



DAFTAR PUSTAKA

- Afolabi, S. O., Semire, B., Akiode, O. K., dan Idowu, M. A., 2022, Quantum Study on the Optoelectronic Properties and Chemical Reactivity of Phenoxazine-based Organic Photosensitizer for Solar Cell Purposes, *Theoretical Chemistry Accounts*, 141(22), 1-14
- Alamsyah, T., Hiendro, A., Abidin, Z., 2021, Analisis Potensi Energi Matahari sebagai Pembangkit Listrik tenaga Surya Menggunakan Panel Monocrystalline dan Polycrystalline di Kota Pontianak dan Sekitarnya, *Jurnal Teknik Elektro Universitas Tanjungpura*, 2(1).
- Al-Ghamdi, S. N., Al-Ghamdi, H. A., El-Shishtawy, dan Asiri, A. M., 2021, Advances in Phenothiazine and Phenoxazine-based Electron Donors for Organic Dye sensitized Solar Cells, *Dyes and Pigments*, 194, 109638
- Artiningrum, T. dan Havianto, J., 2019, Meningkatkan Peran Energi Bersih lewat Pemanfaatan Sinar Matahari, *Geoplanart*, 2(2), 100-115.
- Chiu, C. C., Sheng, Y. Y., Lin, W. J., Juwita, R., Tan, C. J., dan Tsai, H. H. G., 2018, Effects of Internal Electron-Withdrawing Moieties in D-A- π -A Organic Sensitzers on Photophysical Properties for DSSCs: A Computational Study, *ACS Omega*, 3, 433-445.
- Chen, C. Y., Wang, M., Li, J. Y., Pootrakulchote, N., Alibabaei, L., Ngoc-le, C., Decoppet, J. D., Tsai, J. H., Grätzel, C., Wu, C. G., Zakeeruddin, S. M., dan Grätzel, M., 2009, Highly Efficient Light harvesting Ruthenium Sensitizer for Thin-film Dye-sensitized Solar Cells, *ACS Nano*, 3, 3103-3109.
- Cheng, M., Chen, C., Xu, B., Hua, Y., Zhang, F., Kloo, L., dan Sun, L., 2015, A Novel Phenoxazine-based Hole Transport Material for Efficient Perovskite solar cell, *Journal of Energy Chemistry*, 24, 698-706.
- Copeland, A. W., Black, O. D., and Garret, A. B., 1941, The Photovoltaic Effect, *Chem. Rev.*, 31, 177-226
- Deogratias, G., Al-Qurashi, O. S., Wazzan, N., Pogrebnyaya, T., dan Pogrebnoi, A., 2020, Effects of heteroatoms in π -conjugated linkers on the optical and electronic properties of modified triphenylamine based dyes: towards DSSCs' applications, *Journal of Molecular Modelling*, 26, 288.
- Fauzi, M. A. R. D., Widayapuspaa, A. H., dan Setyawati, H., Review: Sistem Dye Sensitized Solar Cell Terkombinasi dengan Organic Light-Emitting Diode sebagai Sumber Penerangan Berbasis Green Chemistry, *ReTII*, 00.
- Ferrere, S., Zaban, A., dan Gregg, B. A., 1997, Dye Sensitization of Nanocrystalline Tin Oxide by Perylene Derivatives, *J. Phys. Chem. B*, 101, 4490-4493.
- Francis, O. I. dan Ikenna, A., 2021, Review of Dye-Sensitized Solar Cell (DSSCs) Development, *Natural Science*, 13 (12), 496-509.



- Frisch, M. J., Trucks, G. W., Sclegel, H. B., Scuseria, G. E., Robb, M. A., Cheeseman, J. R., Scalmani, G., Barone, V., Mennucci, B., Petersson, G. A., Nakatsuji, H., Caricato, M., Li, X., Hratchian, H. P., Izmaylov, A. F., Bloino, J., Zheng, G., Sonnenberg, J. L., Hada, M., dkk., 2013, Gaussian 09 Revision D.01, Gaussian, Inc., Wallingford, CT.
