Boris I Yakobson

List of Publications by Citations

387 papers	40,307 citations	101 h-index	194 g-index
415 ext. papers	45,629 ext. citations	10.8 avg, IF	7.74 L-index

#	Paper	IF	Citations
387	Nanomechanics of carbon tubes: Instabilities beyond linear response. *Physical Review Letters*, **1996**, 76, 2511-2514	7.4	2251
386	Large scale growth and characterization of atomic hexagonal boron nitride layers. *Nano Letters*, **2010**, 10, 3209-15	11.5	1961
385	Vertical and in-plane heterostructures from WS2/MoS2 monolayers. *Nature Materials*, **2014**, 13, 1135-42	27	1580
384	Intrinsic structural defects in monolayer molybdenum disulfide. *Nano Letters*, **2013**, 13, 2615-22	11.5	1418
383	Vapour phase growth and grain boundary structure of molybdenum disulphide atomic layers. *Nature Materials*, **2013**, 12, 754-9	27	1384
382	Laser-induced porous graphene films from commercial polymers. *Nature Communications*, **2014**, 5, 5714	17.4	1020
381	The role of surface oxygen in the growth of large single-crystal graphene on copper. *Science*, **2013**, 342, 720-3	33.3	868
380	C2F, BN, and C nanoshell elasticity from ab initio computations. *Physical Review B*, **2001**, 64,	3.3	829
379	A library of atomically thin metal chalcogenides. *Nature*, **2018**, 556, 355-359	50.4	812
378	Quasiparticle band structures and optical properties of strained monolayer MoS2 and WS2. *Physical Review B*, **2013**, 87,	3.3	662
377	A review on mechanics and mechanical properties of 2D materials–Graphene and beyond. *Extreme Mechanics Letters*, **2017**, 13, 42-77	3.9	581
376	Achieving Highly Efficient, Selective, and Stable CO2 Reduction on Nitrogen-Doped Carbon Nanotubes. *ACS Nano*, **2015**, 9, 5364-71	16.7	451
375	Polymorphism of two-dimensional boron. *Nano Letters*, **2012**, 12, 2441-5	11.5	435
374	Brittle and Ductile Behavior in Carbon Nanotubes. *Physical Review Letters*, **1998**, 81, 4656-4659	7.4	431
373	Controlled nanocutting of graphene. *Nano Research*, **2008**, 1, 116-122	10	424
372	High strain rate fracture and C-chain unraveling in carbon nanotubes. *Computational Materials Science*, **1997**, 8, 341-348	3.2	417
371	Mechanism of strain release in carbon nanotubes. *Physical Review B*, **1998**, 57, R4277-R4280	3.3	403

