

## DAFTAR PUSTAKA

- Ashraf, P. M., Lalitha, K. V., and Edwin, L., 2015, Synthesis of polyaniline hybrid composite: A new and efficient sensor for the detection of total volatile basic nitrogen molecules. *Sensors Actuators, B Chem.*, 208, 369–378.
- Bamfield, P., and Hutchings, M. G., 2010, ‘Chromic phenomena: technological applications of colour chemistry, second edition, *the royal society of chemistry*.
- Bao, X. and Zhou, Y., 2010, Synthesis and recognition properties of a class of simple colorimetric anion chemosensors containing OH and CONH groups. *Sensors Actuators, B Chem.*, 147, 434–441.
- Beyene, H. D. and Tadesse, E., 2014, Study of solvent effect on UV-visible spectra of a newly synthesized azo-dye, 2-(3-carboxyl-4-hydroxyphenyl)-1-(4-nitrophenyl) diazene (PNA-SA). *Int. J. Technol. Enhanc. Emerg. Eng. Res.*, 2, 23–29.
- Buňková, L., Buňka, F., Klčovská, P., Mrkvička, V., Doležalová, M., and Kráčmar, S., 2010, Formation of biogenic amines by Gram-negative bacteria isolated from poultry skin. *Food Chem.*, 121, 203–206.
- Cai, J., Chen, Q., Wan, X., and Zhao, J., 2011, Determination of total volatile basic nitrogen (TVB-N) content and Warner-Bratzler shear force (WBSF) in pork using Fourier transform near infrared (FT-NIR) spectroscopy. *Food Chem.*, 126, 1354–1360.
- Castro, P., Millán, R., Penedo, J.C., Sanjuán, E., Santana, A., and Caballero, M.J., 2012, Effect of storage conditions on total volatile base nitrogen determinations in fish muscle extracts. *J. Aquat. Food Prod. Technol.*, 21, 519–523.
- Chan, S. T., Yao, M. W. Y., Wong, Y. C., Wong, T., Mok, C. S., and Sin, D. W. M., 2006, Evaluation of chemical indicators for monitoring freshness of food and determination of volatile amines in fish by headspace solid-phase microextraction and gas chromatography-mass spectrometry. *Eur. Food Res. Technol.*, 224, 67–74.
- Du, L., Chai, C., Guo, M., and Lu, X., 2015, A model for discrimination freshness of shrimp. *Sens. Bio-Sensing Res.*, 6, 28–32.
- Fessenden, R.J., dan Fessenden, J.S., 1982, Kimia organik edisi ketiga jilid 2 (diterjemahkan oleh Pudjaatmaka, A.H.), *Erlangga*, Jakarta.
- Fitriana, A.S., Pranowo, H.D., and Purwono, B., 2016, Chalcone based colorimetric sensor for anions: Experimental and TD-DFT study. *Indones. J. Chem.*, 16, 80–86.

