Emerging Focus on Advanced Materials

PART 2

Selected, peer reviewed papers from the 1st International Congress on Advanced Materials 2011 (AM2011)
May 13-16, 2011, Jinan, P.R. China

Edited by

Shiquan Liu and Min Zuo
Part 2

Chapter 8: Constructional Materials

Research on Hydration of Waterproof-Typed Semi-Hydrated Gypsum
J.Q. Li, M.Z. Gong and G.Z. Li ................................................................. 909

Preparation and Properties of Cement Mortar Modified by VAE Latex
Experimental Study on Influential Factors of Adiabatic Temperature Rise for Mass Concrete
D.D. Wang, W.L. Tian and C.Q. Wang ........................................ 917

Influence and Mechanism of Polymer Coating on Shrinkage of Cement-Based Materials
L. Shi, J.Z. Liu and J.P. Liu .................................................. 923

The Failure Mode and Anti-Crack Performance of the Steel Fiber Reinforced High Strength Concrete Four-Pile Cap
D.Y. Gao, H. Fan and J. Lei ..................................................... 927

Preparation and Application of the Vesicant in Gypsum
W.H. Zhang and G.Z. Li ............................................. 934

Effects of LaCrO₃ Composite Additive for the Hydration Resistance of MgO-CaO Refractory
J.J. Sun, C.N. Yin, Y.J. Liu and S.Q. Liu .................................. 938

Application of New Concrete Materials in Channel Lining of the South-to-North Water Diversion Project
W.L. Li, Y.T. Li and J.Y. Yu .................................................. 942

Effects of Viscosity Modifying Admixtures on the Workability of Self-Compacting Concrete
B.G. Ma, H.X. Wang, J. Xiao, L.X. Li and Z.B. Cheng .................. 946

Study on Anti-Ultraviolet Radiation Aging Property of TiO₂ Modified Asphalt
S.S. Sun, Y.M. Wang and A.Q. Zhang ...................................... 951

Research on High Performance Sulfoaluminate Cement Underwater Non-Dispersed Concrete
D.C. Zhang, D.Y. Xu and X. Cheng .......................................... 956

Effect of P₂O₅ on the Properties of Alite-Calcium Strontium Sulphoaluminate Cement
C.N. Yin, L.C. Lu and S.D. Wang ......................................... 961

Effects of CaF₂ on the Formation Kinetics of Portland Cement Clinker

Study on Sintering Technology and Performance of Alite-Rich Cement Modified by C₁₅Sr₂₅A₃S Mineral
G.Q. Li, S.D. Wang, C.N. Yin and L.C. Lu .................................. 970

Study on the Adaptability Between the Amount of C₃S Mineral in Alite-Sulphoaluminate Cement Clinker and the Fly Ash
Y.C. Wu, X.C. Liu, B.L. Li, T. Liu, W.S. Wang and Y.J. Li .............. 975

Influence of Species of Manufactured Sand on Basic Performances of Mortar
Y.L. Wang, S.X. Liu, W.D. Wang and Y.J. Zhao .......................... 980

Study on Integral Utilization of Alkaline Slag and Fly Ash
S.X. Wang and N. Li .......................................................... 984

Spectrophotometric Determination of the Ca Ion Content in Steel Slag by Using Chlorophosphonazo as the Spectral Chromogenic Reagent
H.L. Zhao, X. Cheng and J. Chang ......................................... 989

Study on Preparation and Properties of Cement-Based Foamed Lightweight Thermal Insulation Material
C.C. Jiang, G.Z. Li and S. Zhang ............................................ 994

Effect of Doped with BaO on the Formation Dynamics of Alite in Alite-Rich Cement Clinker
S.D. Wang, X.Y. Guo, L.C. Lu and X. Cheng .............................. 998

Effect of Slag on Expansion of Alite-Calcium Barium Sulphoaluminate Cement
S.D. Wang, L.C. Lu and X. Cheng .......................................... 1003

Experimental Investigation on Related Properties of Asphalt Mastic Containing Recycled Cement Mortar Powder
Thermally and Chemically Added-Calcium Composite Activation of Coal Gangue and its Application in Cement
X.Y. Song, J.Y. Han and Z.H. Gao .......................................................... 1016

Influence of Slag and Fly Ash on the Self-Healing Ability of Concrete

Effect of Gypsum on Hydration Degree and Structure of Hardened Paste of Alite-Strontium Calcium Sulphoaluminate Cement
Q.Y. Li, L.C. Lu and S.D. Wang ............................................................ 1024

