

# Robert C Bowman

## List of Publications by Citations

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113  
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61  
g-index

117  
ext. papers

4,456  
ext. citations

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L-index

#	Paper	IF	Citations
113	Altering Hydrogen Storage Properties by Hydride Destabilization through Alloy Formation: LiH and MgH <sub>2</sub> Destabilized with Si. <i>Journal of Physical Chemistry B</i> , <b>2004</b> , 108, 13977-13983	3.4	378
112	Metal hydride hydrogen compressors: A review. <i>International Journal of Hydrogen Energy</i> , <b>2014</b> , 39, 5818-5851	5.51	269
111	Materials for hydrogen-based energy storage [past, recent progress and future outlook. <i>Journal of Alloys and Compounds</i> , <b>2020</b> , 827, 153548	5.7	264
110	NMR Confirmation for Formation of [B <sub>12</sub> H <sub>12</sub> ] <sup>2-</sup> Complexes during Hydrogen Desorption from Metal Borohydrides. <i>Journal of Physical Chemistry C</i> , <b>2008</b> , 112, 3164-3169	3.8	260
109	Magnesium borohydride as a hydrogen storage material: Properties and dehydrogenation pathway of unsolvated Mg(BH <sub>4</sub> ) <sub>2</sub> . <i>International Journal of Hydrogen Energy</i> , <b>2009</b> , 34, 916-928	6.7	188
108	Structure and vibrational dynamics of isotopically labeled lithium borohydride using neutron diffraction and spectroscopy. <i>Journal of Solid State Chemistry</i> , <b>2007</b> , 180, 1298-1305	3.3	151
107	Metallic Hydrides I: Hydrogen Storage and Other Gas- Phase Applications. <i>MRS Bulletin</i> , <b>2002</b> , 27, 688-693	3.2	143
106	Crystal structure of Li <sub>2</sub> B <sub>12</sub> H <sub>12</sub> : a possible intermediate species in the decomposition of LiBH <sub>4</sub> . <i>Inorganic Chemistry</i> , <b>2008</b> , 47, 9757-9	5.1	133
105	The effect of tin on the degradation of LaNi <sub>5</sub> Sn metal hydrides during thermal cycling. <i>Journal of Alloys and Compounds</i> , <b>1995</b> , 217, 185-192	5.7	127
104	Stability and Reversibility of Lithium Borohydrides Doped by Metal Halides and Hydrides. <i>Journal of Physical Chemistry C</i> , <b>2008</b> , 112, 18661-18671	3.8	117
103	LiBH <sub>4</sub> in Carbon Aerogel Nanoscaffolds: An NMR Study of Atomic Motions. <i>Journal of Physical Chemistry C</i> , <b>2010</b> , 114, 4008-4014	3.8	79
102	Investigation of hydriding properties of LaNi <sub>4.8</sub> Sn <sub>0.2</sub> , LaNi <sub>4.27</sub> Sn <sub>0.24</sub> and La <sub>0.9</sub> Gd <sub>0.1</sub> Ni <sub>5</sub> after thermal cycling and aging. <i>Journal of Alloys and Compounds</i> , <b>1992</b> , 187, 113-135	5.7	75
101	Gas-based hydride applications: recent progress and future needs. <i>Journal of Alloys and Compounds</i> , <b>2003</b> , 356-357, 794-799	5.7	73
100	Atomic Motions in LiBH <sub>4</sub> by NMR. <i>Journal of Physical Chemistry C</i> , <b>2008</b> , 112, 18706-18710	3.8	69
99	LiSc(BH <sub>4</sub> ) <sub>4</sub> as a Hydrogen Storage Material: Multinuclear High-Resolution Solid-State NMR and First-Principles Density Functional Theory Studies. <i>Journal of Physical Chemistry C</i> , <b>2009</b> , 113, 9956-9968	3.8	65
98	Hydrogen Motion in Magnesium Hydride by NMR. <i>Journal of Physical Chemistry C</i> , <b>2008</b> , 112, 19784-19790	3.8	64
97	NMR studies of hydrogen diffusion in [LaNi <sub>5</sub> ]Al <sub>x</sub> hydrides. <i>Solid State Communications</i> , <b>1979</b> , 32, 501-506	3.6	59

