



DAFTAR PUSTAKA

- Abe, K. and H. Yano. 2009. "Comparison of the characteristics of cellulose microfibril aggregates of wood, rice straw and potato tuber." *Cellulose* 16 (6): 1017-e1023.
- Abidi, N. and M. Manike. 2018. "X-Ray Diffraction and FT-IR Investigations of Cellulose Deposition during Cotton Fiber Development." *Textile Research Journal* 88 (7): 719–30.
- Abraham, E., D. Kam, Y. Nevo, R. Slattegard, A. Rivkin, S. Lapidot, and O. Shoseyov. 2016. "Highly modified cellulose nanocrystals and formation of epoxy-nanocrystalline cellulose (CNC) nanocomposites." *ACS Applied Materials & Interfaces* 8 (41): 28086–95.
- Adebajo, M.O. and R.L. Frost. 2004. "Acetylation of raw cotton for oil spill cleanup application: an FT-IR and ¹³C MAS NMR spectroscopic investigation." *Spectrochimica Acta, Part A: Molecular and Biomolecular Spectroscopy* 60 (10): 2315–21.
- Aguayo, M.G., A. Fernández Pérez, G. Reyes, C. Oviedo, W. Gacitúa, R. Gonzalez, and O. Uyarte. 2018. "Isolation and characterization of cellulose nanocrystals from rejected fibers originated in the kraft pulping process." *Polymers (Basel)* 10 (10): 1145.
- Ahmad, T., O. Mamat, and R. Ahmad. 2013. "Studying the effects of addingsilica sand nanoparticles on epoxy based composites." *Journal of Nanoparticle Research* 24: 1–5.
- Aisyah, H.A., M.T. Paridah, S.M. Sapuan, A. Khalina, O.B. Berkalp, S.H. Lee, C. H. Lee, N.M. Nurazzi, N. Ramli, M.S. Wahab, and R.A. Ilyas. 2019. "Thermal properties of woven kenaf/carbon fibre-reinforced epoxy hybrid composite panels." *The International Journal of Polymer Science* 5258621: 1–8.
- Alemdar, A., and M. Sain. 2008. "Isolation and characterization of nanofibers from agricultural residues-wheat straw and soy hulls." *Bioresource Technology* 99: 1664–71.
- Alwadani, N., N. Ghavidel, and P. Fatehi. 2021. "Surface and interface characteristics of hydrophobic lignin derivatives in solvents and films." *Colloids and Surfaces A: Physicochemical and Engineering* 609: 125656.
- Amri, M.R., C.T. Guan, S.S. Osman Al-Edrus, F. Md Yasin, and S.F. Mohamad. 2021. "Effect of cellulose nanofibrils on the properties of jatropha oil-based waterborne polyurethane nanocomposite film." *Polymers (Basel)* 13: 1460.
- Ansari, F., S. Galland, M. Johansson, C.J.G. Plummer, and L.A. Berglund. 2014. "Cellulose nanofiber network for moisture stable, strong and ductile biocomposites and increased epoxy curing rate." *Composites Part A: Applied Science and Manufacturing* 63: 35–44.



- Arthanarieswaran, V.P., A. Kumaravel, and M. Kathirselvam. 2014. "Evaluation of mechanical properties of banana and sisal fiber reinforced epoxy composites: influence of glass fiber hybridization." *Materials and Design* 64: 194–202.
- Ashori, A., M. Babaee, M. Jonoobi, and Y. Hamzeh. 2014. "Solvent-free acetylation of cellulose nanofibers for improving compatibility and dispersion." *Carbohydr. Polym.* 102: 369–75.
- Asim, M., M.T. Paridah, M.Chandrasekar, R.M. Shahroze, M. Jawaid, M. Nasir, and R. Siakeng. 2020. Thermal stability of natural fibers and their polymer composites. *Iranian Polymer Journal* 29: 625–48.
- Awais, H., Y. Nawab, A. Anjang, H. Md Akil, and M.S.Z. Abidin. 2020. "Effect of fabric architecture on the shear and impact properties of natural fibre reinforced composites." *Composites Part B: Engineering* 195: 108069.
- Azhary, T., Kusmono, and M.W. Wildan. 2022. "Mechanical, morphological, and thermal characteristics of epoxy/glass fiber/cellulose nanofiber hybrid composites." *Polymer Testing* 110: 107560.
- Baati, R., Mabrouk, A. B., Magnin, A., and Boufi, S. 2018. "CNFs from twin screw extrusion and high pressure homogenization: A comparative study." *Carbohydrate Polymers*, 195, 321-328.
- Beaumont, M., P. Jusner, N. Gierlinger, A.W.T. King, A. Potthast, O.J. Rojas, and T. Rosenau. 2021. "Unique reactivity of nanoporous cellulosic materials mediated by surface-confined water." *Nature Communications*, 12.
- Bikiaris D. 2011. "Can nanoparticles really enhance thermal stability of polymers? Part II: an overview on thermal decomposition of polycondensation polymers." *Thermochimica Acta* 523 (1-2): 25–45.
- Bismarck, A., S. Mishra, and T. Lampke. 2005. "Plant fibers as reinforcement for green composites, in natural fibers." *Biopolymers and Biocomposites. Natural Fibers, Biopolymers, and Biocomposites*. Vol. 6.
- Bledzki, A.K., A.A. Mamun, M. Lucka-Gabor, and V.S. Gutowski. 2008. "The effects of acetylation on properties of flax fibre and its polypropylene composites." *Express Polymer Letters* 2 (6): 413–22.
- Bledzki, A.K., W. Zhang, and A. Chate. 2001. "Natural-fibre-reinforced polyurethane microfoams." *Composites Science and Technology* 61 (16): 2405–11.
- Boufi, S., and A. Chaker. 2016. "Easy production of cellulose nanofibrils from corn stalk by a conventional high speed blender." *Industrial Crops and Products* 93: 39–47.
- Cai, M., H. Takagi, A.N. Nakagaito, M. Katoh, T. Ueki, G.I.N. Waterhouse, and Y. Li. 2015. "Influence of alkali treatment on internal microstructure and tensile properties of abaca fibers." *Industrial Crops and Products* 65: 27–35.
- Cai, M., H. Takagi, A.N. Nakagaito, Y. Li, and G.I.N. Waterhouse. 2016. "Effect



