

- [2] K. Kakiage, Y. Aoyama, T. Yano, K. Oya, J.-i. Fujisawa, and M. Hanaya, "Highly-efficient dye-sensitized solar cells with collaborative sensitization by silyl-anchor and carboxy-anchor dyes," *Chem. Commun.*, vol. 51, no. 88, pp. 15894-15897, 2015.
- [3] J. M. Kroon, N. J. Bakker, H. J. P. Smit, P. Liska, K. R. Thampi, P. Wang, S. M. Zakeeruddin, M. Grätzel, A. Hinsch, S. Hore, U. Würfel, R. Sastrawan, J. R. Durrant, E. Palomares, H. Pettersson, T. Gruszecki, J. Walter, K. Skupien, and G. E. Tulloch, "Nanocrystalline dye-sensitized solar cells having maximum performance," *Prog. Photovoltaics Res. Appl.*, vol. 15, no. 1, pp. 1-18, 2007.
- [4] P. J. Cameron and L. M. Peter, "Characterization of titanium dioxide blocking layers in dye-sensitized nanocrystalline solar cells," *J. Phys. Chem. B*, vol. 107, no. 51, pp. 14394-14400, 2003.
- [5] A. Sangiorgi, R. Bendoni, N. Sangiorgi, A. Sanson, and B. Ballarin, "Optimized TiO₂ blocking layer for dye-sensitized solar cells," *Ceram. Int.*, vol. 40, no. 7, Part B, pp. 10727-10735, 2014.
- [6] M. Shakeel Ahmad, A. K. Pandey, and N. Abd Rahim, "Advancements in the development of TiO₂ photoanodes and its fabrication methods for dye sensitized solar cell (DSSC) applications. A review," *Renewable Sustainable Energy Rev.*, vol. 77, pp. 89-108, 2017.
- [7] D. Jianping, L. Jing, W. Minqiang, and S. Xiaohui, "The influence of blocking layer on the photovoltaic performance of organometal halide perovskite solar cell," in *Proc. 14th IEEE International Conference on Nanotechnology*, 2014, pp. 789-793.
- [8] H. K. Adli, T. Harada, S. Nakanishi, and S. Ikeda, "Effects of TiCl₄ treatment on the structural and electrochemical properties of porous TiO₂ layer in CH₃NH₃PbI₃ perovskite solar cells," *Phys. Chem. Chem. Phys.*, vol. 19, pp. 26898-26905, 2017.
- [9] Y. Xu, C. Gao, S. Tang, J. Zhang, Y. Chen, Y. Zhu, and Z. Hu, "Comprehensive understanding of TiCl₄ treatment on the compact TiO₂ layer in planar perovskite solar cells with efficiencies over 20%," *J. Alloys Comp.*, vol. 787, pp. 1082-1088, 2019.
- [10] V. Ostapchenko, Q. Huang, Q. Zhang, and C. Zhao, "Effect of TiCl₄ treatment on different TiO₂ blocking layer deposition methods" *Int. J. Electrochem. Sci.*, vol. 12, pp. 2262-2271, 2017.
- [11] Z. Jin, S. Chen, Y. Zhang, Y. Wang, X. Zhang, and Y. Liu, "Construction of hierarchical hetero-structured TiO₂ photoanodes for dye-sensitized solar energy conversion: Case study of anatase nanobranches on rutile nanorod arrays," *Chem. Phys.*, vol. 522, pp. 129-133, 2019.
- [12] K. Li, Q. Sun, S. Wu, D. You, T. Zang, L. Yu, L. Sui, and L. Dong, "The remarkable morphology regulatory effect of NH₄⁺ ions on TiO₂ nanorod arrays and their application in dye-sensitized solar cells," *Appl. Phys. A*, journal article vol. 125, no. 4, p. 245, 2019.
- [13] K. P. Ghoderao, S. N. Jamble, and R. B. Kale, "Influence of reaction temperature on hydrothermally grown TiO₂ nanorods and their performance in dye-sensitized solar cells," *Superlattices Microstruct.*, vol. 124, pp. 121-130, 2018.
- [14] X. Feng, K. Zhu, A. J. Frank, C. A. Grimes, and T. E. Mallouk, "Rapid charge transport in dye-sensitized solar cells made from vertically aligned single-crystal rutile TiO₂ nanowires," *Angew. Chem. Int. Ed.*, vol. 51, no. 11, pp. 2727-2730, 2012.