96	Hydrogen Sorption Behavior of the ScH <sub>2</sub> LiBH <sub>4</sub> System: Experimental Assessment of Chemical Destabilization Effects. <i>Journal of Physical Chemistry C</i> , <b>2008</b> , 112, 8481-8485	3.8	56
95	Discovery of A New Al Species in Hydrogen Reactions of NaAlH <sub>4</sub> . <i>Journal of Physical Chemistry Letters</i> , <b>2010</b> , 1, 2412-2416	6.4	44
94	Sorption coolers using a continuous cycle to produce 20 K for the Planck flight mission. <i>Cryogenics</i> , <b>2004</b> , 44, 395-401	1.8	43
93	NMR studies of diffusion in the metallic glass TiCuH <sub>x</sub> . <i>Physical Review B</i> , <b>1981</b> , 24, 2328-2333	3.3	42
92	Metal hydride hydrogen compression: recent advances and future prospects. <i>Applied Physics A: Materials Science and Processing</i> , <b>2016</b> , 122, 1	2.6	42
91	Hydrogen mobility in crystalline and amorphous Zr <sub>2</sub> PdH <sub>x</sub> . <i>Solid State Communications</i> , <b>1983</b> , 47, 779-782	1.6	41
90	Strain formation and lattice parameter change in LaNi <sub>4.75</sub> Sn <sub>0.25</sub> H system during the initial activation process. <i>Journal of Alloys and Compounds</i> , <b>2004</b> , 373, 183-193	5.7	39
89	Diffusion behavior in titanium-chromium hydrides?. <i>International Journal of Hydrogen Energy</i> , <b>1983</b> , 8, 801-808	6.7	37
88	Stability of Catalyzed Magnesium Hydride Nanocrystalline During Hydrogen Cycling. Part I: Kinetic Analysis. <i>Journal of Physical Chemistry C</i> , <b>2015</b> , 119, 22261-22271	3.8	36
87	Molecular H <sub>2</sub> trapped in AlH <sub>3</sub> solid. <i>Journal of Alloys and Compounds</i> , <b>2008</b> , 463, 1-5	5.7	36
86	Hydrogen diffusion in β phase titanium iron hydride. <i>Solid State Communications</i> , <b>1979</b> , 32, 313-318	1.6	36
85	NMR studies of the helium distribution in uranium tritide. <i>Physical Review B</i> , <b>1977</b> , 16, 1828-1843	3.3	36
84	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. <i>Journal of Physical Chemistry C</i> , <b>2011</b> , 115, 6048-6056	3.8	35
83	Distribution of helium in metal tritides. <i>Nature</i> , <b>1978</b> , 271, 531-533	5.4	35
82	Exchange of Hydrogen Atoms Between BH <sub>4</sub> in LiBH <sub>4</sub> . <i>Journal of Physical Chemistry C</i> , <b>2009</b> , 113, 5039-5042	3.4	34
81	A study of the properties and NMR spectra of amorphous and crystalline Zr <sub>2</sub> Pd hydrides. <i>Journal of Non-Crystalline Solids</i> , <b>1982</b> , 53, 105-122	3.9	34
80	Hydriding and structural characteristics of thermally cycled and cold-worked V <sub>0.5</sub> at.%C alloy. <i>Journal of Alloys and Compounds</i> , <b>2008</b> , 452, 312-324	5.7	33
79	Thermodynamic and degradation studies of LaNi <sub>4.8</sub> Sn <sub>0.2</sub> -H using isotherms and calorimetry. <i>Journal of Alloys and Compounds</i> , <b>1995</b> , 231, 473-478	5.7	31

