

DAFTAR PUSTAKA

- Abbad, S., Guergouri, K., Gazaout, S., Diebabra, S., Zertal, A., Barille, R., dan Zaabat, M. 2020. Effect of Silver Doping on The Photocatalytic Activity of TiO₂ Nanopowders Synthesized by The Sol-Gel Route. *Journal Environmental Chemistry and Engineering*, 8(3): 1-7. DOI: 10.1016/j.jece.2020.103718.
- Ahmed, S., Ara, G., and Susan, A.B.H. Green Nanomaterials for Photocatalytic Degradation of Toxic Organic Compounds. Review Article, *Current Pharmaceutical Biotechnology*, XXXX, XX, 1-27. DOI: 10.2174/1389201023666211231100843.
- Aichour, A., Djafer, K.H., and Zaghouane, B.H. 2021. Textile dyes removal from wastewater using recent promising composites: A review. *Algerian Journal of Chemical Engineering* 02: 49–65. DOI: 10.5281/zenodo.5451775.
- Alvand, M., Ma, Z., Kokate, R., Kumar, P.V., Pan, J., Amal, R., Lovell, E.C., and Jalili, A.R. 2024. Uncovering the role of vanadium-doped Ni₂P for low concentration urea oxidation. *Chemical Engineering Journal*, 500: 157130. DOI: 10.1016/j.cej.2024.157130.
- Amin, I.I., Wahab, A.W., Mukti, R.R., and Taba, P. 2023. Synthesis and characterization of zeolite type ANA and CAN framework by hydrothermal method of Mesawa natural plagioclase feldspar. *Applied Nanoscience*, pages 1-10. DOI:10.1007/s13204-022-02756-4.
- Amakiri, K.T., Angelis-Dimakis, A.R., and Canon, A.R. 2022. Recent advances, influencing factors, and future research prospects using photocatalytic process for produced water treatment. *Water Sci. Technol.* 85(3): 769–788. DOI: 10.2166/wst.2021.641.
- Anwar, D.I. 2011. Sintesis Komposit Fe-TiO₂-SiO₂ sebagai Fotokatalis Pada Degradasi Erionyl Yellow. Tesis. FMIPA, Universitas Gadjah Mada, Yogyakarta.
- Aslam, M., Ismail, I.M.I., Chandrasekaran, S., dan Hameed, A. 2014. Morphology-Controlled Bulk Synthesis of Disc-Shaped WO₃ Powder and Evolution of Its Photocatalytic Activity for The Degradation of Phenols. *Journal of Hazardous Material*, 276: 120-128. DOI: 10.1016/j.jhazmat.2014.05.022.
- Azizi, S.N., and Yousefpour, M. 2010. Synthesis of Zeolites NaA and Analcime Using Rice Husk Ash as Silica Source Without Using Organic Template. *Journal of Materials Science*, 45(20): 5692 - 5697. DOI: 10.1007/s10853-010-4637-7.
- Bairagi, S., and Ali, S.W. 2020. Conventional and Advanced Technologies for Wastewater Treatment. *Environ. Nanotechnol. Water Purif.*, 33–56. DOI: 10.1002/9781119641353.ch2.
- Bakar, F.A., and Foad, N.S.I.M. 2023. Synthesis of TiO₂ photocatalyst with tunable optical properties and exposed facet for textile wastewater treatment. *Results in Optics*, 13: 100545. DOI: 10.1016/j.rio.2023.100545.

- Bang, J.H., dan Suslick, K.S. 2010. Applications of Ultrasound to The Synthesis of Nanostructured Materials. *Advanced Materials*, 22(10): 1039-1059. DOI: 10.1002/adma.200904093.
- Berradi, M., Hsisou, R., Khudhair, M., Assouag, M., Cherkaoui, O., Bachiri, A.E., and Harfi, A.E. 2019. Textile finishing dyes and their impact on aquatic environs: a review. *Heliyon*, 5: e02711. Pages 1-11. DOI: 10.1016/j.heliyon.2019.e02711.
- Blicharz, E.G., Panek, R., Franus, M., and Franus, W. 2022. Mechanochemically Assisted Coal Fly Ash Conversion into Zeolite. *Materials*, 15, 7174. DOI: 10.3390/ma15207174.
- Botella, E.P., Valencia, S., and Rey, F. 2022. Zeolites in Adsorption Processes: State of the Art and Future Prospects. *Chemical Review*, 122: 17647-17695. DOI: 10.1021/acs.chemrev.2c00140.
- Bouasla, C., Samar, M.E.H., dan Ismail, F. 2010. Degradation of Methyl Violet 6B Dye by The Fenton Process. *Desalination*, 254: 35-41. DOI: 10.1016/j.desal.2009.12.017.
- Bourikas, K., Kordulis, C., dan Lycourghiotis, A. 2014. Titanium Dioxide (Anatase and Rutile): Surface Chemistry, Liquid-Solid Interface Chemistry, and Application. *Journal of Photocatalysis*, 6(2): 55-67. DOI: 10.1016/j.jpca.2014.05.011.
- Burhan, M., Wakil, M., and Ng, K.C. 2018. Energy distribution function-based universal adsorption isotherm model for all types of isotherm. *International Journal of Low-Carbon Technologies*, 13: 292–297. DOI: 10.1093/ijlct/cty031.
- Csaba, L., and Buia, G. 2009. Zeolites – “The Stones That Boil” – A Natural Way of Cleaning Up Nature. *Annals of the University of Petroşani, Mining Engineering*, 10. DOI: <https://www.researchgate.net/publication/281748803>.
- Dave, S. J. Das, B. Varshney, V.P. Sharma. 2022. Dyes and Pigments: Interventions and How Safe and Sustainable Are Colors of Life!!!, *Environ. Sci. Eng.*, Springer, 1–20, DOI: 10.1007/978-3-031-08991-6_1.
- Deng, Y., Flury, M., Harsh, J.B., Felmy, A.R., and Qafoku, O. 2006. Cancrinite and sodalite formation in the presence of cesium, potassium, magnesium, calcium and strontium in Hanford tank waste simulants. *Applied Geochemistry*. Pages 2049–2063. DOI: 10.1016/j.apgeochem.2006.06.019.
- Derbe, T., Temesgen, S., and Bitew, M. 2021. A Short Review on Synthesis, Characterization, and Applications of Zeolites. *Advances in Materials Science and Engineering*, 6637898: 1-17. DOI: 10.1155/2021/6637898.
- Dey, A., Varagnolo, S., Power, N.P., Vangapally, N., Elias, Y., Damptey, L., Jaato, B.N., Gopalan, S., Golrokhi, Z., Sonar, P., Selvaraj, V., Aurbach, D., and Krishnamurthy, S. 2023. Doped MXenes—A new paradigm in 2D systems: Synthesis, properties and applications. *Progress in Materials Science*. 139: 101166 pages 1-70. DOI: 10.1016/j.pmatsci.2023.101166
- Dikshit, A.K., Chugh, K., Chaturvedi, S.K., and Mohapatra, B.N. 2022. Synthesis of mesoporous phase materials via Sol-gel process using Indian cementitious raw material. *Materials Today Proceedings*, 62(2): 1132-1138. DOI: 10.1016/j.matpr.2022.04.326.

