

Table of Contents

Committee

Preface

I. Thermal Spray Technology

| | |
|--|----|
| The Remanufacturing Engineering and Automatic Surface Engineering Technology B.S. Xu | 1 |
| Effect of Plasma Sprayed Ceramic and Cermet Coatings on Wear-Out Failure of High Temperature Ball Valve L. Liu, B.Q. Gu and Y. Chen | 11 |
| Preparation and Characterization of Ni-Al-Cr₃C₂ Coating L.Z. Du, W.G. Zhang, D.J. Zhang and B.H. Li | 15 |
| Comparative Study of 321 Stainless Steel and 321-Al Composite Coatings Deposited by Arc Spraying Process Y.X. Chen, B.S. Xu, X.B. Liang and Y. Xu | 19 |
| Effect of HVOF Sprayed MCrAlY Coating on Thermomechanical and Isothermal Fatigue Life of Superalloy M963 Z.W. Huang, Z.G. Wang, S. Zhu, F.H. Yuan and F.G. Wang | 23 |
| Performance Study of Erosion Wear of Nanostructured WC-12Co Coatings Sprayed by HVOF Z.X. Ding, Q. Wang and Z.L. Liu | 27 |
| Fabrication and Evaluation of Plasma-Sprayed Functionally Gradient W/Cu Coatings as Plasma Facing Materials in Fusion Devices S.X. Song, W.Z. Yao, Z.J. Zhou, W.W. Cong, Y. Ma and C.C. Ge | 31 |
| Microstructure and Abrasion Resistance Mechanism of CrB Particles Reinforced MMC Coating H.L. Deng, G.L. Li, Y.J. Song and S.R. Xiao | 35 |
| Micro-Damage Evolution and Residual Stress in Thermally Grown Oxides of Detonation Gun Sprayed Thermal Barrier Coatings Z.X. Chen, S. Zhu, Z.G. Wang and F.H. Yuan | 39 |
| Plasma Transferred Arc Powder Surfacing Technology of Thrust Face Y.H. Lv, B.S. Xu, Y.H. Xiang, D. Xia and C.L. Liu | 43 |
| Microstructure and Performance Analysis of Cr₃C₂-25%NiCr Coating Prepared by Plasma Spraying Process C.M. Wang, H.F. Sun and Q. Song | 47 |
| Microstructure and Properties of Multi-Function Micro-Plasma Sprayed Al₂O₃ Coatings S.C. Hua, H.G. Wang, L.Y. Wang and G. Liu | 51 |
| Effect of Heat Treatment on Microstructures and Properties of Zinc-Aluminum Coating on AZ91D Magnesium Alloy J. Zhang and Y. Wang | 55 |
| Properties of Multi-Function Micro-Plasma Sprayed Nanostructured Al₂O₃-13wt%TiO₂ Coatings L.Y. Wang, G. Liu, H.G. Wang and S.C. Hua | 59 |
| Corrosion Protection of A3 Steel with Zn-Al-Mg-RE Coating from Arc Spraying Y. Liu, Y.X. Chen, J.Y. Bai, Z.X. Zhu, S.C. Wei, X.B. Liang and B.S. Xu | 64 |
| Influence of Substrate Temperature on Microcracks Formation in Plasma-Sprayed Yttria-Stabilized Zirconia Splats Y.Z. Xing, Y. Li, C.J. Li, C.X. Li and G.J. Yang | 69 |
| Effect of Annealing Treatment on the Structure and Microhardness of Cold-Sprayed Nanostructured FeAl/WC Composite Coating H.T. Wang, G.J. Yang, C.J. Li and C.X. Li | 73 |
| Study on Arc Spraying Technique for Repairing Automobile Parts Based on Four Factors Experimental Method L.G. Liu | 77 |

| | |
|--|----|
| Study on the Plasma-Sprayed Molybdenum as Plasma Facing Materials in Fusion Reactor W.Z. Yao, S.X. Song, Z.J. Zhou, W.W. Cong, Y. Ma and C.C. Ge | 81 |
| High Velocity Arc-Sprayed Coating by CrB Powder Wire for Elevated Temperature Erosion Protection in Circulating Fluidized Bed Boilers Y.J. Song, H.L. Deng, S.R. Xiao and W.H. Shi | 85 |
| An Automatic High Velocity Arc Spraying System J.Y. Bai, Y.X. Chen, J.B. Cheng, X.B. Liang and B.S. Xu | 89 |

