



applied surface science

A journal devoted to applied physics
and chemistry of surfaces and interfaces

Editor in Chief:

Henrik Rudolph, Breda, The Netherlands

Editors:

T.J. Bandosz, New York, NY, USA
S. Barcikowski, Germany
Frederico Rosei, Varennes (QC), Canada
Hikaru Kobayashi, Osaka, Japan
Jingguang Chen, New York, NY, USA
D. Gu, Nanjing, China
Peter Schaaf, Ilmenau, Germany
Robert L. Opila, Newark, DE, USA
Sefik Suzer, Ankara, Turkey
Tadahiro Komeda, Sendai-Shi, Japan
J. Lian, Changchun, China
Thomas K. Lippert, Villigen, Switzerland
Weixin Huang, Hefei, China
Fátima Montemor, Lisboa, Portugal
Peter Kingshott, Hawthorn, Australia
C.F. McConville, Coventry, UK
A. Miotello, Trento Italy
X.W. Sun, Singapore, Singapore
S.J. Pearton, Gainesville, USA

Volume 289, pp. 1–606

15 January 2014

Available online at www.sciencedirect.com

ScienceDirect

applied surface science

Contents

Volume 289 (2014)

Regular papers

- Reversible low adhesive to high adhesive superhydrophobicity transition on ZnO nanoparticle surfaces
J. Li, Z. Jing, Y. Yang, F. Zha, L. Yan and Z. Lei 1
- Effect of water on hydrogenation of 1,3-butadiene over Au (1 1 1): A joint theoretical and experimental study
W. Bu, L. Zhao, Z. Zhang, X. Zhang, J. Gao and C. Xu 6
- Creation of microstructured surfaces using Cu–Ni composite electro-deposition and their application to superhydrophobic surfaces
J.M. Lee, K.M. Bae, K.K. Jung, J.H. Jeong and J.S. Ko 14
- Preparation of silver-cuprous oxide/stearic acid composite coating with superhydrophobicity on copper substrate and evaluation of its friction-reducing and anticorrosion abilities
P. Li, X. Chen, G. Yang, L. Yu and P. Zhang 21
- Thickness dependence of optoelectronic properties in ALD grown ZnO thin films
T. Singh, T. Lehnen, T. Leuning, D. Sahu and S. Mathur 27
- The electrochemical behaviour of 316L austenitic stainless steel in Cl⁻ containing environment under different H₂S partial pressures
J. Ding, L. Zhang, M. Lu, J. Wang, Z. Wen and W. Hao 33
- Structural and magnetic properties in Mn-doped ZnO films prepared by pulsed-laser deposition
Q. Li, Y. Wang, J. Liu, W. Kong and B. Ye 42
- Role of surface on the size-dependent mechanical properties of copper nano-wire under tensile load: A molecular dynamics simulation
W.-T. Liu, C.-I. Hsiao and W.-D. Hsu 47
- Synthesis, characterization and performance evaluation of three-layered photoanodes by introducing a blend of WO₃ and Fe₂O₃ for dye degradation
S. Hosseini, E. Eftekhari, S.M. Soltani, F.E. Babadi, L.J. Minggu and M.H.S. Ismail 53
- Multiple nanoscale parallel grooves formed on Si₃N₄/TiC ceramic by femtosecond pulsed laser
Y. Xing, J. Deng, Y. Lian, K. Zhang, G. Zhang and J. Zhao 62
- Efficiency enhancement for dye-sensitized solar cells with a porous NiO/Pt counter electrode
W. Maiaugree, N. Kongprakaiwoot, A. Tangtrakarn, S. Saekow, S. Pimanpang and V. Amornkitbamrung 72