- [15] J. E. M. Haverkort, E. C. Garnett, and E. P. A. M. Bakkers, "Fundamentals of the nanowire solar cell: Optimization of the open circuit voltage," *Appl. Phys. Rev.*, vol. 5, no. 3, p. 031106, 2018.
- [16] L. Meng, H. Chen, C. Li, and M. P. dos Santos, "Growth of the [110] oriented TiO₂ nanorods on ITO substrates by sputtering technique for dye-sensitized solar cells," *Front. Mater.*, vol. 1, no. 14, 2014.
- [17] D. Gong, C. A. Grimes, O. K. Varghese, W. Hu, R. S. Singh, Z. Chen, and E. C. Dickey, "Titanium oxide nanotube arrays prepared by anodic oxidation," *J. Mater. Res.*, vol. 16, no. 12, pp. 3331-3334, 2011.
- [18] J.-h. Hu, W.-h. Liu, Y.-p. Yang, L. Zhao, Y. Qiao, S.-h. Li, P.-h. Liu, and M.-w. Chen, "TiO₂ nanotube/TiO₂ nanoparticle hybrid photoanode for hole-conductor-free perovskite solar cells based on carbon counter electrodes," *Optical Materials Express*, vol. 7, no. 9, pp. 3322-3331, 2017.
- [19] Y. K. Kwok, "Methodologies for achieving 1D ZnO nanostructures potential for solar cells," in *Renewable and Sustainable Composites*, A. Pereira and F. A. O. Fernandes, Eds.: Intechopen, 2019.
- [20] N. M. Nursam, Shobih, E. S. Rosa, J. Hidayat, P. N. Anggraini, L. Muliani, and L. Retnaningsih, "Fotoanoda berlapis TiO₂ nanorods dan TiO₂ mesopori berserta metode pembuatannya," *Registered patent P00201910454*, Indonesia, 2019.
- [21] N. M. Nursam, J. Hidayat, Shobih, E. S. Rosa, and L. M. Pranoto, "A comparative study between titania and zirconia as material for scattering layer in dye-sensitized solar cells," *J. Phys.: Conf. Ser.*, vol. 1011, p. 012003, 2018.
- [22] N. M. Nursam, L. M. Pranoto, and J. Hidayat, "Application of large area TiO₂ photoelectrode on dye-sensitized solar cells," *Jurnal Elektronika dan Telekomunikasi*, vol. 12, pp. 70-76, 2012.
- [23] J. J. Pandanga, N. M. Nursam, Shobih, and N. Prastomo, "Synthesis and application of TiO₂ nanorods as photo-anode in dye-sensitized solar cells," *J. Phys.: Conf. Ser.*, vol. 1191, p. 012023, 2019.
- [24] B. Liu and E. S. Aydin, "Growth of oriented single-crystalline rutile TiO₂ nanorods on transparent conducting substrates for dye-sensitized solar cells," *J. Am. Chem. Soc.*, vol. 131, no. 11, pp. 3985-3990, 2009.
- [25] W. Peng, M. Yanagida, L. Han, and S. Ahmed, "Controlled fabrication of TiO₂ rutile nanorod/anatase nanoparticle composite photoanodes for dye-sensitized solar cell application," *Nanotechnology*, vol. 22, no. 27, p. 275709, 2011.
- [26] N. G. Park, J. van de Lagemaat, and A. J. Frank, "Comparison of dye-sensitized rutile- and anatase-based TiO₂ solar cells," *J. Phys. Chem. B*, vol. 104, no. 38, pp. 8989-8994, 2000.
- [27] J. Tauc, Grigorov.R, and A. Vancu, "Optical properties and electronic structure of amorphous germanium," (in English), *Phys. Status Solidi*, vol. 15, no. 2, pp. 627-637, 1966.
- [28] G. Boschloo, "Improving the efficiency of dye-sensitized solar cells," *Frontiers in Chem.*, vol. 7, no. 77, 2019.
- [29] S. I. Cho, H. K. Sung, S. Lee, W. H. Kim, D. Kim, and Y. S. Han, "Photovoltaic performance of dye-sensitized solar cells containing ZnO microrods," *Nanomater.*, vol. 9, no. 1645, 2019.