

## REFERENCES

- [1] S. Mathew, A. Yella, P. Gao, R. Humphry-Baker, B. F. E. Curchod, *et al.*, “Dye-Sensitized Solar Cells with 13% Efficiency achieved through the Molecular Engineering of Porphyrin Sensitizers,” On-line Journal, Nature Chemistry, 6, 2014, 242–247. <http://www.nature.com/nchem/journal/v6/n3/full/nchem.1861.html>, 1<sup>st</sup> May 2014.
- [2] A. Pasolini, “New dye-sensitized solar cell could be cheaper and longer-lasting alternative,” Website, <http://www.energyrefuge.com/blog/new-dye-sensitized-solar-cell-could-be-cheaper-and-longer-lasting-alternative/>, 1<sup>st</sup> May 2014.
- [3] L. C. Chen, C. C. Chen, B. S. Tseng. “Improvement of Short-Circuit Current Density in Dye-Sensitized Solar Cells Using Sputtered Nanocolumnar TiO<sub>2</sub> Compact Layer,” On-line Journal, Journal of Nanomaterials 2010, 2010, Article 374052. <http://www.hindawi.com/journals/jnm/2010/374052/>, 1<sup>st</sup> May 2014.
- [4] Hui Xua, Xia Tao, Dong-Ting Wang, Yan-Zhen Zheng, Jian-Feng Chen, “Enhanced efficiency in dye-sensitized solar cells based on TiO<sub>2</sub>nanocrystal/nanotube double-layered films,” On-line Journal, Electrochimica Acta, 55, 2010, 2280–2285. <http://sciencesupply.com.au/research/doublewall.pdf>, 1<sup>st</sup> May 2014.
- [5] P.J. Martin, A. Bendavid, “Review of the filtered vacuum arc process and materials deposition,” On-line Journal, Thin Solid Films, 394 (1–2), 15 August 2001, 1–14. <http://www.sciencedirect.com/science/article/pii/S0040609001011695>, 1<sup>st</sup> May 2014.

- [6] C. Casiraghi, J. Robertson, A.C. Ferrari, “Diamond-like carbon for data and beer storage,” On-line Journal, Materials Today, 10(1–2), January–February 2007, 44–53. <http://www.sciencedirect.com/science/article/pii/S1369702106717916>, 1<sup>st</sup> May 2014.
- [7] D. Bootkul, N. Seanphinit, B. Supsermpol, C. Aramwit, S. Intarasiri, “Nitrogen Doping for Adhesion Improvement of DLC Film Deposited on Si Substrate by Filtered Cathodic Vacuum Arc (FCVA) Technique,” On-line Journal, Applied Surface Science, 2014, xxx, xxx–xxx (Article in Press). <http://www.sciencedirect.com/science/article/pii/S016943321400587X>, 1<sup>st</sup> May 2014.
- [8] M. Quintana, T. Edvinsson, A. Hagfeldt, G. Boschloo, “Comparison of Dye-Sensitized ZnO and TiO<sub>2</sub> Solar Cells: Studies of Charge Transport and Carrier Lifetime,” On-line Journal, The Journal of Physical Chemistry C, 111(2), 2007, 1035–1041. <http://pubs.acs.org/doi/abs/10.1021/jp065948f>, 1<sup>st</sup> May 2014.
- [9] “Titanium dioxide,” Website, [http://en.wikipedia.org/wiki/Titanium\\_dioxide](http://en.wikipedia.org/wiki/Titanium_dioxide), 1<sup>st</sup> May 2014.
- [10] M. H. Habibi, N. Talebian, J.H. Choi, “The Effect of Annealing on Photocatalytic Properties of Nanostructured Titanium Dioxide Thin Films,” On-line Journal, Dyes and Pigments, 73(1), 2007, 103–110. <http://www.sciencedirect.com/science/article/pii/S0143720805003542>, 1<sup>st</sup> May 2014.
- [11] A.D. Paola, M. Bellardita, L. Palmisano, “Brookite, the Least Known TiO<sub>2</sub> Photocatalyst,” On-line Journal, Catalysts, 3, 2013, 36–73. [www.mdpi.com/2073-4344/3/1/36/pdf](http://www.mdpi.com/2073-4344/3/1/36/pdf), 1<sup>st</sup> May 2014.

