

## DAFTAR PUSTAKA

- [1] Ida Bagus Dharmawan and Zulkifli, “Analisa Pengaruh Perlakuan Alkali Dan Hydrogen Peroksida Terhadap Kekuatan Mekanik Komposit Serat Sabut Kelapa Bermatriks Epoxy,” *J. Polimesin*, vol. 17, no. 1, pp. 41–46, 2019.
- [2] Y. Setiyawan, “Preparasi Dan Karakterisasi Nanopartikel Poly Lactic-Co-Glycolic ACID (PLGA) Pembawa Ascorbyl Palmitate (AP),” pp. 1–14, 2017.
- [3] N. Sari, M. Mairisya, R. Kurniasari, and S. Purnavita, “Bioplastik Berbasis Galaktomanan Hasil Ekstraksi Ampas Kelapa Dengan Campuran Polyvinyl Alkohol,” *Metana*, vol. 15, no. 2, pp. 71–78, 2019, doi: 10.14710/metana.v15i2.24892.
- [4] F. A. Syamani, W. B. Kusumaningrum, U. P. T. B. L. Biomaterial-lipi, J. Raya, and B. Km, “Karakteristik Film Komposit PVA-Pulp Putih Akasia Terfibrilasi ( Characteristics of the Composite Film of PVA-Fibrillated Acacia Bleached Pulp ),” pp. 1–10, 2004.
- [5] S. E. Lindsey and G. B. Street, “Conductive composites from polyvinyl alcohol and polypyrrole,” *Synth. Met.*, vol. 10, no. 1, pp. 67–69, 1984, doi: 10.1016/0379-6779(84)90080-8.
- [6] A. Z. Al, “The microelectronic parameters of Al / ZnO / pSi / Al Schottky diode for solar cell applications Schottky diode for solar cell applications,” vol. 4, no. July 2014, pp. 55–58, 2015.
- [7] D. A. Porwanto and L. Johar, “Karakterisasi komposit berpenguat serat bambu dan serat gelas sebagai alternatif bahan baku industri,” *J. Tek. Fis. ITS*, pp. 1–16, 2008.
- [8] P. Skripsi *et al.*, “Keanekaragaman Tumbuhan Paku (Pteridophyta) Di Keanekaragaman Tumbuhan Paku (Pteridophyta) Di Kawasan Wisata Coban Kaca Kota Batu Sebagai Sumber Belajar Biologi,” 2022.
- [9] “No Title,” pp. 1–5.
- [10] T. Rihayat and Suryani, “Pembuatan Polimer Komposit Ramah Lingkungan untuk Aplikasi Industri Otomotif Dan Elektronik,” *SNaPP Sains dan Teknol.*, vol. 1, no. 1, pp. 1–7, 2012.
- [11] U. N. Semarang, “Adhi Kusumastuti,” pp. 27–32, 1984.
- [12] M. Yani, B. Suroso, and R. Rajali, “Mechanical Properties Komposit Limbah Plastik,” *J. Rekayasa Mater. Manufaktur dan Energi*, vol. 2, no. 1, pp. 74–83, 2019, doi: 10.30596/rmme.v2i1.3071.
- [13] S. Sunardi, M. Fawaid, and F. R. N. Muhamad, “Variasi Campuran Fly Ash Batubara untuk Material Komposit,” *Flywheel J. Tek. Mesin Untirta*, vol. I, no. 1, pp. 90–102, 2015.

