"You will find it a very good practice always to verify your references".

***Martin Joseph Routh** (1755–1854), British scholar.*

REFERENCES

1. **T. Horváth and I. Berta,** *"Static Elimination"*, John Wiley & Sons Ltd., **1982**, Great Britain.

2. **N. Drake,** *"Polymeric Materials for Electrostatic Applications"*, Rapra Technology Limited, **1996**, UK.

3. **A. Marquez, J. Uribe and R. Cruz,** *"Conductivity Variation Induced by Solvent Swelling of an Elastomer-Carbon Black-Graphite Composite"*, Journal of Applied Polymer Science, **1997**, Vol. 66, pp. 2221-2232.

4. **J.A. Uribe-Calderón,** *"Obtención de un Compuesto Conductor Sensible a Disolventes Orgánicos"*, BSc. Thesis, **1995**, Facultad de Ingeniería Química, Universidad Autónoma de Yucatán, Merida, Mexico.

5. **A.G. MacDiarmid,** *"The Polyanilines: A Novel Class of Conducting Polymers"*, IN: Conjugated Polymers and Related Materials, W.R. Salaneck et al., editors, Oxford University Press, Great Britain, **1993**, pp. 73-98.

6. **E.M. Conwell,** *"Transport in Trans-Polyacetylene"*, IEEE Transactions on Electrical Insulation, **1987**, Vol. 22, No. 5, pp. 591-627.

7. **A.J. Heeger, S.A. Kivelson, J.R. Schrieffer and W.P. Su,** *"Solitons in Conducting Polymers"*, Reviews of Modern Physics, **1988**, Vol. 60, No. 3, pp. 781-850.

8. **J.M. Ginder and A.J. Epstein**, *"Role of Ring Torsion Angle in Polyaniline – Electronic Structure and Defect States"*, Physical Review B, **1990**, Vol. 41, No. 15, pp. 10674-10685.

9. **J. Libert, J.L. Brédas and A.J. Epstein**, *"Theoretical Study of p-Type and n-Type Doping of the Leucoemeraldine Base Form of Polyaniline – Evolution of the Geometric and Electronic Structure"*, Physical Review B, **1995**, Vol. 51, No. 9, pp. 5711-5724.

10. **L.M. Gan, C.H. Chew, H.S.O. Chan and L. Ma,** *"Preparation of Polyaniline Particles in an Inverse Microemulsion"*, Polymer Bulletin, **1993**, Vol. 31, pp. 347-350.

11. **S.Y. Oh, H.C. Koh, J.W. Choi, H.W. Rhee and H.S. Kim,** *"Preparation and Properties of Electrically Conductive Polyaniline-Polystyrene Composites by in-situ Polymerization and Blending"*, Polymer Journal, **1997**, Vol. 29, No. 5, pp. 404-409.

12. **A. Andreatta and P. Smith,** *"Processing of Conductive Polyaniline-UHMW Polyethylene Blends from Solutions in Non-Polar Solvents"*, Synthetic Metals, **1993**, Vol. 55-57, pp. 1017-1022.

13. **R.K. Paul and C.K.S. Pillai,** *"Melt/Solution Processable Conducting Polyaniline with Novel Sulfonic Acid Dopants and its Thermoplastic Blends"*, Synthetic Metals, **2000**, Vol. 114, pp. 27-35.

14. **O.T. Ikkala, J. Laakso, K. Väkiparta, E. Virtanen, H. Ruohonen, H. Järvinen, T. Taka, P. Passiniemi, J.E. Österholm, Y. Cao, A. Andreatta, P. Smith and A.J. Heeger,** *"Counterion Induced Processibility of Polyaniline – Conducting Melt Processible Polymer Blends"*, Synthetic Metals, **1995**, Vol. 69, No. 1-3, pp. 97-100.

15. **J.E. Frommer and R.R. Chance,** *"Electrically Conductive Polymers"*, IN: Encyclopedia of Polymer Science and Engineering, Vol. 5, H.F. Mark et al., editors, John Wiley and Sons, Inc., USA, **1986**, pp. 462-507.

16. **Y. Cao, G.M. Treacy, P. Smith and A.J. Heeger,** *"Optical-Quality Transparent Conductive Polyaniline Films"*, Synthetic Metals, **1993**, Vol. 55-57, pp. 3526-3531.

17. **C. DeArmitt and S.P. Armes,** *"Colloidal Dispersions of Surfactant-Stabilized Polypyrrole Particles"*, Langmuir, **1993**, Vol.9, pp. 652-654.

18. **B.R. Mattes, H.L. Wang, D. Yang, Y.T. Zhu, W.R. Blumenthal and M.F. Hundley,** *"Formation of Conductive Polyaniline Fibers Derived from Highly Concentrated Emeraldine Base Solutions"*, Synthetic Metals, **1997**, Vol. 84, pp. 45-49.

19. **A.P. Chacko, S.S. Hardaker R.V. Gregory, and R.J. Samuels,** *"Viscoelastic Characterization of Concentrated Polyaniline Solutions: New Insights into*

Conductive Polymer Processing", Synthetic Metals, **1997**, Vol. 84 No. 1-3, pp. 41-44.

20. **Y. Haba, E. Segal, M. Narkis, G.I. Titelman and A. Siegmann,** *"Polyaniline-DBSA/Polymer Blends Prepared Via Aqueous Dispersions"*, Synthetic Metals, **2000**, Vol. 110, pp. 189-193.

21. **M. Zilberman, G.I. Titelman, A. Siegmann, Y. Haba, M. Narkis and D. Alperstein,** *"Conductive Blends of Thermally Dodecylbenzene Sulfonic Acid-Doped Polyaniline with Thermoplastic Polymers"*, Journal of Applied Polymer Science, **1997**, Vol. 66, pp. 243-253.

22. **L.W. Shacklette, C.C. Han, and M.H. Luly**, *"Polyaniline Blends in Thermoplastics"*, Synthetic Metals, **1993**, Vol. 55-57, pp. 3532-3537.