Relationships of Strengths and Dimensional Effect of Plastic Concrete
D.Y. Gao, S.Q. Song and L.M. Hu .......................................................... 1029

Application of Second Law of Fick in NaCl Attack of Sulphoaluminate Cement
Z.M. Ye, L.C. Zheng, L.H. Wan and X. Cheng ........................................ 1038

Study of Adsorptive Behaviors of Aminosulfonic Acid-Based Superplasticizer on the Calcium Sulphoaluminate Mineral
T. Liu, Y.J. Li, B.L. Li, Y.C. Wu, W.S. Wang and X.C. Liu ......................... 1042

Design and Choose Assessment Parameter for Concrete Performance of Anti-Sulfate Erosion
H.X. Qiao, H.F. Yu and Z.M. He ............................................................ 1047

Preparation of Nano Rice-Husk Ash and Effect on the Water-Resistance of Magnesium Oxychloride Composites
K.J. Xu, J.T. Xi and Y.Q. Guo ............................................................... 1051

Effect of MoO3 on the Clinkers Formation of Portland Cement
L.B. Yu, Z.P. Xu, G.W. Dong and Y.N. Zhu ........................................... 1055

Microwave Synthesis of Dicalcium Silicate: - Comparison with Conventional Synthesis
H.Z. Jiang, Q. Hao, J. Zhou and J.J. Li ................................................ 1060

Performance of Belite-Barium Calcium Sulphoaluminate Cement Prepared by Substituting Fly Ash for Clay

Pond Ash: An Alternative Material as Fine Aggregate in Concrete for Sustainable Construction
B. Ganesh, H. Sharada Bai, R. Nagendra and S. Bagade .................................. 1071

Research on the Performance of Ba-Bearing Aluminoferrite Cement
W.J. Tan, J. Chang and Z.M. Ye ........................................................... 1076

Research on Enzymatic Hydrolysis Lignin Modified Petroleum Asphalt
Z.D. Zhao, Y. Xie, X.S. Cheng, Y.Q. Jin and M.Y. Xu .................... 1080

Experimental Research on Compressive Strength of Self-Compacting Concrete with Recycled Coarse Aggregates
J. Li, X.F. Qu, L.F. Wang, C.Q. Zhu and J. Li ................................................ 1084

Influence of Compounding Malic Acid with Plasticizers on Hydration Heat of α-Calcium Sulphate Hemihydrate
P.M. Wang and W. Pan ........................................................................ 1088

Influence of Limestone Powder on Performance of the Pre-Mixed Cement Mortar
X.Z. Zhang, C.S. Han and X. Yin ............................................................ 1096

Effect of Mixed Material on Sulphoaluminate Cement Sulfate Attack Resistance
G.Y. Wang, L.C. Lu, S.D. Wang and P.Q. Zhao ........................................ 1101

Study on Using Low Quality Fly Ash to Produce Baking-Free Bricks
W.H. Tao, X.H. Fu and Z.X. Yang .......................................................... 1106

Corrosion Behavior of Super-Hydrophobic Surface on Fe3Al in Seawater
P. Wang, Y.S. Yin and T. Liu ................................................................. 1110

The Study on Accelerated Life Mechanism of Glass Fiber Reinforced Magnesium Oxychloride Cement
J.M. Dong, H.F. Yu and Q.Q. Liu ............................................................ 1118
Pore Structural Changes and Carbonated Depth of Carbonated Steel Slag
H.Z. Wu, J. Chang and H. Wang ................................................................. 1122

Influence of Mechanical Behavior of Adhesives on Shear Stress Distributions in the
Single-Lap Adhesive Joints
X.C. He ........................................................................................................ 1126

Chapter 9: Nano Materials

Photoluminescence Properties of InGaN/GaN Multiple Quantum Well Light Emitting Diodes by
Metalorganic Chemical Vapor Deposition

Heat Transfer Analysis of the Micron-Scale Agglomerates of TiO₂ Precursor during the
Detonation Process
Y.D. Qu, X.J. Li and H.H. Yan ....................................................................... 1138

Y₃Al₅O₁₂ Nanocrystallites Prepared from a Novel Crystalline Precursor
R.J. Han, D. Gao and K.Z. Chen .................................................................... 1142

Facile Synthesis of Cobalt Oxide Uniformly Coated on Multi-Wall Carbon
Nanotubes for Supercapacitors
L.Y. Gong and L.H. Su .................................................................................. 1148

