



DAFTAR PUSTAKA

- Abebe, L. S., Chen, X., and Sobsey, M. D., 2016, Chitosan Coagulation to Improve Microbial and Turbidity Removal by Ceramic Water Filtration for Household Drinking Water Treatment, *Int. J. Environ. Res. Public Health*, 13(3), 1-11.
- Adams, C. P., Walker, K. A., Obare, S. O., and Docherty, K. M., 2014, Size-Dependent Antimicrobial Effects of Novel Palladium Nanoparticles, *PLoS ONE*, 9(1), e85981.
- Aguilar, M. S., Esparza, R., and Rosas, G., 2019, Synthesis of Cu Nanoparticles by Chemical Reduction Method, *Trans. Nonferrous Met.*, 29(7), 1510-1515.
- Ahmed, M. B., Zhou, J. L., Ngo, H. H., Guo, W., Thomaidis, N. S., and Xu, J., 2017, Progress in the Biological and Chemical Treatment Technologies for Emerging Contaminant Removal from Wastewater: A Critical Review, *J. Hazard. Mater.*, 323, 274–298.
- Appu, M., Lian, Z., Zhao, D., and Huang, J., 2021, Biosynthesis of Chitosan-coated Iron Oxide (Fe_3O_4) Hybrid Nanocomposites from Leaf Extracts of *Brassica oleracea* L. and Study on Their Antibacterial Potentials, *3 Biotech*, 11(6), 1-14.
- Aranaz, I., Mengibar, M., Harris, R., Panos, I., Miralles, B., Acosta, N., Gales, G., and Heras, A., 2009, Functional Characterization of Chitin and Chitosan, *Curr. Chem. Biol.*, 3(2), 203-230.
- Bader, N., Benkhayal, A. A., and Zimmermann, B., 2014, Co-precipitation As A Sample Preparation Technique For Trace Element Analysis: An Overview, *Int. J. Chem. Sci.*, 12(2), 519-525.
- Berthe, T., Ratajczak, M., Clermont, O., Denamur, E. and Petit, F., Evidence for Coexistence of Distinct *E. coli* Populations in Various Aquatic Environments and Their Survival in Estuary Water, *Appl Environ Microbiol*, 79(15), 4684–4693.
- Bilalodin, 2010, Kajian Sifat Magnetik Dari Pasir Besi Pantai Logending Kabupaten Kebumen, *Molekul*, 5(2), 56-108.
- Bondarenko, O., Juganson, K., Ivask, A., Kasemets, K., Mortimer, M., and Kahru, A., 2013, Toxicity of Ag, CuO and ZnO Nanoparticles to Selected Environmentally Relevant Test Organisms and Mammalian Cells In Vitro: A Critical Review, *Arch. Toxicol.*, 87(7), 1181-1200.
- Brooks, G. F., Carroll, K. C., Butel, J. S., Morse, S. A., and Mietzner, T. A., 2013, *Jawetz, Melnick & Adelberg's Medical Microbiology 26th ed*, The McGraw-Hill Companies, New York.
- Castro-Munoz, R., 2020, The Role of New Inorganic Materials in Composite Membranes for Water Disinfection, *Membranes*, 10(05), 1-17.
- Chaki, S. H., Malek, T. J., Chaudhary, M. D., Tailor, J. P., and Deshpande, M. P., 2015, Magnetite Fe_3O_4 Nanoparticles Synthesis by Wet Chemical Reduction and Their Characterization, *Adv. Nat. Sci: Nanosci. Nanotechnol.*, 6(3), 035009.



- Chandra, S., Kumar, A., and Tomar, P. K., 2011, Synthesis and Characterization of Copper Nanoparticles by Reducing Agent, *J. Saudi Chem. Soc.*, 18(2), 149-153.
- Chiam, C. K., and Sarbatly, R., 2011, Purification of Aquacultural Water: Conventional and New Membrane-based Techniques, *Sep. Purif. Rev.*, 40(2), 126–160.
- Cho, S., Hiott, L. M., Barrett, J. B., McMillan, E. A., House, S. L., Humayoun, S. B., Adams, E. S., Jackson, C. R., and Frye, J. G., 2018, Prevalence and Characterization of *E. coli* Isolated from the Upper Oconee Watershed in Northeast Georgia, *PLoS ONE*, 13(5), e0197005.