78	Role of aluminum substitution on hydrogen diffusion in $\text{LaNi}_5\text{Al}_y\text{H}_x$ . <i>Journal of the Less Common Metals</i> , <b>1980</b> , 73, 227-232		30
77	Metal hydrides based high energy density thermal battery. <i>Journal of Alloys and Compounds</i> , <b>2015</b> , 645, S184-S189	5.7	27
76	Structure of the novel ternary hydrides $\text{Li}_4\text{Tt}_2\text{D}$ (Tt=Si and Ge). <i>Acta Crystallographica Section B: Structural Science</i> , <b>2007</b> , 63, 63-8		27
75	Amorphous TiCu-Based Additives for Improving Hydrogen Storage Properties of Magnesium Hydride. <i>ACS Applied Materials &amp; Interfaces</i> , <b>2019</b> , 11, 38868-38879	9.5	24
74	Study of Aluminoborane Compound $\text{AlB}_4\text{H}_{11}$ for Hydrogen Storage. <i>Journal of Physical Chemistry C</i> , <b>2009</b> , 113, 2-11	3.8	24
73	Stability of Catalyzed Magnesium Hydride Nanocrystalline During Hydrogen Cycling. Part II: Microstructure Evolution. <i>Journal of Physical Chemistry C</i> , <b>2015</b> , 119, 22272-22280	3.8	23
72	Hydrogenation of Magnesium Nickel Boride for Reversible Hydrogen Storage. <i>Journal of Physical Chemistry Letters</i> , <b>2010</b> , 1, 69-72	6.4	23
71	NMR Studies of the Hydrogen Storage Compound $\text{NaMgH}_3$ . <i>Journal of Physical Chemistry C</i> , <b>2009</b> , 113, 18414-18419	3.8	23
70	Potential and Reaction Mechanism of $\text{LiMgAlH}_4$ System for Reversible Hydrogen Storage. <i>Journal of Physical Chemistry C</i> , <b>2007</b> , 111, 16686-16692	3.8	23
69	NMR studies of structure and diffusion in metal hydrides?. <i>International Journal of Hydrogen Energy</i> , <b>1977</b> , 1, 421-426	6.7	23
68	Thermodynamic properties and the degradation of $\text{ZrNiH}_x$ at elevated temperatures. <i>Journal of Alloys and Compounds</i> , <b>1995</b> , 231, 518-523	5.7	22
67	Proton magnetic resonance studies of $\text{TiCuH}$ . <i>Solid State Communications</i> , <b>1978</b> , 27, 501-505	1.6	22
66	Direct synthesis and NMR characterization of calcium alanate. <i>Journal of Alloys and Compounds</i> , <b>2007</b> , 446-447, 264-266	5.7	21
65	Thermal stabilities of the crystalline and amorphous $\text{TiyCuH}_x$ systems. <i>Journal of the Less Common Metals</i> , <b>1986</b> , 116, 375-388		21
64	Long-term thermal cycling studies on $\text{LaNi}_5.2$ . <i>Journal of Alloys and Compounds</i> , <b>1993</b> , 199, 93-100	5.7	20
63	Degradation study of $\text{ZrNiH}_{1.5}$ for use as actuators in gas gap heat switches. <i>Journal of Alloys and Compounds</i> , <b>2004</b> , 373, 104-114	5.7	19
62	Pressure-composition isotherms of $\text{TbNiAlH}_x$ . <i>Journal of Alloys and Compounds</i> , <b>2006</b> , 417, 92-95	5.7	18
61	Thermodynamic and degradation studies of $\text{LaNi}_5$ (closely stoichiometric)-H and $\text{LaNi}_5\text{Mnx-H}$ with $x = 0.5\text{--}0$ . <i>Journal of Alloys and Compounds</i> , <b>1993</b> , 202, 147-159	5.7	18

