REFERENCES

1. Tressler J.F., Alkoy S., Dogan A., Newnham R.E. Functional composites for sensors, actuators and transducers. Composites: Part A. 1999; 30: 477-482.
2. Wolak J. Dielectric behavior of 0-3-type piezoelectric composites. IEEE Tran. Elec. Insul. 1993; 28: 116-121.
3. Aizawa S., Kakizawa T., and Higasino M. Case studies of smart materials for civil structures. Smart. Mats. Struct. 1998; 7: 617-626.
4. Li Z.J., Zhang D., and Wu K.R. Cement matrix 2-2 piezoelectric composite Part 1. Sensory effect. Materials and structures/Matriaux *et* Constructions. 2001; 34: 506-512.
5. Chang F.K. Structural health monitoring 2000, Pennsylvania: Technomic Publishing Co. Inc. Lancester. 1999.
6. Tzou H.S. and Guran A. Structronics systems: Smart structures, Devices and systems (Parts I & II). Singapore: World Scientific. 1998.
7. Li Z. Cement-based 0-3 piezoelectric composites. J. Am. Ceram. Soc. 2002; 85: 305-313.
8. Shifeng H., Zhengmao Y., Yali H., Jun C., Lingchao L., Xin C. Effect of forming pressures on electric properties of piezoelectric ceramic/sulphoaluminate cement composites. Compo. Sci. Tech. 2007; 67: 135-139.

9. Calderon-Moreno J.M. Stress induced domain switching of PZT in compression tests. Mats. Sci. Eng. A. 2001; 315: 227-230.

10. Haertling G.H. Ferroelectric ceramics: History and technology. J. Am. Ceram. Soc. 1999; 82: 797-818.

11. Newnham R.E., Cross L.E. Connectivity and piezoelectric-pyroelectric composites. Mats. Res. Bull. 1978; 13: 525-536.

12. Sa-gong G., Safari A., Jang S. J., Newnham R. E. Poling flexible piezoelectric composites. Ferro. Letts. 1986; 5: 131-134.

13. Cui C.X., Baughman R. H., Igbal Z., Kazmar T. R., Dahlstrom D. K. Improved piezoelectric 0-3 ceramic particle/polymer composites. Ferroelectrics, Proceedings of the Tenth IEEE International Symposium on applications of 1996. 1996; 2: 605-608.

14. Sakamoto W.K., Mann-Franch P. and Das-Gupta D.F. Characterization and application of P'ZT/PU and graphite doped PZT/PU composite. Sens. Acts. 2002; 100: 165-174.

15. Shifeng H., Jun Chang, Lu L., Liu F., Ye Z., Cheng X. Preparation and polarization of 0-3 cement based piezoelectric composites. Mats. Res. Bull. 2006; 41: 291-297.

16. Gregorio R.J. and Cestari M. Effect of crystallization temperature on the crystalline phase content and morphology of poly (vinylidene fluoride). J. Polym. Sci, Part B: Poly. Phys. 1994; 32: 859-870.

17. Pramoda P. K., Mohamed A., Phang I. Y., Liu T. Crystal transformation and thermomechanical properties of poly (vinylidene fluoride)/clay nanocomposites. Polym. Inter. 2005; 54: 226-232.

18. Jaffe B., Cook W.R., Jaffe H. Piezoelectric Ceramics. New York: Academic Press. 1971.

19. Herbert J.M. Ferroelectric transducers and sensor. London: Gordon and Breach. 1982.

20. Burfoot J.C. and Taylor G.W. Polar dielectric and their applications. London: Macmillan. 1979.

21. Levinson L.M. Electronic ceramics. New York: Marcel Dekker. 1988.

22. Cady W.G. Piezoelectricity. New York: McGraw-Hill. 1946

23. Board I.S. Standard definitions of primary ferroelectric terms. An American National Standard IEEE. 1986.

24. Standards I. IRE Standards on piezoelectric crystals: Measurements of piezoelectric ceramics. Proc. IRE. 1961.

25. Ballato A. Piezoelectricity: Old effect, New Thrusts. IEEE Transactions on ultrasonics, ferroelectrics, and frequency control. 1995; 12: 916-926.