- Choi, O., and Hu, Z., 2008, Size Dependent and Reactive Oxygen Species Related Nanosilver Toxicity to Nitrifying Bacteria, *Environ. Sci. Technol.*, 42(12), 4583-4588.
- Croxen, M. A., and Finlay, B. R., 2010, Molecular Mechanisms of *E. coli* Pathogenicity, *Nat Rev Microbiol*, 8(1), 26–38
- Darmo, S., and Sutanto, R., 2022, Influence of Particle Sizes on Mechanical and Magnetic Properties of Magnet Composite Fe₃O₄, *IJAEM*, 4(2), 1472-1476.
- Das, S., Ranjana, N., Misra, A. J., Suar, M., Mishra, A., Tamhankar, A. J., Lundborg, C. S., and Tripathy, S. K., 2017, Disinfection of the Water Borne Pathogens *E. coli* and *S. aureus* by Solar Photocatalysis Using Sonochemically Synthesized Reusable Ag@ZnO Core-Shell Nanoparticles, *Int. J. Environ. Res. Public Health*, 14(7), 1-16.
- Dhumal, J., Bandgar, S., Zipare, K., and Shahane, G., 2015, Fe₃O₄ Ferrofluid Nanoparticles: Synthesis and Rheological Behavior, *Mater. Chem. Phys.*, 1(2), 141-145.
- Divya, K., Vijayan, S., George, T. K., and Jisha, M. S., 2017, Antimicrobial Properties of Chitosan Nanoparticles: Mode of Action and Factors Affecting Activity, *Fibers Polym.*, 18, 221-230.
- Fahimirad, S., Fahimirad, Z., and Sillanpaa, M., 2021, Efficient Removal of Water Bacteria and Viruses Using Electrospun Nanofibers, *Sci. Total Environ.*, 751(2021), 141673.
- Fahmiati, Nuryono, and Suyanta, 2017, Characteristics of Iron Sand Magnetic Material from Bugel Beach, Kulon Progo, Yogyakarta, *IOP Conf. Ser.: Mater. Sci. Eng.*, 172, 012020.
- Fayaz, A. M., Girilal, M., Rahman, M., Venkatesan, R., and Kalaichelvan, P. T., 2011, *Prossess Biochem*, 46(10), 1958-1962.
- Giakisikli, G., and Anthemidis A. N., 2013, Magnetic Materials as Sorbents for Metal/Metalloid Preconcentration and/or Separation: A Review, *Anal Chim Acta*, 789, 1-16.
- González-Martínez, E., Pérez, A. G., González-Martínez, D. A., Águila, C. R. D., Urbina, E. C., Ramírez, D. U., and Yee-Madeira, H., 2020, Chitosan-coated Magnetic Nanoparticles; Exploring Their Potentialities for DNA and Cu(II) Recovery, *Inorg. Nano-Met. Chem*, 51(8), 1098-1107.
- Gouyau, J., Duval, R. E., Boudier, A., and Lamouroux, E., 2021, Investigation of Nanoparticle Metallic Core Antibacterial Activity: Gold and Silver



- Nanoparticles against *Escherichia coli* and *Staphylococcus aureus*, *Int J Mol Sci.*, 22(4), 1905.
- Granata, G., Yamaoka, T., Pagnanelli, F., and Fuwa, A., 2016, Study of the Synthesis of Copper Nanoparticles: The Role of Capping and Kinetic Towards Control of Particle Size and Stability, *J. Nanoparticle Res.*, 18(133), 1-12.
- Gritsch, L., Lovell, C., Goldmann, W. H., and Boccaccini, A. R., 2018, Fabrication and Characterization of Copper(II)-Chitosan Complexes as Antibiotic-free Antibacterial Biomaterial, *Carbohydr. Polym.*, 179(1), 370-378.
- Harris, L. G., Foster, S. J., and Richards, R. G., 2002, An Introduction to *S. Aureus*, and Techniques For Identifying and Quantifying *S. Aureus* Adhesins in Relation to Biomaterials: Review, *Eur. Cells Mater.*, 4, 39-60.
- Hatiboruan, D., Devi, D. Y., Namsa, N. D., and Nath, P., 2020, Turbidimetric Analysis of Growth Kinetics of Bacteria in the Laboratory Environment Using Smartphone, *J. Biophotonics.*, 13(4), e201960159.
