

DAFTAR PUSTAKA

- [1] L. M. Pandey, "Surface engineering of personal protective equipments (PPEs) to prevent the contagious infections of SARS-CoV-2," <https://doi-org.ezproxy.ugm.ac.id/10.1080/02670844.2020.1801034>, vol. 36, no. 9, pp. 901–907, Sep. 2020, doi: 10.1080/02670844.2020.1801034.
- [2] J. A. Otter, C. Donskey, S. Yezli, S. Douthwaite, S. D. Goldenberg, and D. J. Weber, "Transmission of SARS and MERS coronaviruses and influenza virus in healthcare settings: the possible role of dry surface contamination," *Journal of Hospital Infection*, vol. 92, no. 3, pp. 235–250, Mar. 2016, doi: 10.1016/J.JHIN.2015.08.027.
- [3] N. van Doremalen *et al.*, "Aerosol and Surface Stability of SARS-CoV-2 as Compared with SARS-CoV-1," *New England Journal of Medicine*, vol. 382, no. 16, pp. 1564–1567, Apr. 2020, doi: 10.1056/NEJMC2004973/SUPPL_FILE/NEJMC2004973_DISCLOSURE_S.PDF.
- [4] "Pakar UGM Paparkan Faktor Pemicu Gelombang Ketiga Covid-19 | Universitas Gadjah Mada." <https://ugm.ac.id/id/berita/21847-pakar-ugm-paparkan-faktor-pemicu-gelombang-ketiga-covid-19> (accessed Nov. 20, 2021).
- [5] F. Narita *et al.*, "A Review of Piezoelectric and Magnetostrictive Biosensor Materials for Detection of COVID-19 and Other Viruses," *Advanced Materials*, vol. 33, no. 1, p. 2005448, Jan. 2021, doi: 10.1002/ADMA.202005448.
- [6] S. E. Beck *et al.*, "Evaluating UV-C LED disinfection performance and investigating potential dual-wavelength synergy," *Water Res*, vol. 109, pp. 207–216, Feb. 2017, doi: 10.1016/J.WATRES.2016.11.024.
- [7] M. B. Lore, B. K. Heimbuch, T. L. Brown, J. D. Wander, and S. H. Hinrichs, "Effectiveness of Three Decontamination Treatments against Influenza Virus Applied to Filtering Facepiece Respirators," *Ann Occup Hyg*, vol. 56, no. 1, pp. 92–101, Jan. 2012, doi: 10.1093/ANNHYG/MER054.
- [8] B. K. Heimbuch *et al.*, "A pandemic influenza preparedness study: Use of energetic methods to decontaminate filtering facepiece respirators contaminated with H1N1 aerosols and droplets," *Am J Infect Control*, vol. 39, no. 1, pp. e1–e9, Feb. 2011, doi: 10.1016/J.AJIC.2010.07.004.



- [9] D. Welch *et al.*, “Far-UVC light: A new tool to control the spread of airborne-mediated microbial diseases,” *Scientific Reports* 2018 8:1, vol. 8, no. 1, pp. 1–7, Feb. 2018, doi: 10.1038/s41598-018-21058-w.
- [10] C. Otto, S. Zahn, F. Rost, P. Zahn, D. Jaros, and H. Rohm, “Physical Methods for Cleaning and Disinfection of Surfaces,” *Food Engineering Reviews*, vol. 3, no. 3–4, pp. 171–188, Dec. 2011, doi: 10.1007/S12393-011-9038-4/FIGURES/9.
- [11] W. Kowalski, *Ultraviolet germicidal irradiation handbook: UVGI for air and surface disinfection*. Springer science & business media, 2010.
- [12] A. R. Tarek, B. A. Rasco, and S. S. Sablani, “Ultraviolet-C Light Sanitization of English Cucumber (*Cucumis sativus*) Packaged in Polyethylene Film,” *J Food Sci*, vol. 81, no. 6, pp. E1419–E1430, Jun. 2016, doi: 10.1111/1750-3841.13314.
- [13] J. M. Boyce and C. J. Donskey, “Understanding ultraviolet light surface decontamination in hospital rooms: A primer,” *Infect Control Hosp Epidemiol*, vol. 40, no. 9, pp. 1030–1035, Sep. 2019, doi: 10.1017/ICE.2019.161.
- [14] C. J. Donskey, “Decontamination devices in health care facilities: Practical issues and emerging applications,” *Am J Infect Control*, vol. 47, pp. A23–A28, Jun. 2019, doi: 10.1016/J.AJIC.2019.03.005.
- [15] C. Smolle, F. Huss, M. Lindblad, F. Reischies, and E. Tano, “Effectiveness of automated ultraviolet-C light for decontamination of textiles inoculated with *Enterococcus faecium*,” *Journal of Hospital Infection*, vol. 98, no. 1, pp. 102–104, Jan. 2018, doi: 10.1016/J.JHIN.2017.07.034.
- [16] P. de Sternberg Stojalowski and J. Fairfoull, “Comparison of Reflective Properties of Materials Exposed to Ultraviolet-C Radiation,” *J Res Natl Inst Stand Technol*, vol. 126, pp. 1–11, 2021.
- [17] W. Suryaningsih, B. Hariono, and others, “RANCANG BANGUN alat sterilisasi non thermal metode PULSA ULTRAVIOLET UNTUK karkas ayam,” *Prosiding*, 2016.
- [18] P. Tsantarliotis, M. G. Tsipouras, and N. Giannakeas, “Personalized UV Radiation Risk Monitoring Using Wearable Devices and Fuzzy Modeling,” *Inventions* 2018, Vol. 3, Page 26, vol. 3, no. 2, p. 26, Apr. 2018, doi: 10.3390/INVENTIONS3020026.
- [19] S. A. Craik, D. Weldon, G. R. Finch, J. R. Bolton, and M. Belosevic, “Inactivation of *cryptosporidium parvum* oocysts using medium- and low-



