

## DAFTAR PUSTAKA

- Abdullah, M. (2008). Pengantar Nanosains, *Institut Teknologi Bandung*, Bandung.
- Ahmadpour, N., Sayadi, M.H., Sobhani, S., dan Hajiani, M. (2020). A potential natural solar light active photocatalyst using magnetic  $\text{ZnFe}_2\text{O}_4/\text{TiO}_2/\text{Cu}$  nanocomposite as a high performance and recyclable platform for degradation of naproxen from aqueous solution. *J Clean Prod*, 26(8): 122-123.
- Ahmed, M.A., Ateia, E., Salah, L.M., dan El-Gamal, A.A. (2005). Structural and Electrical Studies on  $\text{La}^{3+}$  Substituted Ni-Zn Ferrites. *Material Chemistry and Physics*, 9(2): 310-321.
- Alam, J., Bran, C., Chiriac, H., Lupu, N., Óvári, T.A., Panina, L. V., Rodionova, V., Varga, R., Vazquez, M., dan Zhukov, A. (2020). Cylindrical micro and nanowires: Fabrication, properties and applications. *J Magn Magn Mater*, 51(3): 167-174.
- Alfredo, R.V., Guevara, H.J., Ayala, H.A., dan Sanchez, L. (2020). Synthesis and characterization of magnetite nanoparticles for photocatalysis of nitrobenzene. *Journal of Saudi Chemical Society*, 24(2): 223-235.
- Al-Hakkani, M.F. (2020). Biogenic copper nanoparticles and their applications: A review. *SN applied Sciences*, 2(12): 1-20.
- Almessiere, M.A., Güner, S., Sertkol, M., Demir Korkmaz, A., Baykal, A., Auwal, I.A., Shirsath, S.E., Slimani, Y., dan Hassan, M. (2021). Comparative study of sonochemically and hydrothermally synthesized  $\text{Mn}_{0.5}\text{Zn}_{0.5}\text{Sm}_x\text{Eu}_x\text{Fe}_{2-2x}\text{O}_4$  nanoparticles: Structural, optical and magnetic properties. *Nano-Structures and Nano-Objects*, 2(8): 345-765.
- Alves, L.M., Leitão, P.M.F., dan Martins, P.A.F. (2014). Elastomer-assisted compression beading of tubes. *Proc Inst Mech Eng Part B J Eng Manuf*, 22(8): 744–756.
- Andersen, H.L., Saura-Múzquiz, M., Granados-Mirallas, C., Canévet, E., Lock, N.,

- dan Christensen, M. (2018). Crystalline and magnetic structure-property relationship in spinel ferrite nanoparticles, *Nanoscale*, 1(20): 14902–14914.
- Andrade, N.F., Lima, A.B., Wilson, R.R.Y.O.V., Nicacio, T.C.N., Bomio, M.R.D., dan Motta, F. V. (2022). Heterostructures obtained by ultrasonic methods for photocatalytic application: *A review Mater Sci Semicond Process*, 13(9): 106-311.
- Armynah, B., Hajar, S., Rahmat, R., Fahri, A.N., Gareso, P.L., Heryanto, H., dan Tahir, D. (2022). Structural Properties and Degradation Efficiency Photocatalyst-based Composite Titanium Dioxide/Activated Carbon by Charge Trap System for Groundwater Reach Phenol Treatment. *Arab J Sci Eng*, 2(21): 109-116
- Asuha, S., Zhou, X. G., dan Zhao, S. (2010). Adsorption of methyl orange and Cr(VI) on mesoporous  $\text{TiO}_2$  prepared by hydrothermal method. *Journal of Hazardous Materials*, 1(81): 204-210.
- Atacan, K., Güy, N., dan Çakar, S. (2018). Preparation and antibacterial activity of solvothermal synthesized  $\text{ZnFe}_2\text{O}_4/\text{Ag-TiO}_2$  nanocomposite. *Sak Univ J Sci*, 2(32): 1–1.
- Azam, M., Adeela, N., Khan, U., Riaz, S., Iqbal, M., dan Naseem, S. (2017). Structural and magnetic investigations of Cr substituted  $\text{NiFe}_2\text{O}_4$  nanostructures. *J Alloys Compd*, 6(98): 228–233.
- Balakhrisnan, A., Gaware, J.G., dan Chintala, M. (2023). Heterojunction photocatalysts for the removal of nitrophenol: A systematic review. *Chem Soc Rev*, 3(10): 136-365.
- Behrad, F., Farimani, M., Shahahmasebi, N., Roknabadi, M., dan Karimipour, M. (2015). Synthesis and characterization of  $\text{Fe}_3\text{O}_4/\text{TiO}_2$  magnetic and photocatalyst bifunctional composite with superparamagnetic performance. *European Physical Journal Plus*, 130(7).
- Belay., Kassa., dan Akeza Hayelom. (2014). Removal of Methyl Orange from

Aqueous Solutions Using Thermally Treated Egg Shell (Locally Available and Low Cost Biosorbent). *International Journal of Innovation and Scientific Research*, 8(23): 43–49.

