

## DAFTAR PUSTAKA

1. Pushpamalini, T.; Keerthana, M.; Sangavi, R.; Nagaraj, A.; Kamaraj, P. Comparative Analysis of Green Synthesis of TiO<sub>2</sub> Nanoparticles Using Four Different Leaf Extract. *Mater. Today Proc.* 2020, 40, S180–S184. <https://doi.org/10.1016/j.matpr.2020.08.438>.
2. Shamloo, E.; Shokri, S.; Sadighara, P.; Fallahizadeh, S.; Ghasemi, A.; Abdi-Moghadam, Z.; Rezagholizade-shirvan, A.; Mazaheri, Y. Application of Nanomaterials for Determination and Removal of Polycyclic Aromatic Hydrocarbons in Food Products: A Review. *Food Chem. X* 2024, 24 (September). <https://doi.org/10.1016/j.fochx.2024.101833>.
3. Yang, L.; Wang, H.; Leng, D.; Fang, S.; Yang, Y.; Du, Y. Machine Learning Applications in Nanomaterials : Recent Advances and Future Perspectives. 2024, 500 (October).
4. Nasrollahzadeh, M.; Sajjadi, M.; Sajadi, S. M.; Issaabadi, Z. Chapter 5 - Green Nanotechnology. In *An Introduction to Green Nanotechnology*; Nasrollahzadeh, M., Sajadi, S. M., Sajjadi, M., Issaabadi, Z., Atarod. and T., Eds.; Elsevier, 2019; Vol. 28, pp 145–198. <https://doi.org/https://doi.org/10.1016/B978-0-12-813586-0.00005-5>.
5. Bayda, S.; Adeel, M.; Tuccinardi, T.; Cordani, M.; Rizzolio, F. Molecules-25-00112-V2.Pdf. *Molecules* 2020, 25 (Figure 1), 1–15.
6. Baig, N.; Kammakam, I.; Falath, W.; Kammakam, I. Nanomaterials: A Review of Synthesis Methods, Properties, Recent Progress, and Challenges. *Mater. Adv.* 2021, 2 (6), 1821–1871. <https://doi.org/10.1039/d0ma00807a>.
7. Chaurasiya, N.; Kumar, U.; Sikarwar, S.; Yadav, B. C.; Yadawa, P. K. Synthesis of TiO<sub>2</sub> Nanorods Using Wet Chemical Method and Their Photovoltaic and Humidity Sensing Applications. *Sensors Int.* 2021, 2 (April). <https://doi.org/10.1016/j.sintl.2021.100095>.
8. Devasahayam, S. Chapter 17 - Nanotechnology and Nanomedicine in Market: A Global Perspective on Regulatory Issues. In *Micro and Nano Technologies*; Mohapatra, S. S., Ranjan, S., Dasgupta, N., Mishra, R. K., Thomas, S. B. T.-C. and B. of N. for D. D., Eds.; Elsevier, 2019; pp 477–522. <https://doi.org/https://doi.org/10.1016/B978-0-12-814031-4.00017-9>.
9. Sengupta, J. Chapter 17 - Application of Carbon Nanomaterials in the Electronic Industry. In *Micro and Nano Technologies*; Hussain, C., Ed.; Elsevier, 2020; pp 421–450. <https://doi.org/https://doi.org/10.1016/B978-0-12-821381-0.00017-X>.
10. Negahdary, M.; Mabbott, S. Automated Synthesis and Processing of Functional Nanomaterials: Advances and Perspectives. *Coord. Chem. Rev.* 2025, 523, 216249. <https://doi.org/https://doi.org/10.1016/j.ccr.2024.216249>.
11. Kumas, K.; Akyuz, A. An Overview on the Use of Nanotechnology in the Renewable Energy Field. *Int. J. Energy Appl. Technol.* 2020, 7 (4), 143–148. <https://doi.org/10.31593/ijeat.764240>.
12. Ping, Y.; Cao, D.; Hu, J.; Lin, Y.; Dang, C.; Xue, D. The Application, Safety, and Challenge of Nanomaterials on Plant Growth and Stress Tolerance. *Ind. Crops Prod.* 2024, 222 (September). <https://doi.org/10.1016/j.indcrop.2024.119691>.
