

DAFTAR PUSTAKA

- [1] K. A. Alrefaey dkk., “EEco-friendly cellulose-based membranes derived from sugarcane bagasse for efficient industrial paint wastewater treatmentco - friendly cellulose - based membranes derived from sugarcane bagasse for efficient industrial paint wastewater treatment,” *Int. J. Environ. Sci. Technol.*, vol. 23, no. 3, pp. 1–16, 2026, doi: 10.1007/s13762-025-06957-6.
- [2] N. Ladislas, “Turbidity Removal Efficiency Of Different Inorganic Coagulants During Water Treatment - A Review,” *Int. J. Progress. Sci. Technol.*, vol. 50, no. 2, pp. 256–266, 2025.
- [3] A. Musyaffa dkk., “SINTESIS DAN KARAKTERISASI MEMBRAN POLISULFON DAN SELULOSA ASETAT DARI LIMBAH FILTER ROKOK,” *J. Teknol. Pertan. Vol. 25 No. 2*, vol. 25, no. 2, 2024.
- [4] M. R. Maulana and B. D. Marsono, “Penerapan Teknologi Membran untuk Mengolah Limbah Cair Industri Tahu (Studi Kasus: UKM Sari Bumi, Kabupaten,” *J. Tek. ITS*, vol. 10, no. 2, 2021.
- [5] U. Fathanah and H. Meilina, “Karakterisasi dan Kinerja Membran Polyethersulfone Termodifikasi Aditif Anorganik secara Blending Polimer,” vol. VI, no. 4, pp. 2407–2414, 2021.
- [6] F. I. A. Nabella, “Dari Limbah Menjadi Material: Eksplorasi Hidroksiapatit Tulang Ayam sebagai Filler Membran Komposit,” *J. Artif. Intell. Digit. Bus.*, vol. 4, no. 4, pp. 4765–4773, 2025.
- [7] M. . Mohammed and F. El-Sayed, “PEG’s impact as a plasticizer on the PVA polymer’s structural, thermal, mechanical, optical, and dielectric characteristics,” *Opt. Quantum Electron.*, vol. 55, no. 13, pp. 1–22, 2023, doi: 10.1007/s11082-023-05420-5.
- [8] A. A. Sapalidis, “Porous Polyvinyl Alcohol Membranes: Preparation Methods and Applications,” *Symmetry (Basel)*, vol. 12, p. 960, 2020.
- [9] S. Rajan dkk., “Development and in-vitro characterization of HAP blended PVA/PEG bio-membrane,” *J. Mater. Res. Technol.*, vol. 18, pp. 4956–4964, 2022, doi: 10.1016/j.jmrt.2022.04.130.
- [10] B. U. Durmaz and A. Ayse, “Effects of Polyol-Based Plasticizer Types and Concentration on the Properties of Polyvinyl Alcohol and Casein Blend Films,” *J. Polym. Environ.*, no. 0123456789, 2020, doi: 10.1007/s10924-020-01881-x.
- [11] D. Nataraj dkk., “Crosslinking electrospun poly (vinyl) alcohol fibers with citric acid to impart aqueous stability for medical applications,” *Eur. Polym. J.*, vol. 124, p. 109484, 2020, doi: 10.1016/j.eurpolymj.2020.109484.
- [12] S.-M. Huang dkk., “Effect of Citric Acid on Swelling Resistance and Physicochemical Properties of Post-Crosslinked Electrospun Polyvinyl Alcohol Fibrous Membrane,” *Polymers (Basel)*, vol. 15, p. 1738, 2023.
- [13] E. Ricci dkk., “Modelling Sorption and Transport of Gases in Polymeric Membranes across Different Scales: A Review,” *Membranes (Basel)*, 2022.

- [14] B. Mondal dkk., "Fish scale derived hydroxyapatite scaffold for bone tissue engineering," *Mater. Charact.*, vol. 121, pp. 112–124, 2016, doi: 10.1016/j.matchar.2016.09.034.