370	B80 fullerene: an Ab initio prediction of geometry, stability, and electronic structure. *Physical Review Letters*, **2007**, 98, 166804	7.4	373
369	Strain and structure heterogeneity in MoS2 atomic layers grown by chemical vapour deposition. *Nature Communications*, **2014**, 5, 5246	17.4	352
368	Incorporation of Nitrogen Defects for Efficient Reduction of CO2 via Two-Electron Pathway on Three-Dimensional Graphene Foam. *Nano Letters*, **2016**, 16, 466-70	11.5	351
367	Carbon nanotube-enhanced thermal destruction of cancer cells in a noninvasive radiofrequency field. *Cancer*, **2007**, 110, 2654-65	6.4	334
366	Nonlocal shell model for elastic wave propagation in single- and double-walled carbon nanotubes. *Journal of the Mechanics and Physics of Solids*, **2008**, 56, 3475-3485	5	333
365	Controlled Sliding and Pullout of Nested Shells in Individual Multiwalled Carbon Nanotubes. *Journal of Physical Chemistry B*, **2000**, 104, 8764-8767	3.4	329
364	Single-Atomic Ruthenium Catalytic Sites on Nitrogen-Doped Graphene for Oxygen Reduction Reaction in Acidic Medium. *ACS Nano*, **2017**, 11, 6930-6941	16.7	327
363	Mechanical Properties of Carbon Nanotubes **2001**, 287-327		316
362	Nitrogen-Doped Carbon Nanotube Arrays for High-Efficiency Electrochemical Reduction of CO2: On the Understanding of Defects, Defect Density, and Selectivity. *Angewandte Chemie - International Edition*, **2015**, 54, 13701-5	16.4	315
361	Carbyne from first principles: chain of C atoms, a nanorod or a nanorope. *ACS Nano*, **2013**, 7, 10075-82	16.7	304
360	Mechanical relaxation and intramolecular plasticity in carbon nanotubes. *Applied Physics Letters*, **1998**, 72, 918-920	3.4	289
359	Cones, pringles, and grain boundary landscapes in graphene topology. *Nano Letters*, **2010**, 10, 2178-83	11.5	287
358	Can Two-Dimensional Boron Superconduct?. *Nano Letters*, **2016**, 16, 2522-6	11.5	281
357	Electrochemical CO2 Reduction with Atomic Iron-Dispersed on Nitrogen-Doped Graphene. *Advanced Energy Materials*, **2018**, 8, 1703487	21.8	277
356	Graphene nucleation on transition metal surface: structure transformation and role of the metal step edge. *Journal of the American Chemical Society*, **2011**, 133, 5009-15	16.4	273
355	Predicting dislocations and grain boundaries in two-dimensional metal-disulfides from the first principles. *Nano Letters*, **2013**, 13, 253-8	11.5	270
354	Dislocation theory of chirality-controlled nanotube growth. *Proceedings of the National Academy of Sciences of the United States of America*, **2009**, 106, 2506-9	11.5	265
353	BN white graphene with "colorful" edges: the energies and morphology. *Nano Letters*, **2011**, 11, 3113-6	11.5	261

352	High-Performance Hydrogen Evolution from MoS2(1-x) P(x) Solid Solution. *Advanced Materials*, **2016**, 28, 1427-32	24	260
351	Feasibility of Lithium Storage on Graphene and Its Derivatives. *Journal of Physical Chemistry Letters*, **2013**, 4, 1737-42	6.4	253
350	Self-optimizing, highly surface-active layered metal dichalcogenide catalysts for hydrogen evolution. *Nature Energy*, **2017**, 2,	62.3	240
349	Carbon Nanotubes and Related Nanomaterials: Critical Advances and Challenges for Synthesis toward Mainstream Commercial Applications. *ACS Nano*, **2018**, 12, 11756-11784	16.7	239
348	Borophene as a prototype for synthetic 2D materials development. *Nature Nanotechnology*, **2018**, 13, 444-450	28.7	237
347	Oxygen-activated growth and bandgap tunability of large single-crystal bilayer graphene. *Nature Nanotechnology*, **2016**, 11, 426-31	28.7	227
346	Electronics and magnetism of patterned graphene nanoroads. *Nano Letters*, **2009**, 9, 1540-3	11.5	223
345	Two-Dimensional Boron Monolayers Mediated by Metal Substrates. *Angewandte Chemie - International Edition*, **2015**, 54, 13022-6	16.4	221
344	Probing the synthesis of two-dimensional boron by first-principles computations. *Angewandte Chemie - International Edition*, **2013**, 52, 3156-9	16.4	212
343	Fullerene nanocage capacity for hydrogen storage. *Nano Letters*, **2008**, 8, 767-74	11.5	211
342	Two-dimensional boron: structures, properties and applications. *Chemical Society Reviews*, **2017**, 46, 6746-6763	58.5	209
341	Wafer-scale single-crystal hexagonal boron nitride monolayers on Cu□(111). *Nature*, **2020**, 579, 219-223	50.4	209
340	Symmetry-, time-, and temperature-dependent strength of carbon nanotubes. *Proceedings of the National Academy of Sciences of the United States of America*, **2006**, 103, 6105-9	11.5	208
339	Boron- and Nitrogen-Substituted Graphene Nanoribbons as Efficient Catalysts for Oxygen Reduction Reaction. *Chemistry of Materials*, **2015**, 27, 1181-1186	9.6	202
338	Gram-scale bottom-up flash graphene synthesis. *Nature*, **2020**, 577, 647-651	50.4	201
337	Equilibrium at the edge and atomistic mechanisms of graphene growth. *Proceedings of the National Academy of Sciences of the United States of America*, **2012**, 109, 15136-40	11.5	200
336	Role of hydrogen in graphene chemical vapor deposition growth on a copper surface. *Journal of the American Chemical Society*, **2014**, 136, 3040-7	16.4	193
335	Dislocations and grain boundaries in two-dimensional boron nitride. *ACS Nano*, **2012**, 6, 7053-8	16.7	189