13. Nabi, G.; Majid, A.; Riaz, A.; Alharbi, T.; Arshad Kamran, M.; Al-Habardi, M. Green Synthesis of Spherical TiO<sub>2</sub> Nanoparticles Using Citrus Limetta Extract: Excellent Photocatalytic Water Decontamination Agent for RhB Dye. *Inorg. Chem. Commun.* 2021, 129 (February). <https://doi.org/10.1016/j.inoche.2021.108618>.
14. Siddiqui, T.; Khan, N. J.; Fatma, T. Green Synthesis of Titanium Dioxide Nanoparticles and Their Applications. *Sustain. Nanotechnol. Strateg. Prod. Appl.* 2022, 10 (May), 135–142. <https://doi.org/10.1002/9781119650294.ch8>.
15. Javed, R.; Zia, M.; Naz, S.; Aisida, S. O.; Ain, N. ul; Ao, Q. Role of Capping Agents in the Application of Nanoparticles in Biomedicine and Environmental Remediation: Recent Trends and Future Prospects. *J. Nanobiotechnology* 2020, 18 (1), 1–15. <https://doi.org/10.1186/s12951-020-00704-4>.
16. Vasanth, V.; Murugesu; Susikaran, S. Synthesis of Titanium Dioxide Nanoparticles Using Spirulina Platensis Algae Extract. *Pharma Innov.* 2022, 11 (7S), 266–269.

- <https://doi.org/10.22271/tpi.2022.v11.i7sd.13643>.
17. de Oliveira, M. L.; Rodrigues, L. M.; Silva da Veiga, M. A. M.; Souza, L. R. R. Advancing Nanomaterial Synthesis: Harnessing Green Chemistry for Sustainable Innovation. *Green Anal. Chem.* 2024, 11 (August).  
<https://doi.org/10.1016/j.greeac.2024.100148>.
  18. Riska, A. M.; Putri, N. P. Green Synthesis TiO<sub>2</sub> Menggunakan Ekstrak Daun Pepaya (Carica Papaya L.) Sebagai Bioreduktor Yang Berpotensi Dalam Aplikasi Fotokatalitik Green Synthesis of TiO<sub>2</sub> Using Papaya (Carica Papaya L.) Leaf Extract as a Bioreductor with Potential in Photocatalytic. 2024, 9 (1), 1–7.
  19. Hidayat, R.; Fadillah, G.; Ohira, S.-I.; Fajarwati, F. I.; Setyorini, D. A.; Saputra, A. Facile Green Synthesis of Ag Doped TiO<sub>2</sub> Nanoparticles Using Maple Leaf for Bisphenol-A Degradation and Its Antibacterial Properties. *Mater. Today Sustain.* 2024, 26, 100752. <https://doi.org/https://doi.org/10.1016/j.mtsust.2024.100752>.
  20. Wijaya, B.; Apriandanu, D. O. B.; Surya, R. M.; Yulizar, Y.; Sambudi, N. S.; Khalil, M.; Umar, A. Synthesis of Novel TiO<sub>2</sub>/CeFeO<sub>3</sub> Heterojunction Using Mugwort (Artemisia Vulgaris) Leaves Extracts with Enhanced Photocatalytic Activity under Visible Light Irradiation. *Appl. Surf. Sci. Adv.* 2024, 21, 100599.  
<https://doi.org/https://doi.org/10.1016/j.apsadv.2024.100599>.
  21. Zulhadjri; Rizki, A.; Putri, Y. E.; Wendari, T. P.; Mufti, N.; Setiyanto, H.; Aziz, M. S. Innovative Synthesis and Performance Enhancement of Yttria-Stabilized Zirconia Nanocrystals via Hydrothermal Method with Uncaria Gambir Roxb. Leaf Extract as a Capping Agent. *Kuwait J. Sci.* 2024, 100342.  
<https://doi.org/https://doi.org/10.1016/j.kjs.2024.100342>.
  22. Rilda, Y.; Ulfa, M.; Holilah, H.; Baruji, H.; Nur, H.; Pardi, H. Tailoring Structural and Optical Properties of Ti<sub>1-x</sub>M<sub>x</sub>O<sub>2</sub> (M = Fe, Co, Ni, Cu, and Zn) Nanoparticles for Enhanced Antimicrobial Activity: A Sol-Gel Synthesis Study. *J. Dispers. Sci. Technol.* 2024, 0 (0), 1–10. <https://doi.org/10.1080/01932691.2024.2397356>.
