

## CURRICULUM VITAE ( YANNIS F. MISSIRLIS )

Name : Yannis F. Missirlis  
Birthdate : November 13, 1946  
Birth Place : Karlovassi, Samos, Greece  
Nationality : Greek and Canadian

### Education

Diploma in Chemical Engineering, July 1969  
National Technical University of Athens, Greece  
M. Sc., in Chemical Engineering, June 1971, Syracuse  
University.  
Thesis: "Direct Contact Heat Transfer Between two  
Immiscible Liquids".  
Ph. D., in Chemical Engineering, December 1973,  
Rice University.  
Thesis: "In-Vitro Studies of Human Aortic Valve Mechanics".

### Professional Experience

Dec. 1980-today : Professor, University of Patras.  
July 1979-Dec. 1980 : Associate Professor of Engineering Physics, McMaster  
University.  
Jan. 1974-June 1979 : Assistant Professor of Engineering Physics, McMaster  
University.  
Jan. 1974-June 1981 : Associate Member of the Department of Medicine,  
McMaster University.  
: Associate Member of the Department of Medical Sciences,  
McMaster University.  
1973 : Research Associate, Department of Surgery, Baylor College of  
Medicine.

### Academic Administrative Experience

March 1986-Aug. 1988 : 1) Vice-Rector for Academic Affairs and Personell, University of  
Patras.  
2) Chairman, Research Council of University of Patras.  
Sept. 1986-June 1987 : Chairman, Department of Pedagogics.  
Sept. 1984-Aug. 1986 : Chairman, Department of Mechanical Engineering.  
Sept. 1994-Aug. 1996 : Director, Applied Mechanics Section, Dept. of Mechanical  
Engineering.  
Sept. 2001-Aug.2004 : Director, Applied Mechanics, Materials Technology and  
Bioengineering Section, Dept. of Mechanical Engineering and  
Aeronautics.  
Sept.1998- Aug.2004 : Member of the Research Committee of the University of Patras

### Professional Involvement

1. Professor Yannis F. Missirlis pioneered Educational and Research activities in Greece in the areas of Biomechanics, Biomaterials, Biomedical Engineering, Regenerative Medicine. In the early 1980s he represented his country in the European Union in the scientific areas of Biotechnology, and Biomedical Engineering. He has been a founding member and a Council member of the World Council of Biomechanics (1994-2006). At the same time he has served as member of the Council of the European Society of Biomechanics (1994-2002) responsible for the Award Committee and the Education Committee.
2. At the invitation of the Science & Technology Foundation of Japan, through an application of Professor Kozaburo Hayashi (Osaka University), Prof. Missirlis visited Japan in March-April 1995. Intense and fruitful interactions between Prof. Missirlis and colleagues at prestigious Japanese Universities in Osaka, Tokyo, Yokohama, Kyoto, Sendai, Sapporo resulted in closer scientific (in the area of Biomedical Engineering) and cultural understanding on both sides.
3. Prof. Missirlis has been invited and given seminars , or invited plenary talks, apart from European and North American Educational and Research Establishments, to scientific audiences in China, India, Iran, Syria, Egypt, Tunisia, Argentina, Brazil, Cuba, Venezuela, Siberia (Russia).

Research Projects at Laboratory of Biomechanics & Biom.Engineering

Project leader: Y.F.Missirlis

1. **Bioreactive composite scaffold design (VASCUPLUG)**  
EU-FP6 **2005-2008** -NMP3-CT-2005-013811 314,000 euros (our lab)
2. **Core Laboratories for the improvement of medical devices in clinical practice from the analysis of implanted prostheses (COST Action 537, chair: R.Barbucci, vice-chair: Y.Missirlis),2004-2008.**
3. ESTABLISHMENT OF A MULTIDISCIPLINARY SCIENTIFIC NETWORK FOR THE DEVELOPMENT AND APPLICATION OF BIOMATERIALS (INTERREG III: GREECE-ITALY), 2006-2008
4. **Nanotechnology in Medicine (NANOMED)**  
Quality of life Program **2000-2003**.QLK3-CT-2000-01500 211,560 euros (our lab)
5. **"Development and Testing of Membranes for Biohybrid Systems" 1998-2001.**  
BRITE-EURAM III-Contract CT98-0620. 225,000 ECU (our lab.)
6. **"Development of Biomaterials with improved Resistance to infection" 1997-2000**  
BRITE-EURAM III-Contract CT97-0415 100.000 ECU (our lab.)