- Husain, S., Irfansyah, M., Haryanti, N. H., Suryajaya, S., Arjo, S., and Maddu, A., 2019, Synthesis and Characterization of Fe₃O₄ Magnetic Nanoparticles From Iron Ore, *J. Phys.: Conf. Ser.*, 1242(1), 012021.
- Ibrahim, S., Yunus, M. A. M., and Khairi, M. T. M., 2013, Turbidity Measurement Using An Optical Tomography System, *Internat. J. Sci. Eng.*, 5(2), 66-72.
- Ilmi, M. M., Nurdini, N., Maryanti, E., Setiawan, P., and Ismunandar, 2021, X-ray Diffraction Peak Profile Analysis for Determination of Microstructural Properties of Hematite (Fe₂O₃), *J. Res. Dev. Nanotechnol.*, 1, 11-17.
- Indira, T. K., and Lakshmi, P. K., 2010, Magnetic Nanoparticles: A Review, *Int. J. Pharm. Sci. Nanotech*, 3(3), 1035-1043.
- Ipa, S. H. M., Kubangun, S. H., Bijaksana, S., Dahrin, D., and Hasanah, U., 2018, Characterization of Magnetic Properties of the Coastal Sand Deposits in South Beach of Manokwari, West Papua, *J. Nat. Scien. & Math. Res.*, 4(2), 33-40.
- Islam, S., Bhuiyan, M. A. R., and Islam, M. N., 2017, Chitin and Chitosan: Structure, Properties and Applications in Biomedical Engineering, *J Polym Environ*, 25, 854–866.
- Jang, J., Nur, H.-G., Sadowsky, M. J., Byappanahalli, M. N., Yan, T., and Ishii, S., 2017, Environmental *E. coli*: Ecology and Public Health Implication—A Review, *J. Appl. Microbiol.*, 123(3), 570-581.
- Kaper, J. B., Nataro, J. P., and Mobley, H. L. T., 2004, Pathogenic *E. coli*, *Nat Rev Microbiol*, 2, 123– 140.
- Karatas, A., and Karatas, E., 2016, Environmental Education as A Solution Tool for the Prevention of Water Pollution, *J. Surv. Fish. Sci.*, 3(1), 61-70.
- Khaing, T. T., dan Naung, S. H. H., 2020, Synthesis and Characterization of Copper Nanoparticles by Chemical Reduction Method, *IJRRIAR*, 4(5), 37-43.
- Khan, A., Rashid, A., Younas, R., and Chong, R., 2016, A Chemical Reduction Approach To the Synthesis of Copper Nanoparticles, *Int. Nano Lett.*, 6, 21-26.



- Kumar, A., Jena, P. K., Behera, S., Lockey, R. F., Mohapatra, S., and Mohapatra, S., 2010, Multifunctional Magnetic Nanoparticles for Targeted Delivery, *Nanomed.: Nanotechnol. Biol. Med.*, 6(2010), 64-69.
- Kumar, B. V., Taj, Y. P, and Reddy, K. H., 2020, Synthesis and Characterization of Surfactant Capped Copper Nanoparticles Using Natural Vitamin, *Asian J. Chem.*, 32(9), 2130-2134.
- Kumar, M. N. V. R., Muzzarelli, R. A. A., Muzzarelli, C., Sashiwa, H., and Domb, A. J., 2004, Chitosan Chemistry and Pharmaceutical Perspectives, *Chem. Rev.*, 104(12), 6017–6084.
- Kurita, K., 2001, Controlled Functionalization of the Polysaccharide Chitin, *Prog. Polym. Sci.*, 26(9), 1921-1971.
- Kusnadi, Purgiyanti, Kumoro, A. C., and Legowo, A. M., 2022, The antioxidant and antibacterial activities of chitosan extract from white shrimp shell (*Penaeus indicus*) in the waters north of Brebes, Indonesia, *Biodiversitas*, 23(3), 1267-1272.
- Laurent, S., Forge, D., Port, M., Roch, A., Robic, C., Eist, L. V., and Muller, R. N., 2010, Magnetic Iron Oxide nanoparticles: Synthesis, Stabilization, Vectorization, Physicochemical Characterizations, and Biological Applications, *Chem. Rev.*, 110(4), 2574–2574.