  23. Qin, N.; Lu, X.; Liu, Y.; Qiao, Y.; Qu, W.; Feng, F.; Sun, H. Recent Research Progress of Uncaria Spp. Based on Alkaloids: Phytochemistry, Pharmacology and Structural Chemistry. *Eur. J. Med. Chem.* 2021, 210, 112960.  
<https://doi.org/10.1016/j.ejmech.2020.112960>.
  24. Mahendra, I.; Azhar, M. Ekstraksi Dan Karakterisasi Katekin Dari Gambir (Uncaria Gambir Roxb). *J. Period. Jur. Kim. UNP* 2022, 11 (1), 5.  
<https://doi.org/10.24036/p.v11i1.113262>.
  25. Mayaringtyas, R.; Susanti, H.; Kunci, K.; Gambir Roxb, U. Prosiding Seminar Nasional Farmasi Universitas Ahmad Dahlan Total Flavonoid Contents And Antioxidant of Activity of Menthanol Fraction Of Gambir Leaf Ethanol Extract (Uncaria Gambir Roxb). *Pros. Semin. Nas. Farm. Univ.* 2023, 49–54.
  26. Elsyia, S. A. R.; Zulhadjri, Z.; Arief, S. Pendekatan Green Synthesis Nanopartikel CuFe<sub>2</sub>O<sub>4</sub> Dengan Bantuan Ekstrak Daun Gambir Dan Sifat Anti Bakterinya. *J. Kim. dan Kemasan* 2019, 41 (2), 55. <https://doi.org/10.24817/jkk.v41i2.5417>.
  27. Jannah, N.; Ha, M.; Othman, D.; Abu, S.; Khadijah, S.; El-badawy, T.; Jaafar, J.; Rahman, M. A. Journal of Water Process Engineering Hydrothermal Synthesis of TiO<sub>2</sub> Nano FI Ower Deposited on Bauxite Hollow Fi Bre Membrane for Boosting Photocatalysis of Bisphenol A. 2020, 37 (July).
  28. Citak, A.; Safak, U. Synthesis of Titanium Dioxide Nanoparticles with Renewable Resources and Their Applications : Review. 2022, 46 (5).  
<https://doi.org/10.55730/1300-0527.3443>.
  29. Rilda, Y.; Safitri, R.; Agustien, A.; Nazir, N.; Syafiuddin, A.; Nur, H. Enhancement of Antibacterial Capability of Cotton Textiles Coated with TiO<sub>2</sub>-SiO<sub>2</sub>/Chitosan Using Hydrophobization. *J. Chinese Chem. Soc.* 2017, 64 (11), 1347–1353.  
<https://doi.org/10.1002/jccs.201700165>.
  30. Zanatta, A. R. Temperature-Dependent Optical Bandgap of TiO<sub>2</sub> under the Anatase and Rutile Phases. *Results Phys.* 2024, 60 (April).  
<https://doi.org/10.1016/j.rinp.2024.107653>.
  31. Azwina, F.; Ardani, M. R.; Ramli, S. F.; Rezan, S. A.; Aziz, H. A. Sudy the Effect of Calcination Temperature and Time on TiO<sub>2</sub> Band Gap Synthesized from TiCl<sub>4</sub>

- Coagulation Sludge. *Mater. Today Proc.* 2019, 32, 407–411.  
<https://doi.org/10.1016/j.matpr.2020.02.088>.
32. Rilda, Y.; Alif, A.; Munaf, E.; Agustien, A. Effects of Molar Ratio on the Synthesis and Characterization Nanocluster TiO<sub>2</sub>-SiO<sub>2</sub> with Induced Copolymer Chitosan by Sol - Gel. *Res. J. Pharm. Biol. Chem. Sci.* 2014, 5 (2), 1417–1427.
  33. Thakur, N.; Thakur, N.; Kumar, A.; Thakur, V. K.; Kalia, S.; Arya, V.; Kumar, A.; Kumar, S.; Kyzas, G. Z. A Critical Review on the Recent Trends of Photocatalytic, Antibacterial, Antioxidant and Nanohybrid Applications of Anatase and Rutile TiO<sub>2</sub> Nanoparticles. *Sci. Total Environ.* 2024, 914 (November 2023).  
<https://doi.org/10.1016/j.scitotenv.2023.169815>.
  34. Puri, N.; Gupta, A. Water Remediation Using Titanium and Zinc Oxide Nanomaterials through Disinfection and Photo Catalysis Process: A Review. *Environ. Res.* 2023, 227 (March). <https://doi.org/10.1016/j.envres.2023.115786>.
