

# Stan Veprek

## List of Publications by Year in Descending Order

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The third column is the impact factor (IF) of the journal, and the fourth column is the number of citations of the article.

110  
papers

5,965  
citations

38  
h-index

76  
g-index

115  
ext. papers

6,229  
ext. citations

3.7  
avg, IF

6.1  
L-index

#	Paper	IF	Citations
110	Ultrastrong Bonded Interface as Ductile Plastic Flow Channel in Nanostructured Diamond. <i>ACS Applied Materials &amp; Interfaces</i> , <b>2020</b> , 12, 4135-4142	9.5	5
109	Measurements of Hardness and Other Mechanical Properties of Hard and Superhard Materials and Coatings <b>2016</b> , 105-134		
108	Superhard and Ultrahard Nanostructured Materials and Coatings <b>2016</b> , 167-210		1
107	Industrial Applications of Hard and Superhard Nanocomposite Coatings on Tools for Machining, Forming, Stamping and Injection Molding. <i>Advanced Materials Research</i> , <b>2016</b> , 1135, 218-233	0.5	2
106	Mechanical strength and electronic instabilities in ultra-incompressible platinum dinitrides. <i>Physical Review B</i> , <b>2015</b> , 92,	3.3	15
105	Photoluminescence from nanocrystalline silicon nc-Si, nc-Si/SiO <sub>2</sub> nanocomposites, and nc-Si oxidized in O <sub>2</sub> and treated in H <sub>2</sub> O. <i>Journal of Vacuum Science and Technology A: Vacuum, Surfaces and Films</i> , <b>2015</b> , 33, 043001	2.9	1
104	The deformation of the substrate during indentation into superhard coatings: Böklin's rule revised. <i>Surface and Coatings Technology</i> , <b>2015</b> , 284, 206-214	4.4	14
103	High-rate deposition of AlTiN and related coatings with dense morphology by central cylindrical direct current magnetron sputtering. <i>Thin Solid Films</i> , <b>2014</b> , 556, 361-368	2.2	14
102	Bond deformation paths and electronic instabilities of ultraincompressible transition metal diborides: Case study of OsB <sub>2</sub> and IrB <sub>2</sub> . <i>Physical Review B</i> , <b>2014</b> , 90,	3.3	19
101	First-principles quantum molecular dynamics study of Ti Zr N(111)/SiN heterostructures and comparison with experimental results. <i>Science and Technology of Advanced Materials</i> , <b>2014</b> , 15, 025007	7.1	36
100	First-principles molecular dynamics investigation of thermal and mechanical stability of the TiN(001)/AlN and ZrN(001)/AlN heterostructures. <i>Thin Solid Films</i> , <b>2014</b> , 564, 284-293	2.2	17
99	Nanosized and Nanostructured Hard and Superhard Materials and Coatings <b>2014</b> , 207-234		
98	Models of the Interfaces in Superhard TiN-Based Heterostructures and Nanocomposites from First-Principles <b>2014</b> , 45-91		1
97	Recent search for new superhard materials: Go nano!. <i>Journal of Vacuum Science and Technology A: Vacuum, Surfaces and Films</i> , <b>2013</b> , 31, 050822	2.9	99
96	Nanosized and Nanostructured Hard and Superhard Materials and Coatings <b>2013</b> , 207-234		
95	Decomposition mechanism of Al <sub>1-x</sub> Si <sub>x</sub> Ny solid solution and possible mechanism of the formation of covalent nanocrystalline AlN/Si <sub>3</sub> N <sub>4</sub> nanocomposites. <i>Acta Materialia</i> , <b>2013</b> , 61, 4226-4236	8.4	18
94	First-principles molecular dynamics study of the thermal stability of the BN, AlN, SiC and SiN interfacial layers in TiN-based heterostructures: Comparison with experiments. <i>Thin Solid Films</i> , <b>2013</b> , 545, 391-400	2.2	18