7. **"Design and evaluation of a Heparin adsorbing Filter for application, in the extracorporeal Hemodialysis" 1993-1997.**  
BRITE-EURAM II-Contract CT92-0277 95,000 ECU (our lab.)
8. **"Long term performance and stability of materials for biomedical applications" 1994-1997**  
CONCERTED ACTION BE7317 (Co-coordinator)
9. **" Resorbable continuous fiber reinforced polymers for osteosynthesis plates"**  
BRITE-EURAM I-Contract CT91-0446 100,000 ecu (our lab).
10. **" Study of haemodialysis materials"** 1992-1994.  
SCIENCE-CT91-0720
11. **" Eurobiomat" 1989-1992**  
CONCERTED ACTION ON BIOMATERIALS RESEARCH-MEDICAL RESEARCH PROGRAM II.1.2/2.

In addition, several bilateral research projects between the Biomechanics & Biomedical Engineering Lab and laboratories in Germany, France, United Kingdom have been implemented.

#### REFEREED PUBLICATIONS

1. **C.D. Armeniades, L.W. Lake, Y.F. Missirlis and H.J. Kennedy**, "Histological Origin of Aortic Tissue Mechanics", Applied Polymer Symposium, 22, 319-339, 1973.
2. **Y.F. Missirlis, C.D. Armeniades and J.H. Kennedy**, "Mechanical and Histological Study of Aortic Valve Tissue from a Patient with Marfan's Disease". Atherosclerosis, 24, 335-338, 1976.
3. **Y.F. Missirlis and C.D. Armeniades**, "Parameters of the Stress Analysis on the Aortic Valve during Diastole", Journal of Biomechanics, 9, 447-480, 1976.
4. **Y.F. Missirlis and C.D. Armeniades**, "Ultrastructural Basis of the Human Aortic Valve Function", Acta Anatomica, 98, 199-206, 1977.
5. **Y.F. Missirlis**, "Use of Enzymolysis Techniques in Studying the Mechanical Properties of Connective Tissue Components", Journal of Bioengineering, 1(3), 211-222, 1977.
6. **M.C. Brain, I. Kohn, A.J. McComas, Y.F. Missirlis, M.P. Rathbone and J. Vickers**, "Red-Cell Stability in Duchenne Syndrome", New England Journal of Medicine, 298, 403, 1978 (letter).
7. **Y.F. Missirlis, I.L. Kohn, J.D. Vickers, M.P. Rathbone, D.H.K. Chui, A.J. McComas and M.C. Brain**, "Alterations in Erythrocyte Membrane Material Properties: A Marker of the Membrane Abnormality in Human and Chicken Muscular Dystrophy", Erythrocyte Membranes: Recent Clinical and Experimental Advances, edited by G. Brewer, A.R. Liss, Inc. New York, N.Y. p. 189-200, 1978.

