

DAFTAR PUSTAKA

- Abd El-aziz, A. M., El-Maghraby, A., & Taha, N. A. (2017). Comparison Between Polyvinyl Alcohol (PVA) Nanofiber and Polyvinyl Alcohol (PVA) Nanofiber/Hydroxyapatite (HA) for Removal of Zn²⁺ Ions from Wastewater. *Arabian Journal of Chemistry*, 10(8), 1052–1060. <https://doi.org/10.1016/j.arabjc.2016.09.025>
- Agrawal, K., Singh, G., Puri, D., & Prakash, S. (2011). Synthesis and Characterization of Hydroxyapatite Powder by Sol-Gel Method for Biomedical Application. *Journal of Minerals & Materials Characterization & Engineering*, 10(8), 727–734. <https://doi.org/10.4028/www.scientific.net/AMR.152-153.1305>
- Anjaneyulu, U., Priyadarshini, B., Nirmala Grace, A., & Vijayalakshmi, U. (2016). Fabrication and Characterization of Ag Doped Hydroxyapatite-Polyvinyl Alcohol Composite Nanofibers and its In Vitro Biological Evaluations for Bone Tissue Engineering Applications. *Journal of Sol-Gel Science and Technology*, 81(3), 750–761. <https://doi.org/10.1007/s10971-016-4243-5>
- Arsad, M. S M, Lee, P. M., & Hung, L. K. (2010). Morphology and Particle Size Analysis of Hydroxyapatite Micro- and Nano-Particles. *CSSR 2010 - 2010 International Conference on Science and Social Research*, (03), 1030–1034. <https://doi.org/10.1109/CSSR.2010.5773682>
- Arsad, Maisara S.M., & Lee, P. M. (2011). Synthesis and Characterization of Hydroxyapatite Nanoparticles and β-TCP Particles. *2nd International Conference on Biotechnology and Food Science*, 7, 184–188. <https://doi.org/10.4028/www.scientific.net/DDF.312-315.423>
- Ashraf, A. A., Zebarjad, S. M., & Hadianfard, M. J. (2019). The Cross-Linked Polyvinyl Alcohol/Hydroxyapatite Nanocomposite Foam. *Journal of Materials Research and Technology*, 8(3), 3149–3157. <https://doi.org/10.1016/j.jmrt.2019.02.024>
- Bacakova, L., Filova, E., Parizek, M., Rumli, T., & Svorcik, V. (2011). Modulation of cell adhesion, proliferation and differentiation on materials designed for body implants. *Biotechnology Advances*, 29(6), 739–767. <https://doi.org/10.1016/j.biotechadv.2011.06.004>
- Baldwin, P., Li, D. J., Auston, D. A., Mir, H. S., Yoon, R. S., & Koval, K. J. (2019). Autograft, Allograft, and Bone Graft Substitutes: Clinical Evidence and Indications for Use in the Setting of Orthopaedic Trauma Surgery. *Journal of Orthopaedic Trauma*, 33(4), 203–213. <https://doi.org/10.1097/BOT.0000000000001420>
- Bhattacharjee, P. K., Schneider, T. M., Brenner, M. P., McKinley, G. H., & Rutledge, G. C. (2013). On the Measured Current in Needle- and Needleless Electrospinning. *Journal of Nanoscience and Nanotechnology*, 13(7), 4672–4679. <https://doi.org/10.1166/jnn.2013.7189>
- Bilhim, T., Pisco, J. M., Duarte, M., & Oliveira, A. G. (2011). Polyvinyl Alcohol Particle Size for Uterine Uterine Embolization: A Prospective Randomized Study of Initial Use of 350-500μm Particles Versus Initial Use of 500-700μm Particles. *Journal of Vascular and Interventional Radiology*, 22(1), 21–27. <https://doi.org/10.1016/j.jvir.2010.09.018>
- Bose, S., Roy, M., & Bandyopadhyay, A. (2012). Recent Advances in Bone Tissue Engineering Scaffolds. *Trends in Biotechnology*, 30(10), 546–554.