II. Vapour Deposition Technology

| | |
|---|-----|
| PVD-PECVD Hybrid Processes: Synthesis of Composite Thin Films and Process Understanding T. Belmonte, A. Daniel and T. Duguet | 93 |
| RIBAD Deposition of TiN on Magnesium Alloy S. Abela and M. Grech | 100 |
| Evolution of Nanoindentation Hardness of Fe/Cu Nanometer-Scale Multilayers by Magnetron Sputtering J. Gao, Z.L. Wu, Z.P. Zhang, B.S. Cao and M.K. Lei | 104 |
| Molecular Dynamics Studies on the Growth and Structural Properties of Hydrogenated DLC Films Y.J. Zhang, G.N. Dong, J.H. Mao and Y.B. Xie | 108 |
| Structure of Alumina Layer on the Damage Resistance of Multilayered CVD Coating under Repeated Impact Loading X.D. Zhu, H.L. Dou, Z.G. Ban, Y.X. Liu and J.W. He | 113 |
| Study on the Mechanic Properties of DLC Films on Different Metal Substrates D.C. Zhao, N. Ren, Z.J. Ma, G.J. Xiao and S.H. Wu | 117 |
| Material Design of Transition Metal Nitrides for Hard Coatings by Metal and Nonmetal Atom Substitution T. Suzuki, J. Inoue, H. Asami, T. Ibi, T. Nakayama, H. Suematsu and K. Niihara | 122 |
| Synthesis and Characterization of CrXN Nano-Multilayer Coatings H.Q. Li, X.Y. Li, H.L. Sun, D. Teer and H.S. Dong | 126 |
| Deposition of CrN Coatings by Filtered Cathodic Vacuum Arc J.L. Mo, M.H. Zhu, J. An, H. Sun, Y.X. Leng and N. Huang | 130 |
| Polycrystalline Columnar Diamond Film Deposited on Spherical Substrate by DC Arc Plasma CVD D.S. Li, D.W. Zuo, W.Z. Lu, R.F. Chen, B.K. Xiang and M. Wang | 134 |
| The Influence of the Magnetic Field Arrangement on the Titanium Oxide Films Properties for Four Targets Closed-Filed Unbalance Magnetron Sputtering F. Qi, Y.X. Leng, H. Sun and N. Huang | 138 |
| Fabrication Of Nd:YVO₄ Thin Film Waveguide Grown on Si/SiO₂ by Pulsed Laser Deposition H.X. Li, R.G. Song, X. Wu and J.Y. Wang | 142 |
| The Preparation and Properties of TiN/Carbon Coatings by Ion Beam Assistant Magnetron Sputtering Deposition J. Du and W.J. He | 146 |
| Adhesion Studies of Diamond-Like Carbon Films on 202 Stainless Steel Substrate with a Silicon Interlayer L. Ji, H.X. Li, F. Zhao, J.M. Chen and H.D. Zhou | 151 |
| Study on Interfacial Bonding Strength of TiN Films Prepared by Magnetron Sputtering at Low Temperature X.Q. Bai and J. Li | 155 |
| Rf Sputtering of Composite Fluorocarbon/ZnO Films and their Basic Properties Y.H. Zhang, Q. Ji and X. Wang | 159 |
| Effect of Yttrium(Y) Content in Al Target on the Thickness of CrAlTiN Film by Magnetron Sputtering Z.Z. Liu, Y.H. Liu, B.L. Jiang and S.R. Yu | 163 |
| Effects of Substrate Bias Voltage on the Microstructure of Cr-Al-N Coatings M. Zhu, S.W. Duo, T.P. Li, M.S. Li and Y.C. Zhou | 167 |
| Effect of Low-Energy Ion Irradiation on Synthesis of Hard and Superhard Films Z.G. Li, S. Miyake and Y.X. Wu | 172 |

