

DAFTAR PUSTAKA

- Afza, E. (2011). Pembuatan Magnet Permanen Ba-Hexa Ferrite ($\text{Ba}_6\text{Fe}_2\text{O}_3$) dengan Metode Kopersipitasi dan Karakterisasinya. *Skripsi*, Universitas Sumatera Utara. Medan.
- Aguila-Garib, J. A., Garcia-Onofre, V., Ortiz, U., & Valdez-Nava, Z. (2013). Microwave Energy for Expanding Perlite Ore. *Journal of Applied Research and Technology*, 11(6), 823–830.
- Ali, R., & Siew, O. B. (2008). Photodegradation of New Methylene Blue in Aqueous Solution Using Zinc Oxide and Titanium Dioxide as Catalyst. *Desalination*, 1, 1–14.
- Almeida, J. M. F., Silva, D., Damasceno, J. E., & Fernandes, N. S. (2018). Modification of Expanded Perlite with Orthophenanthroline for Formation of Active Sites for Acid Dyes: Preparation and Characterization. *Periodico Tche Quimica*, 15, 338–344.
- Amri, S., & Utomo, M. P. (2017). Preparasi dan Karakterisasi Komposit ZnO-Zeolit untuk Fotodegradasi Zat Warna Congo Red. *Jurnal Kimia Dasar*, 6(2), 30–36.
- Anggraeni, N. D. (2008). Analisa SEM (Scanning Electron Microscopy) dalam Pemantauan Proses Oksidasi Magnetite Menjadi Hematite. *Seminar Nasional - VII Rekayasa Dan Aplikasi Teknik Mesin Di Industri*, 50–56.
- Attia, A. J., Kadhim, S. H., & Hussien, F. H. (2007). Photocatalytic Degradation of Textile Dyeing Wastewater Using Titanium Dioxide and Zinc Oxide. *E-Journal of Chemistry*, 2, 219–223.
- Bayat, R., Derakhshi, P., Rahimi, R., Safekordi, A. A., & Rabbani, M. (2019). A Magnetic $\text{ZnFe}_2\text{O}_4/\text{ZnO}/\text{Perlite}$ Nanocomposite for Photocatalytic Degradation of Organic Pollutants under LED Visible Light Irradiation. *Solid State Sciences*, 89, 167–171.
- Bemis, R., Nurjanah, S., & Maghviroh, N. A. (2019). Sintesis dan karakterisasi fotokatalis ZnO/Karbon Aktif (KA) dan Aplikasinya Pada Degradasi Rhodamin B. *Chempublish Journal*, 4(2), 101–113.
- Callister, W. D. (2007). *Material Science and Engineering an Introduction*. New York: John Wiley and Sons, Inc.
- Choi, H. J., & Yu, S. W. (2019). Biosorption of Methylene Blue from Aqueous Solution by Agricultural Bioadsorbent Corncob. *Environmental Engineering Research*, 24(1), 99–106.
- Cullity, B. D., & Stock, S. R. (2001). *Elements of X-Ray Diffraction*. New Jersey: Prentice Hall.
- Davis, K., Yarbrough, R., Froeschle, M., White, J., & Rathnayake, H. (2019).

Band Gap Engineered Zinc Oxide Nanostructure Via a Sol-Gel Synthesis of Solvent Driven Shape-Controlled Crystal Growth. *Royal Society of Chemistry*, 9, 14638–14648.

