Co composites. Scripta Materialia, 2005, 52, 785-791.	5.2	62
28	Mechanical properties and wear resistance of functionally graded WCâ€“Co. International Journal of Refractory Metals and Hard Materials, 2013, 36, 46-51.	3.8	61
29	Potential of Binary Lithium Magnesium Nitride for Hydrogen Storage Applications. Journal of Physical Chemistry C, 2007, 111, 12129-12134.	3.1	59
30	The study on low temperature sintering of nano-tungsten powders. International Journal of Refractory Metals and Hard Materials, 2016, 61, 273-278.	3.8	59
31	Titanium and Titanium Alloy via Sintering of TiH₂. Key Engineering Materials, 0, 436, 157-163.	0.4	58
32	Hydrogen Sintering of Titanium to Produce High Density Fine Grain Titanium Alloys. Advanced Engineering Materials, 2012, 14, 383-387.	3.5	58
33	Thermodynamic Destabilization of Magnesium Hydride Using Mg-Based Solid Solution Alloys. Journal of Physical Chemistry C, 2014, 118, 11526-11535.	3.1	55
34	Amorphous TiCu-Based Additives for Improving Hydrogen Storage Properties of Magnesium Hydride. ACS Applied Materials & Interfaces, 2019, 11, 38868-38879.	8.0	54
35	A New, Energy-Efficient Chemical Pathway for Extracting Ti Metal from Ti Minerals. Journal of the American Chemical Society, 2013, 135, 18248-18251.	13.7	51
36	Effect of WC particle size on Co distribution in liquid-phase-sintered functionally graded WCâ€“Co composite. International Journal of Refractory Metals and Hard Materials, 2008, 26, 98-105.	3.8	49

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37	Kinetics of the formation of metal binder gradient in WCâ€“Co by carbon diffusion induced liquid migration. Acta Materialia, 2011, 59, 4719-4731.	7.9	49
38	An analysis of grain boundaries and grain growth in cemented tungsten carbide using orientation imaging microscopy. Metallurgical and Materials Transactions A: Physical Metallurgy and Materials Science, 2006, 37, 599-607.	2.2	48
39	Hydrogen-enabled microstructure and fatigue strength engineering of titanium alloys. Scientific Reports, 2017, 7, 41444.	3.3	48
40	The effect of molten salt on oxygenÂremoval from titanium and its alloys using calcium. Journal of Materials Science, 2017, 52, 4120-4128.	3.7	47
41	A kinetic model for cobalt gradient formation during liquid phase sintering of functionally graded WCâ€“Co. International Journal of Refractory Metals and Hard Materials, 2008, 26, 91-97.	3.8	46
42	Metal hydrides based high energy density thermal battery. Journal of Alloys and Compounds, 2015, 645, S184-S189.	5.5	44
43	Understanding competing fatigue mechanisms in powder metallurgy Tiâ€“6Alâ€“4V alloy: Role of crack initiation and duality of fatigue response. Materials Science & Engineering A: Structural Materials: Properties, Microstructure and Processing, 2015, 630, 139-145.	5.6	42
44	Stability of Catalyzed Magnesium Hydride Nanocrystalline During Hydrogen Cycling. Part I: Kinetic Analysis. Journal of Physical Chemistry C, 2015, 119, 22261-22271.	3.1	42
45	An experimental survey of additives for improving dehydrogenation properties of magnesium hydride. Journal of Power Sources, 2015, 278, 38-42.	7.8	42
46	Hydrogen Assisted Magnesiothermic Reduction (HAMR) of Commercial TiO₂ to Produce Titanium Powder with Controlled Morphology and Particle Size. Materials Transactions, 2017, 58, 355-360.	1.2	42
47	Design of cobalt gradient via controlling carbon content and WC grain size in liquid-phase-sintered WCâ€“Co composite. International Journal of Refractory Metals and Hard Materials, 2009, 27, 256-260.	3.8	39
48	The effects of microstructure and porosity on the competing fatigue failure mechanisms in powder metallurgy Ti-6Al-4V. International Journal of Fatigue, 2018, 116, 584-591.	5.7	39
49	New Powder Metallurgical Approach to Achieve High Fatigue Strength in Ti-6Al-4V Alloy. Metallurgical and Materials Transactions A: Physical Metallurgy and Materials Science, 2016, 47, 2335-2345.	2.2	37