- of alkali treatment on interfacial bonding in abaca fiber-reinforced composites.” *Composites Part A: Applied Science and Manufacturing* 90: 589–597.
- Callister Jr., W. D. and D.G. Rethwisch. 2018. materials science and engineering -. an introduction 10th edition, John Wiley & Sons, Inc., Hoboken.
- Castro, C., R. Zuluaga, L. Vélez, A. Retegi, I. Mondragon, P. Gañán. 2012. “Biodegradability of banana and plantain cellulose microfibrils films in anaerobic conditions.” *Journal of Polymers and the Environment* 20: 774–782.
- Cerdeira, D.A., G. Filho, and C.D.S. Meireles. 2007. “Optimization of sugarcane bagasse cellulose acetylation.” *Carbohydrate Polymers* 69: 579–582.
- Çetin, N.S., P. Tingaut P, N. Özmen, N. Henry, D. Harper, M. Dadmun, and G. Sèbe. 2009. “Acetylation of cellulose nanowhiskers with vinyl acetate under moderate conditions.” *Macromolecular Bioscience* 9 (10): 997– 1003.
- Chaker, A., P. Mutjé, Vilar, M.R. Vilar, and S. Boufi. 2014. “agriculture crop residues as a source for the production of nanofibrillated cellulose with low energy demand.” *Cellulose* 21: 4247–59.
- Chaker, A., S. Alila, P. Mutjé, M. Rei Vilar, and S. Boufi. 2013. “Key role of the hemicellulose content and the cell morphology on the nanofibrillation effectiveness of cellulose pulps.” *Cellulose* 20 (6): 2863–75.
- Chee, S.S., Jawaid M, Sultan MTH, Alothman OY, Abdullah LC. 2020. “Effects of nanoclay on physical and dimensional stability of bamboo/kenaf/nanoclay reinforced epoxy hybrid nanocomposites. The Journal of Materials Research and Technology 9: 5871–80.
- Chen, W., H. Yu, Y. Liu, P. Chen, M. Zhang, and Y. Hai. 2011. “Individualization of cellulose nanofibers from wood using high-intensity ultrasonication combined with chemical pretreatments.” *Carbohydrate Polymers* 83 (4): 1804–11.
- Cheng, C., D. Shen, S. Gu, and K.H. Luo. 2018a. “State-of-the-art catalytic hydrogenolysis of lignin for the production of aromatic chemicals.” *Catalysis Science & Technology* 24 (8): 6275–96.
- Cheng, L., D. Zhang, Z. Gu, Z. Li, Y. Hong, and C. Li. 2018b. “Preparation of acetylated nanofibrillated cellulose from corn stalk microcrystalline cellulose and its reinforcing effect on starch films.” *International Journal of Biological Macromolecules* 111: 959–66.
- Cheng, S., A. Huang, S. Wang, and Q. Zhang. 2016. ”Effect of different heat treatment temperatures on the chemical composition and structure of Chinese fir wood.” *Bioresources* 11 (2): 4006–4016.
- Chesson, A. 1981. “Effects of sodium hydroxide on cereal straws in relation to the enhanced degradation of structural polysaccharides by rumen microorganisms.” *Journal of the Science of Food and Agriculture* 32: 745–



58.

- Chieng, B.W., S.H. Lee, N.A. Ibrahim, Y.Y. Then, and Y.Y. Loo. 2017. "Isolation and characterization of cellulose nanocrystals from oil palm mesocarp fiber." *Polymers* 9 (8): 355-65.
- Chin, S.C., K.F. Tee, F.S. Tong, H.R. Ong, and J. Gim bun. 2020. "Thermal and mechanical properties of bamboo fiber reinforced composites." *Materials Today Communications* 23: 100876.
- Da Rosa, T.S., R. Trianoski, F. Michaud, C. Belloncle, and S. Iwakiri. 2022. "Efficiency of different acetylation methods applied to cellulose fibers waste from pulp and paper mill sludge." *Journal of Natural Fibers* 19: 185–198.
- De Castro, D.O., J. Bras, A. Gandini, and N. Belgacem. 2016. "Surface grafting of cellulose nanocrystals with natural antimicrobial rosin mixture using a green process." *Carbohydrate Polymers* 137: 1–8.
- Dhali, K., M. Ghasemlou, F. Daver, P. Cass, and B. Adhikari. 2021. "A review of nanocellulose as a new material towards environmental sustainability." *Science of the Total Environment* 775: 145871.
- Diop, C.I.K., H.L. Li, B.J. Xie, and J. Shi. 2011. "Effects of acetic acid/acetic anhydride ratios on the properties of corn starch acetates." *Food Chemistry*, 126 (4): 1662-9.
- Dominic, M.C.D., S. Maheswary, K.V. Neenu, S.M. Sajadi, D. dos Santos Rosa, B.P.M. Sabura Begum, M. Mathew, T.G. Ajithkumar, J. Parameswaranpillai, T.S. George, V.C. Resmi, R.A. Ilyas, and M. Badawi. 2022. "Colocasia esculenta stems for the isolation of cellulose nanofibers: a chlorine-free method for the biomass conversion." *Biomass Conversion and Biorefinery* 14: 10305-10318.
- Dong, C., and H. Takagi. 2014. "Flexural properties of cellulose nanofibre reinforced green composites." *Composites Part B: Engineering*, 58: 418-421.
- Duan, L., R. Liu, Y. Duan, Z. Li, Q.A. Li. 2022. "Simultaneous strategy for the preparation of acetylation modified cellulose nanofiber/polypropylene composites." *Carbohydrate Polymers* 277: 118744.
- Dutra, E.D., F.A. Santos, B.R.A. Alencar, A.L.S. Reis, R. de Fatima Rodrigues de Souza, K.A. da Silva Aquino, M.A. Morais, and R.S.C. Menezes. 2018. "Alkaline hydrogen peroxide pretreatment of lignocellulosic biomass: status and perspectives." *Biomass Conversion and Biorefinery* 8 (1): 225–34.
- du Plessix, B.D., C.S. Le, F. Jacquemin, P. Lefebure, and V. Sobotka. 2016. "Improved simplified approach for the prediction of porosity growth during the curing of composites parts." *Composites Part A: Applied Science and Manufacturing* 1 (90): 549–58.
- Feng, Y.H., T.Y. Cheng, W.G. Yang, P.T. Ma, H.Z. He, X.C. Yin, and X.X. Yu. 2018. "Characteristics and environmentally friendly extraction of cellulose nanofibrils from sugarcane bagasse." *Industrial Crops and Products* 111:



285–91.