- Li, D., Chen, S., Zhang, K., Gao, N., Zhang, M., Albasher, G., Shi, J., and Wang, C., 2021, The Interaction of Ag₂O Nanoparticles with *Escherichia coli*: Inhibition–Sterilization Process, *Sci. Rep.*, 11(1), 1703.
- Liu, Q., Yasunami, T., Kuruda, K., and Okido, M., 2012, Preparation of Cu Nanoparticles With Ascorbic Acid by Aqueous Solution Reduction Method, *Trans. Nonferrous Met. Soc. China*, 22(9), 2198-2203.
- Liu, X. F., Guan, Y. L., Yang, D. Z., Li, Z., Yao, K. D., 2001, Antibacterial Action of Chitosan and Carboxymethylated Chitosan, *J. Appl. Polym. Sci.*, 79(7), 1324-1335.
- Liu, Z., Wang, K., Wang, T., Wang, Y., and Ge, Y., 2022, Copper Nanoparticles Supported on Polyethylene Glycol-modified Magnetic Fe₃O₄ Nanoparticles: Its Anti-human Gastric Cancer Investigation, *Arab. J. Chem.*, 15(1), 103523.
- Longano, D., Ditaranto, N., Sabbatini, L., Torsi, L., and Cioffi, N., 2011, Synthesis and Antimicrobial Activity of Copper Nanomaterials, *Nano-Antimicrobials*, 85-117.
- Loureco, F. R., and Pento, T. J. A., 2011, Antibiotic Microbial Assay Using Kinetic-reading Microplate System, *Braz. J. Pharm. Sci.*, 47(3), 573-584.
- Lu, R., Hao, W., Kong, L., Zhao, K., Bai, H., and Liu, Z., 2023, A Simple Method For The Synthesis of Copper Nanoparticles From Metastable Intermediates, *RSC Adv.*, 13(21), 14361-14369.
- Lu, Y., Song, S., Wang, R., Liu, Z., Meng, J., Sweetman, A., Jenkins, A., Ferrier, R., Li, H., Luo, W., and Wang, Y., Impacts of Soil and Water Pollution on Food Safety and Health Risks in China, *Environ. Int.*, 77(2015), 5-15.
- Lugo, J. L., Lugo, E. R., and Puente, M., 2021, A Systematic Review of Microorganisms as Indicators of Recreational Water Quality in Natural and Drinking Water Systems, *J Water Health*, 19(1), 20-28.



- Lustriane, C., Dwivany, F. M., Suendo, V., and Reza, M., 2018, Effect of Chitosan and Chitosan-nanoparticles on Post Harvest Quality of Banana Fruits, *J Plant Biotechnol*, 45(1), 36-44.
- Mahmoodi, S., Elmi, A., and Hallaj-Nezhadi, S., 2018, Copper Nanoparticles As Antibacterial Agents, *J Mol Pharm Org Process Res*, 6(1), 1000140.
- Mahmoud, M. G., El Kady, E. M., and Asker, M. S., 2019, Chitin, Chitosan and Glucan, Properties and Applications, *World j. agric. sci.*, 3(1), 1-19.
- Maia, M. R. G., Marques, S., Cabrita, A. R. J., Wallace, R. J., Thompson, G., Fonseca, A. J. M., and Oliveira, H. M., 2016, Simple and Versatile Turbidimetric Monitoring of Bacterial Growth in Liquid Cultures Using a Customized 3D Printed Culture Tube Holder and a Miniaturized Spectrophotometer: Application to Facultative and Strictly Anaerobic Bacteria, *Front Microbiol*, 7, 1381.
- Manikandan., A., and Sathiyabama, M., 2015, Green Synthesis of Copper-Chitosan Nanoparticles and Study of Its Antibacterial Activity, *J Nanomed Nanotechnol*, 6(1), 1000251.
- Martha, A. A., Permatasari, D. I., Dewi, E. R., Wijaya, N. A., Kunarti, E. S., Rusdiarso,, B., and Nuryono, 2022, Natural Magnetic Particles/Chitosan Impregnated with Silver Nanoparticles for Antibacterial Agents, *Indones. J. Chem.*, 22(3), 620-629.