50	Mathematical modeling of liquid phase migration in solidâ€“liquid mixtures: Application to the sintering of functionally graded WCâ€“Co composites. Acta Materialia, 2007, 55, 3111-3119.	7.9	36
51	Reaction Mechanisms in the Li‹sub›3‹/sub›AlH‹sub›6‹/sub›/LiBH‹sub›4‹/sub› and Al/LiBH‹sub›4‹/sub› Systems for Reversible Hydrogen Storage. Part 2: Solid-State NMR Studies. Journal of Physical Chemistry C, 2011, 115, 6048-6056.	3.1	36
52	Effect of air exposure on hydrogen storage properties of catalyzed magnesium hydride. Journal of Power Sources, 2020, 454, 227936.	7.8	36
53	Pathways to Optimize Performance/Cost Ratio of Powder Metallurgy Titanium â€“ A Perspective. Key Engineering Materials, 0, 520, 15-23.	0.4	35
54	Characterization of quasi-plastic deformation of WCâ€“Co composite using Hertzian indentation technique. International Journal of Refractory Metals and Hard Materials, 2008, 26, 106-114.	3.8	34

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55	Kinetic Analysis of Densification Behavior of Nanoâ€sized Tungsten Powder. Journal of the American Ceramic Society, 2012, 95, 2458-2464.	3.8	34
56	Hydrogen Storage Properties of Magnesium Hydride with V-Based Additives. Journal of Physical Chemistry C, 2014, 118, 21778-21784.	3.1	34
57	Phase Transformations and Formation of Ultra-Fine Microstructure During Hydrogen Sintering and Phase Transformation (HSPT) Processing of Ti-6Al-4V. Metallurgical and Materials Transactions A: Physical Metallurgy and Materials Science, 2015, 46, 5546-5560.	2.2	34
58	Chemical vapor synthesis of Mgâ€“Ti nanopowder mixture as a hydrogen storage material. International Journal of Hydrogen Energy, 2009, 34, 7700-7706.	7.1	33
59	Kinetics of Initial Coarsening During Sintering of Nanosized Powders. Metallurgical and Materials Transactions A: Physical Metallurgy and Materials Science, 2011, 42, 3534-3542.	2.2	31
60	Kinetics of isothermal hydrogenation of magnesium with TiH2 additive. International Journal of Hydrogen Energy, 2014, 39, 7373-7381.	7.1	31
61	Hydrogen enhanced thermodynamic properties and kinetics of calciothermic deoxygenation of titanium-oxygen solid solutions. International Journal of Hydrogen Energy, 2018, 43, 11939-11951.	7.1	30
62	The Nature of Tensile Ductility as Controlled by Extreme-Sized Pores in Powder Metallurgy Ti-6Al-4V Alloy. Metallurgical and Materials Transactions A: Physical Metallurgy and Materials Science, 2016, 47, 2150-2161.	2.2	27
63	A Perspective on Thermochemical and Electrochemical Processes for Titanium Metal Production. Jom, 2017, 69, 1861-1868.	1.9	27
64	Quasi-Plastic Deformation of WC-Co Composites Loaded with a Spherical Indenter. Metallurgical and Materials Transactions A: Physical Metallurgy and Materials Science, 2007, 38, 552-561.	2.2	26
65	Stability of Catalyzed Magnesium Hydride Nanocrystalline During Hydrogen Cycling. Part II: Microstructure Evolution. Journal of Physical Chemistry C, 2015, 119, 22272-22280.	3.1	25
66	Formation of Co-capping during sintering of straight WCâ€“10wt% Co. International Journal of Refractory Metals and Hard Materials, 2010, 28, 317-323.	3.8	24
67	Mechanically alloyed composite anode materials based on SiOâ€“SnxFeyCz for Li-ion batteries. Journal of Materials Chemistry A, 2013, 1, 4376.	10.3	24
68	The relationship between the green density and as-sintered density of nano-tungsten compacts. International Journal of Refractory Metals and Hard Materials, 2015, 53, 134-138.	3.8	24
69	Synthesis and Characterization of Nanoscaled Cerium (IV) Oxide via a Solid-State Mechanochemical Method. Journal of the American Ceramic Society, 2006, 89, 842-847.	3.8	23
70	Potentially More Ecofriendly Chemical Pathway for Production of High-Purity TiO₂ from Titanium Slag. ACS Sustainable Chemistry and Engineering, 2019, 7, 4821-4830.	6.7	23
71	Roles of Ti-Based Catalysts on Magnesium Hydride and Its Hydrogen Storage Properties. Inorganics, 2021, 9, 36.	2.7	23