93	Origin of different plastic resistance of transition metal nitrides and carbides: Stiffer yet softer. <i>Scripta Materialia</i> , <b>2013</b> , 68, 913-916	5.6	19
92	First-principles study of TiN/SiC/TiN interfaces in superhard nanocomposites. <i>Physical Review B</i> , <b>2012</b> , 86,	3.3	22
91	Comparative first-principles study of TiN/SiNx/TiN interfaces. <i>Physical Review B</i> , <b>2012</b> , 85,	3.3	33
90	Stability and strength of transition-metal tetraborides and triborides. <i>Physical Review Letters</i> , <b>2012</b> , 108, 255502	7.4	124
89	Recent attempts to design new super- and ultrahard solids leads to nano-sized and nano-structured materials and coatings. <i>Journal of Nanoscience and Nanotechnology</i> , <b>2011</b> , 11, 14-35	1.3	33
88	Mechanical properties and hardness of boron and boron-rich solids. <i>Journal of Superhard Materials</i> , <b>2011</b> , 33, 409-420	0.9	41
87	Anisotropic ideal strengths of superhard monoclinic and tetragonal carbon and their electronic origin. <i>Physical Review B</i> , <b>2011</b> , 83,	3.3	29
86	Phase stabilities and decomposition mechanism in the ZrSiN system studied by combined ab initio DFT and thermodynamic calculation. <i>Acta Materialia</i> , <b>2011</b> , 59, 297-307	8.4	35
85	Study of spinodal decomposition and formation of nc-Al <sub>2</sub> O <sub>3</sub> /ZrO <sub>2</sub> nanocomposites by combined ab initio density functional theory and thermodynamic modeling. <i>Acta Materialia</i> , <b>2011</b> , 59, 3498-3509	8.4	34
84	Thermodynamic stability and unusual strength of ultra-incompressible rhenium nitrides. <i>Physical Review B</i> , <b>2011</b> , 83,	3.3	48
83	Search for Ultrahard Materials and Recent Progress in the Understanding of Hardness Enhancement and Properties of Nanocomposites. <i>Solid State Phenomena</i> , <b>2010</b> , 159, 1-10	0.4	2
82	Design of ultrahard materials: Go nano!. <i>Philosophical Magazine</i> , <b>2010</b> , 90, 4101-4115	1.6	22
81	Elastic moduli of nc-TiN/a-Si <sub>3</sub> N <sub>4</sub> nanocomposites: Compressible, yet superhard. <i>Journal of Physics and Chemistry of Solids</i> , <b>2010</b> , 71, 1175-1178	3.9	24
80	The Fundamentals of Hard and Superhard Nanocomposites and Heterostructures <b>2010</b> , 1-34		
79	The Fundamentals of Hard and Superhard Nanocomposites and Heterostructures <b>2010</b> , 1-34		
78	Non-linear finite element constitutive modeling of indentation into super- and ultrahard materials: The plastic deformation of the diamond tip and the ratio of hardness to tensile yield strength of super- and ultrahard nanocomposites. <i>Surface and Coatings Technology</i> , <b>2009</b> , 203, 3385-3391	4.4	34
77	Deformation paths and atomistic mechanism of B <sub>4</sub> -B <sub>1</sub> phase transformation in aluminium nitride. <i>Acta Materialia</i> , <b>2009</b> , 57, 2259-2265	8.4	22
76	Role of oxygen impurities in etching of silicon by atomic hydrogen(a). <i>Journal of Vacuum Science and Technology A: Vacuum, Surfaces and Films</i> , <b>2008</b> , 26, 313-320	2.9	43

