

DAFTAR PUSTAKA

- Abdullah, S. H. Y. S., Hanapi, N. H. M., Azid, A., Umar, R., Juahir, H., Khatoon, H., dan Endut, A. (2017). A review of biomass-derived heterogeneous catalyst for a sustainable biodiesel production. *Renewable and Sustainable Energy Reviews*, 70, 1040–1051. <https://doi.org/10.1016/j.rser.2016.12.008>
- Afriyanti, Y., Sasana, H., dan Jalunggono, G. (2020). ANALISIS FAKTOR-FAKTOR YANG MEMPENGARUHI KONSUMSI ENERGI TERBARUKAN DI INDONESIA. *DINAMIC: Directory Journal of Economic*, 2(3), Article 3. <https://doi.org/10.31002/dinamic.v2i3.1428>
- Ahluwalia, R. K., Hua, T. Q., Peng, J.-K., Lasher, S., McKenney, K., Sinha, J., dan Gardiner, M. (2010). Technical assessment of cryo-compressed hydrogen storage tank systems for automotive applications. *International Journal of Hydrogen Energy*, 35(9), 4171–4184. <https://doi.org/10.1016/j.ijhydene.2010.02.074>
- Araújo, C. M. G. (2008). Hydrogen Storage Materials. *Digital Comprehensive Summaries of Uppsala Dissertations from the Faculty of Science and Technology*, 408. <https://doi.org/10.33063/diva-442412>
- Badan Pusat Statistik. (2019). *Statistik Indonesia 2019*. <https://www.bps.go.id/en/publication/2019/07/04/daac1ba18cae1e90706ee58a/statistical-yearbook-of-indonesia-2019.html>
- Bahl, B. S., Tuli, G. D., dan Bahl, A. (1997). *Essential of physical chemistry: A textbook for B.sc. students of Indian university* (2 ed.). S Chand and Company. <https://lib.ui.ac.id>
- Bakti, A. I., dan Gareso, P. L. (2018). Characterization of Active Carbon Prepared from Coconuts Shells using FTIR, XRD and SEM Techniques. *Jurnal Ilmiah Pendidikan Fisika Al-Biruni*, 7(1), 33–39. <https://doi.org/10.24042/jipfalbiruni.v7i1.2459>
- Berjoza, D., Jurgena, I., dan Masek, J. (2024, Mei 22). *Changes in electric car energy consumption depending on mass*. 23rd International Scientific Conference Engineering for Rural Development. <https://doi.org/10.22616/ERDev.2024.23.TF035>
- Brunauer, S., Emmett, P. H., dan Teller, E. (1938). Adsorption of Gases in Multimolecular Layers. *Journal of the American Chemical Society*, 60(2), 309–319. <https://doi.org/10.1021/ja01269a023>
- Bunaciu, A. A., Udriștioiu, E. gabriela, dan Aboul-Enein, H. Y. (2015). X-Ray Diffraction: Instrumentation and Applications. *Critical Reviews in*

Analytical Chemistry, 45(4), 289–299.
<https://doi.org/10.1080/10408347.2014.949616>

Christmann, K. (2012). *Thermodynamics and Kinetics of Adsorption*.

Dillon, A. C., dan Heben, M. J. (2001). Hydrogen storage using carbon adsorbents: Past, present and future. *Applied Physics A*, 72(2), 133–142.
<https://doi.org/10.1007/s003390100788>

Ding, L. P., dan Bhatia, S. K. (2003). Analysis of multicomponent adsorption kinetics on activated carbon. *AIChE Journal*, 49(4), 883–895.
<https://doi.org/10.1002/aic.690490408>

Durbin, D. J., dan Malardier-Jugroot, C. (2013). Review of hydrogen storage techniques for on board vehicle applications. *International Journal of Hydrogen Energy*, 38(34), 14595–14617.
<https://doi.org/10.1016/j.ijhydene.2013.07.058>

Elinur, E., D. S. P., Tambunan, M., dan Firdaus, M. (2010). Perkembangan Konsumsi Dan Penyediaan Energi Dalam Perekonomian Indonesia. *Indonesian Journal of Agricultural Economics (IJAE)*, 2(1), Article 1.

