Stan Veprek

List of Publications by Year
in descending order

108 papers	6,573 citations	81743 39 h-index	64668 79 g-index
115 all docs	115 docs citations	115 times ranked	3410 citing authors

#	Article	IF	Citations
1	The search for novel, superhard materials. Journal of Vacuum Science and Technology A: Vacuum, Surfaces and Films, 1999, 17, 2401-2420.	0.9	1,112
2	Different approaches to superhard coatings and nanocomposites. Thin Solid Films, 2005, 476, 1-29.	0.8	704
3	Industrial applications of superhard nanocomposite coatings. Surface and Coatings Technology, 2008, 202, 5063-5073.	2.2	342
4	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.	1.6	236
5	New development in superhard coatings: the superhard nanocrystalline-amorphous composites. Thin Solid Films, 1998, 317, 449-454.	0.8	183
6	Origin of the green/blue luminescence from nanocrystalline silicon. Applied Physics Letters, 1994, 65, 1537-1539.	1.5	175
7	Mechanical properties of superhard nanocomposites. Surface and Coatings Technology, 2001, 146-147, 175-182.	2.2	157
8	Stability and Strength of Transition-Metal Tetraborides and Triborides. Physical Review Letters, 2012, 108, 255502.	2.9	141
9	Superhard Nitride-Based Nanocomposites: Role of Interfaces and Effect of Impurities. Physical Review Letters, 2006, 97, 086102.	2.9	122
10	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.	1.6	116
11	Recent search for new superhard materials: Go nano!. Journal of Vacuum Science and Technology A: Vacuum, Surfaces and Films, 2013, 31, .	0.9	116
12	Conditions required for achieving superhardness of â‰¥45GPa in nc-TiN/a-Si3N4 nanocomposites. Materials Science & Engineering A: Structural Materials: Properties, Microstructure and Processing, 2004, 384, 102-116.	2.6	115
13	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.	0.9	96
14	The formation and role of interfaces in superhard nc-MenN/a-Si3N4 nanocomposites. Surface and Coatings Technology, 2007, 201, 6064-6070.	2.2	96
15	Comparative study of the tribological behaviour of superhard nanocomposite coatings nc-TiN/a-Si3N4 with TiN. Surface and Coatings Technology, 2005, 194, 143-148.	2.2	95
16	On the spinodal nature of the phase segregation and formation of stable nanostructure in the Tiâ€"Siâ€"N system. Materials Science & Engineering A: Structural Materials: Properties, Microstructure and Processing, 2006, 424, 128-137.	2.6	94
17	Metastable phases and spinodal decomposition in Ti1â^'xAlxN system studied by ab initio and thermodynamic modeling, a comparison with the TiNâ€"Si3N4 system. Materials Science & Engineering A: Structural Materials: Properties, Microstructure and Processing, 2007, 448, 111-119.	2.6	91
18	Mechanical and electronic properties of hard rhenium diboride of low elastic compressibility studied by first-principles calculation. Applied Physics Letters, 2007, 91, .	1.5	85