Effects of Conductive Supports on the Growth and Capacitive Performance of Nanostructured
Manganese Oxides
N. Guo and Z.Y. Qin .................................................................................... 1153

Large-Sized TiO₂/SiO₂ Macroporous Materials for Photo-Degradation of Organic Compounds
in Water and Air
R.F. Zhang, J. Ye and N.B. Long .................................................................... 1157

Synthesis and Characterization of Sol-Gel Derived Magnesium Tantalate Nanopowder
Y.S. Jiang, J.H. Luo, Z. Li and L.N. Chen ......................................................... 1162

Density Functional Theory Study of Influence of Hydrogen Absorption on the Field Emission
Properties of Carbon Nanotubes
K. Sun, Z.Q. Fan and X.Y. Liu ....................................................................... 1166

Influence of Treatment of Hydrogen Plasma on Field Emission Properties of Carbon Nanotubes
Films
Z.Q. Fan, H.F. Ou, R. Li, G.W. Cai and J.D. Zhang ........................................ 1170

Synthesis, Photophysical Properties and Aggregates of a New Pyridinium Dye
Y.H. Sun, Y.L. Deng, D.X. Cao and Z.Q. Liu .................................................. 1174

Effect of Volume Fraction and Temperature on Thermal Conductivity of SiO₂ Nanofluids
B.J. Zhu, W.L. Zhao, D.D. Li and J.K. Li .......................................................... 1178

Conducting Polymer Functionalized Single-Walled Carbon Nanotubes: Synthesis,
Morphological Characteristics and Thermal Stability
H.M. Niu ........................................................................................................ 1182

Synthesis and Characterization of Nanocrystalline Mg₄Nb₂O₉ by the Modified
Sol-Gel Method

Facile Synthesis and Properties of Cd₅Zn₁₋₁₋₅Se Alloy Nanocrystals
R.L. Zhang, N. Liu, Z.M. Yuan, J. Yang, Y.L. Zhang, A.Y. Zhang, Y.Q. Cao,
Y.N. Zhu and P. Yang .................................................................................... 1190

Preparation and Photoluminescence of Hybrid SiO₂-Coated CdTe Nanocrystals
N. Liu, Z.M. Yuan, J. Yang, Y.L. Zhang, R.L. Zhang, Y.Q. Cao, A.Y. Zhang,
Y.N. Zhu and P. Yang .................................................................................... 1194

Anatase Nano Titanium Oxide Synthesized Using the Hydrothermal Method and its Optical
Absorption Properties
X.M. Fu and Z.W. Liu ..................................................................................... 1198
Synthesis and Properties of CdSe/Cd_3Zn_1-xS Quantum Dots
J. Yang, Y.L. Zhang, R.L. Zhang, N. Liu, Z.M. Yuan, A.Y. Zhang, Y.Q. Cao, Y.N. Zhu and P. Yang .......................... 1203

Synthesis of a-Ni(OH)_2 Peonies Assembled from Nanosheet Building Blocks and Corresponding NiO Porous Peonies
Y. Yan, W.J. Kang, J.F. Li and Y.T. Qian ................................................................. 1207

Synthesis of Carbon/Carbon Core/Shell Nanofibers by Co-Pyrolysis of Tetrahydrofuran and Ferrocene
W.J. Kang, H.B. Li, Y. Yan and Y.T. Qian ................................................................. 1211

Carbon Nanotubes-Doped Glassy Carbon Ceramic Composite Electrode and its Electrocatalytic Reduction of Nitrite
D.Z. Sun ..................................................................................................................... 1215

Electrocatalytic Reduction of Nitrite at Carbon-Nanotube-Modified Glassy Carbon Electrodes
D.Z. Sun ..................................................................................................................... 1221

The Effect of Alcoholic Reducing Agent on Morphology and Structure of VO_2(B) Nano-Particles
J. Qi and C. Niu .......................................................................................................... 1225

Characterization and Properties of Sol-Gel-Derived Polyurethane Acrylate/Silica Hybrid Materials
Z.H. Yang, J.H. Wang, Y.D. Ji and Y.Z. Yin .................................................................. 1229

Preparation and Characterizations of Na_2Ti_3O_7, H_2Ti_3O_7 and TiO_2 Nanobelts
Y.M. Wang and H. Liu ............................................................................................. 1233