26. Haertling G.H. Electro-optic ceramics and devices ed. L.M. Levinson. New York: Marcel Dekker. 1988.

27. Xu Y. Ferroelectric material and their applications. North-Holland: Elsevier Science Publishers. 1991.

28. Moulson A.J. and Herbert J.M. Electroceramics, Chichester: Wiley & Sons. 2003.

29. Noheda B. Stability of the monoclinic phase in the ferroelectric perovskite $Pb(Zr_{1-x}Ti_x)O_3$. Phys. Rev. B. 2000; 63: 14103- 9.

30. Guo R. Origin of the high piezoelectric response in $Pb(Zr_{1-x}Ti_x)O_3$. Phys. Rev. Lett. 2000; 84: 5423-6.

31. Berlincourt D.A., Cmolik C. and Jaffe H. Piezoelectric properties of polycrystalline Lead titanate zirconate compositions. Proceedings of the IRE. 1960: 220-229.

32. Wada Y. and Hayakawa R. Piezoelectricity and pyroelectricity of polymers. Jpn. J. Appl. Phys. 1976; 15: 2041-57.

33. Broadhurst M.G., Davis G. T., McKinney J. E., Collins R. E. Piezoelectricity and pyroelectricity in polyvinylidene fluoride-A model. J. Appl. Phys. 1978; 49: 4992-4997.

34. Takahashi N. and Odajima A. Ferroelectric reorientation of crystallites in polyvinylidene fluoride. Ferroelectrics. 1981; 32: 49-59.

35. Broadhurst M.G. and Davis G.T. Physical basis for piezoelectricity in PVDF. Ferroelectrics. 1984; 60: 3–13.

36. Nakamura K. and Wada Y. Piezoelectricity, pyroelectricity, and the electro-striction constant of poly(vinylidene fluoride). J. polym. Sci.A-2. 1971; 9(1): 161-173.

37. Hasegawa R., Kobayashi M. and Tadogoro H. Molecular conformation and packing of poly(vinylidene fluoride) stability of three crystalline forms and the effect of high pressure. Polym. J. 1972; 3(5): 591-599.

38. Murayama N. Persistent polarization in poly(vinylidene fluoride). I. Surface charges and piezoelectricity of poly(vinylidene fluoride) thermoelectrets. J. Poly. Sci. Polym, Phys. Edit. 1975; 13(5): 929-946.

39. Hasegawa R., Kobayashi M., Tadogoro H.Crystal structure of three crystalline form of poly(vinylidene fluoride). Polym. J. 1972; 3(5): 600-610.

40. Hilczer B. and Malecki J. Electrets. Amsterdam: Elsevier. 1986.

41. Fukuda E. Meeting on ferroelectric materials and their applications. Proc. 2nd. Kyoto. 1979.

42. Lovinger A.J., Development in crystalline polymer-1, ed. Bassett. London: Applied Science. Publishers. Ltd. 1981.

43. Servet B., Broussoux D. and Micheron F. Stretching induced γ→β transition in poly (vinylidene fluoride). J. appl. Phys. 1981; 5926-30.

44. Bachmann M., Gordon W. l., Weinhold S., Lando J. B. The crystal structure of phase IV of poly(vinylidene fluoride). J. Appl. Phys. 1980; 51(10): 5095-5099.

45. Furukawa T., Goho T., Date M., Takamatsu T., Fukada E. Piezoelectricity of Corona-Poled PVDF. Kobunshi. Ronbunshu. 1979; 36: 685.

46. Holliday L. Composite Materials. Amsterdam/London/New York: Elsevier publishing company, 1966.

47. Lea F.M. The chemistry of cement and concrete ed. 2nd. London: Edward Arnold. 1956.

48. Bogue R.H. Calculation of the compounds in Portland cement. Ind. Eng. Chem. 1929;1: 192-197.

49. Bogue R.H. and Lerch W. Hydration of Portland cement compounds. Ind. Eng. Chem. 1934; 26: 837-847.

50. Bernal J.D., Jeffery J.W. and Taylor H.F.W. Crystallographic research on the hydration of Portland cement. Mag. Concrete. res. 1952; 11: 49-54.