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19	Anisotropic ideal strengths and chemical bonding of wurtzite BN in comparison to zincblende BN. Physical Review B, 2008, 77, .	1.1	83
20	Phase stabilities and thermal decomposition in the Zr1âˆ’Al N system studied by ab initio calculation and thermodynamic modeling. Acta Materialia, 2008, 56, 968-976.	3.8	77
21	Phase stabilities and spinodal decomposition in the Cr1âˆ’xAlxN system studied by ab initio LDA and thermodynamic modeling: Comparison with the Ti1âˆ’xAlxN and TiN/Si3N4 systems. Acta Materialia, 2007, 55, 4615-4624.	3.8	76
22	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.	2.2	73
23	Phase stabilities of self-organized nc-TiN/a-Si3N4 nanocomposites and of Ti1âˆ’xSixNy solid solutions studied by ab initio calculation and thermodynamic modeling. Thin Solid Films, 2008, 516, 2264-2275.	0.8	73
24	Thermal stability of nc-TiN/a-BN/a-TiB2 nanocomposite coatings deposited by plasma chemical vapor deposition. Thin Solid Films, 2004, 467, 133-139.	0.8	72
25	Development of novel coating technology by vacuum arc with rotating cathodes for industrial production of nc-(Al1?xTix)N/a-Si3N4 superhard nanocomposite coatings for dry, hard machining. Plasma Chemistry and Plasma Processing, 2004, 24, 493-510.	1.1	68
26	First principles studies of ideal strength and bonding nature of AlN polymorphs in comparison to TiN. Applied Physics Letters, 2007, 91, .	1.5	66
27	Electronic and mechanical properties of nanocrystalline composites when approaching molecular size. Thin Solid Films, 1997, 297, 145-153.	0.8	65
28	On the measurement of hardness of super-hard coatings. Surface and Coatings Technology, 2006, 200, 5645-5654.	2.2	65
29	The issue of the reproducibility of deposition of superhard nanocomposites with hardness of â‰¥50 GPa. Surface and Coatings Technology, 2006, 200, 3876-3885.	2.2	63
30	Origin of the hardness enhancement in superhard nc-TiN/a-Si₃N₄and ultrahard nc-TiN/a-Si₃N₄/TiSi₂nanocomposites. Philosophical Magazine Letters, 2007, 87, 955-966.	0.5	60
31	Possible role of oxygen impurities in degradation of nc-TiNâˆ•a-Si[sub 3]N[sub 4] nanocomposites. Journal of Vacuum Science & Technology an Official Journal of the American Vacuum Society B, Microelectronics Processing and Phenomena, 2005, 23, L17.	1.6	55
32	Mechanical strengths of silicon nitrides studied by ab initio calculations. Applied Physics Letters, 2007, 90, 191903.	1.5	54
33	Thermodynamic stability and unusual strength of ultra-incompressible rhenium nitrides. Physical Review B, 2011, 83, .	1.1	52
34	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.	1.6	51
35	Role of oxygen impurities in etching of silicon by atomic hydrogen. Journal of Vacuum Science and Technology A: Vacuum, Surfaces and Films, 2008, 26, 313-320.	0.9	50
36	Tailoring Raney-catalysts for the selective hydrogenation of butyronitrile to n-butylamine. Journal of Catalysis, 2007, 245, 237-248.	3.1	47

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37	First-principles quantum molecular dynamics study of Ti_{<i>x</i>}Zr_{1âˆ’<i>x</i>}N(111)/SiN_{<i>y</i>} heterostructures and comparison with experimental results. Science and Technology of Advanced Materials, 2014, 15, 025007.	2.8	47
38	Mechanical properties and hardness of boron and boron-rich solids. Journal of Superhard Materials, 2011, 33, 409-420.	0.5	45
39	Stability of Tiâ€“Bâ€“N 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.	3.8	40
40	Phase stabilities and decomposition mechanism in the Zrâ€“Siâ€“N system studied by combined ab initio DFT and thermodynamic calculation. Acta Materialia, 2011, 59, 297-307.	3.8	37
41	Comparative first-principles study of TiN/SiN<mml:math xmlns:mml="http://www.w3.org/1998/Math/MathML" display="inline"><mml:msub><mml:mrow /><mml:mi>x</mml:mi></mml:msub></mml:math>/TiN interfaces. Physical Review B, 2012, 85, .	1.1	37
42	Chemistry and Solid State Physics of Microcrystalline Silicon. Materials Research Society Symposia Proceedings, 1989, 164, 39.	0.1	35
43	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.	2.6	35
44	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.	2.2	35
45	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.	0.9	34
46	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.	3.8	34
47	Possible contribution of SiH2and SiH3in the plasmaâ€induced deposition of amorphous silicon from silane. Applied Physics Letters, 1990, 56, 1766-1768.	1.5	33
48	Anisotropic ideal strengths of superhard monoclinic and tetragonal carbon and their electronic origin. Physical Review B, 2011, 83, .	1.1	30
49	On the possible origin of the photoluminescence from oxidized nanocrystalline silicon. Thin Solid Films, 1995, 255, 92-95.	0.8	28
50	Elastic properties of nc-TiNâˆ•a-Si3N4 and nc-TiNâˆ•a-BN nanocomposite films by surface Brillouin scattering. Journal of Applied Physics, 2005, 97, 054308.	1.1	26
51	Mechanism of the<mml:math xmlns:mml="http://www.w3.org/1998/Math/MathML" display="inline"><mml:mrow><mml:mi>B</mml:mi><mml:mn>3</mml:mn></mml:mrow></mml:math>to<mml:math xmlns:mml="http://www.w3.org/1998/Math/MathML" display="inline"><mml:mrow><mml:mi>B</mml:mi><mml:mn>1</mml:mn></mml:mrow></mml:math>transformation in cubic AlN under uniaxial stress. Physical Review B, 2007, 76, .	1.1	26
52	Elastic moduli of nc-TiN/a-Si3N4 nanocomposites: Compressible, yet superhard. Journal of Physics and Chemistry of Solids, 2010, 71, 1175-1178.	1.9	26
53	Open questions regarding the mechanism of plasma-induced deposition of silicon. Plasma Chemistry and Plasma Processing, 1991, 11, 323-334.	1.1	25
54	Deformation paths and atomistic mechanism of B4 â†’ B1 phase transformation in aluminium nitride. Acta Materialia, 2009, 57, 2259-2265.	3.8	25