| | |
|--|-----|
| The Microstructure and Properties of CrN_x Films Synthesized by Unbalanced Magnetron Sputtering | |
| Y.P. Wu, Y.X. Leng, S. Hong, S.F. Zhu, N. Huang, B. Bai and P.C. Zhang | 176 |
| Microstructure and Properties of TiC Coating by Vibrating Electrospark Deposition | |
| C. Luo, S.J. Dong and X. Xiong | 180 |
| Effects of Incident Angle on Microstructure of Ni-Cr Film Deposited by PVD | |
| Y.C. Shan, J.J. Xu, X.D. He and M.W. Li | 184 |
| Microstructure and Hardness of Ti-Si-C-N Coatings | |
| Y. Guo, S.L. Ma, K.W. Xu, T. Bell, X.Y. Li and H.S. Dong | 188 |
| Influence of Bi-Layer Thickness on the Structure and Properties of Multilayered TiN/CrN Coatings by Cathodic Arc Plasma Deposition | |
| C.L. Chang, W.Y. Ho, W.J. Liu, J.J. Hwang and D.Y. Wang | 192 |
| . Electrodeposition and Electroless Deposition | |
| Microstructure and Properties of Surface Coating for Cr12MoV Steel Treated by TD Salt-Bath Vanadizing Process | |
| M.B. Yang, L.W. Tang, H. Yang and W.L. Zhao | 196 |
| Study of Hard Chromium Plating from Trivalent Chromium Electrolyte | |
| B.S. Li and A. Lin | 200 |
| Microstructure and Formation Mechanism of Aluminized Coatings on Nickel-Based Superalloys | |
| J.B. Pei, L. Zhang, J. Niu and Q.Z. Zhang | 204 |
| Effect of UV-Irradiation on Anodized Films Formed on Titanium in 0.1M H₂SO₄ Solution | |
| Y.H. Yao, H. Nanjo, J.N. Liu, Z.B. Xia, Z.P. Wang and J.F. Wei | 208 |
| Preparation and Property of Electrodeposited Zn-Fe-SiO₂ Composite Coating | |
| Y.Y. Fan, Y.J. Zhang and P. Dong | 212 |
| Effect of pH Value on the Electrodeposition Potential of Cu-In Alloy Film | |
| H.X. Yang, Z.L. Song, Y.W. Song and H. Zhang | 216 |
| On the Properties of Conductive Adhesive Filled with Electroless Silver Plated Flake Graphite | |
| M. You, L.L. Zhang, Z.P. Gong, W.J. Liu and A.P. He | 220 |
| Preparing an Environment-Benign Rare-Earth Based Chemical Conversion Coatings on 6063 Aluminium Alloy | |
| D.C. Chen, G.X. Wu, W.F. Li, W.H. Gong and Y.Q. Liang | 224 |
| Cerium-Phytic Acid Passivation Treatment on Galvanized Steel | |
| G.M. Liu, L. Yang, F. Yu, J.H. Tian, S.W. Duo and N. Du | 228 |
| Electrodeposited Ni/Al₂O₃ Composite Coating on NdFeB Permanent Magnets | |
| H. Zhang, Y.W. Song and Z.L. Song | 232 |
| The Study of the Electrochemical Graining Process in NaBO₂- H₃BO₃ Solution and Grain Appearance on the Surface of Aluminum Alloy | |
| J.Q. Liu, X.H. Wang and J.L. Xu | 236 |
| Study on Electroless Ni-P Deposit on W-Cu Alloy and its Anti-Corrosion Mechanism | |
| L. Hao, Y.M. Zhang, C. Yang, H. Zhu, X.H. Mao, A. Lin and F.X. Gan | 240 |
| Sediment Co-Deposition of Nanostructured Ni-Al₂O₃ Composite Coatings | |
| Q.Y. Feng, T.J. Li, H.Y. Yue, F.D. Bai, K. Qi and J.Z. Jin | 244 |
| The Effect of Substrates on Properties of Anodic Coatings Formed on Mg and Mg Alloys | |
| R.F. Zhang, D.Y. Shan and E.H. Han | 248 |
| Anodic Alumina Oxide Template with Branched Structure Formed in Phosphoric Acid | |
| H. Wang, H.W. Wang and P. Zeng | 252 |
| Study of Corrosion Performance of Electroless Ni-P Coating with Molybdenum Disulfide Nanoparticles | |
| X.G. Hu, W.J. Cai, J.C. Wan, Y.F. Xu and X.J. Sun | 256 |
| Research of Microstructure and Properties of the 4Cr14Ni14W2Mo Steel with QPQ Salt-Bath Nitriding | |
| G.Y. Xiong, B.L. He and R. Zou | 260 |
| Deposition of Amorphous Diamond Films on Different Substrates by Electrolysis of Methanol Solution | |
| Y.Y. He, G.F. Zhang, G.Q. Li and X.D. Hou | 264 |

| | |
|--|-----|
| The Study on the Deposition Efficiency of Microarc Oxidation on Aluminum Alloy Z.J. Yan, X.H. Zhu, D. Cheng, Y.Z. Gao and L. Yan | 268 |
| Electrodeposition of Aluminum on 316L Stainless Steel from Molten Salts Based on Chlorides Y.J. Wang, X.X. Ma and G.W. Guo | 273 |
| Preparation and Characterization of Cr-Co-P Alloy Coating Electrodeposited from Trivalent Chromium Solution Y.M. Zhang, D.J. Fang, L. Hao, A. Lin and F.X. Gan | 277 |
| The Study on the Dispersants and Structures of Ni-P-α-Al₂O₃ Composite Electroless Plating Coating L.M. Feng, K.G. Liu and X.F. Guo | 281 |
| Microstructure and Properties of Brush Electroplated Nano-SiC-Al₂O₃/Ni Composite Coating H. Yang, S.Y. Dong and B.S. Xu | 285 |
| . Energetic Beams and Plasma Surface Treatments | |
| Current Status of Supersaturated Surface Engineered S-Phase Materials T. Bell | 289 |
| Low-Temperature Plasma Surface Modification of Medical Grade Austenitic Stainless Steel to Combat Wear and Corrosion J.P. Buhagiar and H.S. Dong | 296 |
| Microstructural Features of EB-PVD Thermal Barrier Coatings Irradiated by High-Intensity Pulsed Ion Beam C. Liu, X.G. Han, X.P. Zhu and M.K. Lei | 300 |
| Fabrication of SiC Particulates Reinforced MoSi₂ Composite Coating by Laser Cladding S. Yang, M.R. Wang, T. Gong and W.J. Liu | 304 |
| Thermal Stability of Nitrogen Expanded Austenite Formed by Plasma Nitriding on AISI304 Austenitic Stainless Steels L. Wang, Y. Li and Y.Z. Wang | 308 |
| Controlled Plasma Nitriding for an Optimum Balance between PACVD TiBN Coating Scratch Resistance and Substrate Toughness Y. He, I. Apachitei, J. Zhou, T. Walstock and J. Duszczek | 312 |
| Stacking Faults in a High Nitrogen Face-Centered-Cubic Phase Formed on Nitrogen-Modified Austenitic Stainless Steel J. Liang and M.K. Lei | 318 |
| The Finite Element Simulation Research on Stress-Strain Field of Laser Cladding P. Zhang, L. Ma, J.P. Yuan, X.N. Yin and Z.H. Cai | 322 |
| Electron Beam Surface Alloying of a Magnesium Alloy with Al H. Ye and Z.L. Yan | 326 |
| Technical Study of Exhaust Valve Overlaying Based on Micro-Plasma Arc Welding Y.H. Xiang, B.S. Xu, Y.H. Lv and D. Xia | 330 |
| Visual Study on Surface Micro-Topography and Residual Stress of Sheet Metal after Pulsed Laser Peening S. Huang, J.Z. Zhou, J.J. Du, Y.Q. Sun and M.X. Ni | 334 |
| Microstructure and Tribological Properties of Layer Deposited by Micro-Plasma Arc Welding on Worn Gear C.L. Liu, Y.H. Lv, B.S. Xu and D. Xia | 338 |
| Study on Process of Ion Implantation on AZ31 Magnesium Alloy H. Zhou, C. Fei, Y.G. Yang, H.C. Wan and S. Cai | 342 |
| Preparation of Ag Nanoparticles Colloid by Pulsed Laser Ablation in Distilled Water B. Xu, R.G. Song, P.H. Tang, J. Wang, G.Z. Chai, Y.Z. Zhang and Z.Z. Ye | 346 |
| Change of Hydrophobicity on Silicone Rubber Modified by CF₄ Capacitively Coupled Plasma and Inductively Coupled Plasma S.H. Gao, Y. Liu, M.K. Lei and L.S. Wen | 350 |
| Experiments of Laser Surface Engineering for the Green Remanufacturing of Railway Coupler C.Y. Liu, L.Y. Yu, W. Tian and J.C. Tang | 354 |
| Ultrasonic Characterization of EB-PVD Thermal Barrier Coatings Irradiated by HIPB L. Lin, Y. Zhao, J. Chen, X.M. Li and M.K. Lei | 358 |