Callister, W. D. (2007), *Materials Science and Engineering*, John Wiley & Sons, Inc., Amerika Serikat.

Castro, P.B. de, Terashima, K., Yamamoto, T.D., Hou, Z., Iwasaki, S., Matsumoto, R., Adachi, S., Saito, Y., Song, P., Takeya, H., dan Takano, Y. (2020). Machine-learning-guided discovery of the gigantic magnetocaloric effect in  $\text{HoB}_2$  near the hydrogen liquefaction temperature. *NPG Asia Mater*, 7(43) 12-23.

Chandrika, M., Ravindra, A. V., Rajesh, C., Ramarao, S.D., dan Ju, S. (2019). Studies on structural and optical properties of nano  $\text{ZnFe}_2\text{O}_4$  and  $\text{ZnFe}_2\text{O}_4\text{-TiO}_2$  composite synthesized by co-precipitation route. *Mater Chem Phys*, 2(30): 107–113.

Chen, R., Ding, S., Wang, B., dan Ren, X. (2022). Preparation of  $\text{ZnFe}_2\text{O}_4@\text{TiO}_2$  Novel Core-Shell Photocatalyst by Ultrasonic Method and Its Photocatalytic Degradation Activity. *Coatings*, 4(12): 12-34.

Choudhury B., dan Choudhury A. (2012). Dopant induced changes in structural and optical properties of  $\text{Cr}^{3+}$  doped  $\text{TiO}_2$  nanoparticles. *Material Chemistry and Physics*, 1(32): 1112-1118.

Coey, J. M. D. (2009). Magnetism and Magnetic Materials, *Cambridge University Press*, Cambridge, Inggris.

Coromelci, C., Neamtu, M., Ignat, M., Samoila, P., Zaltariov, M.F., dan Palamaru, M. (2022). Ultrasound assisted synthesis of heterostructured  $\text{TiO}_2/\text{ZnFe}_2\text{O}_4$  and  $\text{TiO}_2/\text{ZnFeO}_4$  systems as tunable photocatalysts for efficient organic pollutants removal. *Ceram Int*, 4(8): 4829–4840.

Cullity, B. D., dan Graham, C. D. (2009). Introduction to Magnetic Materials, Second Edition. *IEEE Press*, John Wiley & Sons, Inc., Amerika Serikat.

Dagher, S., Soliman, A., Ziout, A., Tit, N., Hilal-Alnaqbi, A., Khashan, S.,

- Alnaimat, F., dan Qudeiri, J.A. (2018). Photocatalytic removal of methylene blue using titania- and silica-coated magnetic nanoparticles. *Mater Res Express*, 9(12): 5-13.
- Dávila, J.L., Neto, P.I., Noritomi, P.Y., Coelho, R.T., dan Silva, J.V.L. (2020). Hybrid manufacturing: a review of the synergy between directed energy deposition and subtractive processes. *Int J Adv Manuf Technol*, 1(10): 3377–3390.
- Dinari, M., dan Haghighi, A. (2017). Surface modification of  $\text{TiO}_2$  nanoparticle by three dimensional silane coupling agent and preparation of polyamide/modified-  $\text{TiO}_2$  nanocomposites for removal of Cr (VI) from aqueous solutions. *Prog Org*, 1(10): 24–34.
- Ding, L., Xiong, T., Zhao, Z., Liao, J., dan Zhang, Y. (2022). In-situ synthesis of  $\text{Al}_2\text{O}_3\text{-TiO}_2$  nanocomposite with enhanced adsorption performance to uranium(VI) from aqueous solution. *Int J Adv Manuf Technol*, 3(62): 119-971.
- Dong, Y., Duchesne, P., Mohan, A., Ghuman, K.K., Kant, P., Hurtado, L., Ulmer, U., Loh, J.Y.Y., Tountas, A.A., Wang, L., Jelle, A., Xia, M., Dittmeyer, R., dan Ozin, G.A. (2020). Shining light on  $\text{CO}_2$ : From materials discovery to photocatalyst, photoreactor and process engineering. *Chem Soc Rev*, 4(5): 49-67.
- Dra, A.F. (2017). Fundamental of magnetism, *Angewandte Chemie International Edition*, 6(11), 3(42): 951–952.
- Draz, M.A., El-Maghrabi, H.H., Soliman, F.S., Selim, H., Razik, A.A., Amin, A.E. sayed, Moustafa, Y.M., Hamdy, A., dan Nada, A.A. (2021). Large scale hybrid magnetic  $\text{ZnFe}_2\text{O}_4/\text{TiO}_2$  nanocomposite with highly photocatalytic activity for water splitting. *J. Nanoparticle Res*, 12(45): 23-45.
- Du, J., Zhang, B., Li, J., dan Lai, B. (2020). Decontamination of heavy metal complexes by advanced oxidation processes: A review *Chinese Chem Lett*, 3(12): 2575–2582.
- El Messaoudi, N., El Khomri, M., Chegini, Z.G., Bouich, A., Dbik, A., Bentahar,