- <https://doi.org/10.1016/j.tibtech.2012.07.005>
- Chee, B. S., de Lima, G. G., Devine, D., & Nugent, M. J. D. (2019). Electrospun Hydrogels Composites for Bone Tissue Engineering. In *Applications of Nanocomposite Materials in Orthopedics*. <https://doi.org/10.1016/b978-0-12-813740-6.00003-x>
- Du, S., Kendall, K., Toloueinia, P., Mehrabadi, Y., Gupta, G., & Newton, J. (2012). Aggregation and Adhesion of Gold Nanoparticles in Phosphate Buffered Saline. *Journal of Nanoparticle Research*, 14(3). <https://doi.org/10.1007/s11051-012-0758-z>
- Epp, J. (2016). X-Ray Diffraction (XRD) Techniques for Materials Characterization. In *Materials Characterization Using Nondestructive Evaluation (NDE) Methods*. <https://doi.org/10.1016/B978-0-08-100040-3.00004-3>
- Fang, J., Zhang, Y., Yan, S., Liu, Z., He, S., Cui, L., & Yin, J. (2014). Poly(L-glutamic acid)/chitosan polyelectrolyte complex porous microspheres as cell microcarriers for cartilage regeneration. *Acta Biomaterialia*, 10(1), 276–288. <https://doi.org/10.1016/j.actbio.2013.09.002>
- Ferdiansyah Mahyudin, N., & Fedik Abdul Rantam, N. (2011). Regenerasi pada Massive Bone Defect dengan Bovine Hydroxyapatite sebagai Scaffold Mesenchymal Stem Cell. *Jurnal Biosains Pascasarjana*, 13(3), 179–195.
- Ficai, A., Andronescu, E., Voicu, G., & Ficai, D. (2011). Advances in Collagen/Hydroxyapatite Composite Materials. In *Intechopen* (pp. 1–32). <https://doi.org/http://dx.doi.org/10.5772/57353>
- Franco, P. Q., João, C. F. C., Silva, J. C., & Borges, J. P. (2012). Electrospun Hydroxyapatite Fibers from a Simple Sol-gel System. *Materials Letters*, 67(1), 233–236. <https://doi.org/10.1016/j.matlet.2011.09.090>
- Ghelich, R., Keyanpour Rad, M., & Youzbashi, A. A. (2015). Study on morphology and size distribution of electrospun NiO-GDC composite nanofibers. *Journal of Engineered Fibers and Fabrics*, 10(1), 12–19. <https://doi.org/10.1177/155892501501000102>
- Giardina, M. A., & Fanovich, M. A. (2010). Synthesis of Nanocrystalline Hydroxyapatite from Ca(OH)2 and H3PO4 Assisted by Ultrasonic Irradiation. *Ceramics International*, 36(6), 1961–1969. <https://doi.org/10.1016/j.ceramint.2010.05.008>
- Guerado, E., & Caso, E. (2017). Challenges of Bone Tissue Engineering in Orthopaedic Patients. *World Journal of Orthopaedics*, 8(2), 87–98. <https://doi.org/10.5312/wjo.v8.i2.87>
- Guo, J. L., Piepergerdes, T. C., & Mikos, A. G. (2020). Bone Graft Engineering : Composite Scaffolds. In *Dental Implants and Bone Grafts: Materials and Biological Issues*. <https://doi.org/10.1016/B978-0-08-102478-2.00007-6>
- Hezma, A. M., EL-Rafei, A. M., El-Bahy, G. S., & Abdelrazzak, A. B. (2017). Electrospun Hydroxyapatite Containing Polyvinyl Alcohol Nanofibers Doped with Nanogold for Bone Tissue Engineering. *InterCeram: International Ceramic Review*, 66(3), 96–100. <https://doi.org/10.1007/bf03401205>
- Holopainen, J., Santala, E., Heikkilä, M., & Ritala, M. (2015). Electrospinning of Calcium Carbonate Fibers and Their Conversion to Nanocrystalline Hydroxyapatite. *Materials Science and Engineering C*, 45, 469–476. <https://doi.org/10.1016/j.msec.2014.09.035>
- Idris, A. M., & El-Zahhar, A. A. (2019). Indicative Properties Measurements by SEM, SEM-EDX and XRD for Initial Homogeneity Tests of New Certified Reference Materials. *Microchemical Journal*, 146(2018), 429–433.

