
References

- H. Kroemer, "Theory of a Wide-Gap Emitter for Transistors," *Proceedings of the IRE*, vol. 45, no. 11, pp. 1535–1537, 1957.
- R. L. Anderson, "Experiments on Ge-GaAs Heterojunctions," *Solid-State Electronics*, vol. 5, no. 5, pp. 341–351, 1962.
- R. S. Wagner, and W. C. Ellis, "Vapor-liquid-solid mechanism of single crystal growth," *Applied Physics Letters*, vol. 4, no. 5, pp. 89–90, 1964.
- B. L. Sharma, and R. K. Purohit, *Semiconductor heterojunctions*, Oxford, Pergamon Press, 1974.
- E. I. Givargizov, "Fundamental aspects of VLS growth," *Journal of Crystal Growth*, vol. 31, pp. 20–30, 1975.
- F. M. Livingstone, "Investigation of silicon-cadmium sulphide heterojunction photodetectors," Ph.D. Thesis, University of Glasgow, 1976.
- S. M. Sze, *Physics of Semiconductor Devices*, 2nd ed. New York, USA: Wiley, 1981.
- C. Y. Ting, and M. Wittmer, "The use of titanium-based contact barrier layers in silicon technology," *Thin Solid Films*, vol. 96, no. 4, pp. 327–345, 1982.
- H. Kroemer, "Heterostructure devices: A device physicist looks at interfaces," *Surface Science*, vol. 132, no. 1, pp. 543–576, 1983.
- J. H. Werner, and H. H. Güttler, "Barrier inhomogeneities at Schottky contacts," *Journal of applied physics*, vol. 69, no. 3, pp. 1522–1533, 1991.
- S. Iijima, "Helical microtubules of graphitic carbon," *Nature*, vol. 354, no. 6348, pp. 56–58, 1991.
- J. C. Bean, "Silicon-Based Semiconductor Heterostructures: Column IV Bandgap Engineering," *Proceedings of the IEEE*, vol. 80, no. 4, pp. 571–587, 1992.
- R. T. Tung, "Electron transport at metal-semiconductor interfaces: General theory," *Physical Review B*, vol. 45, no. 23, pp. 13509–13523, 1992.
- A. L. Linsebigler, G. Lu, and J. T. Yates Jr, "Photocatalysis on TiO₂ Surfaces: Principles, Mechanisms, and Selected Results," *Chemical reviews*, vol. 95, no. 3, pp. 735–758, 1995.
- M. Razeghi, and A. Rogalski, "Semiconductor ultraviolet photodetectors," *Journal of Applied Physics*, vol. 79, no. 10, pp. 7433–7473, 1996.
- N. Martin, C. Rousselot, C. Savall, and F. Palmino, "Characterizations of titanium oxide films prepared by radio frequency magnetron sputtering," *Thin Solid Films*, vol. 287, no. 1–2, pp. 154–163, 1996.
- B. Nabet, "A Heterojunction Metal–Semiconductor–Metal Photodetector," *IEEE Photonics Technology Letters*, vol. 9, no. 2, pp. 223–225, 1997.
- D. Dimova-Malinovska, M. Sendova-Vassileva, N. Tzenov, and M. Kamenova, "Preparation of thin porous silicon layers by stain etching," *Thin Solid Films*, vol. 297, no. 1–2, pp. 9–12, 1997.
- M. Riordan, and L. Hoddeson, "The origins of the pn junction," *IEEE spectrum*, vol. 34,

- no. 6, pp. 46–51, 1997.
- A. M. Morales, and C. M. Lieber, “A Laser Ablation Method for the Synthesis of Crystalline Semiconductor Nanowires,” *Science*, vol. 279, no. 5348, pp. 208–211, 1998.
- T. H. Gfroerer, “Photoluminescence in Analysis of Surfaces and Interfaces,” *Encyclopedia of Analytical Chemistry*, pp. 01–23, 2000.
- X. Li, and P. W. Bohn, “Metal-assisted chemical etching in HF/H₂O₂ produces porous silicon,” *Applied Physics Letters*, vol. 77, no. 16, pp. 2572–2574, 2000.
- Y. Cui, X. Duan, J. Hu, and C. M. Lieber, “Doping and Electrical Transport in Silicon Nanowires,” *The Journal of Physical Chemistry B*, vol. 104, no. 22, pp. 5213–5216, 2000.
- P. Chattopadhyay, and D. P. Haldar, “Capacitance-voltage characteristic of anisotype heterojunction in the presence of interface states and series resistance,” *Applied surface science*, vol. 171, no. 3–4, pp. 207–212, 2001.
- Z. I. Alferov, “Nobel lecture: The double heterostructure concept and its applications in physics, electronics, and technology,” *Reviews of modern physics*, vol. 73, no. 3, pp. 767–782, 2001.
- A. Zalar, J. Van Lier, E. J. Mittemeijer, and J. Kovač, “Interdiffusion at TiO₂/Ti, TiO₂/Ti₃Al and TiO₂/TiAl interfaces studied in bilayer structures,” *Surface and interface analysis*, vol. 34, no. 1, pp. 514–518, 2002.
- H. K. Kim, K. K. Kim, S. J. Park, T. Y. Seong, and Y. S. Yoon, “Thermally stable and low resistance Ru ohmic contacts to n-ZnO,” *Japanese journal of applied physics*, vol. 41, no. 5B, pp. L546–L548, 2002.
- K-Q. Peng, Y. J. Yan, S. P. Gao, and J. Zhu, “Synthesis of large-area silicon nanowire arrays via self-assembling nanoelectrochemistry,” *Advanced Materials*, vol. 14, no. 16, pp. 1164–1167, 2002.
- M. J. Alam, and D. C. Cameron, “Preparation and Characterization of TiO₂ Thin Films by Sol-Gel Method,” *Journal of sol-gel science and technology*, vol. 25, no. 2, pp. 137–145, 2002.
- S. Y. Kim, H. W. Jang, J. K. Kim, C. M. Jeon, W. I. Park, G.-C. Yi, and J. L. Lee, “Low-resistance Ti/Al ohmic contact on undoped ZnO,” *Journal of electronic materials*, vol. 31, no. 8, pp. 868–871, 2002.
- T. Umebayashi, T. Yamaki, H. Itoh, and K. Asai, “Band gap narrowing of titanium dioxide by sulfur doping,” *Applied Physics Letters*, vol. 81, no. 3, pp. 454–456, 2002.
- X. H. Xu, M. Wang, Y. Hou, S. R. Zhao, H. Wang, D. Wang, and S. X. Shang, “Effect of Thermal Annealing on Structural Properties, Morphologies and Electrical Properties of TiO₂ Thin Films Grown by MOCVD,” *Crystal Research and Technology: Journal of Experimental and Industrial Crystallography*, vol. 37, no. 5, pp. 431–439, 2002.
- K. Peng, Y. Yan, S. Gao, and J. Zhu, “Dendrite-Assisted Growth of Silicon Nanowires in Electroless Metal Deposition,” *Advanced Functional Materials*, vol. 13, no. 2, pp. 127–132, 2003.
- S. Ito, T. Kitamura, Y. Wada, and S. Yanagida, “Facile fabrication of mesoporous TiO₂