- S., Labjar, N., Iqbal, M., Jada, A., dan Lacherai, A. (2022). Dye removal from aqueous solution using nanocomposite synthesized from oxalic acid-modified agricultural solid waste and  $\text{ZnFe}_2\text{O}_4$  nanoparticles. *Nanotechnol Environ. Eng*, 7(12): 797–811.
- El Qada, E.N., Allen, S.J., dan Walker, G.M. (2006). Adsorption of Methylene Blue onto activated carbon produced from steam activated bituminous coal: A study of equilibrium adsorption isotherm. *Chem Eng J*, 1(24): 103–110.
- Elfanaoui, A., Elhamri, E., Boukaddat, L., Ihlal, A., Bouabid, K., Laanab, L., Taleb, A., dan Portier, X. (2011). Optical and structural properties of  $\text{TiO}_2$  thin films prepared by sol-gel spin coating. *Int J. Hydrogen Energy*, 3(6): 130–4133.
- Evtushenko, Y.M., romashkin, S.V., Trofimov, N.S., dan Chekhlova, T.K. (2015). Optical Properties of  $\text{TiO}_2$  Thin Films. *Physics Procedia*, 12(73): 100–107.
- Ferdosi, E., H. Bahiraei., dan D. Ghanbari. (2019). Investigation the Photocatalytic Activity of  $\text{CoFe}_2\text{O}_4/\text{ZnO}$  and  $\text{CoFe}_2\text{O}_4/\text{ZnO}/\text{Ag}$  Nanocomposites Purification of Dye Pollutants. *Separation and Purification Technology*, 12(34): 35-39
- Gadd, G.M. (2009). Biosorption: Critical review of scientific rationale, environmental importance and significance for pollution treatment. *J. Chem Technol Biotechnol*, 8(41): 13–28.
- Gázquez, M.J., Bolívar, J.P., dan Tenorio, R., Vaca, F. (2014). A Review of the Production Cycle of Titanium Dioxide Pigment. *Mater Sci Appl*, 2(15): 441–458.
- Gohain, N. (2008). Studies on The Structure and Function of Phenazine Modifying Enzymes PhzM and PhzS Involved in The Biosynthesis of Pyocyanin. *Phd Thesis*.
- Hankare, P., Jadhav, S., Sankpal, U. B., Chavan, S. S., Waghmare, K. J., dan Cgougele, B. K. (2009). Synthesis, characterization and effect of sintering temperature on magnetic properties of  $\text{MgNi}$  ferrite prepared by coprecipitation method, *Journal of Alloys and Coumpounds*, 4(75): 926- 929.

- Hendrasarie, N., dan Maria, S.H. (2021). Combining grease trap and Moringa Oleifera as adsorbent to treat wastewater restaurant. *South African J. Chem Eng*, 3(71): 196–205.
- Houshiar, Mahboubeh, Zebhi, F., Razi, Z. J., Alidoust, A., dan Askari, Z. (2014), Synthesis of Cobalt Ferrite ( $\text{CoFe}_2\text{O}_4$ ) Nanoparticles Using Combustion, Coprecipitation, and Precipitation Methods: A Comparison Study of Size, Structural, and Magnetic Properties, *Journal of Magnetism and Magnetic Materials*, 3(71): 43–48.
- Hu, J., Ma, Y., Kan, X., Liu, C., Zhang, X., Rao, R., Wang, M., dan Zheng, G. (2020). Investigations of Co substitution on the structural and magnetic properties of Ni-Zn spinel ferrite. *J. Magn Magn Mater*, 5(13): 167–200.
- Istiqomah, N.I., Muzakki, A.T., Nofrianti, A., Suharyadi, E., Kato, T., dan Iwata, S. (2020). The effect of silica on photocatalytic degradation of methylene blue using silica-coated nzn ferrite nanoparticles. *Key Eng Mater*, 8(55): 268–273.
- Jenita Rani, G., Jothi Rajan, M.A., dan Gnana kumar, G. (2017). Reduced graphene oxide/ $\text{ZnFe}_2\text{O}_4$  nanocomposite as an efficient catalyst for the photocatalytic degradation of methylene blue dye. *Res Chem Intermed*, 4(31): 2669–2690.
- Jeyakumar, R. P. Suresh., dan V. Chandrasekaran. (2014). Adsorption of Lead (II) Ions by Activated Carbons Prepared from Marine Green Algae: Equilibrium and Kinetics Studies. *International Journal of Industrial Chemistry*, 5(12): 1–9.
- Jiles, D. (1998), Introduction to Magnetism and Magnetic Materials, *Chapman and Hall*, Amerika Serikat.
- Joo, J., Ye, Y., Kim, D., Lee, J., dan Jeon, S. (2013). Magnetically recoverable hybrid  $\text{TiO}_2$  nanocrystal clusters with enhanced photocatalytic activity. *Materials Letters*, 9(31): 141–144.
- Kadam, A. N., Bhopate, D. P., Kondalkar, V. V., Majhi, S. M., Bathula, C. D., Tran, A. V., dan Lee, S. W. (2018). Facile synthesis of Ag-ZnO composite

nanostructures with enhanced photocatalytic activity. *Journal of Industrial and Engineering Chemistry*, 6(12): 78–86.

