Stan Veprek

List of Publications by Citations

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	The search for novel, superhard materials. *Journal of Vacuum Science and Technology A: Vacuum, Surfaces and Films*, **1999**, 17, 2401-2420	2.9	1016
109	Different approaches to superhard coatings and nanocomposites. *Thin Solid Films*, **2005**, 476, 1-29	2.2	623
108	Industrial applications of superhard nanocomposite coatings. *Surface and Coatings Technology*, **2008**, 202, 5063-5073	4.4	304
107	Towards the understanding of mechanical properties of super- and ultrahard nanocomposites. *Journal of Vacuum Science & Technology an Official Journal of the American Vacuum Society B, Microelectronics Processing and Phenomena*, **2002**, 20, 650		221
106	Structural Nanocrystalline Materials: Fundamentals and Applications **2007**,		172
105	New development in superhard coatings: the superhard nanocrystalline-amorphous composites. *Thin Solid Films*, **1998**, 317, 449-454	2.2	171
104	Origin of the green/blue luminescence from nanocrystalline silicon. *Applied Physics Letters*, **1994**, 65, 1537-1539	3.4	154
103	Mechanical properties of superhard nanocomposites. *Surface and Coatings Technology*, **2001**, 146-147, 175-182	4.4	135
102	Stability and strength of transition-metal tetraborides and triborides. *Physical Review Letters*, **2012**, 108, 255502	7.4	124
101	Superhard nitride-based nanocomposites: role of interfaces and effect of impurities. *Physical Review Letters*, **2006**, 97, 086102	7.4	114
100	Microstructure of novel superhard nanocrystalline-amorphous composites as analyzed by high resolution transmission electron microscopy. *Journal of Vacuum Science & Technology an Official Journal of the American Vacuum Society B, Microelectronics Processing and Phenomena*, **1998**, 16, 19		111
99	Conditions required for achieving superhardness of ⩾45GPa in nc-TiN/a-Si3N4 nanocomposites. *Materials Science & Engineering A: Structural Materials: Properties, Microstructure and Processing* , **2004**, 384, 102-116	5.3	103
98	Recent search for new superhard materials: Go nano!. *Journal of Vacuum Science and Technology A: Vacuum, Surfaces and Films*, **2013**, 31, 050822	2.9	99
97	The formation and role of interfaces in superhard nc-MenN/a-Si3N4 nanocomposites. *Surface and Coatings Technology*, **2007**, 201, 6064-6070	4.4	89
96	Metastable phases and spinodal decomposition in Ti1−xAlxN system studied by ab initio and thermodynamic modeling, a comparison with the TiN–Si3N4 system. *Materials Science & Engineering A: Structural Materials: Properties, Microstructure and Processing*, **2007**, 448, 111-119	5.3	86
95	Limits to the strength of super- and ultrahard nanocomposite coatings. *Journal of Vacuum Science and Technology A: Vacuum, Surfaces and Films*, **2003**, 21, 532-544	2.9	86
94	On the spinodal nature of the phase segregation and formation of stable nanostructure in the Ti–Si–N system. *Materials Science & Engineering A: Structural Materials: Properties, Microstructure and Processing*, **2006**, 424, 128-137	5.3	85

