

Investigation of high power impulse magnetron sputter adhesion enhancement of hard coatings on steel

Surface and Coatings Technology

200, 6495-6499

DOI: [10.1016/j.surfcoat.2005.11.082](https://doi.org/10.1016/j.surfcoat.2005.11.082)

Citation Report

#	ARTICLE	IF	CITATIONS
1	On the deposition rate in a high power pulsed magnetron sputtering discharge. Applied Physics Letters, 2006, 89, 154104.	1.5	149
2	Influence of Ion Bombardment Process on Adhesion between CrN Coatings and Aluminum Alloy. Key Engineering Materials, 2007, 353-358, 1887-1890.	0.4	1
3	Metal plasmas for the fabrication of nanostructures. Journal Physics D: Applied Physics, 2007, 40, 2272-2284.	1.3	73
4	Evaluation of the interfacial bonding between fibrous substrate and sputter coated copper. Surface and Coatings Technology, 2008, 202, 4673-4680.	2.2	25
5	Structure and mechanical properties of CrN/TiN multilayer coatings prepared by a combined HIPIMS/UBMS deposition technique. Thin Solid Films, 2008, 517, 1239-1244.	0.8	68
6	High Efficiency Copper Indium Gallium DiSelenide (CIGS) by High Power Impulse Magnetron Sputtering (HIPIMS): A Promising and Scalable Application in Thin-film Photovoltaics. Materials Research Society Symposia Proceedings, 2009, 1210, 1.	0.1	4
7	Modulated pulse power sputtered chromium coatings. Thin Solid Films, 2009, 518, 1566-1570.	0.8	60
8	Ion energy and mass distributions of the plasma during modulated pulse power magnetron sputtering. Surface and Coatings Technology, 2009, 203, 3676-3685.	2.2	103
9	High power pulsed magnetron sputtering: Fundamentals and applications. Journal of Alloys and Compounds, 2009, 483, 530-534.	2.8	111
10	Electron energy loss spectroscopy of nano-scale CrAlYN/CrN/CrAlY(O)N/Cr(O)N multilayer coatings deposited by unbalanced magnetron sputtering. Thin Solid Films, 2010, 518, 5121-5127.	0.8	16
11	Low friction CrN/TiN multilayer coatings prepared by a hybrid high power impulse magnetron sputtering/DC magnetron sputtering deposition technique. Thin Solid Films, 2010, 518, 5553-5557.	0.8	39
12	Structure and properties of high power impulse magnetron sputtering and DC magnetron sputtering CrN and TiN films deposited in an industrial scale unit. Thin Solid Films, 2010, 518, 5558-5564.	0.8	98
13	High power pulsed magnetron sputtering: A review on scientific and engineering state of the art. Surface and Coatings Technology, 2010, 204, 1661-1684.	2.2	854
14	High power impulse magnetron sputtering and related discharges: Scalable plasma sources for plasma-based ion implantation and deposition. Surface and Coatings Technology, 2010, 204, 2864-2868.	2.2	51
15	Industrial-scale deposition of highly adherent CN _x films on steel substrates. Surface and Coatings Technology, 2010, 204, 3349-3357.	2.2	33
16	Adaption of graded Cr/CrN-interlayer thickness to cemented carbide substrates' roughness for improving the adhesion of HPPMS PVD films and the cutting performance. Surface and Coatings Technology, 2010, 205, 1564-1570.	2.2	35
17	Reactive deposition of Al _x N coatings in Ar/N ₂ atmospheres using pulsed-DC or high power impulse magnetron sputtering discharges. Vacuum, 2010, 85, 120-125.	1.6	33
18	Influence of Substrate Biasing on (Al, Ti)N Thin Films Deposited by a Hybrid HiPIMS/DC Sputtering Process. IEEE Transactions on Plasma Science, 2010, 38, 3040-3045.	0.6	10