75	Industrial applications of superhard nanocomposite coatings. <i>Surface and Coatings Technology</i> , <b>2008</b> , 202, 5063-5073	4.4	304
74	Phase stabilities and thermal decomposition in the $Zr_{1-x}Al_xN$ system studied by ab initio calculation and thermodynamic modeling. <i>Acta Materialia</i> , <b>2008</b> , 56, 968-976	8.4	69
73	Stability of $Ti_{1-x}BN$ solid solutions and the formation of nc-TiN/a-BN nanocomposites studied by combined ab initio and thermodynamic calculations. <i>Acta Materialia</i> , <b>2008</b> , 56, 4440-4449	8.4	38
72	Phase stabilities of self-organized nc-TiN/a-Si <sub>3</sub> N <sub>4</sub> nanocomposites and of $Ti_{1-x}Si_xNy$ solid solutions studied by ab initio calculation and thermodynamic modeling. <i>Thin Solid Films</i> , <b>2008</b> , 516, 2264-2275	2.3	65
71	Anisotropic ideal strengths and chemical bonding of wurtzite BN in comparison to zincblende BN. <i>Physical Review B</i> , <b>2008</b> , 77,	3.3	76
70	The formation and role of interfaces in superhard nc-MenN/a-Si <sub>3</sub> N <sub>4</sub> nanocomposites. <i>Surface and Coatings Technology</i> , <b>2007</b> , 201, 6064-6070	4.4	89
69	Phase stabilities and spinodal decomposition in the $Cr_{1-x}Al_xN$ system studied by ab initio LDA and thermodynamic modeling: Comparison with the $Ti_{1-x}Al_xN$ and TiN/Si <sub>3</sub> N <sub>4</sub> systems. <i>Acta Materialia</i> , <b>2007</b> , 55, 4615-4624	8.4	71
68	Metastable phases and spinodal decomposition in $Ti_{1-x}Al_xN$ system studied by ab initio and thermodynamic modeling, a comparison with the TiN/Si <sub>3</sub> N <sub>4</sub> system. <i>Materials Science &amp; Engineering A: Structural Materials: Properties, Microstructure and Processing</i> , <b>2007</b> , 448, 111-119	5.3	86
67	Chemistry, physics and fracture mechanics in search for superhard materials, and the origin of superhardness in nc-TiN/a-Si <sub>3</sub> N <sub>4</sub> and related nanocomposites. <i>Journal of Physics and Chemistry of Solids</i> , <b>2007</b> , 68, 1161-1168	3.9	24
66	Tailoring Raney-catalysts for the selective hydrogenation of butyronitrile to n-butylamine. <i>Journal of Catalysis</i> , <b>2007</b> , 245, 237-248	7.3	43
65	Mechanism of the B3 to B1 transformation in cubic AlN under uniaxial stress. <i>Physical Review B</i> , <b>2007</b> , 76,	3.3	23
64	Mechanical strengths of silicon nitrides studied by ab initio calculations. <i>Applied Physics Letters</i> , <b>2007</b> , 90, 191903	3.4	52
63	First principles studies of ideal strength and bonding nature of AlN polymorphs in comparison to TiN. <i>Applied Physics Letters</i> , <b>2007</b> , 91, 031906	3.4	62
62	Mechanical and electronic properties of hard rhenium diboride of low elastic compressibility studied by first-principles calculation. <i>Applied Physics Letters</i> , <b>2007</b> , 91, 201914	3.4	83
61	Crystalline-to-amorphous transition in $Ti_{1-x}Si_xN$ solid solution and the stability of fcc SiN studied by combined ab initio density functional theory and thermodynamic calculations. <i>Physical Review B</i> , <b>2007</b> , 76,	3.3	22
60	Origin of the hardness enhancement in superhard nc-TiN/a-Si <sub>3</sub> N <sub>4</sub> and ultrahard nc-TiN/a-Si <sub>3</sub> N <sub>4</sub> /TiSi <sub>2</sub> nanocomposites. <i>Philosophical Magazine Letters</i> , <b>2007</b> , 87, 955-966	1	58
59	Structural Nanocrystalline Materials: Fundamentals and Applications <b>2007</b> ,		172
58	Superhard nitride-based nanocomposites: role of interfaces and effect of impurities. <i>Physical Review Letters</i> , <b>2006</b> , 97, 086102	7.4	114