23. **M. Zilberman, A. Siegmann and M. Narkis,** *"Melt-Processed Electrically Conductive Polymer/Polyaniline Blends"*, Journal of Macromolecular Science-Physics part B, **1998**, Vol. B37, No. 3, pp. 301-318.

24. **R.H. Cruz-Estrada and M.J. Folkes,** *"In-situ Production of Electrically Conductive Fibres in Polyaniline-SBS Blends"*, Journal of Materials Science, **2000**, Vol. 35 No. 20, pp. 5065-5069.

25. **A.J. Epstein,** *"Electrical Conductivity in Conjugated Polymers"*, IN: Conductive Polymers and Plastics in Industrial Applications, L. Rupprecht, editor, Plastics Design Library, USA, **1999**, pp. 1-9.

26. **R.S. Kohlman and A.J. Epstein,** *"Insulator-Metal Transitions and Inhomogeneous Metallic State in Conducting Polymers"*, IN: Handbook of Conducting Polymers, 2nd Edition, T.A. Skotheim et al., editors, MARCEL DEKKER, INC., New York, **1998**, pp. 85-121.

27. **E. Dalas,** *"Reparation of Dry Cells Using Polypyrrole and Polyaniline Composites"*, Journal of Materials Science, **1992**, Vol. 27, No. 2, pp. 453-457.

28. **E. Virtanen, J. Laakso, H. Ruohonen, K. Väkiparta, H. Järvinen, M. Jussila, P. Passiniemi and J.E. Österholm,** *"Electrically Conductive Compositions Based on Processible Polyanilines -PANIPOL™"*, Synthetic Metals. **1997**, Vol. 84, pp. 113-114.

29. **J. Anand, S. Palaniappan and D.N. Sathyanarayana,** *"Conducting Polyaniline Blends and Composites"*, Progress in Polymer Science, **1998**, Vol. 23, pp. 993-1018.

30. **E. Harlev, T. Gulakhmedova, I. Rubinovich and G. Aizenshtein,** *"A New Method for the Preparation of Conductive Polyaniline Solutions: Application to Liquid Crystal Devices"*, Advanced Materials, **1996**, Vol. 8, No. 12, pp. 994-997.

31. **C.Y. Wu and A. Benatar,** *"Microwave Welding of High Density Polyethylene Using Intrinsically Conductive Polyaniline"*, Polymer Engineering and Science, **1997**, Vol. 37, No. 4, pp. 738-743.

32. **L. Olmedo, P. Hourquebie and F. Jousse,** *"Microwave Properties of Conductive Polymers"*, Synthetic Metals, **1995**, Vol. 69, pp. 205-208.

33. **S.J. Dahman,** *"The Effect of Co-Dopants on the Processability of Intrinsically Conducting Polymers"*, Polymer Engineering and Science, **1999**, Vol. 39, No.11, pp. 2181-2188.

34. **J.P. Pouget, Z. Oblakowski, Y. Nogami, P.A. Albouy, M. Laridjani, E.J. Oh, Y. Min, A.G. MacDiarmid, J. Tsukamuto, T. Ishiguro and A.J. Epstein,** *"Recent Structural Investigations of Metallic Polymers"*, Synthetic Metals, **1994**, Vol. 65, No. 2-3, pp. 131-140.

35. **J.L. Brédas, J. Cornil, F. Meyers and D. Beljonne,** *"Electronic Structure and Optical Response of Highly Conducting and Semiconducting Conjugated Polymers and Oligomers"*, IN: Handbook of Conducting Polymers, 2nd Edition, T.A. Skotheim et al., editors, MARCEL DEKKER, INC., New York, **1998**, pp. 1-25.

36. **M.J. Rice,** *"Charged Π-Phase Kinks in Lightly Doped Polyacetylene"*, Physics Letters, **1979**, Vol. 71A, No. 1, pp. 152-154.

37. **D.K. Campbell and A.R. Bishop,** *"Solitons in Polyacetylene and Relativistic-Field-Theory Models"*, Physical Review B, **1981**, Vol. 24, No. 8, pp. 4859-4862.

38. **S. Stafstrom, J.L. Brédas, A.J. Epstein, H.S. Woo, D.B. Tanner, W.S. Huang and A.G. MacDiarmid,** *"Polaron Lattice in Highly Conducting Polyaniline –*

Theoretical and Optical Studies", Physical Review Letters, **1987**, Vol. 59, No. 13, pp. 1464-1467.

39. **J.L. Brédas, B. Thémans, J.G. Fripiat, J.M. Andréh and R.R. Chance,** *"Highly Conducting Polyparaphenylene, Polypyrrole, and Polythiophene Chains – An Abinitio Study of the Geometry and Electronic Structure Modifications upon Doping"*, Physical Review B, **1984**, Vol. 9, No. 12, pp. 6761-6773.

40. **F. Genoud, M. Guglielmi, M. Nechtschein, E. Genies and M. Salmon,** *"Electron-Spin-Resonance Study of Electrochemical Doping in the Conducting Polymer Polypyrrole"*, Physical Review Letters, **1985**, Vol. 55, No. 1, pp. 118-121.

41. **H. Shirakawa, E.J. Louis, A.G. MacDiarmid, C.K. Chiang and A.J. Heeger,** *"Synthesis of Electrically Conducting Polymers: Halogen Derivatives of Polyacetylene, $(CH)_x$"*, Journal of the Chemical Society. Chemical Communications, 17th August **1977**, No. 16, pp. 578-580.

42. **C.K. Chiang, C.R. Fincher, Jr., Y.W. Park, A.J. Heeger, H. Shirakawa, E.J. Louis, S.C. Gau and A.G. MacDiarmid,** *"Electrical Conductivity in Doped Polyacetylene"*, Physical Review Letters, **1977**, Vol. 39, No. 17, pp. 1098-1101.

43. **D.M. Ivory, G.G. Miller, J.M. Sowa, L.W. Shacklette, R.R. Chance and R.H. Baughman,** *"Highly Conducting Charge-Transfer Complexes of Poly(p-Phenylene)"*, Journal of Chemical Physics, **1979**, Vol. 71, No. 3, pp. 1506-1507.

