

DAFTAR PUSTAKA

- Biswas, A., Furtado, R.F., Bastos, M. do S.R., Benevides, S.D., Oliveira, M. de A., Boddu, V., and Cheng, H.N., 2018, Preparation and characterization of carboxymethyl cellulose films with embedded essential oils, *J. Mater. Sci. Res.*, 7 (4), 16–25.
- Castejón-del Pino, R., Cayuela, M.L., Sánchez-García, M., and Sánchez-Monedero, M.A., 2023, Nitrogen availability in biochar-based fertilizers depending on activation treatment and nitrogen source, *Waste Manag.*, 158 (1), 76–83.
- Chen, F., Miao, C., Duan, Q., Jiang, S., Liu, H., Ma, L., Li, Z., Bao, X., Lan, B., Chen, L., and Yu, L., 2023, Developing slow release fertilizer through in-situ radiation-synthesis of urea-embedded starch-based hydrogels, *Ind. Crops Prod.*, 191 (11), 1–11.
- Chen, W., Bu, Y., Li, D., Liu, C., Chen, G., Wan, X., and Li, N., 2020, High-strength, tough, and self-healing hydrogel based on carboxymethyl cellulose, *Cellulose*, 27 (2), 853–865.
- Daitx, T.S., Giovanela, M., Carli, L.N., and Mauler, R.S., 2019, Biodegradable polymer/clay systems for highly controlled release of NPK fertilizer, *Polym. Adv. Technol.*, 30 (3), 631–639.
- Dong, H., Wu, L., Zhang, L., Chen, H., and Gao, C., 2015, Clay nanosheets as charged filler materials for high-performance and fouling-resistant thin film nanocomposite membranes, *J. Memb. Sci.*, 494 (11), 92–103.
- Dong, Z., Qu, N., Jiang, Q., Han, Z., Sun, L., Zhang, T., Liang, D., Shi, Y., and Cheng, Z., 2023, Preparation and properties of multifunctional eco-friendly slow-release urea fertilizer encapsulated by diatomite filter aid waste-based superabsorbent, *Prog. Org. Coatings*, 183 (7), 1–10.
- Fageria, N.K., Baligar, C., and Clark, R.B., 2002, *Micronutrients in crop production*, Elsevier Inc., United States of America.
- Feng, X., Hou, X., Cui, C., Sun, S., Sadik, S., Wu, S., and Zhou, F., 2021, Mechanical and antibacterial properties of tannic acid-encapsulated carboxymethyl chitosan/polyvinyl alcohol hydrogels, *Eng. Regen.*, 2 (4), 57–62.
- Gao, D., Ran, C., Zhang, Y., Wang, X., Lu, S., Geng, Y., Guo, L., and Shao, X., 2022, Effect of different concentrations of foliar iron fertilizer on chlorophyll fluorescence characteristics of iron-deficient rice seedlings under saline sodic conditions, *Plant Physiol. Biochem.*, 185 (5), 112–122.
- Ghavaminejad, A., Ashammakhi, N., Wu, X.Y., and Khademhosseini, A., 2020, Crosslinking strategies for 3D bioprinting of polymeric hydrogels, *Small*, 16 (35), 1–30.
- Harunsyah, Sariadi, and Raudah, 2018, The effect of clay nanoparticles as reinforcement on mechanical properties of bioplastic base on cassava starch, *J.*

Phys. Conf. Ser., 953 (1), 1–7.

