REFERENCES

1. Guimard, N. K., Gomez, N. and Schmidt, C. E., Conducting polymers in biomedical engineering, *Prog. Polym. Sci*., 2007, **32**, 876–921.

2. Shirakawa, H., Louis, E. J., MacDiarmid, A. G., Chiang, C.K. and Heeger, A. J., Synthesis of electrically conducting organic polymers: halogen derivatives of polyacetylene, $(CH)_x$, *J. Chem. Soc,. Chem. Commun*., 1977, 578–580.

3. Hikmet, R. A. M., New lithium–ion polymer battery concept for increased capacity, *J. Power Sources*, 2001, **92**, 212–220.

4. Mortimer, R. J., Dyer, A. L. and Reynolds, J. R., Electrochromic organic and polymeric materials for display applications, *Displays*, 2006, **27**, 2–18.

5. Cater, S. A., Angelopoulos, M., Karg, S., Brock, P. J. and Scott, J. C., Polymeric anodes for improved polymer light–emitting diote performance, *Appl. Phys.Lett*., 1997, **70**, 2067–2069.

6. Baba, A., Mannen, T., Ohdaira, Y., Shinbo, K., Kato, K., Kaneko, F., Fukuda, N. and Ushijima, H., Langmuir, Detection of adrenaline on poly(3–aminobenzylamine) ultrathin film by electrochemical–surface plasmon resonance spectroscopy, *Langmuir*, 2010, **26**, 18476–18482.

7. Sriwichai, S., Baba, A., Phanichphant, S., Shinbo, K., Kato, K. and Kaneko, F., Electrochemically controlled surface plasmon resonance immunosensor for the detection of human immunogloblin G on poly(3–aminobenzoic acid) ultrathin films, *Sens. Actuat. B-Chem.*, 2010, **147**, 322–329.

8. Janmanee, R., Baba, A., Phanichphant, S., Sriwichai, S., Shinbo, K., Kato, K. and Kaneko, F., Detection of human IgG on poly(pyrrole–3–carboxylic acid) thin film by electrochemical–surface plasmon resonance spectroscopy, *Jpn. J. Appl. Phys.*, 2011, **50**, No. 1, 01BK02–06.

9. Tian, S., Baba, A., Liu, J., Wang, Z., Knoll, W., Park, M. K. and Advincula, R., Electroactivity of polyaniline multilayer films in neutral solution and their electrocatalyzed oxidation of β–nicotinamide adenine dinucleotide, *Adv.Funct. Mater.*, 2003, **13**, 473–479.

10. Raffa, D. L. and Battaglini, F., Novel conducting polyaniline bearing functional groups, *J. Electroanal.Chem.*, 2001, **54**, 120–124.

11. Epstein, A. J.and MacDiarmid, A. G., Polyanilines: from solutions to polymer metal, from chemical currosity to technology, *Synth. Met.*, 1995, Issues 1–3, 179–182.

12. Salaneck, W. R., Friend, R. H. and Brédas, J. L., Electronic Structure of Conjugated polymers: consequences of electron–lattice coupling, *Phys. Rep.*, 1999, **319**, 231–251.

13. Bakhshi, A. K., Electrically conducting polymer: from fundamental to applied research, *Bull. Mater. Sci.*, 1995, **18** 469–495.

14. Oh, T., Characteristic of organic thin film depending on carbon content by furier transform infrared spectra and X–ray diffraction pattern, *Bull. Korean Chem. Soc*. 2007, **28**, 1588–1590.

15. Groenendaal, L., Jonas, F., Freitag, D., Pielartzik, H. and Reynolds, J. R., Poly(3,4–ethylenedioxythiophene) and its derivatives: past, present, and future, *Adv. Mater.*, 2000, **12** (7), 481–494.

16. Brédas, J. L. and Street, G. B., Polarons, bipolarons, and solutions in conducting polymers, *Accounts Chem. Res.*, 1985, **18**, 309–315.

17. Blatchford, W. and Epstein, A. J., Resource letter: electronic polymer and their applications, *Amer. J. . Phys.*, 1996, **64**, 120–135.