- electrodes for dye solar cells: chemical modification and repetitive coating,” *Solar energy materials and solar cells*, vol. 76, no. 1, pp. 3–13, 2003.
- S. K. Pradhan, P. J. Reucroft, F. Yang, and A. Dozier, “Growth of TiO₂ nanorods by metalorganic chemical vapor deposition,” *Journal of Crystal Growth*, vol. 256, no. 1-2, pp. 83–88, 2003.
- S. Piscanec, M. Cantoro, A. C. Ferrari, J. A. Zapien, Y. Lifshitz, S. T. Lee, S. Hofmann, and J. Robertson, “Raman spectroscopy of silicon nanowires,” *Physical Review B*, vol. 68, no. 24, pp. 241312 (1-4), 2003.
- T. P. Pearsall, “Photonics Essentials : An Introduction with Experiments, 1st Edition, McGraw- Hill, New York, 2003.
- Y.-K. Choi, J. Zhu, J. Grunes, J. Bokor, and G. A. Somorjai, “Fabrication of Sub-10-nm Silicon Nanowire Arrays by Size Reduction Lithography,” *The Journal of Physical Chemistry B*, vol. 107, no. 15, pp. 3340–3343, 2003.
- A. R. Abramson, W. C. Kim, S. T. Huxtable, H. Yan, Y. Wu, A. Majumdar, C. L. Tien, and P. Yang, “Fabrication and characterization of a nanowire/polymer-based nanocomposite for a prototype thermoelectric device,” *Journal of Microelectromechanical Systems*, vol. 13, no. 3, pp. 505–513, 2004.
- A. Rollett, F. J. Humphreys, G. S. Rohrer, and M. Hatherly, *Recrystallization and related annealing phenomena*, Elsevier, 2004.
- J. Liu, J. Niu, D. Yang, M. Yan, and J. Sha, “Raman spectrum of array-ordered crystalline silicon nanowires,” *Physica E: Low-dimensional Systems and Nanostructures*, vol. 23, no. 1–2, pp. 221–225, 2004.
- J. Niu, J. Sha, and D. Yang “Silicon nanowires fabricated by thermal evaporation of silicon monoxide,” *Physica E: Low-dimensional Systems and Nanostructures*, vol. 23, no. 1-2, pp. 131–134, 2004.
- R. Romero, M. C. López, D. Leinen, F. Martin, and J. R. Ramos-Barrado, “Electrical properties of the n-ZnO/c-Si heterojunction prepared by chemical spray pyrolysis,” *Materials Science and Engineering: B*, vol. 110, no. 1, pp. 87–93, 2004.
- T. Qiu, X. L. Wu, X. Yang, G. S. Huang, and Z. Y. Zhang, “Self-assembled growth and optical emission of silver-capped silicon nanowires,” *Applied physics letters*, vol. 84, no. 19, pp. 3867–3869, 2004.
- V. Pore, A. Rahtu, M. Leskelä, M. Ritala, T. Sajavaara, and J. Keinonen, “Atomic layer deposition of photocatalytic TiO₂ thin films from titanium tetramethoxide and water,” *Chemical Vapor Deposition*, vol. 10, no. 3, pp. 143–148, 2004.
- Y. Choi, S. Yamamoto, T. Umebayashi, and M. Yoshikawa, “Fabrication and characterization of anatase TiO₂ thin film on glass substrate grown by pulsed laser deposition,” *Solid State Ionics*, vol. 172, no. 1–4, pp. 105–108, 2004.
- B. Fuhrmann, H. S. Leipner, H. R. Hoche, L. Schubert, P. Werner, and U. Gosele, “Ordered arrays of silicon nanowires produced by nanosphere lithography and molecular beam epitaxy,” *Nano Letters*, vol. 5, no. 12, pp. 2524–2527, 2005.
- B. Liu, X. Zhao, Q. Zhao, X. He, and J. Feng, “Effect of heat treatment on the UV–vis–NIR and PL spectra of TiO₂ films,” *Journal of electron spectroscopy and related phenomena*, vol. 148, no. 3, pp. 158–163, 2005.

- K. Peng, Y. Xu, Y. Wu, Y. Yan, S-T. Lee, and J. Zhu, "Aligned single-crystalline Si nanowire arrays for photovoltaic applications," *small*, vol. 1, no. 11, pp. 1062–1067, 2005.
- A. Fujishima, and X. Zhang, "Titanium dioxide photocatalysis: present situation and future approaches," *Comptes Rendus Chimie*, vol. 9, no. 5–6, pp. 750–760, 2006.
- E. Celik, A. Y. Yildiz, N. A. Azem, M. Tanoglu, M. Toparli, O. F. Emrullahoglu, and I. Ozdemir, "Preparation and characterization of Fe₂O₃-TiO₂ thin films on glass substrate for photocatalytic applications," *Materials Science and Engineering: B*, vol. 129, no. 1–3, pp. 193–199, 2006.
- H. Fang, Y. Wu, J. Zhao, and J. Zhu, "Silver catalysis in the fabrication of silicon nanowire arrays," *Nanotechnology*, vol. 17, no. 15, pp. 3768–3774, 2006.
- J. H. Park, O. O. Park, and S. Kim, "Photoelectrochemical water splitting at titanium dioxide nanotubes coated with tungsten trioxide," *Applied physics letters*, vol. 89, no. 16, pp. 163106 (1-3), 2006.
- K. Peng, H. Fang, J. Hu, Y. Wu, J. Zhu, Y. Yan, and S. Lee, "Metal-particle-induced, highly localized site-specific etching of Si and formation of single-crystalline Si nanowires in aqueous fluoride solution," *Chemistry-A European Journal*, vol. 12, no. 30, pp. 7942–7947, 2006-a.
- K. Peng, J. Hu, Y. Yan, Y. Wu, H. Fang, Y. Xu, S. Lee, and J. Zhu, "Fabrication of Single-Crystalline Silicon Nanowires by Scratching a Silicon Surface with Catalytic Metal Particles," *Advanced Functional Materials*, vol. 16, no. 3, pp. 387–394, 2006-b.
- AE J. González, and S. G. Santiago, "Structural and optoelectronic characterization of TiO₂ films prepared using the sol-gel technique," *Semiconductor science and technology*, vol. 22, no. 7, pp. 709–716, 2007.
- C. Soci, A. Zhang, B. Xiang, S. A. Dayeh, D. P. R. Aplin, J. Park, X. Y. Bao, Y. H. Lo, and D. Wang, "ZnO nanowire UV photodetectors with high internal gain," *Nano letters*, vol. 7, no. 4, pp. 1003–1009, 2007.
- J.-A. Yan, L. Yang, and M. Y. Chou, "Size and orientation dependence in the electronic properties of silicon nanowires," *Physical Review B*, vol. 76, no. 11, pp. 115319 (1-6), 2007.
- X. Chen, and S. S. Mao, "Titanium dioxide nanomaterials: Synthesis, properties, modifications and applications," *Chemical reviews*, vol. 107, no. 7, pp. 2891–2959, 2007.
- H. Xue, X. Kong, Z. Liu, C. Liu, J. Zhou, W. Chen, S. Ruan, and Q. Xu, "TiO₂ based metal-semiconductor-metal ultraviolet photodetectors," *Applied physics letters*, vol. 90, no. 20, pp. 201118 (1-3), 2007.
- A. Welte, C. Waldauf, C. Brabec, and P. J. Wellmann, "Application of optical absorbance for the investigation of electronic and structural properties of sol-gel processed TiO₂ films," *Thin Solid Films*, vol. 516, no. 20, pp. 7256–7259, 2008.
- H. S. Jung, J.-K. Lee, J. Lee, B. S. Kang, Q. Jia, M. Nastasi, J. H. Noh, C.-M. Cho, and S. H. Yoon, "Mobility Enhanced Photoactivity in Sol-Gel Grown Epitaxial Anatase TiO₂ Films," *Langmuir*, vol. 24, no. 6, pp. 2695–2698, 2008.
- K. Peng, X. Wang, and S.-T. Lee, "Silicon nanowire array photoelectrochemical solar

