

## DAFTAR PUSTAKA

- [1] V. A. Online, “cellulose hydrogel by changing the aggregated,” pp. 6678–6686, 2013.
- [2] J. Yang, Y. Chee, C. Cheng, H. Chuah, and N. Dai, “Preparation and characterization of starch-based bioplastic composites with treated oil palm empty fruit bunch fibers and citric acid,” *Cellulose*, vol. 28, no. 7, pp. 4191–4210, 2021.
- [3] M. Asrofi, S. M. Sapuan, R. A. Ilyas, and M. Ramesh, “Materials Today : Proceedings Characteristic of composite bioplastics from tapioca starch and sugarcane bagasse fiber : Effect of time duration of ultrasonication,” *Mater. Today Proc.*, no. xxxx, 2020.
- [4] R. Ferreira *et al.*, “Characterization of starch-based bioplastics from jackfruit seed plasticized with glycerol,” 2017.
- [5] S. Nigam, A. K. Das, and M. Kumar, “Synthesis , characterization and biodegradation of bioplastic films produced from Parthenium hysterophorus by incorporating a plasticizer ( PEG600 ),” *Environ. Challenges*, vol. 5, no. July, p. 100280, 2021.
- [6] R. Reshmy *et al.*, “Science of the Total Environment Development of an eco-friendly biodegradable plastic from jack fruit peel cellulose with different plasticizers and Boswellia serrata as fi ller,” *Sci. Total Environ.*, vol. 767, p. 144285, 2021.
- [7] R. Lim, P. L. Kiew, M. K. Lam, W. M. Yeoh, and M. Y. Ho, “Corn starch/PVA bioplastics—The properties and biodegradability study using Chlorella vulgaris cultivation,” *Asia-Pacific J. Chem. Eng.*, vol. 16, no. 3, pp. 1–13, 2021.
- [8] H. Abrial *et al.*, “Highly transparent and antimicrobial PVA based bionanocomposites reinforced by ginger nanofiber,” *Polym. Test.*, vol. 81, no. July 2019, p. 106186, 2020.

- [9] M. J. Cho and B. D. Park, "Tensile and thermal properties of nanocellulose-reinforced poly(vinyl alcohol) nanocomposites," *J. Ind. Eng. Chem.*, vol. 17, no. 1, pp. 36–40, 2011.
- [10] M. Altgen, W. Willems, R. Hosseinpourpia, and L. Rautkari, "SC," *Polym. Degrad. Stab.*, 2018.
- [11] Y. Xie, Y. Pan, and P. Cai, "Industrial Crops & Products Hydroxyl crosslinking reinforced bagasse cellulose / polyvinyl alcohol composite films as biodegradable packaging," *Ind. Crop. Prod.*, vol. 176, no. June 2021, p. 114381, 2022.
- [12] M. F. Mat Saad, H. H. Goh, R. Rajikan, T. R. Tuan Yusof, S. N. Baharum, and H. Bunawan, "From phytochemical composition to pharmacological importance," *Trop. J. Pharm. Res.*, vol. 19, no. 8, pp. 1767–1773, 2020.
- [13] I. Agriculture and T. Assessment, "Pemecahannya," vol. 5, pp. 46–59, 2006.
- [14] R. V. Gadhave, S. K. Vineeth, P. V. Dhawale, and P. T. Gadekar, "Effect of boric acid on poly vinyl alcohol- tannin blend and its application as water-based wood adhesive," *Des. Monomers Polym.*, vol. 23, no. 1, pp. 188–196, 2020.
- [15] M. P. Arrieta and L. Peponi, "Polyurethane based on PLA and PCL incorporated with catechin: Structural, thermal and mechanical characterization," *Eur. Polym. J.*, vol. 89, pp. 174–184, 2017.
- [16] N. Saba, M. Jawaid, and M. T. H. Sultan, *Thermal properties of oil palm biomass based composites*, vol. 1. Elsevier Ltd., 2017.
- [17] M. M. Abe *et al.*, "Advantages and disadvantages of bioplastics production from starch and lignocellulosic components," *Polymers (Basel)*, vol. 13, no. 15, 2021.
- [18] L. C. Hollaway and P. R. Head, "Composite Materials and Structures in Civil Engineering," *Compr. Compos. Mater.*, pp. 489–527, 2000.