#	ARTICLE	IF	CITATIONS
19	Time resolved optical emission spectroscopy of an HPPMS coating process. Journal Physics D: Applied Physics, 2010, 43, 075205.	1.3	13
20	Distance-dependent plasma composition and ion energy in high power impulse magnetron sputtering. Journal Physics D: Applied Physics, 2010, 43, 275204.	1.3	23
21	The 2D plasma potential distribution in a HiPIMS discharge. Journal Physics D: Applied Physics, 2011, 44, 425201.	1.3	45
22	High rate deposition of thick CrN and Cr ₂ N coatings using modulated pulse power (MPP) magnetron sputtering. Surface and Coatings Technology, 2011, 205, 3226-3234.	2.2	125
23	Comparison of pulsed dc and rf hollow cathode depositions of Cr and CrN films. Surface and Coatings Technology, 2011, 205, 4169-4176.	2.2	12
24	Recent advances in modulated pulsed power magnetron sputtering for surface engineering. Jom, 2011, 63, 48-58.	0.9	77
25	Influence of Ti/TiAlN-multilayer designs on their residual stresses and mechanical properties. Applied Surface Science, 2011, 257, 8550-8557.	3.1	75
26	Effects of the magnetic field strength on the modulated pulsed power magnetron sputtering of metallic films. Journal of Vacuum Science and Technology A: Vacuum, Surfaces and Films, 2011, 29, .	0.9	13
27	Enhancement of Ti-containing hydrogenated carbon (TiC:H) films by high-power plasma-sputtering. Applied Surface Science, 2012, 258, 3433-3437.	3.1	6
28	Comparison of (Cr _{0.75} Al _{0.25})N Coatings Deposited by Conventional and High Power Pulsed Magnetron Sputtering. Contributions To Plasma Physics, 2012, 52, 601-606.	0.5	6
29	Ti-containing hydrogenated carbon films fabricated by high-power plasma magnetron sputtering. Transactions of Nonferrous Metals Society of China, 2012, 22, 1381-1386.	1.7	2
30	Adhesion improvement of carbon-based coatings through a high ionization deposition technique. Journal of Physics: Conference Series, 2012, 370, 012009.	0.3	33
31	Pressure effects on HiPIMS deposition of hafnium films. Surface and Coatings Technology, 2012, 206, 3795-3802.	2.2	12
32	Hybrid HiPIMS and DC magnetron sputtering deposition of TiN coatings: Deposition rate, structure and tribological properties. Surface and Coatings Technology, 2013, 236, 13-21.	2.2	76
33	Microstructure and Platelet Adhesion Behavior of Titanium Oxide Films Synthesized by Reactive High-Power Pulse Magnetron Sputtering. IEEE Transactions on Plasma Science, 2013, 41, 1837-1843.	0.6	6
34	The Effect of Pulse DC and DC Substrate Bias during in situ Cleaning PVD Process on Surface Roughness. Procedia Engineering, 2013, 53, 562-568.	1.2	12
35	Characterization and device applications of ZnO films deposited by high power impulse magnetron sputtering (HiPIMS). Journal Physics D: Applied Physics, 2013, 46, 165105.	1.3	13
36	Flow curve determination on dc-MS and HPPMS CrAlN coatings. Journal Physics D: Applied Physics, 2013, 46, 084006.	1.3	6

