Processing and Fabrication of Advanced Materials VI

Volume 2

Cover: Scanning electron micrograph of fractured surface of plasma sprayed hydroxyapatite coating (Courtesy: Cheang & Khor)
Environment Effect on Corrosion of Aluminium Nitride Coated Materials ........................................ 1029
    Watanabe Y., Sakuragi Y., Amamoto Y., Nakamura Y.

Protective Coatings on Silicon Nitride Bonded Silicon Carbide .................................................. 1041
    Munro D. and Cheng Y.B.

Preparation of Thick Ceramic Film by an Interfacial Polymerization ............................................. 1051
    Yamane M.

Surface Hardening and Surface Cladding by Localized Resistive Heating at Mobile Construction ........... 1059
    Batchelor A.W., Sukumar J., Ma Y.S. and Chin C.S.

Thermally Sprayed TiC-Ni Based Coatings - Experience on Sprayability and Coating Properties .......... 1071
    Mantyla T., Vuoristo P., Berger L.M. and Nebelung M.

RF Planar Coil Inductively Coupled Plasma System for Surface Coating and Modification .................. 1083
    Kok Y.C., Ng K.H., Wong C.S., Chakrabarty C.K. and Idris A.

RF Plasma Nitriding of AISI 304 Stainless Steels Using a High Density Low Frequency ICP Source ........ 1091
    Xu S.Y. and Luo W.

Wear Behaviour of High Mn Ductile Iron Treated by Different Austempering Processes ..................... 1101
    Nili Ahmadabadi M., Ghasemi H.M. and Dsia M.

Friction and Wear Behaviour of Plasma Spray Ceramic Coatings under Dry Contact ......................... 1111
    Krishna Kumar V., Batchelor A.W. and Swarnamani S.

Tribological Behaviour of DLC Coatings during Fretting ................................................................. 1125
    Wei J., Zhang S., Kapsa P. and Vincent L.

Quantitative Backscattered Electron Analysis of Thermally Sprayed Ni—Al Coating ....................... 1137
    Ooi T.N. and Cheang P.

High Kinetic Energy in Thermal Spraying ......................................................................................... 1149
    Lugscheider E., Remer P., Kyeck S. and Sicking R.

The Anodized Alumina Film and Its Electrical Properties ................................................................. 1161
    Sarkar G., Mridha S., Pang Y.L. and Guey L.S.
Effect of Processing Parameters on the Structure and Properties of Amorphous Electrodeposits ................................................................. 1173
Ramanathan L.V., Correa O.V., Kunioshi C.T. and Lima N.B.

Metal Finishing Challenges in the Preparation of Sunshield Panels for INSAT II .......... 1183
Rajagopal I., Rajam K.S. and Rajagopalan S.R.

Inductively Coupled RF Plasma Nitriding of Steels ........................................... 1197
Chakrabarty C.K., Idris A., Wong C.S., Kok Y.C. and Ng K.H.

Deposition of Amorphous Thin Films by Unbalanced Magnetron Sputtering............. 1209
Hsieh J.H., Tan B.H. and Hing P.

Dependence of Microstructural Growth of DLC Coatings on Processing Parameters .... 1219
Zhang S., Zeng X.T., Sun J. and Liang C.

SURFACE & COATING TECHNOLOGY 2

Effect of Hydrogeen Flow on Magnetron Sputting Deposition of a-C on WC ............ 1233
Zhang S., Hing P., Xie H. and Sun C.Q.

Application of X-ray Imaging in Fabrication of Advanced Materials and Surface Coatings ... 1245
Fu Y.Q., Batchelor A.W., Xing H.T. and Ji C.H.

Deposition of Nickel Hydroxide into Porous Sintered Nickel Plaque ....................... 1257
Sasaki Y. and Yamashita T.

The Electrode Reaction and Deposition Behavior of Nickel–Phosphorous Alloy ............. 1263
Yamashita T., Murashita J., Jyouyama A. and Kaneko Y.

Preparation of Carbon Fibers Coated with TiN by Sol–Gel Method .......................... 1271
Hashihin T., Murashita J., Jyouyama A. and Kaneko Y.

Throwing Power of Acid Copper Plating Systems .............................................. 1281
Kobayashi K. and Chiba A.

Brass Plating from Alkaline Cupric-EDTA and Zincate Mixed Bath ....................... 1293
Chiba A., Sudo G., Kobayashi K. and Wu W.C.

Adhesion and Interfacial Indentation Testing of Plasma Sprayed WC-Co-NiCr ............. 1303
Batista J.C.A., Godoy C. and Branco J.R.T.