- Study of electronic sputtering of CaF₂ thin films
R.K. Pandey, M. Kumar, S.A. Khan, T. Kumar, A. Tripathi, D.K. Avasthi and A.C. Pandey 77
- The inter-adsorbate interaction mediated by Shockley-type surface state electrons and dipole moment: Cs and Ba atoms absorbed on Ag (1 1 1) films
S. Zhang, H. Zhang and Y. Miyamoto 81
- Nucleation and characterization of hydroxyapatite on thioglycolic acid-capped reduced graphene oxide/silver nanoparticles in simplified simulated body fluid
J. Zhao, Z. Zhang, Z. Yu, Z. He, S. Yang and H. Jiang 89
- Multifractal characterization of single wall carbon nanotube thin films surface upon exposure to optical parametric oscillator laser irradiation
Ş. Tãlu, Z. Marković, S. Stach, B.T. Marković, M. Tãlu 97
- Adsorptive removal of sulfur compounds using IRMOF-3 at ambient temperature
X.-L. Wang, H.-L. Fan, Z. Tian, E.-Y. He, Y. Li and J. Shanguan 107
- The effect of increasing V content on the structure, mechanical properties and oxidation resistance of Ti–Si–V–N films deposited by DC reactive magnetron sputtering
F. Fernandes, A. Loureiro, T. Polcar and A. Cavaleiro 114
- Improved of the wear resistance of carbon nanofiber/epoxy nanocomposite by a surface functionalization of the reinforcement
M.I. Barrena, J.M. Gómez de Salazar, A. Soria and R. Cañas 124
- Analysis of electrochemical noise (ECN) data in time and frequency domain for comparison corrosion inhibition of someazole compounds on Cu in 1.0 M H₂SO₄ solution
B. Ramezanzadeh, S.Y. Arman, M. Mehdipour and B.P. Markhali 129
- Correlations between the oxygen deficiency and the laser damage resistance of different oxide films
C. Xu, P. Yi, H. Fan, J. Qi, Y. Qiang, J. Liu, C. Tao and D. Li 141
- Effect of electropolymerization time on the performance of poly(3,4-ethylenedioxythiophene) counter electrode for dye-sensitized solar cells
M. Gao, Y. Xu, Y. Bai and S. Jin 145
- Electrospray aerosol deposition of water soluble polymer thin films
M.L. Sweet, D. Pestov, G.C. Tepper and J.T. McLeskey Jr. 150
- Adsorption behavior of poly(dimethyl-diallylammonium chloride) on pulp fiber studied by cryo-time-of-flight secondary ion mass spectrometry and cryo-scanning electron microscopy
T. Masumi, Y. Matsushita, D. Aoki, R. Takama, K. Saito, K. Kuroda and K. Fukushima 155
- Morphology and crystalline phase characteristics of α-GST films irradiated by a picosecond laser
J.J. Zhao, F.R. Liu, X.X. Han, N. Bai, Y.H. Wan, X. Lin and F. Liu 160
- Transverse magnetoresistance induced by electron-surface scattering on thin gold films: Experiment and theory
S. Oyarzún, R. Henríquez, M.A. Suárez, L. Moraga, G. Kremer and R.C. Munoz 167
- Application of different fatigue strength criteria on shot peened notched parts. Part 2: nominal and local stress approaches
S. Bagherifard and M. Guagliano 173

(Contents continued on BM 1)



(Continued from outside back cover)