60	Mobile Species in NaAlH <sub>4</sub> . <i>Journal of Physical Chemistry C</i> , <b>2013</b> , 117, 8105-8113	3.8	17
59	NMR Study of LiBH <sub>4</sub> with C60. <i>Journal of Physical Chemistry C</i> , <b>2010</b> , 114, 19862-19866	3.8	17
58	Neutron vibrational spectroscopy and first-principles calculations of the ternary hydrides Li <sub>4</sub> Si <sub>2</sub> H(D) and Li <sub>4</sub> Ge <sub>2</sub> H(D): Electronic structure and lattice dynamics. <i>Physical Review B</i> , <b>2007</b> , 76,	3.3	17
57	Hydride phase composition and crystal structure in Zr <sub>2</sub> PdH <sub>x</sub> . <i>Journal of the Less Common Metals</i> , <b>1987</b> , 129, 197-205		16
56	NMR studies of electronic structure in crystalline and amorphous Zr <sub>2</sub> PdH <sub>x</sub> . <i>Physics Letters, Section A: General, Atomic and Solid State Physics</i> , <b>1983</b> , 94, 181-184	2.3	16
55	NMR studies of electronic structure and hydrogen diffusion in transition metal hydrides. <i>Hyperfine Interactions</i> , <b>1985</b> , 25, 583-606	0.8	16
54	NMR Study of Anion Dynamics in Solid KAlH <sub>4</sub> . <i>Journal of Physical Chemistry C</i> , <b>2014</b> , 118, 5725-5732	3.8	15
53	Effect of air exposure on hydrogen storage properties of catalyzed magnesium hydride. <i>Journal of Power Sources</i> , <b>2020</b> , 454, 227936	8.9	14
52	Resistometric determination of phase transformations in VH <sub>x</sub> and VD <sub>x</sub> . <i>Journal of the Less Common Metals</i> , <b>1980</b> , 75, 207-222		14
51	Behavior of vacancy formation and recovery during hydrogenation cycles in LaNi <sub>4.93</sub> Sn <sub>0.27</sub> . <i>Journal of Alloys and Compounds</i> , <b>2009</b> , 477, 205-211	5.7	13
50	Variation of hydrogen occupation in LaNi <sub>4.78</sub> Sn <sub>0.22</sub> D <sub>x</sub> along the P-T isotherms studied by in situ neutron powder diffraction. <i>Journal of Alloys and Compounds</i> , <b>2007</b> , 431, 148-154	5.7	13
49	Isothermal hydrogenation kinetics of ball-milled nano-catalyzed magnesium hydride. <i>Materialia</i> , <b>2019</b> , 5, 100227	3.2	12
48	Structural study of the LaNi <sub>4.6</sub> Ge <sub>0.4</sub> -D <sub>2</sub> system using X-ray and neutron powder diffraction. <i>Applied Physics A: Materials Science and Processing</i> , <b>2002</b> , 74, s1037-s1039	2.6	12
47	Dynamics of hydrogen in intermetallic hydrides. <i>Topics in Applied Physics</i> , <b>1992</b> , 97-163	0.5	12
46	Evaluation of metal hydride compressors for applications in Joule-Thomson cryocoolers. <i>Cryogenics</i> , <b>1992</b> , 32, 127-137	1.8	12
45	Proton NMR and magnetic susceptibility study of TiCr <sub>1.8</sub> H <sub>itx</sub> . <i>Materials Letters</i> , <b>1982</b> , 1, 122-126	3.3	12
44	Temperature dependence of the elastic moduli of polycrystalline LaAl <sub>x</sub> Ni <sub>5-x</sub> and LaSn <sub>x</sub> Ni <sub>5-x</sub> . <i>Journal of Alloys and Compounds</i> , <b>2004</b> , 376, 139-144	5.7	11
43	Studies of interdiffusion in GemSin strained layer superlattices. <i>Journal of Electronic Materials</i> , <b>1990</b> , 19, 125-129	1.9	11