| | |
|---|-----|
| Numerical Simulation on Molten Process of GaAs Target Bombarded by Intense Pulsed Ion Beam | |
| J.J. Sun, J.F. Li, Z.D. Liu and G.Q. Li | 363 |
| Electrical Conducting Coating on Glass Substrate Deposited by Wire Exploding Spray Coating Method | |
| J.Z. Yang, Z.Y. Liu, D.W. Xu and T.J. Liu | 367 |
| Surface Modification of CrN Coating by Plasma Oxidation Process | |
| W.Y. Ho, H.C. Chen, C.L. Chang, D.Y. Wang and W.Y. Ho | 371 |
| Microstructure and Wear Response of Ni/SiC Laser Cladding Composite Coatings on a Carbon Steel | |
| B.Y. Lou, B. Xu, Y.B. Zhou, W.J. Bai and H.L. Du | 375 |
| The Structure and Corrosion Properties of Oxidized Layer Formed on Aluminium Alloy by Plasma Oxidation | |
| Y. Li and L. Wang | 379 |
| A Numerical Simulation Studying for Plasma Expansion in Laser Ablation Processing | |
| X.Y. Tan, Z.L. Wang, M. Feng and Y. Zhou | 382 |
| The Application of Ultrasonic Phase Spectrum of the Reflection Coefficient on Nondestructive Characterizing the Plasma Sprayed Coatings Irradiated by HIPB | |
| Y. Zhao, L. Lin, X.M. Li and M.K. Lei | 386 |
| Study on Wear Resistance of Plasma Sprayed Coating Remelted by Laser | |
| Y.J. Liu, Y.S. Wang and X.C. Yang | 392 |
| Investigation of Mechanical Properties and Microstructure of Boron Films Implanted by Polyenergetic Nitrogen Ion | |
| Z.H. Cai, P. Zhang, J.W. He, J.J. Zhao and J. Tan | 396 |
| The Remanufacturing System Based on Robot MAG Surfacing | |
| S. Zhu, F.J. Meng and D.M. Ba | 400 |
| Investigation of Laser Shock Peening on Aero-Engine Compressor Rotor Blade | |
| Z. Ma, Y.H. Li and C. Wang | 404 |
| Model of Heat and Mass Transfer in Atmospheric Pressure Plasma Arc (APPA) Cleaning Metal Surface | |
| W.J. Xu, J.B. Meng, J.C. Fang and X.Y. Wang | 408 |
| Preparation and Characterization of Nickel-Based Composites Coatings Reinforced by TiB₂+WC on Stainless Steel by Laser Cladding | |
| J. Li, W.G. Li and G.J. Zhang | 412 |
| Effect of Laser Scanning and Aging Treatment on Microstructure and Property of Austenitic Heat-Resistant Steel | |
| B. Han, Y. Wang, Y.S. Li and R. Liu | 416 |
| Argon-Oxygen Post-Discharge Treatment of Hexatriacontane: Heat Transfer between Gas Phase and Sample | |
| M. Mafra, T. Belmonte, A.M. Maliska, A.S. da Silva Sobrinho, U. Cvelbar and F. Poncin-Epaillard | 421 |
| Multiple Needle Cathodes Plasma Surface Alloying of Ti6Al4V with W-Mo-C-N | |
| Y.F. Zhang, X.C. Bian, Q. Chen, G.Q. Zhang and Y. Gao | 426 |
| Influence of Oxygen Plasma Treatment on Surface Properties of Armos Fiber | |
| P. Chen, J. Wang, C.S. Zhang, C. Lu, Z.F. Ding, S. Pan, W. Qi, J.C. Sun and J.F. Li | 430 |
| . Wear and Corrosion Behaviors of Engineering Surfaces | |
| Preparation of Epoxy Modified Organosilicone High-Temperature Resistance Coatings | |
| H. Zhu, Z.L. Chen, F. Nan, A. Lin and F.X. Gan | 434 |
| Research on Friction and Wear Performance of Brake Disc Pair Materials for New Type of Drilling Rig | |
| X.H. Wang, S.W. Zhang and D.G. Wang | 438 |
| Influence of the Plating Conditions on the Structure and Corrosion Resistance of the Ni-Mn Alloy | |
| S.L. Wang and W.W. Yu | 442 |
| Microstructural Evaluation of High Oxidation Resistant CrAlSiN Hard Coating at Elevated Temperature in Air Atmosphere | |
| S.K. Tien, C.H. Lin, Y.Z. Tsai and J.G. Duh | 446 |

