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- Anonim, 1999, *Handbook of Compressed Gases Fourth Edition*, Compressed Gas Association Inc., Boston, MA.
- Ali, R., Razi, S.S., Srivastava, P. and Misra, A., 2015, Tetrasubstituted Imidazolcore Containing ESIPT Fluorescent Chemodosimeter for Selective Detection of Cyanide in Different Medium, *Sens. Actuators, B.*, 221, 1236-1247.
- Anslyn, E. V., and Dougherty, D.A., 2006, *Modern Physical Organic Chemistry*, University Science Books, California.
- Balasubramanian, S., and Pugalenthhi, V., 2000, A Comparative Study of the Determination of Sulphide in Tannery Waste Water by Ion Selective Electrode (ISE) and Iodometry, *Water Res.*, 34, 4201-4206.
- Bofill, M. G., Sutton, P. W., Straatman, H., Brummund, J., Schürmann, M., Guillen, M., and Alvaro, G., 2021, Biocatalytic Synthesis of Vanillin by an Immobilised Eugenol Oxidase: High Biocatalyst Yield by Enzyme Recycling, *Appl. Catal.*, A., 610, 117934.
- Caballero, A., Rosario, M., Vega, L., Imma, R., José, V., Klaus, W., Alberto, T., Pedro, M. and Jaume, V., 2005, Highly Selective Chromogenic and Redox or Fluorescent Sensors of Hg^{2+} in Aqueous Environment Based on 1,4-Disubstituted Azines, *J. Am. Chem. Soc.*, 127(45):15666-15667.
- Chourasiya, S. S., Kathuria, D., Wani, A. A., and Bharatam, P.V., 2019, Azines: Synthesis, Structure, Electronic Structure and Their Applications, *Org. Biomol. Chem.*, 17, 8486-8521.
- Chen, G., Tang, M., Fu, X., Cheng, F., Zou, X., Wang, J., and Zeng, R., 2018, A Highly Sensitive and Selective Fluorescent Sensor for Detection of Sulfide Anion Based on The Steric Hindrance Effect, *J. Mol. Struct.*, 1151, 230-235.
- De Melo, C. E. A., Nicoleti, C. R., Nandi, L. G., Schneider, F. S. S., Oliboni, R. D. S., Caramori, G. F., and Machado, V. G., 2020, Solvatochromism of New Substituted 4-[*E*-(4-nitrophenyl)diazenyl]phenolate Dyes, *J. Mol. Liq.*, 301, 112330.
- Dineshkumar, S., and Muthusamy, A., 2016, Investigation of Aggregation Induced Emission in 4-hydroxy-3-methoxybenzaldehyde Azine and Polyazine Towards Application in (Opto) Electronics: Synthesis, Characterization, Photophysical and Electrical Properties, *Des. Monomers Polym.*, 20(1), 234-249.
- Fayeulle, A., Trudel, E., Damiens, A., Josse, A., Youssef, N. B. H., Vigneron, P., Vayssade, M., Rossi, C., and Ceballos, C., 2021, Antimicrobial and Antioxidant Activities of Amines Derived from Vanillin as Potential Preservatives: Impact of the Substituent Chain Length and Polarity, *Sustainable Chem. Pharm.*, 22, 100471.
- Fitzgerald, D.J., Stratford, M., Gasson, M.J., Ueckert, J., Bos, A., and Narbad, A., 2004, Mode of Antimicrobial Action of Vanillin Against Escherichia Coli, Lactobacillus Plantarum and Listeria Innocua, *J. Appl. Microbiol.*, 97, 104-113.



- Fraden, J., 2016, *Hanbook of Modern Kemosensors*, 3rd Ed., Springer, San Diego.
- Ghorai, A., Mondal, J., Chandra, R., and Patra, G.K., 2015, A Reversible Fluorescent-Colorimetric Imino-Pyridyl Bis-Schiff Base Sensor for Expeditious Detection of Al³⁺ and HSO₃⁻ in Aqueous Media, *Dalton T.*, 44, 13261-13271.
- Ghosh, T., and Mishra, S., 2020, A Natural Cyanobacterial Protein C-Phycoerythrin as an HS⁻ Selective Optical Probe in Aqueous Systems, *Spectrochim. Acta, Part A.*, 239.