- [19] H. Abral, R. Fajrul, M. Mahardika, and D. Handayani, "Improving impact , tensile and thermal properties of thermoset unsaturated polyester via mixing with methyl methacrylate and thermoset vinyl ester," *Polym. Test.*, p. 106193, 2019.
- [20] N. Ben Halima, "Poly(vinyl alcohol): Review of its promising applications and insights into biodegradation," *RSC Adv.*, vol. 6, no. 46, pp. 39823–39832, 2016.
- [21] H. Abral *et al.*, "Effect of ultrasonication duration of polyvinyl alcohol (PVA) gel on characterizations of PVA film," *J. Mater. Res. Technol.*, vol. 9, no. 2, pp. 2477–2486, 2020.
- [22] M. H. S. Ginting and R. Hasibuan, "Water absorption and its effect on the tensile properties of tapioca starch / polyvinyl alcohol bioplastics Water absorption and its effect on the tensile properties of tapioca."
- [23] T. S. Gaaz *et al.*, "Properties and applications of polyvinyl alcohol, halloysite nanotubes and their nanocomposites," *Molecules*, vol. 20, no. 12, pp. 22833–22847, 2015.
- [24] R. O. Ebeuele, *Polymer science and technology*. 2000.
- [25] Z. Zhang *et al.*, "Mechanical properties, water swelling behavior, and morphology of swellable rubber compatibilized by PVA-g-PBA," *Polym. Eng. Sci.*, vol. 44, no. 1, pp. 72–78, 2004.
- [26] S. A. Salman and N. A. Bakr, "Journal of Chemical , Biological and Physical Sciences DSC and TGA Properties of PVA Films Filled with," no. March, pp. 0–11, 2018.
- [27] M. T. Razzak, D. Darwis, Zainuddin, and Sukirno, "Irradiation of polyvinyl alcohol and polyvinyl pyrrolidone blended hydrogel for wound dressing," *Radiat. Phys. Chem.*, vol. 62, no. 1, pp. 107–113, 2001.
- [28] Marlinda, "Identifikasi Kadar Katekin pada Gambir (*Uncaria gambier* Roxb.),"

*J. Optim.*, vol. 4, no. 1, pp. 47–53, 2018.

- [29] D. . Basuki, “Teknik Pembuatan Gambir (*Uncaria gambir* Roxb) Secara Tradisional,” *Citra Med.*, vol. 15, no. 2, pp. 1–23, 2013.
- [30] H. Abral *et al.*, “Anti-UV, antibacterial, strong, and high thermal resistant polyvinyl alcohol/*Uncaria gambir* extract biocomposite film,” *J. Mater. Res. Technol.*, vol. 17, pp. 2193–2202, 2022.
- [31] I. Dwynda and R. Zainul, “Recognize The Molecular Interactions in Solutions,” vol. 3, no. 39.
- [32] B. Zumreoglu-karan and D. A. Kose, “Conference paper Boric acid : a simple molecule of physiologic , therapeutic and prebiotic significance,” vol. 87, no. August 2014, pp. 155–162, 2015.
- [33] A. Lopalco, A. A. Lopodota, V. Laquintana, N. Denora, and V. J. Stella, “Boric Acid , a Lewis Acid with Unique and Unusual Properties : Formulation Implications,” *J. Pharm. Sci.*, pp. 1–12, 2020.
- [34] J. H. Woo, N. H. Kim, S. Il Kim, O. K. Park, and J. H. Lee, “Effects of the addition of boric acid on the physical properties of MXene/polyvinyl alcohol (PVA) nanocomposite,” *Compos. Part B Eng.*, vol. 199, p. 108205, 2020.
- [35] B.W.Hapsari, Mujamilah, M.Kurniati, and GraceTj.Sulungbudi, “Sintesis Nanosfer Berbasis Ferrofluid Dan Poly Lactic Acid Dengan Metode Sonikasi,” *J. Sains Mater. Indones.*, vol. 11, no. 2, pp. 139–144, 2010.
- [36] P. Materials and E. I. Materials, “Standard Test Method for Tensile Properties of Plastics 1,” 2015.
- [37] T. Miyazaki, Y. Takeda, S. Akane, T. Itou, A. Hoshiko, and K. En, “Role of boric acid for a poly (vinyl alcohol) film as a cross-linking agent: Melting behaviors of the films with boric acid,” *Polymer (Guildf.)*, vol. 51, no. 23, pp. 5539–5549, 2010.