- cells,” *Applied Physics Letters*, vol. 92, no. 16, pp. 163103 (1-3), 2008.
- M. L. Zhang, K. Q. Peng, X. Fan, J. S. Jie, R. Q. Zhang, S. T. Lee, and N. B. Wong, “Preparation of large-area uniform silicon nanowires arrays through metal-assisted chemical etching,” *The Journal of Physical Chemistry C*, vol. 112, no. 12, pp. 4444–4450, 2008.
- O. Pakma, N. Serin, T. Serin, and S. Altındal, “The double Gaussian distribution of barrier heights in Al/TiO₂/p-Si (metal-insulator-semiconductor) structures at low temperatures,” *Journal of Applied Physics*, vol. 104, no. 1, pp. 014501 (1-6), 2008-a.
- O. Pakma, N. Serin, T. Serin, and Ş. Altındal, “The influence of series resistance and interface states on intersecting behavior of I–V characteristics of Al/TiO₂/p-Si (MIS) structures at low temperatures,” *Semiconductor Science and Technology*, vol. 23, no. 10, pp. 105014 (1-9), 2008-b.
- Y. Yang, G. Meng, X. Liu, L. Zhang, Z. Hu, C. He, and Y. Hu, “Aligned SiC porous nanowire arrays with excellent field emission properties converted from Si nanowires on silicon wafer,” *The Journal of Physical Chemistry C*, vol. 112, no. 51, pp. 20126–20130, 2008.
- Z. Huang, X. Zhang, M. Reiche, L. Liu, W. Lee, T. Shimizu, S. Senz, and U. Gösele, “Extended arrays of vertically aligned Sub-10 nm diameter [100] Si nanowires by metal-assisted chemical etching,” *Nano letters*, vol. 8, no. 9, pp. 3046–3051, 2008.
- H. Altuntas, A. Bengi, U. Aydemir, T. Asar, S. S. Cetin, I. Kars, S. Altındal, and S. Ozcelik, “Electrical characterization of current conduction in Au/TiO₂/n-Si at wide temperature range,” *Materials Science in Semiconductor Processing*, vol. 12, no. 6, pp. 224–232, 2009.
- H. Yu, S. Chen, X. Quan, H. Zhao, and Y. Zhang, “Silicon nanowire/TiO₂ heterojunction arrays for effective photoelectrocatalysis under simulated solar light irradiation,” *Applied Catalysis B: Environmental*, vol. 90, no. 1-2, pp. 242–248, 2009-a.
- H. Yu, X. Li, X. Quan, S. Chen, and Y. Zhang, “Effective Utilization of Visible Light (Including $\lambda > 600$ nm) in Phenol Degradation with p-Silicon Nanowire/TiO₂ Core/Shell heterojunction array cathode,” *Environmental science & technology*, vol. 43, no. 20, pp. 7849–7855, 2009-b.
- M. T. Chang, C. Y. Chen, L. J. Chou, and L. J. Chen, “Core-shell chromium silicide - silicon nanopillars: A contact material for future nanosystems,” *ACS Nano*, vol. 3, no. 11, pp. 3776–3780, 2009.
- N. Megouda, R. Douani, T. Hadjersi, and R. Boukherroub, “Formation of aligned silicon nanowire on silicon by electroless etching in HF solution,” *Journal of Luminescence*, vol. 129, no. 12, pp. 1750–1753, 2009.
- O. Pakma, N. Serin, T. Serin, and Ş. Altındal, “The effects of preparation temperature on the main electrical parameters of Al/TiO₂/p-Si (MIS) structures by using sol-gel method,” *Journal of sol-gel science and technology*, vol. 50, no. 1, pp. 28–34, 2009.
- P. S. Shinde, P. S. Patil, P. N. Bhosale, A. Brüger, G. Nauer, M. Neumann-Spallart, and

- C. H. Bhosale, "UVA and solar light assisted photoelectrocatalytic degradation of AO7 dye in water using spray deposited TiO₂ thin films," *Applied Catalysis B: Environmental*, vol. 89, no. 1-2, pp. 288–294, 2009.
- S. Majumdar, and P. Banerji, "Temperature dependent electrical transport in p-ZnO/n-Si heterojunction formed by pulsed laser deposition," *Journal of Applied Physics*, vol. 105, no. 4, pp. 043704 (1-4), 2009.
- W. Mtangi, F. D. Auret, C. Nyamhere, P. J. Van Rensburg, M. Diale, and A. Chawanda, "Analysis of temperature dependent I-V measurements on Pd/ZnO Schottky barrier diodes and the determination of the Richardson constant," *Physica B: Condensed Matter*, vol. 404, no. 8–11, pp. 1092–1096, 2009.
- Y. J. Hwang, A. Boukai, and P. Yang, "High density n-Si/n-TiO₂ core/shell nanowire arrays with enhanced photoactivity," *Nano letters*, vol. 9, no. 1, pp. 410–415, 2009.
- Y. Q. Fu, A. Colli, A. Fasoli, J. K. Luo, A. J. Flewitt, A. C. Ferrari, and W. I. Milne, "Deep reactive ion etching as a tool for nanostructure fabrication," *Journal of Vacuum Science & Technology B: Microelectronics and Nanometer Structures Processing, Measurement, and Phenomena*, vol. 27, no. 3, pp. 1520-1526, 2009.
- C. Soci, A. Zhang, X.-Y. Bao, H. Kim, Y. Lo, and D. Wang, "Nanowire Photodetectors," *Journal of nanoscience and nanotechnology*, vol. 10, no. 3, pp. 1430–1449, 2010.
- H. Altuntas, A. Bengi, T. Asar, U. Aydemir, B. Sarikavak, Y. Ozen, Ş. Altindal, and S. Ozcelik, "Interface state density analyzing of Au/TiO₂(rutile)/n-Si Schottky barrier diode," *Surface and Interface Analysis*, vol. 42, no. 6–7, pp. 1257–1260, 2010.
- H. Huang, W. Yang, Y. Xie, X. Chen, and Z. Wu, "Metal–Semiconductor–Metal Ultraviolet Photodetectors Based on TiO₂ Films Deposited by Radio-Frequency Magnetron Sputtering," *IEEE Electron Device Letters*, vol. 31, no. 6, pp. 588–590, 2010.
- J. De Boor, N. Geyer, J. V. Wittemann, U. Gösele, and V. Schmidt, "Sub-100 nm silicon nanowires by laser interference lithography and metal-assisted etching," *Nanotechnology*, vol. 21, no. 9, pp. 095302 (1-5), 2010.
- J. V. Wittemann, W. Münchgesang, S. Senz, and V. Schmidt, "Silver catalyzed ultrathin silicon nanowires grown by low-temperature chemical-vapor-deposition," *Journal of Applied Physics*, vol. 107, no. 9, pp. 096105 (1-3), 2010.
- L. Lin, S. Guo, X. Sun, J. Feng, and Y. Wang, "Synthesis and photoluminescence properties of porous silicon nanowire arrays," *Nanoscale research letters*, vol. 5, no. 11, pp. 1822–1828, 2010.
- W. J. Wang, C. X. Shan, H. Zhu, F. Y. Ma, D. Z. Shen, X. W. Fan, and K. L. Choy, "Metal–insulator–semiconductor–insulator–metal structured titanium dioxide ultraviolet photodetector," *Journal of Physics D: Applied Physics*, vol. 43, no. 4, p. 045102 (1-4), 2010-a.
- X. Wang, K. Q. Peng, X. L. Wu, and S. T. Lee, "Single crystalline ordered silicon wire/Pt nanoparticle hybrids for solar energy harvesting," *Electrochemistry Communications*, vol. 12, no. 4, pp. 509–512, 2010-b.