8. **Y.F. Missirlis, F. Fong and M.C. Brain**, "Micropipette Analysis of the Hemolytic Stress of Hypotonic Erythrocytes", Canadian Journal of Physiology and Pharmacology, 56, (3), 435-442, 1978.
9. **Y.F. Missirlis and M. Chong**, "Aortic Mechanics-Part I: Material Properties of Natural Porcine Aortic Valves", Journal of Bioengineering, 2, 278-300, 1978.
10. **M. Chong and Y.F. Missirlis**, "Aortic Valve Mechanics-Part II: A Stress Analysis of the Porcine Aortic Valve Leaflets in Diastole", Biomaterials, Medical Devices and Artificial Organs, 6(3), 225-244, 1978.
11. **Y.F. Missirlis and M. Chong**, "Reply to the Discussion of Aortic Valve Mechanical Part II. A Stress Analysis of the Porcine Aortic Valve leaflets in Diastole by P. L. Could and M.P. Rossow", Biomaterials, Medical Devices and Artificial Organs, 7(3), 439-442, 1979.
12. **Y.F. Missirlis and M.C. Brain**, "An Improved method for studying the Elastic Properties of Erythrocyte Membranes", Blood, 54(5), 1068-1079, 1979.
13. **Y.F. Missirlis, M. Vanderwel, and M.C. Brain**, "Membrane Elasticity of Erythrocytes from Normal and Dystrophic Mice", Muscle and Nerve, 4, 141-148, 1981.
14. **O.S. Hum, D.N. Ghista, J. Brash, B.W. Shragge and Y.F. Missirlis**, "The effects of Glutaraldehyde Fixation of Aortic Valve on their Mechanical Properties and Hydraulic Performance", Advances in Bioengineering pp. 139-142, 1982.
15. **Y. Missirlis**, "Mechanical Properties of some Connective Tissues and their Components in vitro", Biomechanics IX-A, edited by D.A. Winter et. al., Human Kinetics Publishers, Champaign, Ill, pp. 176-180, 1983.
16. **Y. Missirlis**, "Techniques for measuring erythrocyte and platelet mechanical properties", Blood Compatible Materials and their Testing, ed. by S. Dawids and A. Bantjes, M. Nijhoff Publishers, Dordrecht, pp. 81-92, 1986.
17. **Y. Missirlis**, "Structure-Function Relationships for some Biological Tissues", Engineering Applications of New Composites, edited by S. Paipetis and G. Papanicolaou, Omega Scientific, Oxon, England, pp. 106-113, 1988.
18. **D.D. Deligianni, Y.F. Missirlis, K.E. Tanner, W. Bonfield**, "Mechanical Behaviour of trabecular bone of the human femoral head in females", Journal of Materials Science: Materials in Medicine, 2, 168-175, 1991.
19. **D. Mavrilas and Y.F. Missirlis**, "An approach to the optimization of preparation of bioprosthetic heart valves", J. Biomechanics, 24, 331-339, 1991.
20. **G. Athanassiou, N. Zoubos and Y.F. Missirlis**, "Erythrocyte Membrane Deformability in Patients with Thalassaemia Syndromes", Nouvelle Revue Francaise d' Hematologie, 33, 15-20, 1991.
21. **Y.F. Missirlis and W. Lemm, Editors**, "Modern Aspects of Protein Adsorption on Biomaterials", Kluwer academic publishers, Dordrecht, 1991.
22. **G. Athanassiou, A. Symeonidis, A. Kourakli, Y.F. Missirlis and N.C. Zoubos**, "Deformability of the Erythrocyte Membrane in Patients with Myelodysplastic Syndromes", Acta Haematol, 87, 169-172, 1992.
23. **Y.F. Missirlis**. "How to deal with the complexity of the blood-polymer interactions", Clinical Materials, 11, 9-12, 1992.
24. **Y.F. Missirlis and G. Michanetzis**, "Measurement of platelet adhesion, released  $\beta$ -thromboglobulin and generated fibrinopeptide A using whole non-anticoagulated blood at flow

conditions", The Reference Materials of the European Communities, W. Lemm, editor, pp. 157-164. Kluwer academic publishers, Dordrecht, 1992.

**25. Y.F. Missirlis and J-L Wautier, Editors**, "The role of platelets in blood-biomaterial interactions", Kluwer academic publishers, Dordrecht, 1993.

**26. Th. Groth, G. Michanetzis, Y. Missirlis, H. Wolf**, "The interrelationship between platelet adhesiveness and released platelet factors during standardized in-vitro blood/biomaterial contact", Biomaterial-Tissue Interfaces, P.J. Doherty et al. (eds). pp. 247-251, 1992.

**27. G. Athanassiou, M. Savakis, Y. Missirlis**, "Filterability of erythrocytes in patients with myelodysplastic and  $\beta$ -thalassemic syndromes", Clinical Hemorheology, 13, 767-774, 1993.