334	Intrinsic magnetism of grain boundaries in two-dimensional metal dichalcogenides. *ACS Nano*, **2013**, 7, 10475-81	16.7	186
333	In situ observation of graphene sublimation and multi-layer edge reconstructions. *Proceedings of the National Academy of Sciences of the United States of America*, **2009**, 106, 10103-8	11.5	186
332	Curvature-induced polarization in carbon nanoshells. *Chemical Physics Letters*, **2002**, 360, 182-188	2.5	177
331	Elasticity, Flexibility, and Ideal Strength of Borophenes. *Advanced Functional Materials*, **2017**, 27, 1605059	15.6	176
330	In situ evidence for chirality-dependent growth rates of individual carbon nanotubes. *Nature Materials*, **2012**, 11, 213-6	27	174
329	Ripping graphene: preferred directions. *Nano Letters*, **2012**, 12, 293-7	11.5	172
328	Two-dimensional mono-elemental semiconductor with electronically inactive defects: the case of phosphorus. *Nano Letters*, **2014**, 14, 6782-6	11.5	170
327	Direct chemical conversion of graphene to boron- and nitrogen- and carbon-containing atomic layers. *Nature Communications*, **2014**, 5, 3193	17.4	169
326	Ballistic thermal conductance of graphene ribbons. *Nano Letters*, **2010**, 10, 1652-6	11.5	169
325	Dislocation motion and grain boundary migration in two-dimensional tungsten disulphide. *Nature Communications*, **2014**, 5, 4867	17.4	167
324	Electro-mechanical anisotropy of phosphorene. *Nanoscale*, **2015**, 7, 9746-51	7.7	157
323	Two-dimensional tetragonal TiC monolayer sheet and nanoribbons. *Journal of the American Chemical Society*, **2012**, 134, 19326-9	16.4	154
322	Pseudo Hall-Petch strength reduction in polycrystalline graphene. *Nano Letters*, **2013**, 13, 1829-33	11.5	154
321	Evolutionary selection growth of two-dimensional materials on polycrystalline substrates. *Nature Materials*, **2018**, 17, 318-322	27	151
320	Graphene edge from armchair to zigzag: the origins of nanotube chirality?. *Physical Review Letters*, **2010**, 105, 235502	7.4	151
319	Spontaneous twist and intrinsic instabilities of pristine graphene nanoribbons. *Nano Research*, **2009** , 2, 161-166	10	147
318	Photoluminescence quenching and charge transfer in artificial heterostacks of monolayer transition metal dichalcogenides and few-layer black phosphorus. *ACS Nano*, **2015**, 9, 555-63	16.7	145
317	Hydrogen storage by spillover on graphene as a phase nucleation process. *Physical Review B*, **2008**, 78,	3.3	143