Eren, B. M., Taspinar, N., dan Gokmenoglu, K. K. (2019). The impact of financial development and economic growth on renewable energy consumption: Empirical analysis of India. *Science of The Total Environment*, 663, 189–197. <https://doi.org/10.1016/j.scitotenv.2019.01.323>

Erlina, Umiatin, U., dan Budi, E. (2015). PENGARUH KONSENTRASI LARUTAN KOH PADA KARBON AKTIF TEMPURUNG KELAPA UNTUK ADSORPSI LOGAM Cu. *PROSIDING SEMINAR NASIONAL FISIKA (E-JOURNAL)*, 4, SNF2015-55.

Freundlich, H. M. F. (1906). Over the Adsorption in Solution. *Journal of Physical Chemistry*, 57, 1100–1107.

Goldstein, J. I., Newbury, D. E., Echlin, P., Joy, D. C., Romig, A. D., Lyman, C. E., Fiori, C., dan Lifshin, E. (1992). Electron Optics. Dalam J. I. Goldstein, D. E. Newbury, P. Echlin, D. C. Joy, A. D. Romig, C. E. Lyman, C. Fiori, dan E. Lifshin (Ed.), *Scanning Electron Microscopy and X-Ray Microanalysis: A Text for Biologists, Materials Scientists, and Geologists* (hlm. 21–68). Springer US. https://doi.org/10.1007/978-1-4613-0491-3_2

Griffiths, P. R., dan de Haseth, J. A. (2006). Fourier Transform Infrared Spectrometry. Dalam *Fourier Transform Infrared Spectrometry* (2 ed.). John Wiley dan Sons, Ltd. <https://doi.org/10.1002/9780470106310.ch4>

- Hui, T. S., dan Zaini, M. A. A. (2015). Potassium hydroxide activation of activated carbon: A commentary. *Carbon Letters*, 16(4), 275–280. <https://doi.org/10.5714/CL.2015.16.4.275>
- Hwang, N., dan Barron, A. R. (2011). *BET Surface Area Analysis of Nanoparticles*. <http://cnx.org/content/m38278/1.1/>
- Ibrahim, Martin, A., dan Nasruddin, N. (2014). *Pembuatan dan Karakterisasi Karbon Aktif Berbahan Dasar Cangkang Sawit dengan Metode Aktivasi Fisika Menggunakan Rotary Autoclave* (Nomor 2) [Journal:eArticle, Riau University]. <https://www.neliti.com/publications/200232/>
- Ioannidou, O., dan Zabaniotou, A. (2007). Agricultural residues as precursors for activated carbon production—A review. *Renewable and Sustainable Energy Reviews*, 11(9), 1966–2005. <https://doi.org/10.1016/j.rser.2006.03.013>
- Jiménez, V., Sánchez, P., Valverde, J. L., dan Romero, A. (2009). Influence of the activating agent and the inert gas (type and flow) used in an activation process for the porosity development of carbon nanofibers. *Journal of Colloid and Interface Science*, 336(2), 712–722. <https://doi.org/10.1016/j.jcis.2009.04.017>
- Kementerian Energi dan Sumber Daya Mineral. (2019). *Handbook Of Energy dan Economic Statistics Of Indonesia (HEESI) 2019*. <https://www.esdm.go.id/assets/media/content/content-handbook-of-energy-and-economic-statistics-of-indonesia-2019.pdf>
- Knaebel, K. S. (2002). *ADSORBENT SELECTION*. <https://www.semanticscholar.org/paper/ADSORBENT-SELECTION-Knaebel/b3cc0615750e7d830f6d3507f224a5fee32e2451>
- Kumar, A., dan Jena, H. M. (2016). Preparation and characterization of high surface area activated carbon from Fox nut (*Euryale ferox*) shell by chemical activation with H_3PO_4 . *Results in Physics*, 6, 651–658. <https://doi.org/10.1016/j.rinp.2016.09.012>
- Leaper, S., Abdel-Karim, A., dan Gorgojo, P. (2021). The use of carbon nanomaterials in membrane distillation membranes: A review. *Frontiers of Chemical Science and Engineering*, 15(4), 755–774. <https://doi.org/10.1007/s11705-020-1993-y>
- Li, W., Yang, K., Peng, J., Zhang, L., Guo, S., dan Xia, H. (2008). Effects of carbonization temperatures on characteristics of porosity in coconut shell chars and activated carbons derived from carbonized coconut shell chars. *Industrial Crops and Products*, 28(2), 190–198. <https://doi.org/10.1016/j.indcrop.2008.02.012>