42	Characterization and analyses of degradation and recovery of LaNi <sub>4.78</sub> Sn <sub>0.22</sub> hydrides following thermal aging. <i>Journal of Alloys and Compounds</i> , <b>2013</b> , 580, S207-S210	5.7	10
41	NMR Studies of NaH. <i>Journal of Physical Chemistry C</i> , <b>2012</b> , 116, 18649-18654	3.8	10
40	Neutron imaging studies of metal-hydride storage beds. <i>International Journal of Hydrogen Energy</i> , <b>2010</b> , 35, 12837-12845	6.7	10
39	Comparison of structures and electronic properties between TiCoH <sub>x</sub> and TiFeH <sub>x</sub> . <i>Journal of the Less Common Metals</i> , <b>1987</b> , 130, 69-78		10
38	Optical and structural characterization of heavily boron-implanted CdTe. <i>Journal of Crystal Growth</i> , <b>1988</b> , 86, 768-777	1.6	10
37	Thermal expansion coefficients of lithium hydride. <i>Journal of Physics and Chemistry of Solids</i> , <b>1973</b> , 34, 1754-1756	3.9	10
36	Development of Sorbent Bed Assembly for a Periodic 10K Solid Hydrogen Cryocooler <b>1994</b> , 1491-1498		10
35	The effect of heating rate on the reversible hydrogen storage based on reactions of Li <sub>3</sub> AlH <sub>6</sub> with LiNH <sub>2</sub> . <i>Journal of Power Sources</i> , <b>2008</b> , 185, 1354-1358	8.9	8
34	Roles of Ti-Based Catalysts on Magnesium Hydride and Its Hydrogen Storage Properties. <i>Inorganics</i> , <b>2021</b> , 9, 36	2.9	8
33	Metal Hydride Compressors with Gas-Gap Heat Switches: Concept, Development, Testing, and Space Flight Operation for the Planck Sorption Cryocoolers. <i>Inorganics</i> , <b>2019</b> , 7, 139	2.9	8
32	An accelerated rural training program. <i>Journal of the American Board of Family Medicine</i> , <b>2003</b> , 16, 124-30.6		7
31	The effect of cold-work on hysteresis in the V-H(D) system. <i>Scripta Metallurgica Et Materialia</i> , <b>1993</b> , 28, 355-359		7
30	Some physical properties of Zr <sub>2</sub> CuH <sub>4.2</sub> in relation to those observed for other MoSi <sub>2</sub> -type hydrides. <i>Journal of Alloys and Compounds</i> , <b>1992</b> , 185, 7-17	5.7	7
29	Hydrogen absorption by LaCu <sub>5</sub> and nuclear magnetic resonance (NMR) studies of hydrogen diffusion in LaCu <sub>5</sub> hydride. <i>Journal of the Less Common Metals</i> , <b>1987</b> , 129, 261-270		7
28	Density of trapped gas in heavily-irradiated lithium hydride. <i>Journal of Nuclear Materials</i> , <b>1988</b> , 154, 318-331	3.3	7
27	EPR of ultraviolet irradiated lithium hydride crystals. <i>Solid State Communications</i> , <b>1972</b> , 11, 1489-1493	1.6	7
26	Effects of NaOH in Solid NaH: Solution/Segregation Phase Transition and Diffusion Acceleration. <i>Journal of Physical Chemistry C</i> , <b>2013</b> , 117, 23575-23581	3.8	6
25	Community-driven medical education: the rural component. <i>Journal of Rural Health</i> , <b>2003</b> , 19, 214-7	4.6	6