316	Predicting Two-Dimensional Silicon Carbide Monolayers. *ACS Nano*, **2015**, 9, 9802-9	16.7	141
315	The future of the fullerenes. *Solid State Communications*, **1998**, 107, 597-606	1.6	140
314	Clustering of Sc on SWNT and Reduction of Hydrogen Uptake: Ab-Initio All-Electron Calculations. *Journal of Physical Chemistry C*, **2007**, 111, 17977-17980	3.8	139
313	Substrate-Induced Nanoscale Undulations of Borophene on Silver. *Nano Letters*, **2016**, 16, 6622-6627	11.5	136
312	Borophene Synthesis on Au(111). *ACS Nano*, **2019**, 13, 3816-3822	16.7	134
311	Why nanotubes grow chiral. *Nature Communications*, **2014**, 5, 4892	17.4	128
310	Quantum Dots and Nanoroads of Graphene Embedded in Hexagonal Boron Nitride. *Journal of Physical Chemistry C*, **2011**, 115, 9889-9893	3.8	127
309	Probing properties of boron alpha-tubes by Ab Initio calculations. *Nano Letters*, **2008**, 8, 1314-7	11.5	126
308	Quaternary 2D Transition Metal Dichalcogenides (TMDs) with Tunable Bandgap. *Advanced Materials* , **2017**, 29, 1702457	24	124
307	Mechanically induced defects and strength of BN nanotubes. *Physical Review B*, **2002**, 65,	3.3	124
306	Two-dimensional materials: Polyphony in B flat. *Nature Chemistry*, **2016**, 8, 525-7	17.6	122
305	Consistent methodology for calculating surface and interface energies. *Physical Review B*, **1998**, 57, 7281-7291	3.3	121
304	Nanomechanical cleavage of molybdenum disulphide atomic layers. *Nature Communications*, **2014**, 5, 3631	17.4	118
303	Phase diagram of quasi-two-dimensional carbon, from graphene to diamond. *Nano Letters*, **2014**, 14, 676-81	11.5	115
302	H-Spillover through the Catalyst Saturation: An Ab Initio Thermodynamics Study. *ACS Nano*, **2009**, 3, 1657-62	16.7	115
301	Atomic H-Induced MoC Hybrid as an Active and Stable Bifunctional Electrocatalyst. *ACS Nano*, **2017**, 11, 384-394	16.7	114
300	Vacancy clusters in graphane as quantum dots. *ACS Nano*, **2010**, 4, 3510-4	16.7	114
299	Strong ferromagnetism in hydrogenated monolayer MoS2 tuned by strain. *Physical Review B*, **2013**, 88,	3.3	113

298	Pseudoclimb and dislocation dynamics in superplastic nanotubes. *Physical Review Letters*, **2007**, 98, 075503	7.4	113
297	Highly Itinerant Atomic Vacancies in Phosphorene. *Journal of the American Chemical Society*, **2016**, 138, 10199-206	16.4	112
296	Scratching the surface of buckminsterfullerene: the barriers for Stone-Wales transformation through symmetric and asymmetric transition states. *Journal of the American Chemical Society*, **2003**, 125, 5572-80	16.4	112
295	Two-Dimensional SiS Layers with Promising Electronic and Optoelectronic Properties: Theoretical Prediction. *Nano Letters*, **2016**, 16, 1110-7	11.5	110
294	Tailoring the physical properties of molybdenum disulfide monolayers by control of interfacial chemistry. *Nano Letters*, **2014**, 14, 1354-61	11.5	110
293	Patterning nanoroads and quantum dots on fluorinated graphene. *Nano Research*, **2011**, 4, 143-152	10	109
292	What is the ground-state structure of the thinnest Si nanowires?. *Physical Review Letters*, **2003**, 91, 035501	7.4	106
291	Type-II Multiferroic HfVCF MXene Monolayer with High Transition Temperature. *Journal of the American Chemical Society*, **2018**, 140, 9768-9773	16.4	105
290	Mechanically induced metal-insulator transition in carbyne. *Nano Letters*, **2014**, 14, 4224-9	11.5	105
289	Electronic transport through bent carbon nanotubes: Nanoelectromechanical sensors and switches. *Physical Review B*, **2003**, 67,	3.3	103
288	Bond-breaking bifurcation states in carbon nanotube fracture. *Journal of Chemical Physics*, **2003**, 118, 9485-9488	3.9	101
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285	An open canvas--2D materials with defects, disorder, and functionality. *Accounts of Chemical Research*, **2015**, 48, 73-80	24.3	99
284	Kinetic theory of symmetry-dependent strength in carbon nanotubes. *Physical Review Letters*, **2002**, 88, 065501	7.4	98
283	Growth Mechanism and Morphology of Hexagonal Boron Nitride. *Nano Letters*, **2016**, 16, 1398-403	11.5	97
282	Observational geology of graphene, at the nanoscale. *ACS Nano*, **2011**, 5, 1569-74	16.7	96
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280	Controlled Synthesis of Organic/Inorganic van der Waals Solid for Tunable Light-Matter Interactions. *Advanced Materials*, **2015**, 27, 7800-8	24	94
279	Thickness-dependent patterning of MoS2 sheets with well-oriented triangular pits by heating in air. *Nano Research*, **2013**, 6, 703-711	10	92
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276	Intermixing and periodic self-assembly of borophene line defects. *Nature Materials*, **2018**, 17, 783-788	27	90
275	Efficient defect healing in catalytic carbon nanotube growth. *Physical Review Letters*, **2012**, 108, 245505	7.4	89
274	Atomistic theory of mechanical relaxation in fullerene nanotubes. *Carbon*, **2000**, 38, 1675-1680	10.4	86
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271	Self-gating in semiconductor electrocatalysis. *Nature Materials*, **2019**, 18, 1098-1104	27	84
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269	Two-Dimensional Boron Polymorphs for Visible Range Plasmonics: A First-Principles Exploration. *Journal of the American Chemical Society*, **2017**, 139, 17181-17185	16.4	83
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265	Interface toughness of carbon nanotube reinforced epoxy composites. *ACS Applied Materials & Interfaces*, **2011**, 3, 129-34	9.5	78
264	How Graphene Islands Are Unidirectionally Aligned on the Ge(110) Surface. *Nano Letters*, **2016**, 16, 3160-5	11.5	78
263	Oral vaccination of wildlife using a vaccinia-rabies-glycoprotein recombinant virus vaccine (RABORAL V-RG): a global review. *Veterinary Research*, **2017**, 48, 57	3.8	74