- DobrzAński, L.A., M.M. Szindler., M. Szindler., Lukaszkowicz, K., Drygała, A., M. P.V. Prokopowicz. Nanocrystalline TiO₂ powder prepared by sol-gel method for dye-sensitized solar cells. *Arch. Metall. Mater.*, Vol. 61 (2016), No 2, p. 833–836. DOI: 10.1515/amm-2016-0140
- Donkadokula, N.Y., A.K. Kola, I. Naz, D. Saroj. 2020. A review on advanced physics-chemical and biological textile dye wastewater treatment techniques. *Rev. Environ. Sci. Biotechnol.* 19 (3): 543–560. DOI: 10.1007/s11157-020-09543-z.
- Drumond F.M., Chequer, G.A.R. de Oliveira, E.R. Anastacio Ferraz, J. Carvalho, M. V. Boldrin Zanoni, D.P. de Oliveira. 2013. Textile Dyes: Dyeing Process and Environmental Impact, Eco-Friendly Text. Dye. Finish. 6 (6) (2013) 151–176. DOI: 10.5772/53659.
- Edanol, Y. D.G., Usman, K.A.S., Jr, S.C.B., Mantua, M.E and Jr, L.M.P. 2018. Utilizing Silica from Rice Hull for the Hydrothermal Synthesis of Zeolite Y. *KIMIKA* Volume 29, Number 1, pp. 17-21. DOI: 10.26534/kimika.v29i1.17-21
- Elysabeth, T., Jufrodi., dan Hudaeni. 2015. Adsorpsi Logam Berat Besi dan Timbal Menggunakan Zaolit Alam Bayah Teraktivasi. *Jurnal Chemtech.* 1(10).
- Esafain, M., Warr, L.N., Gratoff, G., Meyer, T, Schafmeister, M.T., Kruth, A., and Tertrich, H. 2019. Synthesis of Hydroxy-Sodalite/Cancrinite Zeolites from Calcite-Bearing Kaolin for the Removal of Heavy Metal Ions in Aqueous Media. *Minerals*, 9: 484. DOI: 10.3390/min9080484
- Firnando, H. G., dan Astuti. 2015. Pengaruh Suhu pada Proses Sonikasi Terhadap Morfologi Partikel dan Kristalinitas Nanopartikel Fe₃O₄. *Jurnal Fisika Unand*, 4(1): 1-5. DOI: 10.25077/jfu.4.1.%25p.2015.
- Foo, K. Y., dan Hameed, B.H. 2011. The Environmental Application of Activated Carbon/Zeolite Composite Materials. *Advances in Colloid and Interface Science*, 162: 22-28. DOI: 10.1016/j.cis.2010.09.003
- Fouad, M.M., Shihata, L.A., and Morgan, I.A. 2017. An integrated review of factors influencing the performance of photovoltaic panels. *Renewable and Sustainable Energy Reviews* 80: 1499-1511. DOI: 10.1016/j.rser.2017.05.141
- Fouad, S.M., Y.M.S. El-Shazly, M.A. Alyoubi, S.A. Nosier, M.H. Abdel-Aziz. 2023. Enhanced photocatalytic degradation of cationic dyes using slurry of anatase titania in a falling film reactor, Case Stud. *Chem. Environ. Eng.* 8: 100518. DOI: 10.1016/j.cscee.2023.100518.
- Gadallah, T.A., S. Kato, S. Satokawa, T. Kojima. (2007). Role of core diameter and silica content in photocatalytic activity of TiO₂/SiO₂/Fe₃O₄ composite, *Solid State Sci.* 9 (8): 737–743. <https://doi.org/10.1016/j.solidstatesciences.2007.05.012>
- Gadenken, A., dan Perelshtein, I. 2015. 18 - Power ultrasound for the production of nanomaterials. *Power Ultrasonics. Applications of High-Intensity Ultrasound*. p:543-576. DOI: 10.1016/B978-1-78242-028-6.00018-1
- Georgiev, D., Bogdanov, B., Angelova, K., Markovska, I., and Hristov, Y. 2009. SYNTHETIC ZEOLITES - STRUCTURE, CLASSIFICATION, CURRENT

- TRENDS IN ZEOLITE SYNTHESIS REVIEW. International Science conference 4th - 5th Stara Zagora, BULGARIA "Economics and Society Development on the Base of Knowledge", 5(7): 1-5.
- Ghaly, M.Y., Jamil, T.S., El-Seesy, I.E., Souaya, E.R., and Nasr, R.A. 2011. Treatment of highly polluted paper mill wastewater by solar photocatalytic oxidation with synthesized nano TiO₂. *Chemical Engineering Journal*, 16(1): 446-454. DOI: 10.1016/j.cej.2011.01.028
- Guesh, K., Alvarez, C. M., Chebude, Y and Diaz, I. 2016. Enhanced Photocatalytic Activity Of Supported TiO₂ by Selective Surface Modification Of Zeolite Y. *Applied Surface Science*.
- Guo, Y. G., Hu, Y. S., Sigle, W., dan Maeir. J. 2007. Superior Electrode Performance of Nanostructured Mesoporous TiO₂ (Anatase) through Efficient Hierarchical Mixed Conducting Networks. *Advanced Materials*, 19(16): 2087-2091. DOI: 10.1002/adma.200602828.
- Harbi, A., L. M., Kosa, S. A., Abd El Maksod, I. H., and Hegazy, E. Z. 2015. The photocatalytic activity of TiO₂-zeolite composite for degradation of dye using synthetic UV and Jeddah sunlight. *Journal of Nanomaterials*, 2015, Article ID 565849. <https://doi.org/10.1155/2015/565849>
- Hardeli, Afrianti, R., Desy, K., Nopri Andriko, Hary, S., 2014. Degradasi Methyl Violet dan Methylen Blue oleh Fotokatalis TiO₂. *Eksakta*, Vol 1.
- Hanafi, M.F., and Sapawe, N. 2020. A review on the water problem associate with organic pollutants derived from phenol, methyl orange, and remazol brilliant blue dyes. *Mater. Today Proc.* 31. A141–A15. DOI: 10.1016/j.matpr.2021.01.258.
- Hassan, M.A., El-Nemr, M.A., Elkatory, M.R., Ragab, S., Niculescu, V.C., and El-Nemr, A. 2023. Principles of Photocatalysts and Their Different Applications: A Review. *Topics in Current Chemistry*, 381:31. DOI: 10.1007/s41061-023-00444-7.
- He, L., Zhou, H., Wang, H., Yue, C., Li, H., Zhang, H., Yang, S., and Ma, T. 2024. Photocatalytic degradation by TiO₂-conjugated/coordination polymer heterojunction: Preparation, mechanisms, and prospects. *Review. Applied Catalysis B: Environment and Energy* 344. 123605. DOI: 10.1016/j.apcatb.2023.123605.
- Herrera, C.A.R., Cruz-Cruz, I., Cedeno, I.H.J., Romero, O.M., and Zuniga, A.E. 2021. Influence of the Epoxy Resin Process Parameters on the Mechanical Properties of Produced Bidirectional [$\pm 45^\circ$] Carbon/Epoxy Woven Composites. *Polymers* 13: 1273. DOI: 10.3390/polym13081273.
- Hoque, M. B., Oyshi, T. H., Hannan, M. A., Haque, P., Rahman, M. M., Shahid, M. A., and Sheikh, S. 2024. Unraveling the ecological footprint of textile dyes: A growing environmental concern. *Pollution Study*, 5(2), 3014. <https://doi.org/10.54517/ps.v5i2.3014>.
- Hu, G., Yang, J., Duan, X., Yang, C., Yang, J., Liu, W., and Liu, Q. 2021. Recent developments and challenges in zeolite-based composite photocatalysts for