51. Powers T.C. Some aspects of the hydration of Portland cement. J. Port. Cem. Assoc. Res. Dev. Lab. 1961; 3(1): 47.

52. Mindess S. Concrete materials. J. Mats. Edu. 1983; 4: 984-1046.

53. Lea F.M. The chemistry of Cement and concrete. London: Arnold. 1970.

54. Gani M.S.J. Cement and Concrete. London: Chapman & Hall. 1997.

55. Mindess S. Interface in concrete. Mats. Sci. Concre I. ed. I.J.S. Westerville, OH: The. Amer. Ceram. Soc. 1989.

56. Callister W.D. Fundamentals of Materials Science and Engineering. New York: John Wiley & Sons. 2001.

57. Newnham R.E. Composite electroceramics. Ann. Rev. Mater. Sci. 1986; 16: 47-68.

58. Suchtelen V. Product properties: A new application of composite materials. Philips. Res. Rep. 1972; 27: 28-37.

59. Hearmon R.F.S. An introduction to applied anisotropic elasticity. London: Clarendon Press: Oxford University Press. 1961.

60. Van Beck L.K.H. Dielectric behaviour of heterogeneous systems. Progress in Dielectrics. Heywood Book. London. 1967.

61. Nye J.F. Physical Properties of Crystals. Their representation by tensors and matrices. London: Oxford University Press. 1957.

62. Safari A., Allahverdi M. and Akdogan E.K. Solid freeform fabrication of piezoelectric sensors and actuators. J. mats. sci. 2006;41: 177–198.

63. Bunde A. percolation in composite. J. Electroceramics. 2000; 5(2): 81-92.

64. Bunde A. Fractals and disordered systems. 2nd ed. Heidelberg: Springer Verlag. 1996.

65. Stauffer D. and Aharony A. Introduction to percolation theory. London: Taylor & Francis. 1992.

66. Sahimi M. Application of percolation theory. London: Taylor & Francis. 1994.

67. Chodak I. and Krupa I. Percolation effect and mechanical behaviour of carbon black filled polyethylene. J. Mats. Sci. Letts. 1999; 18(18): 1457–1459.

68. Verbeek C.J.R. Effect of percolation on the mechanical properties of sand-filled polyethylene composites. J. Thermo. comp. mats. 2007.

69. Banks H.T., Smith R.C. and Wang Y. Smart material structures. Modelling, Estimation and Control. Wiley Press. 1996.

70. George E.P., Gotthardt R., Otsuka K., Trolier-McKinstry S., Wun-Fogle M. Materials for smart systems II. Symposium proceedings of Materials Research Society. 1997.

71. Wetherhold R.C. and Panthalingal N. Piezoelectric PZT/expoxy composites for sensing and actuating torsional motion. Smart. Struct. mats, SPIE. 1993; 266-274.

72. Okazaki K. Developments in fabrication of piezoelectric ceramics Piezoelectricity. Taylor. Switzerland: Gordon and Breach Science Publishers. 1985.

73. Banno H. Recent developments of piezoelectric composites in Japan, in Advanced Ceramics, E.b.S. Saito. Editor. Oxford University Press. 1988.

74. Latour, M., Jolivet S., Rahmoune M., Lagarrigue O., Roure A. Piezopolymer transducers in the active control of vibrations. Proceedings of 8th International Symposium on Electrets. 1994; 985-990.

75. Furukawa T. Piezoelectricity and pyroelectricity in polymers. IEEE Transactions on Electrical Insulation. 1989; 24(3): 375—394.

76. Dias C.J. and Das-Gupta D.K. Inorganic ceramic/polymer ferroelectric composites electrets. IEEE transactions on dielectrics and electrical insulation. 1996; 3(5): 706-734.

77. Li Z., B. Dong, and D. Zhang, Influence of polarization on properties of 0–3 cement-based PZT composites. Cem. Con. Com. 2005; 27: 27-32.

78. Xing F., Dong B. and Li Z. Dielectric, piezoelectric, and elastic properties of cement-based piezoelectric ceramic composites. J. Am. Ceram. Soc. 2008; 91(9): 2886–2891.

79. Shifeng H., Chang J., Liu F., Lu L., Ye Z., Cheng X. Poling process and piezoelectric properties of lead zirconate titanate/sulphoaluminate cement composites. J. Mats. Sci. 2004; 39: 6975-6979.