57	Concept for the Design of Superhard Nanocomposites with High Thermal Stability: Their Preparation, Properties, and Industrial Applications. <i>Nanostructure Science and Technology</i> , <b>2006</b> , 347-406 <sup>9</sup>		9
56	The origin of superhardness in TiN/Si <sub>3</sub> N <sub>4</sub> nanocomposites: the role of the interfacial monolayer. <i>High Pressure Research</i> , <b>2006</b> , 26, 119-125	1.6	7
55	Non-linear finite element constitutive modeling of mechanical properties of hard and superhard materials studied by indentation. <i>Materials Science &amp; Engineering A: Structural Materials: Properties, Microstructure and Processing</i> , <b>2006</b> , 422, 205-217	5.3	17
54	Strain and deformation in ultra-hard nanocomposites nc-TiN/a-BN under hydrostatic pressure. <i>Materials Science &amp; Engineering A: Structural Materials: Properties, Microstructure and Processing</i> , <b>2006</b> , 437, 379-387	5.3	33
53	Internal friction studies of nanocomposite superhard nc-TiN/a-Si <sub>3</sub> N <sub>4</sub> and nc-(Ti <sub>1-x</sub> Al <sub>x</sub> )N/a-Si <sub>3</sub> N <sub>4</sub> films. <i>Materials Science &amp; Engineering A: Structural Materials: Properties, Microstructure and Processing</i> , <b>2006</b> , 442, 328-331	5.3	7
52	On the spinodal nature of the phase segregation and formation of stable nanostructure in the Ti <sub>3</sub> Si <sub>2</sub> system. <i>Materials Science &amp; Engineering A: Structural Materials: Properties, Microstructure and Processing</i> , <b>2006</b> , 424, 128-137	5.3	85
51	The issue of the reproducibility of deposition of superhard nanocomposites with hardness of 80 GPa. <i>Surface and Coatings Technology</i> , <b>2006</b> , 200, 3876-3885	4.4	58
50	Properties of superhard nc-TiN/a-BN and nc-TiN/a-BN/a-TiB <sub>2</sub> nanocomposite coatings prepared by plasma induced chemical vapor deposition. <i>Surface and Coatings Technology</i> , <b>2006</b> , 200, 2978-2989	4.4	67
49	On the measurement of hardness of super-hard coatings. <i>Surface and Coatings Technology</i> , <b>2006</b> , 200, 5645-5654	4.4	58
48	Possible role of oxygen impurities in degradation of nc-TiN-Si <sub>3</sub> N <sub>4</sub> nanocomposites. <i>Journal of Vacuum Science &amp; Technology an Official Journal of the American Vacuum Society B, Microelectronics Processing and Phenomena</i> , <b>2005</b> , 23, L17		52
47	Elastic properties of nc-TiN-Si <sub>3</sub> N <sub>4</sub> and nc-TiN-BN nanocomposite films by surface Brillouin scattering. <i>Journal of Applied Physics</i> , <b>2005</b> , 97, 054308	2.5	24
46	Different approaches to superhard coatings and nanocomposites. <i>Thin Solid Films</i> , <b>2005</b> , 476, 1-29	2.2	623
45	Comparative study of the tribological behaviour of superhard nanocomposite coatings nc-TiN/a-Si <sub>3</sub> N <sub>4</sub> with TiN. <i>Surface and Coatings Technology</i> , <b>2005</b> , 194, 143-148	4.4	85
44	Thermally activated relaxation processes in superhard nc-TiN/a-SiN and nc-(TiAl)N/a-SiN nanocomposites studied by means of internal friction measurements. <i>Composites Science and Technology</i> , <b>2005</b> , 65, 735-740	8.6	20
43	Effecting of oxygen and chlorine on nano-structured TiN/Si <sub>3</sub> N <sub>4</sub> films hardness. <i>Materials Letters</i> , <b>2005</b> , 59, 838-841	3.3	11
42	Preparation and Characterization of nc-(Ti,Al)N and h-AlN Nanocrystalline Deposited by Plasma CVD Techniques. <i>Journal of Metastable and Nanocrystalline Materials</i> , <b>2005</b> , 23, 219-222	0.2	
41	Development of novel coating technology by vacuum arc with rotating cathodes for industrial production of nc-(Al <sub>1-x</sub> Ti <sub>x</sub> )N/a-Si <sub>3</sub> N <sub>4</sub> superhard nanocomposite coatings for dry, hard machining. <i>Plasma Chemistry and Plasma Processing</i> , <b>2004</b> , 24, 493-510	3.6	61
40	Evaluation of the internal friction and elastic modulus of the superhard films. <i>Materials Science &amp; Engineering A: Structural Materials: Properties, Microstructure and Processing</i> , <b>2004</b> , 370, 186-190	5.3	15

