

Table of Contents

Preface

Chapter 1: Polymers and Composites

The Effect of Orientation Angle and Layer Thickness on Surface Roughness of ABS Material on FDM A. Kholil, E.A. Syaefuddin, A. Premono and F. Nugraha	3
A Preliminary Study of Isolation and Characterization of Nanocrystalline Cellulose from Microcrystalline Cellulose by Acid Hydrolysis Process F. Yudhanto, H. Sosiati, V. Yudha and E. Syafri	11
Preparation of Modified Starch Nanoparticles from Beneng Taro (<i>Xanthosoma undipes</i> K. Koch) as Active Packaging Materials via Nanoprecipitation Method S. Agustina, Z.H. Kenvisyah, M.H. Revianto and F. Azhari	19
Electrical Conductivity of SDBS-Assisted Polyaniline Doped with HCl Y. Kriswandono, M. Munaji and Triwikantoro	26
Mechanical and Antibacterial Properties of Chitosan-PLA Film Containing Cinnamon and Ginger Essential Oil for Milkfish Satay Packaging N. Kanani, R. Rahmayetty, E.Y. Wardhono and Wardalia	32
High Strength of Aluminium-Based Composites by Different Methods of Severe Plastic Deformation (SPD) A. Pramono, A. Zulfia, K. Dhoska, Suryana, A. Milandia, Y.M. Zulaida and A. Juniarsih	40
Acetylation of Bacterial Cellulose from a Mixture of Palm Flour Liquid Waste and Coconut Water: The Effect of Acetylation Time on Yield and Identification of Cellulose Acetate P.S. Witri, R. Rahmayetty, M. Toha, Alamsyah, N. Kanani and E.Y. Wardhono	48
Analyze of Geometric Characteristic of Powder Reinforced Composite Material from Liquid Waste for Part of Motor Vehicle Hendra, P. Virama, Hernadewita, D. Satria, Hermiyetti and F. Hardian	55
Characterization and Comparison of Various Lewis Acid Surfactant Combined Catalyst (LASC) and Their Potential for Polylactic Acid Synthesis by Polycondensation J. Zuhdan, A.Z. Rohmah, N. Hendriani, H. Ni'mah, S. Nurkhamidah and T. Widjaja	65
Improved Natural Mordenite as Low-Cost Catalyst for Glycerol Acetalization into Solketal – An Effective Fuel Additive T. Kurniawan, N. Nuryoto, N.D. Milenia, K.D. Lestari, A.B.D. Nandiyanto, M.R. Bilad, H. Abdullah and T.M.I. Mahlia	71

Chapter 2: Materials and Technologies for Chemical Production

Effect of Intermittent Agitating during Hydrothermal Synthesis on Mordenite Properties and Ammonium Adsorption T. Kurniawan	91
Gold Adsorption from Pregnant Thiocyanate Solution Using Activated Carbon S. Oediyani, T. Triana, F. Viviyana, F.R. Mufakhir, W. Astuti, S. Sumardi and H.T.B.M. Petrus	98
Fucoxanthin Extraction by Ultrasonic-Assisted from Brown Seaweed (<i>Padina</i> Sp) Origin Pulau Merak Banten D.K. Sari, R.B. Dheni, I. Kustiningsih, Diansih and E. Aprillia	107

Chapter 3: Materials and Technologies for Water and Wastewater Treatment

Synthesis of ZnO/Ag/ SiO₂ Nanocomposite Using Flame Pyrolysis Method and its Photocatalytic Activity S. Winardi, I. Riwayati, M. Shimada, S. Madhanian, S. Machmudah and K. Kusdianto	119
--	-----

Synthesize Fe₃O₄-TiO₂ Composite for Methyl Orange Photocatalytic Degradation I. Kustiningsih, F. Nurrahman, H.A. Rinaldi, I.E. Jumiaty, D.K. Sari and J. Jayanudin	129
Organosilica Multichannel Membranes Prepared by Inner Coating Method Applied for Brackish Water Desalination Aliah, M. Elma, I.F. Nata, N.A. Maulida, S.H. Fitriah, E.L.A. Rampun and A. Rahma	136
Lauric Acid as an Energy Storage Material to Increase Distillation Solar Productivity in Indonesia N.K. Caturwati, I. Rosyadi, Y. Yusuf and E.T. Saputra	144

Chapter 4: Properties and Processing of Structural Metals and Alloys

Effect of Thermomechanical Processing on the Microstructures and Mechanical Properties of Cu-28Zn-2Al Alloys I. Basori, M.S. Ponco and Y. Sari	155
Influence of Thermomechanical Treatment on the Microstructure and Mechanical Properties of Cu-28Zn-4Mn Alloys I. Basori, Z.J. Nabila and Y. Sari	161
Optimizing the Surface Roughness AISI 4340 Steel on Turning Process under Minimum Quantity Lubrication (MQL) M.B. Ramadhani, M. Darsin, R.D.H. Qoryah, H.A. Basuki, S. Junus and Y. Hermawan	167
Improvement of the Corrosion Resistance and Potential for Metal Ion Release of Titanium Alloy Ti-6Al-4V ELI in Hanks Balanced Salt Solution (HBSS) after Thermomechanical S. Anderson, T.A. Al-Bayummy, J. Affi, Y. Yetri and Gunawarman	176
Homogenization Process for Aluminum As-Cast from Waste of Beverage Cans Y.M. Zulaida, P.K. Prasetya, T. Partuti and A. Pramono	189

Chapter 5: Coatings and Surface Processing

Copper Layer on an Aluminum Door Frame to Prevent Spread of Bacteria T. Partuti, I.U. Hasanah, R.F. Suwandana, Y. Dwiyantri and A.A. Alhamidi	197
Effect of Phase Transformation on Surface Roughening Behavior in Austenitic Thin Metal Foils A. Aziz, M. Yang, T. Shimizu and T. Furushima	205
Manufacture of Wear-Resistant Alloy Co-Cr-Mo for Medical Implant Applications by Nitriding Coating Method F. Setiawan, A.P. Laksono, Y.U. Sukma, F.A. Afif, A.A. Supriatna, Y. Nugraha and Alfirano	211
Mechanical and Tribology Properties of Electrodeposited Ni-TiN/Si₃N₄ Composite Coatings E. Budi, L. Kusumawati, W. Indrasari, I. Sugihartono, T.B. Prayitno, H. Nasbey and R. Fahdiran	218
Improving Surface Hardness of AISI H13 Steel by Pack Nitriding F.M. Dianas, M.R. Ryan, M.R. Supriadi, R. Halim, Y. Nugraha and Alfirano	227
Physical and Mechanical Properties of Twin-Wire Arc Spray and Wire Flame Spray Coating on Carbon Steel Surface Z. Nurisna, S. Anggoro and H. Nur Mujtahid	235

Chapter 6: Special and Functional Materials

Synthesis of TiO₂ from TiOSO₄ Solution with Sonochemical Method E. Yustanti, M.Z. Syihab, L.H. Lalasari and A. Manaf	243
Lead Electrochemical Behavior as an Electrode in Sulphuric Acid Solution with Various Pb Ion Concentrations F.B. Susetyo, H.A. Notonegoro and B. Soegijono	255