#	ARTICLE	IF	CITATIONS
37	Graded nanostructured interfacial layers fabricated by high power pulsed magnetron sputtering and plasma immersion ion implantation and deposition (HPPMS&PIL&D). Surface and Coatings Technology, 2013, 236, 320-325.	2.2	5
38	(Cr _{1-x} Al _x)N: A comparison of direct current, middle frequency pulsed and high power pulsed magnetron sputtering for injection molding components. Thin Solid Films, 2013, 528, 180-186.	0.8	88
39	Effects of substrate bias voltage on adhesion of DC magnetron-sputtered copper films on E24 carbon steel: investigations by Auger electron spectroscopy. Journal of Adhesion Science and Technology, 2013, 27, 2367-2386.	1.4	4
40	Performance of PVD AlTiCrN coating during machining of austenitic stainless steel. Surface Engineering, 2013, 29, 402-407.	1.1	25
41	Investigation of the properties of low temperature (Cr _{1-x} Al _x)N coatings deposited via hybrid PVD DC&MSIP/HPPMS. Materialwissenschaft Und Werkstofftechnik, 2013, 44, 667-672.	0.5	8
43	The Influences of Process Parameters on Properties of CrN Coatings Deposited by Closed Field Unbalanced Magnetron Sputtering. Advanced Materials Research, 2014, 908, 38-41.	0.3	0
44	Downstream plasma transport and metal ionization in a high-powered pulsed-plasma magnetron. Journal of Applied Physics, 2014, 115, 223301.	1.1	21
45	A Guillemin type E pulse forming network as the driver for a pulsed, high density plasma source. Review of Scientific Instruments, 2014, 85, 063503.	0.6	14
46	HIPIMS deposition of TiAlN films on inner wall of micro-dies and its applicability in micro-sheet metal forming. Surface and Coatings Technology, 2014, 250, 44-51.	2.2	30
47	History of diamond-like carbon films From first experiments to worldwide applications. Surface and Coatings Technology, 2014, 242, 214-225.	2.2	447
48	Enhanced ionization sputtering: A concept for superior industrial coatings. Surface and Coatings Technology, 2014, 255, 43-51.	2.2	37
49	Effect of peak target power on the properties of Cr thin films sputtered by HIPIMS in deep oscillation magnetron sputtering (DOMS) mode. Surface and Coatings Technology, 2014, 258, 249-256.	2.2	63
50	Comparative analysis of Cr-B coatings deposited by magnetron sputtering in DC and HIPIMS modes. Technical Physics Letters, 2014, 40, 614-617.	0.2	11
51	A review comparing cathodic arcs and high power impulse magnetron sputtering (HiPIMS). Surface and Coatings Technology, 2014, 257, 308-325.	2.2	200
52	Three-dimensional thickness and property distribution of TiC films deposited by DC magnetron sputtering and HIPIMS. Surface and Coatings Technology, 2014, 250, 37-43.	2.2	26
53	The adhesion and corrosion resistance of TiO films on CoCrMo alloy fabricated by high power pulsed magnetron sputtering (HPPMS). Surface and Coatings Technology, 2014, 252, 8-14.	2.2	15
54	Investigation on plastic behavior of HPPMS CrN, AlN and CrN/AlN-multilayer coatings using finite element simulation and nanoindentation. Surface and Coatings Technology, 2015, 284, 310-317.	2.2	43
55	Co-deposition of band-gap tuned ZnMgO using high impulse power- and dc-magnetron sputtering. Journal Physics D: Applied Physics, 2015, 48, 135301.	1.3	8