Khan, M. A., Al-Oufi, M., Tossef, A., Al-Salik, Y., dan Idriss, H. (2015). On the role of  $\text{ZnFe}_2\text{O}_4/\text{TiO}_2$  for the photocatalytic hydrogen production from water in the presence of glycerol. *Catalysis, Structure and Reactivity*, 2(3): 192–200.

Khashan, S., Dagher, S., Tit, N., Alazzam, A., dan Obaidat, I. (2017). Novel method for synthesis of  $\text{Fe}_3\text{O}_4/\text{TiO}_2$  composite nanoparticles. *Surface and Coatings Technology*, 3(22): 92–98.

Kombaiah, K., Vijaya, J.J., Kennedy, L.J., dan Kaviyarasu, K. (2019). Catalytic studies of  $\text{NiFe}_2\text{O}_4$  nanoparticles prepared by conventional and microwave combustion method. *Mater Chem Phys*, 2(21): 11–28.

Kubiak, A., Kubacka, M., Gabala, E., Dobrowolska, A., Synoradzki, K., Siwinska., Ciesielczuk, K., Czaczyk, K., dan Jesionowski, T. (2020). Hydrothermally assisted fabrication of  $\text{TiO}_2\text{-Fe}_3\text{O}_4$  composite materials and their antibacterial activity. *Materials*, 13(21): 1–23.

Kusumaningtyas, V.A., dan Syarif, D.G. (2021). Synthesis of  $\text{TiO}_2\text{-NiFe}_2\text{O}_4$  nanocomposites using coprecipitation method as photocatalyst for methylene blue removal. *IOP Conf Ser Earth Environ Sci*. 12(46): 8-82.

Leng, P.H., Naseri, M.G., Saison, E., Shaari, A.H., dan Kamaruddin, M.A. (2013). Synthesis and Characterization of Ni-Zn ferrite Nanoparticles ( $\text{Ni}_{0.25}\text{Zn}_{0.75}\text{Fe}_2\text{O}_4$ ) by Thermal Treatment Method, *Advances in Nanoparticles*, 3 (2): 378-383.

Li, D., Li, Y., Pan, D., Zhang, Z., dan Choi, C.J. (2019). Prospect and status of iron-based rare-earth-free permanent magnetic materials. *J Magn Magn Mater*, 4(69): 535–544.

Li, Y., dan Jin, R. (2020). Seeing Ligands on Nanoclusters and in Their Assemblies by X-ray Crystallography: Atomically Precise Nanochemistry and beyond. *J. Am Chem Soc*, 1(42): 13627–13644.



- Liang, M., dan Ding, S. (2018). Synthesis of Thermostable Au@ZnO Core-Shell Nanorods with Efficient Visible-Light Photocatalytic Activity, *Materials Letters*, 2(17): 255–58.
- Liu, G.G., Zhang, X.Z., Xu, Y.J., Niu, X.S., Zheng, L.Q., dan Ding, X.J. (2004). Effect of  $\text{ZnFe}_2\text{O}_4$  doping on the photocatalytic activity of  $\text{TiO}_2$ . *Chemosphere*, 5(52): 1287–1291.
- Liu, S., Yu, B., Wang, S., Shen, Y., dan Cong, H. (2020). Preparation, surface functionalization and application of  $\text{Fe}_3\text{O}_4$  magnetic nanoparticles. *Advances in Colloid and Interface Science*, 2(81): 102-165.
- Loan, N. T., Nguyen, T., Nguyen, T. H., dan Nguyen, T. (2019).  $\text{CoFe}_2\text{O}_4$  Nanomaterials: Effect of Annealing Temperature on Characterization, Magnetic, Photocatalytic, and Photo-Fenton Properties, 1(2): 1–14.
- Lu, Z.L., Gao, P.Z., Ma, R.X., Sun, Y.K., dan Li, D.Y. (2016). Preparation, characterization and visible-light catalytic activity of core-shell structure  $\text{NiFe}_2\text{O}_4/\text{TiO}_2$  ferrite nanoparticles. *Key Eng Mater*, 6(80): 272–277.
- Ma, H.L., Yang, J.Y., Dai, Y., Zhang, Y.B., Lu, B., dan Ma, G.H. (2007). Raman study of phase transformation of  $\text{TiO}_2$  rutile single crystal irradiated by infrared femtosecond laser. *Appl Surf Sci*, 2(53): 7497–7500.
- Malega, F., Indrayana, I.P.T., dan Suharyadi, E. (2018). Synthesis and Characterization of the Microstructure and Functional Group Bond of  $\text{Fe}_3\text{O}_4$  Nanoparticles from Natural Iron Sand in Tobelo North Halmahera. *J. Ilm Pendidik Fis Al-Biruni*, 7(12): 129–138.
- Manikandan, A., Antony, S.A., Sridhar, R., Ramakrishna, S., dan Bououdina, M. (2015). A simple Combustion Synthesis and Optical Studies of Magnetic  $\text{Zn}_{1-x}\text{Ni}_x\text{Fe}_2\text{O}_4$  Nanostructures for Photoelectrochemical Application, *Journal of Nanoscience and Nanotechnology*, 15(23): 4948-4960.
- Mondal, Sudip, M. E. De Anda Reyes, dan Umapada Pal. (2017). Plasmon Induced Enhanced Photocatalytic Activity of Gold Loaded Hydroxyapatite Nanoparticles for Methylene Blue Degradation under Visible Light, *RSC*