- Filho, G.R., S.F. da Cruz, D. Pasquini, D.A. Cerqueira, V.d.S. Prado, and R.M.N. de Assunção. 2000. Water flux through cellulose triacetate films produced from heterogeneous acetylation of sugar cane bagasse. *Journal of Membrane Science* 177: 225–231.
- Fisher, B., M. Eaton, and R. Pullin. 2023. “A novel multi-scale modelling approach to predict the reduction of transverse strength due to porosity in composite materials.” *Composite Structures* 312: 116861.
- Fonseca, A.D.S., S. Panthapulakkal, S.K. Konar, M. Sain, L. Bufalinof, J. Raabe, I.P.d.A. Miranda, M.A. Martins, and G.H.D. Tonoli. 2019. “Improving cellulose nanofibrillation of non-wood fiber using alkaline and bleaching pre-treatments.” *Industrial Crops and Products* 131: 203–12.
- Fortunati, E., P. Benincasa, G.M. Balestra, F. Luzi, A. Mazzaglia, D. Del Buono, D. Puglia, L. Torre. 2016. “Revalorization of barley straw and husk as precursors for cellulose nanocrystals extraction and their effect on PVA_CH nanocomposites.” *Industrial Crops and Products* 92: 201–17.
- Foster, E., R. Moon, U. Agarwal, M. Bortner, J. Bras, S. Camarero-Espinosa, K. Chan, M. Clift, E. Cranston, S. Eichhorn, D. Fox, W. Hamad, L. Heux, B. Jean, M. Korey, W. Nieh, K. Ong, M. Reid, S. Renneckar, R. Roberts, J. Shatkin, J. Simonsen, K. Stinson-Bagby, N. Wanasekara, and J. Youngblood. 2018. Current characterization methods for cellulose nanomaterials. *Chemical Society Reviews* 47 (8): 2609-79.
- French, A.D. 2014. “Idealized powder diffraction patterns for cellulose polymorphs.” *Cellulose* 21: 885–96.
- Gibson, R.F., 2016. *Principles of composite material mechanics*. 4th ed. CRC pres, Boca Raton.
- Gea, S., A.H. Siregar, E.Z.M. Harahap, D.P. Indrawan, and Y.A. Perangin-Angin. 2020. “Isolation and characterisation of cellulose nanofibre and lignin from oil palm empty fruit bunches.” *Materials* 13 (10): 2290.
- George, J.S., P.P. Vijayan, H. Vahabi, H. J. Maria, ,C.S., Anju, and S.Thomas. 2024. ”Sustainable hybrid green nanofiller based on cellulose nanofiber for enhancing the properties of epoxy resin. ” *Colloids and Surfaces A: Physicochemical and Engineering Aspects* 694: 134082.
- Ghasemi, S., M. Tajvidi, D.J. Gardner, D.W. Bousfield, and S.M. Shaler. 2018. ”Effect of wettability and surface free energy of collection substrates on the structure and morphology of dry-spun cellulose nanofibril filaments.” *Cellulose* 25: 6305–6317.
- Ghasemlou, M., F. Daver, E.P. Ivanova, Y. Habibi, and B. Adhikari. 2021. “surface modifications of nanocellulose: from synthesis to high-performance nanocomposites.” *Progress in Polymer Science* 119: 101418.
- Gieparda, W., S. Rojewski, S. Wüstenhagen, A. Kicinska-Jakubowska, and A.



- Krombholz. 2021. "Chemical modification of natural fibres to epoxy laminate for lightweight constructions." *Composites Part A: Applied Science and Manufacturing* 140: 106171.
- Goh, K.Y., Y.C. Ching, C.H. Chuah, L.C. Abdullah, N.S. Liou. 2016. "Individualization of microfibrillated celluloses from oil palm empty fruit bunch: comparative studies between acid hydrolysis and ammonium persulfate oxidation." *Cellulose* 23: 379–90.
- Gopinathan, P., K.S. Subramanian, G. Paliyath, and J. Subramanian. 2017. "Genotypic variations in characteristics of nano-fibrillated cellulose derived from banana pseudostem." *Bioengineering and Resuscitation* 12 (4): 6984–7001.
- Gould, J.M. 1984. "Studies on the mechanism of alkaline peroxide delignification of agricultural residues." *Biotechnology and Bioengineering* 27: 225–31.
- Gupta, G.K. and P. Shukla. 2020. "Lignocellulosic biomass for the synthesis of nanocellulose and its eco-friendly advanced applications." *Frontiers in Chemistry* 8: 1–13.
- Hafemann, E., R. Battisti, C. Marangoni, and R.A.F. Machado. 2019. "Valorization of royal palm tree agroindustrial waste by isolating cellulose nanocrystals." *Carbohydrate Polymers* 218: 188–98.
- Haleem, N., M. Arshad, M. Shahid, and M.A. Tahir. 2014. "Synthesis of carboxymethyl cellulose from waste of cotton ginning industry." *Carbohydrate Polymers* 113: 249–55.
- Hamalainen, C., and J.D. Reid. 1949. "Decrystallization of cotton cellulose by partial acetylation: Studies on partial acetylation of cotton cellulose (part 1)." *Industrial & Engineering Chemistry* 41: 1018–21.
- Hestiawan, H. 2020. "The water absorption, mechanical and thermal properties of chemically treated woven fan palm reinforced polyester composites." *Journal of Materials Research* 9 (3): 4410-20.
- Hiremath, V.S., D.M. Reddy, R. Reddy Mutra, A. Sanjeev, T. Dhilipkumar, and J. Naveen. 2024. "Thermal degradation and fire retardant behaviour of natural fibre reinforced polymeric composites- A comprehensive review." *Journal of Materials Research* 30: 4053-63.
- Hu, F., J. Zeng, Z. Cheng, X. Wang, B. Wang, Z. Zeng, and K. Chen. 2021. Cellulose nanofibrils (CNFs) produced by different mechanical methods to improve mechanical properties of recycled paper. *Carbohydrate Polymers* 254: 117474.
- Hu, H., H. Li, Y. Zhang, Y. Chen, Z. Huang, A. Huang, Y. Zhu, X. Qin, and B. Lin. 2015. "Green mechanical activation-assisted solid phase synthesis of cellulose esters using a co-reactant: effect of chain length of fatty acids on reaction efficiency and structure properties of products." *RSC Advances* 5: 20656–62.
- Hu W., S. Chen, Q. Xu, and H. Wang. 2011. "Solvent-free acetylation of bacterial