- Fulmer, G. R., Miller, A. J. M., Sherden, N. H., Gottlieb, H. E., Nudelman, A., Stoltz, B. M., Bercaw, J. E., and Goldberg, K. I., 2010, NMR chemical shifts of trace impurities: common laboratory solvents, organics, and gases in deuterated solvents relevant to the organometallic chemist., *Organometallics.*, 2176–2179.
- Ghouili, A., Dusek, M., Petricek, V., Aayed, T. Ben, and Hassen, R. Ben, 2014, Synthesis, crystal structure and spectral characteristics of highly fluorescent chalcone-based coumarin in solution and in polymer matrix. *J. Phys. Chem. Solids* , 75, 188–193.
- Goswami, S., Sen, D., and Das, N.K., 2010, A new highly selective, ratiometric and colorimetric fluorescence sensor for Cu<sup>2+</sup> with a remarkable red shift in absorption and emission spectra based on internal charge transfer. *Org. Lett.*, 12, 856–859.
- Gunnlaugsson, T., Glynn, M., Tocci, G.M., Kruger, P.E., and Pfeffer, F.M., 2006, Anion recognition and sensing in organic and aqueous media using luminescent and colorimetric sensors., *Coordination Chemistry Reviews.*, 250, 3094–3117.
- Halász, A., Baráth, Á., Simon-Sarkadi, L., and Holzapfel, W., 1994, Biogenic amines and their production by microorganisms in food. *Trends Food Sci. Technol.*, 5, 42–49.
- Huang, L., Zhao, J., Chen, Q., and Zhang, Y., 2014, Nondestructive measurement of total volatile basic nitrogen (TVB-N) in pork meat by integrating near infrared spectroscopy, computer vision and electronic nose techniques. *Food Chem.*, 145, 228–236.
- Huang, Z., Lei, H., Li, N., Qiu, Z., and Wang, H., 2003, Novel heterocycle-based organic molecules with two-photon induced blue fluorescent emission., *J. Mater. Chem.*, 13, 708–711.
- Jarag, K.J., Pinjari, D. V., Pandit, A.B., and Shankarling, G.S., 2011, Synthesis of chalcone (3-(4-fluorophenyl)-1-(4-methoxyphenyl)prop-2-en-1-one): Advantage of sonochemical method over conventional method. *Ultrason. Sonochem.*, 18, 617–623.
- Jin, H., Xiang, L., Wen, F., Tao, K., Liu, Q., and Hou, T., 2008, Improved synthesis of chalconoid-like compounds under ultrasound irradiation. *Ultrason. Sonochem.*, 15, 681–683.
- Kuswandi, B., Damayanti, F., Jayus, J., Abdullah, A., and Heng, L.Y., 2015, Simple and low-cost on-package sticker sensor based on litmus paper for real-time monitoring of beef freshness. *J. Math. Fundam. Sci.*, 47, 236–251.
- Kuswandi, B., Jayus, Larasati, T.S., Abdullah, A., and Heng, L.Y., 2012, Real-time monitoring of shrimp spoilage using on-package sticker sensor based on natural

- dye of curcumin. *Food Anal. Methods*, 5, 881–889.
- Kuswandi, B., Jayus, Oktaviana, R., Abdullah, A., and Heng, L.Y., 2014, A novel on-package sticker sensor based on methyl red for real-time monitoring of broiler chicken cut freshness, *Packag. Technol. Sci.* 2014; 27: 69–81.
- Kuswandi, B., Jayus, Restyana, A., Abdullah, A., Heng, L.Y., and Ahmad, M., 2012, A novel colorimetric food package label for fish spoilage based on polyaniline film. *Food Control*, 25, 18–189.
- Kuswandi, B. and Nurfawaidi, A., 2017, On-package dual sensors label based on pH indicators for real-time monitoring of beef freshness. *Food Control*, 82, 91–100.
- Lakshminarayanan, B., Rajamanickam, V., Subburaju, T., Rajkumar, L. A. P., and Revathi, H., 2010, Synthesis and antimicrobial activity of some aldehyde derivatives of 3-acetylchromen-2-one. *E-Journal Chem.*, 7, 400–404.
- Lampman, P., Vyvyan, K., Pavia, D. L., and Kriz, G. S., 2009, 'Introduction to Spectroscopy, 4<sup>th</sup> Edition, Thomson learning, Inc., *United States of America*.
- Martínez-Mañez, R., and Sancenón, F., 2003, Fluorogenic and chromogenic chemosensors and reagents for anions., *Chem. Rev.*, 103, 4419–4423.
- Mohammadi, A., Yazdanbakhsh, M.R., and Farahnak, L., 2012, Synthesis and evaluation of changes induced by solvent and substituent in electronic absorption spectra of some azo disperse dyes. *Spectrochim. Acta - Part A Mol. Biomol. Spectrosc.*, 89, 238–242.
- Mokale, S.N., Begum, A., Sakle, N.S., Shelke, V.R., and Bhavale, S.A., 2017, Design, synthesis and anticancer screening of 3-(3-(substituted phenyl) acryloyl)-2H-chromen-2ones as selective anti-breast cancer agent. *Biomed. Pharmacother.*, 89, 966–972.
- Nur, A., 2015, Sintesis 4-(2,6-difenil-piridin-4-il)-2-metoksi-fenol dan 4-(2-amino-6-fenil-pirimidin-4-il)-2-metoksi fenol dari vanilin sebagai senyawa kemosensor anion, *Tesis*, Departemen Kimia FMIPA-UGM, Yogyakarta.
- Omotayo, A. R., El-ishaq, A., and Tijjani, L. M., 2016, Comparative analysis of protein content in selected meat samples (cow, rabbit, and chicken) obtained within Damaturu metropolis., *American J. Food Sci. Health.*, 2, 151–155.
- Pingaew, R., Saekee, A., Mandi, P., Nantasenamat, C., Prachayasittikul, S., Ruchirawat, S., and Prachayasittikul, V., 2014, Synthesis, biological evaluation and molecular docking of novel chalcone-coumarin hybrids as anticancer and antimalarial agents. *Eur. J. Med. Chem.*, 85, 65–76.
- Prasath, R., Bhavana, P., Ng, S.W., and Tiekink, E.R.T., 2013, The facile and