- Y. H. Chang, C. M. Liu, Y. C. Tseng, C. Chen, C. C. Chen, and H. E. Cheng, "Direct probe of heterojunction effects upon photoconductive properties of TiO₂ nanotubes fabricated by atomic layer deposition," *Nanotechnology*, vol. 21, no. 22, pp. 225602 (1-7), 2010.
- A. Motayed, J. E. Bonevich, S. Krylyuk, A. V. Davydov, G. Aluri, and M. V. Rao, "Correlation between the performance and microstructure of Ti/Al/Ti/Au ohmic contacts to p-type silicon nanowires," *Nanotechnology*, vol. 22, no. 7, pp. 075206 (1-10), 2011.
- A. Nilchi, S. Janitabar-Darzi, and S. Rasouli-Garmarodi, "Sol-Gel Preparation of Nanoscale TiO₂/SiO₂ Composite for Eliminating of Con Red Azo Dye," *Materials Sciences and Applications*, vol. 2, no. 5, pp. 476–480, 2011.
- B. Kinaci, T. Asar, Y. Özen, and S. ÖzçelİK, "The analysis of Au/TiO₂/n-Si Schottky barrier diode at high temperatures using I-V characteristics," *Optoelectronics and Advanced Materials*, vol. 5, no. 4, pp. 434–437, 2011.
- B. Ozdemir, M. Kulakci, R. Turan, and H. E. Unalan, "Effect of electroless etching parameters on the growth and reflection properties of silicon nanowires," *Nanotechnology*, vol. 22, no. 15, pp. 155606 (1-7), 2011.
- C.-M. Liu, C. Chen, and H.-E. Cheng, "Growth Mechanism of TiO₂ Nanotube Arrays in Nanopores of Anodic Aluminum Oxide on Si Substrates by Atomic Layer Deposition," *Journal of The Electrochemical Society*, vol. 158, no. 3, pp. K58-K63, 2011-a.
- C.-M. Liu, C. Chen, and H.-E. Cheng, "Ultraviolet Photoresponse of TiO₂ Nanotube Arrays Fabricated by Atomic Layer Deposition," *Electrochemical and Solid-State Letters*, vol. 14, no. 6, pp. K33-K35, 2011-b.
- F. Hossein-Babaei, and S. Rahbarpour, "Titanium and silver contacts on thermally oxidized titanium chip: Electrical and gas sensing properties," *Solid-State Electronics*, vol. 56, no. 1, pp. 185–190, 2011.
- H. Park, S. Choi, J.-P. Lee, and S. Park, "Fabrication of highly ordered silicon pin-in-a-hole nanostructures via chemical etching of nanopatterned polymer masks," *Journal of Materials Chemistry*, vol. 21, no. 32, pp. 11996-12000, 2011.
- J. J. Yang, J. P. Strachan, F. Miao, M. X. Zhang, M. D. Pickett, W. Yi, D. A. A. Ohlberg, G. Medeiros-Ribeiro, and R. S. Williams, "Metal/TiO₂ interfaces for memristive switches," *Applied Physics A*, vol. 102, no. 4, pp. 785–789, 2011.
- J. Shi, Y. Hara, C. Sun, M. A. Anderson, and X. Wang, "Three-dimensional high-density hierarchical nanowire architecture for high-performance photoelectrochemical electrodes," *Nano letters*, vol. 11, no. 8, pp. 3413–3419, 2011.
- L. J. Brillson, and Y. Lu, "ZnO Schottky barriers and Ohmic contacts," *Journal of Applied Physics*, vol. 109, no. 12, pp. 121301 (1-33), 2011.
- L. VJ, J. Oh, A. P. Nayak, A. M. Katzenmeyer, K. H. Gilchrist, S. Grego, N. P. Kobayashi, S.-Y. Wang, A. A. Talin, N. K. Dhar, and M. S. Islam, "A Perspective on Nanowire Photodetectors: Current Status, Future Challenges, and Opportunities," *IEEE Journal of selected topics in quantum electronics*, vol. 17, no. 4, pp. 1002–1032, 2011.

- M. Rezaee, S. M. M. Khoie, and K. H. Liu, "The role of brookite in mechanical activation of anatase-to-rutile transformation of nanocrystalline TiO₂: An XRD and Raman spectroscopy investigation," *CrystEngComm*, vol. 13, no. 16, pp. 5055–5061, 2011.
- M. Seo, S. Ho Rha, S. Keun Kim, J. Hwan Han, W. Lee, S. Han, and C. Seong Hwang, "The mechanism for the suppression of leakage current in high dielectric TiO₂ thin films by adopting ultra-thin HfO₂ films for memory application," *Journal of Applied Physics*, vol. 110, no. 2, pp. 024105 (1-7), 2011.
- R. Mechiakh, N. Ben Sedrine, J. Ben Naceur, and R. Chtourou, "Elaboration and characterization of nanocrystalline TiO₂ thin films prepared by sol–gel dip-coating," *Surface and Coatings Technology*, vol. 206, no. 2-3, pp. 243–249, 2011.
- T.-W. Zeng, C.-C. Ho, Y.-C. Tu, G.-Y. Tu, L.-Y. Wang, and W.-F. Su, "Correlating hetero interface structure, charge recombination and device efficiency of poly(3-hexyl thiophene)/TiO₂ nanorod solar cell," *Langmuir*, vol. 27, no. 24, pp. 15255–15260, 2011.
- T.-Y. Tsai, S.-J. Chang, T.-J. Hsueh, H.-T. Hsueh, W.-Y. Weng, C.-L. Hsu, and B.-T. Dai, "p-Cu₂O-shell/n-TiO₂ -nanowire-core heterostructure photodiodes," *Nanoscale Research Letters*, vol. 6, no. 1, pp. 1–7, 2011.
- V. Sivakov, F. Voigt, B. Hoffmann, V. Gerliz, and S. Christiansen, "Wet-Chemically Etched Silicon Nanowire Architectures: Formation and Properties," *In Nanowires-Fundamental Research. InTech*, pp. 45–80, 2011.
- W. Bunjongpru, P. Panprom, S. Porntheeraphat, R. Meananeatra, W. Jeamsaksiri, A. Srisuwan, W. Chaisriratanakul, E. Chaowicharat, A. Pankiew, C. Hruanun, A. Poyai, and J. Nukeaw, "UV-Enhanced Photodetector with nanocrystalline-TiO₂ Thin Film via CMOS compatible process," *In IEEE Nanotechnology Materials and Devices Conference (NMDC), Jeju, Korea*, pp. 364–367, 2011.
- W. J. Lee, and M. H. Hon, "An ultraviolet photo-detector based on TiO₂/water solid-liquid heterojunction," *Applied Physics Letters*, vol. 99, no. 25, pp. 251102 (1-4), 2011.
- Y.-J. Hung, S.-L. Lee, K.-C. Wu, Y. Tai, and Y.-T. Pan, "Antireflective silicon surface with vertical-aligned silicon nanowires realized by simple wet chemical etching processes," *Optics express*, vol. 19, no. 17, pp. 15792-15802, 2011.
- Y. Xie, H. Huang, W. Yang, and Z. Wu, "Low dark current metal-semiconductor-metal ultraviolet photodetectors based on sol-gel-derived TiO₂ films," *Journal of Applied Physics*, vol. 109, no. 2, pp. 023114 (1-4), 2011.
- Z. Huang, N. Geyer, P. Werner, J. De Boor, and U. Gösele, "Metal-Assisted Chemical Etching of Silicon: A Review," *Advanced materials*, vol. 23, no. 2, pp. 285–308, 2011.
- A. Paracchino, N. Mathews, T. Hisatomi, M. Stefik, S. D. Tilley, and M. Grätzel, "Ultrathin films on copper (I) oxide water splitting photocathodes: a study on performance and stability," *Energy & Environmental Science*, vol. 5, no. 9, pp. 8673-8681, 2012.
- A. R. Svobodová, A. Galandáková, J. Šianská, D. Doležal, R. Lichnovská, J. Ulrichová,