- Lozano-Castelló, D., Lillo-Ródenas, M. A., Cazorla-Amorós, D., dan Linares-Solano, A. (2001). Preparation of activated carbons from Spanish anthracite: I. Activation by KOH. *Carbon*, 39(5), 741–749. [https://doi.org/10.1016/S0008-6223\(00\)00185-8](https://doi.org/10.1016/S0008-6223(00)00185-8)
- Lundstedt, C. (2019). BET Theory and how its used to calculate surface area. *HORIBA Scientific*.
- Lv, P. (2024). Chapter 3.3—Hydrogen storage technology. Dalam D. Jaiswal-Nagar, V. Dixit, dan S. Devasahayam (Ed.), *Towards Hydrogen Infrastructure* (hlm. 165–184). Elsevier. <https://doi.org/10.1016/B978-0-323-95553-9.00001-7>
- Madhusudhanan, J., Kaliappan, S., Sathyamurthy, R., Saravanan, R., Sathish, T., Prabu, D., Rajasimman, M., Al-Kahtani, A. A., dan Dragoi, E.-N. (2024). Influence of nanopores volumes in hydrogen absorption properties of B4C and WC carbide-derived carbon nanomaterials. *International Journal of Hydrogen Energy*, 52, 443–455. <https://doi.org/10.1016/j.ijhydene.2023.03.318>
- Marsh, H., dan Rodríguez-Reinoso, F. (2006). CHAPTER 2—Activated Carbon (Origins). Dalam H. Marsh dan F. Rodríguez-Reinoso (Ed.), *Activated Carbon* (hlm. 13–86). Elsevier Science Ltd. <https://doi.org/10.1016/B978-008044463-5/50016-9>
- Marsyahyo, E. (2009). ANALISIS BRUNNAEUR EMMET TELLER (BET) TOPOGRAFI PERMUKAAN SERAT RAMI (*Boehmeria nivea*) UNTUK MEDIA PENGUATAN PADA BAHAN KOMPOSIT. *JURNAL FLYWHEEL*, 2(2), Article 2. <https://doi.org/10.36040/flywheel.v2i2.332>
- Meriatna, Novi Sylvia, dan Thea Rizky Aprilia. (2022). *ADSORPSI MINYAK JELANTAH MENGGUNAKAN ADSORBEN CANGKANG TELUR AYAM YANG DIAKTIVASI SECARA FISIKA DAN KIMIA*. Universitas Malikussaleh.
- Minoda, A., Oshima, S., Iki, H., dan Akiba, E. (2013). Synthesis of KOH-activated porous carbon materials and study of hydrogen adsorption. *Journal of Alloys and Compounds*, 580, S301–S304. <https://doi.org/10.1016/j.jallcom.2013.02.085>
- Mulder, M. (1996). *Basic principles of membrane technology* (2 ed.). Kluwer Academic Publisher. <https://lib.ui.ac.id>
- Nagpal, M., dan Kakkar, R. (2018). An evolving energy solution: Intermediate hydrogen storage. *International Journal of Hydrogen Energy*, 43(27), 12168–12188. <https://doi.org/10.1016/j.ijhydene.2018.04.103>