The Microstructure of Zinc Oxide Films Prepared by Hydrothermal Method
Z.L. Xia, Q. Xu and L.X. Zhao ................................................................................... 1238

Temperature Dependent Photoluminescence of ZnO Nanorods Synthesized by Hydrothermal Method
P. Wang, L.B. Fan, L.X. Shi and B. Fang ................................................................... 1242

Effect of Reaction Temperature on the Morphology of Carbon Nanofibers
L.Y. Yu, L.N. Sui, H.Z. Dong and L.F. Dong .............................................................. 1247

Preparation and Characterization of Poly(Acrylamide)/Silica Nanocomposite Gels

Characterization and their Fluorescence of Fe^{3+}-Doped La_2Zr_2O_7 Nanocrystals by a Salt-Assistant Combustion Method
Y.S. Bai, L.D. Lu and J.C. Bao ................................................................................ 1257

Photoluminescent Properties of TGA-Capped CdTe Quantum Dots
Z.M. Yuan, J. Yang, Y.L. Zhang, R.L. Zhang, N. Liu, Y.Q. Cao, A.Y. Zhang, Y.N. Zhu and P. Yang ............................................ 1262

Facile Fabrication of Free-Standing Titanium Dioxide Nanorods Array with Highly Efficient Ultraviolet Light Induced Photocatalytic Activity
T. Zeng, H. Xie, X.T. Sui and X.J. Zhao ................................................................. 1266

The Preparation of Nano-Sized Lead Sulfide in High Power Pulse Ultrasonic Reactor
M. Shui, J. Shu, Y.L. Ren and R.F. Zhang ................................................................. 1271

Synthesis and Characterization of Mesoporous silica Nanoparticles Embedded Gadolinium Oxide
N.Q. Luo, Z.Y. Huang, P. Luo, Y.Z. Shao and D.H. Chen ................................................. 1275

A Solid-State Reaction Route to Synthesize Crystalline FeB Nanoflowers and their Magnetic Properties
J.F. Li, Y. Yan and Y.T. Qian ...................................................................................... 1280

A Novel Method for Preparing High Efficient Fluorescence-Encoded Microspheres with Semiconductor Nanocrystals
H. Yu and L. Tao ........................................................................................................ 1284
Influence of Doping Methods on the Gas-Sensing Properties of CuO-SnO₂ Sensors
Z.D. Lin, W.L. Song, H.M. Yang and J.C. Zheng ......................................................... 1289

Water-Based Polyurethane-Polyaniline Conductive Core-Shell Latex Nanoparticles
T.L. Zhang and Z.Y. Qin .............................................................................................. 1296

Correlation of Structural and Optical Properties of nc-Ge/a-Si Multilayers Grown by Ion Beam Sputtering
C. Song, R. Huang, X. Wang, J. Song and Y.Q. Guo .................................................... 1300

Influence of Different Processing Parameters on the Structure of Anodic Aluminum Oxide Membrane
X.L. Sun, A.M. Li, W.F. Dong, K.N. Sun, M. Du and W.L. Wang .................................... 1304

Preparation and Characterization of Mg(OH)₂ Flame-Retardant with Particular Morphology via Hydrothermal Process

Finite Element Analysis of High Pressure Torsion Processing
Q. Guan, C.D. Zhu and T.L. Dai .................................................................................. 1317

Phase Diagram of the LiCl-MgCl₂-Na₂cSiO₃-H₂O System at 150°C and Synthesis of Hectorite
J. Wang, Y.Z. Jia, Y. Yao, J.H. Sun, J. Ma, X.J. Yin, Q. Luo and Y. Jing ................................ 1321

Synthesis of Carbon Nanotubes, Carbon Spheres and Slices of Vertically Aligned Multi-Walled Carbon Nanotubes
S.S. Yao ....................................................................................................................... 1325

Characterizations and Crystal Structure of Metallic Ion Doped Titania Nanofiber by Sol-Gel Method
Y. Lu, C.L. Shao, P. Zhang, M.Y. Zhang, Z.Y. Zhang, X. Zhang, M.Y. Li and W.W. Sun .......................................................... 1330

Synthesis of CdS Quantum Dots for Detection of Copper (II) Using Fluorescence Spectroscopy
M. Zhang, F.W. Wan, S.G. Ge and J.H. Yu .................................................................. 1334

CdSe Quantum Dots Decorated by 3-Aminobenzeneboronic Acid as Fluorescence Probe for Glucose
S.W. Wang, X.O. Zhang and J.H. Yu ........................................................................... 1338

