

## DAFTAR PUSTAKA

- Agustika, D., 2012, The Preprocessing Technique Optimization of Sensor's Output Response for Increasing The Classification Rate of Portable Electronic Nose: Herbal Drinks Discrimination Testing, *Tesis*, Jurusan Fisika FMIPA Universitas Gadjah Mada, Yogyakarta.
- Ajisaka, 2012, Teh Dahsyat Khasiatnya, Surabaya: Stomata.
- Arizka, A.A., dan Daryatmo, J., 2015, Perubahan Kelembaban dan Kadar Air Teh Selama Penyimpanan pada Suhu dan Kemasan yang Berbeda, *Indonesian Food Technologists*, 4(4), 124-129.
- Astuti, M., 2001, Potensi Antioksidan pada Teh. Kumpulan Makalah: Radikal Bebas dan Antioksidan dalam Kesehatan: Dasar, Aplikasi, dan Pemanfaatan Bahan Alam, Jakarta: Biokimia FKUI.
- Banerjee, R., Modak, A., Mondal, S., Tudu, B., Bandyopadhyay, R., dan Bhattacharyya, N., 2013, Fusion of electronic nose and tongue response using fuzzy based approach for black tea classification, *Procedia Technology*, 10, 615-622.
- Banerjee, R., Chattopadhyay, P., Tudu, B., Bhattacharyya, N., dan Bandyopadhyay, R., 2014, Artificial flavor percepton of black tea using fusion of electronic nose and tongue response: A Bayesian statistical approach, *Journal of Food Engineering*, 142, 87-93.
- Banerjee, R., Tudu, B., dan Bandyopadhyay, R., 2016, A review on combined odor and taste sensor systems, *Journal of Food Engineering*, 190, 10-21.
- Banerjee, M.B., Roy, R.B., Tudu, B., Bandyopadhyay, R., dan Bhattacharyya, N., 2019, Black tea classification employing feature fusion of E-nose and E-Tongue responses, *Journal of Food Engineering*, 244, 55-63.
- Bhattacharyya, N., Tudu, B., Bandyopadhyay, R., Bhuyan, M., dan Mudi, R., 2004, Aroma characterization of orthodox black tea with electronic nose, *IEEE Region Conference TENCON*, 4, 427-430.
- Bhattacharyya, N., Seth, S., Tudu, B., Tamuly, P., Jana, A., Ghosh, D., Bandyopadhyay, R., dan Bhuyan, M., 2007, Monitoring of black tea fermentation process using electronic nose, *Journal of Food Engineering*, 80, 1146-1156.
- Bhattacharyya, N., Bandyopadhyay, R., Bhuyan, M., Tudu, B., Ghosh, D., dan Jana, A., 2008, Electronic nose for black tea classification and correlation of measurements with "tea taster" marks, *IEEE transaction on instrumentation and measurement*, 57(7), 1313-1321.
- Bhuyan, L.P., Sabhapondit, S., Baruah, B.D., Bordoloi, C., Gogoi, R., dan Bhattacharyya, P., 2013, Polyphenolic compounds and antioxidant activity of CTC black tea of North-East India, *Food Chemistry*, 141, 3744-3751.
- Cai, J.X., Wang, Y.F., Xi, X.G., Li, H., dan Wei, X.L., 2015, Using FTIR spectra and pattern recognition for discrimination of tea varieties, *International Journal of Biological Macromolecules*, 78, 439-446.
- Cevoli, C., Cerretani, L., Gori, A., Caboni, M.F., Toschi, T.G., dan Fabbri, A., 2011, Classification of Pecorino cheeses using electronic nose combined

- with artificial neural network and comparison with GC–MS analysis of volatile compounds, *Food Chemistry*, 129, 1315-1319.
- Chen, Q., Zhao, J., Chen, Z., Lin, H., dan Zhao, D., 2011, Discrimination of green tea quality using the electronic nose technique and the human panel test, comparison of linear and nonlinear classification tools, *Sensors and Actuators B: Chemical*, 159, 294-300.
- Chen, X., Chen, D., Jiang, H., Sun, H., Zhang, C., Zhao, H., Li, X., Yan, F., Chen, C., dan Xu, Z., 2019, Aroma characterization of Hanzhong black tea (*Camellia sinensis*) using solid phase extraction coupled with gas chromatography–mass spectrometry and olfactometry and sensory analysis, *Food Chemistry*, 274, 130-136.