**28. A. Podias, Th. Groth, Y. Missirlis**, "The effect of shear rate on the adhesion/activation of human platelets in flow through a closed-loop polymeric tubular system", J. Biomater. Sci. Polymer Edn, 6, 339-410, 1994.

**29. D. Deligianni, A. Maris, Y. Missirlis**, "Stress relaxation behaviour of trabecular bone specimens", Journal of Biomechanics, 27, 1469-1476, 1994.

**30. Th. Groth, A. Podias, Y. Missirlis, R. Hesse**, "Platelet adhesion and activation under static and flow conditions", Colloids and Surfaces B: Biointerfaces, 3, 241-249, 1994.

**31. G. Athanassiou, W. Meier, D. Lerche, Y. Missirlis**, "The viscosity of RBCM from patients with thalassemic syndromes", Nouvelle Revue Francaise d' Hematologie, 36, 229-233, 1994.

**32. D.D. Deligianni, Y. F. Missirlis and V. Kafka**, "Determination of material constants and hydraulic strengthening of trabecular bone through an orthotropic structural model", Biorheology, 31, 245-257, 1994.

**33. Y.F. Missirlis and V. Kalerides**, "Polymorphonuclear Leukocyte Deformability in Type II Diabetes Mellitus and in Ageing", Clinical Hemorheology, 14, 489-495, 1994.

**34. Y.F. Missirlis, D. Deligianni and D. Mavrilas**, "Test Methodology for Following Biodegradation in Vitro", Journal of Biomaterials Science, Polymer Edition, 6, 827-832, 1994.

**35. G.P.A. Michanetzis and Y.F. Missirlis**, "Flow-dependent platelet behaviour in blood-material interactions", Journal of Materials Science: Materials in Medicine, 7, 29-33, 1996.

**36. J. Kapolos, D. Mavrilas, Y. Missirlis and P.G. Koutsoukos**, "Model Experimental System for Investigation of Heart Valve Calcification in-vitro", J. Biomed. Mater. Res (Appl. Biomater.) 38: 183-190, 1997.

**37. E. Panagiotopoulos, M. Dauner, Y. Missirlis, L. Caramaro, H. Plank and L. Khaldi**, "Soft tissue and cancellous bone reaction to the implantation of novel biodegradable pins and plates in rabbits", Acta Orthop. Scand. (Suppt. 275), 119-122, 1997.

**38. M. Dauner, H. Planck, L. Caramaro, Y. Missirlis and E. Panagiotopoulos**, "Resorbable continuous - fibre reinforced polymers for osteosynthesis", J. Mat. Sci.: Materials in Medicine: 9: 173-179, 1998.

**39. P. Korovessis, D. Deligianni, M. Stamatakis, Y. Missirlis**, "Augmentation of anterior transvertebral screws using threaded teflon anchoring", J.Spinal Disorders 11(4), 300-306, 1998.

**40. D. Deligianni, P. Korovessis, A. Baikoyis, Y. Missirlis**, "Factor analysis of the effectiveness of transfixation and rod characteristics on the TSRH screw-rod instrumentation", J Spinal Disorders, 13(1), 50-57, 2000.