- Day, R. A., & Underwood, A. L. (2002). *Analisis Kimia Kuantitatif, edisi Keenam* (6th ed.). Jakarta: Erlangga.
- Duranoğlu, D. (2016). Preparation of TiO₂/Perlite Composites by Using 2³⁻¹ Fractional Factorial Design. *JOTCSA*, 3(3), 299–312.
- Dwiasi, D. W., Setyaningtyas, T., & Riyani, K. (2018). Penurunan Kadar Metilen Biru dalam Limbah Batik Sokaraja Menggunakan Sistem Fe₂O₃-H₂O₂-UV. *Jurnal Rekayasa Kimia & Lingkungan*, 13(1), 78–86.
- Endang, P. (2006). Degradasi Methylene Blue dengan Metode Fotokatalisis dan Fotoelektrolisis Menggunakan Film TiO₂. *Skripsi*, Institut Pertanian Bogor. Bogor
- Erdogan, S. T. (2014). Properties of Ground Perlite Geopolymer Mortars. *Journal of Materials in Civil Engineering*, 27(7).
- Fan, Z., & Lu, J. G. (2005). *Zinc Oxide Nanostructures: Sythesis and Properties*. Amerika: University of California Irvine.
- Fernandes, D. M., Winkler, A. A., Lima, S. M., Andrade, L. H. C., Caires, A. R. L., & Pineda, E. A. G. (2011). Preparation, Characterization and Photoluminescence Study of PVA/ZnO Nanocomposite Films. *Mater. Chem. Phys.*, 128, 371–376.
- Fiolida, I. A. S. (2016). Preparasi dan Karakterisasi Komposit CuO-Zeolit Alam untuk Fotodegradasi Zata Warna Rhodamin B dengan Sinar Ultraviolet. *Skripsi*, Universitas Negeri Yogyakarta. Yogyakarta.
- Gao, W., & Li, Z. W. (2004). Thin Film Produced by Magnetron Sputtering. *Ceramics International*, 30(7), 1155–1159.
- Ghassabzadeh, H., Mohadespour, A., Torab-Mostaedi, M., Zaheri, P., Maragheh, M. G., & Taheri, H. (2010). Adsorption of Ag, Cu and Hg from Aqueous Solutions Using Expanded Perlite. *Journal of Hazardous Materials*, 177(1), 950–955.
- Gouvea, K., Wypych, F., Moraes, S. G., Duran, N., N., N., & PeraltaZamora, P. (2000). Semiconductor-Assisted Photocatalytic Degradation of Reactive Dyes in Aqueous Solution. *Chemosphere*, 40, 433–440.
- Hamdaoui, O., & Chiha, M. (2007). Removal of Methylene Blue from Aqueous Solutions by Wheat Bran. *Acta Chimica Slovenica*, 54(2), 407–418.
- Haslinda. (2009). Fabrication, Structural and Electrical Characteristic of Zinc Oxide (ZnO) Thin Films by Direct Current Spinterring. *Journal Procedia Chemistry*, 9, 211–216.

- Hong, S., Wen, C., He, J., Gan, F., & Ho, Y. S. (2009). Adsorption Thermodynamics of Methylene Blue Onto Bentonite. *Journal of Hazardous Materials*, 167, 630–633.
- Hosseini, S. N., Borghei, S. M., Vossoughi, M., & Taghavinia, N. (2007). Immobilization of TiO₂ on Perlite Granules for Photocatalytic Degradation of Phenol. *Applied Catalysis B: Environmental*, 74, 53–62.
- Hoxter, E. A. (1982). “*Practical Radiography*” 11th Edition (11th ed.). Germany: Siemens Aktiengesellschaft Heyden & Son Ltd.
- Inkson, B. J. (2016). Scanning Electron Microscopy (SEM) and Transmission Electron Microscopy (TEM) for Materials Characterization. *Materials Characterization Using Nondestructive Evaluation (NDE) Methods*, 17–43.
- Jesionowski, T. (2014). Zinc Oxide from Synthesis to Application: A Review. *Journal Materials*, 7, 2833–2881.
- Jin, Z., Guo, Y.-C., Liu, C.-L., & Xu, D. (2021). Synthesis and Visible-Light-Driven Photocatalytic Properties of Floating BiFeO₃/Expanding Perlite Photocatalyst. *Chinese Journal of Inorganic Chemistry*, 37(5), 905–913.
- Jumardin, Maddu, A., Santoso, K., & Isnaeni. (2022). Karakteristik Sifat Optik Nano-Partikel Karbon (Carbon Dots) dengan Metode UV-Vis DRS (Ultra Violet-Visible Diffuse Reflectance Spectroscopy). *Jurnal Fisika Dan Terapannya*, 9(1), 1–15.
- Khan, S. H., Suriyaprabha, R., Pathak, B., & Fulekar, M. . (2015). Development of Zinc Oxide Nanoparticle by Sonochemical Method and Study of Their Physical and Optical Properties. *Journal Centre of Nanoscience*, 18, 1–7.
- Kotwica, L., Waldemar, P., & Wieslawa, N.-W. (2015). Study of Pozzolanic Action of Ground Waste Expanded Perlite by Means of Thermal Methods. *J. Therm Anal Calorim*, 10.
- Kumar, D., Jat, S. K., Khanna, P. K., Vijayan, N., & Banerjee, S. (2012). Synthesis, Characterization and Studies of PVA/Co-Doped ZnO Nanocomposite Films. *International Journal of Green Nanotechnology*, 4, 408–416.
- Lachheb, H., Puzenat, E., Houas, A., Ksibi, M., Elaoui, E., Guillard, C., & Herman, J. M. (2002). Photocatalytic Degradation of Various Types of Dyes (Alizarin S, Crocein Orange G, Methyl Red, Congo Red, Methylene Blue) in Water by UV-Irradiated Titania. *Applied Catalysis B*, 39, 75–90.
- Lestari. (2011). Preparasi Nanokomposit ZnO dengan Metode Sonokimia serta Uji Aktivitasnya untuk Fotodegradasi Fenol. *Skripsi*, Universitas Negeri Semarang. Semarang.
- Makula, P., Pacia, M., & Macyk, W. (2018). How To Correctly Determine the Band Gap Energy of Modified Semiconductor Photocatalysts Based on UV-