- Diniz, P.H.GD., Pistonesi, M.F., Alvarez, M.B., Band, B.S.F., dan Araujo, M.C.U.D., 2015, Simplified tea classification based on a reduced chemical composition 4 profile via successive projections algorithm linear discriminant analysis (SPA-LDA), *Journal of Food Composition and Analysis*, 2493, 1-8.
- Dutta, R., Hines, E.L., Gardner, J.W., Kashwan, K.R., dan Bhuyan, M., 2003, Tea quality prediction using a tin oxide-based electronic nose: an artificial intelligence approach, *Sensors and Actuators B*, 94, 228-237.
- Figaro, 2013, *Datasheet sensor tgs813, tgs822, tgs2600, tgs826, tgs2611, tgs2620, tgs2612, tgs2602*, <http://www.figarosensor.com/gaslist.html>, diakses 23 Juli 2019.
- Figaro, 2005, *Technical Information on Usage of TGS Sensors for Toxic and Explosive Gas Leak Detectors*, [http://www.figarosensor.com/products/common\(1104\).pdf](http://www.figarosensor.com/products/common(1104).pdf), diakses 23 Juli 2019.
- Flaten, T.P., 2002, Aluminium in tea-concentrations, speciation and bioavailability, *Coordination Chemistry Reviews*, 228, 385-395.
- Gancarz, M., Wawrzyniak, J., Witulska, M.G., Wiacek, D., Nawrocka, A., Tadla, M., dan Rusinek, R., 2017, Application of electronic nose with MOS sensors to prediction of rapeseed quality, *Measurement*, 103, 227-234.
- Gebicki, J., Dymerski, T., dan Rutkowski, S., 2014, Identification of odor of volatile organic compounds using classical sensory analysis and electronic nose technique, *Environment Protection Engineering*, 40, 103–116.
- Ghasemi-Varnamkhashti, M., Mohtasebi, S.S., Rodriguez-Mendez, M.L., Lozano, J., Razavi, S.H., Ahmadi, H., dan Apetrei, C., 2012, Classification of non-alcoholic beer based on aftertaste sensory evaluation by chemometric tools, *Expert Systems with Applications*, 39, 4315-4327.
- Gutierrez-Osuna, R., Nagle, H.T., Kermani, B., Schiffman, S.S., 2003, Signal Conditioning and Preprocessing, *Handbook of Machine Olfaction*, [Online], Wiley-VCH Verlag GmbH & Co. KGaA., chapter 5, 105-132.
- Gutierrez, J., dan Horrillo, M.C., 2014, Advances in artificial olfaction: Sensors and applications, *Talanta*, 124, 95-105.
- Hariana, A., 2003, *Tumbuhan Obat dan Khasiatnya 2*. Jakarta: Niaga Swadaya.
- Hastie, T., Tibshirani, R., dan Friedman, J., 2008, *The Elements of Statistical Learning Data Mining, Interface, and Prediction*, Springer, California.

- He, W., Zhou, J., Cheng, H., Wang, L., Wei, K., Wang, W., dan Li, X., 2012, Validation of origins of tea samples using partial least squares analysis and Euclidean distance method with near-infrared spectroscopy data, *Spectrochimica Acta Part A: Molecular and Biomolecular Spectroscopy*, 86, 399-404.
- Hidayat, S.N., 2015, Aplikasi Sistem Larik Sensor Gas untuk Identifikasi Profil Aroma Tempe selama Proses Fermentasi, *Tesis*, Jurusan Fisika FMIPA Universitas Gadjah Mada, Yogyakarta.
- Indonesia Investment, 2015, *Teh*, <https://www.indonesia-investments.com/id/bisnis/komoditas/teh/item240>, diakses 3 Desember 2019.
- James, G., Witten, D., Hastie, T., dan Tibshirani, R., 2013, *An Introduction to Statistical Learning with Applications in R*, Springer, New York.
- Jeong, J.H., Jung, H.J., dan Kim, Y., 2019, High-resolution H NMR Spectroscopy of green tea and black teas, *Journal of the Korean Chemical Society*, 63(2), 78-84.
