

DAFTAR PUSTAKA

- [1] M. Arese, B. Cavallo, G. Ciaccio, dan V. Brunella, “Characterization of Morphological, Thermal, and Mechanical Performances and UV Ageing Degradation of Post-Consumer Recycled Polypropylene for Automotive Industries,” *Materials*, vol. 18, no. 5, Mar 2025, doi: 10.3390/ma18051090.
- [2] SNI 8432, “SNI 8432, Polipropilena Kopolimer Impak untuk Komponen Otomotif,” 2022.
- [3] X. Yao *dkk.*, “Bio-based high-grafting-rate compatibilizer: Dynamic reactive extrusion synthesis of itaconic anhydride-based copolymers with polypropylene grafts and the application in plant fiber composites,” *Ind. Crops Prod.*, vol. 226, Apr 2025, doi: 10.1016/j.indcrop.2025.120619.
- [4] H. Yaghoobi dan A. Fereidoon, “An experimental investigation and optimization on the impact strength of kenaf fiber biocomposite: application of response surface methodology,” *Polymer Bulletin*, vol. 75, no. 8, hlm. 3283–3309, Agu 2018, doi: 10.1007/s00289-017-2212-y.
- [5] U. Hujuri, S. K. Chattopadhyay, R. Uppaluri, dan A. K. Ghoshal, “Effect of Maleic anhydride grafted polypropylene on the mechanical and morphological properties of chemically modified short-pineapple-leaf-fiber- reinforced polypropylene composites,” *J. Appl. Polym. Sci.*, vol. 107, no. 3, hlm. 1507–1516, Feb 2008, doi: 10.1002/app.27156.
- [6] J. Chen *dkk.*, “Facile synthesis of Ag nanoparticles-loaded chitosan antibacterial nanocomposite and its application in polypropylene,” *Int. J. Biol. Macromol.*, vol. 161, hlm. 1286–1295, Okt 2020, doi: 10.1016/j.ijbiomac.2020.07.151.
- [7] N. Yaşar, M. Günay, E. Kılık, dan H. Ünal, “Multiresponse optimization of drillability factors and mechanical properties of chitosan-reinforced polypropylene composite,” *Journal of Thermoplastic Composite Materials*, vol. 35, no. 10, hlm. 1660–1682, Okt 2022, doi: 10.1177/0892705720939163.
- [8] H. Shorekandi, N. Refahati, dan M. Nouri Niyaraki, “Optimizing the Effect of Nanochitosan and Kenaf Fiber on Tensile and Impact Properties of Polylactic Acid (PLA)/Natural Rubber (SMR20) Biocomposites,” *Applied Mechanics*, vol. 7, no. 1, Mar 2026, doi: 10.3390/applmech7010012.