- 41. G. Athanassiou, P. Matsouka, V. Kaleridis and Y. Missirlis**, "Deformability and filterability of white blood cell subpopulations. Evaluation of these parameters in the cell line HL-60 and in type II diabetes mellitus", Clin. Hemorheology and Microcirculation, 22, 35-43, 2000.
- 42. D. Deligianni, N. Katsala, P. Koutsoukos, Y. Missirlis**, "Effect of surface roughness of hydroxyapatite on human bone marrow cells adhesion, proliferation, differentiation and cell detachment strength", Biomaterials, 22(1), 87-96, 2000.
- 43. A. Skoutelis, V. Kaleridis, G. Athanassiou, K. Kokkinis, Y.F. Missirlis, H. Bassaris**, "Neutrophil deformability in patients with sepsis, septic shock and adult respiratory distress syndrome", Crit Care Med., 28(7), 2355-2359, 2000.
- 44. A. Skoutelis, V. Kaleridis, D. Goumenos, G. Athanassiou, Y.F. Missirlis, J. Vlachojannis and H. Bassaris**, "Polymorphonuclear leucocyte rigidity is defective in patients with chronic renal failure", Nephrol Dial Transplant, 15 : 1788-1793, 2000.
- 45. A. Skoutelis, V. Kaleridis, C. Gogos, G. Athanassiou, Y.F. Missirlis, H. Bassaris**, "Effect of cytokines and colony-stimulating factors on passive polymorphonuclear leucocyte deformability in-vitro", Cytokine 12(11):1737-1740, 2000.
- 46. D. Deligianni, N. Katsala, S. Ladas, D. Sotiropoulou, J. Amedee, Y. Missirlis**, "Effect of surface roughness of the titanium alloy Ti-6Al-4V on human bone marrow cell response and on protein adsorption", Biomaterials,22(11):1241-1251, 2001.
- 47. P. Korovesis, A. Baikoyisis, D. Deligianni, Y. Missirlis and P. Soukakos**, "Effectiveness of Transfixation and Length of Instrumentation on Titanium and Stainless Steel Transpedicular Spine Implants", J Spinal Disorders 14(2), 109-117, 2001.
- 48. A. Symeonidis, G. Athanassiou, A. Psiroyannis, V. Kyriazopoulou, K. Kapatais-Zoumbos, Y. Missirlis and N. Zoumbos**, "Impairment of erythrocyte viscoelasticity is correlated with levels of glycosylated haemoglobin in diabetic patients", Clin.Lab.Haem. 23: 103-109,2001.
- 49 D. Deligianni, P. Korovesis, G. Petsinis, A. Baikoyisis, Y. Missirlis**, "Comparative Strength Measurements of five different Fixation Systems Applied on an in vitro Model of Femoral Midshaft Osteotomy", (Accepted for publication to Clin Orthopaedics).
- 50. N. Sotirakopoulos, G. Athanassiou, T. Tsitsios, M. Stabolidou, Y. Missirlis, K. Mavromatidis**, "Effect of F- carnitine Supplementation on Red Blood Cells Deformability in Haemodialysis Patients", Renal Failure: 22(1), 73-80, 2000.
- 51. G.P.A. Michanetzis, Y.F. Missirlis, N.P. Rhodes, D.F. Williams, R. Eloy, W. Lemm**, "Influence of test protocol in determining the blood response to model polymers", J. of Materials Science: Materials in Medicine 13 , 757-765, 2002.
- 52. Y.F. Missirlis, A.D. Spiliotis**, "Assessment of techniques used in calculating cell-material interactions", Biomolecular Engineering 19, 287-294, 2002.
- 53. Y.F. Missirlis, D. Mavrilas and G. Athanassiou**, "Cardiovascular Mechanics: Investigation of two Components, Tissue Heart Valves and Blood Cells", Meccanica 37, 465-476, 2002.
- 54. B. Seifert, G.Michanetzis, T. Groth, W. Albrecht, K. Richau, Y. Missirlis, D. Paul and G. von Sengbusch**, "Polyetherimide: A New Membrane-Forming Polymer for Biomedical Applications", Artificial Organs 26 (2), 189-199, 2002.
- 55. M. Stavridi, M. Katsikogianni, Y.F. Missirlis**, "The influence of surface patterning and/or sterilization on the haemocompatibility of polycaprolactones", Materials Science and Engineering C1051, 1-7, 2002.