18. Wilbourn, K., and Murray, R. W., The D.C. redox versus electronic conductivity of the ladder polymer poly(benzimidazobenzophenanthroline), *J. Phys. Chem.*, 1988, **92**, 3642–3648.

19. Mark, J. E. (Ed.), *Physical Properties of Polymers Handbook*, AIP Press, New York, 1996.

20. Skotheim, T., (Ed.), *Handbook of Conducting Polymers*, Marcel Dekker, New York, 1986.

21. Brédas, J. L. and Silbey, R., *The Novel Science and Technology of Highly Conducting and Nonlinear Optically Active Materials*, Kluwer, Dordrecht, Netherlands. 1991.

22. Guimard, N. K., *Biodegradable Electroactive Materials for Tissue Engineering Applications*, The University of Texas at Austin, 2008.

23. Baba, A., Tian, S., Stefani, F., Xia, C., Wang, Z., Advincula, R. C., Johannsmann, D. and Knoll, W., Electropolymerization and doping/dedoping properties of polyaniline thin film as studied by electrochemical–surface plasmon spectroscopy and by the quartz crystal microbalance, *J. Electroanal. Chem.*, 2004, **562,** 95–103.

24. W.S. Huang, B.D. Humphrey and A.G. MacDiarmid, Polyaniline, a novel conducting polymer. morphology and chemistry of its oxidation and reduction in aqueous electrolytes, *J. Chem. Soc., Faraday Trans. 1*, 1986, **82** 2385–2400.

25. Yánez–Heras, J., Planes, G. A., Williams, F., Barbero, C. A., and Battaglini, F., Sequential electrochemical polymerization of aniline and their derivatives showing electrochemical activity at neutral pH, *Electroanal.*, 2010, **22** (23), 2801–2808.

26. Huanga, L. M., Chena, C. H., and Wen, T. C., Delopment and characherization of flexible electrochromic devices based on polyaniline and poly(3,4–elethylenedioxythiophene)–poly(styrene sulfonic acid), *Electrochimica Acta*, 2006, **51**, 5858–5863.

27. Stejskal, J., and Gilbert, R. G., Polyaniline. preparation of a conducting polymer (IUPAC Techincal Report), *Pure Appl. Chem.* 2002, **74**, 857–867.

28. Vidal, J. C., Garcia–Ruiz, E. and Castillo, J.R., Recent advances in electropolymerized conducting polymers in amperometric biosensor, *Microchim. Acta*, 2003, 143, 93–111.

29. Adhikari, B. and Majumdar, S., Polymer in sensor applications, *Prog. Polym. Sci.* 2004, **29**, 699–766.

30. Lee, J. W., Serna, F., Nickels, J. and Schmidt, C. E., Carboxylic acid–functionalized conductive polypyrrole as a bioactive platform for cell adhesion, *Biomacromolecules*, 2006, 7, 1692–1695.

31. Pual, M. and Monk, S., *Fundamentals of Electro–Analytical Chemistry*, John Wiley, New York, 2001.

32. Christian, G. D., *Analytical Chemistry,* 5^{th} ed., John Wiley, New York, 1994.

33. Plambeck, J. A., *Electroanalytical Chemistry*: *Basic Principle and Applications,* John Wiley, New York, 1982

34. Newman, J. S., *Electrochemical System*, Prentice–Hall, Englewood Cliffs, 1973.

35. Bard, A. J., and Faulkner, L. R., *Electrochemical Methods*: *Fundamentals and Applications,* 2^{nd} ed., John Wiley, New York, 2000.

36. Heinze, J., *Electronically Conducting Polymers*. *In Topics in Chemistry*, Springer–Verlag,Berlin, 1990.

37. Chun, T. C., Kaufman, J. H., Heeger, A. J. and Wudl, F., Charge storage in doped poly(thiophene): optical and electrochemical studies, *Phys. Rev. B*, 1984, **30**,702–710.