| | |
|---|-----|
| Study on the Characteristics of Wear Resistance Using Silicate Particles as Additive on the Metal Friction Pairs | |
| Y. Zhao, B.S. Xu, Y. Xu, P.J. Shi, X.L. Wang and B. Zhang | 452 |
| Effect of Microbes on the Early Corrosion Behavior of Carbon Steel in Eutrophic Lake | |
| L.W. Jiang, G. Cao, X.H. Mao and F.X. Gan | 456 |
| Corrosion Behavior of AZ31 Magnesium Alloy with Microarc Oxidation Film Irradiated by High-Intensity Pulsed Ion Beam | |
| X.G. Han, P. Li, X.P. Zhu and M.K. Lei | 460 |
| Design and Development of Sulphidation Resistant Coatings | |
| H.L. Du, P.K. Datta and B.Y. Lou | 464 |
| Microstructure and Wear Behavior of Arc Sprayed WC-Co /FeCrB and WC-Ni /FeCrB Composite Coatings | |
| B.Y. Fu, D.Y. He, J.M. Jiang and X.Y. Li | 468 |
| Preparation and Characterization of γ-Aminopropyltrimethoxysilane and Octadecyltrichlorosilane Self-Assembled Monolayers on Titanium Films | |
| C.G. Sun and H.C. Zhang | 472 |
| Study on Friction Reduction and Anti-Scuffing Technology of Duplex Ion Nitrocarburizing and Sulphurizing | |
| C.H. Hu, S.N. Ma, Y.L. Qiao, J.P. Zou, Y.D. Gao and X.F. Sun | 476 |
| The Growth Behaviors of IMC Layers at Soldered and Diffusion Bonding Sn/Cu Interfaces and the Effects of High Magnetic Field | |
| C.Q. Cheng, J. Zhao, Y. Xu and P. Yang | 480 |
| Real-Time Measurement of Friction Coefficient in the Frictional Performance Test of Brake Disk | |
| X.J. Huo, R.Q. Zhang, H. Wang, D.P. Qian and J.X. Teng | 484 |
| Tribological Behavior of Nano-Silicate Mineral Powder as Lubrication Oil Additive | |
| B. Zhang, B.S. Xu, Y. Xu, X.L. Wang and Y. Zhao | 488 |
| Experimental Study for Cutting Performance of $\text{Ti}_{(1-x)}\text{Al}_x\text{N}$ Coated Drills | |
| X. Yang, H. Kumehara and W. Zhang | 493 |
| Micro-Raman Analysis on Scratch of Si Surface Modified by Ion Implantation | |
| Z.K. Lei, X.M. Pan, G. Liu, H. Yun and Z.X. Mu | 497 |
| Cavitation Behavior of Cast Iron under Different Parameter Conditions | |
| Y.Z. Gao, T.N. Wang, Z.W. Yu and H.C. Zhang | 501 |
| Structure and Properties Investigation about a Copper-Base SHS Welding Material | |
| J.Z. Hu, S.N. Ma and X.R. Chen | 505 |
| The Study of the Boundary Lubrication Mechanism of BN-C-Silicone Oil Composite Colloid at High Temperature | |
| H. Guo and Z.M. Liu | 509 |
| Two Surface Treatment Processes and Their Influence on Magnesium Electrochemical Activity | |
| J.Q. Liu, R.F. Zhao and N.B. Li | 513 |
| Contributions of Surface Engineering to Military Equipment Maintenance | |
| L. Li and L. Chen | 517 |
| Structure and Wear Resistance at Elevated Temperature of Auto Brush-Plating n-Al_2O_3/Ni Composite Coatings | |
| B. Zhang, B.S. Xu, S.Y. Dong and B. Wu | 523 |
| Wear Behaviors of Laser Cladded Nickel-Based Alloy Coatings Reinforced by Molybdenum and Cerium Dioxide under Sliding Friction | |
| J.P. Yuan, P. Zhang, Z.J. Liang and L. Sun | 527 |
| Study on Anti-Corrosion Epoxy Resin Coating without Solvent | |
| Q. Huang, Z.J. Liang and F.K. Xie | 531 |
| Research on Wear Mechanism of Surface Build-Up Welding Material of Brake Disc for Drilling Rig | |
| X.H. Wang, S.W. Zhang and D.G. Wang | 535 |
| Mathematical Model of the Part Surface Temperature Field | |
| J.H. Du, G.M. Liu and W.Z. Han | 539 |
| Interfacial Reactions in Sn-xZn-Cu/Cu Couples during Soldering | |
| N. Zhao, J.H. Wang, H.T. Ma and L. Wang | 543 |