- [12] *T. Luttrell, S. Halpegamage, J. Tao, A. Kramer, E. Sutter, M. Batzill*, “Why is anatase a better photocatalyst than rutile? - Model studies on epitaxial TiO<sub>2</sub> films,” On-line Journal, Scientific Reports, 4, 2014, 4043. <http://www.nature.com/srep/2014/140210/srep04043/full/srep04043.html>, 1<sup>st</sup> May 2014.
- [13] *M. Kalin, I. Velkavrh, J. Vizintin, L. Ožbolt*, “Review of boundary lubrication mechanisms of DLC coatings used in mechanical applications,” On-line Journal, Meccanica, 43, 2008, 623–637. <http://link.springer.com/article/10.1007%2Fs11012-008-9149-z>, 1<sup>st</sup> May 2014.
- [14] *Andre’ Anders*, Cathodic Arcs From Fractal Spots to Energetic Condensation, Springer Series on Atomic, Optical, and Plasma Physics, 2008, 227-259. 1<sup>st</sup> May 2014.
- [15] *M. H. An*, “Composition, Structural, and Electrical Investigations on DC- Magnetron-Sputtered TiO<sub>2</sub> Thin Films,” On-line Journal, Journal of the Korean Physical Society, 47(5), 2005, 847-851. <http://www.kps.or.kr/jkps/downloadPdf.asp?articleid=%7B12A2AC54-CE31-450E-96C2-D05A8E01CE38%7D>, 1<sup>st</sup> May 2014.
- [16] *N.R. Mathews, Erik R. Morales, M.A. Cortés-Jacome, J.A. Toledo Antonio*, “TiO<sub>2</sub> thin films – Influence of annealing temperature on structural, optical and photocatalytic properties,” On-line Journal, Solar Energy, 83(9), September 2009, 1499–1508, <http://www.sciencedirect.com/science/article/pii/S0038092X09000930>, 1<sup>st</sup> May 2014.
- [17] *D. Yoo, I. Kim, S. Kim, C. H. Hahn, C. Lee, S. Cho*, “Effects of annealing temperature and method on structural and optical properties of TiO<sub>2</sub> films prepared by RF magnetron sputtering at room temperature,” On-line Journal, Applied Surface Science, 253, 2007, 3888–3892, <http://www.sciencedirect.com/science/article/pii/S0169433206011196>, 1<sup>st</sup> May 2014.

- [18] “How SEM Works,” Website, <http://www.seallabs.com/how-sem-works.html>, 1<sup>st</sup> May 2014.
- [19] “K-alpha,” Website, <http://en.wikipedia.org/wiki/K-alpha>, 1<sup>st</sup> May 2014.
- [20] “How SEM-EDS Works,” Website, <http://www.seallabs.com/how-sem-eds-works.html>, 1<sup>st</sup> May 2014.
- [21] “Raman spectroscopy,” Website, [http://en.wikipedia.org/wiki/Raman\\_spectroscopy](http://en.wikipedia.org/wiki/Raman_spectroscopy), 1<sup>st</sup> May 2014.
- [22] “Raman Scattering,” Website, <http://mackenzie.chem.ox.ac.uk/teaching/Raman%20Scattering.pdf>, 1<sup>st</sup> May 2014.
- [23] M. Giarola, A. Sanson, F. Monti, and G. Mariotto, “Vibrational Dynamics of Anatase TiO<sub>2</sub>: Polarized Raman Spectroscopy and ab Initio Calculations,” On-line Journal, Physical Review B 81, Article 174305, 2010, <http://journals.aps.org/prb/abstract/10.1103/PhysRevB.81.174305>, 1<sup>st</sup> May 2014.
- [24] J. Yan, G. Wu, N. Guan, L. D. Li, Z. X. Li, , X. Z. Cao, “Understanding the effects of surface/bulk defects on the photocatalytic activity of TiO<sub>2</sub>: Anatase versus Rutile,” Text File, Electronic Supplementary Material (ESI) for Physical Chemistry Chemical Physics, <http://www.rsc.org/suppdata/cp/c3/c3cp50927c/c3cp50927c.pdf>, 1<sup>st</sup> May 2014.
- [25] T. Maiyalagan, B. Viswanathan, U. V. Varadaraju, “Fabrication and characterization of uniform TiO<sub>2</sub> nanotube arrays by sol–gel template method,” On-line Journal, Bulletin of Material Science, 29(7), 2006, 705–708. <http://www.ias.ac.in/matersci/bmsdec2006/705.pdf>, 1<sup>st</sup> May 2014.