72	Effects of Liquid-Phase Composition on Its Migration during Liquid-Phase Sintering of Cemented Carbide. Metallurgical and Materials Transactions A: Physical Metallurgy and Materials Science, 2009, 40, 1995-2006.	2.2	22

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73	Kinetically enhanced metallothermic redox of TiO2 by Mg in molten salt. Chemical Engineering Journal, 2017, 327, 169-182.	12.7	22
74	A study on the sintering of ultrafine grained tungsten with Ti-based additives. International Journal of Refractory Metals and Hard Materials, 2017, 65, 2-8.	3.8	22
75	Reaction Mechanisms in the Li₃AlH₆/LiBH₄ and Al/LiBH₄ Systems for Reversible Hydrogen Storage. Part 1: H Capacity and Role of Al. Journal of Physical Chemistry C, 2011, 115, 6040-6047.	3.1	21
76	Isothermal hydrogenation kinetics of ball-milled nano-catalyzed magnesium hydride. Materialia, 2019, 5, 100227.	2.7	21
77	Capturing low-pressure hydrogen using V Ti Cr catalyzed magnesium hydride. Journal of Power Sources, 2019, 413, 139-147.	7.8	21
78	Cemented Tungsten Carbide Hardmetal-An Introduction. , 2014, , 123-137.		19
79	Deoxygenation of Ti metal: A review of processes in literature. International Journal of Refractory Metals and Hard Materials, 2020, 91, 105270.	3.8	17
80	A Comparison of Hydrogen Sintering and Phase Transformation (<scp>HSPT</scp>) Processing with Vacuum Sintering of <scp>CP</scp>â€<scp>T</scp>i. Advanced Engineering Materials, 2013, 15, 1007-1013.	3.5	15
81	Mitigation of the Surface Oxidation of Titanium by Hydrogen. Journal of Physical Chemistry C, 2018, 122, 20691-20700.	3.1	15
82	Mechanisms of Hydrogen-Assisted Magnesiothermic Reduction of TiO2. Metallurgical and Materials Transactions B: Process Metallurgy and Materials Processing Science, 2018, 49, 2998-3006.	2.1	14
83	Microstructural analysis of lead-free solder alloys. Metallurgical and Materials Transactions A: Physical Metallurgy and Materials Science, 2006, 37, 2505-2514.	2.2	13
84	Dependence of microcrack number density on microstructural parameters during plastic deformation of WCâ€“Co composite. International Journal of Refractory Metals and Hard Materials, 2010, 28, 434-440.	3.8	13
85	FE-EPMA measurements of compositional gradients in cemented tungsten carbides. International Journal of Refractory Metals and Hard Materials, 2013, 36, 265-270.	3.8	13
86	The Effects of Molybdenum Additions on the Sintering and Mechanical Behavior of Ultrafine-Grained Tungsten. Jom, 2018, 70, 2567-2573.	1.9	13
87	Chemical Vapor Synthesis and Characterization of Nanosized WCâ"Co Composite Powder and Post-treatment. Industrial & Engineering Chemistry Research, 2008, 47, 9384-9388.	3.7	12
88	Characterization of a bilayer WCâ€“Co hardmetal using Hertzian indentation technique. International Journal of Refractory Metals and Hard Materials, 2009, 27, 317-322.	3.8	12
89	Effects of Li doping on H-diffusion in MgH2: A first-principles study. Journal of Applied Physics, 2013, 114, .	2.5	12
90	An investigation of the reduction of TiO2 by Mg in H2 atmosphere. Chemical Engineering Science, 2019, 195, 484-493.	3.8	12

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91	Analysis of microstructural facet fatigue failure in ultra-fine grained powder metallurgy Ti-6Al-4V produced through hydrogen sintering. International Journal of Fatigue, 2020, 131, 105355.	5.7	12
92	Hydrogen sintering of titanium and its alloys. , 2015, , 163-182.		11
93	Optimization of electrocatalytic properties of NiMoCo foam electrode for water electrolysis by post-treatment processing. Rare Metals, 2015, 34, 802-807.	7.1	11
94	Removal of silicon from highly acidic HCl medium to produce purified TiO2. Hydrometallurgy, 2017, 173, 218-223.	4.3	10
95	Novel Method for Making Biomedical Segregation-Free Ti-30Ta Alloy Spherical Powder for Additive Manufacturing. Jom, 2018, 70, 364-369.	1.9	10
96	An investigation on thermal residual stresses in a cylindrical functionally graded WCâ€“Co component. Materials Science & Engineering A: Structural Materials: Properties, Microstructure and Processing, 2012, 557, 106-112.	5.6	9