- and J. Vostálová, “DNA damage after acute exposure of mice skin to physiological doses of UVB and UVA light,” *Archives of dermatological research*, vol. 304, no. 5, pp. 407–412, 2012.
- B. Kınacı, S. Sebnem Cetin, A. Bengi, and S. Ozcelik, “The temperature dependent analysis of Au/TiO₂ (rutile)/n-Si (MIS) SBDs using current-voltage-temperature (I-V-T) characteristics,” *Materials Science in Semiconductor Processing*, vol. 15, no. 5, pp. 531–535, 2012.
- C. Y. Chen, and A. H. Chen, “Photocatalytic Si nanowires/TiO₂ microparticles with extended absorption edge up to 700 nm,” *Journal of Physics D: Applied Physics*, vol. 45, no. 36, pp. 365304 (1-4), 2012.
- D.-H. Wang, L. Jia, X.-L. Wu, L.-Q. Lu, and A.-W. Xu, “One-step hydrothermal synthesis of N-doped TiO₂/C nanocomposites with high visible light photocatalytic activity,” *Nanoscale*, vol. 4, no. 2, pp. 576–584, 2012.
- G. Jia, M. Steglich, I. Sill, and F. Falk, “Core-shell heterojunction solar cells on silicon nanowire arrays,” *Solar Energy Materials and Solar Cells*, vol. 96, pp. 226–230, 2012.
- H. Zhang, S. Ruan, H. Li, M. Zhang, K. Lv, C. Feng, and W. Chen, “Schottky Diode Ultraviolet Detector Based on TiO₂ Nanowire Array,” *IEEE Electron Device Letters*, vol. 33, no. 1, pp. 83–85, 2012-a.
- K. A. Salman, Z. Hassan, and K. Omar, “Effect of Silicon Porosity on Solar Cell Efficiency,” *International Journal of Electrochemical Science*, vol. 7, no. 1, pp. 376–386, 2012.
- K. Balasundaram, J. S. Sadhu, J. C. Shin, B. Azeredo, D. Chanda, M. Malik, K. Hsu, J. A. Rogers, P. Ferreira, S. Sinha, and X. Li, “Porosity control in metal-assisted chemical etching of degenerately doped silicon nanowires,” *Nanotechnology*, vol. 23, no. 30, pp. 305304 (1-7), 2012.
- K. Rasool, M. A. Rafiq, M. Ahmad, Z. Imran, and M. M. Hasan, “TiO₂ nanoparticles and silicon nanowires hybrid device: Role of interface on electrical, dielectric, and photodetection properties,” *Applied Physics Letters*, vol. 101, no. 25, pp. 253104 (1-5), 2012.
- K. Seshan, *Handbook of Thin Film Deposition*, 3rd Edition, William Andrew, 2012.
- M. Vishwas, K. N. Rao, and R. P. S. Chakradhar, “Influence of annealing temperature on Raman and photoluminescence spectra of electron beam evaporated TiO₂ thin films,” *Spectrochimica Acta Part A: Molecular and Biomolecular Spectroscopy*, vol. 99, pp. 33–36, 2012.
- M. Zhang, C. Shao, J. Mu, Z. Zhang, Z. Guo, P. Zhang, and Y. Liu, “One-dimensional Bi₂MoO₆/TiO₂ hierarchical heterostructures with enhanced photocatalytic activity,” *CrystEngComm*, vol. 14, no. 2, pp. 605–612, 2012-b.
- M. Zhang, H. Zhang, K. Lv, W. Chen, J. Zhou, L. Shen, and S. Ruan, “Ultraviolet photodetector with high internal gain enhanced by TiO₂/SrTiO₃ heterojunction,” *Optics express*, vol. 20, no. 6, pp. 5936-5941, 2012-c.
- P. Chinnamuthu, J. C. Dhar, A. Mondal, A. Bhattacharyya, and N. K. Singh, “Ultraviolet detection using TiO₂ nanowire array with Ag Schottky contact,” *Journal of Physics D: Applied Physics*, vol. 45, no. 13, pp. 135102 (1-5), 2012.

- P. Thanigainathan, and C. Paramasivan, "Growth and characterization of optically confined particulate films of anatase TiO₂," *International Nano Letters*, vol. 2, no. 1, pp. 34 (1-4), 2012.
- S. Chirakkara, and S. B. Krupanidhi, "Study of n-ZnO/p-Si (100) thin film heterojunctions by pulsed laser deposition without buffer layer," *Thin Solid Films*, vol. 520, no. 18, pp. 5894–5899, 2012.
- S. Yilmaz, E. Bacaksız, I. Polat, and Y. Atasoy, "Fabrication and structural, electrical characterization of i-ZnO/n-ZnO nanorod homojunctions," *Current Applied Physics*, vol. 12, no. 5, pp. 1326–1333, 2012.
- W. Choi, M. Y. Cho, A. Konar, J. H. Lee, G. B. Cha, S. C. Hong, S. Kim, J. Kim, D. Jena, J. Joo, and S. Kim, "High-detectivity multilayer MoS₂ phototransistors with spectral response from ultraviolet to infrared," *Advanced materials*, vol. 24, no. 43, pp. 5832–5836, 2012.
- Y.-H. Chang, C.-M. Liu, C. Chen, and H.-E. Cheng, "The heterojunction effects of TiO₂ nanotubes fabricated by atomic layer deposition on photocarrier transportation direction," *Nanoscale research letters*, vol. 7, no. 1, pp. 231 (1-7), 2012.
- Y. Liu, G. Ji, J. Wang, X. Liang, Z. Zuo, and Y. Shi, "Fabrication and photocatalytic properties of silicon nanowires by metal-assisted chemical etching: Effect of H₂O₂ concentration," *Nanoscale research letters*, vol. 7, no. 1, pp. 663 (1-9), 2012-a.
- Y. S. Liu, C. I. Hsieh, Y. J. Wu, Y. S. Wei, P. M. Lee, and C. Y. Liu, "Transparent p-type AlN:SnO₂ and p-AlN:SnO₂/n-SnO₂:In₂O₃ p-n junction fabrication," *Applied Physics Letters*, vol. 101, no. 12, pp. 122107 (1-4), 2012-b.
- A. Ranjitha, N. Muthukumarasamy, M. Thambidurai, R. Balasundaraprabhu, and S. Agilan, "Effect of annealing temperature on nanocrystalline TiO₂ thin films prepared by sol-gel dip coating method," *Optik-International Journal for Light and Electron Optics*, vol. 124, no. 23, pp. 6201–6204, 2013.
- B. Kinaci, and S. Ozcelik, "Analysis of the temperature dependence of the capacitance-voltage and conductance-voltage characteristics of Au/TiO₂(rutile)/n-Si structures," *Journal of electronic materials*, vol. 42, no. 6, pp. 1108–1113, 2013.
- C. Liu, J. Tang, H. M. Chen, B. Liu, and P. Yang, "A fully integrated nanosystem of semiconductor nanowires for direct solar water splitting," *Nano letters*, vol. 13, no. 6, pp. 2989–2992, 2013.
- D. Somvanshi, and S. Jit, "Mean Barrier Height and Richardson Constant for Pd/ZnO Thin Film-Based Schottky Diodes Grown on n-Si Substrates by Thermal Evaporation Method," *IEEE Electron Device Letters*, vol. 34, no. 10, pp. 1238–1240, 2013.
- E. M. Lotfabad, P. Kalisvaart, K. Cui, A. Kohandehghan, M. Kupsta, B. Olsen, and D. Mitlin, "ALD TiO₂ coated silicon nanowires for lithium ion battery anodes with enhanced cycling stability and coulombic efficiency," *Physical Chemistry Chemical Physics*, vol. 15, no. 32, pp. 13646–13657, 2013.
- H. Shi, R. Magaye, V. Castranova, and J. Zhao, "Titanium dioxide nanoparticles : A review of current toxicological data Titanium dioxide nanoparticles : a review of current toxicological data," *Particle and fibre toxicology*, vol. 10, no. 1, pp. 15