24	Swelling and outgassing of tritiated lithium hydride compacts. <i>Journal of Nuclear Materials</i> , <b>1989</b> , 168, 1-11	3-3	6
23	EPR studies of rhodium in LiH and LiD single crystals. <i>Physics Letters, Section A: General, Atomic and Solid State Physics</i> , <b>1977</b> , 60, 353-354	2-3	6
22	Comparison of spin relaxation in the metal-hydrogen systems ZrNiH <sub>x</sub> and ZrNiD <sub>x</sub> . <i>Physical Review B</i> , <b>2006</b> , 73,	3-3	5
21	NMR study of a temperature-induced structural transition in ZrBe <sub>2</sub> D <sub>x</sub> . <i>Journal of Alloys and Compounds</i> , <b>2002</b> , 330-332, 179-182	5-7	5
20	Study of ultra-thin Ge/Si strained layer superlattice. <i>Journal of Crystal Growth</i> , <b>1989</b> , 95, 451-454	1-6	5
19	Swelling and outgassing of heavily-irradiated lithium hydride. <i>Journal of Nuclear Materials</i> , <b>1988</b> , 154, 308-317	3-3	5
18	Vacancy ordering phase transition in ZrBe <sub>2</sub> (H/D) <sub>x</sub> : NMR and electronic structure study. <i>Physical Review B</i> , <b>2003</b> , 67,	3-3	4
17	Isotherm measurements of high-pressure metal hydrides for hydrogen compressors. <i>JPhys Energy</i> , <b>2021</b> , 3, 034004	4-9	4
16	Detection of Fluorite-Structured MgD <sub>2</sub> /TiD <sub>2</sub> : Deuterium NMR. <i>Journal of Physical Chemistry C</i> , <b>2015</b> , 119, 7656-7661	3-8	3
15	Hydrogen isotherms for annealed, un-activated LaNi <sub>5</sub> (273B33K). <i>Journal of Alloys and Compounds</i> , <b>2013</b> , 574, 443-450	5-7	3
14	Low and high-pressure hydriding of V <sub>0.5</sub> at.%C. <i>Journal of Nuclear Materials</i> , <b>2010</b> , 399, 55-61	3-3	3
13	Magnetic alignment in nominally non-magnetic hexagonal metal hydrides: NMR. <i>Solid State Nuclear Magnetic Resonance</i> , <b>2003</b> , 24, 254-62	3-1	3
12	Determination of deuterium site occupation in Zr <sub>4</sub> Pd <sub>2</sub> OD <sub>4.5</sub> . <i>Journal of Alloys and Compounds</i> , <b>2003</b> , 361, 108-112	5-7	3
11	Structure of Plumes from Burning Aluminized Propellant Estimated Using Fan Beam Emission Tomography. <i>AIAA Journal</i> , <b>2007</b> , 45, 2259-2266	2-1	2
10	Rate of hydrogen motion in Ni-substituted LaNi <sub>5</sub> H <sub>x</sub> from NMR. <i>Journal of Alloys and Compounds</i> , <b>2007</b> , 446-447, 495-498	5-7	2
9	Proton and deuteron NMR in amorphous TiCuD <sub>x</sub> . <i>Materials Science and Engineering</i> , <b>1988</b> , 97, 427-430		2
8	Thin Epitaxial Silicon Regrowth Using Ion Implantation Amorphization Techniques. <i>Journal of the Electrochemical Society</i> , <b>1988</b> , 135, 974-979	3-9	2
7	Deuterium exchange dynamics in Zr <sub>2</sub> NiD <sub>4.8</sub> studied by <sup>2</sup> H MAS NMR spectroscopy. <i>Journal of Alloys and Compounds</i> , <b>2015</b> , 645, S361-S364	5-7	1

- 6 In situ X-ray and neutron powder diffraction study of LaNi<sub>5</sub>-xSn<sub>x</sub>-H systems. *Materials Research Society Symposia Proceedings*, **2004**, 837, 19 1
- 5 The observation of the lattice defect formation during the hydrogenation and dehydrogenation in La(Ni,Sn)<sub>5</sub> by in-situ positron lifetime measurement. *Materials Research Society Symposia Proceedings*, **2005**, 885, 1 1
- 4 NMR Studies of the Hydrides of Disordered and Amorphous Alloys. *NATO ASI Series Series B: Physics*, **1986**, 237-262 1
- 3 A high throughput dynamic method for characterizing thermodynamic properties of catalyzed magnesium hydrides by thermogravimetric analysis. *Physical Chemistry Chemical Physics*, **2021**, 23, 15374-15383 1
- 2 Thermal Hydrogen Compression Based on Metal Hydride Materials **2021**, 171-192 0
- 1 Picosecond transient photoreflectance measurements of ion-implanted GaAs. *Applied Surface Science*, **1991**, 50, 337-340 6.7