44. **R.R. Chance, L.W. Shacklette, G.G. Miller, D.M. Ivory, J.M. Sowa, R.L. Elsenbaumer and R.H. Baughman,** *"Highly Conducting Charge-Transfer Complexes of a Processible Polymer; Poly(p-Phenylene Sulphide)"*, Journal of the Chemical Society. Chemical Communications, **1980**, No. 8, pp. 348-349.

45. **K.K. Kanazawa, A.F. Diaz, R.H. Geiss, W.D. Gill, J.F. Kwak, J.A. Logan, J.F. Rabolt and G.B. Street,** *"Organic Metals: Polypyrrole, a Stable Synthetic Metallic Polymer"*, Journal of the Chemical Society. Chemical Communications, 4th October **1979**, No. 19, pp. 854-855.

46. **J.L. Brédas, R.L. Elsenbaumer, R.R. Chance and R. Silbey,** *"Electronic Properties of Sulfur Containing Conjugated Polymers"*, Journal of Chemical Physics, **1983**, Vol. 78, No. 9, pp. 5656-5662.

47. **T. Ohsaka, Y. Ohnuki, N. Oyama, G. Katagiri and K. Kamisako,** *"IR Absorption Spectroscopic Identification of Electroactive and Electroinactive Polyaniline Films Prepared by the Electrochemical Polymerization of Aniline"*, Journal of Electroanalytical Chemistry, **1984**, Vol. 161, No. 2, pp. 399-405.

48. **F. Lux,** *"Properties of Electronically Conductive Polyaniline: A Comparison Between Well-Known Literature Data and Some Recent Experimental Findings"*, Polymer, **1994**, Vol. 35, No. 14, pp. 2915-2936.

49. **J.C. Chiang and A.G. MacDiarmid,** *"Polyaniline-Protonic Acid Doping of the Emeraldine Form to the Metallic Regime"*, Synthetic Metals, **1986**, Vol. 13, No. 1-3, pp. 193-205.

50. **V.G. Kulkarni, L.D. Campbell and W.R. Mathew,** *"Thermal-Stability of Polyaniline"*, Synthetic Metals, **1989,** Vol. 30, No. 3, pp. 321-325.

51. **M. Reghu, Y. Cao, D. Moses and A.J. Heeger,** *"Metal-Insulator-Transition in Polyaniline Doped with Surfactant Counterion"*, Synthetic Metals, **1993,** Vol. 57, No. 2-3, pp. 5020-5025.

52. **A.G. MacDiarmid, J.C. Chiang, A.F. Richter and A.J. Epstein,** *"Polyaniline-A new Concept in Conducting Polymers"*, Synthetic Metals, **1987**, Vol. 18, No. 1-3, pp. 285-290.

53. **W.P. Hsu and K.S. Ho,** *"Solvent Diffusion in a Modified Polyaniline"*, Journal of Applied Polymer Science, **1997**, Vol. 66, pp. 2095-2101.

54. **F. Lux, G. Hinrichsen and M.M. Pohl,** *"TEM Evidence for the Existence of Conducting Islands in Highly Conductive Polyaniline"*, Journal of Polymer Science: Part B, **1994**, Vol. 32, pp. 1957-1959.

55. **F. Lux, G. Hinrichsen, V.I. Krinichnyl, I.B. Nazarova, S.D. Cheremisow and M.M. Pohl,** *"Conducting Islands Concept for Highly Conductive Polyaniline - Recent Results of TEM, X-Ray Diffraction, EPR, D.C. Conductivity and Magnetic Susceptibility Measurements"*, Synthetic Metals, **1993**, Vol. 55-57, pp. 347-352.

56. **P. Beadle, S.P. Armes, S. Gottesfeld, C. Mombourquette, R. Houlton, W.D. Andrews and S.F. Agnew,** *"Electrically Conductive Polyaniline-Copolymer Latex Composites"*, Macromolecules, **1992**, Vol. 25, pp. 2526-2530.

57. **V. Jousseaume, M. Morsli, A. Bonnet, O. Tesson and S. Lefrant**, *"Electrical Properties of Polyaniline-Polystyrene Blends Above the Percolation Threshold"*, Journal of Applied Polymer Science, **1998**, Vol. 67, pp. 1205-1208.

58. **A. Andreatta, Y. Cao, J.C. Chiang, A.J. Heeger and P. Smith,** *"Electrically-Conductive Fibres of Polyaniline Spun from Solutions in Concentrated Sulfuric-Acid"*, Synthetic Metals, **1988**, Vol. 26, No. 4, pp. 383-389.

59. **M. Angelopoulos, A. Ray, A.G. MacDiarmid and A.J. Epstein,** *"Polyaniline - Processability from Aqueous-Solutions and Effect of Water-Vapor on Conductivity"*, Synthetic Metals, **1987**, Vol. 21, No. 1, pp. 21-30.

60. **M. Angelopoulos, G.E. Asturias, S.P. Ermer, A. Ray, E.M. Scherr, A.G., MacDiarmid, M.A. Akhtar, Z. Kiss and A.J. Epstein,** *"Polyaniline - Solutions, Films and Oxidation-State"*, Molecular Crystals and Liquid Crystals, **1988**, Vol. 160, pp. 151-163.

61. **S.P. Armes**, *"Electrically Conducting Polymer Colloids"*, Polymer News, **1995**, Vol. 20, pp. 233-237.

62. **P. Banerjee and B.M. Mandal,** *"Conducting Polyaniline Nanoparticle Blends with Extremely Low Percolation Thresholds"*, Macromolecules, **1995**, Vol. 28, pp. 3940-3943.

63. **S.A. Chen and W.G. Fang,** *"Electrically Conductive Polyaniline-Poly(vinyl alcohol) Composite Films: Physical Properties and Morphological Structures"*, Macromolecules, **1991**, Vol. 24, pp. 1242-1248.

64. **Y. Cao, P. Smith and A.J. Heeger,** *"Counterion Induced Processability of Conducting Polyaniline"*, Synthetic Metals, **1993,** Vol. 57, No. 1, pp. 3514-3519.