| | |
|---|-----|
| An Impact-Abrasion Resistant Surfacing Electrode and its Wear-Resistant Mechanism Z.J. Liu and X.B. Zeng | 547 |
| Application of Surface Engineering Techniques to Corrosion Control over Offshore Engineering Equipment X.Q. Pan and J.J. Wang | 551 |
| Application of EIS and SEM to Study the Corrosion Behaviors of Organic Coatings/Substrate System R. Yan, H. Wu, S.K. Yu, S.N. Ma and B.S. Xu | 556 |
| Effects of Shape and Distribution of M_7C_3 on Wear Resistance of Iron Based Composite Z.J. Liu, Y.H. Su and J.G. Sun | 560 |
| Friction and Wear Behavior of Plasma Sprayed Nanostructured and Conventional WC-Co Coatings under Water Environment X.Q. Zhao, J.M. Chen and H.D. Zhou | 564 |
| High Temperature Tribological Behavior of Nano-Al_2O_3 in Different Base Oils X.F. Sun, Y.L. Qiao, J.W. He, S.N. Ma and C.H. Hu | 568 |
| Formation Mechanism of the Frictionally-Formed Protective Coating by Using Self-Repairing Material under Sliding Friction W.G. Chen, Y.Z. Gao, H.C. Zhang and Y.J. He | 572 |
| Contact Failure Analysis of Nitrided 32Cr2MoV Coated with TiN by Multi-Arc Ion Plating H. Li, H.B. Xu and J. Zhang | 576 |
| Preparation and Tribological Properties of Surface-Coated Nano-Copper Additives Y. Xu, H.L. Yu, B.S. Xu, X.L. Wang and Q. Liu | 580 |
| Effects of Erosion Rate on the Erosion-Corrosion Synergism of High Velocity Oxy-Fuel Sprayed Ni-Based Coatings A.F. Zhang, Y.Y. Wang and C.J. Li | 585 |
| Research on High-Temperature Corrosion-Resistance Performance of Exhaust Pipe of Heavy Duty Vehicle S.C. Wei, B.S. Xu, H.D. Wang and G. Jin | 589 |
| Effect of Plasma Sprayed Coatings on Stress Corrosion Cracking of 08Cr2AlMo Steel in Saturated H_2S Solution Y.F. Zhang, B.Q. Gu and Y. Ding | 593 |
| Wear and Corrosion Resistance of Ni-PTFE-SiO_2 Composite Coating Deposited by Jet Electrodeposition W.S. Lin, S.Q. Qian and X.W. Chen | 597 |
| Lead-Free Oxidation- Resistant Glass-Ceramic Coating for Heat Processing of Ti-6Al-4V Alloy M.W. Zhang, C. Gao, Y.X. Ding, J. Tao and T. Wang | 601 |
| Erosion Wastage at High Temperature for Arc Spraying Coatings J.Z. Hu, S.N. Ma and X.R. Chen | 605 |

. Functional Films and Coatings

| | |
|---|-----|
| Corrosion Behavior of TiO_2 Coating on Magnesium Alloy AM60 in Hank's Solution R.C. Zeng, W. Dietzel, J. Chen, W.J. Huang and J. Wang | 609 |
| Deposition of Bioactive Titania Layers on Non-Metallic Substrates under Ambient Conditions due to Hydrolysis of Titanium Oxysulfate Solution F. Xiao, R.G. Song and A. Osaka | 613 |
| Research on the Surface Treatment of Magnetic Powder in Bonded Nd8Fe80B6Co6 Alloy H.F. Zhao, L. Wang and J.Y. Su | 617 |
| Enhanced Up-Conversion Emission of Er^{3+}-Doped Al_2O_3 Powders by Y^{3+} Codoping Prepared in a Non-Aqueous Sol-Gel Process H. Wang and M.K. Lei | 621 |
| <i>In situ</i> Photoemission Study on Initial Growth of Er_2O_3 Films on Si(001) Y.Y. Zhu, Z.B. Fang, S. Chen, C. Liao and Z.M. Jiang | 625 |
| Surface Grafting Modification of Silk Fibroin by Atom Transfer Radical Polymerization T.L. Xing, H.J. Wang, Z.X. Li and G.Q. Chen | 629 |
| Drug-Eluting Coronary Stents Coated with Polysulfone-Poly(ethylene Oxide) Block Copolymer by Ultrasonic Spray X.Z. Gu, H. Yi, Z.H. Ni and J.H. Fang | 633 |