- Menamo, D. S., Ayele, D. W., and Ali, M. T., 2017, Green Synthesis, Characterization, and Antibacterial Activity of Copper Nanoparticles Using L-Ascorbic Acid as A Reducing Agent, *Ethiop. J. Sci. & Technol.*, 10(3), 209-220.
- Mirhosseini, M., 2015, Synergistic Antibacterial Effect of Metal Oxid Nanoparticles and Ultrasound Stimulation, *J. Biol. Today's World*, 4(6), 138-144.
- Mody, V. V., Siwale, R., Singh, A., and Mody, H. R., 2010, Introduction of Metallic Nanoparticles, *J Pharm Bioallied Sci*, 2(4), 282-289.
- Montes-Duarte, G. G., Tostado-Blazquez, G., Castro, K. L. S., Araujo, J. R., Achete, C. A., Sanchez-Salas, J. L., and Campos-Delgado, J., 2021, *RSC Adv.*, 11(12), 6509-6516.
- Musa, A., Ahmad, M. B., Hussein, M. Z., Izham, S. M., Shameli, K., and Sani, H. A., 2016, Synthesis of Nanocrystalline Cellulose Stabilized Copper Nanoparticles, *J. Nanomater.*, 2016, 1-7.
- Mytilinaios, I., Salih, M., Schofield, H. K., and Lambert, R. J. W., 2012, Growth Curve Prediction from Optical Density Data, *Int. J. Food Microbiol.*, 154(3), 169-176.
- Nagy, A., Harrison, A., Sabbani, S., Munson Jr, R. S., Dutta, P. K., and Waldman, W. J., 2011, Silver Nanoparticles Embedded in Zeolite Membranes: Release of Silver Ions and Mechanism of Antibacterial Action, *Int J Nanomedicine*, 6, 1833-1852.
- Nandiyanto, A. B. D., Ragadhita, R., and Fiandini, M., 2023, Interpretation of Fourier Transform Infrared Spectra (FTIR): A Practical Approach in the Polymer/Plastic Thermal Decomposition, *IJoST*, 8(1), 113-126.



- Nowicki, S., deLaurent, Z. R., de Villiers, E. P., Githinji, G., and Charles, K. J., 2021, The Utility of *E. coli* as A Contamination Indicator for Rural Drinking Water: Evidence from Whole Genome Sequencing, *PLOS ONE*, 16(1): e0245910.
- Nugraha, P. A., Sari, S. P., Hidayati, W. N., Dewi, C. R., and Kusuma, D. Y., 2016, The Origin and Composition of Iron Sand Deposit in the Southern Coast of Yogyakarta, *AIP Conference Proceedings*, 1746(1), 020028.
- Nurayni, S., and Nofitasari, R. N., 2018, Characterization of Mineral Content of Iron Sand at Depok Beach, Sigandu Beach and Muara Beach in Batang Regency, *J. Nat. Scien. & Math. Res.*, 4(1), 23-26.
- Odonkor, S. T., and Ampofo, J. K., 2013, *E. coli* as An Indicator of Bacteriological Quality of Water: An Overview, *Microbiology Research*, 4(1), e2.
- Omura, Y., Shigemoto, M., Akiyama, T., Saimoto, H., Shigemasa, Y., Nakamura, I., and Tsuchido, T., 2003, Antimicrobial Activity of Chitosan with Different Degrees of Acetylation and Molecular Weights, *Biocontrol Sci.*, 8(1), 25-30.
- Oufakir, A., Khouchaf, L., Elaatmani, M., Zegzouti, A., Louarn, G., and Fraj, A. B., 2018, Study of Structural Short Order and Surface Changes of SiO₂ Compounds, *MATEC Web Conf.*, 149, 01041.
- Pedreira, A., Vázquez, J. A., and Garcia, M. R., 2022, Kinetics of Bacterial Adaptation, Growth, and Death at Didecyldimethylammonium Chloride sub-MIC Concentrations, *Front. Microbiol.*, 13, 758237.
- Permatasari, D. I., Rusdiarso, B., and Nuryono, N., 2022, Green Synthesis and Characterization of Natural Magnetic Particles/Chitosan Composite Material Impregnated with Copper Nanoparticles, *Solid State Phenom.*, 339, 19-27.