38. Brédas, J. L. Chance, R. and Silbey, R., Comparative theoretical study of the doping of conjugated polymers: polarons in polyacetylene and polyparaphenylene, *Phys. Rev. B*, 1982, 26, 5843–5854.

39. Knoll, W., Interface and thin film as seen by bound electromagnetic waves, *Annu. Rev. Phys. Chem*., 1988, **49**, 569–638.

40. Hickel, W., Rothenhausler, B. and Knoll, W., Surface plasmon microscopic characterization of external surfaces, *J. Appl. Phys*., 1989, **66**, 4832–4836.

41. Baba, A., Advincula, R. C. and Knoll, W., In situ investigations on the electrochemical polymerization and properties of polyaniline thin films by surface plasmon optical techniques, *J. Phys. Chem. B*, 2002, **106**, 1581–1587.

42. Advincula, R. C., Aust, E., Meyer, W. and Knoll, W., In situ investigations of polymer self–assembly solution adsorption by surface plasmon spectroscopy, *Langmuir*, 1996, **12**, 3536–3540.

43. Xia, C., Advincula, R. C., Baba, A. and Knoll, W., *In situ* investigations of the electrodeposition and electrochromic properties of poly(3,4–ethylenedioxythiophene) ultrathin films by electrochemical–surface plasmon spectroscopy, *Langmuir*, 2002, **18**, 3555–3560.

44. Raitman, O. A., Katz, E., Buckman, A. F. and Wilner, I., Integration of polyaniline/poly(acrylic acid) films and redox enzymes on electrode supports: an in situ electrochemical/surface plasmon resonance study of the bioelectrocatalyed oxidation of glucose or lactate in the integrated bioelectrocatalytic systems, *J. Am. Chem. Soc*., 2002, **124**, 6487–6496.

45. Gardner, D. G. and Shoback, D., *Greenspan's Basic & Clinical Endocrinology*, 9^{th} ed., McGraw-Hill, New York, 2011.

46. Purves, D., Augustine, G.J., Fitzpatrick, D., Hall, W. C., Lamantia, A. S., McNamara, J. O. and White, L. E., *Neuroscience*, 4th ed., Sinauer Associates, Sunderland, 2008.

47. Moghaddam, H. M. and Beitollahi, H., Simulataneous volatmmetric determination of norepinephrine and acetaminophen at the surface of a modified carbon nanotube paste electrode, *Int. J. Electrochem. Sci*., 2011, **6**, 6503–6513.

48. Joh, T. H. and Hwang, O., *Dopamine Beta–Hydroxylase: Biochemistry and Molecular Biology*, Annals of the New York Academy of Sciences, New York, 1987.

49. Manor, I., Tyano, S., Mel, E., Eisenberg, J., Bachner-Melman, R., Kotler, M. and Ebstein, R. P., Family-based and association studies of monoamine oxidase and attention deficit hyperactivity disorder (ADHD): preferential transmission of the long promoter-region repeat and its association with impaired performance on a continuous performance test (TOVA), *Mol. Psychiatr.*, 2002, **7**, 626–632.

50. Brunner, H. G., MAOA Deficiency and abnormal behaviour: perspectives on an association, *Ciba Foundation Symposium*, 1996**, 194**, 155–164, discussion 164–167. (http://europepmc.org/abstract/MED/8862875)

51. http://www.wisegeek.com/what-is-adrenaline.htm (November, 13 2012).

52. Cannon, W. B., Organization for physiological homeostasis, *Physiol. Rev.*, 1929, 9, 399–431.

53. Bennett, M., One hundred Years of Adrenaline: the Discovery of Autoreceptors, *Clin. Auton. Res.* 1999, 9, 145–159.

54. http://www.unc.edu/~rowlett/units/scales/clinical_data.html (November, 15 2012).

55. http://www.amamanualofstyle.com/oso/public/jama/si_conversion_table.html (November, 15 2012).

56. Malik, V. S., Popkin, B. M., Bray, G. A., Després, J. P., Willett, W. C. and Hu, F. B., Sugar-sweetened beverages and risk of metabolic syndrome and type 2 diabetes: a meta-analysis, *Diabetes Care*, 2010, **33**, 2477–2483.