- [14] S. Ramadhonal, "Pembuatan Komposit Matriks Logam Berpenguat Keramik ( Al/SiC ) Dicampur Kayu Dengan Metode Metalurgi Serbuk," pp. 1–87, 2010.
- [15] P. H. Tjahjanti, "Buku Ajar Teori Dan Aplikasi Material Komposit Dan Polimer," *Buku Ajar Teor. Dan Apl. Mater. Komposit Dan Polim.*, 2018, doi: 10.21070/2019/978-602-5914-27-0.
- [16] F. T. Industri, "Pengaruh Konsentrasi Polivinil Alkohol ( Pva ) Terhadap Performa," vol. 2, 2014.
- [17] O. Cao, D. Cangkang, and T. Ayam, "Pembuatan Nanosuspensi Kalsium Oksida (CaO) Dari Cangkang Telur Ayam (Gallus gallus domesticus) Sebagai Antibakteri Menggunakan Penstabil Polyvinil Alcohol (PVA) Dengan Metode Sonikasi," 2019.
- [18] "Fabrikasi Fiber Polyvinil Alcohol (PVA) Dengan Elektrosinning," vol. 5, no. 1, pp. 88–98, 2019.
- [19] "Dan 26,62-26,64," vol. 2, no. 2, 2013.
- [20] R. K. . Putri and N. M. . Putra, "Karakteristik Struktur, Optik, Dan Listrik Film Tipis Polianilin (PANI) Doping HCl Yang Ditumbuhkan Dengan Metode Spin Coating," *Unnes Phys. J.*, vol. 3, no. 1, pp. 14–21, 2014.
- [21] K. Namsheer and C. S. Rout, "Conducting polymers: a comprehensive review on recent advances in synthesis, properties and applications," *RSC Adv.*, vol. 11, no. 10, pp. 5659–5697, 2021, doi: 10.1039/d0ra07800j.
- [22] J. H. Min, M. Patel, and W. G. Koh, "Incorporation of conductive materials into hydrogels for tissue engineering applications," *Polymers (Basel).*, vol. 10, no. 10, pp. 1–36, 2018, doi: 10.3390/polym10101078.
- [23] V. Harahap and S. Sidabutar, "Sintesis Dan Sifat Magnetik Komposit BaFe 12 O 19 /ZnO Terhadap Aplikasi Elektronik Media Perekam Dan Absorben," *Tunas-Tunas Ris. Kesehat.*, vol. 10, pp. 86–92, 2020.
- [24] A. Kumar, "Synthesis and Characterization of Zn 1-X Cu X O," vol. 12, no. 2, pp. 181–186, 2017.
- [25] H. S. and A. I. Irzaman, A Maddu, "Uji konduktivitas listrik dan dielektrik film tipis lithium tantalate yang didadah niobium pentaoksida menggunakan metode chemical solution deposition," no. August, 2018.
- [26] M. Hidayati and H. Harmadi, "Rancang Bangun Sensor Serat Optik dengan Cladding Zinc Oxide untuk Mendeteksi Kelembaban Udara," *J. Fis. Unand*, vol. 10, no. 2, pp. 255–261, 2021, doi: 10.25077/jfu.10.2.255-261.2021.
- [27] N. Wulan Sari, M. Y. Fajri, and Anjas W., "Analisis Fitokimia Dan Gugus Fungsi Dari Ekstrak Etanol Pisang Goroho Merah (Musa Acuminata (L))," *Ijobb*, vol. 2, no. 1, p. 30, 2018.
- [28] "By : Jamaaluddin Jamaaluddin Orcid. ID : Universitas Muhammadiyah Sidoarjo".
- [29] M. J. Simanjuntak, "Studi Film Polivinil Alkohol (PVA) Di Modifikasi dengan Acrylamide (Aam) Sebagai Material Sensitif Terhadap

- Kelembaban,” *Thesis*, p. Depok: Universitas Indonesia, 2008.
- [30] J. Bhadra, A. Popelka, A. Abdulkareem, M. Lehocky, P. Humpolicek, and N. Al-Thani, “Effect of humidity on the electrical properties of the silver-polyaniline/polyvinyl alcohol nanocomposites,” *Sensors Actuators, A Phys.*, vol. 288, pp. 47–54, 2019, doi: 10.1016/j.sna.2019.01.012.
- [31] E. Taer, Z. Zulkifli, E. N. Arif, and R. Taslim, “ANALISA KAPASITANSI SPESIFIK ELEKTRODA KARBON SUPERKAPASITOR dari KAYU KARET terhadap LAJU SCAN BERDASARKAN VARIASI AKTIVASI HNO<sub>3</sub>,” *Spektra J. Fis. dan Apl.*, vol. 1, no. 1, pp. 35–40, 2016, doi: 10.21009/spektra.011.06.
- [32] Y. N. Fidiyanti, L. Rohmawati, N. P. Putri, and W. Setyarsih, “Analisis Nilai Kapasitansi Spesifik Pada Elektroda Karbon Aktif/PVDF,” *Sains Mat.*, vol. 4, no. 2, 2016.
- [33] X. Huang *et al.*, “Cyclic Voltammetry in Lithium–Sulfur Batteries—Challenges and Opportunities,” *Energy Technol.*, vol. 7, no. 8, 2019, doi: 10.1002/ente.201801001.
- [34] M. Das and D. Sarkar, “Development of room temperature ethanol sensor from polypyrrole (PPy) embedded in polyvinyl alcohol (PVA) matrix,” *Polym. Bull.*, vol. 75, no. 7, pp. 3109–3125, 2018, doi: 10.1007/s00289-017-2192-y.
- [35] P. K. Pertiwi, T. Oktafiana, L. Ningsih, and G. Prajitno, “Uji Konduktivitas Listrik pada CaCO<sub>3</sub> dan Arang Kayu dengan Metode Four Point Probe,” *Fis. Lab. - Lab. Mater.*, pp. 1–5, 2015.
- [36] R. Shavira, A. M. Rusnadar, A. A. Qolbi, E. Widyabutama, and F. Jannah, “LAPORAN PRAKTIKUM MATERIAL Pengujian Konduktivitas Listrik Material dengan Metode Four Point Probe ( FPP ) - RHEI ... Pengujian Konduktivitas Listrik Material dengan Metode Four Point Probe ( FPP ),” 2019.
- [37] P. Physics and V. No, “ $R = \rho \frac{l}{A}$ ,” 2019.
- [38] A. Nayan and T. Hafli, “Analisa Stuktur Mikro Material Komposit Polimer Berpenguat Serbuk Cangkang Kerang,” *J. Mech. Sci. Technol.*, vol. 6, no. 1, pp. 15–24, 2022.
- [39] I. Setiawan, “Pengukuran Kuantitatif Kandungan Zno Menggunakan Metode Pengenceran—Matrix Multikomponen Dengan X-Ray Diffraction,” *J. Tek. Mesin Cakram*, vol. 2, no. 2, p. 88, 2020, doi: 10.32493/jtc.v2i2.4025.
- [40] “–8 –8 –7 –6,” vol. 6, no. 2, pp. 5305–5313, 2019.
- [41] N. Masta, “Buku Materi Pembelajaran Scanning Electron Microscopy,” *Patra Widya Seri Pnb. Penelit. Sej. dan Budaya.*, vol. 21, no. 3, pp. i–iii, 2020.
- [42] muhamad subhan Aprianto, *Karakterisasi Ftir Membran Komposit Nilon-Arang Berbahan Dasar Limbah Jaring Benang Nilon Dan Ampas Tebu*. 2018.