Hard-Templating Synthesis of Mesoporous Laₐ₋₄Sr₄MnO₃₋₄ Perovskite and Catalysis Activity in CO Oxidation
X.H. Huang and M. Li ................................................................................................. 1342

Synthesis of CdTe and CdTe/CdS Core-Shell Quantum Dots and their Optical Properties
J.J. Lu, S.G. Ge, F.W. Wan and J.H. Yu ...................................................................... 1350

Determination of Interdiffusion Coefficient in Nanolayered Structures by Auger Electron Spectroscopical Sputter Depth Profiling
J.Y. Wang ..................................................................................................................... 1354

Preparation and Dispersion of Polyacrylamide-Grafting Graphene
L.L. Wu, X. Lv and C.C. Zhang .................................................................................. 1360

Electron Microscopy Study of Y-Shaped Carbon Fibers with Different Morphologies
Q. Zhang and L.F. Dong ............................................................................................. 1364

Complexial Ultrafine Zinc Oxide Powders Prepared by Controlled-Release Precipitation
Z.F. Tong, Y.J. Li and L.X. Lian .................................................................................. 1369

Preparation and Characterization of BCN-TiO₂ Nanoparticles
L. Zhang, L. Li, Z.G. Mou and X.F. Li ....................................................................... 1375

Study of Amorphization of Mechanical Alloyed Cu₅₅Zr₄₀Ag₁₀ Alloy
L.Y. Xia and Y. Wang .................................................................................................. 1379

Effect of Reaction Temperature on Carbon Nanotubes
Y.C. Yue, W. Ren, M.L. Zhao, M.X. Guo, Y.T. Zhang, J. Xia and D.J. Li .......................................................... 1383

Numerical Simulation of Dense Phase Pneumatic Conveying Gypsum in Stepped Pipeline
W.X. Wu, Z.M. Liu and G.B. Duan .............................................................................. 1387
**Emerging Focus on Advanced Materials**

<table>
<thead>
<tr>
<th>Title</th>
<th>Authors</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Preparation and Characterization of Hydrophobic Mesoporous SiO₂ Aerogel</td>
<td>H.X. Liu, S. Chen, R. Shao, R. Dong and M.L. Jia</td>
<td>1393</td>
</tr>
<tr>
<td>Nanocrystalline ZrO₂ Porous Ceramics Fabricated by SPS</td>
<td>D. Zhang, M.G. Wang and Z.K. Zhao</td>
<td>1398</td>
</tr>
<tr>
<td>The Electrical and Optical Properties of Al-Doped ZnO Thin Films Prepared by Atomic Layer Deposition</td>
<td>J. Song, H.C. Mu, L.X. Jiang, G.L. Yin, Z. Yu and D.N. He</td>
<td>1402</td>
</tr>
<tr>
<td>Electrodeposition of Au/Brush-Zn Heterojunction Nanowires</td>
<td>X. Zhao, Y.Z. Wu and X.P. Hao</td>
<td>1406</td>
</tr>
<tr>
<td>Visible-Light Photocatalytic Activity of the Bi₂Ti₄O₁₁ Nanorods</td>
<td>W.W. Zhao, C.Y. Zhang, Y.W. Liu, X.P. Huang and F. Mao</td>
<td>1416</td>
</tr>
<tr>
<td>The Influence of the Temperature on the Light-Sensitive Character of WO₃ Nanorods Synthesized by the Hydrothermal Method</td>
<td>X.M. Fu, C.C. Xie and L.Y. Zhou</td>
<td>1425</td>
</tr>
<tr>
<td>β-Ni(OH)₂ Flower-Like Spheres and NanoflakesSynthesized Using the Hydrothermal Method and its Formation Mechanism</td>
<td>X.M. Fu, Z.W. Liu, L.Y. Zhou and C.C. Xie</td>
<td>1430</td>
</tr>
<tr>
<td>A Strategy to Produce Single and Double Layer Graphene Sheets</td>
<td>S.R. Dhakate, N. Chauhan, S. Sharma and R.B. Mathur</td>
<td>1435</td>
</tr>
<tr>
<td>Ultrasensitive Chemiluminescence Detection of Indoleacetic Acid Catalyzed by Silver Nanoparticles</td>
<td>W.W. Liu, W.H. Liu, X.M. Mu, P.X. Gong and W. Cao</td>
<td>1440</td>
</tr>
<tr>
<td>A Study on Mechanism of Tribological Behavior of Carbon Nanotubes</td>
<td>R. Li, Y.Z. Hu and H. Wang</td>
<td>1444</td>
</tr>
</tbody>
</table>