#	ARTICLE	IF	CITATIONS
56	Wear and corrosion resistance of CrN/TiN superlattice coatings deposited by a combined deep oscillation magnetron sputtering and pulsed dc magnetron sputtering. Applied Surface Science, 2015, 351, 332-343.	3.1	98
57	Study of magnetic iron nitride thin films deposited by high power impulse magnetron sputtering. Surface and Coatings Technology, 2015, 275, 264-269.	2.2	30
58	Mechanical and tribological properties of CrN/TiN superlattice coatings deposited by a combination of arc-free deep oscillation magnetron sputtering with pulsed dc magnetron sputtering. Thin Solid Films, 2015, 594, 147-155.	0.8	32
59	Thermal Shock and Oxidation Behavior of HiPIMS TiAlN Coatings Grown on Ti-48Al-2Cr-2Nb Intermetallic Alloy. Materials, 2016, 9, 961.	1.3	11
60	Improved adhesion of carbon nitride coatings on steel substrates using metal HiPIMS pretreatments. Surface and Coatings Technology, 2016, 302, 454-462.	2.2	37
61	Rolling contact fatigue of bearing components coated with carbon nitride thin films. Tribology International, 2016, 98, 100-107.	3.0	21
62	(Cr,Al)N/(Cr,Al)ON Oxy-nitride Coatings deposited by Hybrid dcMS/HPPMS for Plastics Processing Applications. Surface and Coatings Technology, 2016, 308, 394-403.	2.2	37
63	On the plastic deformation of chromium-based nitride hard coatings deposited by hybrid dcMS/HPPMS: A fundamental study using nanoscratch test. Surface and Coatings Technology, 2016, 308, 298-306.	2.2	16
64	Influence of dcMS and HPPMS in a dcMS/HPPMS hybrid process on plasma and coating properties. Thin Solid Films, 2016, 620, 188-196.	0.8	32
65	Mass spectrometry analyzes to highlight differences between short and long HiPIMS discharges. Applied Surface Science, 2016, 390, 497-505.	3.1	29
66	Structure, adhesion and corrosion behavior of CrN/TiN superlattice coatings deposited by the combined deep oscillation magnetron sputtering and pulsed dc magnetron sputtering. Surface and Coatings Technology, 2016, 293, 21-27.	2.2	53
67	Reduced friction on $\hat{1}^3$ -Mo ₂ N coatings deposited by high power impulse magnetron sputtering on microstructured surfaces. Tribology International, 2017, 106, 41-45.	3.0	10
68	Microstructure and mechanical properties of Cr films deposited with different peak powers by high-power impulse magnetron sputtering. Rare Metals, 2023, 42, 327-335.	3.6	2
69	Process- and optoelectronic-control of NiOx thin films deposited by reactive high power impulse magnetron sputtering. Journal of Applied Physics, 2017, 121, .	1.1	21
70	Reactive high-power impulse magnetron sputtering of ZrO ₂ films with gradient ZrOx interlayers on pretreated steel substrates. Journal of Vacuum Science and Technology A: Vacuum, Surfaces and Films, 2017, 35, 031503.	0.9	7
71	Investigations on Mechanical and Tribological Behavior of dcMS/HPPMS CrN and (Cr,Al)N Hard Coatings Using Nanoscratch Technique. Advanced Engineering Materials, 2017, 19, 1600632.	1.6	23
72	Tutorial: Reactive high power impulse magnetron sputtering (R-HiPIMS). Journal of Applied Physics, 2017, 121, .	1.1	275
73	Tribology of multilayer coatings for wear reduction: A review. Friction, 2017, 5, 248-262.	3.4	145

#	ARTICLE	IF	CITATIONS
74	Plastic deformation behavior of nanostructured CrN/AlN multilayer coatings deposited by hybrid dcMS/HPPMS. Surface and Coatings Technology, 2017, 332, 253-261.	2.2	41
75	Fundamental study of an industrial reactive HPPMS (Cr,Al)N process. Journal of Applied Physics, 2017, 122, .	1.1	17
76	On the thermal stability of the nanostructured tungsten coatings. Surface and Coatings Technology, 2017, 325, 588-593.	2.2	10
77	Effect of bias voltage on TiAlSiN nanocomposite coatings deposited by HiPIMS. Applied Surface Science, 2017, 392, 826-833.	3.1	83
78	Reduction in EMI with BaTiO ₃ and Fe ₃ O ₄ Thin Film grown by UBM Sputtering. Procedia Engineering, 2017, 216, 111-126.	1.2	0
79	Effect of substrate bias voltage on defect generation and their influence on corrosion and tribological properties of HIPIMS deposited CrN/NbN coatings. Surface and Coatings Technology, 2018, 344, 383-393.	2.2	24
80	Effect of chamber pressure on defect generation and their influence on corrosion and tribological properties of HIPIMS deposited CrN/NbN coatings. Surface and Coatings Technology, 2018, 336, 84-91.	2.2	29
81	Condensation, Nucleation, Interface Formation, and Film Growth. , 2018, , 221-240.		0
82	Ti _{1-x} Al _x N coatings by Reactive High Power Impulse Magnetron Sputtering: film/substrate interface effect on residual stress and high temperature oxidation. Surface and Coatings Technology, 2018, 354, 56-65.	2.2	16
83	Space-resolved plasma diagnostics in a hybrid (Cr,Al)N process. Journal of Vacuum Science and Technology A: Vacuum, Surfaces and Films, 2018, 36, 031515.	0.9	2
84	Correlation of HPPMS plasma and coating properties using artificial neural networks. Surface and Coatings Technology, 2018, 349, 1130-1136.	2.2	8
85	Adhesion enhancement of DLC hard coatings by HiPIMS metal ion etching pretreatment. Surface and Coatings Technology, 2018, 349, 787-796.	2.2	48
86	Al rich PVD protective coatings: A promising approach to prevent T91 steel corrosion in stagnant liquid lead. Surface and Coatings Technology, 2019, 377, 124890.	2.2	40
87	Influence of the etching processes on the adhesion of TiAlN coatings deposited by DCMS, HiPIMS and hybrid techniques on heat treated AISI H11. Surface and Coatings Technology, 2019, 378, 125075.	2.2	23
88	Effect of plasma nitriding and modulation structure on the adhesion and corrosion resistance of CrN/Cr ₂ O ₃ coatings. Surface and Coatings Technology, 2019, 379, 125051.	2.2	13
89	The experimental approach into the influence of external inductance on the discharge characteristic of HiPIMS. Journal of Theoretical and Applied Physics, 2019, 13, 289-297.	1.4	6
90	Influence of etching-pretreatment on nano-grained WC-Co surfaces and properties of PVD/HVOF duplex coatings. Surface and Coatings Technology, 2019, 374, 32-43.	2.2	20
91	Characterization of transport of titanium neutral atoms sputtered in Ar and Ar/N ₂ HIPIMS discharges. Plasma Sources Science and Technology, 2019, 28, 035005.	1.3	11