*Advances* 7(14): 86–345.

- Mondal, B., Kundu, M., Mandal, S.P., Saha, R., Roy, U.K., Roychowdhury, A., dan Das, D. (2019). Sonochemically Synthesized Spin-Canted  $\text{CuFe}_2\text{O}_4$  Nanoparticles for Heterogeneous Green Catalytic Click Chemistry. *ACS Omega*, 4(12): 13845–13852.
- Moreno, L.M., Romero, C., Law, J.Y., Franco, V., Conde, A., Radulov, I.A., Maccari, F., Skokov, K.P., dan Gutfleisch, O. (2019). Tunable first order transition in  $\text{La}(\text{Fe,Cr,Si})_{13}$  compounds: Retaining magnetocaloric response despite a magnetic moment reduction. *Acta Mater*, 1(75): 406–414.
- Mustapha, S., Ndamitso, M.M., Abdulkareem, A.S., Tijani, J.O., Shuaib, D.T., Ajala, A.O., dan Mohammed, A.K. (2020). Application of  $\text{TiO}_2$  and  $\text{ZnO}$  nanoparticles immobilized on clay in wastewater treatment: a review, *Applied Water Science*. Springer International Publishing.
- Nabiyouni, G., dan Ghanbari, D. (2018). Simple preparation of magnetic, antibacterial and photo-catalyst  $\text{NiFe}_2\text{O}_4/\text{TiO}_2/\text{Pt}$  nanocomposites. *J. Nanostructures*, 2(28): 408–416.
- Naeem, M., Shah, N. A., Gul, I. H., dan Maqsood, A. (2009). Structural, Electrical and Magnetic Characterization of Ni-Mg Spinel Ferrite, *Journal of Alloys and Compounds*, 4(87): 739-743.
- Nazari, Y. dan Salem, S. (2019). Efficient photocatalytic methylene blue degradation by  $\text{Fe}_3\text{O}_4/\text{TiO}_2$  core/shell linked to graphene by aminopropyltrimethoxysilane. *Environmental Science and Pollution Research*, 26(24): 25359–25371.
- Nguyen, T.B., dan Doong, R.A. (2017). Heterostructured  $\text{ZnFe}_2\text{O}_4/\text{TiO}_2$  nanocomposites with a highly recyclable visible-light-response for bisphenol A degradation. *RSC Adv*, 7(12): 50006–50016.
- Nguyen, T.B., Huang, C.P., dan Doong, R. an. (2019). Photocatalytic degradation of bisphenol A over a  $\text{ZnFe}_2\text{O}_4/\text{TiO}_2$  nanocomposite under visible light. *Sci. Total Environ*, 6(46): 745–756.
- Niaki, Z.M., Ghorbani, M., dan Ghoreishi, S.A. (2021). Synthesis of