- Giuriati, C., Cavalli, S., Gorni, A., Badocco, D., and Pastore, P., 2004, Ion Chromatographic Determination of Sulfide and Cyanide in Real Matrices by Using Pulsed Amperometric Detection on a Silver Electrode, *J. Chromatogr. A.*, 1023, 105-112.
- Gowri, V., Jalwal, S., Dar, A. H., Gopal, A., Muthukrishnan, A., Bajaj, A., Ali, Md. E., and Jayamurugan, G., 2021, A Subtle Change in Substituent Enabled Multi-Ways Fluorine Anion Signals Including Paper-Strip Colorimetric Detection Using Urea-Functionalized Push-Pull Chromophore Receptor, *J. Photochem. Photobiol. A*, 410.
- Hansen, C. A., 2021, Vanillin Biosynthesis from Sucrose Ex-Sugarcane: Authentication of an Alternative Vanillin Source Through Stable Isotope Data Analysis, *Heliyon* 7, e06970.
- Huang, W., Li, Y., Lin, H., and Lin, H., 2012, Colorimetric Recognition of Acetate Anions in Aqueous Solution Using Charge Neutral Azo Derivatives, *Spectrochim. Acta, Part A.*, 86, 437-442.
- Irmi, N. M., Purwono, B., and Anwar, C., 2021, Synthesis of Symmetrical Acetophenone Azine Derivatives as Colorimetric and Fluorescent Cyanide Chemosensors, *Indones. J. Chem.*, 21(6), 1337 – 1347.
- Kang, J. H., Chae, J. B., and Kim, C., 2018, A Multi-Functional Chemosensor for Highly Selective Ratiometric Fluorescent Detection of Silver(I) Ion and Dual Turn-On Fluorescent and Colorimetric Detection of Sulfide, *R. Soc. Open Sci.*, 5, 180293.
- Kashyap, S., Singh, R., and Singh, U. P., 2020, Inorganic and Organic Anion Sensing by Azole Family Members, *Coordin. Chem. Rev.*, 417, 213369.
- Kaushik, R., Kumar, P., Ghosh, A., Gupta, N., Kaur, D., Arora, S., and Jose, D.A., 2015, Alizarin Red S-Zinc (II) fluorescent Ensemble for Selective Detection of Hydrogen Sulphide and Assay with an H₂S Donor, *RSC Adv.*, 5, 79309-79316.
- Kaushik, R., Ghosh, A., and Jose, D. A., 2017, Recent Progress in Hydrogen Sulphide (H₂S) Kemosensors by Metal Displacement Approach, *Coordin. Chem. Rev.*, 347, 141-157.
- Kaushik, R., Ghosh, A., Singh, A., and Jose, D. A., 2018, Colorimetric Sensor for the Detection of H₂S and its Application in Molecular Half-Subtractor, *Anal. Chim. Acta*, 1040, 177-186.
- Khanmohammadi, H., and Rezaeian, K., 2012, Thermally Stable Water Insoluble Azo-Azomethine Dyes: Synthesis, Characterization and Solvatochromic Properties, *Spectrochim. Acta, Part A.*, 97, 652-658.



- Khanmohammadi, H., and Khodam, F., 2013, Solvatochromic and Electrochemical Properties of New Thermally Stable Azo–azomethine Dyes with N₂S₂O₂ Donor Set of Atoms, *J. Mol. Liq.*, 177, 198-203.
- Lee, S. Y., and Kim, C., 2016, A Colorimetric Chemosensor for Sulfide in a Near Perfect Aqueous Solution: Practical Application Using Test Kit, *RSC Adv.*, 1-28.
- Lewis, A. E., 2010, Review of Metal Sulphide Precipitation, *Hydrometallurgy*, 104, 222-234.
- Li, H., Yang, Y., Wu, X., Jia, R., Zhao, P., and Wang, Y., 2021, Novel Reactive Chemosensor for Sulfide Detection with High Selectivity and Sensitivity Based on 4-Cl Coumarin Derivatives, *Dyes Pigm.*, 191, 5-6.
- Li, Q., Yong, G., Jian, X. and Shijun, S, 2011, Salicylaldehyde Based Colorimetric and ‘Turn On’ Fluorescent Chemosensors for Fluoride Anion Sensing Employing Hydrogen Bonding, *Sens. Actuators, B.*, 158(1): 427-431.