- [43] 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, doi: 10.1016/j.jmrt.2019.12.078.
- [44] V. Y. Pamela, R. Syarif, E. S. Iriani, and N. E. Suyatma, “KARAKTERISTIK MEKANIK, TERMAL DAN MORFOLOGI FILM POLIVINIL ALKOHOL DENGAN PENAMBAHAN NANOPARTIKEL ZnO DAN ASAM STEARAT UNTUK KEMASAN MULTILAYER,” *J. Penelit. Pascapanen Pertan.*, vol. 13, no. 2, p. 63, 2017, doi: 10.21082/jpasca.v13n2.2016.63-73.
- [45] H. Abral *et al.*, “Characterization of compressed bacterial cellulose nanopaper film after exposure to dry and humid conditions,” *J. Mater. Res. Technol.*, vol. 11, pp. 896–904, 2021, doi: 10.1016/j.jmrt.2021.01.057.
- [46] A. P. Aritonang *et al.*, “Kualitas Air Sungai Siak Menggunakan Metode Jembatan Wheatstone,” *Jom Fmipa*, vol. 1, no. 2, pp. 1–9, 2014.
- [47] B. susanto Widodo, Harlia, and I. Syahbanu, “Sintesis Komposit Polimer Konduktif Polipirol ( PPy )/ Selulosa Bakteri,” *Jkk*, vol. 7, no. 1, pp. 59–65, 2018, [Online]. Available: <https://jurnal.untan.ac.id/index.php/jkkmipa/article/view/23594>
- [48] M. D. Levi, C. Lopez, E. Vieil, and M. A. Vorotyntsev, “Influence of ionic size on the mechanism of electrochemical doping of polypyrrole films studied by cyclic voltammetry,” *Electrochim. Acta*, vol. 42, no. 5 SPEC. ISS., pp. 757–769, 1997, doi: 10.1016/s0013-4686(96)00340-4.
- [49] *et al.*, “Pengaruh Variasi Suhu Aktivasi Fisika Terhadap Sifat Fisis Dan Elektrokimia Elektroda Karbon Superkapasitor Dari Limbah Kulit Pisang,” *Spektra J. Fis. dan Apl.*, vol. 1, no. 2, pp. 165–170, 2016, doi: 10.21009/spektra.012.11.
- [50] Z. Efendi, *Pengaruh Kelembaban Relatif (Relative Humidity) Terhadap Laju Perpindahan Massa Pada Proses Pengeringan*. 2019.
- [51] Dachriyanus, *Na L I S I S T R U K T U R E N Y a W a R G a N I K E C a R a P E K T R O S K O P I*. 2004.
- [52] J. Bhadra, A. Popelka, A. Abdulkareem, M. Lehocky, P. Humpolicek, and N. Al-Thani, “Effect of humidity on the electrical properties of the silver-polyaniline/polyvinyl alcohol nanocomposites,” *Sensors Actuators, A Phys.*, vol. 288, pp. 47–54, 2019, doi: 10.1016/j.sna.2019.01.012.
- [53] M. Lay, J. A. Méndez, M. Delgado-Aguilar, K. N. Bun, and F. Vilaseca, “Strong and electrically conductive nanopaper from cellulose nanofibers and polypyrrole,” *Carbohydr. Polym.*, vol. 152, pp. 361–369, 2016, doi: 10.1016/j.carbpol.2016.06.102.