57. Pak, C. Y., Medical stone management: 35 years of advances, *J. Urology*, 2008, 180, 813–819.

58. Toncev, G., Therapeutic value of serum uric acid levels increasing in the treatment of multiple sclerosis, *Vojnosanit.Pregl.*, 2006, **63**, 879–882.

59. Lachapelle, M. Y. and Drouin, G., Inactivation dates of the human and guinea pig Vitamin C genes, *Genetica*, 2010, **139**, 199–207.

60. Aboul-Enein, H. Y. and Al-Duraibi, I. A., Analysis of L– and D–ascorbic acid in fruits and fruit drinks by HPLC, *Seminars in Food Analysis*, 1999, **4**, 31–37.

61. Zhang, Y., Shi, Z., Gu, Z. and Iijima, S., Structure modification of single-wall carbon nanotubes, *Carbon*, 2000, **38**, 2055–2059.

62. Tzeng, Y., Chen, Y. and Liu, C., Electrical contacts between carbon-nanotube coated electrodes, *Diam. Relat. Mater.*, 2003, 12, 744–779.

63. McEuen, P. L., Single-wall carbon nanotubes, *Phys. World*, 2000, 13, 31–36.

64. McEuen, P. L., Fuhrer, M. S. and Park, H., Single-walled carbon nanotube electronics, *IEEE Trans. Nanotechnol.*, 2002, 1, 78–85.

65. Dekker, C., Carbon nanotubes as molecular quantum wires, *Phys. Today*, 1999, 52, 22–28.

66. Martel, R., Derycke, V., Lavoice, C., Appenzeller, J., Chan, K., Tersoff, J., Avouris, Ph., Ambipolar electrical transport in semiconducting single-wall carbon nanotubes, Phys. Rev., 2001, 87, 256085–256808.

67. http://www.nanocyl.com/CNT-Expertise-Centre/Carbon-Nanotubes (June, 2 2012).

68. Song R., Liu Y., He L., Synthesis and characterization of mercaptoacetic acid-modified ZnO nanoparticles, *Solid State Sci*., 2008, **10**, 1563–1567.

69. Ristic M., Music S., Ivanda M., Popovic S., Sol-gel synthesis and characterization of nanocrystalline ZnO powders, *J. Alloy. Compd.,* 2005, **397**, 1–4.

70. Chen Y., Yu R., Shi Q., Qin J., Zheng F., Hydrothermal synthesis of hexagonal ZnO clusters, *Mater. Lett.,* 2007, **61**, 4438–4441.

71. Kim H., Horwitz J.S., Kim W.H., Makinen A.J., Kafafi Z.H., Chrisey D.B., Doped ZnO thin films as anode materials for organic light emitting diyotes, *Thin Solid Films,* 2002, **420–421**, 539–543.

72. Vale G.G., Hammer P., Pulcinelli S.H., Santilli C.V., Transparent and conductive ZnO: Al thin films prepared by sol-gel dipcoating, *J. Eur. Ceram. Soc.*, 2004, **24**, 1009–1013.

73. Yim K., Lee C., Optical properties of Al-doped ZnO thin films deposited by two different sputtering methods, *Cryst. Res. Technol.*, 2006, **41**, 1198–1202.

74. Spanhel L., Anderson M A., Semiconductor clusters in the sol-gel process: Quantized aggregation, gelation, and crystal growth in concentrated ZnO colloids., *J. Am. Chem. Soc., 1991,* ***113****, 2826–2833*.

75. Hossain M. K., Ghosh S. C., Boontongkong Y., Thanachayanont C., Dutta J., Growth of zinc oxide nanowires and nanobelts for gas sensing applications, *J. Metal. Nanocrys. Mater.*, 2005, **23**, 27–30.

76. Siqingaowa, Zhaorigetu, Hongxia Y., Garidi, Preparation and characterization of nanocrystalline ZnO by direct precipitation method, *Front. Chem. Chin.,* 2006, **3**, 277−280.