- environmental applications. *Chemical Engineering Journal* 417: 129209. DOI: 10.1016/j.cej.2021.129209.
- Huayna, G., Laura, A., Churata, R., Lazo, L., Guzman, R., Ramos, P.G., and Rodeiguez, J.M. 2024. Synthesis and Characterization of a Photocatalytic Material from TiO₂ Nanoparticles Supported on Zeolite Obtained from Ignimbrite Residue Used in Decolorization of Methyl Orange. *Appl. Sci.* 14: 3146. DOI: 10.3390/app14083146.
- Huang, C., Ding, Y., Chen, Y., Li, P., Zhu, S., and Shen, S. 2017. Highly efficient Zr doped-TiO₂/glass fiber photocatalyst and its performance in formaldehyde removal under visible light. *Journal of Environmental Sciences*. 60, pages 61-69. DOI: 10.1016/j.jes.2017.06.041.
- Huang, Y. R., Kong, Y., Li, H. Z., and Wei, X. M. 2020. Removal of crystal violet by ultraviolet/persulfate: effects, kinetics and degradation pathways. *Environmental Technology and Innovation*, 18, 1-10.
- Ibrahim, M.A., Musyaffa, M.H., Hetiyanto, H., Haryadi, H. 2022. PURIFICATION OF ETHANOL BY CONTINUOUS ADSORPTION METHOD USING ZEOLITE 3A AND CALCIUM OXIDE. *Jurnal Kimia Riset*, 7(1): 9-19. Online ISSN: 2528-0422.
- Ifeanyi, M.S.A., Bilainu, O., and Yusuf, M.I. 2024. Effects of transition metal doping on the properties and catalytic performance of ZSM-5 zeolite catalyst on ethanol-to-hydrocarbons conversion. *Fuel Communications*. 18: 100101. Pages 1-11. DOI: 10.1016/j.fueco.2023.100101.
- Irodia, R., Ungureanu, C., Satulu, V., and Mindroiu, V.M. 2023. Photocatalyst Based on Nanostructured TiO₂ with Improved Photocatalytic and Antibacterial Properties. *Materials*. 16: 7509. Pages 1-22. DOI: 10.3390/ma16247509.
- Jhang, J.H., and Altman, I. 2019. Water Chemistry on Two-Dimensional Silicates Studied by Density Functional Theory and Temperature-Programmed Desorption. *Surface Science*, 679: 99-109. DOI: 10.1016/j.susc.2018.08.026.
- Janek, M., Bugar, I., Lorenc, D., Szocs, V., Velic, D., Chorvat, D. 2009. Terahertz Time-Domain Spectroscopy of Selected Layered Silicates. *Clays and Clay Minerals*, 57(4): 416–424. DOI: 10.1346/CCMN.2009.0570402.
- Jeong, M.G., Park, E.J., Seao, H.O., Kim, K.D., Kim, Y.D., Lim, D.C. 2013. Humidity Effect on Photocatalytic Activity of TiO₂ and Regeneration of Deactivated Photocatalysts. *Applied Surface Science*, 271: 164–170. DOI: 10.1016/j.apsusc.2013.01.155.
- Jia, X., Khan, W., Wu, Z., Choi, J., and Yip, A.C.K. 2019. Modern Synthesis Strategies for Hierarchical Zeolites: Bottom-up versus Top-down Strategies. *Advanced Powder Technology*, 30: 467–484. DOI: 10.1016/j.aprt.2018.12.014.
- Jiang, Z., Yang, J., Ma, X., Yuan, J. 2016. Synthesis of Pure NaA Zeolites from Coal Fly Ashes for Ammonium Removal from Aqueous Solutions. *Clean Technology Environmental Policy*, 18: 629–637. DOI: 10.1007/s10098-015-1072-0.

- Joseph, C. G., Liew, Y. L. S., Bono, A., dan Teng, L. Y. 2013. Photodegradation of Indigo Dye Using TiO₂ and TiO₂/Zeolite System. *Asian Journal of Chemistry*, 25(15): 8402-8406. DOI: 10.14233/ajchem.2013.14768.
- Joseph, I. V., Doyle, A.M., Amedlous, A., Mintova, S., and Tosheva, L. 2022. Scalable Solvent-Free Synthesis of Aggregated Nanosized Single-Phase Cancrinite Zeolite. *Materials Today Communications*, 32: 103879. DOI: 10.1016/j.mtcomm.2022.103879.
- Kacem, M., Pellerano, M., Delebarre, A. 2015. Pressure Swing Adsorption for CO₂/N₂ and CO₂/CH₄ Separation: Comparison Between Activated Carbons and Zeolites Performances. *Fuel Processing Technology*, 138: 271–283. DOI: 10.1016/j.fuproc.2015.04.032.
- Kamegawa, T., Ishiguro, Y., Kido, R., dan Yamashita, H. 2014. Design of Composite Photocatalyst of TiO₂ and Y-Zeolite for Degradation of 2-Propanol in the Gas Phase Under UV and Visible Light Irradiation. *Molecules*, 19(10): 16477-16488. DOI: 10.3390/molecules191016477.
- Kansal, S. K., Singh, M., and Sud, D. 2006. Studies on Photodegradation of Two Commercial Dyes in Aqueous Phase Using Different Photocatalyst. *Journal of Hazardous Materials*, 141(3): 581-590. DOI: 10.1016/j.jhazmat.2006.07.035.
- Kartawa, W., and Kusumah, K. D. 2006. Potensi Zeolit di Daerah Sangkarop-Mendila, Tana Toraja, Sulawesi Selatan. *Jurnal Geologi dan Sumberdaya Mineral*, 16(6): 371-386. DOI: 10.33332/jgsm.geologi.v16i6.377.
- Kartawa, Wawa and Kusuma, Kusdji, D. 2009. Potensi Zeolit di Daerah Sangkarop-Mendila, Tana Toraja, Sulawesi Selatan. *Badan Geologi Pusat Survei Geologi Departemen Energi dan Sumber Daya Mineral*, Bandung.
- Katwal, R. R., Kothari, D., and Pathania, D. 2021. Chapter 10 - An Overview on Degradation Kinetics of Organic Dyes by Photocatalysis Using Nanostructured Electrocatalyst. *Delivering Low-Carbon Biofuels with Bioproduct Recovery*, 195–213. DOI: 10.1016/B978-0-12-821841-9-00005-0.
- Kautsar, A., Ramadhana, K., Wardhani, S., dan Purwonugroho, D. 2013. Fotodegradasi Zat Warna Methyl Orange Menggunakan TiO₂-Zeolite dengan Penambahan Ion Persulfat. *Kimia Student Journal*, 1(2): 168-174.
- Khan, I., Saeed, K., Ali, N., Khan, I., Zhang, B., and Sadiq, M. 2020. Heterogeneous Photodegradation of Industrial Dyes: An Insight to Different Mechanisms and Rate Affecting Parameters. *Journal of Environmental Chemical Engineering*, 8(5): 104364. DOI: 10.1016/j.jece.2020.104364.
- Khan, S., Noor, T., Iqbaal, N., and Yaqoob, L. 2024. Photocatalytic Dye Degradation from Textile Wastewater: A Review. *ACS Omega*, 9: 21751-21767. DOI: 10.1021/acsomega.4c00887.
- Khaleque, A., Alam, M. M., Hoque, M., Mondal, S., Haeder, J.B., Xu, B., Johir, M.A.H., Karmakar, A.K., Zhou, J.L., Ahmed, M.B., Moni, M.A. 2020. Zeolite Synthesis from Low-Cost Materials and Environmental Applications: A Review. *Environmental Advances*, 2: 100019. DOI: 10.1016/j.envadv.2020.100019.

