

DAFTAR PUSTAKA

- Armbruster, D. A. & Pry, T., 2008. Limit of blank, limit of detection and limit of quantitation. *The Clinical biochemist Reviews*, 29, 49-52.
- Abdelghany, A. M., Meikhail, M. S. dan Asker, N., 2019, Synthesis and structural-biological correlation of PVC \ PVAc polymer blends, *Integrative Medicine Research*, 8(5), 3908–3916.
- Agustina, K. K., Merthayasa, J. D. dan Suada, K., 2015, Daya Ikat Air , pH , Warna , Bau dan Tekstur Daging Sapi Bali dan Daging Wagyu Laboratorium Kesehatan Masyarakat Veteriner, *Indonesia Medicus Veterinus*, 4(1), 16–24.
- Andrews, L dan Burkholder, T. R., 1992, Infrared spectra of molecular B(OH)3 and HOBO in solid argon, *American Institute of Physics*, 97, 7203.
- Anju, V.P., Jithesh, P.R. dan Narayananankutthy, S.K., 2018, A Novel humidity and Ammonia Sensor Based on Nanofiber/Polyaniline/Polyvinyl Alcohol, *Sensors and Actuators A*, 285, 35-44.
- Armbruster, D. A. dan Pry, T., 2008, Limit of blank, limit of detection and limit of quantitation, *The Clinical biochemist Reviews*, 29, 49-52.
- Ayad, M. M. dan Minisy, I. M., 2016, Detection and kinetics of methylamine on chitosan film coated quartz crystal microbalance electrode, *Progress in Organic Coatings*, 100, 76–80.
- Ayad, M.M., Salahuddin, N.A., Minisy, I.M. dan Amer, W.A., 2014, Chitosan /Polyaniline Nanofibers Coating on The Quartz Crystal Microbalance Electrode for Gas Sensing, *Senors and Actoatoers B*, 202, 144-153.



- Azmar, A., Saaid, F. dan Winie, T. 2017. ScienceDirect Study on miscibility of poly (methyl acrylate) and poly (vinyl acetate) by viscometric , thermal and structural analyses, *Materials Today: Proceedings*. 4(4), 5100–5107.
- Billaud, G. dan Demortier, A., 1975, Dielectric constant of liquid ammonia from -35 to + 50.deg. and its influence on the association between solvated electrons and cation, *The Journal of Physical Chemistry*, 79(26), 3053–3055.
- Brydson, J. A., 1999, Poly(vinyl acetate) and its Derivatives, *Plastics Materials*, New York: Elsevier.
- Das, R., Biswas, S., Bandyopadhyay, R. dan Pramanik, P., 2013, Chemical Polymerized linseed oil coated quartz crystal microbalance for the detection of volatile organic vapours, *Sensors & Actuators: B. Chemical*, 185(2),. 293–300.
- Ding, B., Kim, J., Miyazaki, Y. dan Shiratori, S., 2004, Electrospun nanofibrous membranes coated quartz crystal microbalance as gas sensor for NH₃ detection, *Sensors & Actuators: B*, 101, 373–380.
- Duan, X., 2014, Lipid based sensing of organic vapours: a study combining AFM and QCM. *Disertasi*, (Durham University), Durham.
- Fabbri, P. dan Messori, M. 2016. Surface Modification of Polymers: Chemical, Physical, and Biological Routes. *Modification of Polymer Properties*, New York: Elsevier Inc.
- Firmansyah, H. B., Syauqi, D., Hannats, M., dan Ichsan, H. 2019, Implementasi Sistem Penentuan Kesegaran Daging Sapi Lokal Berdasarkan Warna dan Kadar Amonia Dengan Metode Jaringan Saraf Tiruan Berbasis Embedded System, *Jurnal Pengembangan Teknologi Informasi dan Ilmu Komputer*, 3(4), 3955-3962.
- Geng, S., Shah, F. U., Liu, P., Antzutkin, O. N., dan Oksman, K. 2017. Plasticizing