77. Zhou J., Zhao F., Wang Y., Zhang Y., Yang L., Size-controlled synthesis of ZnO nanoparticles and their photoluminescence properties, *J. Lumin.,* 2007, **122–123**, 195–197.

78. Burunkaya E., Kiraz N., Kesmez Ö., Ċamurlu H.E., Asiltürk M., Arpac E., Preparation of aluminum-doped zinc oxide (AZO) nano particles by hydrothermal synthesis, *J. Sol-Gel Sci. Technol.*, 2010, **55**, 171–176.

79. Damos, F. S., Luz, R. C. S. and Kubota, L. T., Investigations of ultrathin polypyrrole films: formation and effects of doping/dedoping processes on its optical properties by electrochemical surface plasmon resonance (ESPR), *Electrochim. Acta*, **2006**, *51*, 1304–1312.

80. Dong, H., Cao, X. D., Li, C. M. and Hu, W. H., An in situ electrochemical surface plasmon resonance immunosensor with polypyrrole propylic acid film: comparison between SPR and electrochemical responses from polymer formation to protein immunosensing, *Biosens. Bioelectron*., 2008, **23**, 1055–1062.

81. Baba, A. and Knoll, W., Properties of poly(3,4-ethylenedioxythiophene) ultrathin films detected by in situ electrochemicalsurface plasmon field-enhanced photoluminescence spectroscopy, *J. Phys. Chem. B*, 2003, **107**, 7733–7738.

82. Kato, K., Yamashita, K., Ohdaira, Y., Baba, A., Shinbo, K. and Kaneko, F., Electrochemical surface plasmon excitation and emission light properties in poly(3-hexylthiophene) thin films, *Thin Solid Films*, 2009, **518**, 758–761.

83. Hu, W., Li, C. M. and Dong, H., Poly(pyrrole-*co*-pyrrole propylic acid) film and its application in label-free surface plasmon resonance immunosensors, *Anal. Chim. Acta*, 2008, **630**, 67–74.

84. Wang, J., Wang, F., Chen, H., Liu, X. and Dong, S., Electrochemical surface plasmon resonance detection of enzymatic reaction in bilayer lipid membranes, *Talanta*, 2008, **75**, 666–670.

85. Kang, X., Cheng, G. and Dong, S., A novel electrochemical SPR biosensor, *Electrochem. Commun.*, 2001, **3**, 489–493.

86. Shankar, S. S., Swamy, B. E. K., Chandra, U., Manjunatha, J. G., Sherigara, B. S., Simultaneous determination of dopamine, uric acid and ascorbic acid with CTAB modified carbon paste electrode, *Inter. J. Electrochem. Sci.*, 2009, **4**, 592–601.

87. Manjunatha, R., Suresh, G. S., Melo, J. S., D'Souza, S. F. and Venkatesha, T. V., Simultaneous determination of ascorbic acid, dopamine and uric acid using polystyrene sulfonate wrapped multiwalled carbon nanotubes bound to graphite electrode through layer-by-layer technique, *Sensor. Actuat. B-Chem.*, **2010**, 145, 643–650.

88. Nohta,H., Yukizawa,T., Ohkura, Y., Yoshimura, M., Ishida, J. And Yamaguchi, M., Aromatic glycinonitriles and methylamines as pre-column fluorescence derivatization reagents for catecholamines, *Anal.Chim.Acta*. 1997, **344**, 233–240.

89. Wu, K., Fei, J. and Hu, S., Simultaneous determination of dopamine and serotonin on a glassy carbon electrode coated with a film of carbon nanotubes, *Anal. Biochem.*, 2003, **318**, 100–106.

90. Zhang, Y., Jin, G., Wang, Y. and Yang, Z., Determination of dopamine in the presence of ascorbic acid using poly(acridine red) modified glassy carbon electrode, *Sensor*s, 2003, **3**, 443–450.

91. Song, S., Gao, Q., Xia, K. and Gao, L., Selective determination of dopamine in the presence of ascorbic acid at porous-carbon-modified glassy carbon electrodes, *Electroanal.*, 2008, **20**, 1159–1166.