93	Comparative study of the tribological behaviour of superhard nanocomposite coatings nc-TiN/a-Si3N4 with TiN. *Surface and Coatings Technology*, **2005**, 194, 143-148	4.4	85
92	Mechanical and electronic properties of hard rhenium diboride of low elastic compressibility studied by first-principles calculation. *Applied Physics Letters*, **2007**, 91, 201914	3.4	83
91	Anisotropic ideal strengths and chemical bonding of wurtzite BN in comparison to zincblende BN. *Physical Review B*, **2008**, 77,	3.3	76
90	Phase stabilities and spinodal decomposition in the Cr1−xAlxN system studied by ab initio LDA and thermodynamic modeling: Comparison with the Ti1−xAlxN and TiN/Si3N4 systems. *Acta Materialia*, **2007**, 55, 4615-4624	8.4	71
89	Phase stabilities and thermal decomposition in the Zr1−xAlxN system studied by ab initio calculation and thermodynamic modeling. *Acta Materialia*, **2008**, 56, 968-976	8.4	69
88	Properties of superhard nc-TiN/a-BN and nc-TiN/a-BN/a-TiB2 nanocomposite coatings prepared by plasma induced chemical vapor deposition. *Surface and Coatings Technology*, **2006**, 200, 2978-2989	4.4	67
87	Phase stabilities of self-organized nc-TiN/a-Si3N4 nanocomposites and of Ti1−xSixNy solid solutions studied by ab initio calculation and thermodynamic modeling. *Thin Solid Films*, **2008**, 516, 2264-2275	2.2	65
86	Thermal stability of nc-TiN/a-BN/a-TiB2 nanocomposite coatings deposited by plasma chemical vapor deposition. *Thin Solid Films*, **2004**, 467, 133-139	2.2	65
85	First principles studies of ideal strength and bonding nature of AlN polymorphs in comparison to TiN. *Applied Physics Letters*, **2007**, 91, 031906	3.4	62
84	Development of novel coating technology by vacuum arc with rotating cathodes for industrial production of nc-(Al1−x Ti x)N/a-Si3N4 superhard nanocomposite coatings for dry, hard machining. *Plasma Chemistry and Plasma Processing*, **2004**, 24, 493-510	3.6	61
83	Electronic and mechanical properties of nanocrystalline composites when approaching molecular size. *Thin Solid Films*, **1997**, 297, 145-153	2.2	59
82	Origin of the hardness enhancement in superhard nc-TiN/a-Si3N4 and ultrahard nc-TiN/a-Si3N4/TiSi2 nanocomposites. *Philosophical Magazine Letters*, **2007**, 87, 955-966	1	58
81	The issue of the reproducibility of deposition of superhard nanocomposites with hardness of 50 GPa. *Surface and Coatings Technology*, **2006**, 200, 3876-3885	4.4	58
80	On the measurement of hardness of super-hard coatings. *Surface and Coatings Technology*, **2006**, 200, 5645-5654	4.4	58
79	Mechanical strengths of silicon nitrides studied by ab initio calculations. *Applied Physics Letters*, **2007**, 90, 191903	3.4	52
78	Possible role of oxygen impurities in degradation of nc-TiN/a-Si3N4 nanocomposites. *Journal of Vacuum Science & Technology an Official Journal of the American Vacuum Society B, Microelectronics Processing and Phenomena*, **2005**, 23, L17		52
77	Degradation of superhard nanocomposites by built-in impurities. *Journal of Vacuum Science & Technology an Official Journal of the American Vacuum Society B, Microelectronics Processing and Phenomena*, **2004**, 22, L5		49
76	Thermodynamic stability and unusual strength of ultra-incompressible rhenium nitrides. *Physical Review B*, **2011**, 83,	3.3	48