- He, K., He, G., Wang, C., Zhang, H., Xu, Y., Wang, S., Kong, Y., Zhou, G., and Hu, R., 2020, Biochar amendment ameliorates soil properties and promotes *Miscanthus* growth in a coastal saline-alkali soil, *Appl. Soil Ecol.*, 155 (7), 1–10.
- He, Sirui, Liu, J., He, Shu, Liu, A., and Shao, W., 2022, Double crosslinked polyvinyl alcohol/gelatin/silver sulfadiazine sponges with excellent antibacterial performance, *Colloids Surfaces A Physicochem. Eng. Asp.*, 643 (3), 1–9.
- Kartini, I., Lumbantobing, E.T., Suyanta, S., Sutarno, S., and Adnan, R., 2020, Bioplastic composite of carboxymethyl cellulose/N-P-K fertilizer, *Key Eng. Mater.*, 840 (11), 156–161.
- Khan, M.A., Islam, J.M.M., Arifur Rahman, M., Khan, R.A., and Islam, T., 2010, Study on the effect of urea on the mechanical and morphological properties of jute/gelatin composites, *Polym. - Plast. Technol. Eng.*, 49 (9), 885–891.
- Korsmeyer, R.W., Gurny, R., Doelker, E., Buri, P., and Peppas, N.A., 1983, Mechanisms of solute release from porous hydrophilic polymers, *Int. J. Pharm.*, 15 (1), 25–35.
- Li, Y., Hou, X., Pan, Y., Wang, L., and Xiao, H., 2020, Redox-responsive carboxymethyl cellulose hydrogel for adsorption and controlled release of dye, *Eur. Polym. J.*, 123 (1), 1–8.
- Luo, Z., Li, Yunliang, Pei, X., Woon, K.S., Liu, M., Lin, X., Hu, Z., Li, Yongtao, and Zhang, Z., 2024, A potential slow-release fertilizer based on biogas residue biochar: Nutrient release patterns and synergistic mechanism for improving soil fertility, *Environ. Res.*, 252 (4), 1–13.
- Mahender, A., Swamy, B.P.M., Anandan, A., and Ali, J., 2019, Tolerance of Iron-Deficient and -toxic soil conditions in Rice, *Plants*, 8 (2), 1–34.
- Mondal, M.I.H., Yeasmin, M.S., and Rahman, M.S., 2015, Preparation of food grade carboxymethyl cellulose from corn husk agrowaste, *Int. J. Biol. Macromol.*, 79 (4), 144–150.
- Mu, Z., Zhang, W., Chai, D. feng, Lv, Q., Tan, X., Yuan, R., and Dong, G., 2024, Preparation and characterization of slow-release urea fertilizer encapsulated by a blend of starch derivative and polyvinyl alcohol with desirable biodegradability and availability, *Int. J. Biol. Macromol.*, 271 (1), 1–11.
- Naz, M.Y. and Sulaiman, S.A., 2016, Slow release coating remedy for nitrogen loss from conventional urea: A review, *J. Control. Release*, 225 (1), 109–120.
- Nikolaos A. Peppas, J.J.S., 1989, A simple equation for the description of solute release. III. Coupling of diffusion and relaxation, *International Journal of Pharmaceutics*, *Int. J. Pharm.*, 57 (2), 169–172.
- Pal, A., Kaur, P., Dwivedi, N., Rookes, J., Bohidar, H.B., Yang, W., Cahill, D.M., and Manna, P.K., 2023, Clay-nanocomposite based smart delivery systems: A

- promising tool for sustainable farming, *ACS Agric. Sci. Technol.*, 3 (1), 3–16.
- Patel, S., Bajpai, A.K., Bajpai, J., Saini, R.K., and Acharya, S., 2017, Facile preparation of iron loaded calcium alginate nanocarriers and study of controlled release of iron, *J. Environ. Chem. Eng.*, 5 (6), 5337–5346.
- Picchio, M.L., Linck, Y.G., Monti, G.A., Gugliotta, L.M., Minari, R.J., and Alvarez Igarzabal, C.I., 2018, Casein films crosslinked by tannic acid for food packaging applications, *Food Hydrocoll.*, 84 (7), 424–434.
- Pourmadadi, M., Rahmani, E., Shamsabadipour, A., Samadi, A., Esmaili, J., Arshad, R., Rahdar, A., Tavangarian, F., and Pandey, S., 2023, Novel carboxymethyl cellulose based nanocomposite: A promising biomaterial for biomedical applications, *Process Biochem.*, 130 (12), 211–226.
- Rahman, M.S., Hasan, M.S., Nitai, A.S., Nam, S., Karmakar, A.K., Ahsan, M.S., Shiddiky, M.J.A., and Ahmed, M.B., 2021, Recent developments of carboxymethyl cellulose, *Polymers (Basel)*, 13 (8), 1–48.
- Rubentheren, V., Ward, T.A., Chee, C.Y., and Tang, C.K., 2015, Processing and analysis of chitosan nanocomposites reinforced with chitin whiskers and tannic acid as a crosslinker, *Carbohydr. Polym.*, 115 (9), 379–387.
- Sarkar, K. and Sen, K., 2018, Polyvinyl alcohol based hydrogels for urea release and Fe(III) uptake from soil medium, *J. Environ. Chem. Eng.*, 6 (1), 736–744.
- Sethi, S., Thakur, S., Sharma, D., Singh, G., Sharma, N., Kaith, B.S., and Khullar, S., 2022, Malic acid cross-linked chitosan based hydrogel for highly effective removal of chromium (VI) ions from aqueous environment, *React. Funct. Polym.*, 177 (7), 1–19.
- Shui, T., Feng, S., Chen, G., Li, A., Yuan, Z., Shui, H., Kuboki, T., and Xu, C., 2017, Synthesis of sodium carboxymethyl cellulose using bleached crude cellulose fractionated from cornstalk, *Biomass and Bioenergy*, 105 (7), 51–58.
- Siepmann, J. and Peppas, N.A., 2011, Higuchi equation: Derivation, applications, use and misuse, *Int. J. Pharm.*, 418 (1), 6–12.
- Simões, B.M., Cagnin, C., Yamashita, F., Olivato, J.B., Garcia, P.S., de Oliveira, S.M., and Eiras Grossmann, M.V., 2020, Citric acid as crosslinking agent in starch/xanthan gum hydrogels produced by extrusion and thermopressing, *Lwt*, 125 (12), 1–7.
- Singh, Gagandeep, Singh, Gurbir, and Kang, T.S., 2018, Colloidal systems of surface active ionic liquids and sodium carboxymethyl cellulose: physicochemical investigations and preparation of magnetic nano-composites, *Phys. Chem. Chem. Phys.*, 20 (27), 18528–18538.
- Singh, P., Baisthakur, P., and Yemul, O.S., 2020, Synthesis, characterization and application of crosslinked alginate as green packaging material, *Heliyon*, 6 (1), 1–8.