- Otowa, T., Tanibata, R., dan Itoh, M. (1993). Production and adsorption characteristics of MAXSORB: High-surface-area active carbon. *Gas Separation dan Purification*, 7(4), 241–245. [https://doi.org/10.1016/0950-4214\(93\)80024-Q](https://doi.org/10.1016/0950-4214(93)80024-Q)
- Pambayun, G. S., Yulianto, R. Y. E., Rachimoellah, M., dan Putri, E. M. M. (2013). PEMBUATAN KARBON AKTIF DARI ARANG TEMPURUNG KELAPA DENGAN AKTIVATOR $ZnCl_2$ DAN Na_2CO_3 SEBAGAI ADSORBEN UNTUK MENGURANGI KADAR FENOL DALAM AIR LIMBAH. *JURNAL TEKNIK POMITS*, 2(1).
- Panella, B., dan Hirscher, Dr. M. (2010). Physisorption in Porous Materials. *Handbook of Hydrogen Storage*, 39–62. <https://doi.org/10.1002/9783527629800>
- Panigrahi, P. K., Chandu, B., Motapothula, M. R., dan Puvvada, N. (2024). Potential Benefits, Challenges and Perspectives of Various Methods and Materials Used for Hydrogen Storage. *Energy dan Fuels*, 38(4), 2630–2653. <https://doi.org/10.1021/acs.energyfuels.3c04084>
- Pellenz, L., De Oliveira, C. R. S., Da Silva Júnior, A. H., Da Silva, L. J. S., Da Silva, L., Ulson De Souza, A. A., De Souza, S. M. D. A. G. U., Borba, F. H., dan Da Silva, A. (2023). A comprehensive guide for characterization of adsorbent materials. *Separation and Purification Technology*, 305, 122435. <https://doi.org/10.1016/j.seppur.2022.122435>
- Pemerintah Pusat Indonesia. (2014). *Peraturan Pemerintah No. 79 Tahun 2014 tentang Kebijakan Energi Nasional*. <http://peraturan.bpk.go.id/Details/5523/pp-no-79-tahun-2014>
- Prasetyo, I., Rochmadi, R., Ariyanto, T., dan Yunanto, R. (2013). SIMPLE METHOD TO PRODUCE NANOPOROUS CARBON FOR VARIOUS APPLICATIONS BY PYROLYSIS OF SPECIALLY SYNTHESIZED PHENOLIC RESIN. *Indonesian Journal of Chemistry*, 13(2), Article 2. <https://doi.org/10.22146/ijc.21290>
- Rasapoor, M., Young, B., Asadov, A., Brar, R., Sarmah, A. K., Zhuang, W.-Q., dan Baroutian, S. (2020). Effects of biochar and activated carbon on biogas generation: A thermogravimetric and chemical analysis approach. *Energy Conversion and Management*, 203, 112221. <https://doi.org/10.1016/j.enconman.2019.112221>
- Sasana, H., dan Ghazali, I. (2017). The Impact of Fossil and Renewable Energy Consumption on the Economic Growth in Brazil, Russia, India, China and South Africa. *International Journal of Energy Economics and Policy*, 7(3), Article 3.

- Sdanghi, G., Schaefer, S., Maranzana, G., Celzard, A., dan Fierro, V. (2020). Application of the modified Dubinin-Astakhov equation for a better understanding of high-pressure hydrogen adsorption on activated carbons. *International Journal of Hydrogen Energy*, 45(48), 25912–25926. <https://doi.org/10.1016/j.ijhydene.2019.09.240>
- Sekretariat Jenderal Dewan Energi Nasional Kementerian Energi dan Sumber Daya Mineral. (2018). *Outlook Energi Indonesia 2018*. <https://www.esdm.go.id/assets/media/content/content-outlook-energi-indonesia-2018-bahasa-indonesia.pdf>
- Shivananda C. S. (2017). *SYNTHESIS OF SILVER NANOPARTICLES USING SILK FIBROIN: CHARACTERIZATION AND POTENTIAL ANTIBACTERIAL PROPERTIES* [Sir M. Visvesvaraya Insititute of Technology]. <https://doi.org/10.13140/RG.2.2.20649.62566>
- Shofa, A. (2012). *Pembuatan karbon aktif berbahan baku ampas tebu dengan aktivasi kalium hidroksida = Preparation of activated carbon from sugarcane bagasse by potassium hydroxide activation* [Indonesia University]. <https://lib.ui.ac.id>
- Singh, J., Bhunia, H., dan Basu, S. (2019). Adsorption of CO₂ on KOH activated carbon adsorbents: Effect of different mass ratios. *Journal of Environmental Management*, 250, 109457. <https://doi.org/10.1016/j.jenvman.2019.109457>
- Singla, M. K., Gupta, J., Safaraliev, M., Nijhawan, P., Oberoi, A. S., dan Menaem, A. A. (2024). Characterization of an activated carbon electrode made from coconut shell precursor for hydrogen storage applications. *International Journal of Hydrogen Energy*, 61, 1417–1428. <https://doi.org/10.1016/j.ijhydene.2024.02.341>
- Smith, B. C. (2011). *Fundamentals of Fourier Transform Infrared Spectroscopy*. CRC Press.
- Tamado, D., Budi, E., Wirawan, R., Dwi, H., Tyaswuri, A., Sulistyani, E., dan Asma, E. (2013). Sifat Termal Karbon Aktif Berbahan Arang Tempurung Kelapa. *PROSIDING SEMINAR NASIONAL FISIKA (E-JOURNAL)*, 2, 73–81.
- Thommes, M., Kaneko, K., Neimark, A. V., Olivier, J. P., Rodriguez-Reinoso, F., Rouquerol, J., dan Sing, K. S. W. (2015). Physisorption of gases, with special reference to the evaluation of surface area and pore size distribution (IUPAC Technical Report). *Pure and Applied Chemistry*, 87(9–10), 1051–1069. <https://doi.org/10.1515/pac-2014-1117>