- [9] F. J. Carrasco-Guigón *dkk.*, “Preparation and characterization of extruded composites based on polypropylene and chitosan compatibilized with polypropylene-graft-maleic anhydride,” *Materials*, vol. 10, no. 2, 2017, doi: 10.3390/ma10020105.
- [10] S. Magalhães *dkk.*, “Acacia Wood Fractionation Using Deep Eutectic Solvents: Extraction, Recovery, and Characterization of the Different Fractions,” *ACS Omega*, vol. 7, no. 30, hlm. 26005–26014, Agu 2022, doi: 10.1021/acsomega.1c07380.
- [11] H. P. S. A. Khalil, H. D. Rozman, H. Ismail, dan M. N. Ahmad, “Polypropylene (PP)- Acacia mangium composites: The effect of acetylation on mechanical and water absorption properties,” *Polymer - Plastics Technology and Engineering*, vol. 41, no. 3, hlm. 453–468, Jun 2002, doi: 10.1081/PPT-120004362.
- [12] K. Sakthi Vadivel dan P. Govindasamy, “Characterization of natural cellulosic fiber from treated acacia arabica and pencil cactus fiber,” *Mater. Today Proc.*, vol. 46, hlm. 3392–3397, 2021, doi: 10.1016/j.matpr.2020.11.582.
- [13] K. R. J. Sheeba, R. K. Priya, K. P. Arunachalam, S. Avudaiappan, N. Maureira-Carsalade, dan Á. Roco-Videla, “Characterisation of Sodium Acetate Treatment on Acacia pennata Natural Fibres,” *Polymers (Basel)*, vol. 15, no. 9, hlm. 1996, Apr 2023, doi: 10.3390/polym15091996.
- [14] N. Bala, M. Napiiah, dan I. Kamaruddin, “Nanosilica composite asphalt mixtures performance-based design and optimisation using response surface methodology,” *International Journal of Pavement Engineering*, vol. 21, no. 1, hlm. 29–40, Jan 2020, doi: 10.1080/10298436.2018.1435881.
- [15] M. F. Emam, A. A. El-Ashmawy, N. M. Mursi, dan L. H. Emara, “Optimization of Meloxicam Solid Dispersion Formulations for Dissolution Enhancement and Storage Stability Using 33 Full Factorial Design Based on Response Surface Methodology,” *AAPS PharmSciTech*, vol. 23, no. 7, Okt 2022, doi: 10.1208/s12249-022-02394-7.
- [16] H. C. Kim, Y. R. Kwon, J. S. Kim, M. Kwon, J. H. Kim, dan D. H. Kim, “Computational Approach to the Surface-Crosslinking Process of Superabsorbent Polymer via Central Composite Design,” *Polymers (Basel)*, vol. 14, no. 18, Sep 2022, doi: 10.3390/polym14183842.
- [17] S. Yan, Y. Tang, G. Bi, B. Xiao, G. He, dan Y. Lin, “Optimal Design of Carbon-Based Polymer Nanocomposites Preparation Based on

Response Surface Methodology,” *Polymers (Basel)*., vol. 15, no. 6, Mar 2023, doi: 10.3390/polym15061494.

- [18] P. W. Huang dan H. S. Peng, “Number of times recycled and its effect on the recyclability, fluidity and tensile properties of polypropylene injection molded parts,” *Sustainability (Switzerland)*, vol. 13, no. 19, Okt 2021, doi: 10.3390/su131911085.
- [19] J. Antonio Frizzo, A. Rigo, P. Anderson Soares, R. Geremias Rua Josefina Henn, dan B. São Cristovão, “Construction of a plastomer for the analysis of polypropylene fluidity under different temperatures and use of additives,” 2020. [Daring]. Tersedia pada: www.techniumscience.com
- [20] Z. F. Al-Zuhairi dan A. A. A. Al-Zubiedy, “Recycling Polypropylene from Waste Polymers: A Review,” *System Safety: Human - Technical Facility - Environment*, vol. 7, no. 1, hlm. 431–442, Des 2025, doi: 10.2478/czoto-2025-0040.
- [21] C. Badini, O. Ostrovskaya, G. Bernagozzi, R. Lanfranco, dan S. Miranda, “Recycling of Polypropylene Recovered from a Composting Plant: Mechanical Behavior of Compounds with Virgin Plastic,” *Recycling*, hlm., 2023, doi: 10.3390/recycling8040062.
- [22] J. Aurrekoetxea, M. A. Sarrionandia, I. Urrutibeascoa, dan M. LI MASPOCH, “Effects of recycling on the microstructure and the mechanical properties of isotactic polypropylene,” 2001. doi: 10.1023/A:1017983907260.
- [23] J. Wang dan S. Zhuang, “Chitosan-based materials: Preparation, modification and application,” 25 Juni 2022, *Elsevier Ltd*. doi: 10.1016/j.jclepro.2022.131825.
- [24] K. Divya dan M. S. Jisha, “Chitosan nanoparticles preparation and applications,” 1 Maret 2018, *Springer Verlag*. doi: 10.1007/s10311-017-0670-y.
- [25] A. El-Araby, W. Janati, R. Ullah, S. Ercisli, dan F. Errachidi, “Chitosan, chitosan derivatives, and chitosan-based nanocomposites: eco-friendly materials for advanced applications (a review),” 2023, *Frontiers Media SA*. doi: 10.3389/fchem.2023.1327426.
- [26] H. Krisnawati, M. Kallio, dan M. Kanninen, “Acacia mangium Willd : Ecology, silviculture and productivity,” 2011.
- [27] S. Magalhães *dkk.*, “Acacia Wood Fractionation Using Deep Eutectic Solvents: Extraction, Recovery, and Characterization of the Different Fractions,” *ACS Omega*, vol. 7, no. 30, hlm. 26005–26014, Agu 2022, doi: 10.1021/acsomega.1c07380.

