

Table of Contents

Preface, Committees

Chapter 1: Electromagnetic Engineering

Technical Problems for Core Loss Reduction of High-Speed Motor M. Enokizono	3
Building Factor Evaluation of the Stator Core Made of Ultrathin Electrical Steel Sheet for the High-Speed Motor M. Oka, M. Enokizono, Y. Mori and K. Yamazaki	9
Fabrication and Characterization of Permanent Magnetic SmCo₅ Thin Films by SQUID Magnetometer M. Kuru, E. Ongun, A. Özmetin, M. Hançer and A.E. Özmetin	16
Dynamics of a Water Droplet Subjected to Forced Vibration by Surface Acoustic Wave Device S. Sudo and H. Kuwano	22
Effects of Dielectric Spacer on Absorbance Characteristics of a Dual-Band Nanoaperture Based Perfect Absorber A. Onur and M. Turkmen	28
Piezoelectricity in the {A_xA`_(1-x)}BO₃ and A{B_xB`_(1-x)}O₃ Ceramic Alloys B. Akgenc, Ç. Tasseven and T. Çağın	34
Changes in the Resistance Force of a Magneto-Rheological Shock Absorber Induced by a Magnetic Field T. Sawada, T. Endo, Y. Shimizu and H. Nishida	39

Chapter 2: Superconductivity, Applications in Energy and Transportation

Geometric Study of Space Motor and Power Assist Leg Motor Y. Okada, R. Kondo, M. Otsuki and M. Enokizono	47
HTSC Bulk Magnetizing Control System for Cryogenic Alternators L. Chubraeva, E. Evseev and S. Timofeev	53
HTSC Synchronous Condenser for Wind Power Plant L. Chubraeva and S. Timofeev	59
Structure and Properties of Magnesium Diboride and the Effect of Additions T. Prikhna, M. Eisterer, A.G. Mamalis, A. Kozyrev, V. Romaka, V. Sokolovsky, M. Karpets, V. Moshchil, V. Sverdun, S. Ponomaryov and T. Serbenyuk	65
Electromagnetic Compatibility Issues in Electric Vehicle Applications T. Damatopoulou, V. Lazaris, A. Kladas and A.G. Mamalis	71
Study on Structure for Increase of a Transmit Torque on Magnetic Harmonic Gear with Stackable Structure K. Chigira, Y. Ando, I. Murakami and T. Kurahashi	77
Magnetic Hysteresis Loss Calculations of HTS Coil under Rotating Magnetic Fields S. Tunç and F. Inanir	83

Chapter 3: Nanostructure Materials: Synthesis and Processing

Synthesis and Characterization of Modified Diatomite-Leaf-Like CuO Nanosheet Composites F. Boran	93
Size Controllable Synthesis and Characterization of CuO Nanostructure D. Candemir and F. Boran	98

Experimental Investigation of Morphological and Electrical Characteristics of PS/MWCNT Nanocomposite Films	104
B. Demirbay and Ş. Uğur	
A Study on the Solvent Vapor Induced Film Formation of PS/AgNPs Composites	110
C. Akaoglu and Ş. Uğur	
Synthesis Features of Iron Oxide Nanopowders with High Magnetic and Sorption Properties	116
S. Lavrynenko, A.G. Mamalis, D. Sofronov, A. Odnovolova and V. Starikov	
Investigation of Lithium Sorption Efficiency Using SWCNT Functionalized Electrospun Fiber Mats from the Hypersaline Geothermal Brine	121
A. Çelik, G. Topçu, T. Isik, A. Baba, N. Horzum and M.M. Demir	

Chapter 4: Multifunctional and Biomaterials

Self-Cleaning Ability Quantization of Textiles with Degussa P-25	129
A. Cerhan, Z. Ozdemir and B. Basim	
SnO₂/Graphene Nanocomposites with Enhanced Gas Sensing Performance	135
F. Boran and S. Çetinkaya	
The Shape and Size Effect of the Diatom Frustule Addition on the Compression Behavior of an Epoxy	140
D. Zeren, K. Kesici, A. Sukatar and M. Güden	
Micromechanical Modeling of Precipitation Hardened NiTiHf	147
J.K. Joy, A. Solomou, T. Baxevanis, I. Karaman and D.C. Lagoudas	
Investigation of Magnetic Properties of PS LATEX/MNPs Composite Films	157
N.C. Dağyar and Ş. Uğur	
Development of Non-Cadmium I-III-VI Quantum Dots and their Surface Modification for Biomedical Applications	163
X.S. Zhu, V.G. Demillo, S.Q. Chen and A.G. Mamalis	

Chapter 5: Particular Advanced Materials

Filtered Optical Feedback in Quantum Dot Light Emitting Diode	171
K.A.M. Al Naimee, H.B. Al Husseini, A.H. Al Khursan, S.F. Abdalah, R. Meucci and F.T. Arechi	
Features of Consolidation of Nanoceramics for Aerospace Industry	179
S. Lavrynenko, A.G. Mamalis and E. Gevorkyan	
A Case Study on Metal-Ceramic Interfaces: Wetting of Alumina by Molten Aluminum	185
A. Tiğlı and T. Çağın	
Microstructural Magnetic Characterization of Annealed Non-Oriented Electrical Steel	190
E. Hristoforou and A.G. Mamalis	
Desalination of Brackish Water/Seawater via Selective Separation	196
M.E. Kouli, A. Ferraro, P. Tselou and E. Hristoforou	
Efficient and Accurate Electromagnetic Analysis of Three-Dimensional Nano-Optical Structures	202
Ş. Yazar, C.G. Sür, B. Solak, Ö. Eroğlu, A. Altınoklu, S. Güler, U.M. Gür, B. Karaosmanoğlu and Ö. Ergül	
Fabrication of Polymer Nanofiber-Conducting Polymer Fabric and Noncontact Motion Sensing Platform	207
M.U. Mutlu, O. Akin, M.M. Demir and Ü.H. Yıldız	
Utilization of Near IR Absorbing Gold Nanocolloids by Green Synthesis	213
B. Elveren, Ü.H. Yıldız and A. Arslan Yıldız	
Frequency Response Comparison of Photo-Detectors for Visible Light Communication Systems	220
M. Sönmez	
Influence of H-Content on Thermo-Mechanical Properties of NiAl Alloys	224
U. Aslan and T. Çağın	

Chapter 6: Materials Characterization

Ka Band RF Front-End Design H. Mecidoglu and H. Torpi	231
Effect of Heating Time on the Structural Properties of Cadmium Telluride Nanoparticles Prepared by Aqueous Solution Method with Organic Stabilizing Agent S.S. Ahmed, R.K. Ibrahim, K.A. Aadim, A.N. Naje, O.A. Adnan and A.M. Suhail	237
Spontaneous Adhesion of DOPA and Tryptophan Functionalized PEG to Polystyrene Nanobeads: An EPR Study Y. Göksel, I. Kırpat and Y. Akdogan	243

Chapter 7: Advanced Manufacturing under Shock Loading

Introductory Remarks on the Shockwaves Cluster A.G. Mamalis	251
Advanced Manufacturing under Shock A.G. Mamalis	253