  35. Farooq, N.; Kallem, P.; ur Rehman, Z.; Imran Khan, M.; Kumar Gupta, R.; Tahseen, T.; Mushtaq, Z.; Ejaz, N.; Shanableh, A. Recent Trends of Titania (TiO<sub>2</sub>) Based Materials: A Review on Synthetic Approaches and Potential Applications. *J. King Saud Univ. - Sci.* 2024, 36 (6). <https://doi.org/10.1016/j.jksus.2024.103210>.
  36. Alameen, A. S.; Undre, S. B.; Undre, P. B. Synthesis, Dispersion, Functionalization, Biological and Antioxidant Activity of Metal Oxide Nanoparticles: Review. *Nano-Structures and Nano-Objects* 2024, 39 (April).  
<https://doi.org/10.1016/j.nanoso.2024.101298>.
  37. Wadhwa, S.; Mathur, A.; Pendurthi, R.; Singhal, U.; Khanuja, M.; Roy, S. S. Titania-Based Porous Nanocomposites for Potential Environmental Applications. *Bull. Mater. Sci.* 2020, 43 (1). <https://doi.org/10.1007/s12034-019-2009-8>.
  38. Rilda, Y.; Valeri, A.; Syukri, S.; Agustien, A.; Pardi, H.; Sofyan, N. Biosynthesis, Characterization, and Antibacterial Activity of Ti-Doped ZnO (Ti/ZnO) Using Mediated *Aspergillus Niger*. *South African J. Chem. Eng.* 2023, 45 (November 2022), 10–19.  
<https://doi.org/10.1016/j.sajce.2023.04.001>.
  39. Wang, C.; Zainal Abidin, S.; Toyong, N. M. P.; Zhu, W.; Zhang, Y. Mildew Resistance and Antibacterial Activity of Plywood Decorated with ZnO/TiO<sub>2</sub> Nanoparticle. *J. Saudi Chem. Soc.* 2024, 28 (4). <https://doi.org/10.1016/j.jscs.2024.101877>.
  40. Zhang, B.; Gao, S.; Cheng, J.; Li, R.; Wang, E.; Guo, Y.; Zhang, K.; Liang, J.; Liu, B. Y-Doped TiO<sub>2</sub> Coating with Superior Bioactivity and Antibacterial Property Prepared via Plasma Electrolytic Oxidation. *Mater. Des.* 2020, 192, 1–12.  
<https://doi.org/10.1016/j.matdes.2020.108758>.
  41. Pathak, T. K.; Kroon, R. E.; Craciun, V.; Popa, M.; Chifiriuc, M. C.; Swart, H. C. Influence of Ag, Au and Pd Noble Metals Doping on Structural, Optical and Antimicrobial Properties of Zinc Oxide and Titanium Dioxide Nanomaterials. *Heliyon* 2019, 5 (3). <https://doi.org/10.1016/j.heliyon.2019.e01333>.
  42. Begmatova, D.; Eshkuvatov, H.; Abdullayev, N.; Xodjayeva, N.; Suvonova, O.; Ishtayev, J. Use of Educational Technologies in Teaching the Basics of Nanophysics, Nanomaterials and Nanotechnologies. *Results Opt.* 2024, 16 (March), 100717.  
<https://doi.org/10.1016/j.rio.2024.100717>.
  43. Bokov, D.; Turki Jalil, A.; Chupradit, S.; Suksatan, W.; Javed Ansari, M.; Shewael, I. H.; Valiev, G. H.; Kianfar, E. Nanomaterial by Sol-Gel Method: Synthesis and Application. *Adv. Mater. Sci. Eng.* 2021, 2021. <https://doi.org/10.1155/2021/5102014>.
  44. Singh, T.; Shukla, S.; Kumar, P.; Wahla, V.; Bajpai, V. K. Application of Nanotechnology in Food Science: Perception and Overview. *Front. Microbiol.* 2017, 8 (AUG), 1–7. <https://doi.org/10.3389/fmicb.2017.01501>.
  45. Harinisri, K.; Jayanthi, N.; Suresh Kumar, R. Diverse Application of Green Nanotechnology – A Review. *Mater. Today Proc.* 2023.  
<https://doi.org/10.1016/j.matpr.2023.06.085>.