- and crosslinking effects of borate additives on the structure and properties of poly(vinyl acetate), *RSC Advances*, 7, 7483–7491.
- Güntner, A. T., Righettoni, M., dan Pratsinis, S. E., 2016, Selective sensing of NH 3 by Si-doped α -MoO₃ for breath analysis, *Sensors and Actuators B*, 223, 266–273.
- Hibbard, T., Crowley, K. dan Killard, A. J., 2013, Measurement of ammonia in simulated human breath using an inkjet-printed polyaniline nanoparticle sensor, *Analytica Chimica Acta*, 779, 56–63.
- Hu, Y., Yu, H., Yan, Z., dan Ke, Q., 2018, The surface chemical composition effect of a polyacrylic acid/polyvinyl alcohol nanofiber/quartz crystal microbalance sensor on ammonia sensing behavior, *RSC Advances*, 8(16), 8747–8754.
- Huang, W., Wang, X., Jia, Y., Li, X., Zhu, Z., Li, Y., Si, Y., Ding, B., Wang, X. dan Yu, J., 2013, Highly sensitive formaldehyde sensors based on polyvinylamine modified polyacrylonitrile nanofibers, *RSC Adv.*, 3, 22994
- Hwang, H. T. dan Varma, A., 2012, Effect of boric acid on thermal dehydrogenation of ammonia borane : Mechanistic studies, *International Journal of Hydrogen Energy*, 38(4), 1925–1931.
- Jia, Y. Yan, C., Yu, H., Chen, L., dan Dong, F., 2014, Chemical One-step fabrication of ammonia sensor by electrospinning PS- b -PMA nanofibers on quartz crystal microbalance, *Sensors & Actuators: B*, 203, 459–464.
- Jia, Y., Chen, L., Yu, H., Zhang, Y., dan Dong, F., 2015, Graphene oxide/polystyrene composite nanofibers on quartz crystal microbalance electrode for the ammonia detection, *RSC Advances*, 5(51), 40620–40627.
- Jia, Y., Yu, H., Zhang, Y., Dong, F., dan Li, Z., 2016, Cellulose acetate nanofibers coated layer-by-layer with polyethylenimine and graphene oxide on a quartz



UNIVERSITAS
GADJAH MADA

Peningkatan Sensitivitas Sensor Ammonia Berbasis Quartz Crystal Microbalance dengan Lapisan Aktif
Polyvinyl Acetate yang Didoping H₃BO₃
INNAS AMALIYA F, Dr. Kuwat Triyana ; Dr. Ahmad Kusumaatmaja
Universitas Gadjah Mada, 2020 | Diunduh dari <http://etd.repository.ugm.ac.id/>

crystal microbalance for use as a highly sensitive ammonia sensor, *Colloids and Surfaces B : Biointerfaces*, 148, 263–269

Jia, Y.T., Yu, H., Jie, C., Zhe, L., dan Fungchun, D., 2017, Chemical Explore on the quantitative analysis of specific surface area on sensitivity of polyacrylic acid-based QCM ammonia sensor. *Sensors and Actuators B* , 243, 1042–1045.

Johannsmann, D., 2015, The Quartz Crystal Microbalance in Soft Matter Research. Switzerland: *Springer*, International Publishing.

Kakalis, A. dan Panayiotou, C., 2017, The temperature effect of AT-cut input quartz parameters on QCM effective properties calculated with equivalent circuit models, *Journal of Electroceramics*, 40(1), 23-35.

Kalantar-Zadeh, K., 2013, Sensors: An introductory course in Sensors. New York: *Springer-Verlag* New York Inc.

Lam, C. S., Wang, Y.J.C., dan Wang, S.M., 2004, A Review of the Recent Development of Temperature Stable Cuts of Quartz for SAW Application, *Ultrasonics*, 1(1), 1–7.