- $\text{ZnFe}_2\text{O}_4@\text{Uio-66}$  nanocomposite for the photocatalytic degradation of metronidazole antibiotic under visible light irradiation. *J. Environ Heal Sci Eng*, 2(19): 1583–1596.
- Njoroge, M.A., Kirimi, N.M., dan Kuria, K.P. (2021). Spinel ferrites gas sensors: a review of sensing parameters, mechanism and the effects of ion substitution. *Crit Rev Solid State Mater Sci*, 2(20): 1–30.
- Nohl, J. F., Farr, N. T. H., Sun, Y., Hughes, G. M., Cussen, S. A., dan Rodenburg, C. (2022). Low-voltage SEM of air-sensitive powders: From sample preparation to micro/nano analysis with secondary electron hyperspectral imaging. *Micron*, 156(March), 1(2): 103-234.
- Nunome, T., Irie, H., Sakamoto, N., Sakurai, O., Shinozaki, K., Suzuki, H., dan Wakiya, N. (2013). Magnetic and photocatalytic properties of n- and p-type  $\text{ZnFe}_2\text{O}_4$  particles synthesized using ultrasonic spray pyrolysis. *J. Ceram. Soc Japan* 1(21): 26–30.
- Pandey, A., Dalal, S., Dutta, S., dan Dixit, A. (2021). Structural characterization of polycrystalline thin films by X-ray diffraction techniques. *Journal of Materials Science: Materials in Electronics*, 3(21): 2-5.
- Piaskowski, K., Świdarska-Dąbrowska, R., dan Zarzycki, P.K. (2018). Dye removal from water and wastewater using various physical, chemical, and biological processes. *J. AOAC Int*, 1(11): 1371–1384.
- Polte, J. (2015). Fundamental growth principles of colloidal metal nanoparticles - a new perspective. *CrystEngComm*, 3(6): 6809–6830.
- Prakruthi, K., Ujwal, M.P., Yashas, S.R., Mahesh, B., Kumara Swamy, dan N., Shivaraju, H.P. (2022). Recent advances in photocatalytic remediation of emerging organic pollutants using semiconducting metal oxides: an overview. *Environ Sci Pollut Res*, 2(9): 4930–4957.
- Puri, R. K. dan Babbar, V. K. (1997). *Solid State Physics*, S. Chand & Company LTD, New Delhi, India.

- Rahman, S., Nadeem, K., Anis-Ur-Rehman, M., Mumtaz, M., Naeem, S., dan Letofsky, I. (2013). Structural and magnetic properties of ZnMg-ferrite nanoparticles prepared using the co-precipitation method. *Ceram Int*, 3(9): 5235–5239.
- Rajaratnam, S., Ganguly, U., dan Venkataramani, N. (2022). Impact of oxygen partial pressure on resistive switching characteristics of PLD deposited ZnFe<sub>2</sub>O<sub>4</sub> thin films for RRAM devices. *Ceram Int*, 4(8): 7876–7884.
- Rao, M., Wu, W., dan Yang, C. (2021). Recent progress on the enantioselective excited-state photoreactions by pre-arrangement of photosubstrate(s). *Green Synth. Catal.*
- Rao, R., Zhang, X., Sun, X., dan Wang, M., Ma, Y. (2020). Effects of Elemental Chemical State in NiFe<sub>2</sub>O<sub>4</sub>@TiO<sub>2</sub> on the Photocatalytic Performance. *J. Wuhan Univ Technol Mater Sci Ed*, 3(5): 320–326.
- Ravishankar, T. N., Banuprakash, G., dan de, M. (2022). Synthesis of Ag@TiO<sub>2</sub>/NiFe<sub>2</sub>O<sub>4</sub> ternary nanostructures and evaluation of their photocatalytic activities. *J Mater Sci Mater Electron*, 3(31): 23153–23173.
- Ravishankar, T N, Banuprakash, G., dan Vaz, M.D.O. (2022). Sintesis struktur nano terner Ag@TiO<sub>2</sub>/NiFe<sub>2</sub>O<sub>4</sub> dan evaluasi aktivitas fotokatalitiknya, 2(31): 23153–23173.
- Rodionovsa, P., Grabis, J., Krumina, A., Anorganik, I.K., Riga, U.T., dan Valdena, P. (2018). Sintesis Hidrotermal Berbantuan Gelombang Mikro dari ZnFe<sub>2</sub>O<sub>4</sub> / TiO<sub>2</sub> Properti Komposit dan Fotokatalitik, 7(88): 102–107.
- Rooney, C.M. (2005). Hitchhiker's guide to the T cell. *Nat. Med*, 1(11): 1051–1052.
- Sah, M.K., Edbey, K., EL-Hashani, A., Almshty, S., Mauro, L., Alomar, T.S., AlMasoud, N., dan Bhattarai, A. (2022). Exploring the Biosorption of Methylene Blue Dye onto Agricultural Products: A Critical Review. *Separations*, 3(12): 1–26.
- Sahebi, A.Z., Koushkbaghi, S., Pishnamazi, M., dan Askari, A. (2019). Jurnal

Internasional Makromolekul Biologis Sintesis nanofiber komposit selulosa asetat / kitosan / SWCNT /  $\text{Fe}_3\text{O}_4$  /  $\text{TiO}_2$  untuk menghilangkan Cr ( VI ), As ( V ), Methylene blue dan Congo red dari larutan air, 1(40): 1296–1304.

Sahoo, S.K., dan Hota, G. (2019). Amine-Functionalized GO Decorated with  $\text{ZnO-ZnFe}_2\text{O}_4$  Nanomaterials for Remediation of Cr(VI) from Water. *ACS Appl Nano Mater*, 2(21): 983–996.