80. Dong B. and Li Z. Cement-based piezoelectric ceramic smart composites. Comp. Sci. Tech. 2005; 65: 1363–1371.

81. Li Z. and Gonga H. Effects of Particle Size on the Piezoelectric Properties of 0-3 PZT/Cement Composites. Multis. Funct. Grad. Mats. 2006: 538-543.

82. Li Z., Gonga H. and Zhang Y. Fabrication and piezoelectricity of 0–3 cement based composite with nano-PZT powder. Curr. Appl. Phys. 2008;8: 1-4.

83. Shifeng H., Lu L., Chang J., Xu D., Liu F., Cheng X. Influence of ceramic particle size on piezoelectric properties of cement-based piezoelectric composites. Ferroelectrics. 2006; 332: 187-194.

84. Xin, C., Huang S., Chang J., Xu R., Liu F., Lu L. Piezoelectric and dielectric properties of piezoelectric ceramic–sulphoaluminate cement composites. J. Eur. Ceram. Soc. 2005; 25: 3223–3228.

85. Xin, C., Huang S., Chang J., Li Z. Piezoelectric, dielectric, and ferroelectric properties of 0–3 ceramic/cement composites. J. Appl. Phys. 2007; 101: 094110-6.

86. Shifeng, H., Li X., Liu F., Chang J., Xu D., Cheng X. Effect of carbon black on properties of 0–3 piezoelectric ceramic/cement composites. Curr. Appl. Phys. 2009; 9: 1191–1194.

87. Gong H., Zongjin L., Yujun Z., Runhua F.Piezoelectric and dielectric behavior of 0-3 cement-based composites mixed with carbon black. J. Eur. Ceram. Soc. 2009; 29: 2013–2019.

88. Hong S., Woo J., Shin H., Jeon J. U., Pak Y. E., Colla E. L., Setter N., Kim E., No K. Principle of ferroelectric domain imaging using atomic force microscope. J. Appl. Phys. 2001; 89: 1377.

89. Chu M.W., Szafraniak I., Scholz R., HarnageaC., Hesse D., Alexe M., Gosele U. Impact of misfit dislocations on the polarization instability of epitaxial nanostructured ferroelectric perovskites. Nature. mats. 2004; 3; 87-90.

90. Zeng, H.R., Yu H.F.,Hui S.X., Chu R.Q., Li G.R., Luo H.S., Yin Q.R. Local elasticity imaging of ferroelectric domains in $Pb(Mg_{1/3} Nb_{2/3})O_3$ $PbTiO_3$ single crystals by low-frequency atomic force acoustic microscopy. Solid. State. Commu. 2005; 133: 521-525.

91. Zeng H.R., Yu H.F., Hui S.X., Li G.R., Luo H.S., Yin Q.R. Depth profile dependence of domain configuration variations in $Pb(Mg_{1/3} Nb_{2/3})O_3$-$PbTiO_3$ single crystals. Mats. Sci. Eng. B: Solid-State Materials for Advanced Technology. 2006; 127(1): 58-61.

92. Chaipanich A. Effect of PZT particle size on dielectric and piezoelectric properties of PZT–cement composites. Curr. Appl. Phys. 2007.

93. Yimnirun R., Wongsaenmai S., Ananta S. and Laosiritaworn Y. Stress-dependent scaling behavior of dynamic hysteresis in bulk soft ferroelectric ceramics. Appl. Phys. Letts. 2006; 89(24): 242901-3.

94. Yimnirun R., Wongdamnern N., Triamnak N., Unruan M., Ngamjarurojana A., Ananta S., Laosiritaworn Y. Stress-dependent scaling behavior of subcoercive field dynamic ferroelectric hysteresis in $Pb(Zn_{1/3}\ Nb_{2/3})O_3$-modified $Pb(Zr_{1/2}\ Ti_{1/2})O_3$ ceramic. J. Appl. Phys. 2008; 103(8):08105-3.

95. Yimnirun R., Wongdamnern N., Triamnak N., Unruan M., Ngamjarurojana A., Ananta S., Laosiritaworn Y. Power-law scaling of sub-coercive field dynamic hysteresis response in $0.7Pb(Zr_{1/2}\ Ti_{1/2})O_3–0.3Pb(Zn_{1/3}\ Nb_{2/3})O_3$ ceramic. J. Phys. D: Appl. Phys. 2008; 41(20): 205415-1.

