

DAFTAR PUSTAKA

- Ahaduzzaman, M., Milan, L., Morton, C.L., Gerber, P.F., and Walkden-Brown, S.W., 2021, Characterization of Poultry House Dust Using Chemometrics and Scanning Electron Microscopy Imaging, *Poult. Sci.*, 7 (100), 188.
- Ahmed, N., Varadachari, C., and Ghosh, K., 2002, Soil Clay-Humus Complexes. II. Bridging Cations and DTA Studies, *Aust. J. Soil Res.*, 4 (40), 705–713.
- Anonim, 2021, *GAR Special Report on Drought 2021*, United Nations Office for Disaster Risk Reduction, Genewa.
- Bader, B.R., Taban, S.K., Fahmi, A.H., Abood, M.A., and Hamdi, G.J., 2021, Potassium Availability in Soil Amended with Organic Matter and Phosphorous Fertiliser under Water Stress during Maize (*Zea Mays* L) Growth, *J. Saudi Soc. Agric. Sci.*, 6 (20), 390–394.
- Bakari, R., Mungai, N., Thuita, M., and Masso, C., 2020, Impact of Soil Acidity and Liming on Soybean (*Glycine Max*) Nodulation and Nitrogen Fixation in Kenyan Soils, *Acta Agric. Scand. Sect. B Soil Plant Sci.*, 8 (70), 667–678.
- Barker, A. V. and Pilbeam, D.J., 2016, *Handbook of Plant Nutrition*, CRC Press.
- Bhari, R., Kaur, M., and Sarup Singh, R., 2021, Chicken Feather Waste Hydrolysate as a Superior Biofertilizer in Agroindustry, *Curr. Microbiol.*, 6 (78), 2212–2230.
- Cha, J.-Y., Kang, S.-H., Ali, I., Cheol Lee, S., Geun Ji, M., Yi Jeong, S., Shin, G.-I., Gab Kim, M., Jeon, J.-R., and Kim, W.-Y., 2020, Humic Acid Enhances Heat Stress Tolerance via Transcriptional Activation of Heat-Shock Proteins in Arabidopsis, *Sci. Rep.*, 10 (1), 15042.
- Chen, P., Yang, R., Pei, Y., Yang, Y., Cheng, J., He, D., Huang, Q., Zhong, H., and Jin, F., 2022, Hydrothermal Synthesis of Similar Mineral-Sourced Humic Acid from Food Waste and the Role of Protein, *Sci. Total Environ.*, (828), 154440.
- Cimas, Á., Tielens, F., Sulpizi, M., Gageot, M.P., and Costa, D., 2014, The Amorphous Silica-Liquid Water Interface Studied by Ab Initio Molecular Dynamics (AIMD): Local Organization in Global Disorder, *J. Phys. Condens. Matter*, 24 (26), 1–10.
- Czerwinska, K., Sliz, M., and Wilk, M., 2022, Hydrothermal Carbonization Process: Fundamentals, Main Parameter Characteristics and Possible Applications Including an Effective Method of SARS-CoV-2 Mitigation in Sewage Sludge. A Review | Elsevier Enhanced Reader, *Renew. Sustain. Energy Rev.*, (154), 1–17.
- Diah Setyorini, Sri Rochayati, dan I. Las, 2010, Pertanian Pada Ekosistem Lahan