65. **T. Vikki, L.O. Pietilä, H. Österholm, L. Ahjopalo, A. Takala, A. Toivo, K. Levon, P. Passiniemi and O. Ikkala,** *"Molecular Recognition Solvents for Electrically Conductive Polyaniline"***,** Macromolecules, **1996**, Vol. 29, pp. 2945-2953.

66. **S.J. Davies, T.G. Ryan, C.J. Wilde and G. Beyer**, *"Processable Forms of Conductive Polyaniline"*, Synthetic Metals, **1995**, Vol. 69, pp. 209-210.

67. **Y. Wei, J.M. Yeh, D. Jin, X. Jia, J. Wang, G.W. Jang, C. Chen and R.W. Gumbs,** *"Composites of Electronically Conductive Polyaniline with Polyacrylate-Silica Hybrid Sol-Gel Materials"*, Chemistry of Materials, **1995**, Vol. 7, No. 5, pp. 969-974.

68. **V. Jousseaume, M. Morsli, A. Bonnet and S. Lefrant,** *"X-Ray Photoelectron Spectroscopy of Conducting Polyaniline-Polystyrene Blends"*, Journal of Applied Polymer Science, **1998**, Vol. 67, pp. 1209-1214.

69. **W. Luzny, T. Kaniowski and A. Pron,** *"Structural and Transport Properties of Thermally Processable Conducting Polymer: Polyaniline Protonated with Diphenyl Phosphate"*, Polymer, **1998**, Vol. 39, No. 2, 475-483.

70. **T.L. Porter, D. Thompson and M. Bradley,** *"Scanning Force Microscope Studies of Langmuir-Blodgett Polyaniline Thin Films"*, Thin Solid Films, **1996**, Vol. 288, pp. 268-271.

71. **M. Jussila**, *"Proprietary Information on Neste PANIPOL™"*, 23rd October **1997,** Neste Oy Chemicals, Technology Centre, P.O. Box 310, FIN-06101 Porvoo, Finland.

72. **K. Levon, K.H. Ho, W.Y. Zheng, J. Laakso, T. Kärnä, T. Taka and J.E. Österholm,** *"Thermal Doping of Polyaniline with Dodecylbezene Sulfonic Acid without Auxiliary Solvents"*, Polymer, **1995**, Vol. 36, No. 14, pp. 2733-2738.

73. **A.J. Medalia,** *"Electrical Conduction in Carbon Black Composites"*, Rubber Chemical Technology, **1986**, Vol. 59, pp. 432-454.

74. **E.K. Sichel, J.I. Gittleman and P. Sheng,** *"Transport Properties of the Composite Material Carbon-Polyvinylchloride"*, Physical Review B, **1978**, Vol. 18, pp. 5712-5716.

75. **R.D. Sherman, L.M. Middleman and S.M. Jacobs,** *"Electron Transport Processes in Conductive Filled Composites"*, Polymer Engineering and Science, **1983**, Vol. 23, pp. 36-46.

76. **I. Balberg,** *"Tunnelling and Nonuniversal Conductivity in Composite Materials"*, Physical Review Letters, **1987**, Vol. 59, pp. 1305-1308.

77. *Encarta® World English Dictionary* © & (P) **1999, 2000** Microsoft Corporation. Developed for Microsoft by Bloomsbury Publishing Plc.

78. **S. Kirkpatrick**, *"Percolation and Conduction"*, Reviews of Modern Physics, **1973**, Vol. 45, No. 4, pp. 574-588.

79. **D. Stauffer and A. Aharony**, *"Introduction to Percolation Theory"*, 2nd edition, Taylor & Francis Ltd, UK, **1992**.

80. **D.S. McLachlan, M. Blaszkiewicz and R.E. Newnham**, *"Electrical Resistivity of Composites"*, Journal of the American Ceramic Society, **1990**, Vol. 73, No. 8, pp. 2187-2203.

81. **R. Zallen,** *"The Physics of Amorphous Solids"*, Chapter 4, Wiley, **1983,** New York.

82. **M. Weber and M.R. Kamal,** *"Estimation of the Volume Resistivity of Electrically Conductive Composites"*, Polymer Composites, **1997**, Vol. 18, No. 6, pp. 711-725.

83. **J. Kovácik,** *"Electrical Conductivity of Two-Phase Composite Material"*, Scripta Materialia, **1998**, Vol. 39, No. 2, pp. 153-157.

84. **R.E. Meredith and C.W. Tobias,** *"Conduction in Heterogeneous Systems"*, IN: Advances in Electrochemistry and Electrochemical Engineering, Vol. 2, C.W. Tobias, ed., Interscience, New York, **1962**, pp. 15-47.

85. **D.S. McLachlan,** *"An Equation for the Conductivity of Binary Mixtures with Anisotropic Grain Structures"*, Journal of Physics, part C: Solid State Physics, **1987**, Vol. 20, pp. 865-877.

86. **M. Blaszkiewicz, D.S. McLachlan and R.E. Newnham,** *"The Volume Fraction and Temperature Dependence of the Resistivity in Carbon Black and Graphite Polymer Composites: An Effective Media-Percolation Approach"*, Polymer Engineering and Science, **1992**, Vol. 32, No. 6, pp. 421-425.

87. **P.N. Sen, C. Scala and M.H. Cohen,** *"A Self-Similar Model for Sedimentary Rocks with an Application to the Dielectric Constant of Fused Glass Beads"*, Geophysics, **1981**, Vol. 46, pp. 781-795.

88. **R. Landauer,** *"Electrical Conductivity in In-homogenous Media"*, IN: Electrical Transport and Optical Properties of In-homogeneous Media, American Institute of Physics Conference Proceedings, No. 40, J.C. Garland et al., editors, American Institute of Physics, New York, **1978**, pp. 2-45.

89. **D.S. McLachlan,** *"Measurement and Analysis of a Model Dual-Conductivity Medium Using a Generalized Effective-Medium Theory"*, Journal of Physics, part C: Solid State Physics, **1988**, Vol. 21, pp. 1521-1532.

90. **F. Brouers,** *"Percolation Threshold and Conductivity in Metal-Insulator Composite Mean-Field Theories"*, Journal of Physics, part C: Solid State Physics, **1987**, Vol. 19, pp. 7183-7193.