efficient ultrasound-assisted synthesis of new quinoline-appended ferrocenyl chalcones and their properties. *J. Organomet. Chem.*, 726, 62–70.

- Prasath, R., Bhavana, P., Sarveswari, S., Ng, S.W., and Tiekink, E.R.T., 2015, Efficient ultrasound-assisted synthesis, spectroscopic, crystallographic and biological investigations of pyrazole-appended quinoliny chalcones. *J. Mol. Struct.*, 1081, 201–210.
- Proestos, C., Loukatos, P., and Komaitis, M., 2008, Determination of biogenic amines in wines by HPLC with precolumn dansylation and fluorimetric detection. *Food Chem.*, 106, 1218–1224.
- Purwono, B., Anwar, C., and Hanapi, A., 2013, Syntheses of azo-imine derivatives from vanillin as an acid base indicator. *Indones. J. Chem.*, 13, 1–6.
- Radchatawedchakoon, W., Sangsuwan, W., Kruanetr, S., and Sakee, U., 2014, Synthesis and evaluation of simple naked-eye colorimetric chemosensors for anions based on azo dye-thiosemicarbazones. *Spectrochim. Acta - Part A Mol. Biomol. Spectrosc.*, 121, 306–312.
- Reena, V., Suganya, S., and Velmathi, S., 2013, Synthesis and anion binding studies of azo-Schiff bases: Selective colorimetric fluoride and acetate ion sensors. *J. Fluor. Chem.*, 153, 89–95.
- Reichardt, C., 2004, Solvents and solvent effects in organic chemistry, third edition. *Federal republic of Germany*.
- Rodriguez, S.V., Guñez, R. F., Matos, M. J., Olea-Azar, C., Maya, J. D., Uriarte, E., Santana, L., and Borges, F., 2015, Synthesis and typanocidal properties of new coumarin-chalcone derivatives. *Med. Chem. (Los. Angeles)*, 5, 173–177.
- Rosa, G.P., Seca, A.M.L., Barreto, M.D.C., and Pinto, D.C.G.A., 2017, Chalcone: A valuable scaffold upgrading by green methods. *ACS Sustain. Chem. Eng.*, 5, 7467–7480.
- Rukchon, C., Nopwinyuwong, A., Trevanich, S., Jinkarn, T., and Suppakul, P., 2014, Development of a food spoilage indicator for monitoring freshness of skinless chicken breast. *Talanta*, 130, 547–554.
- Sahoo, S. K., Sharma, D., Bothra, S., Roy, S. M., Kumar, R., Kumar, S. K. A., Nandrec, J. P., Patilc, U. D., and Callan, J. F., 2016, Pyridoxal derived chemosensor: Its application in anion sensing and molecular logic gate building. *Indian J. Chem. - Sect. A Inorganic, Phys. Theor. Anal. Chem.*, 55A, 44–50.