- [28] S. Gea dan M. Harahap, *SELULOSA*. 2018.
- [29] T. Taflick, É. G. Maich, L. Dias Ferreira, C. I. D. Bica, S. R. S. Rodrigues, dan S. M. B. Nachtigall, “Acacia bark residues as filler in polypropylene composites,” *Polimeros*, vol. 25, no. 3, hlm. 289–295, 2015, doi: 10.1590/0104-1428.1840.
- [30] F. A. Radini, F. Apriyani, Y. A. Swasono, R. P. Rudianto, N. S. Sambudi, dan Y. F. Buys, “The effect of mixing sequence on synthesis of PP-g-GMA compatibilizer for multilayer packaging (MLP) compounding,” *Journal of Metals, Materials and Minerals*, vol. 34, no. 2, 2024, doi: 10.55713/jmmm.v34i2.1789.
- [31] M. Zhang, R. H. Colby, S. T. Milner, T. C. M. Chung, T. Huang, dan W. Degroot, “Synthesis and characterization of maleic anhydride grafted polypropylene with a well-defined molecular structure,” *Macromolecules*, vol. 46, no. 11, hlm. 4313–4323, Jun 2013, doi: 10.1021/ma4006632.
- [32] M. Pokhriyal, P. K. Rakesh, S. M. Rangappa, dan S. Siengchin, “Effect of alkali treatment on novel natural fiber extracted from Himalayacalamus falconeri culms for polymer composite applications,” *Biomass Convers. Biorefin.*, vol. 14, no. 16, hlm. 18481–18497, Agu 2024, doi: 10.1007/s13399-023-03843-4.
- [33] X. Jiang, J. Wang, G. Wu, X. Peng, dan X. Ma, “Significant reinforcement of polypropylene/wood flour composites by high extent of interfacial interaction,” *Journal of Thermoplastic Composite Materials*, vol. 32, no. 5, hlm. 577–592, Mei 2019, doi: 10.1177/0892705718761476.
- [34] S. Huang, Q. Fu, L. Yan, dan B. Kasal, “Characterization of interfacial properties between fibre and polymer matrix in composite materials – A critical review,” 1 Juli 2021, *Elsevier Editora Ltda*. doi: 10.1016/j.jmrt.2021.05.076.
- [35] X. Jiang, J. Wang, G. Wu, X. Peng, dan X. Ma, “Significant reinforcement of polypropylene/wood flour composites by high extent of interfacial interaction,” *Journal of Thermoplastic Composite Materials*, vol. 32, no. 5, hlm. 577–592, Mei 2019, doi: 10.1177/0892705718761476.
- [36] L. Dányádi, J. Móczó, dan B. Pukánszky, “Effect of various surface modifications of wood flour on the properties of PP/wood composites,” *Compos. Part A Appl. Sci. Manuf.*, vol. 41, no. 2, hlm. 199–206, Feb 2010, doi: 10.1016/j.compositesa.2009.10.008.
- [37] T. J. Trivedi, K. S. Rao, dan A. Kumar, “Facile preparation of agarose-chitosan hybrid materials and nanocomposite ionogels using an ionic