The Effect of Oxygen Impurities in the IVA Group Nitride Films Prepared by Reactive RF–Sputtering ......................................................... 1315
Ando Y., Sakamoto I., Suzuki I. and Maruno S.
Crystallization Behaviors of Amorphous Nanosized Si₃N₄ Powder Prepared by Thermal Plasma CVD Method .......................................................... 1325
  Liang S.Q., Husin K. and Rahamat A.

Surface Layer Addition of Hard Particles Using TIG are Melting .............................. 1331
  Mirdha S., Ho S.Y. and Kum S.T.

Spectroscopy Study of a Low Frequency and Inductively Coupled Plasma ...................... 1339
  Shaful Azam A.B.M., Luo W. Y., Mannan A., Xu S.Y. and Lee S.

Crystalline Silicon Nitride Films Grown on Si(110) by Means of a High Density and Low Energy Ion Implantation .................................................. 1347
  Manna A., Luo W., Azam S. and Xu S.

Effects of Aluminium Addition on Oxidation Behavior of Ti-Al-N Film ...................... 1355
  Kim C.W., Chwa S.O., Park H.C. and Kim K.H.

**POWDER INJECTION MOLDING**

Powder Injection Molding Applications to New Materials ........................................... 1363
  German R.M.

High Performance Injection Molded Stainless Steels .................................................. 1377
  Miura H. and Baba T.

Effect of Powder Characteristics on Mechanical Properties of SUS304L Sintered Compacts by Powder Injection Molding .............................................. 1389
  Kyogoku H., Komatsu S. and Nakayama H.

Effects of Mixing Sequence on Alumina Injection Molding Parts ................................ 1399
  Wei W.C.J. and Tsai S.J.

Effects of Debinding Parameters on Metals on Metal Injection Molding Parts ............... 1409
  Ji C.H., Loh N.H., Khor K.A. and Tor S.B.

Effects of Processing Parameters and Material Characteristics on the Solvent Debinding Behavior of PIM Compacts ....................................................... 1421
  Hwang K.S., Hwang W. and Lin H.K.

Titanium Feedstock for Rapid Catalytic Debinding .................................................. 1433
  Ito S. and Ogasawa N.

MIM Process and Debinding Method Using Supercritical Carbon Dioxides ....................... 1443
  Shimizu T., Sano T., Mochizuki S. and Fuchizawa S.

Enhanced Sintering of Carbonyl Iron Compacts by the Addition of Processing Additives ..... 1455
  Lu Y.C. and Hwang K.S.
POLYMERS & COMPOSITES

Mechanical Properties of a Polyurethane-Poly (Vinylidene Fluoride) Blend ........................................... 1527
   Chian K.S.

Study of Microwave Dielectric Properties of Thermoplastics ................................................................. 1539
   Yarlagadda P.K.V. and Tan C.C.

On the Tensile and Shear Susceptibilities of a Fiber Reinforced Polymer Composite .............................. 1553
   Manoharan M. and Hu X.

Accelerated Thermal Curing of Diglycidylether of Bisphenol A/Diamino Diphenyl Sulfone Epoxy Resins System .......................................................... 1563
   Foo M.J. David and Boey Y.C. Freddy

Mode 1 and Mode 2 Fracture Toughness of Interface Modified Glass Fabric/Vinyl Ester Composites ................. 1569
   Padmanabhan K. and C.Y. Yue

Study of Creep Behaviour of a Natural Composite ......................................................................................... 1581
   Huda M.D. and Cheh K.C.

Mechanical and Adhesive Properties of a Poly (Oxazolidone) Polymer ....................................................... 1591
   Manoharan M. and Chian K.S.

Manufacture of Stiffened Composite Panels Using Cocuring Technique ................................................... 1599
   Lee S.
The Effect of Curing Profile on the Properties of Modified Bismaleimide
Boey Y.C. Freddy, Song X.L. and C.Y. Yue.

Surface Coatings: Synthesis and Characterization of Photocrosslinkable Polymers
Nagarajan E.R., Rajeswari N. and Viswanathan S.

Shielding Effect of Metallized Fabrics of Polythylene-terephthalate
Lircov A., Petrov H., Dobrev E. and Dimitrov D.

Electrical Resistivity, Thermal Conductivity and Young’s Modulus of Phenol Composites
Loaded with Conducting Particles
Tani M., Kaneko T., Itakura H., Ota T. and Hikichi Y.

BIOMATERIALS

Processing and Fabrication of Biodegradable Implants and Devices - State of the Art
and Future Perspectives
Hutmacher D., Kirsch A. and Hurzeler M.B.

A New Class of Swellable Materials for Orthopaedic Biomplants
Kalidindi S.R.

Properties of Sintered Ti-6Al-4V Alloys Designed for Use as Implantable
Medical Devices
Bolton J.D. and Becker B.S.