- cellulose under moderate conditions.” *Carbohydrate Polymers* 83 (4): 1575–81.
- [http://balittas.litbang.pertanian.go.id/index.php/id/publikasi/60-info teknologi /1741-agave-sisalana-si-tanaman-eksotis-penghasil-serat-alam-serbaguna](http://balittas.litbang.pertanian.go.id/index.php/id/publikasi/60-info-teknologi/1741-agave-sisalana-si-tanaman-eksotis-penghasil-serat-alam-serbaguna).
- Ibrahim, I.D., T. Jamiru, E.R. Sadiku, W.K. Kupolati, and S.C. Agwuncha. 2016. “Impact of surface modification and nanoparticle on sisalfiber reinforced polypropylene nanocomposites.” *Journal of Nanotechnology* 2016: 1–9.
- Idicula, M., K. Joseph, and S. Thomas. 2010. “Mechanical performance of short banana/sisal hybrid fiber reinforced polyester composites.” *Journal of Reinforced Plastics and Composites* 29 (1): 12–29.
- Idicula, M., N.R. Neelakantan, Z. Oommen, K. Joseph, and S. Thomas. 2005. “A study of the mechanical properties of randomly oriented short banana and sisal hybrid fiber reinforced polyester composites.” *Journal of Applied Polymer Science* 96 (5): 1699–709.
- Ifuku S., M. Nogi, K. Abe, K. Handa, F. Nakatsubo, and H. Yano. 2007. “Surface modification of bacterial cellulose nanofibers for property enhancement of optically transparent composites: dependence on acetyl-group DS.” *Biomacromolecules* 8: 1973–8.
- Inkson, B.J. 2016. *Scanning electron microscopy (SEM) and transmission electron microscopy (TEM) for materials characterization. Materials Characterization using nondestructive evaluation (NDE) Methods*. Elsevier Ltd.
- Isogai, A. and L. Bergström. 2018. “Preparation of cellulose nanofibers using green and sustainable chemistry.” *Current Opinion in Green and Sustainable Chemistry* 12: 15–21.
- Israelachvili, J. N. (2011). Special Interactions: Hydrogen-Bonding and Hydrophobic and Hydrophilic Interactions. *Intermolecular and Surface Forces (Third Edition)*, 151–167. <https://doi.org/10.1016/B978-0-12-375182-9.10008-9>
- Iwamoto, S., K. Abe, and H. Yano. 2008. “The effect of hemicelluloses on wood pulp nanofibrillation and nanofiber network characteristics.” *Biomacromolecules* 9 (3): 1022–6.
- Jenkins R. and R.L. Snyder. 1996. *Introduction to X-ray powder diffractometry*. Wiley, New York.
- Jin, F.L., X. Li, and S.J. Park. 2015. “Synthesis and application of epoxy resins: a review.” *Journal of Industrial and Engineering Chemistry* 29: 1–11.
- Jonoobi, M., H. Jalaluddin, P.M. Aji, M.Z.B. Hussein, and K. Oksman. 2010. “Preparation of cellulose nanofibers with hydrophobic surface characteristics,” *Cellulose* 17: 299–307.
- Jonoobi M., A.P. Mathew, M.M. Abdi, M.D. Makinejad, and K. Oksman. 2012. “A comparison of modified and unmodified cellulose nanofiber reinforced poly-



- lactic acid (PLA) prepared by twin screw extrusion.” *Journal of Polymers and the Environment* 20 (4): 991–7.
- Joseph, S., P. Koshy and S. Thomas. 2005. “The role of interfacial interactions on the mechanical properties of banana fibre reinforced phenol formaldehyde composites”, *Composite Interfaces* 12(6): 581-600.
- Kabir, M.M., H. Wang, K.T. Lau, and F. Cardona. 2012. “Chemical treatments on plant-based natural fibre reinforced polymer composites: an overview.” *Composites Part B: Engineering* 43 (7): 2883–92.
- Kaffashsaie, E., H. Yousefi, T. Nishino, T. Matsumoto, M. Mashkour, M. Madhoushi, and H. Kawaguchi. 2021. “Direct conversion of raw wood to tempo-oxidized cellulose nanofibers.” *Carbohydrate Polymers* 262: 117938.
- Kathirselvam, M., A. Kumaravel, V. Arthanarieswaran, and S.S. Saravanakumar. 2019. Isolation and characterization of cellulose fibers from *Thespesia populnea* barks: a study on physicochemical and structural properties. *International Journal of Biological Macromolecules* 129: 396–406.
- Khalil, H.P.S.A., H. Bhat, and F.I. Yusra. 2012. “Green Composites from Sustainable Cellulose Nanofibrils: A Review.” *Carbohydrate Polymers* 87 (2): 963–79.
- Khan, A., A.M. Asiri, M. Jawaid, N. Saba, and Inamuddin. 2020. “Effect of cellulose nano fibers and nano clays on the mechanical, morphological, thermal and dynamic mechanical performance of kenaf/epoxy composites.” *Carbohydrate Polymers* 239: 116248.
- Kılınç, A.Ç., S. Köktaş, Y. Seki, M. Atagür, R. Dalmış, Ü.H. Erdoğan, A.A. Göktas, and M.Ö. Seydibeyoğlu. 2018. “Extraction and investigation of lightweight and porous natural fiber from Conium maculatum as a potential reinforcement for composite materials in transportation.” *Composites Part B: Engineering* 140:1-8.
- Kim, J.S., Y.Y. Lee, and T.H. Kim. 2016. “A review on alkaline pretreatment technology for bioconversion of lignocellulosic biomass.” *Bioresource Technology* 199: 42–8.
- Klemm, D., F. Kramer, S. Moritz, T. Lindström, M. Ankerfors, D. Gray, and A. Dorris. 2011. “Nanocelluloses: a new family of nature-based materials.” *Angewandte Chemie International Edition* 50 (24): 5438–66.
- Kontturi, K.S., K. Biegaj, A. Mautner, R.T. Woodward, B.P. Wilson, L.S. Johansson, K.Y. Lee, J.Y.Y. Heng, A. Bismarck, and E. Kontturi. 2017. “Noncovalent surface modification of cellulose nanopapers by adsorption of polymers from aprotic solvents.” *Langmuir* 33: 5707–12.
- Kose, R., Yamaguchi, K. and Okayama, T. 2016. “Preparation of fine fiber sheets from recycled pulp fibers using aqueous counter collision.” *Cellulose* 23, 1393–9.
- Krishnan, K.A., C. Jose, K.R. Rohith, and K.E. George. 2015. “Sisal nanofibril



reinforced polypropylene/polystyrene blends: morphology, mechanical, dynamic mechanical and water transmission studies.” *Industrial Crops and Products* 71: 173-84.

Krishnan, P., and J. Selwin Rajadurai. 2017. “Microscopical, physico-chemical, mineralogical, and mechanical characterization of Sansevieria zeylanica fibers as potential reinforcement of composite structures.” *Journal of composite materials* 51: 811–29.

Kudva, A., G.T. Mahesha, and D. Pai. 2024. “Influence of Chemical Treatment on the Physical and Mechanical Properties of Bamboo Fibers as Potential Reinforcement for Polymer Composites.” *Journal of Natural Fibers* 21 (1).

Kulasinski, K., R. Guyer, D. Derome, J. Carmeliet. 2015. “Water adsorption in wood microfibrillated cellulose system: role of the crystalline–amorphous interface.” *Biomacromolecules* 16 (9): 2972–78.

Kumar, A. and C. Ram. 2021a. “Agave Biomass: A potential resource for production of value-added products.” *Journal of Environmental Sustainability* 4 (2): 245–59.

Kumar, S., G. Graninger, S.C. Hawkins, B.G. Falzon. 2021b. “A nanostructured cellulose-based interphase layer to enhance the mechanical performance of glass fibre-reinforced polymer composites.” *Composites Part A: Applied Science and Manufacturing* 148, 106475.

Kumar, S., L. Prasad, V.K. Patel, A. Kumar, A. Yadav, and J. Winczek. 2021c. “Physical and mechanical properties of natural leaf fiber-reinforced epoxy polyester composites.” *Polymers* 13 (9).

Kusmono and M.N. Affan. 2020. “Isolation and characterization of nanocrystalline cellulose from ramie fibers via phosphoric acid hydrolysis.” *Journal of Natural Fibers* 19 (7): 1–12.