- liquid via dissolution, regeneration and sol-gel transition,” *Green Chemistry*, vol. 16, no. 1, hlm. 320–330, 2014, doi: 10.1039/c3gc41317a.
- [38] F. Burgada *dkk.*, “Upgrading Recycled Polypropylene from Textile Wastes in Wood Plastic Composites with Short Hemp Fiber,” 2021, doi: 10.3390/polym.
- [39] M. Demir dan R. Ekici, “Investigation of low-velocity impact behaviors of polymer composites reinforced with different natural fiber fabrics,” *Polym. Compos.*, vol. 45, no. 6, hlm. 4928–4946, Apr 2024, doi: 10.1002/pc.28099.
- [40] E. P. D. Boangmanalu, A. B. Pratama, A. Qadry, J. F. H. Saragi, dan F. T. H. Sinaga, “Charpy and Izod Method Impak Strength Analysis on ST 37 Steel with Temperature Variations,” *Formosa Journal of Science and Technology*, vol. 2, no. 12, hlm. 3329–3342, Des 2023, doi: 10.55927/fjst.v2i12.7074.
- [41] N. M. Z. Abidin, M. T. H. Sultan, A. U. M. Shah, dan S. N. A. Safri, “Charpy and Izod impact properties of natural fibre composites,” dalam *IOP Conference Series: Materials Science and Engineering*, IOP Publishing Ltd, Des 2019. doi: 10.1088/1757-899X/670/1/012031.
- [42] Q. Zheng *dkk.*, “Understanding Glass through Differential Scanning Calorimetry,” *Chem. Rev.*, vol. 119, no. 13, hlm. 7848–7939, Jul 2019, doi: 10.1021/acs.chemrev.8b00510.
- [43] J. Drzeżdżon, D. Jacewicz, A. Sielicka, dan L. Chmurzyński, “Characterization of polymers based on differential scanning calorimetry based techniques,” 1 Januari 2019, *Elsevier B.V.* doi: 10.1016/j.trac.2018.10.037.
- [44] E. Oktariani, A. A. Ahnaf, R. Christine, dan H. Arina, “Development and Characterization of Recycled Polypropylene/Teak Wood Dust Composite for Sustainable Applications in the Automotive Components Industry: Thermal and Mechanical Properties,” *Jurnal Riset Kimia*, vol. 16, hlm. 97–107, Sep 2025, doi: <https://doi.org/10.25077/jrk.v16i2.826>.
- [45] M. A. Elsayy, G. R. Saad, dan A. M. Sayed, “Mechanical, thermal, and dielectric properties of poly(lactic acid)/chitosan nanocomposites,” *Polym. Eng. Sci.*, vol. 56, no. 9, hlm. 987–994, Sep 2016, doi: 10.1002/pen.24328.
- [46] E. Ghanbari, S. J. Picken, dan J. H. van Esch, “Analysis of differential scanning calorimetry (DSC): determining the transition temperatures, and enthalpy and heat capacity changes in multicomponent systems by

- analytical model fitting,” *J. Therm. Anal. Calorim.*, vol. 148, no. 22, hlm. 12393–12409, Nov 2023, doi: 10.1007/s10973-023-12356-1.
- [47] R. Ghelich, M. R. Jahannama, H. Abdizadeh, F. S. Torknik, dan M. R. Vaezi, “Central composite design (CCD)-Response surface methodology (RSM) of effective electrospinning parameters on PVP-B-Hf hybrid nanofibrous composites for synthesis of HfB₂-based composite nanofibers,” *Compos. B Eng.*, vol. 166, hlm. 527–541, Jun 2019, doi: 10.1016/j.compositesb.2019.01.094.
- [48] E. Valter Silva dan J. Sousa Cardoso, *Response Surface Methods - Theory, Applications and Optimization Techniques*. IntechOpen, 2024. doi: 10.5772/intechopen.1001640.
- [49] M. Reji dan R. Kumar, “Response surface methodology (RSM): An overview to analyze multivariate data,” 2022, *IP Innovative Publication Pvt. Ltd.* doi: 10.18231/j.ijmr.2022.042.
- [50] D. C. . Montgomery, *Design and Analysis of Experiments, 9th Edition*. Wiley, 2017.
- [51] J. Antony, “Full Factorial Designs,” dalam *Design of Experiments for Engineers and Scientists*, Elsevier, 2014, hlm. 63–85. doi: 10.1016/B978-0-08-099417-8.00006-7.
- [52] H. Y. Chen dan C. Chen, “Importance of Using Modern Regression Analysis for Response Surface Models in Science and Technology,” *Applied Sciences (Switzerland)*, vol. 15, no. 13, Jul 2025, doi: 10.3390/app15137206.
- [53] M. H. Flaifel, “An approach towards optimization appraisal of thermal conductivity of magnetic thermoplastic elastomeric nanocomposites using response surface methodology,” *Polymers (Basel)*, vol. 12, no. 9, Sep 2020, doi: 10.3390/POLYM12092030.
- [54] M. Kumari dan S. K. Gupta, “Response surface methodological (RSM) approach for optimizing the removal of trihalomethanes (THMs) and its precursor’s by surfactant modified magnetic nanoadsorbents (sMNP) - An endeavor to diminish probable cancer risk,” *Sci. Rep.*, vol. 9, no. 1, Des 2019, doi: 10.1038/s41598-019-54902-8.
- [55] E. Delli, D. Gkiliopoulos, E. Vouvoudi, D. Bikiaris, dan K. Chrissafis, “Defining the Effect of a Polymeric Compatibilizer on the Properties of Random Polypropylene/Glass Fibre Composites,” *Journal of Composites Science*, vol. 8, no. 2, Feb 2024, doi: 10.3390/jcs8020044.
- [56] S. Borysiak, “Determination of nucleating ability of wood for non-isothermal crystallisation of polypropylene,” *J. Therm. Anal. Calorim.*,