- Kim, G., Kang, P.G., Kim, E., and Seo, K. 2022. Application of Best Available Techniques to Remove Air and Water Pollutants from Textile Dyeing and Finishing in South Korea. *Sustainability*, 14: 2209. DOI: 10.3390/su14042209.
- Koohsaryan, E., and Anbia, M. 2016. Nanosized and Hierarchical Zeolites: A Short Review. *Chinese Journal of Catalysis*, 37(4): 447-467. DOI: 10.1016/S1872-2067(15)61038-5.
- Kordala, N., and Wyszkowski, M. 2024. Zeolite Properties, Methods of Synthesis, and Selected Applications. *Molecules*, 29: 1069. DOI: 10.3390/molecules29051069.
- Koshlak, H. 2023. Synthesis of Zeolites from Coal Fly Ash Using Alkaline Fusion and Its Applications in Removing Heavy Metals. *Materials*, 16: 4837. DOI: 10.3390/ma16134837.
- Krol, M. 2020. Natural Vs. Synthetic Zeolites. *Crystals*, 10(7): 622-629. DOI: 10.3390/crust10070622.
- Längauer, D., Cablik, V., Hredzak, S., Zubrik, A., Matik, M., Dankova, Z. 2021. Preparation of Synthetic Zeolites from Coal Fly Ash by Hydrothermal Synthesis. *Materials*, 14: 1267. DOI: 10.3390/ma14051267.
- Le, V.Q., Do, Q.M., Hoang, M.D., Nguyen, H.T. The role of active silica and alumina in geopolymmerization. *Vietnam Journal of Science, Technology and Engineering*, 60(2): 16-23. DOI: 10.31276/VJSTE.60(2).16
- Lee, G.J., and Wu, J.J. 2017. Recent developments in ZnS photocatalysts from synthesis to photocatalytic applications — A review. *Powder Technology* 318: 8–22. DOI: 10.1016/j.powtec.2017.05.022
- Lee, M.G., Yi, G., Ahn, B.J., and Roddick, F. 2000. Conversion of Coal Fly Ash into Zeolite and Heavy Metal Removal Characteristics of the Products. *Korean J. Chem. Eng.*, 17(3), 325-331. DOI: 10.1007/BF02699048.
- Lellis, B., Polono, C.Z.F., Pamphile, J.A., and Polonio, J.C. 2019. Effects of textile dyes on health and the environment and bioremediation potential of living organisms. *Biotechnology Research and Innovation* 3, 275-290 DOI: 10.1016/j.biori.2019.09.001
- Lestari, W.W., Hasanah, D.N., Putra, R., Mukti, R.R., and Nugrahaningtyas, K.D. 2018. Transformation of Indonesian Natural Zeolite into Analcime Phase under Hydrothermal Condition. *IOP Conference Series: Materials Science and Engineering*. 349, 012068. DOI: 10.1088/1757-899X/349/1/012068.
- Li, S., Jia, S., Nagasaka, T., Bai, H., and Yang, L. 2023. CO₂ Adsorption Properties of Amine-Modified Zeolites Synthesized Using Different Types of Solid Waste. *Sustainability*. 5: 10144. Pages 1-17. DOI: 10.3390/su151310144.
- Li, Y., Zhang, S., Yu, Q., and Yin, W. 2007. The effects of activated carbon supports on the structure and properties of TiO₂ nanoparticles prepared by a sol-gel method. *Applied Surface Science* 253(23): 9254-9258 DOI: 10.1016/j.apsusc.2007.05.057