39	Conditions required for achieving superhardness of $\approx 5$ GPa in nc-TiN/a-Si <sub>3</sub> N <sub>4</sub> nanocomposites. <i>Materials Science &amp; Engineering A: Structural Materials: Properties, Microstructure and Processing</i> , <b>2004</b> , 384, 102-116	5.3	103
38	Thermal stability of nc-TiN/a-BN/a-TiB <sub>2</sub> nanocomposite coatings deposited by plasma chemical vapor deposition. <i>Thin Solid Films</i> , <b>2004</b> , 467, 133-139	2.2	65
37	Degradation of superhard nanocomposites by built-in impurities. <i>Journal of Vacuum Science &amp; Technology an Official Journal of the American Vacuum Society B, Microelectronics Processing and Phenomena</i> , <b>2004</b> , 22, L5		49
36	Superhard nanocomposites: design concept, properties, present and future industrial applications. <i>EPJ Applied Physics</i> , <b>2004</b> , 28, 313-317	1.1	14
35	Recent Progress in Superhard Nanocomposites: Preparation, Properties and Industrial Applications. <i>NATO Science Series Series II, Mathematics, Physics and Chemistry</i> , <b>2004</b> , 23-34		1
34	Spectroscopic studies of the role of silyl radicals in photolysis of polysilanes. <i>Chemical Physics Letters</i> , <b>2003</b> , 374, 257-263	2.5	11
33	Limits to the strength of super- and ultrahard nanocomposite coatings. <i>Journal of Vacuum Science and Technology A: Vacuum, Surfaces and Films</i> , <b>2003</b> , 21, 532-544	2.9	86
32	Mechanical Properties of Superhard Nanocomposites with High Thermal Stability. <i>Materials Research Society Symposia Proceedings</i> , <b>2003</b> , 791, 1		1
31	The Role of nc-TiN Surface Coverage by a-Si <sub>3</sub> N <sub>4</sub> for the Control of Room Temperature and In-Dry-Air Oxidation Resistance of nc-TiN/a-Si <sub>3</sub> N <sub>4</sub> /a- and nc-TiSi <sub>2</sub> Nanocomposites. <i>Materials Science Forum</i> , <b>2003</b> , 437-438, 403-406	0.4	4
30	Torsion pendulum method to evaluate the internal friction and elastic modulus of films. <i>Review of Scientific Instruments</i> , <b>2003</b> , 74, 2477-2480	1.7	8
29	Structure and photoluminescence features of nanocrystalline Si/SiO <sub>2</sub> films produced by plasma chemical vapor deposition and post-treatment. <i>Journal of Vacuum Science &amp; Technology an Official Journal of the American Vacuum Society B, Microelectronics Processing and Phenomena</i> , <b>2002</b> , 20, 1368		22
28	Towards the understanding of mechanical properties of super- and ultrahard nanocomposites. <i>Journal of Vacuum Science &amp; Technology an Official Journal of the American Vacuum Society B, Microelectronics Processing and Phenomena</i> , <b>2002</b> , 20, 650		221
27	Towards the Industrialization of Superhard Nanocrystalline Composites for High Speed and Dry Machining. <i>Materials Research Society Symposia Proceedings</i> , <b>2002</b> , 750, 1		2
26	Mechanical properties of superhard nanocomposites. <i>Surface and Coatings Technology</i> , <b>2001</b> , 146-147, 175-182	4.4	135
25	Pseudomorphic growth of ultrathin cubic 3C-BiC films on Si(100) by temperature programmed organometallic chemical vapor deposition. <i>Journal of Applied Physics</i> , <b>1999</b> , 85, 2652-2657	2.5	18
24	Photolumineszenzeigenschaften von substituierten Silsesquioxanen der Zusammensetzung Rn(SiO <sub>1.5</sub> )n. <i>Monatshefte für Chemie</i> , <b>1999</b> , 130, 55-68	1.4	
23	The search for novel, superhard materials. <i>Journal of Vacuum Science and Technology A: Vacuum, Surfaces and Films</i> , <b>1999</b> , 17, 2401-2420	2.9	1016
22	Photolumineszenzeigenschaften von substituierten Silsesquioxanen der Zusammensetzung Rn(SiO <sub>1.5</sub> )n <b>1999</b> , 55-68		1