- Pham, X. N., Nguyen, T. P., Pham, T. N., Tran, T. T. N., and Tran, T. V. T., 2016, Synthesis and Characterization of Chitosan-coated Magnetite Nanoparticles and Their Application in Curcumin Drug Delivery, *Adv. Nat. Sci: Nanosci. Nanotechnol.*, 7(4), 045010.
- Phul, R., Kaur, C., Farooq, U., and Ahmad, T., 2018, Ascorbic Acid Assisted Synthesis , Characterization, and Catalytic Application of Copper Nanoparticles, *Material Sci & Eng Int J.*, 2(4), 90-94.
- Ponmurugan, P., Manjukarunambika, K., Elango, V., and Gnanamangai, B. M., 2016, Antifungal Activity of Biosynthesised Copper Nanoparticles Evaluated Against Red Root-Rot Disease in Tea Plants, *J. Exp. Nanosci.*, 11(13), 1019-1031.
- Pourmortazavi, S. M., Sahebi, H., Zandavar, H., and Mirsadeghi, S., 2019, Fabrication of Fe₃O₄ Nanoparticles Coated by Extracted Shrimp Peels Chitosan As Sustainable Adsorbents For Removal of Chromium Contaminates From Wastewater: The Design of Experiment, *Compos. B. Eng.*, 175, 107130.
- Prabhu, Y. T., Rao, K. V., Kumari, B. S., Kumar, V. S. S., and Pavani, T., 2015, Synthesis of Fe₃O₄ Nanoparticles and Its Antibacterial Application, *Int. Nano Lett.*, 5, 85-92.



- Prasdiantika, R., dan Susanto, 2020, Pencucian Material Magnetik Pasir Besi Lansilowo Menggunakan Larutan Asam Klorida, *Jurnal Teknosains*, 10(1), 75-85.
- Prasetyowati, R., Widiawati, D., Swastika, P. E., Ariswan, dan Warsono, 2021, Sintesis dan Karakterisasi Nanopartikel Magnetit (Fe_3O_4) Berbasis Pasir Besi Pantai Glagah Kulon Progo Dengan Metode Kopresipitasi Pada Berbagai Variasi Konsentrasi NH_4OH , *J. Sains Dasar*, 10(2), 57-61.
- Puspitarum, D. L., Safitri, G., Ardiyanti, H., and Anrokhil, M. S., 2019, Characteristics and Mineral Content of Lampung Tengah Ironsands, *JSAT*, 2(1), 192-196.
- Qu, J., Liu, G., Wang, Y., and Hong, R., 2010, Preparation of Fe_3O_4 -chitosan Nanoparticles Used For Hyperthermia, *Adv. Powder Technol.*, 21(4), 461-467.
- Raffi, M., Mehrwan, S., Bhatti, T. M., Akhter, J. I., Hameed, A., Yawar, W., and ul Hasan, M. M., 2010, Investigation Into the Antibacterial Behaviour of Copper Nanoparticles Against *E. coli*, *Ann. Microbiol.*, 60, 75-80.
- Ramyadevi, J., Jeyasubramanian, K., Marikani, A., Rajakumar, G., and Rahuman, A. A., Synthesis and Antimicrobial Activity of Copper Nanoparticles, *Mater. Lett.*, 71(2012), 114–116.
- Rehana, D., Mahendiran, D., Kumar, R. S., and Rahiman, A. K., 2017, Evaluation of Antioxidant and Anticancer Activity of Copper Oxide Nanoparticles Synthesized Using Medicinally Important Plant Extracts, *Biomed Pharmacother.*, 89, 1067-1077.
- Rianna, M., Sembiring, T., Situmorang, M., Kurniawan, C., Setiadi, E. A., Tetuko, A. P., Simbolon, S., Ginting, M., dan Sebayang, P., 2018, Preparation and Characterization of Natural Iron Sand From Kata Beach, Sumatera Barat Indonesia With High Energy Milling (HEM), *Jurnal Natural*, 18(2), 97-100.
- Rinaudo, M., Pavlov, G., and Desbrieres, J., 1999, Influence of Acetic Acid Concentration on the Solubilization of Chitosan, *Polymer*, 40(25), 7029-7032.
- Romanazzi, G., Gabler, F. M., Margosan, D., Mackey, B. E., and Smilanick, J. L., 2009, Effect of Chitosan Dissolved in Different Acids on Its Ability to Control Postharvest Gray Mold of Table Grape, *Phytopathology*, 99(9), 1028-1036.