**Chapter 10: Environmental and Green Materials**

<table>
<thead>
<tr>
<th>Title</th>
<th>Authors</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Photocatalytic Properties of F-TiO₂/Ti Photoelectrodes Prepared by Microarc Oxidation Method under Visible Light Illumination</td>
<td>Y.J. Xin and D.J. Cui</td>
<td>1459</td>
</tr>
<tr>
<td>Mechanical Properties Simulation of Squeeze Cast Magnesium Alloy</td>
<td>Z.H. Guo, H. Hou and S.W. Qu</td>
<td>1464</td>
</tr>
<tr>
<td>Experimental Research on Mechanical Properties of Coal Paste Filling Material</td>
<td>C.Z. Zhao and H.Q. Zhou</td>
<td>1473</td>
</tr>
<tr>
<td>Study on the Kinetics of Phosphor-Gypsum Pyrolysis</td>
<td>M.K. Zhou, G.L. Ying, B.X. Li and T. Xie</td>
<td>1477</td>
</tr>
<tr>
<td>Ecological Barium-Crystal Glass Based on Thailand Quartz Sands Doped with Zirconium Dioxide</td>
<td>K. Won-In, S. Pongkrapan and P. Dararatana</td>
<td>1484</td>
</tr>
<tr>
<td>The Phosphorus Removal Characteristics of Grain-Slag as Filter Media</td>
<td>Y. Feng, Y.Z. Yu, M.T. Li and L. Cheng</td>
<td>1488</td>
</tr>
</tbody>
</table>
Electrochemistry Characterization of Ionic Liquid-Type Phosphomolybdic Salt with Modified Electrode
Z.Y. Li, X.M. Xu, C.L. Zhou and D.Z. Sun ................................................................. 1492

Preparation of a Novel Poly-Silicic-Ferric Coagulant from Fly Ash Extract
J. Tan, Y.Z. Yu and Y. Sun .................................................................................. 1496

The Research of Fired Grain Slag Brick
Y.Z. Yu, J. Tan and L.L. Gao ........................................................................... 1500

Multiple Objective Preform Die Shape Optimization Design for Controlling Forging’s Shape and Deforming Force during Forging Process
X.H. Zhao, G.Q. Zhao, X.H. Huang and Y.G. Luan ........................................ 1504

Synthesis and Application of an Efficient and Stable Solid Acid Catalyst St-e-AS
S.H. Liu, P.R. Meng, L.J. Yu, Y.M. Zhang and X.H. Wang .............................. 1508

Suppressing the Powdering of Zirconia Fibers after High-Temperature Application by Large Additions of Yttria
X.Q. Hou ........................................................................................................ 1512

A New Treatment Method of Pineapple Leaf Fiber for Textile Use
Z.F. Li, G.L. Liu and C.W. Yu ........................................................................ 1516

Preparation and Oxygen Intake/Release Characteristics of YBaCo2Fe2O7

Extraction Behavior of Scandium Cation in Ion Liquid Extraction System Using 1-Butyl-3-Methyl-Imidazolium Hexafluorophosphate and 2-Ethylhexyl Phosphonic Acid-2-Ethylhexyl Phosphonic Ester
Z.W. Pan, G.Q. Li and L.B. Lin ...................................................................... 1524

Anaerobic Biohydrogen Production by the Mixed Culture with Mesoporous Fe3O4 Nanoparticles Activation
W. Zhao, J. Zhao, G.D. Chen, R. Feng, J. Yang, Y.F. Zhao, Q. Wei, B. Du and Y.F. Zhang ............................................................ 1528

Study on Solvent Extraction of Fast Pyrolysis Bio-Oil
Q.K. Tian, L. He, H. Zhang, Z.L. Lv and R. Li .................................................. 1532

Research Progress in Protective Organic Silane Films
X.L. Ran and T.Y. Li ...................................................................................... 1537

Study on the Treatment of Domestic Sewage with Water Quenched Slag Biological Aerated Filter
Y.Z. Yu, Y. Feng and L. Cheng ....................................................................... 1541

Investigations of Adsorption of 1-Dodecyl-3-Methyl Imidazolium Chloride on Iron Surface as Corrosion Inhibitor
Q. Zhao, M.S. Pei, W.J. Guo and S.N. Wang .................................................. 1545