75	Role of oxygen impurities in etching of silicon by atomic hydrogena). *Journal of Vacuum Science and Technology A: Vacuum, Surfaces and Films*, **2008**, 26, 313-320	2.9	43
74	Tailoring Raney-catalysts for the selective hydrogenation of butyronitrile to n-butylamine. *Journal of Catalysis*, **2007**, 245, 237-248	7.3	43
73	Mechanical properties and hardness of boron and boron-rich solids. *Journal of Superhard Materials*, **2011**, 33, 409-420	0.9	41
72	Stability of TiBN solid solutions and the formation of nc-TiN/a-BN nanocomposites studied by combined ab initio and thermodynamic calculations. *Acta Materialia*, **2008**, 56, 4440-4449	8.4	38
71	First-principles quantum molecular dynamics study of Ti Zr N(111)/SiN heterostructures and comparison with experimental results. *Science and Technology of Advanced Materials*, **2014**, 15, 025007	7.1	36
70	Phase stabilities and decomposition mechanism in the ZrSiN system studied by combined ab initio DFT and thermodynamic calculation. *Acta Materialia*, **2011**, 59, 297-307	8.4	35
69	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. *Surface and Coatings Technology*, **2009**, 203, 3385-3391	4.4	34
68	Study of spinodal decomposition and formation of nc-Al2O3/ZrO2 nanocomposites by combined ab initio density functional theory and thermodynamic modeling. *Acta Materialia*, **2011**, 59, 3498-3509	8.4	34
67	Chemistry and Solid State Physics of Microcrystalline Silicon. *Materials Research Society Symposia Proceedings*, **1989**, 164, 39		34
66	Comparative first-principles study of TiN/SiNx/TiN interfaces. *Physical Review B*, **2012**, 85,	3.3	33
65	Recent attempts to design new super- and ultrahard solids leads to nano-sized and nano-structured materials and coatings. *Journal of Nanoscience and Nanotechnology*, **2011**, 11, 14-35	1.3	33
64	Strain and deformation in ultra-hard nanocomposites nc-TiN/a-BN under hydrostatic pressure. *Materials Science & Engineering A: Structural Materials: Properties, Microstructure and Processing* , **2006**, 437, 379-387	5.3	33
63	Possible contribution of SiH2 and SiH3 in the plasma-induced deposition of amorphous silicon from silane. *Applied Physics Letters*, **1990**, 56, 1766-1768	3.4	32
62	Anisotropic ideal strengths of superhard monoclinic and tetragonal carbon and their electronic origin. *Physical Review B*, **2011**, 83,	3.3	29
61	Elastic moduli of nc-TiN/a-Si3N4 nanocomposites: Compressible, yet superhard. *Journal of Physics and Chemistry of Solids*, **2010**, 71, 1175-1178	3.9	24
60	Chemistry, physics and fracture mechanics in search for superhard materials, and the origin of superhardness in nc-TiN/a-Si3N4 and related nanocomposites. *Journal of Physics and Chemistry of Solids*, **2007**, 68, 1161-1168	3.9	24
59	Elastic properties of nc-TiN-Si3N4 and nc-TiN-BN nanocomposite films by surface Brillouin scattering. *Journal of Applied Physics*, **2005**, 97, 054308	2.5	24
58	On the possible origin of the photoluminescence from oxidized nanocrystalline silicon. *Thin Solid Films*, **1995**, 255, 92-95	2.2	24

57	Mechanism of the B3 to B1 transformation in cubic AlN under uniaxial stress. *Physical Review B*, **2007**, 76,	3.3	23
56	Open questions regarding the mechanism of plasma-induced deposition of silicon. *Plasma Chemistry and Plasma Processing*, **1991**, 11, 323-334	3.6	23
55	First-principles study of TiN/SiC/TiN interfaces in superhard nanocomposites. *Physical Review B*, **2012**, 86,	3.3	22
54	Design of ultrahard materials: Go nano!. *Philosophical Magazine*, **2010**, 90, 4101-4115	1.6	22
53	Deformation paths and atomistic mechanism of B4-B1 phase transformation in aluminium nitride. *Acta Materialia*, **2009**, 57, 2259-2265	8.4	22
52	Crystalline-to-amorphous transition in Ti1−xSixN solid solution and the stability of fcc SiN studied by combined ab initio density functional theory and thermodynamic calculations. *Physical Review B*, **2007**, 76,	3.3	22
51	Structure and photoluminescence features of nanocrystalline Si/SiO[sub 2] films produced by plasma chemical vapor deposition and post-treatment. *Journal of Vacuum Science & Technology an Official Journal of the American Vacuum Society B, Microelectronics Processing and Phenomena*, **2002**, 20, 1368		22
50	Thermally activated relaxation processes in superhard nc-TiN/a-SiN and nc-(TiAl)N/a-SiN nanocomposites studied by means of internal friction measurements. *Composites Science and Technology*, **2005**, 65, 735-740	8.6	20
49	Bond deformation paths and electronic instabilities of ultraincompressible transition metal diborides: Case study of OsB2 and IrB2. *Physical Review B*, **2014**, 90,	3.3	19
48	Origin of different plastic resistance of transition metal nitrides and carbides: Stiffer yet softer. *Scripta Materialia*, **2013**, 68, 913-916	5.6	19
47	Plasma-induced deposition of titanium nitride from TiCl4 in a direct current glow discharge: Control of the chlorine content and gas-phase nucleation. *Plasma Chemistry and Plasma Processing*, **1996**, 16, 341-363	3.6	19
46	Decomposition mechanism of Al1−xSixNy solid solution and possible mechanism of the formation of covalent nanocrystalline AlN/Si3N4 nanocomposites. *Acta Materialia*, **2013**, 61, 4226-4236	8.4	18
45	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. *Thin Solid Films*, **2013**, 545, 391-400	2.2	18
44	Pseudomorphic growth of ultrathin cubic 3C-SiC films on Si(100) by temperature programmed organometallic chemical vapor deposition. *Journal of Applied Physics*, **1999**, 85, 2652-2657	2.5	18
43	First-principles molecular dynamics investigation of thermal and mechanical stability of the TiN(001)/AlN and ZrN(001)/AlN heterostructures. *Thin Solid Films*, **2014**, 564, 284-293	2.2	17
42	Non-linear finite element constitutive modeling of mechanical properties of hard and superhard materials studied by indentation. *Materials Science & Engineering A: Structural Materials: Properties, Microstructure and Processing*, **2006**, 422, 205-217	5.3	17
41	Plasma-induced deposition of thin films of aluminum oxide. *Plasma Chemistry and Plasma Processing*, **1992**, 12, 129-145	3.6	17
40	Mechanical strength and electronic instabilities in ultra-incompressible platinum dinitrides. *Physical Review B*, **2015**, 92,	3.3	15