- Liao, G., He, W., and He, Y. 2019. Investigation of Microstructure and Photocatalytic Performance of a Modified Zeolite Supported Nanocrystal TiO₂ Composite. *Catalyst*, 9(502): 1-13. DOI: 10.3390/catal9060502.
- Liu, Y., and Pan, H. 2013. Hydrogen Storage Materials. *Batteries, Hydrogen Storage and Fuel Cells*, p. 377-405. DOI: 10.1016/B978-0-444-53880-2.00018-1.
- Maddah, H.A., Alzhrani, A.S., Bassyouni, M., Abdel-Aziz, M.H., Zoromba, M., and Almalki, A.M. 2018. Evaluation of various membrane filtration modules for the treatment of seawater. *Applied Water Science*, 8: 1–13.
- Ma, H. 2016. Preparation of potassium sulfate and zeolite NaA from K-feldspar by a novel hydrothermal process. *International Journal of Mineral Processing* 155. DOI: 10.1016/j.minpro.2016.08.017
- Mahalakshmi, M., Priya, S. V., Arabindoo, B., Palanichamiy, M., and Murugesan. 2009. Photocatalytic Degradation of Aqueous Propoxur Solution Using TiO₂ and H Zeolite-Supported TiO₂. *Journal of Hazardous Materials*, 161(1): 336-343. DOI: 10.1016/j.jhazmat.2008.03.098.
- Manoharmayum, V.S., and Ningombam, D. 2024. Zeolites as versatile material for sustainable water purification: a review. *EQA - International Journal of Environmental Quality*. 65: 25-34. DOI: 10.6092/issn.2281-4485/20297.
- Martinsen, G.O., and Heiskanen, A. 2023. Chapter 2 - Electrolytics. *Bioimpedance and Bioelectricity Basics* (Fourth Edition), Pages 7-36. DOI: 10.1016/B978-0-12-819107-1.00014-5.
- Mehrotra, K., Yablonsky, G.S., and Ray, A.K. 2003. Kinetic studies of photocatalytic degradation in a TiO₂ slurry system: Distinguishing working regimes and determining rate dependences.
- Mo, Y., Zhang, Y., Xu, Q., and Yang, R. 2009. Effect of TiO₂/adsorbent hybrid photocatalysts for toluene decomposition in gas phase. *Journal of Hazardous Materials*, 168(1): 276–281.
- Moheimani, N.R., and Parlevliet, D. 2013. Sustainable solar energy conversion to chemical and electrical energy. *Renewable and Sustainable Energy Reviews* 27: 494-504. DOI: 10.1016/j.rser.2013.07.006.
- Montesano, G., Cappelletti, P., Caputo, D., Liguori, B., Campanile, A., and Rispoli, C. 2022. Mineralogical and Technological Characterization of Zeolites from Basin and Range as Pozzolanic Addition of Cement. *Materials* 15, 2684. DOI: 10.3390/ma15072684.
- Murayama, N., Yamamoto, H., and Shibata, J. 2002. Mechanism of Zeolite Synthesis from Coal Fly Ash by Alkali Hydrothermal Reaction. *International Journal of Mineral Processing* 64(1), 1-17. DOI: 10.1016/S0301-7516(01)00046-1.
- Mustapha, S.I., Aliyu, U., Bux, F., and Isa, Y.M. 2022. Catalytic hydrothermal liquefaction of nutrient-stressed microalgae for production of high-quality bio-oil over Zr-doped HZSM-5 catalyst. *Biomass and Bioenergy*, 163(9): 106497. DOI: 10.1016/j.biombioe.2022.106497.
- Naggar, M.A.E., Maghawry, A.H., Alturki, A.A., Nosier, S.A., Hussein, M., & Abdel-Aziz, M.H. (2024). TiO₂-catalyzed photodegradation of methylene blue in a

- helical FEP tubing reactor: modeling and optimization using response surface methodology. *Applied Water Science*, 14(9), 207.
- Nakata, K., & Fujishima, A. (2012). TiO₂ Photocatalyst: Design and Applications. *Journal of Photochemistry and Photobiology C: Photochemistry Reviews*, 13(3), 169-189. <https://doi.org/10.1016/j.jphotochemrev.2012.06.001>
- Nath, R.K., Zain, M.F.M., & Jamil, M. (2016). An environment-friendly solution for indoor air purification by using renewable photocatalysts in concrete: A review. *Renewable and Sustainable Energy Reviews*, 62, 1184-1194. <https://doi.org/10.1016/j.rser.2016.05.018>
- Ngapa, Y.D. (2017). Kajian pengaruh asam-basa pada aktivasi zeolit dan karakterisasinya sebagai adsorben pewarna biru metilena. *Jurnal Kimia dan Pendidikan Kimia*, 2(2), 90-96.
- Nikravesh, B., Shomalnasab, A., Nayyer, A., Aghababaei, N., Zarebi, R., & Ghanbari, F. (2020). UV/Chlorine Process for dye degradation in aqueous solution: Mechanism, affecting factors, and toxicity evaluation for textile wastewater. *Journal of Environmental Chemical Engineering*, 8(5), 104244. <https://doi.org/10.1016/j.jece.2020.104244>
- Ningsih, T. (2012). Pemanfaatan Bahan Additive Abu Sekam Padi pada Cement Portland PT Semen Baturaja (PERSERO). *Jurnal Teknik Kimia Universitas Sriwijaya*, 18(4). ISSN: 2339-1960.
- Novembre, D., & Gimeno, D. (2021). Synthesis and characterization of analcime (ANA) zeolite using a kaolinitic rock. *Scientific Reports*, 11, 13373. <https://doi.org/10.1038/s41598-021-92862-0>
- Nyankson, E., Efavi, J.K., Yaya, A., Manu, G., Asare, K., Daafuor, J., & Abrokwhah, R.Y. (2018). Synthesis and characterization of zeolite-A and Zn-exchanged zeolite-A based on natural aluminosilicates and their potential applications. *Cogent Engineering*, 5(1), 1440480. <https://doi.org/10.1080/23311916.2018.1440480>
- Nasrollahzadeh, M., Atarod, M., Sajjadi, M., Sajadi, S.M., & Issaabadi, Z. (2019). Plant-Mediated Green Synthesis of Nanostructures: Mechanisms, Characterization, and Applications. *Interface Science and Technology*, 28. <https://doi.org/10.1016/B978-0-12-813586-0.00006-7>
- Ojha, K., Pradhan, N., & Samanta, A.N. (2004). Zeolite from Fly Ash: Synthesis and Characterization. *Bulletin of Materials Science*, 27(6), 555-564. <https://doi.org/10.1007/BF02707285>
- Ojumu, T.V., Du Plessis, P.W., & Petrik, L.F. (2016). Synthesis of zeolite A from coal fly ash using ultrasonic treatment – A replacement for fusion step. *Ultrasonics Sonochemistry*, 31, 342-349. <https://doi.org/10.1016/j.ultsonch.2016.01.017>
- Oi, L.E., Choo, M.Y., Lee, H.V., Ong, H.C., Hamid, S.B.A., & Juan, J.C. (2016). Recent Advances of Titanium Dioxide (TiO₂) for Green Organic Synthesis. *Royal Society of Chemistry Advances*, 6(110), 108741-108754. <https://doi.org/10.1039/C6RA22894A>
- Ola, O., & Valer, M.M.M. (2015). Review of material design and reactor engineering on TiO₂ photocatalysis for CO₂ reduction. *Journal of Photochemistry and*