- Application of different fatigue strength criteria to shot peened notched components. Part 1: Fracture Mechanics based approaches
S. Bagherifard, C. Colombo and M. Guagliano 180
- Microstructure, mechanical property and wear performance of cold sprayed Al5056/SiCp composite coatings: Effect of reinforcement content
M. Yu, X.K. Suo, W.Y. Li, Y.Y. Wang and H.L. Liao 188
- Investigation of the surface morphologies and the microstructures of graphite cathodes for explosive emission
F. Zhou, H. Wan, J. Chuan, S. Bai and P. Wu 197
- Solar Spectrum Photocatalytic Conversion of CO₂ and Water Vapor Into Hydrocarbons Using TiO₂ Nanoparticle Membranes
S. Rani, N. Bao and S.C. Roy 203
- Synthesis and characterization of nanostructured poly(methyl methacrylate) for antireflection coating
M. Dai, Y. Wang, M. Pan, S. Lin, G.L. Rempel and Q. Pan 209
- Correlation between sol-gel reactivity and wettability of silica films deposited on stainless steel
M. Houmar, E.H.M. Nunes, D.C.L. Vasconcelos, G. Berthomé, J.-C. Joud, M. Langlet and W.L. Vasconcelos 218
- Enhanced photocatalytic performance of Bi₂O₃/H-ZSM-5 composite for rhodamine B degradation under UV light irradiation
Q. Wang, J. Hui, L. Yang, H. Huang, Y. Cai, S. Yin and Y. Ding 224
- Effect of prior laser microstructural refinement on the formation of amorphous layer in an Al₈₆Co_{7.6}Ce_{6.4} alloy
C.L. Li, J.W. Murray, K.T. Voisey, A.T. Clare and D.G. McCartney 230
- Promotional effect of fluorine on the selective catalytic reduction of NO with NH₃ over CeO₂-TiO₂ catalyst at low temperature
R. Zhang, Q. Zhong, W. Zhao, L. Yu and H. Qu 237
- A green synthesis of magnetic bentonite material and its application for removal of microcystin-LR in water
L. Lian, X. Cao, Y. Wu, D. Sun and D. Lou 245
- Tunable photoluminescence properties of well-aligned ZnO nanorod array by oxygen plasma post-treatment
S. Jiang, Z. Ren, S. Gong, S. Yin, Y. Yu, X. Li, G. Xu, G. Shen and G. Han 252
- Temperature dependent rotation of the uniaxial easy axis of magnetization in granular SiO₂-(Co/Fe/CoFe₂)-Si(1 1 1) multilayers
B. Pacakova Bittova, J. Lancok, M. Klementova and J. Vejpravova 257
- Controllable growth of BiOCl film with high percentage of exposed {0 0 1} facets
S. Wu, C. Wang and Y. Cui 266
- Effects of nanosecond-pulsed laser irradiation on nanostructure formation on the surface of thin Au films on SiO₂ glass substrates
R. Yu, T. Shibayama, X. Meng, S. Takayanagi, Y. Yoshida, S. Yatsu and S. Watanabe 274
- Fabrication of hierarchically structured rutile TiO₂ nanorods on mica particles and their superhydrophilic coating without UV irradiation
Q. Gao, X. Wu, Y. Fan and X. Zhou 281
- Electrochromic performance, wettability and optical study of copper manganese oxide thin films: Effect of annealing temperature
S.S. Falahatgar, F.E. Ghodsi, F.Z. Tepehan, G.G. Tepehan, İ. Turhan 289
- Fabrication of silicon nanopillar arrays by cesium chloride self-assembly and wet electrochemical etching for solar cell