Vis Spectra. *Journal of Physical Chemistry Letters*, 9(23), 6814–6817.

- Manendar, R. (2010). Pengolahan Limbah Cair Rumah Potong Hewan (RPH) dengan Metode Fotokatalitik TiO_2 : Pengaruh Waktu Kontak Terhadap Kualitas BOD₅, COD, dan pH Efluen. *Laporan Penelitian*, Institut Pertanian Bogor. Bogor.
- Manurung, R., Hasibuan, R., & Irvan. (2004). Perombakan Zat Warna Azo Secara Anaerob dan Aerob. *Skripsi*, Universitas Sumatera Utara. Medan.
- Morkoc, H., & Ozgur, U. (2009). *Chapter 1 General Properties of ZnO in Zinc Oxide: Fundamentals, Materials and Device Technology*. Wiley: VCH.
- Ngaha, E., Sayen, S., Guillon, E., & Duranoğlu, D. (2019). Process Optimization with Box-Behnken Experimental Design for Photocatalytic Degradation of Thiamethoxam Using Perlite Supported TiO_2 . *Desalination and Water Treatment*, 162, 364–375.
- Nurdani, Y. (2009). Sintesis dan Karakterisasi CuO-Bentonit Serta Aplikasinya Sebagai Fotokatalis. *Laporan Penelitian*, Universitas Indonesia. Depok.
- Nurhasni, H., & Saniyyah, N. (2014). Sekam Padi untuk Menyerap Ion Logam Tembaga dan Timbal dalam Air Limbah. *Jurnal Kimia Valensi*, 4(1), 36–44.
- Omidi, M., Fatehinya, A., Farahani, M., Akbari, Z., Shahmoradi, S., Yazdian, F., & Vashae, D. (2017). Characterization of biomaterials. *Biomaterials for Oral and Dental Tissue Engineering*, 97–115.
- Ong, C. B., Ng, L. Y., & Mohammad, A. W. (2018). A Review of ZnO Nanoparticles as Solar Photocatalyst: Synthesis, Mechanisms and Applications. *Renewable and Sustainable Energy Reviews*, 81(2), 536–551.
- Qodri, A. A. (2011). Fotodegradasi Zat Warna Remazol Yellow FG dengan Fotokatalis Komposit $\text{TiO}_2/\text{SiO}_2$. *Laporan Penelitian*, Universitas Sebelas Maret. Surakarta.
- Qourzal, S., Tamimi, M., Assabane, A., & Ait-Ichou, Y. (2009). Photodegradation of 2-Naphthol Using Nanocrystalline. *M. J. Condensed Mater*, 11, 55–59.
- Rafatullah, M., Sulaiman, O., Hashim, R., & Ahmad, A. (2010). Adsorption of Methylene Blue on Low-Cost Adsorbents: A Review. *Journal of Hazardous Materials*, 3(1), 70–80.
- Rafi, M., Anggundari, W. C., & Irawadi, T. T. (2016). Potensi spektroskopi FTIR-ATR dan Kemometrik untuk Membedakan Rambut Babi, Kambing, dan Sapi. *Indonesian Journal of Chemical Science*, 5(3), 232–237.
- Riyanto. (2016). *Metode Spektroskopi*. Yogyakarta: Universitas Islam Indonesia.
- Rodrigues, L. M., Carvalho, L. F., Das, C. e. S., Bonnier, F., Anbinder, A. L., Martinho, H., & Almeida, J. D. (2018). Evaluation of Inflammatory Processes by FTIR Spectroscopy. *Journal of Medical Engineering and*

Technology, 42(3), 228–235.