#	ARTICLE	IF	CITATIONS
92	Reactive HiPIMS deposition of Ti-Al-N: Influence of the deposition parameters on the cubic to hexagonal phase transition. <i>Surface and Coatings Technology</i> , 2020, 382, 125007.	2.2	24
93	Synthesis of thin films and coatings by high power impulse magnetron sputtering. , 2020, , 333-374.		6
94	Effects of Varying Power and Argon Gas Flux on Tribological Properties and High-Speed Drilling Performance of Diamond-Like Carbon Coatings Deposited using High-Power Impulse Magnetron Sputtering System. <i>Journal of Materials Engineering and Performance</i> , 2020, 29, 7291-7307.	1.2	3
95	Mechanical and Tribological Properties and High-Speed Drilling Performance of NbTiN Coatings Prepared by High-Power Impulse Magnetron Sputtering with Varying Nitrogen and Acetylene Flux Rates. <i>Journal of Materials Engineering and Performance</i> , 2020, 29, 8194-8212.	1.2	1
96	Effect of TiN/TiO ₂ multilayer coatings on the properties of stainless steel for biomedical applications. <i>Journal of Physics: Conference Series</i> , 2020, 1492, 012029.	0.3	1
97	Effects of Substrate Rotation Speed on Structure and Adhesion Properties of CrN/CrAlSiN Multilayer Coatings Prepared Using High-Power Impulse Magnetron Sputtering. <i>Coatings</i> , 2020, 10, 742.	1.2	10
98	Optimizing the deposition rate and ionized flux fraction by tuning the pulse length in high power impulse magnetron sputtering. <i>Plasma Sources Science and Technology</i> , 2020, 29, 05LT01.	1.3	46
99	The Critical Raw Materials in Cutting Tools for Machining Applications: A Review. <i>Materials</i> , 2020, 13, 1377.	1.3	89
100	Effects of Cathode Voltage Pulse Width in High Power Impulse Magnetron Sputtering on the Deposited Chromium Thin Films. <i>Coatings</i> , 2020, 10, 542.	1.2	8
101	Effects of nitrogen-argon flow ratio on the microstructural and mechanical properties of AlCrN coatings prepared using high power impulse magnetron sputtering. <i>Surface and Coatings Technology</i> , 2020, 386, 125484.	2.2	21
102	Physical vapor deposition technology for coated cutting tools: A review. <i>Ceramics International</i> , 2020, 46, 18373-18390.	2.3	131
103	Effect of mid-frequency pulse insertion on the microstructural and mechanical properties of AlTiN coatings prepared using superimposed HiPIMS process. <i>Surface and Coatings Technology</i> , 2020, 388, 125597.	2.2	6
104	Adhesive Strength of Ni-Cu Surface Alloy Formation by Low-Energy High-Current Electron Beam. <i>Russian Physics Journal</i> , 2021, 63, 1804-1809.	0.2	5
105	Dependence of Optical Emission Spectra on Argon Gas Pressure during Modulated Pulsed Power Magnetron Sputtering (MPPMS). <i>Plasma</i> , 2021, 4, 269-280.	0.7	3
106	Taguchi Optimization of Wear Resistance of CrN Coatings Deposited on WC Substrates Using High-Power Impulse Magnetron Sputtering Technology and Application to High-Speed Micro-Drilling. <i>Journal of Materials Engineering and Performance</i> , 2021, 30, 6243-6257.	1.2	3
107	A review of physical vapor deposition coatings for rolling bearings. <i>Proceedings of the Institution of Mechanical Engineers, Part J: Journal of Engineering Tribology</i> , 2022, 236, 786-803.	1.0	2
108	Comprehensive Research and Analysis of a Coated Machining Tool with a New TiAlN Composite Microlayer Using Magnetron Sputtering. <i>Materials</i> , 2021, 14, 3633.	1.3	2
109	Time-averaged and time-resolved ion fluxes related to reactive HiPIMS deposition of Ti-Al-N films. <i>Surface and Coatings Technology</i> , 2021, 424, 127638.	2.2	5