- Gao, F., Yang, C. L., Wang, M. S., Ma, X. G., dan Liu, W. W., 2019, Theoretical studies on the feasibility of the hybrid nanocomposites of graphene quantum dot and phenoxazine-based dyes as an efficient sensitizer for dye-sensitized solar cells, *Spectrochimica Acta Part A: Molecular and Biomolecular Spectroscopy*, 206, 216-223.
- Guangul, F. M. dan Chala, G. T., 2019, Solar Energy as Renewable Energy Source: SWOT Analysis, 1-5.
- Grätzel, M., 2001, Photoelectrochemical Cells, *Nature* 414, 338-344.
- Green, M. A., 2002, Third Generation Photovoltaics: Solar Cells for 2020 and Beyond, *Phycisa E*, 14, 65-70.
- Hassan, A. U., Sumrra, S. H., Mustafa, G., Mohyuddin, A., Imran, M., Mehmood, R. F., Mohyuddin, A., 2023, Novel *pull-push* solar switches with a D- π -D- π -A framework of the thiophene core: computed absorbance/fluorescence ability with device parameters, *Structural Chemistry*.
- Hohenberg, P., dan Kohn, 1964, Inhomogeneous Electron Gas, 155.
- Hu, W., Zhang, Z., Shen, W., Li, M., dan He, R., 2017, Cyclopentadithiophene bridged organic sensitizers with different auxiliary acceptor for high performance dye sensitized solar cells, *Dyes and Pigments*, 137, 165-173.
- Kalyanasundaram, K., dan Grätzel, M., 1998, Applications of functionalized transition metal complexes in photonic and optoelectronic devices, *Coordination Chemistry Reviews*, 77, 347-414.
- Kathiravan, A., Kumar, M. D., Gayathri, M. N., Joseph, J. N., dan Jaccob, M., 2023, Role of anchoring groups on the light harvesting and optoelectronic properties of triphenylamine derivatives: insights from theory, *Journal of Molecular Modelling*, 29, 79.
- Kim, T. D., dan Lee, K. S., 2013, Molecular design principle of all-organic dyes for dye-sensitized solar cells, *Chem. – A Eur. J.*, 19, 5220-5230.
- Kuczyńska-Łażewska, A., Klugmann-Radziemska, E., dan Witkowska, A., Recovery of Valuable Materials and Methods for Their Management When Recycling Thin-Film CdTe Photovoltaic Modules, *Materials*, 14, 7836.
- Kusama, H., Orita, H., dan Sugihara, H., 2008, TiO₂ Band Shift by Nitrogen Containing Heterocycles in Dye-Sensitized Solar Cells: a Periodic Density Functional Theory Study, *Langmuir*, 24, 4411-4419.



- Lameirinhas, R. A. M., Torres, J. P . N., dan Cunha, J . P. D. M., 2022, A Photovoltaic Technology Review: History, Fundamentals and Applications, *Energies*, 15,1823.
- Lee, H. M. dan Yoon, J. H., 2018, Power Performance analysis of a transparent DSSC BIPV window based on 2 year measurement data in a full-scale mock-up, *Applied Energy*, 225, 1013-1021.
- Li, P., Cui, Y., Song, C., dan Zhang,, H., A systematic study of phenoxazine-based organic sensitizers for solar cells, *Dyes and Pigments*, 137, 12-33.
- Li, S., Zhang, S., Mei, S., Kong, X., Yang, M., Wu, W., Zhang, S., dan Tan, H., 2021, A novel porphyrin dye with phenoxazine as donor unit for efficient dye sensitized solar cells, *Dyes and Pigments*, 190, 109308.
- Liu, H., Liu, L., Fu, Y., Liu, E., Xue, B., 2019, Theoretical design of D- π -A-A sensitizers with narrow band gap and broad spectral response based on boron dipyrromethene for dye-sensitized solar cells, *J. Chem. Inf. Model*, 59(5), 2248 -2256.
- Lu, T., dan Chen, F., 2012, Multiwfn: A multifunctional wavefunction analyzer, *J. Comput. Chem.*, 33, 580-592.