- <https://doi.org/10.1016/j.microc.2019.01.032>
- Jain, N., Singh, V. K., & Chauhan, S. (2018). *A Review on Mechanical and Water Absorption Properties of Polyvinyl Alcohol Based Composites / Films.*
- Jiang, W., & Liu, H. (2016). Nanocomposites for Bone Repair and Osteointegration with Soft Tissues. In *Nanocomposites for Musculoskeletal Tissue Regeneration*. <https://doi.org/10.1016/B978-1-78242-452-9.00011-X>
- Jiao, H., Zhao, K., Ma, L., Tang, Y., Liu, X., & Bian, T. (2017). Preparation and Characterization of BaTiO₃ /HA Nanocomposite Materials by Hydrothermal Synthesis. *Journal of Alloys and Compounds*, 693, 221–225. <https://doi.org/10.1016/j.jallcom.2016.09.175>
- Jones, D. R. H., & Ashby, M. F. (2019). Yield Strength, Tensile Strength, and Ductility. *Engineering Materials* 1, 137–156. <https://doi.org/10.1016/b978-0-08-102051-7.00008-7>
- Kakiage, M., & Oda, S. (2019). Nanofibrous Hydroxyapatite Composed of Nanoparticles Fabricated by Electrospinning. *Materials Letters*, 248(March), 114–118. <https://doi.org/10.1016/j.matlet.2019.03.138>
- Kheirallah, M., & Almeshaly, H. (2016). Present Strategies for Critical Bone Defects Regeneration. *Oral Health Case Reports*, 02(03). <https://doi.org/10.4172/2471-8726.1000127>
- Khurana, J. S. (2009). Bone Pathology. In *Bone Pathology*. <https://doi.org/10.1007/978-1-59745-347-9>
- Kim, K., Yeatts, A., Dean, D., Ph, D., Fisher, J. P., Ph, D., & Dma, P. E. G. (2010). *Stereolithographic Bone Scaffold Design Parameters : Osteogenic Differentiation and Signal Expression*. 16(5). <https://doi.org/10.1089/ten.teb.2010.0171>
- Kurniawan, C., Waluyo, T. B., & Perdamean Sebayang. (2011). Analisis Ukuran Partikel Menggunakan Free Software Image-J. *Seminar Nasional Fisika*, (12-13 Juli 2011), 1–9.
- Lee, J. H., & Kim, Y. J. (2014). Hydroxyapatite Nanofibers Fabricated Through Electrospinning and Sol-gel Process. *Ceramics International*, 40(2), 3361–3369. <https://doi.org/10.1016/j.ceramint.2013.09.096>
- Li, W., Zhou, J., & Xu, Y. (2015). Study of the In Vitro Cytotoxicity Testing of Medical Devices. *Biomedical Reports*, 3(5), 617–620. <https://doi.org/10.3892/br.2015.481>
- Liu, D. D., Zhang, J. C., Yi, C. Q., & Yang, M. S. (2010). The Effects of Gold Nanoparticles on the Proliferation, Differentiation, and Mineralization Function of MC3T3-E1 Cells In Vitro. *Chinese Science Bulletin*, 55(11), 1013–1019. <https://doi.org/10.1007/s11434-010-0046-1>
- Lobb, D. C., DeGeorge, B. R., & Chhabra, A. B. (2019). Bone Graft Substitutes: Current Concepts and Future Expectations. *Journal of Hand Surgery*, 44(6), 497-505.e2. <https://doi.org/10.1016/j.jhsa.2018.10.032>
- Mawuntu, V. J., & Yusuf, Y. (2019). Porous Structure Engineering of Bioceramic Hydroxyapatite-Based Scaffolds Using PVA, PVP, and PEO as Polymeric Porogens. *Journal of Asian Ceramic Societies*, 7(2), 161–169. <https://doi.org/10.1080/21870764.2019.1595927>
- Mohamed, M. A., Jaafar, J., Ismail, A. F., Othman, M. H. D., & Rahman, M. A. (2017). Spectroscopy. In *Membrane Characterization*. <https://doi.org/10.1016/B978-0-444-63776-5.00001-2>
- Mohammad Ali Zadeh, M., Keyanpour-Rad, M., & Ebadzadeh, T. (2014). Effect of

- Viscosity of Polyvinyl Alcohol Solution on Morphology of the Electrospun Mullite Nanofibres. *Ceramics International*, 40(4), 5461–5466.