vol. 88, no. 2, hlm. 455–462, Mei 2007, doi: 10.1007/s10973-006-8077-1.

- [57] S. Luo, C. Lv, L. Chang, dan W. Guo, “Enhancing Crystallization and Toughness of Wood Flour/Polypropylene Composites via Matrix Crystalline Modification: A Comparative Study of Two β -Nucleating Agents,” *Polymers (Basel)*., vol. 14, no. 17, Sep 2022, doi: 10.3390/polym14173561.
- [58] A. A. Joraid, M. A. Al-Maghrabi, dan A. A. Alshehry, “Effect of SiO₂ nanoparticles on the melt-crystallization kinetics and mechanical behavior of polypropylene,” *Journal of Polymer Research*, vol. 32, no. 6, hlm. 196, Jun 2025, doi: 10.1007/s10965-025-04424-x.
- [59] S. Tarashi, H. Nazockdast, M. Karbalaei-Bagher, A. Rostami, dan M. Mehranpour, “Toward understanding the crystallization behavior of polypropylene-based nanocomposites: Effect of ethylene–octene copolymer and nanoclay localization,” *Polym. Compos.*, vol. 44, no. 9, hlm. 5589–5607, Sep 2023, doi: 10.1002/pc.27512.
- [60] C. W. Huang, T. C. Yang, K. C. Hung, J. W. Xu, dan J. H. Wu, “The effect of maleated polypropylene on the non-isothermal crystallization kinetics of wood fiber-reinforced polypropylene composites,” *Polymers (Basel)*., vol. 10, no. 4, Apr 2018, doi: 10.3390/polym10040382.
- [61] K. Zdiri, A. Elamri, M. Hamdaoui, O. Harzallah, N. Khenoussi, dan J. Brendlé, “Reinforcement of recycled pp polymers by nanoparticles incorporation,” *Green Chem. Lett. Rev.*, vol. 11, no. 3, hlm. 296–311, Jul 2018, doi: 10.1080/17518253.2018.1491645.
- [62] Q. Chen dan J. Qi, “How much should we trust R^2 and adjusted R^2 : evidence from regressions in top economics journals and Monte Carlo simulations,” *J. Appl. Econ.*, vol. 26, no. 1, Des 2023, doi: 10.1080/15140326.2023.2207326.
- [63] M. A. Bezerra, R. E. Santelli, E. P. Oliveira, L. S. Villar, dan L. A. Escalera, “Response surface methodology (RSM) as a tool for optimization in analytical chemistry,” 15 September 2008, *Elsevier*. doi: 10.1016/j.talanta.2008.05.019.