- Li, Z., Wang, S., Xiao, L., Li, X., Jing, X., Peng, X., and Ren, L., 2018, An Efficient Colorimetric and Absorption Ratiometric Anion Sensor Based on a Simple Azo-Azomethine Receptor, *Inorg. Chim. Acta*, 479, 148-153.
- Lin, C., Zhu, Y., Yu, J., Xian, X., Tsow, F., Forzani, E. S., Wang, D., and Tao, N., 2018, Gradient-Based Colorimetric Sensors for Continuous Gas Monitoring, *Anal. Chem.*, 90, 8, 5375-5380.
- Liu, R., 2008, *Water-Insoluble Drug Formulation*, 2nd Ed, CRC Press Taylor & Francis Group, London.
- Mahnashi, M. H., Mahmoud, A. M., Alkahtani, S. A., Ali, R., and El-Wekil, M. M., 2020, A Novel Imidazole Derived Colorimetric and Fluorometric Chemosensor for Bifunctional Detection of Copper (II) and Sulphide Ions in Environmental Water Samples, *Spectrochim. Acta, Part A.*, 228, 117846.
- Martau, G. A., Calinoiu, L. F., and Vodnar, D. C., 2021, Bio-Vanillin: Towards a Sustainable Industrial Production, *Trends Food Sci. Technol.*, 109, 579-592.
- Martinez-Manez, R., and Sancenon, F., 2003, Fluorogenic and Chromogenic Chemosensors and Reagents for Anions, *Chem. Rev.*, 103:4419-4476.
- Nanto, H., and Stetter, J. R., 2003, *Handbook of Machine Olfaction: Electronic Nose Technology*, WILEY-VCH Verlag GmbH Co. KGaA, Weinheim.
- Pei, P. X., Hu, J. H., Chen, Y., Sun, Y., and Qi, J., 2017, A Novel Dual-Channel Chemosensor for CN⁻ Using Asymmetric Double-Azine Derivatives in Aqueous Media and its Application in Bitter Almond, *Spectrochim. Acta, Part A.*, 181, 131-136.
- Pei, P.X., Hu, J.H., Long, C. and Ni, P., 2018, A Novel Colorimetric and ‘Turn-On’ Fluorimetric Chemosensor for Selective Recognition of CN⁻ Ions Based on Asymmetric Azine Derivatives in Aqueous Media, *Spectrochim. Acta, Part A.*, 198,182-187.
- Purwono, B., Anwar, C., and Hanapi, A., 2013, Synthesis of Azo-Imine Derivatives from Vanillin as an Acid Base Indicator, *Indo. J. Chem.*, 13(1),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.*, 121, 306-312.
- Rahmawati, R., Purwono, B., and Matsjeh, S., 2018, a Naked-Eye Colorimetric Receptor for Anions Based on Nitro Group Featuring with Benzimidazole Unit, *Asian J. Chem.*, 30(9), 1933–1936.
- 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. Fluorine Chem.*, 153, 89-95.
- Reichardt, C., 2004, Pyridinium N-Phenolate Betaine Dyes as Empirical Indicators of Solvent Polarity: Some New Findings, *Pure Appl. Chem.*, 76(10), 1903-1919.
- Riyanto, 2014, *Validasi & Verifikasi Metode Uji: Sesuai dengan ISO/IEC 17025 Laboratorium Pengujian dan Kalibrasi*, Deepublish, Yogyakarta.
- Santos-Figueroa, L.E., 2014, New Approaches for the Development of Chromofluorogenic Sensors for Chemical Species of Biological, Industrial, and Environmental Interest, *PhD. Thesis*, Centro de Reconocimiento Molecular Y Desarrollo Tecnologico Universitat Politecnica de Valencia, Valencia.
- Savizi, I. S. P., Kariminia, H. R., Ghadiri, M., and Roosta-Azad, R., 2012, Amperometric Sulfide Detection Using *Coprinus Cinereus* Peroxidase Immobilized on Screen Printed Electrode in an Enzyme Inhibition Based Biosensor, *Biosens. Bioelectron.*, 35, 297-301.