- (1-33), 2013.
- L. Sang, M. Liao, and M. Sumiya, "A comprehensive review of semiconductor ultraviolet photodetectors: From thin film to one-dimensional nanostructures," *Sensors*, vol. 13, no. 8, pp. 10482–10518, 2013.
- M. Hasan, M. F. Huq, and Z. H. Mahmood, "A review on electronic and optical properties of silicon nanowire and its different growth techniques," *Springerplus*, vol. 2, no. 1, pp. 151 (1-9), 2013.
- M. J. Yang, W. Liu, J. L. Sun, J. Q. Wei, and J. L. Zhu, "Fabrication of double-walled carbon nanotube film/TiO₂ nanotube array heterojunctions with length-dependent photoresponse for broad band photodetectors," *International Journal of Minerals, Metallurgy, and Materials*, vol. 20, no. 3, pp. 307–312, 2013.
- N. Ghobadi, "Band gap determination using absorption spectrum fitting procedure," *International Nano Letters*, vol. 3, no. 1, pp. 2 (1-4), 2013.
- P. Hazra, and S. Jit, "An in-house approach for fabrication of silicon nanowire arrays using electroless metal deposition and etching method," *International Journal of Surface Science and Engineering*, vol. 7, no. 3, pp. 285–294, 2013.
- S. Avasthi, W. E. McClain, G. Man, A. Kahn, J. Schwartz, and J. C. Sturm, "Hole-blocking titanium-oxide/silicon heterojunction and its application to photovoltaics," *Applied Physics Letters*, vol. 102, no. 20, pp. 203901 (1-4), 2013.
- S. Datta, "Recent Advances in High Performance CMOS Transistors: From Planar to Non-Planar," *The Electrochemical Society Interface*, vol. 22, no. 1, pp. 41–46, 2013.
- S. Y. Noh, K. Sun, C. Choi, M. Niu, M. Yang, K. Xu, S. Jin, and D. Wang, "Branched TiO₂/Si nanostructures for enhanced photoelectrochemical water splitting," *Nano Energy*, vol. 2, no. 3, pp. 351–360, 2013.
- T. D. Dao, C. T. T. Dang, G. Han, C. V. Hoang, W. Yi, V. Narayanamurti, and T. Nagao, "Chemically synthesized nanowire TiO₂/ZnO core-shell p-n junction array for high sensitivity ultraviolet photodetector," *Applied Physics Letters*, vol. 103, no. 19, pp. 193119 (1-4), 2013.
- T. Touam, L. Znaidi, D. Vrel, I. Ninova-Kuznetsova, O. Brinza, A. Fischer, and A. Boudrioua, "Low Loss Sol-Gel TiO₂ Thin Films for Waveguiding Applications," *Coatings*, vol. 3, no. 1, pp. 49–58, 2013.
- Y. Xie, L. Wei, G. Wei, Q. Li, D. Wang, Y. Chen, S. Yan, G. Liu, L. Mei, and J. Jiao, "A self-powered UV photodetector based on TiO₂ nanorod arrays," *Nanoscale research letters*, vol. 8, no. 1, pp. 188 (1-6), 2013.
- A. B. Yadav, A. Pandey, and S. Jit, "Pd Schottky Contacts on Sol–Gel Derived ZnO Thin Films With Nearly Ideal Richardson Constant," *IEEE Electron Device Letters*, vol. 35, no. 7, pp. 729–731, 2014.
- A. M. Selman, Z. Hassan, M. Husham, and N. M. Ahmed, "A high-sensitivity, fast-response, rapid-recovery p-n heterojunction photodiode based on rutile TiO₂ nanorod array on p-Si(111)," *Applied Surface Science*, vol. 305, pp. 445–452, 2014.
- D. Somvanshi, and S. Jit, "Analysis of temperature-dependent electrical characteristics of n-ZnO Nanowires (NWs)/p-Si heterojunction diodes," *IEEE Transactions on*

- Nanotechnology*, vol. 13, no. 1, pp. 62–69, 2014.
- G. Akgul, F. A. Akgul, E. Mulazimoglu, H. E. Unalan, and R. Turan, “Fabrication and characterization of copper oxide-silicon nanowire heterojunction photodiodes,” *Journal of Physics D: Applied Physics*, vol. 47, no. 6, pp. 065106 (1-7), 2014.
- H. F. Zhang, A. Saha, W. C. Sun, and M. Tao, “Characterization of Al/Si junctions on Si(100) wafers with chemical vapor deposition-based sulfur passivation,” *Applied Physics A*, vol. 116, no. 4, pp. 2031–2038, 2014.
- H. J. Kim, and J. H. Lee, “Highly sensitive and selective gas sensors using p-type oxide semiconductors: Overview,” *Sensors and Actuators B: Chemical*, vol. 192, pp. 607–627, 2014.
- I. Iatsunskyi, S. Jurga, V. Smyntyna, M. Pavlenko, V. Myndrul, and A. Zaleska, “Raman spectroscopy of nanostructured silicon fabricated by metal-assisted chemical etching,” Proceedings of SPIE 9132, *In Optical Micro-and Nanometrology V*, SPIE Photonics Europe, Brussels, Belgium, pp. 913217 (1-7), 2014.
- I. S. Grover, S. Singh, and B. Pal, “Stable anatase TiO₂ formed by calcination of rice-like titania nanorod at 800 °C exhibits high photocatalytic activity,” *RSC Advances*, vol. 4, no. 47, pp. 24704–24709, 2014.
- J. Bai, and B. Zhou, “Titanium dioxide nanomaterials for sensor applications,” *Chemical reviews*, vol. 114, no. 19, pp. 10131–10176, 2014.
- K. Rasool, M. A. Rafiq, and Z. A. K. Durrani, “Tailoring transport and dielectric properties by surface passivation of silicon nanowires with Polyacrylic acid/TiO₂ nanoparticles composite,” *Microelectronic Engineering*, vol. 119, pp. 141–145, 2014.
- M. Y. Bashouti, M. Pietsch, G. Brönstrup, V. Sivakov, J. Ristein, and S. Christiansen, “Heterojunction based hybrid silicon nanowire solar cell: surface termination, photoelectron and photoemission spectroscopy study,” *Progress in Photovoltaics: Research and Applications*, vol. 20, no. 10, pp. 1050–1061, 2014.
- P. B. Pillai, A. N. Corpus Mendoza, M. M. De Souza, G. Bree, and D. Jeng, “Extraction of Schottky barrier at the F-doped SnO₂/TiO₂ interface in Dye Sensitized solar cells,” *Journal of Renewable and Sustainable Energy*, vol. 6, no. 1, pp. 013142 (1-11), 2014.
- P. Hazra, and S. Jit, “A p-silicon nanowire/n-ZnO thin film heterojunction diode prepared by thermal evaporation,” *Journal of Semiconductors*, vol. 35, no. 1, pp. 014001 (1-5), 2014-a.
- P. Hazra, and S. Jit, “p-Si Nanowires/n-ZnO Thin Film Based Core–Shell Heterojunction Diodes with Improved Effective Richardson Constant,” *Journal of nanoscience and nanotechnology*, vol. 14, no. 7, pp. 5380–5385, 2014-b.
- P. Hazra, S. K. Singh, and S. Jit, “Ultraviolet Photodetection Properties of ZnO/Si Heterojunction Diodes Fabricated by ALD Technique Without Using a Buffer Layer,” *JSTS: Journal of Semiconductor Technology and Science*, vol. 14, no. 1, pp. 117–123, 2014-c.
- R. Ghosh, P. K. Giri, K. Imakita, and M. Fujii, “Origin of visible and near-infrared photoluminescence from chemically etched Si nanowires decorated with