- Mandal, S., dan Kandregula, G. R., 2023, A Computational Finding on the Effect of π -conjugated acceptors in thiophene-linked coumarin dyes for potential suitability in DSSC application, *Journal of Photochemistry & Photobiology, A: Chemistry*, 435, 114300.
- Marlina, L. A., 2022, Pengaruh Substitusi Ion Logam Pusat dan Modifikasi Gugus Donor-Akseptor Elektron Terhadap Peningkatan Sifat Fotoelektronik Kompleks Logam-Porfirin sebagai Sensitiser dalam Dye-Sensitized Solar Cells (DSSC), *Disertasi*, Program Studi Doktor Kimia, Departemen Kimia, Fakultas Matematika dan Ilmu Pengetahuan Alam, Universitas Gadjah Mada, Yogyakarta.
- Marlina, L. A., Haryadi, W., Daengngern, R., dan Pranowo, H. D., 2022, Molecular Design of Benzo[c][1,2,5]Thiadiazole or Thieno [3,4-d] Pyridazine-based Auxiliary Acceptors through Different Anchoring Groups in D- π -A-A Framework: A DFT/TD-DFT Study, *Journal of Molecular Graphics and Modelling*, 113, 108148.
- Matthew, S., Yella, A., Gao, P., Humphry-Baker, R., Curchod, B. F. E., Ashari-Astani, N., Tavernelli, I., Rothlisberger, U., Nazeerudding, M. K., dan Grätzel, M., 2014, *Nat. Chem.*, 6, 242-247.
- Mei, S., Shao, W., Huang, S., Kong, X., Hu, Z., Yang, M., Wu, W., dan Tan, H., 2021, Novel D-A- π -A Organic Dyes with Phenoxazine as a Donor Unit for Dye Sensitized Solar Cells: The Effect of an Ethynyl Group on Performance, *Energy Fuels*, 35, 19748-19755.



- Mo, Y., Lin, Z., Wu, W., dan Zhang, Q., 1996, Bond-distorted orbitals and effects of hybridization and resonance on C-C bond lengths, *J. Phys. Chem.*, 100, 11569-11572
- Mohammadi, H., Saghalian, S., and Gharibi, B. Z. D., 2023, Renewable and Non Renewable Energy Consumption and Its Impact on Economic Growth, *Sustainability*, 15(4), 3822.
- Nagarajan, B., Kushwaha, S., Elumalai, R., Mandal, S., Ramanujam, K., dan Raghavachari, D., 2017, Novel ethynyl-pyrene substituted phenothiazine based metal free organic dyes in DSSC with 12% conversion efficiency, *J. Mater. Chem. A*, 5, 10289-10300.
- Nalçakan, H., Kurtay, G., Sarikavak, K., Şen, N., dan Sevin, F., 2023, Computational insights into bis-N,N-dimethylaniline based D- π -A photosensitizers bearing divergent-type of π -linkers for DSSCs, *Journal of Molecular Graphics and Modelling*, 122, 108485.
- Nindhankar, A. D., Goudappagouda, Wakchaure, V.C., dan Babu, S. S., 2021, Efficient metal-free organic room temperature phosphors, *Chemical Science*, 12, 4216-4236.
- Nusbaumer, H. dan Moser, J. E., Zakeeruddin, S. M., Nazeeruddin, M. K., dan Grätzel, M., 2001, $\text{Co}^{II}(\text{dbbip})_2^{2+}$ Complex Rivals Tri-iodide/Iodide Redox Mediator in Dye-Sensitized Photovoltaic Cells, *J. Phys. Chem. B*, 105, 10461-10464.
- Oskam, G., Bergeron, B. V., Meyer, G. J., dan Searson, P. C., 2001, Pseudohalogens for Dye Sensitized TiO_2 Photoelectrochemical cell, *J. Phys. Chem. B*, 105, 6867-6873.
- O'Rourke, C., dan Bowler, D. R., 2014, DSSC Anchoring Groups: a Surface dependent decision, *J. Phys.: Condens. Matter*, 26, 195302.