- Souri, M.K., Naiji, M., and Kianmehr, M.H., 2019, Nitrogen release dynamics of a slow release urea pellet and its effect on growth, yield, and nutrient uptake of sweet basil (*Ocimum basilicum* L.), *J. Plant Nutr.*, 42 (6), 604–614.
- Suman, J., Rakshit, A., Patra, A., Dutta, A., Tripathi, V.K., Mohapatra, K.K., Tiwari, R., and Krishnamoorthi, S., 2023, Enhanced efficiency n fertilizers: an effective strategy to improve use efficiency and ecological sustainability, *J. Soil Sci. Plant Nutr.*, 23 (4), 1472–1488.
- Supramaniam, J., Adnan, R., Mohd Kaus, N.H., and Bushra, R., 2018, Magnetic nanocellulose alginate hydrogel beads as potential drug delivery system, *Int. J. Biol. Macromol.*, 118 (6), 640–648.
- Thivya, P., Bhosale, Y.K., Anandakumar, S., Hema, V., and Sinija, V.R., 2021, Development of active packaging film from sodium alginate/carboxymethyl cellulose containing shallot waste extracts for anti-browning of fresh-cut produce, *Int. J. Biol. Macromol.*, 188 (5), 790–799.
- Thomas, A.P., Kasa, V.P., Dubey, B.K., Sen, R., and Sarmah, A.K., 2023, Synthesis and commercialization of bioplastics: Organic waste as a sustainable feedstock, *Sci. Total Environ.*, 904 (7), 1–16.
- Wang, C., Luo, D., Zhang, X., Huang, R., Cao, Y., Liu, G., Zhang, Y., and Wang, H., 2022, Biochar-based slow-release of fertilizers for sustainable agriculture: A mini review, *Environ. Sci. Ecotechnology*, 10 (3), 1–19.
- Wei, J., Liang, Y., Hu, Y., Kong, B., Simon, G.P., Zhang, J., Jiang, S.P., and Wang, H., 2016, A Versatile iron-tannin-framework ink coating strategy to fabricate biomass-derived iron carbide/Fe-N-Carbon catalysts for efficient oxygen reduction, *Angew. Chemie - Int. Ed.*, 55 (4), 1355–1359.
- Wen, P., Wu, Z., Han, Y., Cravotto, G., Wang, J., and Ye, B.C., 2017, Microwave-assisted synthesis of a novel biochar-based slow-release nitrogen fertilizer with enhanced water-retention capacity, *ACS Sustain. Chem. Eng.*, 5 (8), 7374–7382.
- Wu, L. and Liu, M., 2008, Preparation and properties of chitosan-coated NPK compound fertilizer with controlled-release and water-retention, *Carbohydr. Polym.*, 72 (2), 240–247.
- Yan, W., Shi, M., Dong, C., Liu, L., and Gao, C., 2020, Applications of tannic acid in membrane technologies: A review, *Adv. Colloid Interface Sci.*, 284 (229), 1–23.
- Yurchenko, A. V., Golub, N.B., and Zhu, Y., 2019, Lignin as the basis for obtaining bioplastics, *Innov. Biosyst. Bioeng.*, 3 (3), 185–197.
- Zhang, H., Liang, H., Xing, L., Ding, W., Geng, Z., and Xu, C., 2023, Cellulose-based slow-release nitrogen fertilizers: Synthesis, properties, and effects on pakchoi growth, *Int. J. Biol. Macromol.*, 244 (4), 1–10.
- Zhang, H.W., Xing, L. Bin, Liang, H. xu, Liu, S. zhi, Ding, W., Zhang, J. guo, and Xu, C. yang, 2023, Preparation and characterization of biochar-based slow-release

nitrogen fertilizer and its effect on maize growth, *Ind. Crops Prod.*, 203 (7), 1–10.

Zhang, W., Sun, X.L., Yang, Q., Guo, Y., Cui, Y., Xiang, Y., Hu, B., Wei, J., and Tu, P., 2024, In situ forming of PEG-NH₂/dialdehyde starch Schiff-base hydrogels and their application in slow-release urea, *Int. J. Biol. Macromol.*, 256 (1), 1–11.

Zhou, Z., Liu, T., Zhou, W., Chen, H., Bian, Y., Gong, S., Shi, S.Q., and Li, J., 2022, A strong and biodegradable wood particles-based bioplastic modified by synergistically dynamic cross-linking with tannic acid and Fe³⁺, *Compos. Part B Eng.*, 247 (6), 1–9.

Zhu, C., Zhang, S., Yi, C., Heng, Z., Wang, Z., Liu, C., and Zheng, X., 2023, Aminated rice straw/oxidized sodium alginate/iron(III): Synthesis and slow-release properties of a biomass-based material used as base fertilizer, *Ind. Crops Prod.*, 205 (6), 1–10.