Development of Ceramic Composite Materials for Hard Tissue Replacements
Li J.G.

Characterization of Ceramic Glass in Hydroxyapatite Containing Glass Coated
Titanium Composites
Yang X., Roop Kumar R., Ban S. and Maruno S.

Near Net-Shaped Hydroxyapatite Ceramics by the Oxidation of Metal–Bearing Precursors
Sandhage K.H., Shaw E., Gallagher P.K. and Litsky A.S.

The Development of a Tissue Engineered Membrane for Bone Regeneration
Hutmacher D., Kirsch A. and Hurzeler M.B.

Hydrostatic Extrusion of Hydroxyapatite-Polyethylene Composites for Enhanced
Performance

Compression Molding of PMMA/HA Composites
Cheang P. and Khor K.A.
Role of Powder Morphology in the Mechanical Properties of Plasma Sprayed HA Coatings
Cheang P. and Khor K.A. ............................................................... 1751

CERAMIC MATRIX COMPOSITES

In-Situ Reaction-Sintering of High-Fracture-Toughened Si₃N₄-TiN Composite
Lee B.T., Kim H.D., Lee S.Y., Park D.S., Song C.B., Won C.W. and Chun B.S. ...
 ........................................................................................................ 1763

Electrical Discharge Machining of Aluminium Oxide Matric Composites Containing Titanium Carbide as a Conductive Second Phase
Yun J. and Wang D.H. ...................................................................... 1773

In-Situ Reactive Pressureless Sintered TiB₂-TiN Ceramic Composite
Zhao H. and Cheng Y-B. .................................................................. 1783

Tape Casting of High Dielectric Ceramics Composite/Hybrid Substrates for Microelectronics Application
Tok I.Y., Boey Y.C. and Khor K.A. ..................................................... 1791

Microstructure and Properties of SiC-reinforced Si₃N₄ Ceramic
Hadian A.M. and Ataie A. ............................................................... 1817

PTC Effect in High-Thermal-Expansion Ceramic Composites Loaded with Conducting Ceramic Filller
Harada T., Ota T., Hikichi Y., Unuma H., Takabashi M. and Suzuki H. ... 1825

Microstructure and Mechanical Properties of Si-SiC Composite
Oh K.D., Jang Y.S., Lee Y.B., Park H.C. and Kim I.S. ....................... 1835

Microstructure and Characteristics of Al₂O₃-CaO Ceramics
Chak R.S. and Park H.C. ................................................................ 1843

Thermal Conductivity of Al₂O₃-AlN Ceramics
Park H.C., Park S.S., Lee Y.B., Oh K.D. and Kim W.K. ...................... 1849

Synthesis of Al₂O₃-SiC Composite Powders from Silica by Self-Propagating High Temperature of Synthesis Method
Won C.W., Kim Y.S., Cho S.S., Chun B.S. and Lee B.T. ..................... 1855

INTERMETALLICS

Processing and Properties of Advanced Niobium Based Intermetallics

Diffusion Brazing of a TiAl Alloy
Chaturvedi M.C., Xu Q. and Richards N.L. ........................................ 1879
Friction and Wear of TiAl-Alloys ................................................................. 1891
    Sugishita J. and Terada M.

Microstructural Characterization of the Laser Surface Melt Zones of Ti-23Al-11Nb-0.9Si
(Ti₃Al-Based) Alloy .................................................................................. 1901
    Kashani-Bozorg S.F.

Development of Intermetallic Fibers by Melt Extraction for High-Temperature
Applications ............................................................................................. 1913
    Stephani G.

Formation and Growth of Copper-Tin Intermetallic During Soldering ................... 1927
    Zaruzi S., Seah C.H., Chandel R.S. and Sritharan T.

Phase Transformations and Microstructural Studies of Si Alloyed γ-TiAl .................. 1935
    Heshmati-Manesh S. and Flower H.M.

Microstructure and Properties of Some TMP Treated Gamma Titanium Aluminides .......... 1945
    Chen Z.X. and Wang Y.

FUNCTIONALLY GRADED MATERIALS

Processing Developments of FGMs in the World ............................................. 1959
    Miyamoto Y.

Infiltration Processing of Novel Layered and Graded Materials ....................... 1971
    Low I.M.

Development of the Graded Cr-Ti-N Coatings ............................................. 1985
    Zeng X.T., Zhang S. and Hsieh J.

Gradient Nickel-Alumina Composites ......................................................... 1995
    Ramanathan L.V. and Kunioshi C.T.

APPLICATIONS

Tactile Sensor using Metal-Powder Rubber Compound ....................................... 2007
    *Miyazawa S., Usui Y. and Yoshida H.