- [15] I. Wulansari dkk., "Development of Brake Camp Material Using Reinforced Polymer Composite by Clamshells/Cardboard Waste/Orange Peel," *J. Inov. Teknol. dan Rekayasa*, vol. 9, no. 1, pp. 178–183, 2024, doi: 10.31572/inotera.Vol9.Iss1.2024.ID333.
- [16] G. Xie dkk., "Measurement Error Analysis and Thermal Degradation Kinetic Model Improvement for Thermogravimetric Analyzers," *Polymers (Basel)*, vol. 17, no. 17, pp. 1–13, 2025, doi: 10.3390/polym17172390.
- [17] T. N. Agustin and D. H. Kusumawati, "Fabrikasi dan Karakterisasi Nanofiber PVA-Graphene Oxide (GO) sebagai Separator Baterai Lithium-Ion," *J. Inov. Fis. Indones.*, vol. 12, pp. 1–13, 2023.
- [18] N. A. Salsabila and C. P. Meylani, "Proses Produksi Asam Sitrat Melalui Fermentasi : Metode dan Strategi," *J. Integr. Nat. Sci.*, vol. 1, no. 1, pp. 10–18, 2024.
- [19] U. Fathanah dkk., "Pembuatan dan Karakterisasi Membran Polyethersulfone (PES)-Kitosan Secara Blending Polimer," *Proceeding Semin. Nas. Politek. Negeri Lhokseumawe*, vol. 3, no. 1, pp. 62–66, 2019.
- [20] K. Sari dkk., "Kajian Hasil Pengujian X-Ray Diffraction (XRD) Dan Konstanta Dielektrik Membran Polimer Kitosan/PEG4000 dengan Lithium Triflat (LiCF₃SO₃)," *Sainmatika J. Ilm. Mat. dan Ilmu Pengetah. Alam*, vol. 18, no. 2, pp. 169–174, 2021, doi: 10.31851/sainmatika.v18i2.6717.
- [21] E. Yuliwati dkk., "TEKNOLOGI MEMBRAN ULTRAFILTRASI UNTUK PENGELOLAAN AIR LIMBAH PENCUCIAN INDUSTRI TEKSTIL ECO-PRINT," *Publ. Penelit. Terap. dan Kebijak.*, vol. 4, no. 1, 2021.
- [22] S. M. Dischinger dkk., "Unifying the Conversation: Membrane Separation Performance in Energy, Water, and Industrial Applications," *Am. Chem. Soc.*, vol. 4, pp. 277–289, 2024, doi: 10.1021/acsestengg.3c00475.
- [23] L. R. Sahu dkk., "Polymeric Membranes for Liquid Separation : Innovations in Materials , Fabrication , and Industrial Applications," *Polymers (Basel)*, 2024.
- [24] R. B. Fitradi, "Preparasi dan Modifikasi Membran untuk Pengolahan Air," *Inst. Teknol. Bandung*, no. 10, 2015.
- [25] D. Wiliana dkk., "FABRIKASI MEMBRAN BIOPOLIMER KITOSAN DARI CANGKANG KERANG MUTIARA (*Pinctada maxima*) SEBAGAI ADSORBEN METILEN BIRU," *SPIN J. Kim. Pendidik. Kim.*, vol. 4, no. 62, pp. 48–57, 2022, doi: 10.20414/spin.v4i1.5371.
- [26] A. Filimon dkk., "Polyvinyl Alcohol-Based Membranes: A Review of Research Progress on Design and Predictive Modeling of Properties for Targeted Application," *Polymers (Basel)*, vol. 17, p. 1016, 2025.
- [27] M. Mahardika dkk., "Aplikasi Serat Alam Muntingia calabura sebagai Pengisi dalam Biokomposit Bermatriks Polivinil Alkohol (PVA): Karakteristik Sifat Kuat Tarik dan Permukaan Patahan," *Agroteknika*, vol. 4, no. 1, pp. 43–52, 2021.