- [38] K. Ohishi, T. Itadani, T. Hayashi, T. Nakai, and F. Horii, "Role of boric acid in the formation of poly(vinyl alcohol)-iodine complexes in undrawn films," *Polymer (Guildf)*, vol. 51, no. 3, pp. 687–693, 2010.
- [39] Y. Yin, J. Li, Y. Liu, and Z. Li, "Starch crosslinked with poly(vinyl alcohol) by boric acid," *J. Appl. Polym. Sci.*, vol. 96, no. 4, pp. 1394–1397, 2005.
- [40] X. Hong, J. He, L. Zou, Y. Wang, and Y. V. Li, "Preparation and characterization of high strength and high modulus PVA fiber via dry-wet spinning with cross-linking of boric acid," *J. Appl. Polym. Sci.*, vol. 138, no. 47, pp. 1–8, 2021.
- [41] W. Yang *et al.*, "Highly transparent PVA/nanolignin composite films with excellent UV shielding, antibacterial and antioxidant performance," *React. Funct. Polym.*, vol. 162, no. November 2020, p. 104873, 2021.
- [42] J. Chen, Y. Li, Y. Zhang, and Y. Zhu, "Preparation and characterization of graphene oxide reinforced PVA film with boric acid as crosslinker," *J. Appl. Polym. Sci.*, vol. 132, no. 22, pp. 1–8, 2015.
- [43] Z. Bai, T. Wang, X. Zheng, Y. Huang, Y. Chen, and W. Dan, "High strength and bioactivity polyvinyl alcohol/collagen composite hydrogel with tannic acid as cross-linker," *Polym. Eng. Sci.*, vol. 61, no. 1, pp. 278–287, 2021.
- [44] H. Abrial, Kadriadi, M. Mahardika, D. Handayani, E. Sugiarti, and A. N. Muslimin, "Characterization of disintegrated bacterial cellulose nanofibers/PVA bionanocomposites prepared via ultrasonication," *Int. J. Biol. Macromol.*, vol. 135, pp. 591–599, 2019.
- [45] R. A. Ilyas, S. M. Sapuan, M. R. Ishak, and E. S. Zainudin, "Sugar palm nanofibrillated cellulose (*Arenga pinnata* (Wurmb.) Merr): Effect of cycles on their yield, physic-chemical, morphological and thermal behavior," *Int. J. Biol. Macromol.*, vol. 123, pp. 379–388, 2019.
- [46] Y. Wang *et al.*, "Simultaneous Enhancements of UV-Shielding Properties and

Photostability of Poly(vinyl alcohol) via Incorporation of Sepia Eumelanin,” *ACS Sustain. Chem. Eng.*, vol. 4, no. 4, pp. 2252–2258, 2016.

[47] K. H. Hong, “Preparation and properties of polyvinyl alcohol/tannic acid composite film for topical treatment application,” *Fibers Polym.*, vol. 17, no. 12, pp. 1963–1968, 2016.

[48] J. Csapó, J. Prokisch, C. Albert, and P. Sipos, “Effect of UV light on food quality and safety,” *Acta Univ. Sapientiae, Aliment.*, vol. 12, no. 1, pp. 21–41, 2019.

[49] X. Zhai *et al.*, “Novel colorimetric films based on starch/polyvinyl alcohol incorporated with roselle anthocyanins for fish freshness monitoring,” *Food Hydrocoll.*, vol. 69, pp. 308–317, 2017.

[50] C. Zhang *et al.*, “Physical properties and bioactivities of chitosan/gelatin-based films loaded with tannic acid and its application on the preservation of fresh-cut apples,” *Lwt*, vol. 144, no. November 2020, p. 111223, 2021.