- pressure ultraviolet radiation,” *Water Res*, vol. 35, no. 6, pp. 1387–1398, Apr. 2001, doi: 10.1016/S0043-1354(00)00399-7.
- [20] K. Song, F. Taghipour, and M. Mohseni, “Microorganisms inactivation by wavelength combinations of ultraviolet light-emitting diodes (UV-LEDs),” *Science of The Total Environment*, vol. 665, pp. 1103–1110, May 2019, doi: 10.1016/J.SCITOTENV.2019.02.041.
- [21] M. Raeiszadeh and F. Taghipour, “Microplasma UV lamp as a new source for UV-induced water treatment: Protocols for characterization and kinetic study,” *Water Res*, vol. 164, p. 114959, Nov. 2019, doi: 10.1016/J.WATRES.2019.114959.
- [22] M. & Eddy, F. L. Burton, H. D. Stensel, and G. Tchobanoglous, *Wastewater engineering: treatment and reuse*. McGraw Hill, 2003.
- [23] “The Ultraviolet Disinfection Handbook - James R. Bolton, Christine Anne Cotton - Google Books.”
https://books.google.co.id/books?hl=en&lr=&id=1-Aw1BVoJVgC&oi=fnd&pg=PR9&ots=hYoWlBtSWq&sig=BgVkj9ME8iz7RPJDxtP-Smwbj3k&redir_esc=y#v=onepage&q&f=false (accessed Dec. 20, 2021).
- [24] M. Buonanno, D. Welch, I. Shuryak, and D. J. Brenner, “Far-UVC light (222 nm) efficiently and safely inactivates airborne human coronaviruses,” *Scientific Reports 2020 10:1*, vol. 10, no. 1, pp. 1–8, Jun. 2020, doi: 10.1038/s41598-020-67211-2.
- [25] N. Storm *et al.*, “Rapid and complete inactivation of SARS-CoV-2 by ultraviolet-C irradiation,” *Scientific Reports 2020 10:1*, vol. 10, no. 1, pp. 1–5, Dec. 2020, doi: 10.1038/s41598-020-79600-8.
- [26] J. L. Sagripanti and C. D. Lytle, “Estimated Inactivation of Coronaviruses by Solar Radiation With Special Reference to COVID-19,” *Photochem Photobiol*, vol. 96, no. 4, pp. 731–737, Jul. 2020, doi: 10.1111/PHP.13293.
- [27] M. Biasin *et al.*, “UV-C irradiation is highly effective in inactivating SARS-CoV-2 replication,” *Scientific Reports 2021 11:1*, vol. 11, no. 1, pp. 1–7, Mar. 2021, doi: 10.1038/s41598-021-85425-w.
- [28] C. S. Heilingloh *et al.*, “Susceptibility of SARS-CoV-2 to UV irradiation,” *Am J Infect Control*, vol. 48, no. 10, pp. 1273–1275, Oct. 2020, doi: 10.1016/J.AJIC.2020.07.031.
- [29] ROITHNER LASERTECHNIK, “GUVA-S12SD UV-B Sensor Features Applications,” 2011.