Sathiyar, K., Bar-Ziv, R., Mendelson, O., dan Zidki, T. (2020). Controllable synthesis of  $\text{TiO}_2$  nanoparticles and their photocatalytic activity in dye degradation. *Mater Res. Bull*, 1(26): 110842.

Schwingenschlögl, U., Chroneos, A., Grimes, R. W. ., dan Schuster, C. (2012). Electronegativity and doping in semiconductors. *Journal of Applied Physics*, 3(12): 32-78.

Sertkol, M., Köseoğlu, Y., Baykal, A., Kavas, H., dan Basaran, A.C. (2009). Synthesis and Magnetic Characterization of  $\text{Zn}_{0.6}\text{Ni}_{0.4}\text{Fe}_2\text{O}_4$  Nanoparticles Via a Polyethylene Glycol-Assisted Hydrothermal Route, *Journal of Magnetism and Magnetic Materials*, 3(21): 157-162.

Shahid, Muhammad, Liu Jingling, Zahid Ali, Imran Shakir, Muhammad Farooq Warsi, Riffat Parveen f., dan Nadeem, M. (2013). Photocatalytic Degradation of Methylene Blue on Magnetically Separable  $\text{MgFe}_2\text{O}_4$  under Visible Light Irradiation. *Materials Chemistry and Physics*, 1(39): 566-571.

Shihong, X., Daolun, F., dan Wenfeng, S. (2009). Preparations and photocatalytic properties of visible-light-active zinc ferrite-doped  $\text{TiO}_2$  photocatalyst. *J Phys. Chem. C*, 1(13): 2463–2467.

Shen, T. (1994). Superparamagnetic Contrast Agents for Magnetic Resonance Imaging, *Doctoral Thesis*, Massachusetts Institute of Technology, Amerika Serikat.

Singh, B., dan Singh, A.K. (2018). Photodegradation of phenanthrene catalyzed by rGO sheets and disk like structures synthesized using sugar cane juice as a reducing agent. *Spectrochim. Acta - Part A Mol. Biomol Spectrosc*, 2(24):

603–610.

- Singh, R., dan Dutta, S. (2018). A review on  $\text{H}_2$  production through photocatalytic reactions using  $\text{TiO}_2/\text{TiO}_2$ -assisted catalysts. *Fuel*, 2(20): 607–620.
- Song, G., Xin, F., dan Yin, X. (2015). Photocatalytic reduction of carbon dioxide over  $\text{ZnFe}_2\text{O}_4/\text{TiO}_2$  nanobelts heterostructure in cyclohexanol. *J Colloid Interface Sci*, 4(42): 60–66.
- Sonu, Sharma, S., Dutta, V., Raizada, P., Hosseini, A., Thakur, V., Nguyen, V.H., Vanle, Q., dan Singh, P. (2021). An overview of heterojunctioned  $\text{ZnFe}_2\text{O}_4$  photocatalyst for enhanced oxidative water purification. *J Environ Chem Eng*, 9(12): 105812.
- Srinivas, Ch., Triupanyam, B.V., Satish, A., Seshubai, V., Sastry, D.L., dan Caltum, O.F. (2015), Effect of  $\text{Ni}^{2+}$  substitution on structural and magnetic properties of Ni-Zn ferrite nanoparticles. *Journal of Magnetism and Magnetic Materials*, 3(82): 15-19.
- Suharyadi, E., Muzakki, A., Istiqomah, N.I., Puspitarum, D.L., Purnama, B., dan Djuhana, D. (2022). Reusability of Photocatalytic  $\text{CoFe}_2\text{O}_4$  @ $\text{ZnO}$  Core–Shell Nanoparticles for Dye Degradation . *ECS J Solid State Sc. Technol*, 2(11): 023-034.
- Suleman, M., Manzoor, N., Sagir, M., Tahir, M.B., dan Nawaz, T. (2021). Fabrication of  $\text{ZnFe}_2\text{O}_4$  modified  $\text{TiO}_2$  hybrid composites for photocatalytic reduction of  $\text{CO}_2$  into methanol. *Fuel*, 28(5): 1192-06.
- Sun, M., Fu, X., Chen, K., dan Wang, H. (2020). Dual-Plasmonic Gold@Copper Sulfide Core-Shell Nanoparticles: Phase-Selective Synthesis and Multimodal Photothermal and Photocatalytic Behaviors. *ACS Appl Mater Interfaces*, 2(12): 46146–46161.
- Tamaddon, F., Mosslemin, M.H., Asadipour, A., Gharaghani, M.A., dan Nasiri, A. (2020). Microwave-assisted preparation of  $\text{ZnFe}_2\text{O}_4$ @methyl cellulose as a new nano-biomagnetic photocatalyst for photodegradation of metronidazole. *Int J Biol Macromol*, 1(54): 1036–1049.