  46. Masara, B.; van der Poll, J. A.; Maaza, M. A Nanotechnology-Foresight Perspective of South Africa. *J. Nanoparticle Res.* 2021, 23 (4). <https://doi.org/10.1007/s11051-021-05193-6>.
  47. Chen, X.; Mao, S. S. Titanium Dioxide Nanomaterials: Synthesis, Properties, Modifications, and Applications. *Chem. Rev.* 2007, 107 (7), 2891–2959.

- <https://doi.org/10.1021/cr0500535>.
48. Reddy, K. K.; Goud, K. Y.; Satyanarayana, M.; Kummari, S.; Kumar, V. S.; Bandal, H.; Jayaramudu, T.; Pyarasani, R. D.; Kim, H.; Amalraj, J.; Gobi, K. V. Chapter Four - Metal Oxide-Metal Nanocomposite-Modified Electrochemical Sensors for Toxic Chemicals. In *Metal Oxides*; Pandikumar, A., Rameshkumar; Elsevier, 2021; pp 79–137. <https://doi.org/https://doi.org/10.1016/B978-0-12-820727-7.00001-X>.
  49. Linsebigler, A. L.; Lu, G.; Yates, J. T. J. Photocatalysis on TiO<sub>2</sub> Surfaces: Principles, Mechanisms, and Selected Results. *Chem. Rev.* 1995, 95 (3), 735–758. <https://doi.org/10.1021/cr00035a013>.
  50. Kim, M.; Baek, J.; Kim, S.; Bae, J.; Cho, B. J.; Kim, J.; Hwang, W. S. Improvement of Electrical and Optoelectronic Properties of ZnO Thin Films by Plasma Nitridation Treatment. *Opt. Mater. (Amst)*. 2024, 155 (May). <https://doi.org/10.1016/j.optmat.2024.115863>.
  51. Lakshmanan, A.; Alex, Z. C.; Meher, S. R. Recent Advances in Cuprous Oxide Thin Film Based Photovoltaics. *Mater. Today Sustain.* 2022, 20. <https://doi.org/10.1016/j.mtsust.2022.100244>.
  52. Tadic, M.; Panjan, M.; Lalatone, Y.; Milosevic, I.; Tadic, B. V.; Lazovic, J. Magnetic Properties, Phase Evolution, Hollow Structure and Biomedical Application of Hematite ( $\alpha$ -Fe<sub>2</sub>O<sub>3</sub>) and QUAIPH. *Adv. Powder Technol.* 2022, 33 (12). <https://doi.org/10.1016/j.appt.2022.103847>.
  53. Zheng, F.; Beleggia, M.; Migunov, V.; Pozzi, G.; Dunin-Borkowski, R. E. Electron-Beam-Induced Charging of an Al<sub>2</sub>O<sub>3</sub> Nanotip Studied Using off-Axis Electron Holography. *Ultramicroscopy* 2022, 241, 113593. <https://doi.org/https://doi.org/10.1016/j.ultramic.2022.113593>.
  54. Gołabiewska, A.; Kobylański, M. P.; Zaleska-Medynska, A. 2 - Fundamentals of Metal Oxide-Based Photocatalysis. In *Metal Oxides*; Zaleska-Medynska, P., Ed.; Elsevier, 2018; pp 3–50. <https://doi.org/https://doi.org/10.1016/B978-0-12-811634-0.00002-0>.
  55. Farag, S.; Amr, A.; El-Shafei, A.; Asker, M. S.; Ibrahim, H. M. Green Synthesis of Titanium Dioxide Nanoparticles via Bacterial Cellulose (BC) Produced from Agricultural Wastes. *Cellulose* 2021, 28 (12), 7619–7632.
  56. Mohammad Saifulddin, Mohd.; Tan Ji, Siang. Contemporary Assessment on Composite Titania onto Graphitic Carbon Nitride-Based Catalyst as Photocatalyst. *J. Energy Saf. Technol.* 2019, 2 (1), 2–7. <https://doi.org/10.11113/jest.v2n1.39>.
  57. Chaki Borrás, M.; Sluyter, R.; Barker, P. J.; Konstantinov, K.; Bakand, S. Y<sub>2</sub>O<sub>3</sub> Decorated TiO<sub>2</sub> Nanoparticles: Enhanced UV Attenuation and Suppressed Photocatalytic Activity with Promise for Cosmetic and Sunscreen Applications. *J. Photochem. Photobiol. B Biol.* 2020, 207 (December 2019). <https://doi.org/10.1016/j.jphotobiol.2020.111883>.