- Paniagua, J. C., 2023, A simple, clear and pedagogical way of introducing Density Functional Theory.
- Preat, J., Michaux, C., Jacquemin, D., dan Perpete, E. A., 2009, Enhanced Efficiency of Organic Dye Sensitized Solar Cells: Triphenylamine Derivatives, *J. Phys. Chem.*, 113, 16821-16833.
- Rawal, N., Vaishaly, A. G., Sharma, H., dan Mathew, B. B., 2015, Dye Sensitized Solar Cells: The Emerging Technology, *Energy and Power Engineering Science*, 2(2), 46-52.
- Roohi, H., dan Mohtamafiar, N., 2022, The role of the donor group and electron accepting substitutions inserted in p-linkers in tuning the optoelectronic properties of D-p-A dye-sensitized solar cells: a DFT/TDDFT study, *RSC Adv.*, 12, 11557.
- Suman, Sharma, P., Goyal, P., 2020, Evolution of PV Technology from Conventional to Nano-materials, *Materials Today: Proceedings*, 28, 1593-1597.



- Sharma, K., Sharma, V., Sharma, S. S., 2018, Dye-Sensitized Solar Cells: Fundamentals and Current Status, *Nanoscale Research Letters*, 13, 381.
- Tan, H., Pan, C., Wang, G., Wu, Y., Zhang, Y., Zou, Y., Yu, G., dan Zhang, M., 2013, Phenoxyazine-based organic dyes with different chromophores for dye sensitized solar cells, *Organic Electronics*, 14, 2795-2801.
- Tan, L. Z., Zheng, F., Young, S. M., Wang, F., Liu, S., dan Rappe, A. M., 2016, Shift Current Bulk Photovoltaic Effect in Polar Materials-Hybrid and Oxide Perovskites and beyond, *npj Comput Mater* 2, 16026.
- Tripathi, A., Ganjoo, A., dan Chetti, P., 2020, Influence of internal acceptor and thiophene based π -spacer in D-A- π -A system on photophysical and charge transport properties for efficient DSSCs: A DFT insight, *Solar Energy*, 209, 194-205.
- Wu, Y., Zhu, W., Zakeeruddin, S. M., dan Grätzel, M, 2015, Insight into D-A- π -A Structured Sensitizers: A Promising Route to Highly Efficient and Stable Dye Sensitized Solar Cells, *ACS Appl. Mater. Interfaces*, 7, 9307-9318.
- Yao, Z., Wu, H., Li, Y., Wang, J., Zhang, J., Zhang, M., Guo, Y., dan Wang, P., 2015, Dithienopicenocarbazole as the Kernel Module of Low-energy-gap Organic Dyes For Efficient Conversion of Sunlight to Electricity, *Energy Environ. Sci.*, 8, 3192-3197.
- Yu, P., Zhang, F., Li, M., dan He, R., 2015, Influence of position of auxiliary acceptor in D-A-p-A photosensitizer on photovoltaic performances of dye-sensitized solar cells, *J Mater Sci*, 50, 7333-7342
- Zhang, G., Bai, Y., Li, R., Shi, D., Wenger, S., Zakeerudding, S. M., Grätzel, M., dan Wang, P., 2009, Employ a bisthienothiophene linker to construct an organic chromophore for efficient and stable dye-sensitized solar cells, *Energy Environ. Sci.*, 2, 92-95.
- Zhang, L., dan Cole J. M., 2015, Anchoring Groups for Dye-Sensitized Solar Cells, *ACS Appl. Mater. Interfaces*, 7, 3427-3455
- Zheng, J., Du, J., Wang, B., Klemes, J. J., Liao, Q., dan Liang, Y., 2023, A Hybrid Framework for Forecasting Power Generation of Multiple Renewable Energy Sources, *Renewable and Sustainable Energy Reviews*, 172, 113046.
- Zhu, W., Wu, Y., Wang, S., Li, W., Li, X., Chen, J., Wang, Z. S., dan Tian, H., 2011, Organic D-A- π -A Solar Cell Sensitzers With Improved Stability and Spectral Response, *Adv. Funct. Mater.*, 21, 756-763.