- Sawah,. In, Suradisastra,K., Sahat M. Pasaribu, Bambang,S., Dariah,A., Irsal Las, Haryono, and Pasandaran,E. (eds), *Membalik Kecenderungan Degradasi Sumber Daya Lahan dan Air*. IPB Press, Jakarta.
- Dong, R., Pang, Y., Su, Y., and Zhu, X., 2015, Supramolecular Hydrogels: Synthesis, Properties and Their Biomedical Applications, *Biomater. Sci.*, 7 (3), 937–954.
- Emami, F.S., Puddu, V., Berry, R.J., Varshney, V., Patwardhan, S. V, Perry, C.C., and Heinz, H., 2014, Prediction of Specific Biomolecule Adsorption on Silica Surfaces as a Function of PH and Particle Size, *Chem. Mater.*, 19 (26), 5725–5734.
- Feroz, S., Muhammad, N., Ranayake, J., and Dias, G., 2020, Keratin - Based Materials for Biomedical Applications, *Bioact*, 3 (5), 496–509.
- Fuertes, A.B., Arbestain, M.C., Sevilla, M., Maciá-Agulló, J.A., Fiol, S., López, R., Smernik, R.J., Aitkenhead, W.P., Arce, F., Macias, F., Fuertes, A.B., Arbestain, M.C., Sevilla, M., Maciá-Agulló, J.A., Fiol, S., López, R., Smernik, R.J., Aitkenhead, W.P., Arce, F., et al., 2010, Chemical and Structural Properties of Carbonaceous Products Obtained by Pyrolysis and Hydrothermal Carbonisation of Corn Stover, *Soil Res.*, 7 (48), 618–626.
- Gascó, G., Paz-Ferreiro, J., Álvarez, M.L., Saa, A., and Méndez, A., 2018, Biochars and Hydrochars Prepared by Pyrolysis and Hydrothermal Carbonisation of Pig Manure, *Waste Manag.*, (79), 395–403.
- Ghorbani, S., Eyni, H., Bazaz, S.R., Nazari, H., Asl, L.S., Zaferani, H., Kiani, V., Mehri, A.A., and Soleimani, M., 2018, Hydrogels Based on Cellulose and Its Derivatives: Applications, Synthesis, and Characteristics, *Polym. Sci. Ser. A*, 6 (60), 707–722.
- Gouveia, D.S., Bressiani, A.H.A., and Bressiani, J.C., 2006, Phosphoric Acid Rate Addition Effect in the Hydroxyapatite Synthesis by Neutralization Method, *Mater. Sci. Forum*, November (530–531), 593–598.
- Guo, Z., Li, W., Ul Islam, M., Wang, Y., Zhang, Z., and Peng, X., 2022, Nitrogen Fertilization Degrades Soil Aggregation by Increasing Ammonium Ions and Decreasing Biological Binding Agents on a Vertisol after 12 Years, *Pedosphere*, 4 (32), 629–636.
- Hosseini, S.A., Réthoré, E., Pluchon, S., Ali, N., Billiot, B., and Yvin, J.C., 2019, Calcium Application Enhances Drought Stress Tolerance in Sugar Beet and Promotes Plant Biomass and Beetroot Sucrose Concentration, *Int. J. Mol. Sci.*, 15 (20), 1–22.
- Huang, T., Ju, X., and Yang, H., 2017, Nitrate Leaching in a Winter Wheat-Summer

Maize Rotation on a Calcareous Soil as Affected by Nitrogen and Straw Management OPEN, *Sci. Rep.*, 42247 (7), 1–11.

Ji, Y., Yang, X., Ji, Z., Zhu, L., Ma, N., Chen, D., Jia, X., Tang, J., and Cao, Y., 2020, DFT-Calculated IR Spectrum Amide I, II, and III Band Contributions of N-Methylacetamide Fine Components, *ACS Omega*, 15 (5), 8572–8578.

Jin, P., Song, J., Yang, L., Jin, X., and Wang, X.C., 2018, Selective Binding Behavior of Humic Acid Removal by Aluminum Coagulation, *Environ. Pollut.*, (233), 290–298.

Jing, J., Zhang, S., Yuan, L., Li, Y., Lin, Z., Xiong, Q., and Zhao, B., 2020, Combining Humic Acid with Phosphate Fertilizer Affects Humic Acid Structure and Its Stimulating Efficacy on the Growth and Nutrient Uptake of Maize Seedlings, *Sci. Rep.*, 1 (10), 17502.

Kiss, T. and Hollósi, M., 2001, The Interaction of Aluminium with Peptides and Proteins,. In, *Aluminium and Alzheimer's Disease*. Elsevier.

Kome, G.K., Enang, R.K., Tabi, F.O., and Yerima, B.P.K., 2019, Influence of Clay Minerals on Some Soil Fertility Attributes: A Review, *Open J. Soil Sci.*, 09 (09), 155–188.

Kuncaka, A., Arvianto, R.I., Latifa, A.S.R.B., Rambe, M.R., Suratman, A., and Triono, S., 2021, Analysis and Characterization of Solid and Liquid Organic Fertilizer from Hydrothermal Carbonization (HTC) of Chicken Feather and Blood Waste, *Indones. J. Chem.*, 3 (21), 651–658.