91. **G.A. Niklasson and C.G. Granquist,** *"Optical Properties and Solar Selectivity of Coevaporated Co-Al_2O_3 Composite Films"*, Journal of Applied Physics, **1984**, Vol. 55, pp. 3382-3410.

92. **H. Ziebland,** *"The Thermal and Electrical Transmission Properties of Polymer Composites"*, IN: Polymer Engineering Composites, M.O.W. Richardson, editor, Applied Science Publishers LTD, Great Britain, **1977**, pp. 317-362.

93. **Z. Fan,** "A Microstructural Approach to the Effective Transport Properties of Multiphase Composites", Philosophical Magazine A, **1996**, Vol. 73, No. 6, pp. 1663-1684.

94. **S.N. Roberts and L.M. Schwartz,** *"Grain Consolidation and Electrical Conductivity in Porous Media"*, Physical Review part B, **1985,** Vol. 31, No. 9, pp. 5990-5997.

95. **A. Malliaris and D. T. Turner**, "Influence of Particle Size on the Electrical Resistivity of Compacted Mixtures of Polymeric and Metallic Powders", Journal of Applied Physics, **1971,** Vol. 42, No. 2, pp. 614-618.

96. **P. Kusy,** *"Influence of Particle Size Ratio on the Continuity of Aggregates"*, Journal of Applied Physics, **1977,** Vol. 48, No. 12, pp. 5301-5305.

97. **F.P. Gerstle Jr.,** *"Composites"*, IN: Encyclopedia of Polymer Science and Engineering, Vol. 3, H.F. Mark et al., editors, John Wiley & Sons, Inc., USA, **1985**, pp. 776-820.

98. **D. Hull,** *"An Introduction to Composite Materials"*, Cambridge University Press, **1981,** Cambridge.

99. **F.L. Matthews and R.D. Rawlings,** "Composite Materials: Engineering and Science", Chapman and Hall, **1994**, London.

100. **P.K. Mallick,** *"Fiber-Reinforced Composites: Materials, Manufacturing and Design"*, 2nd ed., Marcel Dekker, Inc., **1993**, New York.

101. **S.C. Steadman,** *"Fibre Forming Blends and In Situ Fibre Composites"*, IN: Polymer Blends and Alloys, M.J. Folkes et al., editors, Chapman & Hall, **1993**, Great Britain, pp. 228-255.

102. **F. Ehtaiatkar, M.J. Folkes, and S.C. Steadman,** *"In Situ Production of Polyethylene Fibres from Polymer Blends"*, Journal of Materials Science, **1989**, Vol. 24, pp. 2808-2814.

103. **M.J. Folkes and P.W. Reip,** *"SBS Block Copolymer-Polystyrene Blends: 1. Morphology and Swelling Properties"*, Polymer, **1986**, Vol. 27, pp. 377-383.

104. **T.S. Chung,** *"Properties and Morphology of Thermotroopic Polyester/Nylon 12 Blends"*, IN: Advances in Polymer Blends and Alloys Technology, Vol. 1, M.A. Kohudic, editor, Technomic Publishing Company, Inc., USA, **1988**, pp. 175-188.

105. **D.R. Paul, and S. Newman,** *"Polymer Blends"*, Vols. 1 and 2, Academic Press, **1978**, New York.

106. **C.D. Han,** *"Multiphase Flow in Polymer Processing*", Academic Press, **1981**, New York.

107. **A.J. McHugh,** *"Flow-Induced Crystallization from Solution: The Relative Effects of Extension and Shearing Flow Fields"*, Journal of Applied Polymer Science, **1975**, Vol. 19, No. 1, pp. 125-140.

108. **J. Lyngaae-Jørgensen,** *"Melt Flow Properties of Block Copolymers"*, IN: Processing, Structure and Properties of Block Copolymers, M.J. Folkes, editor, Elsevier Applied Science Publishers, **1985**, England, pp. 75-123.

109. **R.S. Porter and N.E. Weeks,** *"Mechanical Properties of Ultra-Oriented Polyethylene"*, Journal of Polymer Science, Polymer Physics Edition, **1974**, Vol. 12, No. 4, pp. 635-643.

110. **G. Capaccio and I.M. Ward,** *"Properties of Ultra-High Modulus Linear Polyethylenes"*, Nature (Physical Science), **1973**, Vol. 243, No. 130, p. 143.

111. **P.J. Lemstra and P. Smith,** *"Ultra-High-Strength Polyethylene Filaments by Solution Spinning/Drawing"*, Journal of Materials Science, **1980**, Vol. 15, No. 2, pp. 505-514.

112. **A Siegmann, M. Narkis, M. Puterman and A.T. Benedetto,** *"Glassy Polymer Solutions: Some Morphology-Property Relationships"*, Polymer, **1979**, Vol. 20, pp. 89-93.

113. **J.R. Joseph, J.L. Kardos and L.E. Nielesen,** *"Growth, Morphology, and Reinforcement Potential of Low Molecular Weight Crystals in Amorphous Polymeric Matrices"*, Journal of Applied Polymer Science, **1968**, Vol. 12, pp. 1151-1165.

114. **G. Kiss, A.J. Kovacs and J.C. Wittmann,** *"Insitu Polymerization in Binary Polymer-Monomer Mixtures - A Novel Route to Polymeric Composites"*, Journal of Applied Polymer Science, **1981**, Vol. 26, No. 8, pp. 2665-2677.

115. **R.H. Baughman, H. Gleiter and N.J. Sendfeld,** *"Deformation and Microstructure of Extended-Chain Polydiacetylene Crystals"*, Journal of Polymer Science, Polymer Physics Edition, **1975**, Vol. 13, No. 10, pp. 1871-1879.

116. **S.C. Wong, Y.W. Mai, and Y. Leng,** *"Fiber Reinforcement and Fracture Resistance of PC/PBT/LCP Ternary In Situ Composite"*, Polymer Engineering and Science, **1998**, Vol. 38, No. 1, pp. 156-168.