- [26] Robert A. Wilson and Heather A. Bullen, "Introduction to Scanning Probe Microscopy (SPM): Basic Theory Atomic Force Microscopy (AFM)," Text File, [http://asdlib.org/onlineArticles/ecourseware/Bullen/SPMModule\\_BasicTheoryAFM.pdf](http://asdlib.org/onlineArticles/ecourseware/Bullen/SPMModule_BasicTheoryAFM.pdf), 1<sup>st</sup> May 2014.
- [27] Jonathan Rochford, "Power Conversion Efficiency of a Dye-Sensitized Solar Cell," Text File, UMass Boston, Chem 371 Advanced Inorganic Chemistry Laboratory, [http://alpha.chem.umb.edu/chemistry/ch371/documents/8DSSC\\_000.pdf](http://alpha.chem.umb.edu/chemistry/ch371/documents/8DSSC_000.pdf), 1<sup>st</sup> May 2014.
- [28] Green M.A., "Solar cell fill factors: General graph and empirical expressions," On-line Journal, Solid-State Electronics, 24, 1981, 788 –789. <http://pveducation.org/pvc/drom/solar-cell-operation/fill-factor>, 1<sup>st</sup> May 2014.
- [29] K. Gupta, R. P. Singh, A. Pandey, A. Pandey, "Photocatalytic antibacterial performance of TiO<sub>2</sub> and Ag-doped TiO<sub>2</sub> against S. aureus. P. aeruginosa and E. coli," On-line Journal, Beilstein Journal of Nanotechnology, 4, 2013, 345–351. <https://www.beilstein-journals.org/bjnano/content/pdf/2190-4286-4-40.pdf>, 1<sup>st</sup> May 2014.
- [30] N.E. Derradji, M.L. Mahdjoubi, H. Belkhir, N. Mumumbila, B. Angleraud, P.Y.Tessier, "Nitrogen effect on the electrical properties of CN<sub>x</sub> thin films deposited by reactive magnetron sputtering," On-line Journal, Thin Solid Films, 482(1–2) , 22 June 2005, 258–263. <http://www.sciencedirect.com/science/article/pii/S0040609004017171>, 1<sup>st</sup> May 2014.
- [31] B. Kleinsorge, A.C. Ferrari, J. Robertson, W.I. Milne, S. Waidmann, S. Hearne, "Bonding regimes of nitrogen in amorphous carbon," On-line Journal, Diamond and Related Materials, 9(3–6) , April–May 2000, 643–648. <http://www.sciencedirect.com/science/article/pii/S092596359900309X>, 1<sup>st</sup> May 2014.

- [32] K.C. Kadiyala, “Characterization and Tribological Behavior of Diamond-Like Carbon and Nitrogen-Doped Diamond-Like Carbon Thin Films,” Master Thesis, Nagarjuna University, 2006. [http://etd.lsu.edu/docs/available/etd-06082006-151124/unrestricted/Kadiyala\\_thesis.pdf](http://etd.lsu.edu/docs/available/etd-06082006-151124/unrestricted/Kadiyala_thesis.pdf), 1<sup>st</sup> May 2014.
- [33] N.W. Khun, E. Liu, “Investigation of structure, adhesion strength, wear performance and corrosion behavior of platinum/ruthenium/nitrogen doped diamond-like carbon thin films with respect to film thickness,” On-line Journal, Materials Chemistry and Physics, 126, 2011, 220–226. [http://www.ntu.edu.sg/home/mejliu/index\\_files/Khun%20NW\\_MCP2011.pdf](http://www.ntu.edu.sg/home/mejliu/index_files/Khun%20NW_MCP2011.pdf), 1<sup>st</sup> May 2014.
- [34] N.W. Khun, E. Liu, X.T. Zeng, “Corrosion behavior of nitrogen doped diamond-like carbon thin films in NaCl solutions,” On-line Journal, Corrosion Science, 51, 2009, 2158–2164. [http://www.ntu.edu.sg/home/mejliu/index\\_files/Khun%20NW\\_CS2009.pdf](http://www.ntu.edu.sg/home/mejliu/index_files/Khun%20NW_CS2009.pdf), 1<sup>st</sup> May 2014.
- [35] J. Robertson, “Requirements of Ultrathin Carbon Coating for Magnetic Storage Technology,” On-line Journal, Tribology International, April–June 2003, 36(4-6), 405-415. <http://www.sciencedirect.com/science/article/pii/S0301679X02002165>, 1<sup>st</sup> May 2014.