Li, H., Li, N., Zhang, Y., He, H., and Liu, Z., 2017, Anti-Reflection OTS-Treated SiO₂ Thin Films with Super-Hydrophobic Property, *J. Sol-Gel Sci. Technol.*, (83), 518–526.

Li, Q., 2019, Progress in Microbial Degradation of Feather Waste, *Front. Microbiol.*, December (10), 1–15.

Li, Y., Zhu, C., Dong, Y., and Liu, D., 2020, Supramolecular Hydrogels: Mechanical Strengthening with Dynamics, *Polymer (Guildf.)*, (210), 1–12.

Lowe, B.M., Skylaris, C.K., and Green, N.G., 2015, Acid-Base Dissociation Mechanisms and Energetics at the Silica-Water Interface: An Activationless Process, *J. Colloid Interface Sci.*, (451), 231–244.

Ma, J.F., 2005, Plant Root Responses to Three Abundant Soil Minerals: Silicon, Aluminum and Iron, *CRC. Crit. Rev. Plant Sci.*, 4 (24), 267–281.

Malghani, S., Gleixner, G., and Trumbore, S.E., 2013, Chars Produced by Slow Pyrolysis and Hydrothermal Carbonization Vary in Carbon Sequestration Potential and Greenhouse Gases Emissions, *Soil Biol. Biochem.*, (62), 137–

146.

- Mayorov, D. V and Gorbacheva, T.T., 2021, Adsorption of Phosphate Ions from Aqueous Solutions by Amorphous Silica Obtained by Acid Decomposition of Nepheline, *Colloids Surfaces A Physicochem. Eng. Asp.*, (627), 1–8.
- Mazzei, P., Oschkinat, H., and Piccolo, A., 2013, Reduced Activity of Alkaline Phosphatase Due to Host-Guest Interactions with Humic Superstructures, *Chemosphere*, 9 (93), 1972–1979.
- Mindari, W., Aini, N., and Kusuma, Z., 2014, Effects of Humic Acid-Based Buffer + Cation on Chemical Characteristics of Saline Soils and Maize Growth, *Degrad. Min. L. Manag.*, 1 (2), 259–268.
- Namvar, M., Mahinroosta, M., Allahverdi, A., and Mohammadzadeh, K., 2022, Preparation of Monolithic Amorphous Silica Aerogel through Promising Valorization of Silicomanganese Slag, *J. Non. Cryst. Solids*, (586), 121561.
- Ngene, P., Lambregts, S.F.H., Blanchard, D., Vegge, T., Sharma, M., Hagemann, H., and De Jongh, P.E., 2019, The Influence of Silica Surface Groups on the Li-Ion Conductivity of LiBH₄/SiO₂ Nanocomposites, *Phys. Chem. Chem.*, 40 (21), 22456–22466.
- Nkoh, J.N., Hong, Z., Lu, H., Li, J., and Xu, R., 2022, Adsorption of Amino Acids by Montmorillonite and Gibbsite: Adsorption Isotherms and Spectroscopic Analysis, *Appl. Clay Sci.*, (219), 437.
- Nurdiawati, A., Nakhshiniev, B., Zaini, I.N., Saidov, N., Takahashi, F., and Yoshikawaa, K., 2018, Characterization of Potential Liquid Fertilizers Obtained by Hydrothermal Treatment of Chicken Feathers, *Environ. Prog. Sustain. Energy*, 3 (33), 375–382.
- Oviasogie, P.O. and Okolo, P.O., 2008, Effect of PH and Concentration on the Complexation of Calcium Ions with Humic Acid Extracted from Composted Oil Palm Bunches, *Int. J. Phys. Sci.*, 2 (3), 056–058.
- Puddu, V. and Perry, C.C., 2014, Interactions at the Silica-Peptide Interface: The Influence of Particle Size and Surface Functionality, *Langmuir*, 1 (30), 227–233.
- Rimola, A., Costa, D., Sodupe, M., Lambert, O., and Ugliengo, P., 2013, Silica Surface Features and Their Role in the Adsorption of Biomolecules: Computational Modeling and Experiments, *Chem. Rev.*, (113), 4261–4314.
- Rimola, A., Sodupe, M., and Ugliengo, P., 2009, Affinity Scale for the Interaction of Amino Acids with Silica Surfaces, *J. Phys. Chem. C*, 14 (113), 5741–5750.
- Saha, S., Arshad, M., Zubair, M., and Ullah, A., 2019, Keratin as a Biopolymer,.