| | |
|---|-----|
| Research on the Surface Treatment of Carbon Fibers Used in Fabrication of MMCs Wire L. Wang and H.F. Zhao | 637 |
| Influence of the Surface Roughness of Plasma-Sprayed YSZ on LSM Cathode Polarization in Solid Oxide Fuel Cells M. Gao, C.X. Li, M.D. Wang, H.L. Wang and C.J. Li | 641 |
| Preparation and Characterization of Poly Amide Amine (Generation 4.0) Self-Assembled Monolayer on Si (100) B.F. Cui, J.M. Chen, J.Y. Zhang and H.D. Zhou | 645 |
| Self-Assembled Monolayers of Schiff Base on the Surfaces of Oxidized Copper D.G. Li, X.J. Yu, Y.H. Dong, L.P. Zhang and Z.D. Zhao | 649 |
| Fabrication, Surface Modification and Analysis of Biocompatibility of Biologic Chitosan Scaffold K.D. Song, P.F. Wen, T.Q. Liu, L.L. Jiang and G.Y. Mei | 654 |
| A Novel Thermo-Sensitive Polymer Film and its Imaging Properties T. Wu, W.M. Zhang, N. Yang and J.L. Pu | 658 |
| Study on Preparation and Properties of a Room Temperature Fast Curing Epoxy Resin Nano-Adhesive S.N. Ma, N.S. Zhu, C.Q. Li and C.H. Hu | 662 |
| Preparation of TiC/ Fe Surface Composite by a Casting-SHS Process B.S. Jin, Y.F. Jiao and G. Li | 666 |
| Surface Modification of Nano-Copper and its Dispersive Behavior in Water X.J. Wang, D.S. Zhu, X.F. Li and N. Wang | 670 |
| Preparation and Characterization of Cu-Coated Nano SiC Composite Particles S. Zhu, C. Li, J.H. Du and W.Z. Han | 674 |
| The Synthesis and Phase Behavior of a Novel Discoticnematic Triphenylene Mesogen and its Application to an Optically Anisotropic Film C.X. Zhang, Z.Q. He, J.L. Pu, J.J. Wang, Y.S. Wang, Z.X. Li and S. Ye | 678 |
| The Insulated Effect of New Inorganic Coatings on the Surface of Fiber Paper F. He, X.D. He, J.F. Li, M.W. Li and S.M. Zhang | 682 |
| A Photometric Method for Measuring Photoacid Generator Efficiencies Using Rhodamine B as Acid Sensor in Thin Polymer Films J.P. Li, W.M. Zhang and J.L. Pu | 686 |
| Superficial Optimization of Microcapsule S.N. Qiao, L.H. Li, W. Ming and L.X. Mo | 690 |
| Controlled Self-Assembling Patterns of Colloidal Crystal by Solvent Modification J. Wang, Y.C. Hu, B. Qu, B.P. Wang and Z.Z. Gu | 694 |
| Preparation and Characterization of Silver Citrate Nano-Emulsion and Nano-Silver Film L.X. Mo, L.H. Li, Y.L. Li, Z.X. Li and M. Wang | 698 |
| Surface Modification and Properties of SiO₂ Nano Porous Aerogels X.Y. Ni, Y. Li, Z.H. Zhang, J. Shen, B. Zhou and G.M. Wu | 702 |
| Encapsulated Titanium Oxide with Al₂O₃ and its Ultraviolet Shielding Properties J.H. Li, X.W. Wu and J. Yang | 706 |
| Microstructure and Thermal Behavior of Gradient Bioceramic Coatings Fabricated by Laser Cladding on Titanium Alloy M. Zheng, D. Fan, X.K. Li, Q.B. Liu and J.B. Zhang | 710 |
| Evaluation and Analysis for the Surface Morphology and Mechanism Properties of the Self-Repair Microcapsule Y. Xin, W. Zhang, S. Zhang and B.S. Xu | 714 |
| The Effects of Surface Modifications on Tin-Doped Indium Oxide Films: Optoelectrical, Wettability and XPS Investigations Z.Y. Zhong and F.L. Sun | 718 |
| Bio-Derived Bone Surface Modification with Biomimetic Thin Film Coatings to Improve Mesenchymal Stem Cells Adhesion and Spreading K.D. Song, P.F. Wen and T.Q. Liu | 722 |
| Study on the Structure and Electrochromism of WO₃ and Ti-Doped WO₃ Films L.G. Wang, G.Q. Li, Y.R. Hu, W. Gou and M. Shi | 726 |
| Study on Electrical Properties and 1064nm Pulse Laser Damage of Vanadium Oxide Thin Film X.R. Chen, J.Z. Hu, W.Z. Han and B.S. Xu | 730 |