Lachman, N., and H.D. Wagner. 2010. “Correlation between interfacial molecular structure and mechanics in CNT/epoxy nano-composites.” *Composites Part A: Applied Science and Manufacturing* 41 (9): 1093–8.

Lai, W., M. Mariatti, and S.M. Jani. 2008. “The properties of woven kenaf and betel palm (*Areca catechu*) reinforced unsaturated polyester composites.” *Polymer-Plastics Technology and Engineering* 47 (12): 1193–9.

Lefevre, A., A.L. Duigou, A. Bourmaud, A. Kervoelen, C. Morvan, and C. Baley. 2015. “Analysis of the role of the main constitutive polysaccharides in the flax fibre mechanical behaviour.” *Industrial Crops and Products* 76: 1039–48.

Lei, W., C. Fang, X. Zhou, Q. Yin, S. Pan, R. Yang, D. Liu, and Y. Ouyang. 2018. “Cellulose nanocrystals obtained from office waste paper and their potential application in PET packing materials.” *Carbohydrate Polymers* 181: 376–85.

Loganathan, S., R.B. Valapa, R.K. Mishra, G. Pugazhenthi, and S. Thomas. 2017. “Thermogravimetric analysis for characterization of nanomaterials. thermal and rheological measurement techniques for nanomaterials characterization.”



Vol. 3. Elsevier Inc.

- Li, Y., and Y.O. Shen. 2015. "The Use of Sisal and Henequen Fibres as Reinforcements in Composites." *Biofiber Reinforcements in Composite Materials* 1: 165–210.
- Lin, N., J. Huang, P.R. Chang, J. Feng, and J. Yu. 2011. "Surface acetylation of cellulose nanocrystal and its reinforcing function in poly(lactic acid)." *Carbohydrate Polymers* 83 (4): 1834–42.
- Liu, Y., L. Liu, K. Wang, H. Zhang, Y. Yuan, H. Wei, X. Wang, Y. Duan, L. Zhou, and J. Zhang. 2020. "Modified ammonium persulfate oxidations for efficient preparation of carboxylated cellulose nano-crystals." *Carbohydrate Polymers* 229: 115572–8617.
- Liu, Q., B. Du, Y. Mai, and Y. Zhao. 2022. "Study of the effects of doping alkali metal ions on cross-linked network of epoxy resins and analysis of insulation properties." *Journal of Electronic Materials* 51: 3141–9.
- Mansour, H., E.A. Soliman, A.M.F. El-Bab, and A.L. Abdel-Mawgood. 2022. "Development of epoxy resin-based microfluidic devices using CO₂ laser ablation for DNA amplification point-of-care (POC) applications." *International Journal of Advanced Manufacturing Technology* 120: 4355–72.
- Matsuoka, S., H. Kawamoto, and S. Saka. 2014. "What is active cellulose in pyrolysis? An approach based on reactivity of cellulose reducing end." *Journal of Analytical and Applied Pyrolysis* 106: 138–46.
- Mehdinia, M., Farajollah Pour, M., Yousefi, H., Dorieh, A., Lamanna, A. J., and Fini, E. 2024. "Developing Bio-Nano Composites Using Cellulose-Nanofiber-Reinforced Epoxy." *Journal of Composites Science*, 8 (7): 250. <https://doi.org/10.3390/jcs8070250>
- Middleton, B. 2016. Composites: manufacture and application. design and manufacture of plastic components for multifunctionality. Elsevier Inc.
- Mittal, A., R. Katahira, B.S. Donohoe, B.A. Black, S. Pattathil, J.M. Stringer, and G.T. Beckham. 2017. "Alkaline Peroxide Delignification of Corn Stover." *ACS Sustainable Chemistry & Engineering* 5 (7): 6310–21.
- Mondragon, G., S. Fernandes, A. Retegi, C. Peña, I. Algar, A. Eceiza, and A. Arbelaitz. 2014. "A common strategy to extracting cellulose nanoentities from different plants." *Industrial Crops and Products* 55: 140–8.
- Mokhena, T.C., E.R. Sadiku, M.J. Mochane, S.S. Ray, M.J. John, and A. Mtibe. 2021. "Mechanical properties of cellulose nanofibril papers and their bionanocomposites: a review." *Carbohydrate Polymers* 273: 118507.
- Morán, J.I., V.A. Alvarez, V.P. Cyras, and A. Vázquez. 2008. "Extraction of cellulose and preparation of nanocellulose from sisal fibers." *Cellulose* 15: 149–59.



- Mulenga, T.K., A.U. Ude, and V. Chinnasamy. 2023. "Mechanical analysis of sisal fiber/bio-epoxy/flyash reinforced hybrid composites." *Journal of Composite Materials* 57 (28): 4463-77.
- Nabinejad, O., D. Sujan, M.E. Rahman, and I.J. Davies. 2017. "Effect of filler load on the curing behavior and mechanical and thermal performance of wood flour filled thermoset composites." *Journal of Cleaner Production* 164: 1145–56.
- Nascimento, S.A., and C.A. Rezende. 2018. "Combined approaches to obtain cellulose nanocrystals, nanofibrils and fermentable sugars from elephant grass." *Carbohydrate Polymers* 180: 38–45.
- Nechyporchuk, O., M.N. Belgacem, and J. Bras. 2016. "Production of cellulose nanofibrils: a review of recent advances." *Industrial Crops and Products* 93: 2–25.
- Nguyen, T., E. Zavarin, and E.M. Barrall. 1981. "Thermal analysis of lignocellulosic materials. Part II. Modified materials." *Journal of Macromolecular Science, Part C* 21 (1): 1–60.
- Normand, M.L., R. Moriana, and M. Ek. 2014. "Isolation and characterization of cellulose nanocrystals from sprucebark in a biorefinery perspective." *Carbohydrate Polymers* 111: 979–87.
- Nurazzi, N.M., M.R. Asyraf, M. Rayung, M.N. Norrrahim, S.S. Shazleen, M.S.A. Rani, A.R. Shafi, H.A. Aisyah, M.H.M. Radzi, F.A. Sabaruddin, R.A. Ilyas, E.S. Zainudin, and K. Abdan. 2020. "Thermogravimetric analysis properties of cellulosic natural fiber polymer composites: a review on influence of chemical treatments." *Polymer* 13 (16): 2710.
- Ornaghi, H.L., F.M. Monticeli, R.M. Neves, L.D. Agnol, and O. Bianchi. 2023. "Influence of different cellulose/hemicellulose/lignin ratios on the thermal degradation behavior: prediction and optimization." *Biomass Conv. Bioref.* 13, 7775–82.
- Oun, A.A. and J.W. Rhim. 2017. "Characterization of carboxymethyl cellulose-based nanocomposite films reinforced with oxidized nanocellulose isolated using ammonium persulfate method." *Carbohydrate Polymers* 174: 484–92.
- Pandey, J.K., H. Takagi, A.N. Nakagaito, and H.J. Kim. 2015. "Handbook of polymer nanocomposites. processing, performance and application: volume c: polymer nanocomposites of cellulose nanoparticles." *Handbook of Polymer Nanocomposites. Processing, Performance and Application: Vol. C: Polymer Nanocomposites of Cellulose Nanoparticles C*: 1–511.
- Pappu, A., L.K. Pickering, and V.K. Thakur. 2019. "Manufacturing and characterization of sustainable hybrid composites using sisal and hemp fibres as reinforcement of poly (lactic acid) via injection moulding." *Industrial Crops and Products* 137: 260–69.
- Parveen, S., S. Pichandi, P. Goswami, S. Rana. 2020. "Novel glass fibre reinforced hierarchical composites with improved interfacial, mechanical and dynamic