262	Real time microscopy, kinetics, and mechanism of giant fullerene evaporation. *Physical Review Letters*, **2007**, 99, 175503	7.4	73
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260	Engineering grain boundaries at the 2D limit for the hydrogen evolution reaction. *Nature Communications*, **2020**, 11, 57	17.4	72
259	Assessing carbon-based anodes for lithium-ion batteries: a universal description of charge-transfer binding. *Physical Review Letters*, **2014**, 113, 028304	7.4	71
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255	Riemann Surfaces of Carbon as Graphene Nanosolenoids. *Nano Letters*, **2016**, 16, 34-9	11.5	67
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246	Oxidized Laser-Induced Graphene for Efficient Oxygen Electrocatalysis. *Advanced Materials*, **2018**, 30, e1707319	24	63
245	Large hexagonal bi- and trilayer graphene single crystals with varied interlayer rotations. *Angewandte Chemie - International Edition*, **2014**, 53, 1565-9	16.4	63

244	An Anomalous Formation Pathway for Dislocation-Sulfur Vacancy Complexes in Polycrystalline Monolayer MoS2. *Nano Letters*, **2015**, 15, 6855-61	11.5	62
243	Strain-rate and temperature dependent plastic yield in carbon nanotubes from ab initio calculations. *Applied Physics Letters*, **2004**, 84, 2775-2777	3.4	62
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241	Predicting stable phase monolayer Mo2C (MXene), a superconductor with chemically-tunable critical temperature. *Journal of Materials Chemistry C*, **2017**, 5, 3438-3444	7.1	60
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239	Coalescence of fullerene cages: Topology, energetics, and molecular dynamics simulation. *Physical Review B*, **2002**, 66,	3.3	59
238	Mechanisms of the oxygen reduction reaction on B- and/or N-doped carbon nanomaterials with curvature and edge effects. *Nanoscale*, **2018**, 10, 1129-1134	7.7	58
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215	Dirac Cones and Nodal Line in Borophene. *Journal of Physical Chemistry Letters*, **2018**, 9, 2757-2762	6.4	44
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