  58. Qasim, A. K.; Jamil, L. A.; Chen, Q. Enhanced Photoelectrochemical Water Splitting of Hydrothermally-Grown ZnO and Yttrium-Doped ZnO NR Arrays. *IOP Conf. Ser. Mater. Sci. Eng.* 2018, 454 (1).
  59. Govindasamy, R.; Govindarasu, M.; Alharthi, S. S.; Mani, P.; Bernardshaw, N.; Gomathi, T.; Ansari, M. A.; Alomary, M. N. Sustainable Green Synthesis of Yttrium Oxide ( Y<sub>2</sub>O<sub>3</sub>) Nanoparticles Using Lantana Camara Leaf Extracts : Physicochemical Characterization , Photocatalytic Degradation , Antibacterial , and Anticancer Potency. 2022.
  60. Aswathy, P. M.; Sarina, P.; Kavitha, M. K.; Priya, M. J.; John, H.; Jayaraj, M. K. Development of Au Doped TiO<sub>2</sub> Nanofibers for Photocatalytic Applications. In *AIP Conference Proceedings*; AIP Publishing, 2019; Vol. 2082.
  61. Kanoun, M. B.; Ahmed, F.; Awada, C.; Jonin, C.; Brevet, P. F. Band Gap Engineering of Au Doping and Au – N Codoping into Anatase TiO<sub>2</sub> for Enhancing the Visible Light Photocatalytic Performance. *Int. J. Hydrogen Energy* 2024, 51, 907–913. <https://doi.org/10.1016/j.ijhydene.2023.10.244>.
  62. Ghobashy, M. M.; Alkhursani, S. A.; Alqahtani, H. A.; El-damhougy, T. K.; Madani, M. Gold Nanoparticles in Microelectronics Advancements and Biomedical Applications. *Mater. Sci. Eng. B* 2024, 301, 117191.

- <https://doi.org/https://doi.org/10.1016/j.mseb.2024.117191>.
63. Fan, J.; Cheng, Y.; Sun, M. Functionalized Gold Nanoparticles: Synthesis, Properties and Biomedical Applications. *Chem. Rec.* 2020, 20 (12), 1474–1504.
  64. Giljohann, D. A.; Seferos, D. S.; Daniel, W. L.; Massich, M. D.; Patel, P. C.; Mirkin, C. A. Gold Nanoparticles for Biology and Medicine. *Spherical Nucleic Acids* 2020, 55–90.
  - (65) Rathore, C.; Yadav, V. K.; Gacem, A.; Chundawat, R. S.; Gnanamoorthy, G.; Yadav, K. K.; Choudhary, N.; Sahoo, D. K. Microbial Synthesis of Titanium Dioxide Nanoparticles and Their Importance in Wastewater Treatment and Antimicrobial Activities : A Review. 2022, No. October.
  66. Karmakar, D.; Karmakar, S.; Ghosh, A.; Jana, D. A Comparative Overview of the Recent Progress of Some Novel Metal Oxide and Sulfide Nanomaterials-Based Photocatalyst. *Mater. Today Commun.* 2024, 40, 110115.  
<https://doi.org/https://doi.org/10.1016/j.mtcomm.2024.110115>.
  67. Mazari, S. A.; Ali, E.; Abro, R.; Khan, F. S. A.; Ahmed, I.; Ahmed, M.; Nizamuddin, S.; Siddiqui, T. H.; Hossain, N.; Mubarak, N. M.; Shah, A. Nanomaterials: Applications, Waste-Handling, Environmental Toxicities, and Future Challenges - A Review. *J. Environ. Chem. Eng.* 2021, 9 (2). <https://doi.org/10.1016/j.jece.2021.105028>.
  68. Enriyani, R.; Zulfikar, M. A.; Alni, A. Sintesis Dan Karakterisasi Titanium Oksida Dalam Cairan Ion 1-Butil-3- Metil Imidazolium Klorida Dengan Metode Hidrotermal Synthesis and Characterization of Titanium Oxide in 1-Butyl-3-Methyl Immidazolium Chloride Ionic Liquid by Hydrothermal Method. 2022, No. May, 64–71.
  69. Sebayang, L.; Afni Hardyani, M. The Morphology Characteristics of Plant Gambir (Uncaria Gambire Roxb.) in Pakpak Barat District. *J. Pertan. Trop.* 2020, 7 (2), 213–218. <https://doi.org/10.32734/jpt.v7i2.4374>.