- arbitrarily shaped Si nanocrystals.,” *Nanotechnology*, vol. 25, no. 4, pp. 045703 (1-13), 2014.
- S. Aksoy, and Y. Caglar, “Structural transformations of TiO₂ films with deposition temperature and electrical properties of nanostructure n-TiO₂/p-Si heterojunction diode,” *Journal of Alloys and Compounds*, vol. 613, pp. 330–337, 2014.
- S. Cao, B. Liu, L. Fan, Z. Yue, B. Liu, and B. Cao, “Highly antibacterial activity of N-doped TiO₂ thin films coated on stainless steel brackets under visible light irradiation,” *Applied Surface Science*, vol. 309, pp. 119–127, 2014.
- S. Chakrabartty, A. Mondal, M. B. Sarkar, B. Choudhuri, A. K. Saha, and A. Bhattacharyya, “TiO₂ nanoparticles arrays ultraviolet-A detector with Au schottky contact,” *IEEE Photonics Technology Letters*, vol. 26, no. 11, pp. 1065–1068, 2014.
- S. Dias, and S. B. Krupanidhi, “Temperature dependent electrical behavior of Cu₂SnS₃ films,” *AIP Advances*, vol. 4, no. 3, pp. 037121 (1-13), 2014.
- S. G. Yenchalwar, V. K. Azhagan, and M. V. Shelke, “Enhanced photoluminescence and photoactivity of plasmon sensitized nSiNWs/TiO₂ heterostructures,” *Physical Chemistry Chemical Physics*, vol. 16, no. 33, pp. 17786–17791, 2014.
- S. K. Srivastava, D. Kumar, S. W. Schmitt, K. N. Sood, S. H. Christiansen, and P. K. Singh, “Large area fabrication of vertical silicon nanowire arrays by silver-assisted single-step chemical etching and their formation kinetics,” *Nanotechnology*, vol. 25, no. 17, pp. 175601 (1-17), 2014.
- S. R. Sani, “Analysis of optoelectronic properties of TiO₂ nanowires/Si heterojunction arrays,” *Chinese Physics B*, vol. 23, no. 10, pp. 107302 (1-3), 2014.
- A. B. Yadav, A. Pandey, D. Somvanshi, and S. Jit, “Sol-Gel-Based Highly Sensitive Pd/n-ZnO Thin Film/n-Si Schottky Ultraviolet Photodiodes,” *IEEE Transactions on Electron Devices*, vol. 62, no. 6, pp. 1879–1884, 2015.
- A. Haider, H. Cansizoglu, M. F. Cansizoglu, T. Karabacak, A. K. Okyay, and N. Biyikli, “Enhanced photoresponse of conformal TiO₂/Ag nanorod array-based Schottky photodiodes fabricated via successive glancing angle and atomic layer deposition,” *Journal of Vacuum Science & Technology A: Vacuum, Surfaces, and Films*, vol. 33, no. 1, pp. 01A110 (1-6), 2015.
- A. Hazra, K. Dutta, B. Bhowmik, and P. Bhattacharyya, “Highly Repeatable Low-ppm Ethanol Sensing Characteristics of p-TiO₂-Based Resistive Devices,” *IEEE Sensors Journal*, vol. 15, no. 1, pp. 408–416, 2015-a.
- A. Hazra, P. P. Chattopadhyay, and P. Bhattacharyya, “Hybrid Fabrication of Highly Rectifying p-n Homojunction Based on Nanostructured TiO₂,” *IEEE Electron Device Letters*, vol. 36, no. 5, pp. 505–507, 2015-b.
- A. M. Selman, and Z. Hassan, “Highly sensitive fast-response UV photodiode fabricated from rutile TiO₂ nanorod array on silicon substrate,” *Sensors and Actuators A: Physical*, vol. 221, pp. 15–21, 2015.
- D. Zhang, X. Gu, F. Jing, F. Gao, J. Zhou, and S. Ruan, “High performance ultraviolet detector based on TiO₂/ZnO heterojunction,” *Journal of Alloys and Compounds*, vol. 618, pp. 551–554, 2015-a.
- F. A. Akgul, G. Akgul, H. H. Gullu, H. E. Unalan, and R. Turan, “Enhanced diode

- performance in cadmium telluride-silicon nanowire heterostructures,” *Journal of Alloys and Compounds*, vol. 644, pp. 131–139, 2015-a.
- F. A. Akgul, G. Akgul, H. H. Gullu, H. E. Unalan, and R. Turan, “Improved diode properties in zinc telluride thin film-silicon nanowire heterojunctions,” *Philosophical Magazine*, vol. 95, no. 11, pp. 1164–1183, 2015-b.
- G. Qian, S. A. Rahman, and B. T. Goh, “Controlled growth of Si-based heterostructure nanowires and their structural and electrical properties,” *Nanoscale research letters*, vol. 10, no. 1, pp. 267 (1–9), 2015.
- I. Karaduman, M. Demir, D. E. Yıldız, and S. Acar, “CO₂ gas detection properties of a TiO₂/Al₂O₃ heterostructure under UV light irradiation,” *Physica Scripta*, vol. 90, no. 5, pp. 055802 (1–8), 2015.
- J.-Z. Chen, T.-H. Chen, L.-W. Lai, P.-Y. Li, H.-W. Liu, Y.-Y. Hong, and D.-S. Liu, “Preparation and Characterization of Surface Photocatalytic Activity with NiO/TiO₂ Nanocomposite Structure,” *Materials*, vol. 8, no. 7, pp. 4273–4286, 2015.
- K. Rasool, M. A. Rafiq, M. Ahmad, Z. Imran, S. S. Batool, A. Nazir, Z. A. K. Durrani, and M. M. Hasan, “Charge injection and trapping in TiO₂ nanoparticles decorated silicon nanowires arrays,” *Applied Physics Letters*, vol. 106, no. 7, pp. 073101 (1-5), 2015.
- L. Zhang, C. Liu, A. B. Wong, J. Resasco, and P. Yang, “MoS₂-wrapped silicon nanowires for photoelectrochemical water reduction,” *Nano Research*, vol. 8, no. 1, pp. 281–287, 2015-b.
- M. A. Mayimele, M. Diale, W. Mtangi, and F. D. Auret, “Temperature-dependent current–voltage characteristics of Pd/ZnO Schottky barrier diodes and the determination of the Richardson constant,” *Materials Science in Semiconductor Processing*, vol. 34, pp. 359–364, 2015.
- M. Zhang, D. Zhang, F. Jing, G. Liu, K. Lv, J. Zhou, and S. Ruan, “Fast Decay Time and Low Dark Current Mechanism in TiO₂ Ultraviolet Detector,” *IEEE Photonics Technology Letters*, vol. 27, no. 1, pp. 54–57, 2015-c.
- P. Du, J. H. Lim, J. W. Leem, S. M. Cha, and J. S. Yu, “Enhanced Photovoltaic Performance of Dye-Sensitized Solar Cells by Efficient Near-Infrared Sunlight Harvesting using Upconverting Y₂O₃:Er³⁺/Yb³⁺ Phosphor Nanoparticles,” *Nanoscale research letters*, vol. 10, no. 1, pp. 321 (1-6), 2015.
- Q. Liu, F. Wu, F. Cao, L. Chen, X. Xie, W. Wang, W. Tian, and L. Li, “A multijunction of ZnIn₂S₄ nanosheet/TiO₂ film/Si nanowire for significant performance enhancement of water splitting,” *Nano Research*, vol. 8, no. 11, pp. 3524–3534, 2015.
- S. Li, P. Zhang, X. Song, and L. Gao, “Photoelectrochemical Hydrogen Production of TiO₂ Passivated Pt/Si-Nanowire Composite Photocathode,” *ACS applied materials & interfaces*, vol. 7, no. 33, pp. 18560–18565, 2015.
- S. N. Mazhir, G. H. Mohamed, A. A. Abdullah, and M. D. Radhi, “UV Photovoltaic detector based on Bi doped TiO₂ Fabricated by Pulse Laser Deposition,” *International Journal of Advanced Research*, vol. 3, no. 5, pp. 1060–1070, 2015.
- T. Minemoto, and M. Murata, “Theoretical analysis on effect of band offsets in