117. **H.J. O'Donnell, and D.G. Baird,** *" In Situ Reinforcement of Polypropylene with Liquid-Crystalline Polymers: Effect of Maleic Anhydride-Grafted Polypropylene"*, Polymer, **1995**, Vol. 36, No. 16, pp. 3113-3126.

118. **S. Bastida, J.I. Eguiazábal and J. Nazábal,** *"Liquid-Crystal Polymer Fiber Production and Reinforcing in Ribbons of Poly(Ether Imide)/Vectra-B Blends",* Polymer Composites, **1996**, Vol. 17, No. 6, pp. 919-925.

119. **L. Pan and B. Liang,** *"A Comparative Study of In-Situ Composite Fibers Reinforced with Different Rigid Liquid Crystalline Polymers",* Journal of Applied Polymer Science, **1998**, Vol. 70, pp. 1035-1045.

120. **M.F. Boyaud, P. Cassagnau, A. Michel, M. Bousmina and A. Aït-Kadi,** *"Transient Elongational Properties of an In Situ Generated Polymer/Polymer Composite",* Polymer Engineering and Science, **2001**, Vol. 41, No. 4, pp. 684-695.

121. **P. Passiniemi, J. Laakso, H. Österholm and M. Pohl,** *"TEM and WAXS Characterization of Polyaniline/PP Fibers",* Synthetic Metals, **1997**, Vol. 84, No. 1-3, pp. 775-776.

122. **S.Y. Lee and S.C. Kim,** *"Laminar Morphology Development and Oxygen Permeability of LDPE/EVOH Blends",* Polymer Engineering and Science, **1997**, Vol. 37, No. 2, pp. 463-475.

123. **L.A. Utracki and Z.H. Shi,** *"Development of Polymer Blend Morphology During Compounding in a Twin-Screw Extruder. Part I: Droplet Dispersion and Coalescence-A review",* Polymer Engineering and Science, **1992**, Vol. 32, No. 24, pp. 1824-1833.

124. **S. Wu,** *"Formation of Dispersed Phase in Incompatible Polymer Blends: Interfacial and Rheological Effects",* Polymer Engineering and Science, **1987**, Vol. 27, No. 5, pp. 335-343.

125. **B.D. Favis,** *"Factors Influencing the Morphology of Immiscible Polymer Blends in Melt Processing",* IN: Polymer Blends, Vol. 1, D.R. Paul et al., editors, John Wiley & Sons, Inc., **2000**, USA, pp. 501-537.

126. **J. Lyngaae-Jørgensen,** *"Rheology of Polymer Blends",* IN: Polymer Blends and Alloys, M.J. Folkes et al., editors, Chapman & Hall, **1993**, Great Britain, pp. 75-102.

127. **H.P. Grace,** *"Dispersion Phenomena in High-Viscosity Immiscible Fluid Systems and Application of Static Mixers as Dispersion Devices in such Systems"*, Chemical Engineering Communications, **1982**, Vol. 14, No. 3-6, pp. 225-277.

128. **B.D. Favis and J.P. Chalifoux**, *"The Effect of Viscosity ratio on the Morphology of Polypropylene Polycarbonate Blends during Processing"*, Polymer Engineering and Science, **1987**, Vol. 27, No. 21, pp. 1591-1600.

129. **B.D. Favis and D. Therrien,** *"Factors Influencing Structure Formation and Phase Size in an Immiscible Polymer Blend of Polycarbonate and Polypropylene Prepared by Twin-Screw Extrusion"*, Polymer, **1991**, Vol. 32, No. 8, pp. 1474-1481.

130. **P.H.M. Elemans, J.M.H. Janssen and H.E.H. Meijer,** *"The Measurement of Interfacial-Tension in Polymer-Polymer Systems - The Breaking Thread Method"*, Journal of Rheology, **1990**, Vol. 34, No. 8, pp. 1311-1325.

131. **M.A. Huneault, Z.H. Shi and L.A. Utracki,** *"Development of Polymer Blend Morphology during Compounding in a Twin-Screw Extruder .4. A New Computational Model with Coalescence"*, Polymer Engineering and Science, **1995**, Vol. 35, No. 1, pp. 115-127.

132. **J. Kang, T.G. Smith and D.I. Bigio,** *"Study of Breakup Mechanisms in Cavity Flow"*, AIChE Journal, **1996**, Vol. 42, No. 3, pp. 649-659.

133. **K. Min, J.L. White and J.F. Fellers,** *"High-Density Polyethylene Polystyrene Blends - Phase Distribution Morphology, Rheological Measurements, Extrusion, and Melt Spinning Behavior"*, Journal of Applied Polymer Science, **1984**, Vol. 29, No. 6, pp. 2117-2142.

134. **R. Gonzalez-Nunez, D. DeKee and B.D. Favis,** *"The Influence of Coalescence on the Morphology of the Minor Phase in Melt-Drawn Polyamide-6/HDPE Blends"*, Polymer, **1996**, Vol. 37, No. 21, pp. 4689-4693.

135. **J.M. Willis, V. Caldas and B.D. Favis,** *"Processing Morphology Relationships of Compatibilized Polyolefin Polyamide Blends .2. The Emulsifying Effect of an Ionomer Compatibilizer as a Function of Blend Composition and Viscosity Ratio"*, Journal of Materials Science, **1991**, Vol. 26, No. 17, pp. 4742-4750.

136. **J.M. Willis and B.D. Favis,** *"Processing-Morphology Relationships of Compatibilized Polyolefin Polyamide Blends .1. The Effect of an Ionomer Compatibilizer on Blend Morphology"*, Polymer Engineering and Science, **1988**, Vol. 28, No. 21, pp. 1416-1426.

137. **G. Serpe, J. Jarrin and F. Dawans,** *"Morphology-Processing Relationships in Polyethylene-Polyamide Blends"*, Polymer Engineering and Science, **1990**, Vol. 30, No. 9, pp. 553-565.

138. **P. Cigana, B.D. Favis, and R. Jérôme,** *"Diblock Copolymers as Emulsifying Agents in Polymer Blends: Influence of Molecular Weight, Architecture, and Chemical Composition"*, Journal of Polymer Science, Part B-Polymer Physics, **1996**, Vol. 34, No. 9, pp. 1691-1700.