- Rusianto, T., Wildan, M. W., Abraha, K., and Kusmono, 2012, The Potential of Iron Sand from the Coast South of Bantul Yogyakarta as Raw Ceramic Magnet Materials, *Jurnal Teknologi*, 5(1), 62-69.
- Sahariah, P., and Másson, M., 2017, Antimicrobial Chitosan and Chitosan Derivatives: A Review of the Structure-Activity Relationship, *Biomacromolecules*, 18(11), 3846-3868.
- Salsabila, S., Rohman, L., and Purwandari, E., 2020, Study of the Ferromagnetic Magnetite Resonance (Fe_3O_4) Forms of Thin Films Using Micromagnetic Simulation, *CERIMRE*, 3(1), 10-18.
- Sánchez-España, J., Ilín, A., and Yusta, I., 2022, Metallic Copper ($Cu[0]$) Obtained from Cu^{2+} -Rich Acidic Mine Waters by Two Different Reduction Methods: Crystallographic and Geochemical Aspects, *Minerals*, 12(3), 322.



- Sayoga, I. M. A., and Sujita, 2020, Characterization of Magnetic Properties of Ferric Oxide from Sekotong Beach Iron Sand West Lombok Indonesia, *WJAETS*, 5(2), 082-087.
- Simamora, P., Manullang, M., Munthe, J., and Rajagukguk, J., 2018, The Structural and Morphology Properties of $\text{Fe}_3\text{O}_4/\text{Ppy}$ Nanocomposite, *J. Phys.: Conf. Ser.*, 1120, 012063.
- Singh, B. P., Kumar, A., Areizaga-Martinez, H. I., Vega-Olivencia, C. A., and Tomar, M. S., 2017, Synthesis, Characterization, and Electrocatalytic Ability of $\gamma\text{-Fe}_2\text{O}_3$ Nanoparticles For Sensing Acetaminophen, *IJPAP*, 55(10), 722-728.
- Songping, W., Li, J., Jing, N., Zhenou, Z., and Song, L., 2007, Preparation of Ultra Fine Copper-Nickel Bimetallic Powders for Conductive Thick Film, *Intermetallics*, 15, 1316-1321.
- Thapaliya, D., Hellwig, E. J., Kadariya, J., Grenier, D., Jefferson, A. J., Dalman, M., Kennedy, K., DiPerna, M., Orihill, A., Taha, M., and Smith, T. C., 2017, Prevalence and Characterization of *S. aureus* and Methicillin-Resistant *S. aureus* on Public Recreational Beaches in Northeast Ohio, *GeoHealth*, 1(10), 320-332.
- Tiwari, D. K., Behari, J., and Sen, P., 2008, Application on Nanoparticles in Waste Water Treatment, *World Appl. Sci. J.*, 3(3), 417-433.
- Togibasa, O., Bijaksana, S., and Novala, G. C., 2018, Magnetic Properties of Iron Sand from the Tor River Estuary, Sarmi, Papua, *Geosciences*, 8(4), 113.
- Tokarek, K., Hueso, J. L., Kuśtrowski, P., Stochel, G., and Kyziol, A., 2013, Green Synthesis of Chitosan-Stabilized Copper Nanoparticles, *EurJIC*, 2013(8), 4940-4947.
- Topic, N., Cenov, A., Jozic, S., Glad, M., Mance, D., Lusic, D., Kapetanovic, D., Mance, D., dan Lusic, D. V., 2021, *S. aureus*-An Additional Parameter of Bathing Water Quality for Crowded Urban Beaches, *Int. J. Environ. Res. Public Health*, 18(10), 5234.
- Travan, A., Pelilo, C., Donati, I., Marsich, E., Benincasa, M., Scarpa, T., Semeraro, S., Turco, G., Gennaro, R., and Paoletti, S., 2009, Non-cytotoxic Silver Nanoparticle-Polysaccharide Nanocomposites with Antimicrobial Activity, *Biomacromolecules*, 10(6), 1429-1435.
- Trisno, K., Tono, K., dan Suarjana, I. G., K., 2019, Isolasi dan Identifikasi Bakteri *E. coli* dari Udara pada Rumah Potong Unggas Swasta di Kota Denpasar, *Indonesia Medicus Veterinus*, 8(5), 685-694.