#	ARTICLE	IF	CITATIONS
110	Calorimetric probe measurements for a high voltage pulsed substrate (PBII) in a HiPIMS process. Plasma Sources Science and Technology, 2017, 26, 065013.	1.3	18
111	Time-of-flight mass spectrometric diagnostics for ionized and neutral species in high-power pulsed magnetron sputtering of titanium. Japanese Journal of Applied Physics, 2020, 59, SHHB05.	0.8	8
112	Studies on the Microstructure-Controlled Zn Interlayer for Improving the Adhesion Strength of the Zn/Zn-Mg Double Layer Coating. Journal of Korean Institute of Metals and Materials, 2019, 57, 695-700.	0.4	1
113	Application of High Power Impulse Magnetron Sputtering (HIPIMS) Technology for Deposition of Protective Coatings. , 2020, , .		0
114	High-quality transparent conductive indium oxide film deposition by reactive pulsed magnetron sputtering: Determining the limits of substrate heating. Applied Surface Science, 2022, 585, 152604.	3.1	6
116	In-situ formation, structural transformation and mechanical properties Cr N coatings prepared by MPCVD. Surface and Coatings Technology, 2022, 441, 128522.	2.2	7
117	Contamination of Substrate-Coating Interface Caused by Ion Etching. Coatings, 2022, 12, 846.	1.2	3
118	Analysis of Composite Coating of Deep Drawing Tool. Coatings, 2022, 12, 863.	1.2	4
119	Operating modes and target erosion in high power impulse magnetron sputtering. Journal of Vacuum Science and Technology A: Vacuum, Surfaces and Films, 2022, 40, .	0.9	9
120	Interfacial Cation Mixing and Microstructural Changes in Bilayer GTO/GZO Thin Films After Irradiation. Jom, 2022, 74, 4015-4025.	0.9	2
121	Frequency Effect on the Structure and Properties of Mo-Zr-Si-B Coatings Deposited by HIPIMS Using a Composite SHS Target. Coatings, 2022, 12, 1570.	1.2	4
122	(Cr _{1-x} Al _x)N Coating Deposition by Short-Pulse High-Power Dual Magnetron Sputtering. Materials, 2022, 15, 8237.	1.3	3
123	Influence of substrate bias voltage on microstructure and mechanical characteristics of TiAlSiN coating deposited by High Power Impulse Magnetron Sputtering (HiPIMS). Surface and Coatings Technology, 2023, 458, 129351.	2.2	11