139. **R. Fayt, R. Jérôme and Ph. Teyssié,** *"Characterization and Control of Interfaces in Emulsified Incompatible Polymer Blends"*, Polymer Engineering and Science, **1987**, Vol. 27, No. 5, pp. 328-334.

140. **M.V. Tsebrenko, A.V. Yudin, T.I. Ablazova and G.V. Vinogradof,** *"Mechanism of Fibrillation in the Flow of Molten Polymer Mixtures"*, Polymer, **1976**, Vol. 17, No. 9, pp. 831-834.

141. **V. E. Dreval, G.V. Vinogradof, E.P. Plotnikova, M.P. Zabugina, N.P. Plotnikova, E.V. Kotova and Z. Pelzbauer,** *"Deformation of Melts of Mixtures of Incompatible Polymers in a Uniform Shear Field and the Process of their Fibrillation"*, Rheologica Acta, **1983**, Vol. 22, No. 1, pp. 102-107.

142. **R. Gonzalez-Nunez, C.F. Chan Man Fong, B.D. Favis and D. DeKee,** *"Deformation of Drops in Extensional Viscoelastic Flow"*, Journal of Applied Polymer Science, **1996**, Vol. 62, No. 10, pp. 1627-1634.

143. **I. Delaby, B. Ernst, D. Froelich and R. Muller,** *"Droplet Deformation in Immiscible Polymer Blends during Transient Uniaxial Elongational Flow"*, Polymer Engineering and Science, **1996**, Vol. 36, No. 12, pp. 1627-1635.

144. **F.P. LaMantia, A. Valenza, M. Paci and P.L. Magagnini,** *"Rheology-Morphology Relationships in Nylon-6 Liquid-Crystalline Polymer Blends"*, Polymer Engineering and Science, **1990**, Vol. 30, No. 1, pp. 7-12.

145. **N. Chapleau and B.D. Favis,** *"Droplet Fiber Transitions in Immiscible Polymer Blends Generated during Melt Processing"*, Journal of Materials Science, **1995**, Vol. 30, No. 1, pp. 142-150.

146. **J.E. Etches,** *"The Use of an Electrically Conductive Polymer in an In-Situ Fibre Production Process"*, **1998**, BSc Dissertation Project, Brunel University, UK.

147. **R.D.C. Callister,** *"The In-Situ Manufacture of a Metal-Loaded, Anisotropically Conductive Adhesive"*, **1998**, PhD Thesis, Brunel University, UK.

148. **M.J. Hollaway,** *"Electrically Conducting Composites Formed from Polymer Blends"*, **1992**, PhD Thesis, Brunel University, UK.

149. **S.C. Steadman,** *"The In-Situ Production of Polyethylene Fibres form Polymer Blends"*, **1990**, PhD Thesis, Brunel University, UK.

150. **J.P. Yang, P. Rannou, J. Planès, A. Pron and M. Nechtschein,** *"Preparation of Low Density Polyethylene-Based Polyaniline Conducting Polymer Composites with Low Percolation Threshold Via Extrusion"*, Synthetic Metals, **1998**, Vol. 93, No. 3, pp. 169-173.

151. **M. Jussila**, *"Communication on PANIPOL™ Polyaniline Complexes"*, 16th December **1998,** Telefax from PANIPOL OY, P.O.B. 163, FIN-06101, Porvoo, Finland.

152. KRATON™ Polymers Europe/Africa, *"KRATON™ D-1102CU Polymer Data Document"*, September **2000**, www.kraton.com (accessed on 07/02/01).

153. **M.J. Folkes, and A. Keller,** *"Morphology of Block Copolymers and Its Consequences"*, Reprint from Block and Graft Copolymers, Syracuse University Press, N.Y., **1973**, pp. 87-103.

154. **M.J. Folkes, A. Keller and F.P. Scalisi,** *"An Extrusion Technique for the Preparation of Single-Crystals of Block Copolymers"*, Kolloid-Z. u. Z. Polymere, **1973**, Vol. 251, pp. 1-4.

155. *"Polymer Data Handbook"*, J.E. Mark, ed., Oxford University Press, USA, **1999**.

156. *"The Plastics Compendium, Key Properties and Sources"*, M.C. Hough and R. Dolbey, eds., Vol. 1, Rapra Technology Ltd, UK, **1995**.

157. BP Amoco Chemicals, *"Novex LDPE (LD5320AA) Data Sheet"*, **2000**, http://www.bpamocochemicals.com/polyethylene/products/grades/LD5320AA.asp (accessed on 07/02/01).

158. *"BASF Novolen® 2300L polypropylene Data Sheet"*, The Online Materials Information Resource, http://www.matweb.com/main.htm, Copyright **1997-2001** by Automation Creations, Inc., (accessed on 07/02/01).

159. **B.D. Cullity**, *"Elements of X-Ray Diffraction"*, Addison-Wesley Publishing Company, Inc., **1978**, USA.

160. Powder Diffraction File Search Manual, Hanawalt Method, Inorganic Section, **1991**, International Centre for Diffraction Data, USA, File No. 36-1451, pp. 968.

161. **D.A. Skoog, D.M. West and F.J. Holler,** *"Analytical Chemistry: An Introduction"*, 6th edition, Saunders College Pub., **1994**, London.

162. **M.S. Pinho, M.M. Gorelova, M. Dezzoti, B.G. Soares and A.J. Pertsin,** *"Conductive Polyaniline-Polychloroprene Blends"*, Journal of Applied Polymer Science, **1998**, Vol. 70, pp. 1543-1549.

163. **C.Y. Yang, P. Smith, A.J. Heeger, Y. Cao and J.E. Osterholm,** *"Electron Diffraction Studies of the Structure of Polyaniline-Dodecylbenzenesulfonate"*, Polymer, **1994**, Vol. 35, No. 6, pp. 1142-1147.

164. **T. Kärnä, J. Laakso, K. Levon and E. Savolainen**, *"Conducting Polymer Material and Method for its Preparation"*, United States Patent No. US5346649, **1994**.