- [28] Haryanto dkk., "Pengembangan Hidrogel Sebagai Media Tanam dari Poli (Asam Akrilat) dan Polivinil Alkohol (PVA) Menggunakan Metode Crosslinking Kimia," *J. Ris. Sains dan Teknol.*, vol. 7, no. 2, pp. 239–244, 2023, doi: 10.30595/jrst.v7i2.17919.
- [29] Z. Zakaria and S. K. Kamarudin, "A review of quaternized polyvinyl alcohol as an alternative polymeric membrane in DMFCs and DEFCs," *Wiley Energy Res.*, no. February, pp. 1–17, 2020, doi: 10.1002/er.5314.
- [30] N. Asthana dkk., "Polyvinyl alcohol (PVA) mixed green–clay and aloe vera based polymeric membrane optimization: Peel-off mask formulation for skin care cosmeceuticals in green nanotechnology," *J. Mol. Struct.*, p. 129592, 2020, doi: 10.1016/j.molstruc.2020.129592.
- [31] R. Checchetto, "Polyethylene Glycol (PEG) Additive in Polymer Membranes for Carbon Dioxide Separation: A Critical Review on Performances and Correlation with Membrane Structure," *Separations*, vol. 12, p. 71, 2025.
- [32] S. Jain and A. K. Bajpai, "Designing polyethylene glycol (PEG) – plasticized membranes of poly(vinyl alcohol-g-methyl methacrylate) and investigation of water sorption and blood compatibility behaviors," *Des. Monomers Polym.*, vol. 16, no. 5, pp. 436–446, 2013, doi: 10.1080/15685551.2012.747162.
- [33] H. Herlina dkk., "Membran Alginat Padina sp. - Polietilen Glikol (AP-PEG): Preparasi, Karakterisasi dan Aplikasinya sebagai Enkapsulan," *ALCHEMY J. Penelit. Kim.*, vol. 17, no. 1, pp. 63–73, 2021, doi: 10.20961/alchemy.17.1.41713.63-73.
- [34] X. Wang dkk., "Effect of Polyethylene Glycol Additive on the Structure and Performance of Fabric-Reinforced Thin Film Composite," *Molecules*, vol. 28, p. 2318, 2023.
- [35] E. Hartati dkk., "Literatur Review : Sintesis Hidroksiapatit dari Limbah Tulang Sapi Menggunakan Metode Hidrotermal," *J. Serambi Eng.*, vol. 11, no. 1, pp. 17149–17157, 2026.
- [36] A. Diez-Escudero dkk., "High-aspect-ratio nanostructured hydroxyapatite: towards new functionalities for a classical material," *Chem. Sci.*, vol. 15, no. 1, pp. 55–76, 2023, doi: 10.1039/d3sc05344j.
- [37] R. M. Barbosa dkk., "Cell-Friendly Chitosan-Xanthan Gum Membranes Incorporating Hydroxyapatite Designed for Periodontal Tissue Regeneration," *Pharmaceutics*, vol. 15, p. 705, 2023.
- [38] Z. Zhe, "HYDROXYAPATITE COATED POLYMER MICROSPHERES FOR DRUG DELIVERY," *Sch. Mech. Aerosp. Eng.*, vol. 91, p. 107, 2012, doi: <https://doi.org/10.32657/10356/48172>.
- [39] M. Lambros dkk., "Citric Acid: A Multifunctional Pharmaceutical Excipient," *Pharmaceutics*, vol. 14, 972, no. 5, pp. 972–972, 2022.
- [40] P. Verma dkk., "Molecular Structure, Spectral Investigations, Hydrogen Bonding Interactions and Reactivity-Property Relationship of Caffeine-Citric Acid Cocrystal by Experimental and DFT Approach," *Front. Chem.*, vol. 9, no. July, pp. 1–13, 2021, doi: 10.3389/fchem.2021.708538.

- [41] Suprpto dkk., "Modification of Corn Starch (*Zea mays*, [L]) and Xanthan Gum with Citric Acid Crosslinking Agent," *Univ. Res. Colloquium*, pp. 1611–1621, 2022.