- Photobiology C: Photochemistry Reviews, 24, 16-42. <https://doi.org/10.1016/j.jphotochemrev.2015.06.001>
- Oladoye, P.A., Kadhom, M., Khan, I., Aziz, K.H.H., & Alli, Y.A. (2024). Advancements in adsorption and photodegradation technologies for Rhodamine B dye wastewater treatment: fundamentals, applications, and future directions. *Green Chemical Engineering*, 5(4), 440-460. <https://doi.org/10.1016/j.gce.2023.12.004>
- Oliveira, R. de., & Sant'Ana, A.C. (2024). Crystal Violet degradation by visible light-driven AgNP/TiO₂ hybrid photocatalyst tracked by SERRS spectroscopy. *Vibrational Spectroscopy*, 133, 103694. <https://doi.org/10.1016/j.vibspec.2024.103694>
- Padma, C.M., Raja, D.H., and Davidson, D.J. (2023). Photodegradation of Methyl violet using Ag modified TiO₂ nanotubes by UV and UV/H₂O₂, *Chem. Phys. Impact* 7: 100366. <https://doi.org/10.1016/j.chphi.2023.100366>
- Pal, A., D. B., M. Akbar., Alhazmi, A., Haque, S., Yoon, T., Srivastava, N., and Gepta, V. K. 2022. Biological remediation technologies for dyes and heavy metals in wastewater treatment: New insight. *Bioresource Technology*. 343: 126154. DOI: 10.1016/j.biortech.2021.126154
- Pelaez, M., Nolan, N.T., Pillai, S.C., Seery MK., Falaras, P., Kontos, AG., Dunlop, PSM., Hamilton, JWJ., Byrne, J., K O'shea., Entezari, M.H dan Dionysiou, D. D. 2012. A review on the visible light active titanium dioxide photocatalysts for environmental applications. *Applied Catalysis B: Environmental*. 125: 331-349. DOI: 10.1016/j.apcatb.2012.05.036.
- Permai, F. I., Hamzah, H., & Kurniawati, D. 2012. Penentuan Kondisi Optimum Reaktor Fotokatalitik TiO₂/PEG Untuk Mendegradasi Zat Warna Methanil Yellow. *Periodic*, 1(1), 19-23.
- Permanasari, A. R., Sihombing, R. P., Yulistiani, F., Paramitha, T., Tsamarah, A. F., Meydillahaq, E., & Wibisono, W. 2024. The synthesis of Fe-Zeolite catalyst by impregnation process and its catalytic performance in glucose isomerization. *Advanced Materials Research*, 1179, 85–93. DOI: 10.4028/p-7wyRNB
- Perwez, M., H. Fatima, M. Arshad, V. Meena and B. Ahmad. 2022. Magnetic iron oxide nanosorbents effective in dye removal. *Int. Journal of Environmental Science and Technology*. 1–18. DOI: 10.1007/s13762-022-04003-3
- Petkowicz, D.I., Mignoni, M.L., and Santos, H.Z. 2009. Dry-gel process for zeolite synthesis: Some fundamental aspects, *Microporous and Mesoporous Materials* 279: 92-98. DOI: 10.1016/j.micromeso.2018.12.021
- Puneetha. J., Nagaraju, K., and Rathna, A. 2021. Investigation of photocatalytic degradation of crystal violet and its correlation with bandgap in ZnO and ZnO/GO nanohybrid. *Inorganic Chemistry Communications*. 125 (108460): 1-12. DOI : 10.1016/j.inoche.2021.108460.
- Purnawan, C., Wahyuningsih, S., and Nawakusuma, V. (2018). Methyl violet degradation using photocatalytic and photoelectrocatalytic processes over

- Graphite/PbTiO₃ composite. *Bulletin of Chemical Reaction Engineering & Catalysis*, 13(1), 127–135. <https://doi.org/10.9767/bcrec.13.1.1354.127-135>
- Qian, X., Kamegawa, T., K. Mori, H. Li, H. Yamashita. 2013. Calcium phosphate coatings incorporated in mesoporous TiO₂/SBA-15 by a facile inner-pore sol-gel process toward enhanced adsorption-photocatalysis performances, *J. Phys. Chem. C* 117: 19544e19551.
- Rahman, A., Nurjayadi, M., Wartilah, R., Kusrini, E., Prasetyanto, E. A., & Degermenci, V. 2018. Enhanced activity of TiO₂/natural zeolite composite for degradation of methyl orange under visible light irradiation. *International Journal of Technology*, 9(6), 1159–1167. DOI: 10.14716/ijtech.v9i6.2368.
- Rios, C.A., Williams, C.D., Maple, M.J. 2007. Synthesis of Zeolites and Zeotypes by Hydrothermal transformation of Kaolinite and Metakaolinite. *BISTUA*. 5(1): 15-26. DOI: <https://www.researchgate.net/publication/32117077>.
- Sabalova, V., Brinek, A., & Sladek, V. (2018). The effect of hydrochloric acid on microstructure of porcine (*Sus scrofa domesticus*) cortical bone tissue. *Forensic Science International*, 291, 260-271. <https://doi.org/10.1016/j.forsciint.2018.08.030>
- Sadiku, M., Selimi, T., Berisha, A., Maloku, A., Mehmeti, V., Thaci, V., & Hasani, N. (2022). Removal of Methyl Violet from Aqueous Solution by Adsorption onto Halloysite Nanoclay: Experiment and Theory. *Toxics*, 10(445), 1-19. <https://doi.org/10.3390/toxics10080445>
- Sakthivel, S., Neppolian, B., Shankar, M. V., Arabindoo, B., Palanichamy, M., & Murugesan, M. (2003). Solar Photocatalytic Degradation of Azo Dye: Comparison of Photocatalytic Efficiency of ZnO and TiO₂. *Solar Energy Materials and Solar Cells*, 77, 65-82.
- Sanjaya, H., Hardeli, & Syafitri, R. (2018). Degradasi metil violet menggunakan katalis ZnO-TiO₂ secara fotosonolisis. *Eksakta*, 19(1), 1-7. <https://doi.org/10.24036/eksakta/vol19-iss01>
- Saule, M., Zhanibek, A., Milana, B., John, V., Dionissios, M., Timur, S. A., & Stavros, G. P. (2024). TiO₂/Zeolite Composites for SMX Degradation under UV Irradiation. *Catalysts*, 14(147), 1-16. <https://doi.org/10.3390/catal14020147>
- Selim, A. Q., Mohamed, E. A., Seliem, M. K., & Zayed, A. M. (2018). Synthesis of sole cancrinite phase from raw muscovite: Characterization and optimization. *Journal of Alloys and Compounds*, 762, 653-667. <https://doi.org/10.1016/j.jallcom.2018.05.195>
- Shankar, M. V., Anandan, S., Ventachalam, V., Arabindoo, B., & Murugesan, V. (2006). Fine Route for An Efficient Removal of 2,4-Dichlorophenoxyacetic Acid (2,4-D) by Zeolite-Supported TiO₂. *Chemosphere*, 63(6), 1014-1021. <https://doi.org/10.1016/j.chemosphere.2005.08.041>
- Shokry, F., El-Gedawy, M., Nosier, S. A., & Aziz, M. A. H. (2025). Optimizing photocatalytic degradation of methyl violet dye in a recirculating slurry-type reactor. *Results in Chemistry*, 13, 101980. <https://doi.org/10.1016/j.rechem.2024.101980>