- Jiang, H., Xu, W., dan Chen, Q., 2019, Evaluating aroma quality of black tea by an olfactory visualization system: selection of feature sensor using particle swarm optimization, *Food Research International*, 126, 1-7.
- Joshi, R., dan Gulati, A., 2015, Fractionation and identification of minor and aroma-active constituents in Kangra orthodox black tea, *Food Chemistry*, 167, 290-298.
- Kang, S., Yan, H., Zhu, Y., Liu, X., Lv, H.P., Zhang, Y., Dai, W.D., Guo, L., Tan, J.F., Peng, Q.H., dan Lin, Z., 2019, Identification and quantification of key odorants in teh world's four most famous black teas, *Food Research International*, 121, 73-83.
- Kumar, R.S.S., Murugesan, S., Kottur, G., dan Gymfi, D., 2013, Black tea: Teh plants, processing/manufacturing and production, *Tea in Health and Disease Prevention*, chapter 4, 41-57.
- Kusumo, Y.P.J., 2010, *Industri Pengolahan Teh Hitam*, Universitas Sebelas Maret, <https://eprints.uns.ac.id/4469/1/155212208201012391.pdf>, diakses pada tanggal 10 Agustus 2019.
- Lelono, D., Triyana, K., Hartati, S., dan Istiyanto, J.E., 2016, Classification of Indonesia black teas based on quality by using electronic nose and principal component analysis, *AIP Conference Proceedings*, 1755, 020003-1-020003-5.
- Lelono, D., 2017, Pengembangan Instrumentasi Sistem E-nose untuk Uji Teh Hitam Lokal, *Disertasi*, Jurusan Fisika FMIPA Universitas Gadjah Mada, Yogyakarta.
- Li, S., Lo, C.Y., Pan, M.H., Lai, C. S., dan Ho, C.T., 2013, Black tea: Chemical analysis and stability, *Food & Function*, 4(1), 10-18.
- Mckay, D., dan Blumberg, J.B., 2002, The Role of Tea in Human Health: An Update, *Journal of the American College of Nutrition*, 21(1), 1-13.
- Men, H., Fu, S., Yang, J., Cheng, M., Shi, Y., dan Liu, J., 2018, Comparison of SVM, RF, and ELM on an electronic nose for intelligent evaluation of paraffin samples, *Sensors*, 18(1), 1-17.

- Nanto, H., dan Stetter, J.R., 2003, Introduction to Chemosensors, *Handbook of Machine Olfaction: Electronic Nose Technology*, Wiley-VCH Verlag GmbH & Co. KGaA, chapter 4, 79-104.
- Natale, C.D., Davide, F., dan D'Amico, A., 1995, Pattern recognition in gas sensing: well-stated techniques and advances, *Sensors and Actuators B*, 23, 111-118.
- Olafsdottir, G., dan Kristbergsson, K., 2006, Electronic-nose technology: application for quality evaluation in the fish industry, *Odors in the Food Industry*, Springer US, New York, 57-74.
- Ouyang, Q., Zhao, J., Chen, Q., dan Lin, H., 2013, Classification of rice wine according to different marked ages using a novel artificial olfactory technique based on colorimetric sensor array, *Food Chemistry*, 138, 1320-1324.
- Peluso, I., dan Serafini, M., 2017, Antioxidants from black and green tea: From dietary modulation of oxidative stress to pharmacological mechanisms, *British Journal of Pharmacology*, 174(11), 1195-1208.
- Phaisangittisagul, E., 2007, Signal Processing Using Wavelets for Enhancing Electronic Nose Performance, *Disertasi*, Faculty of North Carolina State University.
- Qin, Z., Pang, X., Chen, D., Cheng, H., Hu, X., dan Wu, J., 2013, Evaluation of Chinese tea by the electronic nose and gas chromatography-mass spectrometry: Correlation with sensory properties and classification according to grade level, *Food Research International*, 53, 864-874.
- Qiu, S., Gao, L., dan Wang, J., 2015, Classification and regression of ELM, LVQ and SVM for E-nose data of strawberry juice, *Journal of Food Engineering*, 77-85.
