

Table of Contents

Preface, Conference Committees

Chapter 1: Steels and Alloys

Optimization of EDM Drilling Parameters for Aluminum 2024 Alloy Using Response Surface Methodology and Genetic Algorithm	
S. Dave, J.J. Vora, N. Thakkar, A. Singh, S. Srivastava, B. Gadhvi, V.V. Patel and A. Kumar	3
Comparative Study of Palm Oil and Corn Oil as Corrosion Inhibitor for Low Carbon Steel	
N.A. Khalim and E. Hamzah	9
Effect of Al Content in Low Carbon High Manganese TWIP Steel	
N.K. Tewary, S.K. Ghosh and S. Chatterjee	16
Mechanical Behaviour under Quasi-Static Loading of Open-Cell Foams of 6061-T6 Al Alloys Processed by Pressurized Salt Infiltration Technique	
B. Soni and S. Biswas	23

Chapter 2: Ceramic Materials

Hybridized Prototyping Process: A Contemporary Cultural Approach to Enhance Ceramic Production	
F.E. Olalere and A.A. Shuaib	31
Mechanical and Microstructural Evaluation of Y-TZP Using Microwave Sintering Technique	
M. Golieskardi, M. Satgunam and D. Ragurajan	36
Microstructure Analysis and Low Temperature Degradation Resistance of Doped 3Y-TZP Ceramics for Hip Implant Application	
D. Ragurajan, M. Golieskardi, M. Satgunam and A.M.H. Ng	42

Chapter 3: Semiconductors

A Model for Neutron Radiation Damage in Metal Oxide Semiconductor (MOS) Structures	
H.F. Abdul Amir, A.H. Husin, S. Salleh and F.P. Chee	51
Effect of Hydrogenation Temperature on Distribution of Hydrogen Atoms in c-Si and a-Si: Molecular Dynamic Simulations	
M.A. Pamungkas and R. Widiyatmoko	55

Chapter 4: Polymers and Composites in Engineering Practice

The Influence of Layer Thickness on Mechanical Properties of the 3D Printed ABS Polymer by Fused Deposition Modeling	
P. Shubham, A. Sikidar and T. Chand	63
Patterning Method of IPMC Actuator Using a Milling Machining	
B.H. Shin, Y.S. Kim and S.Y. Lee	68
Design and Manufacturing of a Composite Drive Shaft	
S. Tataroğlu, E. Ok, S. Kaya, A. Şen, V.Z. Doğan, Z. Mecitoğlu, E. Akay, S. Süsler and H.S. Türkmen	73
The Study of Wood-Based Composites Based on Biodegradable Polymer	
R.R. Safin, L.V. Akhunova, A.R. Shaikhutdinova and R.R. Ziatdinov	78
Amorphous Silica Micro Powder Additive Influence on Bending Strength of One-Ply Particle Board	
A.V. Pitukhin, G.N. Kolesnikov, N.G. Panov and S.B. Vasilyev	82

Chapter 5: Materials and Technologies in Environmental and Biochemical Engineering

Peculiarities of Fatliquor Emulsion Preparation Adding Essential Oils and the Fatliquoring Effect on Leather Properties

A. Jucyte, V. Valeika, J. Sirvaityte, K. Beleška and V. Valeikiene

89

TiO₂-SiO₂ Gel Photocatalytic Degradation of Methylene Blue and Composite Energy Gap Calculation

N. Pijarn, H. Seng, T. Toso and C. Dissong

94

Photodegradation of Methylene Blue Using Titanium Dioxide in Different Lighting Area

N. Pijarn, H. Seng, C. Dissong and T. Toso

99

Chapter 6: Materials for Construction

Investigation on Mechanical Performance of Slender Cold-Formed Steel Channel Column

M.S.H. Mohd Sani, F. Muftah and T.C. Siang

107

Mechanical and Thermal Properties of Brick Produced Using Recycled Fine Aggregate

S. Ismail, Z.A.H. Anas and Z. Yaacob

112