- Side, S., Putro, S. E., Pratiwi, D. E., Rahma, A., & Rahman, A. (2023). The Effect of Acid Treatment on The Characteristics of Modernite Zeolite. *Jurnal Sainsmat*, 12(2), 114-123. ISSN 2579-5686.
- Singh, A., Pal, D. B., Akbar, M., Alhazmi, A., Haque, S., Yoon, T., Srivastava, N., & Gupta, V. K. (2022). Biological remediation technologies for dyes and heavy metals in wastewater treatment: New insight. *Bioresource Technology*, 343, 126154. <https://doi.org/10.1016/j.biortech.2021.126154>
- Sirait, M., Saragih, K. S. D., Nurfajriani, & Gea, S. (2020). The fabrication of natural zeolite via co-precipitation method as Cu, Pb, and Zn metal absorbent. *Latvian Journal of Physics and Technical Sciences*, 2020(3). <https://doi.org/10.2478/lpts-2020-0014>
- Slama, H. B., Chenari Bouket, A., Pourhassan, Z., Alenezi, F. N., Silini, A., Cherif-Silini, H., Oszako, T., Luptakova, L., Golińska, P., & Belbahri, L. (2021). Diversity of synthetic dyes from textile industries, discharge impacts, and treatment methods. *Applied Sciences*, 11(14), 6255. <https://doi.org/10.3390/app11146255>
- Su, S., Ma, H., Chuan, X., & Cai, B. (2016). Preparation of potassium sulfate and zeolite NaA from K-feldspar by a novel hydrothermal process. *International Journal of Mineral Processing*, 155, 130–135. <https://doi.org/10.1016/j.minpro.2016.08.017>
- Sun, Q., Hu, X., Heng, S., & Sun, H. (2015). Influence of calcination temperature on the structural, adsorption and photocatalytic properties of TiO₂ nanoparticles supported on natural zeolite. *Journal of University of Mining and Technology, China*.
- Sulistyani, M., & Huda, N. (2018). Perbandingan Metode Transmisi dan Reflektansi pada Pengukuran Polistirena Menggunakan Instrumentasi Spektroskopi Fourier Transform Infrared. *Indonesian Journal of Chemical Science*, 7(2), 195-198. <https://doi.org/10.15294/IJCS.V1212.72451>
- Saeed, K., Khan, I., Gul, T., & Sadiq, M. (2017). Efficient photodegradation of methyl violet dye using TiO₂/Pt and TiO₂/Pd photocatalysts. *Applied Water Science*, 7(7), 3841–3848. <https://doi.org/10.1007/s13201-017-0535-3>
- Sherly, R. A., Padma, C. M., Raja, D. H., Sindhusha, S., Almansour, A. I., & Dhas, S. S. J. (2024). H₂O₂-assisted photo-electrocatalytic and photocatalytic degradation of methyl violet by CuO-modified TiO₂ nanotube arrays. *Optical Materials*, 155, 115870. <https://doi.org/10.1016/j.optmat.2024.115870>
- Singh, R. L., Singh, P. K., & Singh, R. P. (2015). Enzymatic decolorization and degradation of azo dyes - A review. *International Biodegradation & Biodegradation*, 104(1), 21–31. <https://doi.org/10.1016/j.ibiod.2015.04.027>
- Tahir, M., and Amin, N. S. 2015. Indium-doped TiO₂ nanoparticles for photocatalytic CO₂ reduction with H₂O vapors to CH₄. *Applied Catalysis B: Environmental*, 162, 98–109. DOI: 10.1016/j.apcatb.2014.06.037.
- Takeuchi, M., Kimura, T., Hidaka, M., Rakhamawaty, D., and Anpo, M. 2007. Photocatalytic oxidation of acetaldehyde with oxygen on TiO₂/ZSM-5

- photocatalysts: Effect of hydrophobicity of zeolites. *Journal of Catalysis*, 246, 235–240.
- Tan, I.A.W., Abdullah, M.O., Lim, L.L.P., and Yeo, T.H.C. 2017. Surface modification and characterization of coconut shell-based activated carbon subjected to acidic and alkaline treatments. *Journal of Applied Science and Process Engineering*, 4(2). e-ISSN: 2289-7771.
- Tenge-Ong, S., Cheng, W.S., and Hung, Y.T. 2012. Photodegradation of commercial dye, methylene blue using immobilized TiO₂. *International Conference on Chemical, Biological and Environmental Engineering*, 43, 23.
- Tiple, A., Sinhmar, P. S., and Gogate, P. R. 2021. Improved direct synthesis of TiO₂ catalyst using sonication and its application for the desulfurization of thiophene. *Ultrasonic Sonochemistry*, 73(1), 1-14.
- Tohamy, A.R., Ali, S.S., Li, F., Okasha, K.M., Yehia, A.G. M., Elsamahy, T., Jiao, H., Fu, Y., and Sun, J. 2022. A critical review on the treatment of dye-containing wastewater: Ecotoxicological and health concerns of textile dyes and possible remediation approaches for environmental safety. *Ecotoxicology and Environmental Safety*, 231, 113160. DOI: 10.1016/j.ecoenv.2021.113160.
- Toshihide, H.D.D., and Nicholson, D. 2011. Capillary condensation of adsorbates in porous materials. *Advances in Colloid and Interface Science*, 169, 40–58. DOI: 10.1016/j.cis.2011.08.003.
- Tovani, C.B., Ferreira, C.R., Simao, A.M.S., Bolean, M., Coppeta, L., Rosato, N., Bottini, M., Ciancaglini, P., and Ramos, A.P. 2020. Characterization of the in vitro osteogenic response to submicron TiO₂ particles of varying structure and crystallinity. *ACS Omega*, 1-11. DOI: 10.1021/acsomega.0c00900.
- Trivana, L., Sugiarti, S., and Rohaeti, E. 2015. Sintesis zeolit dan komposit zeolit/TiO₂ dari kaolin serta uji adsorpsi-fotodegradasi biru metilena. *ALCHEMY Jurnal Penelitian Kimia*, 11(2), 147–162.
- Underwood, T. M., and Robinson, R. S. 2022. Adducing knowledge capabilities of instrumental techniques through the exploration of heterostructures' modification methods. *ChemPhysChem*, 23, e202200241. DOI: 10.1002/cphc.202200241.
- Ullah, S., Khalid, R., Rehman, M. F., Irfan, M. I., Abbas, A., Alhoshani, A. et al. 2023. Biosynthesis of phyto-functionalized silver nanoparticles using olive fruit extract and evaluation of their antibacterial and antioxidant properties. *Frontiers in Chemistry*, 11, 1–14. DOI: 10.3389/fchem.2023.1202252.
- Utada, M. 2001. Zeolites in hydrothermally altered rocks. *Reviews in Mineralogy and Geochemistry*, 45(1), 305–322. DOI: 10.2138/rmg.2001.45.10.
- Vaiano, V. M. Matarangolo, O. Sacco, D. Sannino. 2017. Photocatalytic treatment of aqueous solutions at high dye concentration using praseodymium-doped ZnO catalysts, *Appl. Catal. B Environ.* 209: 621–630, DOI: 10.1016/j.apcatb.2017.03.015.