Liauw, C. M., Slate, A. J., Butler, J. A., Wilson-Nieuwenhuis, J. S. T., Deisenroth, T., Preuss, A., Verran, J., dan Whitehead, K. A. 2020, The Effect of Surface Hydrophobicity on the Attachment of Fungal Conidia to Substrates of Polyvinyl Acetate and Polyvinyl Alcohol, *Journal of Polymers and the Environment*, 28(5), 1450–1464.

Macagnano, A., Zampetti, E. dan Kny, E., 2015, Electrospinning for High Performance Sensors, Switzerland: *Springer* International Publishing.

Mohammadi, M., Irajizad, A. dan Razi, F., 2016, Ethanol sensing properties of PVP electrospun membranes studied by quartz crystal microbalance, *Measurement*, 78, 283–288.



- Morris, A. S., 2001, Measurement and Instrumentation Principles, *Measurement Science and Technology*, 12(10), 1743–1744.
- National Center for Biotechnology Information. 2019, *PubChem Compound Database CID=7904*.
- Pambudi, P. E., Utanta, E., dan Mujiman., 2014, Identifikasi Daging Segar Dan Busuk Menggunakan Sensor Warna RGB dan pH Meter Digital, *Jurnal Teknologi Technoscientia*, 7(1), 46-53.
- Park, J. Y., Lee, I. H. dan Bea, G. N., 2008, Optimization of the electrospinning conditions for preparation of nanofibers from polyvinylacetate (PVAc) in ethanol solvent, *Journal of Industrial and Engineering Chemistry*, 14(6), 707–713.
- Patel, A., Joshi, S., Jadhav, M., dan Britto, E., 2015, Renewable and Sustainable Energy Conversion Using Piezoelectric Transducers, *International Conference on Energy Systems and Applications (ICESA 2015)*, 517-521.
- Peak, D., Luther, G. W., dan Sparks, D., 2003, ATR-FTIR spectroscopic studies of boric acid adsorption on hydrous ferric oxide, *Geochimica et Cosmochimica Acta*, 67(14), 2551–2560.
- Rahayu, S., 2013, Sintesis bahan piezoelektrik bnt-bt dengan penambahan TA₂O₅ menggunakan metode solid state reaction, *Jurnal Fisika Unand*, 2(4), 276–283.
- Redkin, A. N. Yakimov, E E., Roshchupkin, D. V., dan Korepanov, V. I., 2019, Characterization of highly textured piezoelectric AlN fi lms obtained from aluminum and ammonium chloride by a simple vapor deposition process, *Thin Solid Films*, 684, 15–20.
- Rianjanu, A., Hasanah, S. A., Nugroho, D., Kusumaatmaja, A., Roto, R., dan Triyana, K., 2019, Polyvinyl Acetate Film-Based Quartz Crystal Microbalance



for the Detection of Benzene , Toluene , and Xylene Vapors in Air,
Chemosensors. 7(2), 1-9

Rianjanu, A., Nugroho, D., Kusumaatmaja, A., Roto, R., dan Triyana, K., 2019, A study of quartz crystal microbalance modified with polyvinyl Acetate to differentiate short-chain alcohol isomers, *Sensing and Bio-Sensing Research*, 25, 100294.

Rianjanu, A., Roto, R., Julian, T., Hidayat, S. N., Kusumaatmaja, A., Suyono, E. A., dan Triyana, K. 2018. Polyacrylonitrile nanofiber-based quartz crystal microbalance for sensitive detection of safrole, *Sensors (Switzerland)*, 18(4), 1–11.

Rianjanu, A., Triyana, K., Nugroho, D., Kusumaatmaja, A., dan Roto, R., 2020, Electrospun polyvinyl acetate nanofiber modified quartz crystal microbalance for detection of primary alcohol vapor, *Sensor and Actuators A*, 301, 111742.

Roto, R., Rianjanu, A., Fatyadi, I. A., Kusumaatmaja, A., dan Triyana, K. 2020, Physical Enhanced sensitivity and selectivity of ammonia sensing by QCM modified with boric acid-doped PVAc nanofiber, *Sensors & Actuators: A*, 304, 111902.