- Treybal, R. E. (1980). *Mass-Transfer Operations* (3 ed.). McGraw-Hill Book Company. http://archive.org/details/mass-transfer-operations-robert-treybal_202310
- Viswanathan, B., Pulidindi, I. N., dan Varadarajan, T. K. (2009). *Methods of Activation and Specific Applications of Carbon Materials*. NCCR IIT Madras. https://www.researchgate.net/publication/299393936_Methods_of_Activation_and_Specific_Applications_of_Carbon_Materials
- Walton, K. S., dan Snurr, R. Q. (2007). Applicability of the BET Method for Determining Surface Areas of Microporous Metal–Organic Frameworks. *Journal of the American Chemical Society*, 129(27), 8552–8556. <https://doi.org/10.1021/ja071174k>
- Wan, T., dan Wang, Y. (2022). The Hazards of Electric Car Batteries and Their Recycling. *IOP Conference Series: Earth and Environmental Science*, 1011(1), 012026. <https://doi.org/10.1088/1755-1315/1011/1/012026>
- Wang, H., Gao, Q., dan Hu, J. (2009). High Hydrogen Storage Capacity of Porous Carbons Prepared by Using Activated Carbon. *Journal of the American Chemical Society*, 131(20), 7016–7022. <https://doi.org/10.1021/ja8083225>
- Wang, J., dan Guo, X. (2020). Adsorption isotherm models: Classification, physical meaning, application and solving method. *Chemosphere*, 258, 127279. <https://doi.org/10.1016/j.chemosphere.2020.127279>
- Wibawa, P. J., Nur, M., Asy'ari, M., dan Nur, H. (2020). SEM, XRD and FTIR analyses of both ultrasonic and heat generated activated carbon black microstructures. *Heliyon*, 6(3), e03546. <https://doi.org/10.1016/j.heliyon.2020.e03546>
- Xia, H., Wu, J., Srinivasakannan, C., Peng, J., dan Zhang, L. (2016). Effect of Activating Agent on the Preparation of Bamboo-Based High Surface Area Activated Carbon by Microwave Heating. *High Temperature Materials and Processes*, 35(6), 535–541. <https://doi.org/10.1515/htmp-2014-0228>
- Xu, X., Zhou, Q., dan Yu, D. (2022). The future of hydrogen energy: Bio-hydrogen production technology. *International Journal of Hydrogen Energy*, 47(79), 33677–33698. <https://doi.org/10.1016/j.ijhydene.2022.07.261>
- Zamhari, M., Junaidi, R., Rachmatika, N., dan Oktarina, A. (2021). PEMBUATAN KATALIS BERBASIS KARBON AKTIF DARI TEMPURUNG KELAPA (*Cocos nucifera*) DIIMPREGNASI KOH PADA REAKSI TRANSESTERIFIKASI SINTESIS BIODIESEL. *Jurnal Kinetika*, 12(01), 23–31.

- Zhang, F., Zhao, P., Niu, M., dan Maddy, J. (2016). The survey of key technologies in hydrogen energy storage. *International Journal of Hydrogen Energy*, 41(33), 14535–14552. <https://doi.org/10.1016/j.ijhydene.2016.05.293>
- Zhang, L., dan Zuo, S. (2024). The Significance of Lignocellulosic Raw Materials on the Pore Structure of Activated Carbons Prepared by Steam Activation. *Molecules*, 29(13), Article 13. <https://doi.org/10.3390/molecules29133197>
- Zhou, L. (2005). Progress and problems in hydrogen storage methods. *Renewable and Sustainable Energy Reviews*, 9(4), 395–408. <https://doi.org/10.1016/j.rser.2004.05.005>