Effects of Li2O on Properties of Low Fluoride Content Mould Flux for High Speed Continuous Casting
Y.Q. Lu, G.D. Zhang and M.F. Jiang .............................................................. 1549

Effect of Kaolin on the Properties of Flue Gas Desulphurization Gypsum-Steel Slag Cementitious Materials
L. Zhang, Z. Wang, L.Y. Fan and G.P. Shi ...................................................... 1553

The Relationship Between the TiO2 Photocatalyst Deactivation, Regeneration and the Concentration of the Surface Adsorbed SO42-
Y. Huang, Z.H. Zhou, Y.P. Wu, Y.C. Meng and S. Shen ............................... 1557

Preparation and Characterization of Hydrophilic PVDF Membrane via Graft Modification by Acrylic Acid

Experimental Research on Durabilities of Coal Gangue Concrete
J.M. Guo and L.L. Zhu .................................................................................. 1569

Synthesis and Characterization of Mesoporous SAPO-11 by Using Carbon Particles
J. Liang and F.P. Wang .................................................................................. 1576
The Application of Peroxide in the Degumming Process of Ramie
G.L. Liu, Z.F. Li, R.Y. Ding and C.W. Yu ...................................................... 1580

The Key Problems in the Manufacturing of the Bamboo Buffer Packaging Material
Y. Liu, S.Y. Qi and Z.Y. Shi ................................................................. 1585

GGBFS Activated by Tetra-Isopropyl Titanate
C.J. Zhu, H.Q. Ru and C. Zhang ............................................................ 1589

Floc's Formation and Settlement of Organic Poly-Silicic-Ferric Coagulant
Y. Fu, X.Y. Zhang, N. Shi and J.C. Zhang ........................................... 1596

Mathematical Modeling and Numerical Simulation of Fouling Processes of Polymeric Ultrafiltration Membrane
W.C. Song, Y.X. Jia and T.F. Shi .......................................................... 1600

Study on the Oil-Absorbing Materials with Waste Plastics
Y.J. Gong, S.S. Qiu, Y. Zhang and J.P. Wei ........................................... 1604

Analysis of Photo-Degradation of Dyed Veneer by XRD and SEM
Y. Liu, J.M. Gao, L.M. Shao and H.W. Guo .......................................... 1609

Research on Strategy-Oriented Management of Environment Performance of County and Municipal Party and Government Leaders
J.K. Zhou .................................................. 1613

Study on Performance of Al-Zn-In-Mg-Ti Sacrificial Anode
Y.B. Huang, G.W. Song, H.D. Ding and X.H. Shao ................................. 1619

Study on the Addition of SiO₂ into Lithium-Iron-Phosphate Glass
R.J. Yang, Y.H. Wang, H.L. Liu and S.Q. Liu ....................................... 1623

Biomimetic Hemocompatible Nanofibrous Scaffolds as Potential Small-Diameter Blood Vessels by Bilayering Electrospun Technique

Grafting Sulfoammonium Zwitterionic Brushes onto Polycarbonateurethane Surface to Improve Hemocompatibility

Electrochemical Properties of PANI/CNTs Composites Modified by Oxygen Plasma
C. Li, L. Zhang and K. Wang ............................................................... 1635

Fluorescent Sensors for Nitroaromatic Compounds Based on the Comb-Like Polysiloxane-Acrylate
Y.Z. Cui, X.L. Ren, X.M. Dong and Y.T. Wang ..................................... 1640

Flexible and Ordered Macroporous PMMA Polymers Films
L.E. Deng, Y.S. Wang and M. Fu .......................................................... 1645

Synthesis and Characterization of Highly Regioregular Poly (3-Hexylthiophene)
C.Y. Zhou, L.T. Yan, L.N. Zhang, X.D. Ai and T.X. Li ........................... 1649

Experimental Study on Uniaxial Time-Dependent Cyclic Deformation of POM/PTFE Blends

Preparation of L-Tryptophan Imprinted Polymer Microspheres in Aqueous Media by In Situ Grafting on Surface
J. Ding, S.S. Chen, X. Li, X.G. Ying, S.F. Jiang, S. Weng and W.Y. Zhang 1658

The Properties and Hydrolysis of Polysiloxanes with Cyanoethyl Groups
R.F. Guan and Y.R. Dong ................................................................. 1663