- Razak, N.A., Shaari, A.R., dan Hamid, N.A., 2018, Effect of Storage Temperature on Moisture Content of Encapsulated Orthosiphon Stamineus Spray-Dried Powder, *AIP Conference Proceedings*, 2030 (1), 1-5.
- Sabbeh, S.F., 2018, Machine-learning techniques for customer retention: A comparative study, *International Journal of Advanced Computer Science and Applications*, 9(2), 273-281.
- Sereshti, H., Samadi, S., M. dan Heravi, J., 2013, Determination of volatile components of green, black, oolong and white tea by optimized ultrasound-assisted extraction-dispersive liquid-liquid microextraction coupled with gas chromatography, *Developments in Food Science*, 1280, 1-8.
- Smith, L.I., 2002, *A tutorial on Principal Components Analysis*, [http://www.sccg.sk/~haladova/principal\\_components.pdf](http://www.sccg.sk/~haladova/principal_components.pdf), diakses 8 Agustus 2019.
- Su, Y.L., Leung, L.K., Huang, Y., dan Chen, Z.Y., 2003, Stability of tea theaflavins and catechins, *Food Chemistry*, 83, 189-195.
- Syarief, Rizal dan Irawati.A., 1986, *Pengetahuan Bahan Untuk Industri Pertanian*, PT Mediatama Sarana Perkasa, Jakarta.
- Taylor, H.R., 1997, *Data Acquisition for Sensor Systems*, Chapman and Hall, New York.

- Theodoridis, S. dan Koutroumbas, K., 2009, chapter 1 – Introduction, Sergios Theodoridis dan Konstantinos Koutroumbas (ed), *Pattern Recognition (Fourth Edition)*, Fourth Edition, Academic Press, Boston., hal. 1-12, DOI:<http://dx.doi.org/10.1016/B978-1-59749-272-0.50003-7>.
- Todd, M.D., 2014, Sensor Data Acquisition Systems and Architectures, *Sensor Technologies for Civil Infrastructure*, University of California San Diego, USA, chapter 2, 23-56.
- Tripathy, A., Mohanty, A.K., dan Mohanty, M.N., 2012, Electronic nose for black tea quality evaluation using Kernel Based Clustering Approach, *International Journal of Image Processing*, 6(2), 86-93.
- Triyana, K., Subekti, M.T., Aji, P., Hidayat, S.N., dan Rohman, A., 2015, Development of electronic nose with low-cost dynamic headspace for classifying vegetable oils and animal fats, *Applied Mechanics and Materials*, 771, 50-54.
- Tuan, H.Q., Thinh, N.D., dan Tu, N.T.M., 2016, Differentiation of black teas by volatile profile analysis using HS-SPME/GC-MS, *Journal of Science and Technology*, 54 (4), 483-493.
- Tudu, B., Jana, A., Metla, A., Ghosh, D., Bhattacharyya, N., dan Bandyopadhyay, R., 2009, Electronic nose for black tea quality evaluation by an incremental RBF network, *Sensors and Actuators B: Chemical*, 138, 90-95.
- Yan, J., Tian, F., He, Q., Shen, Y., Xu, S., Feng, J., dan Chaibou, K., 2012, Feature Extraction from Sensor Data for Detection of Wound Pathogen Based on Electronic Nose, *MYU Tokyo*, 24, 57-73.
- Yang, Z., Baldermann, S., dan Watanabe, N., 2013, Recent studies of the volatile compounds in tea, *Food Research International*, 53(2), 585-599.
- Yu, H., dan Yang, J., 2001, A direct LDA algorithm for high-dimensional data with application to face recognition, *The journal of the Pattern Recognition Society*, 34, 2067-2070.
- Zhang, Z., Tong, J., Chen, D., dan Lan, Y., 2008, Electronic nose with an air sensor matrix for detecting beef freshness, *Journal of Bionic Engineering*, 5, 67-73.
- Zhang, Z., Wu, X., dan Tan, J., 2019, Laboratory-scale identification of corrosion mechanisms by a pattern recognition system based on electrochemical noise measurements, *Journal of The Electrochemical Society*, 166, 284-295.
- Zhao, Y., Wang, J., Lu, Q., dan Jiang, R., 2010, Pattern recognition of eggshell crack using PCA and LDA, *Innovative Food Science and Emerging Technologies*, 11, 520-525.