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55	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.	1.9	24
56	First-principles study of TiN/SiC/TiN interfaces in superhard nanocomposites. Physical Review B, 2012, 86, .	1.1	24
57	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.	0.8	24
58	Origin of different plastic resistance of transition metal nitrides and carbides: Stiffer yet softer. Scripta Materialia, 2013, 68, 913-916.	2.6	24
59	Crystalline-to-amorphous transition in<mml:math xmlns:mml="http://www.w3.org/1998/Math/MathML" display="inline"><mml:mrow><mml:msub><mml:mi mathvariant="normal">Ti</mml:mi><mml:mrow><mml:mn>1</mml:mn><mml:mo>â^'</mml:mo><mml:mi>x</mml:mi></mml:mrow></ mathvariant="normal">Si</mml:mi><mml:mi>x</mml:mi></mml:msub><mml:mi mathvariant="normal">N</mml:mi></mml:mrow></mml:math>solid solution and the stability of fcc SiN studied by combined<i>ab initio</i>density functional theory and therm. Physical Review B, 2007, 76	1.1	23
60	Design of ultrahard materials: Go nano!. Philosophical Magazine, 2010, 90, 4101-4115.	0.7	23
61	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.	1.6	22
62	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.	0.8	22
63	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.	1.1	21
64	Decomposition mechanism of Al1â^'xSixNy solid solution and possible mechanism of the formation of covalent nanocrystalline AlN/Si3N4 nanocomposites. Acta Materialia, 2013, 61, 4226-4236.	3.8	21
65	Pseudomorphic growth of ultrathin cubic 3Câ€"SiC films on Si(100) by temperature programmed organometallic chemical vapor deposition. Journal of Applied Physics, 1999, 85, 2652-2657.	1.1	20
66	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.	3.8	20
67	Plasma-induced deposition of thin films of aluminum oxide. Plasma Chemistry and Plasma Processing, 1992, 12, 129-145.	1.1	19
68	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.	2.6	19
69	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.	2.6	19
70	Bond deformation paths and electronic instabilities of ultraincompressible transition metal diborides: Case study of<mml:math xmlns:mml="http://www.w3.org/1998/Math/MathML"><mml:msub><mml:mi>OsB</mml:mi><mml:mn>2</mml:mn></mml:msub></mm xmlns:mml="http://www.w3.org/1998/Math/MathML"><mml:msub><mml:mi>IrB</mml:mi><mml:mn>2</mml:mn></mml:msub></mml: Physical Review B, 2014, 90, .	1.1	19
71	The deformation of the substrate during indentation into superhard coatings: BÃ¼ckle's rule revised. Surface and Coatings Technology, 2015, 284, 206-214.	2.2	18
72	Mechanical strength and electronic instabilities in ultra-incompressible platinum dinitrides. Physical Review B, 2015, 92, .	1.1	17