| | |
|---|-----|
| Influence of Hydrothermal Treatment in Deionized Water on Surface Morphology and Structure of Titanium with Biomedical Application by Microarc Oxidation W. Li, L.Z. Chen and P.S. Pang | 734 |
| Preparation of Sn-Coated Mesophase Graphite Powders by Carbothermal Reduction Y.R. Jhan, T. Fang, S.Y. Tsai and J.G. Duh | 738 |
| Room-Temperature Deposition of Nano-TiO₂ Coating by Vacuum Cold Spraying Using TiCl₄-Aagglomerated Nano-TiO₂ Powder for Flexible Dye-Sensitized Solar Cell S.Q. Fan, C.J. Li, G.J. Yang, J.C. Gao, L.Z. Zhang, C.X. Li and Y.Y. Wang | 742 |
| . Surface Machining and Mechanical Processing | |
| Study on the Machining of Plasma-Sprayed Al₂O₃ Coatings by Ultrasonic Vibration Cutting G.M. Liu, Y.L. Song, L.L. Ma and F. Wang | 746 |
| Appearance of Mechanical Zinc Coatings and Superficial Pore Sealing Treatment J.C. Ding, Z.D. Zhao, J. Lu and Y.Q. Sun | 750 |
| Experimental Investigation on Intensity and Residual Stress in Superficial Layers Induced by Water Cavitation Peening with Aeration D.Y. Ju and B. Han | 754 |
| Formation and Control of 40Cr Grind-Hardening G.C. Wang, H.J. Pei, J.Y. Zhang, C.Y. Zhang and Q.F. Li | 758 |
| Fractal Characteristic and Wear Prediction of Surface Micro-Topography of Laser-Textured Roller H.B. Liu, D.P. Wan and D.J. Hu | 762 |
| Effects of Dimple Geometric Parameters on the Performance of a Laser-Textured Mechanical Seal X.D. Peng, S.E. Sheng, J.Y. Li, X.M. Pan and S.X. Bai | 766 |
| Research on the Robotic Free Abrasive Polishing System for the Rapid Spray Metal Tooling G.C. Han, M. Sun, H.O. Zhang and G.L. Wang | 770 |
| The Surface Coating Robot for Space Solar Cell Array Assembly Z. Fu, W.X. Yan and Y.Z. Zhao | 774 |
| The Characteristic Analysis of the Surface Wave of Film under Different Surface Tension S.L. Wang, Z.R. Wu, Y.L. Cheng, M. Liu and D. Lu | 778 |
| Design of Surface Finish Using Compound Processes of Grinding and Electrochemical Finishing Following Turning P.S. Pa | 782 |
| A FEM Study on Thermal Stress in Laminated Composite Z. Li, M. You, X.L. Zheng, M.R. Zhao and J.L. Yan | 786 |
| Interacting of Screw Dislocation with Stiff Imperfect Interface S.X. Ma, H. Fan and H. Hu | 790 |
| Design of Ultrasonic Ejecting Gun Used for Surface Nanocrystallization Based on CFD X.M. Wang, S.N. Ma, C.Q. Li, J.W. He and X.Q. Feng | 794 |
| Study on CMP Slurry and Technique of Silicon Dioxide Dielectric for ULSI B.M. Tan, J.Y. Yuan, X.H. Niu, H.L. Shi, Y.L. Liu and C.X. Cui | 798 |
| Applications of Nanoindentation Techniques in the Field of Surface Coatings H.M. Wang, P.J. Shi, H.L. Yu, W. Zhang and B.S. Xu | 802 |
| Figuration Control of Deposit in Friction Surfacing X.M. Liu, Z.D. Zou, Y.H. Zhang, S.Y. Qu and X.H. Wang | 806 |
| The Investigation of Surface Nanocrystallization of Structural Steel Induced by Supersonic Fine Particles Bombarding D.M. Ba, S.N. Ma, F.J. Meng and C.Q. Li | 811 |
| The Development of Apparent Density Measuring Apparatus of Magnetic Lubricating Oil X.H. Li, X.L. Zhang, Z.F. Liu and Y.Q. Li | 815 |
| Study on Chemical Mechanical Polishing Technology of Copper S.L. Wang, Y.J. Yuan, Y.L. Liu and X.H. Niu | 820 |
| Study on the Polishing Characteristics of the Magnetic Abrasives Finishing to the Slender Pipe Y. Chen, F. Yan and C.Q. Zhu | 824 |

| | |
|---|-----|
| Effect of High Pressure Waterjet Peening on Surface Strengthening Properties of 7075-T651 Aluminum Alloy | |
| G.Q. Chen, D. Zhang, J.H. Song, Y.S. Zeng, Z.Q. Li and W.L. Zhou | 828 |
| Numerical Simulation of Residual Stress Field Induced by Ultrasonic Shot Peening | |
| G. Ma, X. Ling and Y.S. Zeng | 832 |
| Study on the Cleaning and Descaling Anticorrosion Technology of Water Cooling Engine without Disassembling | |
| H. Jiang, X. Zhang, Y.G. Yu, Z.G. Yu and X.B. Lan | 836 |