  70. Haryanto, S. *Ensiklopedi Tanaman Obat Indonesia*, 1st ed.; PalMall: Yogyakarta, 2012.
  71. Yunarto, Nanang; Elya, B.; Konadi, L. Potensi Fraksi Etil Asetat Ekstrak Daun Gambir ( Uncaria Gambir Roxb .) Sebagai Antihiperlipidemia Potency of Ethyl Acetate Fraction of Gambier Leaves Extract Abstrak Mengandung Katekin Adalah Gambir Alat Dan Bahan Ini Adalah Rotary Evaporator ( Buchi ).. *J. kefarmasian Indones.* 2015, 5 (1), 1–10.
  72. Kasim, A.; Malrianti, Y.; Derosya, V.; Syukri, D. Gc-Ms Screening of Valuable Volatile Compounds in the Waste of Uncaria Gambir. *Ann. Biol.* 2019, 35 (2), 242–245.
  73. Anggraeni Putri, P.; Chatri, M.; Advinda, L. Karakteristik Saponin Senyawa Metabolit Sekunder Pada Tumbuhan. *J. Serambi Biol.* 2023, 8(2) (2), 251–258.
  74. Restrepo, C. V.; Villa, C. C. Synthesis of Silver Nanoparticles, Influence of Capping Agents, and Dependence on Size and Shape: A Review. *Environ. Nanotechnology, Monit. Manag.* 2021, 15 (December 2020), 100428.  
<https://doi.org/10.1016/j.enmm.2021.100428>.
  75. Arief, S.; Wellia, D. V.; Ohya, Y. Hydrothermal Synthesized Ag Nanoparticles Using Bioreductor of Gambier Leaf Extract (Uncaria Gambier Roxb) Studies on the Mechanism of Chalaza Formation in Quail Eggs View Project Aurivillius View Project. 2015, No. January.
  76. Firdausni, F ; Hermianti, Wilsa; Diza, Y. H. Jurnal Litbang Industri Jurnal Litbang Industri. *J. Litbang Ind.* 2022, 2014 (2), 73–81.
  77. Hartanti, L.; Ashari, A. M.; Warsidah, W. Total Phenol and Antioxidant Activity of Ethanol Extract and Water Extract from Claw Uncariaa Gambir Roxb. *Berk. Sainstek* 2021, 9 (3), 131. <https://doi.org/10.19184/bst.v9i3.27179>.
  78. Ismail, A. S.; Rizal, Y.; Armenia, A.; Kasim, A. Determination of the Best Method for Processing Gambier Liquid By-Product [Uncaria Gambir (Hunter) Roxb] as Natural Antioxidant Sources. *J. Indones. Trop. Anim. Agric.* 2021, 46 (2), 166–172. <https://doi.org/10.14710/jitaa.46.2.166-172>.
  79. Gani, M.; Cuaca, Y.; Ayucitra, A.; Indraswati, N. Ekstraksi Senyawa Fenolik Antioksidan Dari Daun Dan Tangkai Gambir. *J. Tek. Kim. Indones.* 2018, 12 (2), 250. <https://doi.org/10.5614/jtki.2013.12.2.4>.
  80. Flieger, J.; Flieger, W.; Baj, J.; Maciejewski, R. Antioxidants: Classification, Natural Sources, Activity/Capacity Measurements, and Usefulness for the Synthesis of

- Nanoparticles. *Materials (Basel)*. 2021, 14 (15). <https://doi.org/10.3390/ma14154135>.
81. Rozi, F.; Nuzul Azhim Ash Siddiq, M.; Masyhuri Majiding, C.; Kesehatan Masyarakat, F.; Mulawarman, U. Analisis Kapasitas Antioksidan Minuman Sumber Vitamin C. *J. Kesehat. Tambusai* 2023, 4, 6105–6111.
  82. Martemucci, G.; Costagliola, C.; Mariano, M.; D'andrea, L.; Napolitano, P.; D'Alessandro, A. G. Free Radical Properties, Source and Targets, Antioxidant Consumption and Health. *Oxygen* 2022, 2 (2), 48–78. <https://doi.org/10.3390/oxygen2020006>.