- mechanical properties developed using cellulose microcrystals.” *Mater. Des.* 188: 108448.
- Pelissari, F., P.A. Sobral, and F. Menegalli. 2014. “Isolation and characterization of cellulose nanofibers from banana peels.” *Cellulose* 21 (1): 417-e432.
- Peng, Y., D.J. Gardner, Y. Han, A. Kiziltas, Z. Cai, and M.A. Tshabalala. 2013. “Influence of drying method on the material properties of nanocellulose I: thermostability and crystallinity.” *Cellulose* 20: 2379–2392.
- Pitchandi S., S. Rana, S. Parveen, R. Fangueiro. 2018. “A green approach of improving interface and performance of plant fibre composites using cellulose microcrystals.” *Carbohydrate Polymers* 197: 137–46.
- Pickering, K.L., M.G.A. Efendy, and T.M. Le. 2016. “A review of recent developments in natural fibre composites and their mechanical performance.” *Composites Part A: Applied Science and Manufacturing* 83: 98–112.
- Pokhriyal, M., P.K. Rakesh, S.M. Rangappa, and S. Siengchin. 2024. “Effect of alkali treatment on novel natural fiber extracted from *Himalayacalamus falconeri* culms for polymer composite applications.” *Biomass Conversion and Biorefinery* 14: 18481–97.
- Pradhan, D., A.K. Jaiswal, and S. Jaiswal. 2022. “Emerging technologies for the production of nanocellulose from lignocellulosic biomass.” *Carbohydrate Polymers* 285: 119258.
- Prakobna, K., V. Kisonen, C. Xu, and L.A. Berglund. 2015. “Strong reinforcing effects from galactoglucomannan hemicellulose on mechanical behavior of wet cellulose nanofiber gels.” *Journal of Materials Science* 50: 7413–7423.
- Qin, C., Y. Du, and L. Xiao. 2002. “Effect of hydrogen peroxide treatment on the molecular weight and structure of chitosan.” *Polymer Degradation and Stability* 76 (2): 211–218.
- Qu, W., J. Liu, Y. Xue, X. Wang, and X. Bai. 2017. “Potential of producing carbon fiber from biorefinery corn stover lignin with high ash content.” *Journal of Applied Polymer Science* 135: 45736.
- Ramesh, M., L. Rajeshkumar, and V. Bhuvaneswari. 2021. “Leaf Fibres as Reinforcements in Green Composites: A Review on Processing, Properties and Applications.” *Emergent Materials* 5: 83-857.
- Razak, S.I.A, W.A. Wan Abdul Rahman, and M.Y. Yahya. 2013. “Hybrid composites of short acetylated kenaf bast fiber and conducting polyaniline nanowires in epoxy resin.” *Journal of Composite Materials* 48 (6): 667-76.
- Reimer, L., and H. Kohl. 2008. transmission electron microscopy: physics of image formation, 5th ed. *Springer*.
- Riedel, U. and J. Nickel. 1999. “Natural fibre reinforced biopolymers as construction materials–new discoveries.” *Macromolecular Chemistry and Physics*



Physics 272 (1): 34 - 40.

- Robles, E., I. Urruzola, J. Labidi, and L. Serrano. 2015. "Surface-modified nano-cellulose as reinforcement in poly (lactic acid) to conform new composites." *Industrial Crops and Products* 71: 44–53.
- Rochardjo, H.S.B., Fatkhurrohman, A. Kusumaatmaja, and F. Yudhanto. 2021. "Fabrication of nanofiltration membrane based on polyvinyl alcohol nanofibers reinforced with cellulose nanocrystal using electrospinning techniques." *International Journal of Technology* 12 (2): 329-38.
- Rochardjo, H.S.B., J. Jamasri, and F. Yudhanto. 2019. "Extraction of natural fibers by high-speed blender to produce cellulose sheet composite". *The International Review of Mechanical Engineering* 13 (12): 691–9.
- Rochmadi dan Permonuo, A., 2018, *Mengenal Polimer dan Polimerisasi*, Gadjah Mada University Press, Yogyakarta.
- Rol, F., M.N. Belgacem, A. Gandini, and J. Bras. 2019. "Recent advances in surface-modified cellulose nanofibrils." *Progress in Polymer Science* 88: 241–64.
- Rossi, B.R., V.O.A. Pellegrini, A.A. Cortez, E.M.S. Chiromito, A.J.F. Carvalho, L.O. Pinto, C.A. Rezende, V.R. Mastelaro, and I. Polikarpov. 2021. "Cellulose nanofibers production using a set of recombinant enzymes." *Carbohydrate Polymers* 256: 117510.
- Saba, N. and M. Jawaid. 2017. *Epoxy resin based hybrid polymer composites. hybrid polymer composite materials: Properties and Characterisation*. Elsevier Ltd.
- Saba, N., Paridah, M.T., K. Abdan, and N.A. Ibrahim. 2016a. "dynamic mechanical properties of oil palm nano filler/kenaf/epoxy hybrid nanocomposites." *Construction and Building Materials* 124: 133–38.
- Saba, N., M.T. Paridah, K. Abdan, and N.A. Ibrahim. 2016b. "thermal properties of oil palm nano filler/kenaf reinforced epoxy hybrid nanocomposites." *AIP Conference Proceedings* 1787.
- Saba, N., M. Paridah, K. Abdan, and N. Ibrahim. 2016. "Effect of oil palm nano filler on mechanical and morphological properties of kenaf reinforced epoxy composites." *Construction and Building Materials* 123: 15-26.
- Saba, N., O.Y. Alothman, Z. Almutairi, and M. Jawaid. 2019. "Magnesium hydroxide reinforced kenaf fibers/epoxy hybrid composites: mechanical and thermomechanical properties." *Construction and Building Materials* 201: 138–48.
- Sanjay, M. R., G. R. Arpitha, L.L. Naik, K. Gopalakrishna, and B. Yogesha. 2016. "Applications of natural fibers and its composites: an overview." *Natural Resources Journal* 07 (3): 108–14.
- Saurabh, C. K., A. Mustapha, M.M. Masri, A.F. Owolabi, M.I. Syakir, R. Dungani,