<https://doi.org/10.1016/j.ceramint.2013.10.132>
- Mondal, S., & Pal, U. (2019). 3D Hydroxyapatite Scaffold for Bone Regeneration and Local Drug Delivery Applications. *Journal of Drug Delivery Science and Technology*, 53(April), 101131. <https://doi.org/10.1016/j.jddst.2019.101131>
- Munir, M. M., Iskandar, F., Khairurrijal, & Okuyama, K. (2009). High Performance Electrospinning System for Fabricating Highly Uniform Polymer Nanofibers. *Review of Scientific Instruments*, 80(2). <https://doi.org/10.1063/1.3079688>
- Patravale, V., Dandekar, P., & Jain, R. (2012). Nanotoxicology: Evaluating Toxicity Potential of Drug-Nanoparticles. *Nanoparticulate Drug Delivery*, 123–155.
<https://doi.org/10.1533/9781908818195.123>
- Pineda-Castillo, S., Bernal-Ball n, A. s., Bernal-López, C., Segura-Puello, H., Nieto-Mosquera, D., Villamil-Ballesteros, A., ... Munster, L. (2018). Synthesis and Characterization of Poly(Vinyl Alcohol)-Chitosan-Hydroxyapatite Scaffolds: A Promising Alternative for Bone Tissue Regeneration. *Molecules*, 23(10).
<https://doi.org/10.3390/molecules23102414>
- Präbst, K., Engelhardt, H., Ringgeler, S., & Hübner, H. (2017). Colorimetric Proliferation Assays. *Basic Colorimetric Proliferation Assays: MTT, WST, and Resazurin*, 1601, 1–17. <https://doi.org/10.1007/978-1-4939-6960-9>
- Rao, B. G., Mukherjee, D., & Reddy, B. M. (2017). Nanostructures for Novel Therapy Novel Approaches for Preparation of Nanoparticles. In *Nanostructures for Novel Therapy*. <https://doi.org/10.1016/B978-0-323-46142-9/00001-3>
- Ren, L., Xu, J., Zhang, Y., Zhou, J., Chen, D., & Chang, Z. (2019). Preparation and characterization of porous chitosan microspheres and adsorption performance for hexavalent chromium. *International Journal of Biological Macromolecules*, 135, 898–906. <https://doi.org/10.1016/j.ijbiomac.2019.06.007>
- Saba, N., Jawaid, M., & Sultan, M. T. H. (2019). An Overview of Mechanical and Physical Testing of Composite Materials. In *Mechanical and Physical Testing of Biocomposites, Fibre-Reinforced Composites and Hybrid Composites*.
<https://doi.org/10.1016/b978-0-08-102292-4.00001-1>
- Santosa, A., Widianto, E., & Restianto, F. (2017). Rancang Bangun Sistem Electrospinning untuk Mensintesis Nanofiber Polivinil Alkohol dan Karakterisasinya. *Infomatek*, 19(2), 101. <https://doi.org/10.23969/infomatek.v19i2.634>
- Saxena, V., Shukla, I., & Pandey, L. M. (2019). Hydroxyapatite: An Inorganic Ceramic for Biomedical Applications. In *Materials for Biomedical Engineering*.
<https://doi.org/10.1016/b978-0-12-816909-4.00008-7>
- Schemitsch, E. H. (2017). Size Matters: Defining Critical in Bone Defect Size! *Journal of Orthopaedic Trauma*, 31(10), S20–S22.