39	Ultra thin 3C-SiC pseudomorphic films on Si (100) prepared by organometallic CVD with methyltrichlorosilane. *Thin Solid Films*, **1998**, 318, 18-21	2.2	15
38	Evaluation of the internal friction and elastic modulus of the superhard films. *Materials Science & Engineering A: Structural Materials: Properties, Microstructure and Processing*, **2004**, 370, 186-190	5.3	15
37	High-rate deposition of AlTiN and related coatings with dense morphology by central cylindrical direct current magnetron sputtering. *Thin Solid Films*, **2014**, 556, 361-368	2.2	14
36	The deformation of the substrate during indentation into superhard coatings: B□kle's rule revised. *Surface and Coatings Technology*, **2015**, 284, 206-214	4.4	14
35	Superhard nanocomposites: design concept, properties, present and future industrial applications. *EPJ Applied Physics*, **2004**, 28, 313-317	1.1	14
34	Spectroscopic studies of the role of silyl radicals in photolysis of polysilanes. *Chemical Physics Letters*, **2003**, 374, 257-263	2.5	11
33	Effecting of oxygen and chlorine on nano-structured TiN/Si3N4 films hardness. *Materials Letters*, **2005**, 59, 838-841	3.3	11
32	Concept for the Design of Superhard Nanocomposites with High Thermal Stability: Their Preparation, Properties, and Industrial Applications. *Nanostructure Science and Technology*, **2006**, 347-406	0.9	9
31	Torsion pendulum method to evaluate the internal friction and elastic modulus of films. *Review of Scientific Instruments*, **2003**, 74, 2477-2480	1.7	8
30	The origin of superhardness in TiN/Si3N4 nanocomposites: the role of the interfacial monolayer. *High Pressure Research*, **2006**, 26, 119-125	1.6	7
29	Internal friction studies of nanocomposite superhard nc-TiN/a-Si3N4 and nc-(Ti1□Alx)N/a-Si3N4 films. *Materials Science & Engineering A: Structural Materials: Properties, Microstructure and Processing*, **2006**, 442, 328-331	5.3	7
28	Percolation Threshold in Superhard Nanocrystalline Transition Metal-Amorphous Silicon Nitride Composites: The Control and Understanding of the Superhardness. *Materials Research Society Symposia Proceedings*, **1996**, 457, 407		6
27	Ultrastrong □Bonded Interface as Ductile Plastic Flow Channel in Nanostructured Diamond. *ACS Applied Materials & Interfaces*, **2020**, 12, 4135-4142	9.5	5
26	The Role of nc-TiN Surface Coverage by a-Si3N4 for the Control of Room Temperature and In-Dry-Air Oxidation Resistance of nc-TiN/a-Si3N4/a- and nc-TiSi2 Nanocomposites. *Materials Science Forum*, **2003**, 437-438, 403-406	0.4	4
25	Photodegradataion and Stability of a-Si Prepared at High Deposition Rates. *Materials Research Society Symposia Proceedings*, **1992**, 258, 45		4
24	Photoluminescence from Nanocrystalline Silicon-Amorphous Silica Composite Materials: Changing the Color and Decay Time. *Solid State Phenomena*, **1996**, 51-52, 225-236	0.4	3
23	Industrial Applications of Hard and Superhard Nanocomposite Coatings on Tools for Machining, Forming, Stamping and Injection Molding. *Advanced Materials Research*, **2016**, 1135, 218-233	0.5	2
22	Search for Ultrahard Materials and Recent Progress in the Understanding of Hardness Enhancement and Properties of Nanocomposites. *Solid State Phenomena*, **2010**, 159, 1-10	0.4	2