- M.T. Paridah, M. Jawaid, and H.P.S.A Khalil. 2016. "Isolation and characterization of cellulose nanofibers from gigantochloa scorchedinii as a reinforcement material." *Journal of Nanomaterials* 2016: 1–8.
- Sassi, J.F. and H. Chanzy. 1995. "Ultrastructural aspects of the acetylation of cellulose." *Cellulose* 2: 111–127.
- Sawpan, M.A., K.L. Pickering, and A. Fernyhough. 2011. "Effect of fibre treatments on interfacial shear strength of hemp fibre reinforced polylactide and unsaturated polyester composites." *Composites Part A: Applied Science and Manufacturing* 42 (9): 1189–96.
- Segal, L., J.J. Creely, A.E. Martin, and C.M. Conrad. 1959. "An empirical method for estimating the degree of crystallinity of native cellulose using the X-Ray Diffractometer." *Textile Research Journal* 29: 786–794.
- Sentharamaikannan, P. and M. Kathiresan. 2018. "Characterization of raw and alkali treated new natural cellulosic fiber from Coccinia grandis L." *Carbohydrate Polymers* 186: 332–43.
- Senthilkumar, K., N. Saba, N. Rajini, M. Chandrasekar, M. Jawaid, S. Siengchin, and O.Y. Alotman. 2018. "Mechanical Properties Evaluation of Sisal Fibre Reinforced Polymer Composites: A Review." *Construction and Building Materials* 174: 713–29.
- Serra-Parareda, F., Q. Tarrés, J.L. Sanchez-Salvador, C. CaMPano, M.À Pèlach, P. Mutjé, C. Negro, and M. Delgado-Aguilar. 2021. "tuning morphology and structure of non-woody nanocellulose: ranging between nanofibers and nanocrystals." *Industrial Crops and Products* 171.
- Sethi, S., A. Datta, B.L. Gupta, and S. Gupta. 2013. "Optimization of Cellulase Production from Bacteria Isolated from Soil." *International Scholarly Research Notices* 2013: 1–7.
- Sharma, A., M. Thakur, M. Bhattacharya, T. Mandal, and S. Goswami. 2019. "Commercial application of cellulose nano-composites – a review." *Biotechnology Reports* 21: e00316.
- Shrestha, S., R.A. Chowdhury, M.D. Toomey, D. Betancourt, F. Montes, and J.P. Youngblood. 2019. "Surface hydrophobization of TEMPO-oxidized cellulose nanofibrils (CNFs) using a facile, aqueous modification process and its effect on properties of epoxy nanocomposites." *Cellulose* 26: 9631–43.
- Sofla, M.R.K., W. Batchelor, J. Kosinkova, R. Pepper, R. Brown, and T. Rainey. 2019. "Cellulose nanofibres from bagasse using a high speed blender and acetylation as a pretreatment." *Cellulose* 26 (8): 4799–4814.
- Su, J.F., Z. Huang, X.Y. Yuan, X.Y. Wang, M. Li. 2010. "Structure and properties of carboxymethyl cellulose/soy protein isolate blend edible films crosslinked by maillard reactions." *Carbohydrate Polymers* 79: 145–153.
- Sukmawan, R., L.H. Saputri, R. Rochmadi, and H.S.B. Rochardjo. 2019. "The effects of the blending condition on the morphology, crystallinity, and thermal



- stability of cellulose microfibers obtained from bagasse.” *Indonesian Journal of Chemistry* 19 (1): 166–175.
- Sukmawan, R., Kusmono, A.P. Rahmanta, and L.H. Saputri. 2022. “The effect of repeated alkali pretreatments on the morphological characteristics of cellulose from oil palm empty fruit bunch fiber-reinforced epoxy adhesive composite.” *International Journal of Adhesion and Adhesives* 114: 103095.
- Sukmawan, R., Kusmono, and M.W. Wildan. 2023a. “Optimizing acetic anhydride amount for improved properties of acetylated cellulose nanofibers from sisal fibers using a highspeed blender.” *ACS Omega* 8 (30): 27117–27126.
- Sukmawan, R., Kusmono, and M.W. Wildan. 2023b. “Easy production of acetylated cellulose nanofibers from sisal fibers by conventional high-speed blender.” *Biomass Conversion and Biorefinery* 14: 23935–46.
- Sun, R., J. Fang, J. Tomkinson, and G.L. Jones. 1999. “Acetylation of wheat straw hemicelluloses in n,n-dimethylacetamide/licl solvent system.” *Industrial Crops and Products* 10: 209–218.
- Siqueira, G., J. Bras, and A. Dufresne. 2010. “New process of chemical grafting of cellulose nanoparticles with a long chain isocyanate.” *Langmuir* 26 (1): 402–411.
- Sweygers, N., D.E. Depuydt, S. Eyley, W. Thielemans, Y. Mosleh, J. Ivens, R. Dewil, L. Appels, and A.W. Van Vuure. 2022. “Prediction of the equilibrium moisture content based on the chemical composition and crystallinity of natural fibres.” *Industrial Crops and Products* 186:115187.
- Syafri E, N.H. Sari, M. Mahardika, P. Amanda, and R.A. Ilyas. 2022. “Isolation and characterization of cellulose nanofibers from Agave gigantea by chemical-mechanical treatment”. *International Journal of Biological Macromolecules* 200: 25–33.
- Takkalkar P., G. Griffin, and N. Kao. 2019. “Enhanced mechanical and barrier performance of poly (lactic acid) based nanocomposites using surface acetylated starch nanocrystals.” *Journal of Polymers and the Environment* 27: 2078–2088.
- Tanpitchai, S., S.K. Biswas, S. Witayakran, and H. Yano. 2019. “Water hyacinth: a sustainable lignin-poor cellulose source for the production of cellulose nanofibers.” *ACS Sustainable Chemistry & Engineering* 7 (23): 18884–93.
- Taheri, H. and S. Pieter. 2016. “Effect of homogenization (microfluidization) process parameters in mechanical production of micro and nanofibrillated cellulose on its rheological and morphological properties.” *Cellulose* 23 (2): 1221–38.
- Tayeb, A.H., E. Amini, S. Ghasemi, and M. Tajvidi. 2018. “Cellulose nanomaterials-binding properties and applications: a review.” *Molecules* 23 (10): 1–24.
- Trifol, J., C. Sillard, D. Plackett, P. Szabo, J. Bras, and A.E. Daugaard. 2017.