<https://doi.org/10.1097/BOT.0000000000000978>
- Shepherd, J. H., Friederichs, R. J., & Best, S. M. (2015). Synthetic Hydroxyapatite for Tissue Engineering Applications. In *Hydroxyapatite (HAp) for Biomedical Applications*. <https://doi.org/10.1016/B978178242033000011-0>
- Song, W., Markel, D. C., Wang, S., Shi, T., Mao, G., & Ren, W. (2012). Electrospun polyvinyl alcohol-collagen-hydroxyapatite nanofibers: A biomimetic extracellular matrix for osteoblastic cells. *Nanotechnology*, 23(11).
<https://doi.org/10.1088/0957-4484/23/11/115101>

- Szczęś, A., Hołysz, L., & Chibowski, E. (2017). Synthesis of Hydroxyapatite for Biomedical Applications. *Advances in Colloid and Interface Science*, 249(April), 321–330. <https://doi.org/10.1016/j.cis.2017.04.007>
- Tripathi, G., & Basu, B. (2012). A Porous Hydroxyapatite Scaffold for Bone Tissue Engineering: Physico-mechanical and Biological Evaluations. *Ceramics International*, 38(1), 341–349. <https://doi.org/10.1016/j.ceramint.2011.07.012>
- Uma Maheshwari, S., Samuel, V. K., & Nagiah, N. (2014). Fabrication and Evaluation of (PVA/HAp/PCL) Bilayer Composites as Potential Scaffolds for Bone Tissue Regeneration Application. *Ceramics International*, 40(6), 8469–8477. <https://doi.org/10.1016/j.ceramint.2014.01.058>
- University of California Riverside. (2013). *Introduction to Energy Dispersive X-ray Spectrometry (EDS)*. 1–11. Retrieved from <http://micron.ucr.edu/public/manuals/EDS-intro.pdf>
- Vojevodova, A., & Loca, D. (2017). Hydroxyapatite/Polyvinyl Alcohol Composite In Situ Synthesis for Hydrogel Formation. *Key Engineering Materials*, 721 KEM, 202–207. <https://doi.org/10.4028/www.scientific.net/KEM.721.202>
- Wahyudi, T., & Sugiyana, D. (2011). Pembuatan Serat Nano Menggunakan Metode Electrospinning. *Arena Tekstil*, 26(1), 29–34. <https://doi.org/10.31266/at.v26i1.1439>
- Wattanutchariya, W., & Changkowchai, W. (2014). Characterization of Porous Scaffold from Chitosan-gelatin/Hydroxyapatite for Bone Grafting. *Lecture Notes in Engineering and Computer Science*, 2210(January).
- Wills, B. A., & Finch, J. A. (2016). Particle Size Analysis. In *Wills' Mineral Processing Technology* (pp. 91–107). <https://doi.org/10.1016/B978-0-08-097053-0.00004-2>
- Wu, L., Dou, Y., Lin, K., Zhai, W., Cui, W., & Chang, J. (2011). Hierarchically Structured Nanocrystalline Hydroxyapatite Assembled Hollow Fibers as a Promising Protein Delivery System. *Chemical Communications*, 47(42), 11674–11676. <https://doi.org/10.1039/c1cc14709a>
- Wulandari, A. F. (2017). *Karakterisasi In Vitro Scaffold PLA 3D-Printing Menggunakan Metode FDM dengan Coating HIdroksiapatit-Kitosan untuk Rekonstruksi Mandibula*. Universitas Airlangga.
- Xie, X., Chen, Y., Wang, X., Xu, X., Shen, Y., Khan, A. ur R., ... Mo, X. (2020). Electrospinning nanofiber scaffolds for soft and hard tissue regeneration. *Journal of Materials Science & Technology*. <https://doi.org/10.1016/j.jmst.2020.04.037>
- Yelten-Yilmaz, A., & Yilmaz, S. (2018). Wet Chemical Precipitation Synthesis of Hydroxyapatite (HA) Powders. *Ceramics International*, 44(8), 9703–9710. <https://doi.org/10.1016/j.ceramint.2018.02.201>
- Yi, H., Ur Rehman, F., Zhao, C., Liu, B., & He, N. (2016). Recent Advances in Nano Scaffolds for Bone Repair. *Bone Research*, 4(June). <https://doi.org/10.1038/boneres.2016.50>