J. Liu, X. Zhang, G. Dong, Y. Liao, B. Wang, T. Zhang and F. Yi 300
- Effect of calcined atmosphere on the photocatalytic activity of P-doped TiO₂
Y. Xia, Y. Jiang, F. Li, M. Xia, B. Xue and Y. Li 306
- Study on the structure, acidic properties of V-Zr nanocrystal catalysts in oxidative dehydrogenation of propane
S. Chen, F. Ma, A. Xu, L. Wang, F. Chen and W. Lu 316
- Property of anodic coatings obtained in an organic, environmental friendly electrolyte on aluminum alloy 2024-T3
R.F. Zhang, H.W. Shi, Z.L. Liu, S.F. Zhang, Y.Q. Zhang and S.B. Guo 326
- Nonvolatile memory capacitors based on Al₂O₃ tunneling and HfO₂ blocking layers with charge storage in atomic-layer-deposited Pt nanocrystals
X.-J. Liu, L. Zhu, M.-Y. Gao, X.-F. Li, Z.-Y. Cao, H.-F. Zhai, A.-D. Li and D. Wu 332
- Surface characterization of TiNi deformed by high-pressure torsion
D.N. Awang Shri, K. Tsuchiya and A. Yamamoto 338
- Deposition of ZnO rods by electrochemically induced hydrolysis
P. Steegstra and E. Ahlberg 345
- Structural, electronic properties and stability of AlCMn₃ (1 1 1) surfaces by first-principles calculations
F. Wang, K. Li and N.G. Zhou 351
- Electron irradiation-enhanced water and hydrocarbon adsorption in EUV lithography devices
A. Al-Ajlony, A. Kanjilal, M. Catalfano, S.S. Harilal and A. Hassanein 358
- High resolution microstructure characterization of the interface between cold sprayed Al coating and Mg alloy substrate
Q. Wang, D. Qiu, Y. Xiong, N. Birbilis and M.-X. Zhang 366
- Study on depth-related microstructure and wear property of rare earth nitrocarburized layer of M50NiL steel
M.F. Yan, C.S. Zhang and Z. Sun 370
- Microstructure and oxygen evolution of Fe-Ce mixed oxides by redox treatment
K. Li, M. Haneda, P. Ning, H. Wang and M. Ozawa 378
- Hybrid structure of graphene sheets/ZnO nanorods for enhancing electron field emission properties
J.-C. Lin, B.-R. Huang and T.-C. Lin 384
- Oxidation upon segregation: Evaluation of chemical state of segregated species in polycrystalline Fe-Si-Al alloys by AES
D. Mandrino and D.S. Petrović 388
- Graphite-like C₃N₄ modified Ag₃PO₄ nanoparticles with highly enhanced photocatalytic activities under visible light irradiation
Z. Xiu, H. Bo, Y. Wu and X. Hao 394
- Preparation and tribological properties of inclusion complex of β-cyclodextrin/dialkyl pentasulfide as additive in PEG-600 aqueous solution
J. Guan, X. Xu, G. Li and W. Peng 400
- A novel ToF-SIMS operation mode for sub 100 nm lateral resolution: Application and performance
M. Kubicek, G. Holzlechner, A.K. Opitz, S. Larisegger, H. Hutter and J. Fleig 407
- Construction of superhydrophobic and superoleophilic nickel foam for separation of water and oil mixture
R. Gao, Q. Liu, J. Wang, J. Liu, W. Yang, Z. Gao and L. Liu 417
- Tunable surface wettability and water adhesion of Sb₂S₃ micro-/nanorod films
X. Zhong, H. Zhao, H. Yang, Y. Liu, G. Yan and R. Chen 425