- [30] D. H. Park, S. T. Oh, and J. H. Lim, "Development of a UV Index Sensor-Based Portable Measurement Device with the EUVB Ratio of Natural Light," *Sensors* 2019, Vol. 19, Page 754, vol. 19, no. 4, p. 754, Feb. 2019, doi: 10.3390/S19040754.
- [31] A. B. Wijatna, Y. F. Luckyarno, M. M. Waruwu, and R. Wijaya, "A Study of the Effects of the Ultraviolet Radiation on Tofu as a Skin Tissue Mimicking Material," 2019.
- [32] LAPIS SEMICONDUCTOR, "ML8511-00FC REFERENCE BOARD Manual for UV Sensor (QFN)," 2013.
- [33] A. Hendryani, W. ' Nabilah, and A. Komarudin, "Optimization of Ultraviolet Sterilization Cabinet by Improving Light Reflection Using Aluminum Foil," *SANITAS: Jurnal Teknologi dan Seni Kesehatan*, vol. 11, no. 2, pp. 213–221, 2020, doi: 10.36525/SANITAS.2020.20.
- [34] G. Hass, "Filmed Surfaces for Reflecting Optics*," *JOSA*, Vol. 45, Issue 11, pp. 945–952, vol. 45, no. 11, pp. 945–952, Nov. 1955, doi: 10.1364/JOSA.45.000945.
- [35] M. Heredia-Rodríguez *et al.*, "Impact of an ultraviolet air sterilizer on cardiac surgery patients, a randomized clinical trial," *Med Clin (Barc)*, vol. 151, no. 8, pp. 299–307, Oct. 2018, doi: 10.1016/J.MEDCLI.2018.04.015.
- [36] A. D. Elisanti, E. T. Ardianto, N. C. Ida, and E. Hendriatno, "Effectiveness Of Uv And Alcohol 70% Exposure To Total Bacteria Of Folding Money Circulating During The Pandemic Covid-19," *J Ris Kefarmasian Indones*, vol. 2, no. 2, pp. 113–121, 2020.
- [37] M. Stibich *et al.*, "Evaluation of a Pulsed-Xenon Ultraviolet Room Disinfection Device for Impact on Hospital Operations and Microbial Reduction," *Infect Control Hosp Epidemiol*, vol. 32, no. 3, pp. 286–288, Mar. 2011, doi: 10.1086/658329.
- [38] N. Faridah, "Mengenal Lebih Dekat dengan Cahaya dan Warna," 2018.
- [39] Science Mission Directorate, "Ultraviolet Waves | Science Mission Directorate," *National Aeronautics and Space Administration*, 2010. https://science.nasa.gov/ems/10_ultravioletwaves (accessed Dec. 23, 2021).
- [40] HORIBA, "Vacuum Ultra Violet Spectroscopy." https://www.horiba.com/en_en/technology/spectroscopy/vacuum-ultra-violet-spectroscopy/vacuum-ultra-violet-spectroscopy/ (accessed Dec. 23, 2021).



- [41] J. Lucas, “What Is Ultraviolet Light?,” *Live Science*, 2017. <https://www.livescience.com/50326-what-is-ultraviolet-light.html> (accessed Dec. 23, 2021).
- [42] D. Balasubramanian, “Ultraviolet Radiation and Cataract,” <https://home.liebertpub.com/jop>, vol. 16, no. 3, pp. 285–297, Jan. 2009, doi: 10.1089/JOP.2000.16.285.
- [43] M. Wacker and M. F. Holick, “Sunlight and Vitamin D: A global perspective for health,” *Dermatoendocrinol*, vol. 5, no. 1, p. 51, 2013, doi: 10.4161/DERM.24494.
- [44] “UV Radiation - The Skin Cancer Foundation.” <https://www.skincancer.org/risk-factors/uv-radiation/> (accessed Dec. 25, 2021).
- [45] L. Vanhaelewyn, E. Prinsen, D. van der Straeten, and F. Vandenbussche, “Hormone-controlled UV-B responses in plants,” *J Exp Bot*, vol. 67, no. 15, pp. 4469–4482, Aug. 2016, doi: 10.1093/JXB/ERW261.
- [46] “ISO 21348 Definitions of Solar Irradiance Spectral Categories Spectral category Spectral sub-category,” 2013. [Online]. Available: <http://SpaceWx.com>
- [47] S. Kitsinelis, *The Right Light: Matching Technologies to Needs and Applications*. CRC Press, 2012. [Online]. Available: <https://books.google.co.id/books?id=v2fNBQAAQBAJ>
- [48] L. S. Miller, N. Marin, and R. T. McEvoy, *Police Photography*. Elsevier Science, 2010. [Online]. Available: <https://books.google.co.id/books?id=W7h6ADU1qRQC>
- [49] R. S. Simpson, *Lighting Control: Technology and Applications*. Focal Press, 2003. [Online]. Available: <https://books.google.co.id/books?id=gS1EfPUOTUoC>
- [50] K. Chang, “Scientists Consider Indoor Ultraviolet Light to Zap Coronavirus in the Air,” *The New York Times*, May 07, 2020. <https://www.nytimes.com/2020/05/07/science/ultraviolet-light-coronavirus.html> (accessed Dec. 26, 2021).
- [51] “UV LED,” *SENSOR ELECTRONIC TECHNOLOGY, INC.* <http://www.s-et.com/en/technology/uvled/> (accessed Dec. 26, 2021).
- [52] Regula. Meierhofer, Martin. Wegelin, and X. del. Rosario Torres, *Solar water disinfection : a guide for the application of SODIS*. EAWAG, 2002.