21	Stability of structural nanocrystalline materials grain growth93-133		2
20	Towards the Industrialization of Superhard Nanocrystalline Composites for High Speed and Dry Machining. *Materials Research Society Symposia Proceedings*, **2002**, 750, 1		2
19	Surface Processes which Control the Deposition and Etching in the Sih4/H2/Si(S)-Glow Discharge System: The Competition Between Atoms, Ions and Electronics. *Materials Research Society Symposia Proceedings*, **1990**, 201, 19		2
18	Superhard and Ultrahard Nanostructured Materials and Coatings **2016**, 167-210		1
17	Photoluminescence from nanocrystalline silicon nc-Si, nc-Si/SiO2 nanocomposites, and nc-Si oxidized in O2 and treated in H2O. *Journal of Vacuum Science and Technology A: Vacuum, Surfaces and Films*, **2015**, 33, 043001	2.9	1
16	Processing of structural nanocrystalline materials25-92		1
15	Applications of structural nanomaterials341-361		1
14	Mechanical Properties of Superhard Nanocomposites with High Thermal Stability. *Materials Research Society Symposia Proceedings*, **2003**, 791, 1		1
13	Models of the Interfaces in Superhard TiN-Based Heterostructures and Nanocomposites from First-Principles **2014**, 45-91		1
12	Photolumineszenzeigenschaften von substituierten Silsesquioxanen der Zusammensetzung Rn(SiO1.5)n **1999**, 55-68		1
11	Recent Progress in Superdhard Nanocomposites: Preparation, Properties and Industrial Applications. *NATO Science Series Series II, Mathematics, Physics and Chemistry*, **2004**, 23-34		1
10	Getting Light from Silicon: From Organosilanes to Light Emitting Nanocrystalline Silicon821-835		0
9	Measurements of Hardness and Other Mechanical Properties of Hard and Superhard Materials and Coatings **2016**, 105-134		
8	Nanosized and Nanostructured Hard and Superhard Materials and Coatings **2013**, 207-234		
7	Nanosized and Nanostructured Hard and Superhard Materials and Coatings **2014**, 207-234		
6	Preparation and Characterization of nc-(Ti,Al)N and h-AlN Nanocrystalline Deposited by Plasma CVD Techniques. *Journal of Metastable and Nanocrystalline Materials*, **2005**, 23, 219-222	0.2	
5	Photolumineszenzeigenschaften von substituierten Silsesquioxanen der Zusammensetzung Rn(SiO1.5)n. *Monatshefte F Chemie*, **1999**, 130, 55-68	1.4	
4	The Fundamentals of Hard and Superhard Nanocomposites and Heterostructures **2010**, 1-34		

3 The Fundamentals of Hard and Superhard Nanocomposites and Heterostructures **2010**, 1-34

2 Mechanical Properties and Hardness of Advanced Superhard Nanocrystalline Films and Nanomaterials. *Ceramic Transactions*,151-159 0.1

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