- Tánori, O., Mendiola, E., Corrales, R., Cruz, X.M., Ibarra, K., dan Castillo, S.J. (2019). Obtaining nano structures of cobalt telluride by a simplified ion exchange reaction at aqueous solution. *Chalcogenide Lett*, 1(6): 57–61.
- Tolani, S.C., Golhar, A.R., dan Rewatkar, K.G. (2019). A review of morphological, structural behaviour and technological applications of ferrites. *AIP Conf Proc*, 2(35): 21-34.
- Utsev, J.T., Iwar, R.T., dan Ifyalem, K.J. (2020). Adsorption of Methylene Blue from Aqueous Solution onto Delonix regia Pod Activated Carbon: Batch Equilibrium Isotherm, Kinetic and Thermodynamic Studies. *J Mater Environ Sci*, 2(12): 1058–1078.
- Vaseem, M., Umar, A., dan Hahn, Y. (2010). ZnO Nanoparticles : Growth, Properties, and Applications, Metal Oxide Nanostructures and Their Applications.
- Wang, M.C., Huang, C.C., Cheung, C.H., Chen, C.Y., Tan, S.G., Huang, T.W., Zhao, Yue, Zhao, Yanfeng, Wu, G., Feng, Y.P., Wu, H.C., dan Chang, C.R. (2020). Prospects and Opportunities of 2D van der Waals Magnetic Systems. *Ann. Phys*, 5(32): 1–19.
- Xin, T., Ma, M., Zhang, H., Gu, J., Wang, S., Liu, M., dan Zhang, Q. (2014). A facile approach for the synthesis of magnetic separable  $\text{Fe}_3\text{O}_4/\text{TiO}_2$  core-shell nanocomposites as highly recyclable photocatalysts. *Applied Surface Science*, 2(88): 51–59.
- Xu, C. (2004). Modification of Superparamagnetic Nanoparticles for Biomedical Applications, *Ph.D.Dissertation, M.Phil.*, Hong Kong University of Science & Technology, Hong Kong.
- Xu, Q., Feng, J., Li, L., Xiao, Q., dan Wang, J. (2015). Hollow  $\text{ZnFe}_2\text{O}_4/\text{TiO}_2$  composites: High-performance and recyclable visible-light photocatalyst. *J Alloys Compd*, 6(41): 110–118.
- Xu, X., Azad, A.K., dan Irvine, J.T.S. (2013). Photocatalytic  $\text{H}_2$  generation from spinels  $\text{ZnFe}_2\text{O}_4$ ,  $\text{ZnFeGaO}_4$  and  $\text{ZnGa}_2\text{O}_4$ . *Catal*, 1(99): 22–26.

- Yadav, N., Kumar, A., Rana, P. S., Rana, D. S., Arora, M., dan Pant, R. P. (2015). Finite Size Effect on  $\text{Sm}_{3+}$  doped  $\text{Mn}_{0.5}\text{Zn}_{0.5}\text{Sm}_x\text{Fe}_{2-x}\text{O}_4$  ( $0 \leq x \leq 0,5$ ) Ferrite Nanoparticles, *Ceramic International*, 2(41): 8623 – 8629.
- Yang, Y., Li, J., Yan, T., Zhu, R., Yan, L., dan Pei, Z. (2020). Adsorption and photocatalytic reduction of aqueous Cr(VI) by  $\text{Fe}_3\text{O}_4$ -ZnAl-layered double hydroxide/ $\text{TiO}_2$  composites. *J Colloid Interface Sci*, 5(62): 493–501.
- Yu, J., Tang, L., Pang, Y., Zeng, G., Wang, J., Deng, Y., Liu, Y., Feng, H., Chen, S., dan Ren, X. (2019). Magnetic nitrogen-doped sludge-derived biochar catalysts for persulfate activation: Internal electron transfer mechanism. *Chem Eng J*, 3(64): 146–159.
- Zhang, L., He, Y., Ye, P., Wu, Y., dan Wu, T. (2013). Visible light photocatalytic activities of  $\text{ZnFe}_2\text{O}_4$  loaded by  $\text{Ag}_3\text{VO}_4$  heterojunction composites. *J Alloys Compd*, 5(49): 105–113.
- Zhang, L., Ran, J., Qiao, S.Z., dan Jaroniec, M. (2019). Characterization of semiconductor photocatalysts. *Chem Soc Rev*, 4(8): 5184–5206.
- Zhang, W., Sun, A., Zhao, X., Pan, X., dan Han, Y. (2020). Structural, morphological and magnetic properties of  $\text{Mn}^{2+}$  ions substituted nanosized nickel-copper-cobalt ferrites through sol-gel auto-combustion method. *Mod Phys Lett*, 2(3): 3-4.
- Zhu, X., Zhang, F., Wang, M., Ding, J., Sun, S., Bao, J., dan Gao, C. (2014). Facile synthesis, structure and visible light photocatalytic activity of recyclable  $\text{ZnFe}_2\text{O}_4/\text{TiO}_2$ , *Appl Surf Sci*, 3(19): 83–89.