165. **T. Kärnä, J. Laakso, T. Niemi, H. Ruohonen, E. Savolainen, H. Lindstrom, E. Virtanen, O. Ikkala and A. Andreatta**, *"Electrically Conductive Compositions and Methods for their Preparation"*, United States Patent No. US5340499, **1994**.

166. **B. Jönsson, B. Lindman, K. Holmberg and B. Kronberg**, *"Surfactants and Polymers in Aqueous Solution"*, John Wiley & Sons Ltd., **1998**, England.

167. **W.J. Popiel**, *"Introduction to Colloid Science"*, Exposition Press, **1978**, USA.

168. **W. O. George and P.S. McIntyre,** *"Infrared Spectroscopy"*, D. J. Mowthorpe, editor, John Wiley & Sons, Ltd., **1987**, Chichester, UK.

169. **G. Socrates**, *"Infrared Characteristic Group Frequencies"*, John Wiley & Sons, Ltd., **1980**, UK.

170. **D. Lin-Vien, N.B. Colthup, W.G. Fateley and J.G. Grasselli,** *"The Handbook of Infrared and Raman Characteristic Frequencies of Organic Molecules"*, Academic Press, Inc., **1991**, USA.

171. **D. Dolphin and A. Wick,** *"Tabulation of Infrared Spectral Data"*, John Wiley & Sons, Inc., **1977**, USA.

172. **R.T. Morrison, and R.N. Boyd**, *"Organic chemistry"*, Prentice-Hall International, **1992**, London.

173. Ormecon Chemie GmbH & Co., *"Polyaniline Powder Technical Data"*, **1995,** http://www.zipperling.de/Products/PAni/datenbla/pulver_e.html (accessed on 18/01/01), Ferdinand-Harten-Str. 7, D-22949, Ammersbek, Germany.

174. **F.N. Cogswell**, *"Polymer Melt Rheology: A Guide for Industrial Practice"*, Godwin in association with the Plastics and Rubber Institute, **1981**, London.

175. **J.A. Brydson**, *"Flow Properties of Polymer Melts"*, The Plastics Institute, **1970**, London.

176. *"Standard Test Methods (D 257-91) for D-C Resistance or Conductance of Insulating Materials"*, IN: Annual book of ASTM standards, **1992,** Vol. 08.01, p.75, American Society for Testing and Materials, Philadelphia, Pa.

177. **L.V. Hmurcik and M.R. Kinsler,** *"Van Der Pauw Measurements of Resistivity in Plastic/Metal Composites"*, Journal of Composite Materials, **1988**, Vol. 22, pp. 360-372.

178. *"Standard Test Method (D 4496-87) for D-C Resistance or Conductance of Moderately Conductive Materials"*, IN: Annual book of ASTM standards, **1987**, Vol. 10.02, p. 375, American Society for Testing and Materials, Philadelphia, Pa.

179. **A.R. Blythe,** *"Electrical Resistivity Measurements of Polymer Materials"*, Polymer Testing, **1984**, Vol. 4, pp. 195-209.

180. *"Electrometer Model 614 Instruction Manual"*, Keithley Instruments Inc, **1981**, Cleveland, Ohio, USA.

181. **B.I. Bleaney and B. Bleaney**, *"Electricity and Magnetism, Volume 1"*, Oxford University Press, **1976**, UK.

182. **R.B. Seymour and C.E. Carraher**, *"Polymer Chemistry: An Introduction"*, M. Dekker, **1988**, New York.

183. **D.H. Everett,** *"Basic Principles of Colloid Science"*, The Royal Society of Chemistry, **1988**, UK.

184. **O. Ikkala, L.O. Pietila, Y. Cao and A. Andreatta,** *"Electrically Conducting Compositions"*, United States Patent No. US5783111, **1998**.

185. **R.P. Houghton,** *"Metal Complexes in Organic Chemistry"*, Cambridge University Press, **1979**, Great Britain.

186. **R.H. Wildi and C. Maier,** *"Understanding Compounding"*, Hanser Publishers, Munich, **1998**.

187. **M.G. Han and S.S. Im,** *"Electrical and Structural Analysis of Conductive Polyaniline/Polyimide Blends"*, Journal of Applied Polymer Science, **1999**, Vol. 71, pp. 2169-2178.

188. **H.Q. Xie, Y.M. Ma and J.S. Guo,** *"Conductive Polyaniline-SBS Composites from In Situ Emulsion Polymerization"*, Polymer, **1998**, Vol. 40, pp. 261-265.

189. **V. Jousseaume, M. Morsli, A. Bonnet and S. Lefrant**, *"Stability of Electrical Properties in Polyaniline-Polystyrene Blends"*, Optical Materials, **1998**, Vol. 9, pp. 484-488.

190. **H. Hu, J.L. Cadenas, J.M. Saniger and P.K. Nair,** *"Electrically Conducting Polyaniline-Poly(acrylic acid) Blends"*, Polymer International, **1998**, Vol. 45, No. 3, pp. 262-270.

191. *"Perry's Chemical Engineer's Handbook"*, R.H. Perry and D.W. Green, eds., McGraw-Hill Companies, Inc., USA, **1997**.

192. **C.B. Bucknall,** *"Toughened Plastics"*, Applied Science Publishers LTD, Great Britain, **1977**.

193. **L. Flandin, G. Bidan, Y. Brechet and J.Y. Cavaillé,** *"New Nanocomposite Materials Made of an Insulating Matrix and Conducting Fillers: Processing and Properties"*, Polymer Composites, **2000,** Vol. 21, No. 2, pp. 165-174.

194. **I. Křivka, J. Prokeš, E. Tobolková and J. Stejskal**, *"Application of Percolation Concepts to Electrical Conductivity of Polyaniline-Inorganic Salt Composites"*, Journal of Materials Chemistry, **1999,** Vol. 9, pp. 2425-2428.

195. **G. Upton and I. Cook**, *"Understanding Statistics"*, Oxford University Press, **1996,** UK.

196. **P.J. Ross,** *"Taguchi Techniques for Quality Engineering: Loss Function, Orthogonal Experiments, Parameter and Tolerance Design"*, McGraw-Hill, **1996**, New York.