- Valdes, M. G., Cordoves, A. I. P., and Garcia, M. E. D. 2006. Zeolites and Zeolite-Based Materials in Analytical Chemistry. *TrAC Trends in Analytical Chemistry*, 25(1): 24-30.
- Vegere, K., Laura Vitola, Pauls P. Argalis, Diana Bajare, and Andrey E. Krauklis. 2019. Alkali-Activated Metakaolin as a Zeolite-Like Binder for the Production of Adsorbents. *Inorganics*, 7(12), 141. <https://doi.org/10.3390/inorganics7120141>
- Veronica, J., Mollah, M., Anwar, B., and Yuliani, G. 2024. *Synthesis of composite ZnO-zeolite and its application as adsorbent: A systematic review*. Jurnal Kartika Kimia, 7(2), 102-112. <https://doi.org/10.26874/jkk.v7i2.264>
- Wang, Z., Liu, S., Cao, X., Wu, S., Liu, C., Li, G., Jiang, W., Wang, H., Wang, N., dan Ding, W. 2020. Preparation and Characterization of TiO₂ Nanoparticles by Two Different Precipitation Methods. *Ceramics International*, 46(10): 1533-15341.
- Wang, Y., Lin, M., and Tuel, A. 2007. Hollow TS-1 crystals formed via a dissolution–recrystallization process. *Microporous and Mesoporous Materials*. 102: 80–85. DOI: 10.1016/j.micromeso.2006.12.019.
- Wang, Shaobin, and Peng, Yuelian. 2010. Natural zeolites as effective adsorbents in water and wastewater treatment. *Chemical Engineering Journal*. 156(1): 11-24. DOI: 10.1016/j.cej.2009.10.029.
- Wang, C., H. Shi, Y. Li. 2012. Synthesis and characterization of natural zeolite supported Cr-doped TiO₂ photocatalysts, *Appl. Surf. Sci.* 258, 4328e4333.
- Wardhani, S., Bahari, A., & Khunur, M. M. 2017. Aktivitas fotokatalitik beads TiO₂-N/Zeolit-Kitosan pada fotodegradasi metilen biru (kajian pengembangan, sumber sinar dan lama penyinaran). *Journal of Environmental Engineering and Sustainable Technology*, 3(2), 78-84.
- Wategaonkar, S. B., Pawar, R. P., Parale, V. G., Nade, D. P., Sargar, B. M., dan Mane, R. K. 2020. Synthesis of Rutile TiO₂ Nanostructures by Single Step Hydrothermal Route and Its Characterization. *Material Today: Proceedings*, 23: 444-451.
- Weitkamp, J. 2000. *Zeolites and catalysis*. Solid State Ionics, 131(1-2), 175–188. [https://doi.org/10.1016/S0167-2738\(00\)00632-9](https://doi.org/10.1016/S0167-2738(00)00632-9)
- Williamson, B. A. D., Buckeridge, J., Brown, J., Ansbro, S., Palgrave, R. G., & Scanlon, D. O. 2016. *Engineering valence band dispersion for high mobility p-type semiconductors*. *Chemistry of Materials*, 28(11), 3532-3543. <https://doi.org/10.1021/acs.chemmater.6b03306>
- Xiao, Q., L. Gao. 2013. One-step hydrothermal synthesis of C, W-codoped mesoporous TiO₂ with enhanced visible light photocatalytic activity, *J. Alloys Compd.* 551, 286e292.
- Yang, S., Xu, Y., Huang, Y., and Wang, G. 2013. Photocatalytic degradation of methyl violet with TiSiW₁₂O₄₀/TiO₂. *International Journal of Photoenergy*, 2013, Article ID 191340. <https://doi.org/10.1155/2013/191340>

- Zarzeka, C., Goldoni, J., Oliveira, J.R.P., Lenzi, G.G., Bagatini, M.D., and Colpini, M.L.S. 2024. Photocatalytic action of Ag/TiO₂ nanoparticles to emerging pollutants degradation: A comprehensive review. *Sustainable Chemistry for the Environment*, 8: 100177. DOI: 10.1016/j.scenv.2024.100177
- Zhang, P., O'Connor, D., Wang, Y., Jiang, L., Xia, T., Wang, L., Tsang, D.C., Ok, Y.S., Hou, D. A green biochar/iron oxide composite for methylene blue removal. (2020). *J. Hazard. Mater.* 384: 121286. <https://doi.org/10.1016/j.jhazmat.2019.121286>
- Zhang, S., Zhang, J., Sun, J., and Tang, Z. (2020). Capillary microphotoreactor packed with TiO₂-coated glass beads: An efficient tool for photocatalytic reaction. *Chemical Engineering and Processing – Process Intensification*. 147: 107746. <https://doi.org/10.1016/j.cep.2019.107746>
- Zhou, H., Wang, H., Yue, C., He, L., Li, H., Zhang, H., Yang, S. and Ma, T. (2024). Photocatalytic degradation by TiO₂-conjugated/coordination polymer heterojunction: Preparation, mechanisms, and prospects. Review. *Applied Catalysis B: Environment and Energy*. 344: 123605. <https://doi.org/10.1016/j.apcatb.2023.123605>
- Zhu, X., Das, R.S., Bhavya, M.L., Vaquero, M.G., and Tiwari, B.K. 2024. Acoustic cavitation for agri-food applications: Mechanism of action, design of new systems, challenges and strategies for scale-up. *Ultrasonics Sonochemistry*, 105: 106850. DOI: 10.1016/j.ultsonch.2024.106850.
- Zhu, D., and Zhou, Q. (2019). Action and mechanism of semiconductor photocatalysis on degradation of organic pollutants in water treatment: A review. *Environmental Nanotechnology, Monitoring & Management*, 12, 100255. <https://doi.org/10.1016/j.enmm.2019.100255>
- Zhuang, Q., Zhu, G., Li, Z., Wang, P., Zhan, C., Ren, Z., Si, S., Li, D., Cai dan P. Qin. 2022. Photocatalytic degradation of organic dyes using covalent triazine-based framework. *Mater. Res. Bull.* 146: 111619. DOI: 10.1016/j.materresbull.2021.111619.
- Zhang, P., O'Connor, D., Wang, Y., Jiang, L., Xia, T., Wang, L., Tsang, D.C., Ok, Y.S., Hou, D. A green biochar/iron oxide composite for methylene blue removal. 2020. *J. Hazard. Mater.* 384: 121286. DOI: 10.1016/j.jhazmat.2019.121286.
- Zhang, S., Zhang, J., Sun, J., and Tang, Z. 2020. Capillary microphotoreactor packed with TiO₂-coated glass beads: An efficient tool for photocatalytic reaction. *Chemical Engineering and Processing – Process Intensification*. 147: 107746. DOI: 10.1016/j.cep.2019.10.7746
- Zhuang, Q., Zhu, G., Li, Z., Wang, P., Zhan, C., Ren, Z., Si, S., Li, D., Cai dan P. Qin. 2022. Photocatalytic degradation of organic dyes using covalent triazine-based framework. *Mater. Res. Bull.* 146: 111619. DOI: 10.1016/j.materresbull.2021.111619.
- Zeng, Zeng, X., Hu, X., Song, H., Xia, G., Shen, Z.Y., Yu, R and Moskovits, M. 2021. Microwave synthesis of zeolites and their related applications. *Microporous and Mesoporous Materials*. Volume 323, August 2021, 111262. DOI: 10.1016/j.micromeso.2021.111262