  83. Karundeng, G.; Simbala, H. E. I.; Jayanto, I. Identifikasi Fitokimia, Uji Aktivitas Antioksidan Dengan Metode 1.1-Diphenyl-2-Picrylhydrazyl (DPPH), Dan Toksisitas Dengan Metode Brine Shrimp Lethality Test (BSLT) Dari Ekstrak Etanol Tangkai Buah Pinang Yaki (*Areca Vestitaria Giseke*). *Pharmacon* 2019, 8 (3), 619. <https://doi.org/10.35799/pha.8.2019.29385>.
  84. Sagheer, R.; Khalil, M.; Abbas, V.; Kayani, Z. N.; Tariq, U.; Ashraf, F. Effect of Mg Doping on Structural, Morphological, Optical and Thermal Properties of ZnO Nanoparticles. *Optik (Stuttg)*. 2020, 200 (September 2019). <https://doi.org/10.1016/j.ijleo.2019.163428>.
  85. Dobrucka, R. Synthesis of Titanium Dioxide Nanoparticles Using Echinacea Purpurea Herba. *Iran. J. Pharm. Res.* 2017, 16 (2), 753–759.
  86. Desi Heltina; Imamatul Mastura, D.; Partama, A. Uji Kinerja Komposit TiO<sub>2</sub>-Graphene/Surfaktan Dalam Mendegradasi Senyawa Fenol. *Risenologi* 2021, 6 (1b), 50–55. <https://doi.org/10.47028/j.risenologi.2021.61b.244>.
  87. Igenepo John, K.; Abdul Adenle, A.; Timothy Adeleye, A.; Pearl Onyia, I.; Amune-Matthews, C.; Omorogie, M. O. Unravelling the Effect of Crystal Dislocation Density and Microstrain of Titanium Dioxide Nanoparticles on Tetracycline Removal Performance. *Chem. Phys. Lett.* 2021, 776 (February), 138725. <https://doi.org/10.1016/j.cplett.2021.138725>.
  88. Sultana, M.; Mondal, A.; Islam, S.; Afroza, M. Strategic Development of Metal Doped TiO<sub>2</sub> Photocatalysts for Enhanced Dye Degradation Activity under UV – Vis Irradiation : A Review Current Research in Green and Sustainable Chemistry Strategic Development of Metal Doped TiO<sub>2</sub> Photocatalysts for Enhanced. *Curr. Res. Green Sustain. Chem.* 2023, 7 (November), 100383.
  89. Ahmad, W.; Kumar, S.; Ahmed, S. Microwave-Assisted One-Step Biosynthesis of Titanium Dioxide Nanoparticles: Antibacterial, Antioxidant, and Photocatalytic Properties. *Kuwait J. Sci.* 2024, 51 (2). <https://doi.org/10.1016/j.kjs.2024.100203>.
  90. Priscilla, S. J.; Daniel, R.; Dhakshayani, Y.; Caroline, S. C.; Sivaji, K. Effect of Magnesium Dopant on the Structural, Morphological and Electrical Properties of ZnO Nanoparticles by Sol-Gel Method. *Mater. Today Proc.* 2019, 36, 793–796. <https://doi.org/10.1016/j.matpr.2020.07.005>.
  91. Amendola, V.; Meneghetti, M. Size Evaluation of Gold Nanoparticles by UV-vis Spectroscopy. *J. Phys. Chem. C* 2019, 113 (11), 4277–4285. <https://doi.org/10.1021/jp8082425>.
  92. Na-Phattalung, S.; Harding, D. J.; Pattanasattayavong, P.; Kim, H.; Lee, J.; Hwang, D. W.; Chung, T. D.; Yu, J. Band Gap Narrowing of TiO<sub>2</sub> Nanoparticles: A Passivated Co-Doping Approach for Enhanced Photocatalytic Activity. *J. Phys. Chem. Solids* 2022, 162 (August 2021). <https://doi.org/10.1016/j.jpcs.2021.110503>.
  93. Pandiyan, N.; Murugesan, B.; Arumugam, M.; Chinnaalagu, D.; Samayanan, S.; Mahalingam, S. Ionic Liquid Mediated Green Synthesis of Ag-Au/Y<sub>2</sub>O<sub>3</sub> Nanoparticles Using Leaves Extracts of *Justicia Adhatoda*: Structural Characterization and Its Biological Applications. *Adv. Powder Technol.* 2021, 32 (7), 2213–2225. <https://doi.org/10.1016/j.appt.2021.04.030>.
  94. Benson. Manual Laboratorium Aplikasi Mikrobiologi. 2024, 1–14.