- Shojaeifard, Z., Hemmateenejad, B., Shamsipur, M., and Ahmadi, R., 2019, Dual Fluorometric and Colorimetric Sensor Based on Quenching Effect of Copper (II) Sulfate on the Copper Nanocluster for Determination of Sulfide Ion in Water Samples, *J. Photoch. Photobio. A.*, 384, 112030.
- Souto, F. T., Buske, J. L. Buske, J. L. de O., Nicoleti, C. R., Dreyer, J. P., Heying, R. da S., Bortoluzzi, A. J., and Machado, V. G., 2021, Chromogenic Chemodosimeter Based on a Silylated Azo Compound Detects Cyanide in Water and Cassava, *Spectrochim. Acta, Part A.*, 260.
- Suharman, S., dan Rahayu, S. U., 2020, Senyawa Hidrazone dari Vanilin-DNPH Sebagai Sensor Kolorimetri Anion Sianida, *ALCHEMY Jurnal Penelitian Kimia*, 16(1), 77-93.
- Sun, Y., Hu, J. H., Qi, J., and Li, J. B., 2016, A Highly Selective Colorimetric and “Turn-On” Fluorimetric Chemosensor for Detecting CN⁻ Based on Unsymmetrical Azine Derivatives in Aqueous Media, *Spectrochim. Acta, Part A.*, 167, 101-105.
- Tolos, J. P., Martinez, Y. M., Andres, J. V., Chafer, J. C., Legua, C. M., and Falco, P. C., 2016, New Optical Paper Sensor for In Situ Measurement of Hydrogen Sulphide in Waters and Atmosphere, *Talanta*, 156-157, 79-86.
- Udhayakumari, D., 2018, Chemical Chromogenic and Fluorogenic Chemosensors for Lethal Cyanide Ion. A Comprehensive Review of the Year 2016. *Sens. Actuators, B.*, 259, 1022–1057.
- Walekar, L., Dutta, T., Kumar, P., Ok, Y.S., Pawar, S., Deep, A., and Kim, K.H., 2017, Functionalized Fluorescent Nanomaterials for Sensing Pollutants in



the Environment: A Critical Review, *TrAC Trends Anal. Chem.*, 97, 458-467.

- Wang, H., Chen, C., Liu, Y., Wu, Y., Yuan, Y., and Zhou, Q., 2019, A Highly Sensitive and Selective Chemosensor for 2,4,6-trinitrophenol Based on L-cysteine-coated Cadmium Sulfide Quantum Dots, *Talanta*, 198, 242-248.
- Yang, L., Liu, Y. L., Liu, C.G., Fu, Y., and Ye, F., 2021, A Naked-Eye Visible Colorimetric and Ratiometric Chemosensor Based on Schiffbase for Fluoride Anion Detection, *J. Mol. Struct.*, 1236, 130343.
- Zakerhamidi, M. S., Ghanadzadeh, A., and Moghadam, M., 2012, Solvent Effects on the UV/Visible Absorption Spectra of Some Aminoazobenzene Dyes, *Chem. Sci. Trans.*, 1(1),1-8.
- Zazzi, B. C., Crepeau, K. L., Fram, M. S., and Bergamaschi, B. A., 2005, Method of Analysis at the U.S. Geological Survey California Water Science Center, Sacramento Laboratory—Determination of Haloacetic Acid Formation Potential, Method Validation, and Quality-Control Practices, *Scientific Investigations Report 2005*, 5115.
- Zhang, H., Xia, X., Zhao, H., Zhang, G. N., Jiang, D. Y., Xue, X. Y., and Zhang, J., 2019, A Near-Infrared Fluorescent Probe Based on S_NAr Reaction for H₂S/GSH Detection in Living Cells and Zebrafish, *Dyes Pigm.*, 163, 183-189.
- Zhao, Y. H., Li, Y., Long, Y., Zhou, Z., Tang, Z., Deng, K., and Zhang, S., 2017, Highly Selective Fluorescence Turn-On Determination of Fluoride Ions via Chromogenic Aggregation of a Silyloxy-Functionalized Salicylaldehyde Azine, *Tetrahedron Lett.*, 58, 1351-1355.
- Zhao, X., Chen, J., Meng, X., Li, L., Zhou, X., Li, J., and Bai, S., 2021, Environmental Profile of Natural Biological Vanillin Production Via Life Cycle Assessment, *J. Cleaner Prod.*, 308, 127399.