- In, Sharma, S. and Kumar, A. (eds), *Keratin as a Protein Biopolymer*. Springer, Malayisa.
- Shao, Y., Bao, M., Huo, W., Ye, R., Liu, Y., and Lu, W., 2021, Production of Artificial Humic Acid from Biomass Residues by a Non-Catalytic Hydrothermal Process, *J. Clean. Prod.*, October 2021 (335), 130302.
- Shin, E.W., Han, J.S., Jang, M., Min, S.H., Park, J.K., and Rowell, R.M., 2004, Phosphate Adsorption on Aluminum-Impregnated Mesoporous Silicates: Surface Structure and Behavior of Adsorbents, *Environ. Sci. Technol.*, 3 (38), 912–917.
- Sirousazar, M. and Khodamoradi, P., 2020, Freeze-Thawed Humic Acid/Polyvinyl Alcohol Supramolecular Hydrogels, *Mater. Today Commun.*, June 2019 (22), 100719.
- Smeulders, D.E., Wilson, M.A., and Kamali Kannangara, G.S., 2001, Host - Guest Interactions in Humic Materials, *Org. Geochem.*, 11 (32), 1357–1371.
- Stavinskaya, O.N., Laguta, I. V., and Kuzema, P.A., 2006, Adsorption Properties of Highly Dispersed Silica with a Partially Hydrophobic Surface, *Russ. J. Phys. Chem.*, 8 (80), 1305–1308.
- Stevenson, F., 1994, Humus Chemistry: Genesis, Composition, Reactions, *Humus Chem.*, 4 (72), 512.
- Tan, L., Yu, Z., Tan, X., Fang, M., Wang, Xiangxue, Wang, J., Xing, J., Ai, Y., and Wang, Xiangke, 2019, Systematic Studies on the Binding of Metal Ions in Aggregates of Humic Acid: Aggregation Kinetics, Spectroscopic Analyses and MD Simulations, *Environ. Pollut.*, (246), 999–1007.
- Tesfaye, T., Sithole, B., Ramjugernath, D., and Chunilall, V., 2017, Valorisation of Chicken Feathers: Characterisation of Chemical Properties, *Waste Manag.*, (68), 626–635.
- Thompson, M.A., Mohajeri, A., and Mirkouei, A., 2021, Comparison of Pyrolysis and Hydrolysis Processes for Furfural Production from Sugar Beet Pulp: A Case Study in Southern Idaho, USA, *J. Clean. Prod.*, (311), 127695.
- Varadachari, C., Mondal, A.H., and Ghosh, K., 1991, Some Aspect of Clay-Humus Complexation: Effect of Exchangable Cations and Lattice Charge, *Soil Science*, 3 (151), 220–227.
- White, P.J. and Broadley, M.R., 2003, Calcium in Plants, *Ann. Bot.*, 4 (92), 487–511.
- Widjonarko, D.M., Jumina, Kartini, I., and Nuryono, 2014, Phosphonate Modified Silica for Adsorption of Co(II), Ni(II), Cu(II), and Zn(II), *Indones. J. Chem.*,

2 (14), 143–151.

Yang, F. and Antonietti, M., 2020, Artificial Humic Acids: Sustainable Materials against Climate Change, *Adv. Sci.*, 5 (7), 1–7.

Zhang, Y., Zhao, W., and Yang, R., 2015, Steam Flash Explosion Assisted Dissolution of Keratin from Feathers, *ACS Sustain. Chem. Eng.*, 9 (3), 2036–2042.

Zhao, Y.L., Köppen, S., and Frauenheim, T., 2011, An SCC-DFTB/MD Study of the Adsorption of Zwitterionic Glycine on a Geminal Hydroxylated Silica Surface in an Explicit Water Environment, *J. Phys. Chem. C*, 19 (115), 9615–9621.

Zhuravlev, L.T. and Potapov, V. V, 2006, Density of Silanol Groups on the Surface of Silica Precipitated from a Hydrothermal Solution, *Orig. Russ. Text © L.T. Zhuravlev*, 7 (80), 1272–1282.