21	New development in superhard coatings: the superhard nanocrystalline-amorphous composites. <i>Thin Solid Films</i> , <b>1998</b> , 317, 449-454	2.2	171
20	Ultra thin 3C-SiC pseudomorphic films on Si (100) prepared by organometallic CVD with methyltrichlorosilane. <i>Thin Solid Films</i> , <b>1998</b> , 318, 18-21	2.2	15
19	Microstructure of novel superhard nanocrystalline-amorphous composites as analyzed by high resolution transmission electron microscopy. <i>Journal of Vacuum Science &amp; Technology an Official Journal of the American Vacuum Society B, Microelectronics Processing and Phenomena</i> , <b>1998</b> , 16, 19		111
18	Electronic and mechanical properties of nanocrystalline composites when approaching molecular size. <i>Thin Solid Films</i> , <b>1997</b> , 297, 145-153	2.2	59
17	Percolation Threshold in Superhard Nanocrystalline Transition Metal-Amorphous Silicon Nitride Composites: The Control and Understanding of the Superhardness. <i>Materials Research Society Symposia Proceedings</i> , <b>1996</b> , 457, 407		6
16	Plasma-induced deposition of titanium nitride from TiCl <sub>4</sub> in a direct current glow discharge: Control of the chlorine content and gas-phase nucleation. <i>Plasma Chemistry and Plasma Processing</i> , <b>1996</b> , 16, 341-363	3.6	19
15	Photoluminescence from Nanocrystalline Silicon-Amorphous Silica Composite Materials: Changing the Color and Decay Time. <i>Solid State Phenomena</i> , <b>1996</b> , 51-52, 225-236	0.4	3
14	On the possible origin of the photoluminescence from oxidized nanocrystalline silicon. <i>Thin Solid Films</i> , <b>1995</b> , 255, 92-95	2.2	24
13	Origin of the green/blue luminescence from nanocrystalline silicon. <i>Applied Physics Letters</i> , <b>1994</b> , 65, 1537-1539	3.4	154
12	Photodegradation and Stability of a-Si Prepared at High Deposition Rates. <i>Materials Research Society Symposia Proceedings</i> , <b>1992</b> , 258, 45		4
11	Plasma-induced deposition of thin films of aluminum oxide. <i>Plasma Chemistry and Plasma Processing</i> , <b>1992</b> , 12, 129-145	3.6	17
10	Open questions regarding the mechanism of plasma-induced deposition of silicon. <i>Plasma Chemistry and Plasma Processing</i> , <b>1991</b> , 11, 323-334	3.6	23
9	Surface Processes which Control the Deposition and Etching in the SiH <sub>4</sub> /H <sub>2</sub> /Si(S)-Glow Discharge System: The Competition Between Atoms, Ions and Electrons. <i>Materials Research Society Symposia Proceedings</i> , <b>1990</b> , 201, 19		2
8	Possible contribution of SiH <sub>2</sub> and SiH <sub>3</sub> in the plasma-induced deposition of amorphous silicon from silane. <i>Applied Physics Letters</i> , <b>1990</b> , 56, 1766-1768	3.4	32
7	Chemistry and Solid State Physics of Microcrystalline Silicon. <i>Materials Research Society Symposia Proceedings</i> , <b>1989</b> , 164, 39		34
6	Processing of structural nanocrystalline materials25-92		1
5	Stability of structural nanocrystalline materials Grain growth93-133		2
4	Applications of structural nanomaterials341-361		1

- 3 Getting Light from Silicon: From Organosilanes to Light Emitting Nanocrystalline Silicon 821-835 ○
- 2 Mechanical Properties and Hardness of Advanced Superhard Nanocrystalline Films and Nanomaterials. *Ceramic Transactions*, 151-159 ○.1
- 1 Concept for the Design of Superhard Nanocomposites with High Thermal Stability: Their Preparation, Properties, and Industrial Applications 347-406