96. Liu, J.-M., Chan H. L. W., Choy C. L., Zhu Y. Y., Zhu S. N., Liu Z. G., Ming N. B. Scaling on hysteresis dispersion in ferroelectric systems. Appl. Phys. Lett. 2001; 79(2): 236-238.

97. Yimnirun R., Ananta S., Laosiritaworn Y., Ngamjarurojana A., Wongsaenmai S. Scaling behavior of dynamic ferroelectric hysteresis in soft PZT ceramic: Stress Dependence Ferroelectrics. 2007; 358(3-11): 885-893.

98. Yimnirun R., Laosiritaworn Y., Wongsaenmai S., Ananta S. Scaling behavior of dynamic hysteresis in soft lead zirconate titanate bulk ceramics. Appl. Phys. Letts. 2006; 89(16): 162901-3.

99. Jaitanong N., Chaipanich A. and Tunkasiri T. Properties 0-3 PZT-Portland cement composites. Ceram. Inter. 2008. 34: 793-795.

100. Mindess S., Skalny J. and Struble L. A review of the cement-aggregate bond. Cement. Concrete. Res. 1980; 10(2): 277-286.

101. Diamond S. Hydraulic cement pastes: their structure and properties. Proc. Conf. held at Tapton Hall. 1976.

102. Kalinin, S.V., Rodriguez B.J., Kim S-H., Hong S-K., Gruverman A., Eliseev E.A. Imaging mechanism of piezoresponse force microscopy in capacitor structures. Appl. Phys. Letts. 2008; 92: 152906-3.

103. Morozovska A.N., Eliseev E.A., Bravina S.L., Kalinin S.V. Resolution-function theory in piezoresponse force microscopy: Wall imaging, spectroscopy, and lateral resolution. Physical. Review. B. 2007; 75: 174109-18.

104. Dang Z.M., Fan L.Z. and Shen Y. Study on dielectric behavior of a three-phase CF/(PVDF + $BaTiO_3$) composite. Chem. Phys. Lett. 2003; 369: 95–100.

105. Gong H., Zongjin L., Yujun ., Runhua F. Piezoelectric and dielectric behavior of 0-3 cement-based composites mixed with carbon black. J. Eur. Ceram. Soc. 2009; 29: 2013–2019.

106. Bunde A., Dieterich W. Percolation in Composites. J. Electroceramics. 2000; 5: 81-92.

107. Guan Z.D., Zhang Z.T. and Jiao J.S. Physical properties of inorganic materials. Tsinghua University Press. Beijing. 1995; 353–356.

108. Okabe Y., Kyu T., Saito H., Inoue T. Spiral crystal growth in blends of poly(vinylidene fluoride) and Poly(vinyl acetate). Macromolecules. 1998; 31: 5823-5829.

109. Wang T.T. and Nishi T. Bell Laboratories. Vol. 10. New Jersey: Murray Hill. 1977.

110. Gu X., Sung L., Ho D.L., Michaels C.A., Nguyen T. Surface and Interface Properties of PVDF/Acrylic Copolymer Blends Before and After UV exposure. in FSCT•ICE Proceedings of the 80th Annual Meeting Technical Program. New Orleans, LA. 2002.

111. Papadaki V.G., Pedersen E.J. and Lindgreen H. An AFM-SEM Investigation of the effect of silica fume and fly ash on cement paste microstructure. J. Mats. Sci. 1999; 34(4): 683-690.

112. Gruverman A., Auciello O., Tokumoto H. Imaging and control of domain structures in thin films via scanning force microscopy. Annu. Rev. Mater. Sci. 1998; 28: 101-23.

113. Abplanalp M., Fousek J. and Günter P. Higher Order Ferroic Switching Induced by Scanning Force Microscopy. Physical. Review. letters. 2001; 86(25): 5799-5802.

114. Maso J.C. On Chemistry of cement. Editions Septima Cong. Paris. 1980.

115. Madeswaran S., Rajasekaran S.V., Jayavel R., Ganesamoorthy S., Behr G. Domain structure studies on $Pb(Zn_{1/3}Nb_{2/3})O_3$–$PbTiO_3$ mixed crystal system. Mats. Sci. Eng B., 2005; 120:32-36.