92. Jeong, H. and Jeon, S., Determination of dopamine in the presence of ascorbic acid by nafion and single-walled carbon nanotube film modified on carbon fiber microelectrode, *Sensors*, 2008, **8**, 6924–6935.

93. Chuekachang, S., Kruefu, V., Phanichphant, S. and Chaisit, S., Fabrication of modified SWNTs/glassy carbon electrode for the determination of dopamine, *Mol. Cryst. Liq. Cryst*., 2011, **538**, 292–297.

94. Liewhiran, C. and Phanichphant, S., Improvement of flame-made ZnO nanoparticle thick film morphology for ethanol sensing, *Sensors*, 2007, **7**, 650–675.

95. Zhang, L., Ni, Q. Q., Fu, Y. and Natsuki, T., One-step preparation of water-soluble single-walled carbon nanotubes, *Appl. Surf. Sci*., 2009, **255**, 7095–7099.

96. Mandal, G., Bhattacharya, S., Chowdhury, J. and Ganguly, T., Mode of anchoring of ZnO nanoparticles having both –COOH and –NH functionalities, *J. Mol. Struct*., 2010, **964**, 9–17.

97. Binning, G., Quate, C. F. and Gerber, Ch., Atomic force microscope, *Phys. Rev. Lett*., 1986, **56**, 930–933.

98. http://en.wikipedia.org/wiki/Atomic_force_microscopy (November, 16 2012).

99. Baba, A., Kaneko, F., Advincula, R. and Knoll, W., *Electrochemical–Surface Plasmon Resonance Methods for Polymer Thin Films, Functional Polymer Films*, Wiley-VCH Verlag GmbH & Co. KGaA, New York, 2011.

100. Liu, J., Tian, S. and Knoll, W., Properties of polyaniline/carbon nanotube multilayer films in neutral solution and their application for stable low-potential detection of reduced β-Nicotinamide adenine dinucleotide, *Langmuir*, 2005, **21**, 6696–5599.

101. Yamaguchi, M., Ishida, J. and Yoshimura, M., Simultaneous determination of urinary catecholamines and 5–hydroxyindoleamines by high-performance liquid chromatography with flourescence detection, *Analyst*, 1998, **123**, 307–311.

102. Fujino, K., Yoshitake, T., Kehr, J., Notha, H. and Yamaguchi, M., Simultaneous determination of 5–hydroxyindoles and catechols by high-performance liquid chromatography with fluorescence detection following derivatization with benzylamine and 1,2–diphenylethylenediamine, *J. Chromatogr. A*, 2003, **1012**, 169–177.

103. Sauerbrey, G., Verwendung von schwingguarzen zur wägung dünner schichten und zur mikrowägung, *Z. Phys. A*, 1959, 155, 206–222.

104. Polewski, K., Spectroscopic detection of adrenaline-quinone formation in resonance micelles, *Biochim. Biophys. Acta*, 2000, **1523**, 56–64.

105. Ansón-Casaos, A., González-Domínguez, J.M., Terrado, E. and Martínez, M.T., Surfactant-free assembling of functionalized single-walled carbon nanotube buckypapers, *Carbon*., 2010, **48**, 1480–1488.

106. Huang, X.J., Im, H.S., Yarimaga, O., Kim, J.H., Lee, D.H., Kim, H.S. and Choi, Y.K., Direct electrochemistry of uric acid at chemically asembled carboxylated single-walled carbon nanotubes netlike electrode, *J. Phys.Chem.* B, 2006, **110**, 21850–21856.

107. W. Norde, J. Lyklema, Why proteins prefer interfaces, *J. Biomater. Sci. Polym.* Ed., 1991, **2**, 183-202.

108. R. J. Umpley II, S. C. Baxer, A. M. Ranpey, G. T. Rushton, Y. Chen, K. D. Shimizu, Characterization of the heterogeneous binding site affinity distributions in molecularly imprinted polymers, *J. Chromat. B*, 2004, **804**, 141-149.