- Saraswati, I. G. A. A., Diantariani, N. P., & Suarya, P. (2015). Fotodegradasi Zat Warna Tekstil Congo Red dengan Fotokatalis ZnO-Arang Aktif dan Sinar Ultraviolet (UV). *Jurnal Kimia*, 9(2), 175–182.
- Setiabudi, A., Hardian, R., & Mudzakir, A. (2012). *Karakterisasi Material; Prinsip dan Aplikasinya dalam Penelitian Kimia*. Bandung: UPI Press.
- Shabani, K. S., Ardeani, F. D., Badi, K., & Olya, M. E. (2017). Preparation and Characterization of Novel Nano-Mineral for The Removal Several Heavy Metals from Aqueous Solution: Batch and Continuous Systems. *Arab J.Chem*, 10.
- Shavisi, Y., Sharifnia, S., Hosseini, S. N., & Khadivi, M. A. (2013). Application of TiO₂/Perlite Photocatalysis for Degradation of Ammonia in Wastewater. *Journal of Industrial and Engineering Chemistry*, 3(37), 2–7.
- Silva, N., Júnior, E. D., Almeida, J., Dias, E., Silva, S., & Fernandes, N. (2019). Experimental Design for Optimization of The Photocatalytic Degradation Process of The Remazol Red Dye by The TiO₂/Expanded Perlite Composite. *Environmental Technology*, 0(0), 1–29.
- Skoog, D. A., & West, D. M. (1971). *Principles of Instrumental Analysis*. New York: Holt, Rinehart dan Winston, Inc.
- Sujatno, A., Salam, R., Dimiyati, A., & Bandriyana. (2015). Studi Scanning Electron Microscopy (SEM) untuk Karakterisasi Proses Oksidasi Paduan Zirkonium. *Jurnal Forum Nuklir (JFN)*, 9(2), 44–50.
- Sulistiyani, M., & Huda, N. (2017). Optimasi Pengukuran Spektrum Vibrasi Sampel Protein Menggunakan Spektrofotometer Fourier Transform Infrared (FT-IR). *Indonesian Journal of Chemical Science*, 6(2), 173–180.
- Syahvalensi, N., Rokhmat, M., & Wibowo, E. (2019). Pengaruh Penambahan Karbon pada Fotokatalis Berbahan Dasar TiO₂ untuk Mendegradasi Methylene Blue. *E-Prociding of Engineering*, 6(1), 1189–1196.
- Triyati, E. (1985). Spektrofotometer Ultra-Violet dan Sinar Tampak Serta Aplikasinya dalam Oseanologi. *Oseana*, 10(1), 39–47.
- Wadani, R. S. (2011). Variasi Waktu Hidrolisis pada Sintesis TiO₂ Terdoping Nitrogen untuk Aplikasi Fotodegradasi Metil Oranye. *Laporan Penelitian*, Universitas Negeri Yogyakarta. Yogyakarta.
- Wang, R., Xin, J. H., Yang, Y., Liu, H., Xu, L., & Hu, J. (2004). The Characteristics and Photocatalytic Activities of Silver Doped ZnO Nanocrystallites. *Applied Surface Science*, 227(1–4), 312–317.
- Wang, X., Wang, W., Zhang, J., Gu, Z., Zhou, L., & Zhao, J. (2015). Enhanced Visible Light Photocatalytic Activity of Floating Photocatalyst Based on B-N-codoped TiO₂ Grafted on Expanded Perlite. *RSC Advances*, 10.

- Widiyanti, F. D. (2020). Kajian Metode Preparasi Sampel dan Deteksi Karbamazepin dan Karbamazepin-10,11-Epoksida dalam Cairan Hayati Menggunakan KCKT. *Skripsi*, Universitas Islam Indonesia. Yogyakarta.
- Wulandari, I. O., Wardhani, S., & Purwonugroho, D. (2014). Sintesis dan Karakterisasi Fotokatalis ZnO pada Zeolit. *Kimia Student Journal*, 1, 241–247.
- Yanlinastuti, & Fatimah, S. (2016). Pengaruh Konsentrasi Pelarut untuk Menentukan Paduan U-Zr dengan Menggunakan Metode Spektrofotometri UV-Vis. *Pusat Teknologi Bahan Bakar Nuklir*, 17, 22–23.