Synthesis and Application of Molecularly Imprinted Sol-Gel Film for Simultaneous Determination of Multi-Component Pesticide Residue
S.G. Ge, P.N. Zhao, J.H. Yu and J.D. Huang ....................................... 1667

Influence of the Heating Conditions on the Asphalt Compositions by Grey System Theory
M. Yu and S.P. Wu ................................................................. 1673
Relation of 2D Permeability and Preform Structure Parameters
J.H. Jiang and N.L. Chen .................................................. 1678

Effect of Super-Absorbent Polymer as Admixture on the Mechanical Properties of Mortars
T. Yang, N. Sun, W.J. Guo, J. Zhang, M.S. Pei, Y.F. Wei and S.N. Wang .............................................. 1683

Synthesis and Properties of an Amphoteric Superplasticizer Compatible with Sulfoaluminate Cement
N. Sun, J.J. Qin, W.J. Guo, J. Zhang, M.S. Pei, Y.F. Wang and S.N. Wang .............................................. 1688

Effect of Glycerol on the Self-Assembly of P123 in a Room-Temperature Ionic Liquid [Bmim]PF₆
X.N. Li, M.S. Pei, L.Y. Wang and L. Wang .............................................. 1693

Effects of UV Aging on the High-Temperature and Fatigue Performances of Asphalt Mortar
L. Pang, L. Long, S.P. Wu and W. Lu .............................................. 1698

Preliminary Study on Asphalt Mortar Containing Shaped-Stabled Phase Change Material
M.Z. Chen, G.J. Xu, S.P. Wu and W. Lu .............................................. 1702

Investigation on Static Shear Creep Behavior of Asphalt Mastic Containing Recycled Red Brick Powder

Preparation, Characterization and Microwave Absorption Properties of Nano/Micro Carbon Fiber
X.P. Duan, J.H. Jin, S.L. Yang and G. Li .............................................. 1712

Preparation and Properties of Enzymatic Hydrolysis Lignin Modified Thermoplastic Starch Composites
B. Liu, Q.F. Lv, R. Fang and X.S. Cheng .............................................. 1717

Growth and Magneto-Optical Properties of Ca₂TbAlO₄ Crystal
M. Mei, L.L. Cao, Y. He, R.R. Zhang, F.Y. Guo, N.F. Zhuang and J.Z. Chen .............................................. 1722

Synthesis of Nanocrystalline (W, Ti)C from Respective Elemental Powders by Mechanical Alloying and Spark Plasma Sintering
J.H. Liang, C. Yang, X.Q. Li, S.G. Qu and Y.Y. Li .............................................. 1728

Study on the Preparation and Mechanical Properties of Polystyrene/Y₂O₃ Composites
Y.L. Dou, C.L. Zhang, G.E. Sun and W.H. Xu .............................................. 1735

Catalytic Synthesis of Dioctyl Phthalate over Al-MCM-41 Molecular Sieves
H.F. Zhou, Y.J. Yang and J.S. Zhang .............................................. 1741

Microstructures of Graphite/Copper Composites Prepared by Mechanical Milling and Hot Extrusion
Y.P. Jin and M. Hu .............................................. 1747

The Influence of Solvent Metal Microstructure on Synthetic Quality of Diamond Single Crystals
X.H. Fan, B. Xu and C. Gao .............................................. 1753

Influence on Activation Property of Calcined Coal Gangue by [SO₄]²⁻
C.C. Gong and D.X. Li .............................................. 1757

The Effect of Depositing Time on the MPCVD of Diamond on Porous Carbon Monolith
Q. Mei, X.J. Yu, B.Y. Zhao, R.B. Li, Y.J. Lay and K.A. Hu .............................................. 1761

Photocatalytic Property of Amorphous WO₃ Films Prepared by Reactive Magnetron Sputtering
J.M. Huang, Y.Y. Liu and G.P. Wan .............................................. 1767

Synthesis and Characterization of Silicone Based Pressure Sensitive Adhesive
M. He, Q.Y. Zhang and J.Y. Guo .............................................. 1773

The Preparation of TiO₂ Nanotube Arrays
L.X. Pang, P.F. Cuan, H. Shi and X.D. Tang .............................................. 1779
Synthesis and Characterization of Water Based Acrylic Pressure Sensitive Adhesive of Surface Protection Tape
M. He, Q.Y. Zhang and J.Y. Guo .......................................................................................................................... 1785

Keyword Index .................................................................................................................................................. 1793
Author Index .................................................................................................................................................... 1805