- Sakai, R., Satoh, T., and Kakuchi, T., 2017, Polyacetylenes as colorimetric and fluorescent chemosensor for anions. *Polym. Rev.*, 57, 159–174.
- Santos-Figueroa, L.E., Moragues, M.E., Climent, E., Agostini, A., Martínez-Máñez, R., and Sancenón, F., 2013, Chromogenic and fluorogenic chemosensors and reagents for anions. A comprehensive review of the years 2010–2011. *Chem. Soc. Rev.*, 42, 3489.
- Shakhtour, F. G. and Babji, A. S., 2013, Powdered cumin sprinkling on biochemical quality attributes of red tilapia fillet stored ice, *J. Food Tech.*, 14-21.
- Shan, Y., Liu, Z., Cao, D., Liu, G., Guan, R., Sun, N., Wang, C., and Wang, K., 2015, Coumarinic chalcone derivatives as chemosensors for cyanide anions and copper ions. *Sensors Actuators, B Chem.*, 221, 463–469.
- Shan, Y., Wu, Q., Sun, N., Sun, Y., Cao, D., Liu, Z., Guan, R., Xu, Y., and Yu, X., 2017, Two indole chalcone derivatives as chemosensor for cyanide anions. *Mater. Chem. Phys.*, 186, 295–300.
- Šimat, V., Maršić-Lučić, J., Tudor, M., and Mladineo, I., 2009, Long-term storage influence on volatile amines (TVB-N and TMA-N) in sardines and herring utilized as food for tuna fattening. *J. Appl. Ichthyol.*, 25, 766–770.
- Sivasankar, T., Paunikar, A. W., and Moholkar, V. S., 2007, Mechanistic approach to enhancement of the yield of a sonochemical reaction, *AIChE Journal*, 53 (5), 1132-1143.
- Sun, Y., Chen, H., Cao, D., Liu, Z., Chen, H., Deng, Y., and Fang, Q., 2012, Chalcone derivatives as fluorescence turn-on chemosensors for cyanide anions. *J. Photochem. Photobiol. A Chem.*, 244, 65–70.
- Sun, Y., Wang, Y., Cao, D., Chen, H., Liu, Z., and Fang, Q., 2012, 3-Amidocoumarins as chemodosimeters to trap cyanide through both Michael and intramolecular cyclization reaction. *Sensors Actuators, B Chem.*, 174, 500–505.
- Susilo, J., 2016, Sintesis turunan Senyawa imidazole dari vanilin sebagai sensor fluoresen anion, *Tesis*, Departemen Kimia FMIPA-UGM, Yogyakarta.
- Toro, C., Thibert, A., and De, B.L., 2008, Disperse red 1 fluorescence emission in solution at room temperature. *J. Phys. Chem. B*, 112, 929–937.
- Urmila, K., Li, H., Chen, Q., Hui, Z., and Zhao, J., 2015, Quantifying of total volatile basic nitrogen (TVB-N) content in chicken using a colorimetric sensor array and nonlinear regression tool. *Anal. Methods*, 7, 5682–5688.
- Vazquez-Rodriguez, S., Matos, M.J., Guinez, R.F., Maya, J.D., Lapier, M., Oleazar, C., Pérez-Cruz, F., Uriarte, E., and Santana, L., 2012, Coumarin-chalcone

derivatives as potential antitrypanosomal and antioxidant compounds. *Int. Electron. Conf. Synth. Org. Chem.*, 16th b006/1-b006/14.

Vieira, L.C.C., Paixão, M.W., and Corrêa, A.G., 2012, Green synthesis of novel chalcone and coumarin derivatives via Suzuki coupling reaction. *Tetrahedron Lett.*, 53, 2715–2718.

Wu, T.H. and Bechtel, P.J., 2008, Ammonia, dimethylamine, trimethylamine, and trimethylamine oxide from raw and processed fish by-products. *J. Aquat. Food Prod. Technol.*, 17, 27–38.

Yang, Z., Zhang, K., Gong, F., Li, S., Chen, J., Ma, J.S., Sobenina, L. N., Mikhaleva, A. I., Yang, G., and Trofimov, B. A., 2011, A new fluorescent chemosensor for fluoride anion based on a pyrrole-isoxazole derivative. *Beilstein J. Org. Chem.*, 7, 46–52.

Yeh, J.-T., Chen, W.-C., Liu, S.-R., and Wu, S.-P., 2014, A coumarin-based sensitive and selective fluorescent sensor for copper (II) ions. *New J. Chem.*, 38, 4434–4439.