97	Microstructure and Mechanical Properties of Ti-6Al-4V Fabricated by Selective Laser Melting of Powder Produced by Granulation-Sintering-Deoxygenation Method. Jom, 2017, 69, 2731-2737.	1.9	9
98	Manipulation of microstructure and mechanical properties during dehydrogenation of hydrogen-sintered Tiâ€“6Alâ€“4V. Materials Science & Engineering A: Structural Materials: Properties, Microstructure and Processing, 2019, 764, 138244.	5.6	9
99	The effect of heating rate on the reversible hydrogen storage based on reactions of Li3AlH6 with LiNH2. Journal of Power Sources, 2008, 185, 1354-1358.	7.8	8
100	Numerical simulation of kinetics of the cobalt gradient change in WCâ€“Co during liquid phase sintering. International Journal of Refractory Metals and Hard Materials, 2009, 27, 37-42.	3.8	8
101	A study on the synthesis of coarse TiO2 powder with controlled particle sizes and morphology via hydrolysis. Powder Technology, 2021, 393, 650-658.	4.2	8
102	The effect of Ni doping on the mechanical behavior of tungsten. International Journal of Refractory Metals and Hard Materials, 2020, 92, 105281.	3.8	7
103	Low-Temperature Synthesis of Superconducting Nanocrystalline<mml:math xmlns:mml="http://www.w3.org/1998/Math/MathML"><mml:msub><mml:mtext>MgB</mml:mtext><mml:mn mathvariant="bold">2</mml:mn></mml:msub></mml:math>. Journal of Nanomaterials, 2010, 2010, 1-5.	2.7	6
104	The Effects of Atmosphere on the Sintering of Ultrafine-Grained Tungsten with Ti. Jom, 2016, 68, 2864-2868.	1.9	6
105	A high throughput dynamic method for characterizing thermodynamic properties of catalyzed magnesium hydrides by thermogravimetric analysis. Physical Chemistry Chemical Physics, 2021, 23, 15374-15383.	2.8	5
106	A Novel Method for Densification of Titanium Using Hydrogenation-Induced Expansion under Constrained Conditions. Scripta Materialia, 2022, 210, 114432.	5.2	5
107	Gaseous isostatic forging: Design and application to powder metallurgy Ti-6Al-4V. Journal of Materials Processing Technology, 2018, 259, 292-304.	6.3	4
108	Energy consumption of the Kroll and HAMR processes for titanium production. , 2020, , 389-410.		4

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109	Detection of Fluorite-Structured MgD2/TiD2: Deuterium NMR. Journal of Physical Chemistry C, 2015, 119, 7656-7661.	3.1	3
110	Powder Metallurgy Ti-6Al-4V Alloy with Wrought-Like Microstructure and Mechanical Properties by Hydrogen Sintering. Key Engineering Materials, 0, 704, 3-14.	0.4	3
111	Deoxygenation of Ti metal. , 2020, , 181-223.		3
112	Quantitative characterization of microstructures of liquid-phase-sintered two-phase materials. Metallurgical and Materials Transactions A: Physical Metallurgy and Materials Science, 2004, 35, 1881-1888.	2.2	2
113	Automated 3D EDS Acquisition for Spatially Resolved Elemental Characterization of Catalyzed MgH2 Nanostructures. Microscopy and Microanalysis, 2016, 22, 276-277.	0.4	2
114	Selected processes for Ti production â€“ a cursory review. , 2020, , 351-362.		2
115	Hydrogen assisted magnesiothermic reduction (HAMR) of TiO2 to produce titanium metal powder. , 2020, , 165-179.		2
116	Analysis of the Elevated Temperature Plastic Flow Response of Ti-6Al-4V Produced via the Hydrogen Sintering and Phase Transformation (HSPT) Process. Metallurgical and Materials Transactions A: Physical Metallurgy and Materials Science, 2020, 51, 3956-3966.	2.2	1
117	Effects of Process Gas Pressure and Type on Oxygen Content in Sintered Titanium Produced using Jet-Milled Titanium Hydride Powders. Jom, 2020, 72, 1286-1291.	1.9	1
118	The uses and applications of hydrogen processing for titanium additive manufacturing. MATEC Web of Conferences, 2020, 321, 03003.	0.2	1
119	The Potential of Binary Lithium Magnesium Nitride - LiMgN for Hydrogen Storage Application. Materials Research Society Symposia Proceedings, 2007, 1042, 1.	0.1	0
120	The Formation of Twins in Al-10Zn-3Mg-1.8Cu Alloy by Cryomilling. Jom, 2013, 65, 967-972.	1.9	0