- [42] D. N. Hanif dkk., "PENGARUH PERSENTASE SERBUK POLIMER BIODEGRADABLE POLYLACTIC ACID (PLA) TERHADAP DENSITAS CAMPURAN POLICAPROLACTONE (PCL) MENGGUNAKAN METODE SOLVENT CASTING," *J. Tek. Mesin*, vol. 12, no. 2, pp. 99–102, 2024.
- [43] F. V Borbolla-Jiménez dkk., "Films for Wound Healing Fabricated Using a Solvent Casting Technique," *Pharmaceutics*, vol. 15, pp. 1–27, 2023.
- [44] A. Wahyuningsi dkk., "PEMBUATAN MEMBRAN POLIMER BERBASIS MAKROFILTER MENGGUNAKAN ALPA SELULOSA DENGAN PENAMBAHAN ZnO DAN SILIKA FIBER," *Open J. Syst.*, vol. 19, no. 1978, pp. 6003–6012, 2025.
- [45] N. Das Adhikary, "Recent advances in different fabrication techniques to formulate biodegradable plastic and their effects on functional properties of the film: A mini-review," *Pharma Innov. J.*, vol. 12, no. 7, pp. 1760–1766, 2023.
- [46] M. Nayla and C. L. Radiman, "Pengaruh Konsentrasi Agen Pensulfonasi Terhadap Karakteristik Membran Selulosa Bakterial Tersulfonasi Pada Aplikasi Direct Methanol Fuel Cell," *ALCHEMY J. Chem.*, vol. 10, no. 2, pp. 60–70, 2023.
- [47] B. G. Bhernama dkk., "CHARACTERIZATION OF CELLULOSE ACETATE MEMBRANE FROM NU," *J. Sains Nat.*, vol. 13, pp. 152–160, 2023.
- [48] K. Khotimah dkk., "Sifat Fisik dan Mekanik Bioplastik Komposit dari Alginat dan Karagenan," *J. Mar. Res.*, vol. 11, no. 3, pp. 409–419, 2022, doi: 10.14710/jmr.v11i3.33865.
- [49] S. Sumanasekera and J. Rajapakse, "Turbidity as a Barrier to Water Treatment: A Review of Current and Emerging Removal Technologies, Advantages and Limitations," *Pre.print org*, vol. 3, no. 1, pp. 1–34, 2025, doi: 10.20944/preprints202509.2551.v1.
- [50] I. Pratiwi and D. K. Sari, "PENENTUAN DOSIS OPTIMUM DARI PENCAMPURAN AIR LIMBAH WWTP (WAST WATER TREATMENT PLANT) DENGAN AIR SUNGAI LEMATANG SEBAGAI AIR PRODUKSI TERHADAP PARAMETER pH, CONDUCTIVITY, TURBIDITY, DAN SILIKA MENGGUNAKAN KOAGULAN PAC DI PT X," *J. Tek. Patra Akad.*, vol. 14, no. 01, pp. 39–47, 2023.
- [51] I. M. Rudy and M. J. Wilson, "Turbidivision: a machine vision application for estimating turbidity from underwater images," *PeerJ*, pp. 1–14, 2024, doi: 10.7717/peerj.18254.
- [52] R. I. Menteri Kesehatan, "Peraturan Menteri Kesehatan Republik Indonesia Nomor 32 Tahun 2017," 2017.
- [53] D. A. N. Aulia dkk., "Penentuan Stabilitas Kimia dan Termal Membran Komposit Kitosan Tercetak Ion Logam Pada Permukaan Karbon," *JKK*, vol. 6, no. 4, 2017.
- [54] Y. Warastuti dkk., "SINTESIS DAN KARAKTERISASI MEMBRAN

KOMPOSIT HIDROKSIAPATIT TULANG SAPI-KHITOSAN-POLI(VINIL ALKOHOL) UNTUK APLIKASI BIOMATERIAL Yessy Warastuti^{1,2}, J. Sains Mater. Indones., vol. 16, no. 3000, p. 2, 2014.