- Turner, N. A., Sharma-Kuinkel, B. K., Maskarinec, S. A., Eichenberger, E. M., Shah, P. P., Carugati, M., Holland, T. L., and Fowler Jr, V. G., 2019, Methicili-resistant *S. aureus*: An Overview of Basic and Clinical Research, *Nat Rev Microbiol*, 17, 203–218.
- Unsoy, G., Yalcin, S., Khodadust, R., Gunduz, G., and Gunduz, U., 2012, Synthesis Optimization and Characterization of Chitosan-coated Iron Oxide Nanoparticles Produced for Biomedical Applications, *J Nanopart Res*, 14(11), 964.
- Urián, Y. A., Atoche-Medrano, J. J., Quispe, L. T., Felix, L. L., and Coaquira, J. A. H., 2021, Study of the Surface Properties and Particle-particle



- Interactions in Oleic Acid-coated Fe_3O_4 Nanoparticles, *J. Magn. Magn. Mater.*, 525(2021), 167686.
- Usman, M. S., Ibrahim, N. A., Shameli, K., Zainuddin, N., and Yunus, W. M. Z. W., 2012, Copper Nanoparticles Mediated by Chitosan: Synthesis and Characterization via Chemical Methods, *Molecules*, 17(12), 14928-14936.
- Usman, M. S., Zowalaty, M. E. L., Zainuddin, N., Salama, M., and Ibrahim, N. A., 2013, Synthesis, Characterization, and Antimicrobial Properties of Copper Nanoparticles, *Int. J. Nanomedicine*, 2013(8), 4467-4479.
- Varshney, R., Bhaduria, S., Gaur, M. S., and Pasricha, R., 2010, Characterization of Copper Nanoparticles Synthesized by A Novel Microbiological Method, *JOM*, 62(12), 102–104.
- Wang, X., Du, Y., Fan, L., Liu, H., and Hu, Y., 2005, Chitosan-metal Complexes As Antimicrobial Agent: Synthesis, Characterization and Structure-activity Study, *Polym. Bull.*, 55, 105-113.
- Wertheim, H. F., Melles, D. C., Vos, M. C., van Leeuwen, W., van Belkum, A., Verbrugh, H. A., Nouwen, J. L, 2005, The Role of Nasal Carriage in *S. aureus* Infections, *Lancet Infect Dis*, 5(12), 751–762.
- Wulandari, I. O., Santjojo, D. J. D. H., Shobirin, R. A., and Sabarudin, A., 2017, Characteristics and Magnetic Properties of Chitosan-coated Fe_3O_4 Nanoparticles Prepared by Ex-situ Co-precipitation Method, *Rasayan J. Chem.*, 10(4), 1348-1358.
- Yallapragada, V. V. B., Gowda, U., Wong, D., O'Faolain, L., Tangney, M., and Devarapu, G. C. R., 2019, ODX - A fitness Tracker-based Device for Continuous Bacterial Growth Monitoring, *Anal. Chem.*, 91(19), 12329-12335.
- Yang, K., Peng, H., Wen, Y., and Li, N., 2010, Re-examination of Characteristic FTIR Spectrum of Secondary Layer in Bilayer Oleic Acid-coated Fe_3O_4 Nanoparticles, *Appl. Surf. Sci.*, 256(10), 3093-3097.
- Zadvarzi, S. B., Khavarpour, M., Vahdat, S. M., Baghbanian, S. M., and Rad, A. S., 2021, Synthesis of $\text{Fe}_3\text{O}_4@\text{Chitosan}@\text{ZIF-8}$ Towards Removal of Malachite Green From Aqueous Solution: Theoretical and Experimental Studies, *Int. J. Biol. Macromol.*, 168, 428-441.
- Zain, N.M., Stapley, A.G.F., and Shama, G., 2014, Green Synthesis of Silver and Copper Nanoparticles Using Ascorbic Acid and Chitosan for Antimicrobial Applications, *Carbohydr. Polym.*, 112, 195–202.
- Zhang, X., Wang, W., Zhang, Y., Zeng, T., Jia, C., and Chang, L., 2018, Loading Cu-doped Magnesium Oxide onto Surface of Magnetic Nanoparticles to Prepare Magnetic Disinfectant with Enhanced Antibacterial Activity, *Colloids Surf. B*, 161, 433-441.