Investigations on the role of alkali to obtain modulated defect concentrations for Cu ₂ O thin films A. Chowdhury, P.K. Bijalwan and R.K. Sahu	430	Fabrication of through holes in silicon carbide using femtosecond laser irradiation and acid etching V. Khuat, Y. Ma, J. Si, T. Chen, F. Chen and X. Hou	529
Microstructure and wear resistance of the hypereutectic Fe–Cr–C alloy hardfacing metals with different La ₂ O ₃ additives J. Yang, J. Tian, F. Hao, T. Dan, X. Ren, Y. Yang and Q. Yang	437	Etching of CVD diamond films using oxygen ions in ECR plasma Z. Ma, J. Wu, W. Shen, L. Yan, X. Pan and J. Wang	533
Modulating magnetic characteristics of Pt embedded graphene by gas adsorption (N ₂ , O ₂ , NO ₂ , SO ₂) Y. Lee, S. Lee, Y. Hwang and Y.-C. Chung	445	Deposition of Cr–Si–Ni–Mo films at a low sputtering current and performance of heat and humid resistance X.Y. Wang, C.G. Li, J.X. Ma and J.Q. Shao	538
Physico-chemical studies of cuprous oxide (Cu ₂ O) nanoparticles coated on amorphous carbon nanotubes (α -CNTs) M.R. Johan, S.H. Meriam Suhaimy and Y. Yusof	450	Graded composite diamond coatings with top-layer nanocrystallinity and interfacial integrity: Cross-sectional Raman mapping R. Dumpala, B. Ramamoorthy and M.S.R. Rao	545
Nanohardness, corrosion and protein adsorption properties of CuAlO ₂ films deposited on 316L stainless steel for biomedical applications S.-H. Chang, J.-Z. Chen, S.-H. Hsiao and G.-W. Lin	455	Influence of processing conditions on the structure, composition and ferroelectric properties of sputtered PZT thin films on Ti-substrates A. Bose and M. Sreemany	551
Optical and magnetic properties of Fe ₂ O ₃ nanoparticles synthesized by laser ablation/fragmentation technique in different liquid media B.K. Pandey, A.K. Shahi, J. Shah, R.K. Kotnala and R. Gopal	462	Surface and interface analysis of poly-hydroxyethylmethacrylate-coated anodic aluminium oxide membranes N. Ali, X. Duan, Z.-T. Jiang, B.M. Goh, R. Lamb, A. Tadich, G.E.J. Poinern, D. Fawcett, P. Chapman and P. Singh	560
Low electrical potential anode modified with Fe/ferric oxide and its application in marine benthic microbial fuel cell with higher voltage and power output Y. Fu, Q. Xu, X. Zai, Y. Liu and Z. Lu	472	Influence of annealing conditions on the crystallographic structure, chemical composition and luminescence of ZnO thin films K. Khojier, H. Savaloni and E. Amani	564
Task-specific ionic liquid as a new green inhibitor of mild steel corrosion E. Kowsari, M. Payami, R. Amini, B. Ramezanzadeh and M. Javanbakht	478	Spatially controlled immobilisation of biomolecules: A complete approach in green chemistry E. Grinerval, G. Nonglaton and F. Vinet	571
Application of novel Polypyrrole/thiol-functionalized zeolite Beta/MCM-41 type mesoporous silica nanocomposite for adsorption of Hg ²⁺ from aqueous solution and industrial wastewater: Kinetic, isotherm and thermodynamic studies H. Javadian and M. Taghavi	487	Electrical properties of SiGe nanowire following fluorine/nitrogen plasma treatment K.-M. Chang, C.-F. Chen, C.-H. Lai, P.-S. Kuo, Y.-M. Chen and T.-Y. Chang	581
Adsorption of cationic dye (methylene blue) from aqueous solution using poly(cyclotriphosphazene-co-4,4'-sulfonyldiphenol) nanospheres Z. Chen, J. Fu, M. Wang, X. Wang, J. Zhang and Q. Xu	495	Surface treatment of polymer microfibrillar structures for improved surface wettability and adhesion A. Peyvandi, S.U. Abideen, Y. Huang, I. Lee, P. Soroushian and J. Lu	586
DFT study of benzene and CO co-adsorption on PtCo(1 1 1) V. Orazi, J.S. Ardenghi, P. Bechthold, P.V. Jasen, M.E. Pronato and E.A. González	502	Microporosity development in phenolic resin-based mesoporous carbons for enhancing CO ₂ adsorption at ambient conditions J. Choma, K. Jedynak, W. Fahrenholz, J. Ludwinowicz and M. Jaroniec	592
Improving degradation resistance of sisal fiber in concrete through fiber surface treatment J. Wei and C. Meyer	511	Effects of ozone post deposition treatment on interfacial and electrical characteristics of atomic-layer-deposited Al ₂ O ₃ and HfO ₂ films on GaSb substrates L. Zhao, Z. Tan, J. Wang and J. Xu	601
Effect of pH on film structure and electrical property of PMMA–Au composite particles prepared by redox transmetalation H.-M. Wu, K.-J. Lin, Y.-H. Yu, C.-Y. Ho, M.-H. Wei, F.-H. Lu and W.J. Tseng	524		