- “Chemically extracted nanocellulose from sisal fibres by a simple and industrially relevant process.” *Cellulose* 24 (1): 107–18.
- Tserki, V., N.E. Zafeiropoulos, F. Simon, and C. Panayiotou. 2005. “A study of the effect of acetylation and propionylation surface treatments on natural fibres.” *Composites Part A: Applied Science and Manufacturing* 36 (8): 1110–18.
- Uetani, K. and H. Yano. 2011. “Nanofibrillation of wood pulp using a high-speed blender.” *Biomacromolecules* 12 (2): 348–53.
- Vanlandingham, M.R., R.F. Eduljee, J.W. Gillespie Jr. 1999. “Relationships between stoichiometry, microstructure, and properties for amine-cured epoxies.” *Journal of Applied Polymer Science* 71 (5): 699–712.
- Varshney, V.K. and S. Naithani. 2011. “Cellulose fibers: bio- and nano-polar composites.” *Cellulose Fibers: Bio- and Nano-Polymer Composites* 43–60.
- Veerasingham, A., V. Shanmugam, S. Rajendran, D.J. Johnson, A. Subbiah, J. Koilpichai, and U. Marimuthu. 2021. “Thermal properties of natural fiber sisal based hybrid composites—a brief review.” *Journal of Natural Fibers* 19 (12): 1–11.
- Venkateshwaran, N., V. Santhanam, and A. Alavudeen. 2019. “Feasibility study of fly ash as filler in banana fiber-reinforced hybrid composites.” *Processing of Green Composites* 31–47.
- Ventura-Cruz, S. and A. Tecante. 2021. “Nanocellulose and microcrystalline cellulose from agricultural waste: review on isolation and application as reinforcement in polymeric matrices.” *Food Hydrocolloids* 118: 106771.
- Wang, J., M. Dang, C. Duan, W. Zhao, and K. Wang. 2017. “Carboxymethylated cellulose fibers as low-cost and renewable adsorbent materials.” *Industrial & Engineering Chemistry Research* 56 (51): 14940–8.
- Waters, C.L., R.R. Janupala, R.G. Mallinson, and L.L. Lobbann. 2017. “Staged thermal fractionation for segregation of lignin and cellulose pyrolysis products: An experimental study of residence time and temperature effects.” *Journal of Analytical and Applied Pyrolysis* 126: 380–389.
- Xie, H., A. King, I. Kilpelainen, M. Granstrom, and D.S. Argyropoulos. 2007. “Thorough chemical modification of wood-based lignocellulosic materials in ionic liquids.” *Biomacromolecules* 8: 3740–3748.
- Xue, L. and L.G. Tabil. 2007. “Chemical treatments of natural fibre for natural fibre reinforced composites: a review.” *Journal of Polymers and the Environment* 15: 25–33.
- Xu, J., Z. Wu, Q. Wu, and Y. Kuang. 2020. “Acetylated cellulose nanocrystals with high-crystallinity obtained by one-step reaction from the traditional acetylation of cellulose.” *Carbohydrate Polymers* 229: 115553.
- Xu, Y., V. Miladinov, and M. Hanna. 2004. “Synthesis and characterization of starch acetates with high substitution.” *Cereal Chemistry* 81 (6): 735–40.



- Yang, Z., S. Xu, X. Ma, and S. Wang. 2008. "Characterization and acetylation behavior of bamboo pulp." *Wood Science and Technology* 42 (8): 621–32.
- Yu, Wang, Chaoyun Wang, Yongjian Yi, Hongying Wang, Yuanru Yang, Liangbin Zeng, and Zhijian Tan. 2021. "Direct pretreatment of raw ramie fibers using an acidic deep eutectic solvent to produce cellulose nanofibrils in high purity." *Cellulose* 28 (1): 175–88.
- Yu, W., Y. Yi, H. Wang, Y. Yang, L. Zeng, and Z. Tan. 2021. "Light-colored cellulose nanofibrils produced from raw sisal fibers without costly bleaching." *Industrial Crops and Products* 172: 114009.
- Yuan, Y. and T.R. Lee. 2013. Surface science techniques. *chapter 1: contact angle and wetting properties*, Springer-Verlag Berlin Heidenberg.
- Yuan, Y., H. Liu, J. Su, X. Qin, and H. Qi. 2021. "Acetylated cellulose nanofibers fabricated through chemo-mechanical process for stabilizing pickering emulsion." *Cellulose* 28: 9677–87.
- Yudhanto, F., J. Jamasri, H. Rochardjo, and A. Kusumaatmaja. 2021. "Experimental study of polyvinyl alcohol nanocomposite film reinforced by cellulose nanofibers from agave cantala." *International Journal of Engineering* 34 (4): 987-98.
- Zhang, N., P. Tao, Y. Lu, and S. Nie. 2019. "Effect of lignin on the thermal stability of cellulose nanofibrils produced from bagasse pulp." *Cellulose* 26: 7823–35.
- Zhang, K., Y. Zhang, D. Yan, C. Zhang, and S. Nie. 2018. "Enzyme-assisted mechanical production of cellulose nanofibrils: thermal stability." *Cellulose* 25: 5049–61.
- Zhang, S.Y., C.G. Wang, B.H. Fei, Y. Yu, H.T. Cheng, and G.L. Tian. 2013. "Mechanical function of lignin and hemicelluloses in wood cell wall revealed with microtension of single wood fiber." *Bioresources* 8 (2): 2376-85.
- Zhang, Z., Y. Li, and C. Chen. 2017. "Synergic effects of cellulose nanocrystals and alkali on the mechanical properties of sisal fibers and their bonding properties with epoxy." *Composites Part A: Applied Science and Manufacturing* 101: 480-489.
- Zhao, J., W. Zhang, X. Zhang, X. Zhang, C. Lu, and Y. Deng. 2013. "Extraction of cellulose nanofibrils from dry softwood pulp using high shear homogenization." *Carbohydrate Polymers* 97 (2): 695–702.
- Zihan, W., K. Peibin, W. Tianyu, C. Dongli, Y. Xiaoping, and S. Gang. 2022. "Atomistic understanding of cross-linking network in different epoxy resin: effect of loop structure." *Polymer* 243: 124629.
- Zimmermann, M.V.G., M.P. da Silva, A.J. Zattera, and R.M.C. Santana. 2017. "Effect of nanocellulose fibers and acetylated nanocellulose fibers on properties of poly(ethylene-co-vinyl acetate) foams." *Journal of Applied Polymer Science* 134: 44760.



UNIVERSITAS
GADJAH MADA

Studi pembuatan serat nanoselulosa terasetilasi dari serat sisal (agave sisalana) dan aplikasinya sebagai penguat komposit hibrid epoksi/serat sisal searah/nanoselulosa
Romi Sukmawan, Prof. Dr. Ir. Kusmono, S.T., M.T., IPM., ASEAN Eng. ; Ir. M. Waziz Wildan, M.Sc., Ph.D., IPU., ASEAN Eng.

Universitas Gadjah Mada, 2024 | Diunduh dari <http://etd.repository.ugm.ac.id/>

Zuccarello, B., G. Marannano, and A. Mancino. 2018. "Optimal manufacturing and mechanical characterization of high performance biocomposites reinforced by sisal fibers." *Composite Structures* 194: 575-583.

Zuluaga R., J.L. Putaux, J. Cruz, J. Vélez, I. Mondragon, and P. Gañán. 2009. "Cellulose microfibrils from banana rachis: effect of alkaline treatments on structural and morphological features." *Carbohydrate Polymers* 76 (1): 51-59.