Sauerbrey, G., 1959, Verwendung von Schwingquarzen zur Wägung dünner Schichten und zur Mikrowägung, *Zeitschrift für Phys.*, 155, 206–222.

Sharma, P., Ghosh, A., Tudu, B., Sabhapondit, S., Devi, B., Tamuly, P., Bhattacharyya, N., dan Bandyopadhyay, R., 2015, Chemical Monitoring the fermentation process of black tea using QCM sensor based electronic nose, *Sensors & Actuators: B*, 219, 146–157.



Shawgi, N., Li, S., dan Wang, S. 2017, A Novel method of synthesis of high purity nano plated boron carbide powder by a solid-state reaction of poly (vinyl alcohol) and boric acid, *Ceramics International*, 43(13), 10554–10558.

Shrivastava, A. dan Gupta, V., 2011, Methods for the determination of limit of detection and limit of quantitation of the analytical methods, *Chronicles of Young Scientists*, 2(1), 21-25.

Sulistiyoningsih, M. W. dan Atmaja, L. 2014, Sintesis perekat polivinil asetat berbasis pelarut metanol yang terstabilkan oleh disponil, *Jurnal Sains dan Seni Pomits*, 1(1), 1–5.

Triyana, K., Sembiring, A., Rianjanu, A., Hidayat, S., Riowirawan, R., Julian, T., Kusumaatmaja, A., Santoso, I. dan Roto, R., 2018, Chitosan-Based Quartz Crystal Microbalance for Alcohol Sensing. *Electronics*, 7 , 181, 1-11

Triyana, K., Rianjanu, A., Hasanah, S. A., Nugroho, D., Kusumaatmaja, A., Roto, R., Suryana, R., dan Wasisto, H. S, 2019, A highly sensitive safrole sensor based on polyvinyl acetate (PVAc) nanofiber-coated QCM, *Scientific Reports*, 9, 15407, 1–12.

Uchino, K., 2017, *Advanced Piezoelectric Materials Science and Technology Second Edition*. Cambridge: Woodhead Publishing.

Veerabhadraiah, A. Ramakrishna, S., Angadi, G., Venkatram, M. K., Ananthapadmanabha, V. H., NarayanaRao, N. M., dan Munishamaiah, K., 2017, Development of polyvinyl acetate thin films by electrospinning for sensor applications, *Applied Nanoscience*, 7(7), 355–363.

Yağci, Ö., Arat, R., Sarier, N., Ömür, B. C., dan Altındal, A., 2019, Ethanol sensing with pure and boric acid doped eectrospun CuInS₂ nanofibers in the presence



UNIVERSITAS
GADJAH MADA

Peningkatan Sensitivitas Sensor Ammonia Berbasis Quartz Crystal Microbalance dengan Lapisan Aktif
Polyvinyl Acetate yang Didoping H₃BO₃
INNAS AMALIYA F, Dr. Kuwat Triyana ; Dr. Ahmad Kusumaatmaja
Universitas Gadjah Mada, 2020 | Diunduh dari <http://etd.repository.ugm.ac.id/>

of relative humidity. *Materials Science in Semiconductor Processing*, 104, 104651.

Yin, Y., Li, J., Liu, Y., dan Li, Z. 2005, Starch Crosslinked with Poly (vinyl alcohol) by Boric Acid, *Journal of Applied Polymer Science*, 96, 1394–1397.

Yu, Xiang., Chen, X., Zhao, X., Yu, X., dan Ding., 2020, Digital ammonia gas sensor based on quartz resonator tuned by interdigital electrode coated with polyaniline film, *Organic Electronics*, 76, 105413.

Zhang, L. Liu, J., Peng, X., Cui, Q., He, D., Zhao, C., dan Suo, H., 2020, Fabrication of a Ni foam-supported platinum nanoparticles-silver/polypyrrole electrode for aqueous ammonia sensing, *Synthetic Metals*, 259, 116257.