- [53] N. A. Pramono, F. I. Sofyan, B. A. Purwandani, and O. Ghaisyani, "Application of ESP32 as a Media for Learning Ozone Damage in the Form of IoT-Based Ultraviolet Index Readers," 2020. doi: 10.17977/um072v2i12020p22-29.
- [54] R. S. Quimby, *Photonics and lasers: an introduction*. John Wiley & Sons, 2006.
- [55] Y. Zhou *et al.*, "Fabrication and device characteristics of Schottky-type bulk GaN-based 'visible-blind' ultraviolet photodetectors," *Appl Phys Lett*, vol. 90, no. 12, p. 121118, Mar. 2007, doi: 10.1063/1.2715114.
- [56] Harinaldi, *Prinsip-prinsip statistik untuk teknik dan sains*. 2005.
- [57] D. Siagian, *Metode statistika untuk bisnis dan ekonomi*. Jakarta: PT Gramedia Pustaka Utama, 2002.
- [58] D. C. Montgomery and G. C. Runger, *Applied statistics and probability for engineers*. John Wiley & sons, 2010.
- [59] M. Born and E. Wolf, *Principles of optics: electromagnetic theory of propagation, interference and diffraction of light*. Elsevier, 2013.
- [60] V. Pozzobon, W. Levasseur, K. van Do, B. Palpant, and P. Perré, "Household aluminum foil matte and bright side reflectivity measurements: Application to a photobioreactor light concentrator design," *Biotechnology Reports*, vol. 25, p. e00399, Mar. 2020, doi: 10.1016/J.BTRE.2019.E00399.
- [61] C. K. Ho, "Evaluation of reflection and refraction in simulations of ultraviolet disinfection using the discrete ordinates radiation model," *Water Science and Technology*, vol. 59, no. 12, pp. 2421–2428, Jun. 2009, doi: 10.2166/WST.2009.260.
- [62] Y. Zhang, Y. Li, J. Song, X. Chen, Y. Lu, and W. Wang, "Pearson correlation coefficient of current derivatives based pilot protection scheme for long-distance LCC-HVDC transmission lines," *International Journal of Electrical Power & Energy Systems*, vol. 116, p. 105526, Mar. 2020, doi: 10.1016/J.IJEPES.2019.105526.
- [63] T. Fu, X. Tang, Z. Cai, Y. Zuo, Y. Tang, and X. Zhao, "Correlation research of phase angle variation and coating performance by means of Pearson's correlation coefficient," *Prog Org Coat*, vol. 139, p. 105459, Feb. 2020, doi: 10.1016/J.PORGCOAT.2019.105459.
- [64] B. Wang, R. Wang, and Y. Wang, "Compatible matrices of Spearman's rank correlation," *Stat Probab Lett*, vol. 151, pp. 67–72, Aug. 2019, doi: 10.1016/J.SPL.2019.03.015.



- [65] A. Heinen and A. Valdesogo, "Spearman rank correlation of the bivariate Student t and scale mixtures of normal distributions," *J Multivar Anal*, vol. 179, p. 104650, Sep. 2020, doi: 10.1016/J.JMVA.2020.104650.
- [66] J. Frost, *Introduction to Statistics: An Intuitive Guide for Analyzing Data and Unlocking Discoveries*. 2019.
- [67] L. RJaM, "An introduction to mathematical statistics and its applications." Upper Saddle River, NJ: Prentice Hall, 2000.
- [68] D. I. Harinaldi and M. Eng, "Prinsip-prinsip statistik untuk teknik dan sains," *Jakarta: Erlangga*, 2005.
- [69] Y. AKBAR, "Rancang Bangun Detektor Ultraviolet Berbasis Detektor GUV-A-S12SD," Universitas Gadjah Mada, 2021.
- [70] W. S. Souza, M. A. S. de Oliveira, G. M. F. de Oliveira, D. P. de Santana, and R. E. de Araujo, "Self-Referencing Method for Relative Color Intensity Analysis Using Mobile-Phone," *Optics and Photonics Journal*, vol. 08, no. 07, pp. 264–275, Jul. 2018, doi: 10.4236/OPJ.2018.87022.