- perovskite solar cells,” *Solar Energy Materials and Solar Cells*, vol. 133, pp. 8–14, 2015.
- W.-C. Wang, M.-C. Tsai, J. Yang, C. Hsu, and M.-J. Chen, “Efficiency Enhancement of Nanotextured Black Silicon Solar Cells Using Al₂O₃/TiO₂ Dual-Layer Passivation Stack Prepared by Atomic Layer Deposition,” *ACS Appl. Mater. Interfaces*, vol. 7, no. 19, pp. 10228–10237, 2015.
- Z. Alaie, S. M. Nejad, and M. H. Yousefi, “Recent advances in ultraviolet photodetectors,” *Materials Science in Semiconductor Processing*, vol. 29, pp. 16–55, 2015.
- A. H. Chiou, S. D. Wu, R. C. Hsiao, and C. Y. Hsu, “TiO₂–silicon nanowire arrays for heterojunction diode applications,” *Thin Solid Films*, vol. 616, pp. 116–121, 2016.
- A. M. Selman, “Studies on the Influence of Growth Time on the Rutile TiO₂ Nanostructures Prepared on Si Substrates with Fabricated High-Sensitivity and Fast-Response p-n Heterojunction Photodiode,” *American Journal of Nano Research and Applications*, vol. 4, no. 3, pp. 23–32, 2016.
- A. Taherniya, and D. Raoufi, “The annealing temperature dependence of anatase TiO₂ thin films prepared by the electron-beam evaporation method,” *Semiconductor Science and Technology*, vol. 31, no. 12, pp. 125012 (1-9), 2016.
- B. Shougaijam, R. Swain, C. Ngangbam, and T. R. Lenka, “Enhanced Photodetection by Glancing Angle Deposited Vertically Aligned TiO₂ Nanowires,” *IEEE Transactions on Nanotechnology*, vol. 15, no. 3, pp. 389–394, 2016.
- G. Akgul, F. A. Akgul, H. E. Unalan, and R. Turan, “Photovoltaic performance of Gallium-doped ZnO thin film/Si nanowires heterojunction diodes,” *Philosophical Magazine*, vol. 96, no. 11, pp. 1093–1109, 2016.
- G. Man, J. Schwartz, J. C. Sturm, and A. Kahn, “Electronically Passivated Hole-Blocking Titanium Dioxide/Silicon Heterojunction for Hybrid Silicon Photovoltaics,” *Advanced Materials Interfaces*, vol. 3, no. 15, pp. 1600026 (1-8), 2016.
- G. Rawat, D. Somvanshi, H. Kumar, Y. Kumar, C. Kumar, and S. Jit, “Ultraviolet Detection Properties of p-Si/n-TiO₂ Heterojunction Photodiodes Grown by Electron-Beam Evaporation and Sol-Gel Methods: A Comparative Study,” *IEEE Transactions on Nanotechnology*, vol. 15, no. 2, pp. 193–200, 2016.
- K. E. Jahromi, M. H. M. Ara, S. S. Mousavi, and B. Efafi, “Investigation of a Reliable Ohmic Contact to n-Type ZnO Thin Films Prepared by Sol–Gel Method,” *IEEE Electron Device Letters*, vol. 37, no. 1, pp. 43–45, 2016.
- X. Yu, T. J. Marks, and A. Facchetti, “Metal oxides for optoelectronic applications,” *Nature materials*, vol. 15, no. 4, pp. 383–396, 2016.
- F. Konstantinou, A. Shougee, T. Albrecht, and K. Fobelets, “TiO₂ coated Si nanowire electrodes for electrochemical double layer capacitors in room temperature ionic liquid,” *Journal of Physics D: Applied Physics*, vol. 50, no. 41, pp. 415503 (1-6), 2017.
- G. J. S. Man, “Metal oxide/semiconductor heterojunctions as carrier-selective contacts for photovoltaic applications,” Ph. D. Thesis, Princeton University, 2017.

- K. K. Paul, and P. K. Giri, "Shape Tailored TiO₂ Nanostructures and Its' Hybrids for Advanced Energy and Environmental Applications: A Review," *Journal for Nanoscience and Nanotechnology*, pp. 1-59, 2017.
- M. Dominik, A. Leśniewski, M. Janczuk, J. Niedziółka-Jönsson, M. Hołdyński, M. Godlewski, W. J. Bock, and M. Śmietana, "Titanium oxide thin films obtained with physical and chemical vapour deposition methods for optical biosensing purposes," *Biosensors and Bioelectronics*, vol. 93, pp. 102–109, 2017.
- O. N. Oliveira Jr., M. Ferreira, F. de L. Leite and A. L. Da Róz, *Nanocharacterization Techniques. A volume in Micro and Nano Technologies*, 1st Edition, William Andrew, 2017.
- R. Ghosh, and P. K. Giri, "Silicon nanowire heterostructures for advanced energy and environmental applications: A review," *Nanotechnology*, vol. 28, no. 1, pp. 012001 (1-26), 2017.
- X. Zhu, P. Gu, H. Wu, D. Yang, H. Sun, P. Wangyang, J. Li, and H. Tian, "Influence of substrate on structural, morphological and optical properties of TiO₂ thin films deposited by reaction magnetron sputtering," *AIP Advances*, vol. 7, no. 12, pp. 125326 (1-8), 2017.

IR1: <http://metamodern.com/2009/12/29/theres-plenty-of-room-at-the-bottom%E2%80%9D-feynman-1959/>

IR2: <http://www.computerhistory.org/siliconengine/timeline/>

IR3: <https://ninithi.wordpress.com/wet-chemical-methods/>

IR4: <https://en.wikipedia.org/wiki/Heterojunction>

IR5: http://www.daviddarling.info/encyclopedia/H/AE_heterojunction.html

IR6: https://en.wikipedia.org/wiki/Titanium_dioxide

IR7: <https://en.wikipedia.org/wiki/Silicon>

IR8: <https://refractiveindex.info/?shelf=main&book=Si&page=Aspnes>

IR9: <https://www.azom.com/properties.aspx?ArticleID=1179>