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73	Superhard nanocomposites: design concept, properties, present and future industrial applications. EPJ Applied Physics, 2004, 28, 313-317.	0.3	16
74	Ultra thin 3C-SiC pseudomorphic films on Si (100) prepared by organometallic CVD with methyltrichlorosilane. Thin Solid Films, 1998, 318, 18-21.	0.8	15
75	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.	0.8	15
76	Spectroscopic studies of the role of silyl radicals in photolysis of polysilanes. Chemical Physics Letters, 2003, 374, 257-263.	1.2	11
77	Effecting of oxygen and chlorine on nano-structured TiN/Si3N4 films hardness. Materials Letters, 2005, 59, 838-841.	1.3	11
78	Concept for the Design of Superhard Nanocomposites with High Thermal Stability: Their Preparation, Properties, and Industrial Applications. Nanostructure Science and Technology, 2006, , 347-406.	0.1	11
79	Torsion pendulum method to evaluate the internal friction and elastic modulus of films. Review of Scientific Instruments, 2003, 74, 2477-2480.	0.6	10
80	The origin of superhardness in TiN/Si3N4nanocomposites: the role of the interfacial monolayer. High Pressure Research, 2006, 26, 119-125.	0.4	8
81	Internal friction studies of nanocomposite superhard nc-TiN/a-Si3N4 and nc-(Ti1âˆ’xAlx)N/a-Si3N4 films. Materials Science & Engineering A: Structural Materials: Properties, Microstructure and Processing, 2006, 442, 328-331.	2.6	7
82	Industrial Applications of Hard and Superhard Nanocomposite Coatings on Tools for Machining, Forming, Stamping and Injection Molding. Advanced Materials Research, 0, 1135, 218-233.	0.3	7
83	Ultrastrong Ï€-Bonded Interface as Ductile Plastic Flow Channel in Nanostructured Diamond. ACS Applied Materials & Interfaces, 2020, 12, 4135-4142.	4.0	7
84	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.	0.1	6
85	Photodegradataion and Stability of a-Si Prepared at High Deposition Rates. Materials Research Society Symposia Proceedings, 1992, 258, 45.	0.1	4
86	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.	0.3	4
87	Photoluminescence from Nanocrystalline Silicon-Amorphous Silica Composite Materials: Changing the Color and Decay Time. Solid State Phenomena, 1996, 51-52, 225-236.	0.3	3
88	Towards the Industrialization of Superhard Nanocrystalline Composites for High Speed and Dry Machining. Materials Research Society Symposia Proceedings, 2002, 750, 1.	0.1	3
89	Search for Ultrahard Materials and Recent Progress in the Understanding of Hardness Enhancement and Properties of Nanocomposites. Solid State Phenomena, 2010, 159, 1-10.	0.3	3
90	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.	0.1	2

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91	Mechanical Properties of Superhard Nanocomposites with High Thermal Stability. Materials Research Society Symposia Proceedings, 2003, 791, 1.	0.1	2
92	Stability of structural nanocrystalline materials â€“ grain growth. , 0, , 93-133.		2
93	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, .	0.9	2
94	Superhard and Ultrahard Nanostructured Materials and Coatings. , 2016, , 167-210.		2
95	Getting Light from Silicon: From Organosilanes to Light Emitting Nanocrystalline Silicon. , 0, , 821-835.		1
96	Processing of structural nanocrystalline materials. , 0, , 25-92.		1
97	Applications of structural nanomaterials. , 0, , 341-361.		1
98	Recent Progress in Superdhard Nanocomposites: Preparation, Properties and Industrial Applications. NATO Science Series Series II, Mathematics, Physics and Chemistry, 2004, , 23-34.	0.1	1
99	Models of the Interfaces in Superhard TiN-Based Heterostructures and Nanocomposites from First-Principles. , 2014, , 45-91.		1
100	Photolumineszenzeigenschaften von substituierten Silsesquioxanen der Zusammensetzung R n (SiO1.5) n. , 1999, , 55-68.		1
101	Photolumineszenzeigenschaften von substituierten Silsesquioxanen der Zusammensetzung Rn(SiO1.5)n. Monatshefte FÃ¼r Chemie, 1999, 130, 55-68.	0.9	0
102	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.	0.1	0
103	ICMCTF 2014 - Preface. Thin Solid Films, 2014, 572, 1.	0.8	0
104	In Gratitude to Steven Girshick. Plasma Chemistry and Plasma Processing, 2014, 34, 703-704.	1.1	0
105	Measurements of Hardness and Other Mechanical Properties of Hard and Superhard Materials and Coatings. , 2016, , 105-134.		0
106	The Fundamentals of Hard and Superhard Nanocomposites and Heterostructures. , 2010, , 1-34.		0
107	The Fundamentals of Hard and Superhard Nanocomposites and Heterostructures. , 2010, , 1-34.		0
108	Concept for the Design of Superhard Nanocomposites with High Thermal Stability: Their Preparation, Properties, and Industrial Applications. , 0, , 347-406.		0