- 56. G.P.A. Michanetzis, N. Katsala, Y.F. Missirlis**, "Comparison of haemocompatibility improvement of four polymeric biomaterials by two heparinization techniques", *Biomaterials* 24, 677-688, 2003.
- 57. M. Katsikogianni and Y.F. Missirlis**, "Concise review of mechanisms of bacterial adhesion to biomaterials and of techniques used in estimating bacteria-material interactions", *European Cells & Materials Journal*,8, 37-57,2004.
- 58. Groth T, Seifert B, Albrecht W, Malsch G, Gross U, Fey-Lamprecht F, Michanetzis G, Missirlis Y, Engbers G.**, "Development of polymer membranes with improved haemocompatibility for biohybrid organ technology", *Clin Hemorheol Microcirc.* 2005;32(2):129-43.
- 59. Amanatides E., Mataras D., Katsikogianni M., Missirlis Y.F.**, "Plasma surface treatment of polyethylene terephthalate films for bacterial repellence", *Surface & Coatings Technology*, 200:6331-6335, 2006.
- 60. Koromila G., Michanetzis,G.P.A., Missirlis,Y.F. ,Antimisiaris,S.G.**, "Heparin incorporating liposomes as a delivery system of heparin from PET-covered metallic stents: Effect on haemocompatibility ", *Biomaterials*, 27, 2525-2533, 2006.
- 61. Katsikogianni M.,Spiliopoulou I., Dowling,D.P., Missirlis, Y.F.**, " Adhesion of slime producing *Staphylococcus epidermidis* strains to PVC and diamond like carbon/silver/fluorinated coatings ", *J Mater Sci: Mater Med* 17, 679-689, 2006.
- 62. Antimisiaris,S.G., Koromila G., Michanetzis,G.P.A., Missirlis,Y.F.**, "Liposome Coated Stents: A Method to Deliver Drugs to the Site of Action and Improve Stent Blood-Compatibility", *Journal of Liposome Research*, 16:303–309, 2006.
- 63. Katsikogianni M. G., Syndrevelis C. S., Amanatides E., Mataras D. S., Missirlis Y. F.**, "Plasma treated and a-C:H coated PET performance in inhibiting bacterial adhesion", *Plasma Processes and Polymers*, 4( S1), : S1046-S1051 ,2007.
- 64. A. G. Moutzouri , A. T. Skoutelis , C.A. Gogos , Y. F. Missirlis , G. M. Athanassiou**, "Red blood cell deformability in patients with sepsis: A marker for prognosis and monitoring of severity", *Clinical Hemorheology and Microcirculation*, 36(4) : 291-299, 2007.
- 65. Th. S. Tsapikouni and Y.F.Missirlis**, "pH and ionic strength effect on single fibrinogen molecule adsorption on mica studied with AFM", *Colloids and Surfaces B: Biointerfaces*, 57, (1) : 89-96, 2007.
- 66. Y.F.Missirlis and M.Katsikogianni**, "Theoretical and experimental approaches of bacteria-biomaterial interactions", *Mat.-wiss. U. Werkstofftech.* 38(12),983-994, 2007.
- 67. Th.S.Tsapikouni, St. Allen, Y.F.Missirlis**, "Measurement of interaction forces between fibrinogen coated probes and mica surface with the Atomic Force Microscope: The pH and ionic strength effect", *Biointerphases*, 3(1),1-8 , 2008.
- 68. M. Katsikogianni, E. Amanatides, D. Mataras, Y.F. Missirlis.** '*Staphylococcus epidermidis* adhesion to He, He/O<sub>2</sub> plasma treated PET films and aged materials: Contributions of surface free energy and shear rate', *Colloids and Surfaces B: Biointerfaces*, 65:257-268,2008
- 69. G.P.A.Michanetzis, Y.F.Missirlis and S.G.Antimisiaris**, " Haemocompatibility of Nanosized Drug Delivery Systems: Has it been Adequately Considered?", *J.Biomed. Nanotechnol.*, 4(3) : 218-233,2008.
- 70. Th. S. Tsapikouni and Y.F.Missirlis**, Protein–material interactions: From micro-to-nano scale, *Materials Science and Engineering: B*, 152(1-3): 2-7, 2008.
- 71. S.Mourtas, G.P.A.Michanetzis, Y.F.Missirlis and S.G.Antimisiaris**, "Haemolytic activity of liposomes: Effect of vesicle size, lipid concentration and polyethylene glycol-lipid or arsonolipid incorporation", *J.Biomed. Nanotechnol.*, 5(4) : 409-415,2009.

- 72. M.G. Katsikogianni, Y.F. Missirlis**, “Interactions of bacteria with specific biomaterial surface chemistries under flow conditions”, Acta Biomaterialia, 6:1107-1118,2010
- 73. Th. S. Tsapikouni and Y.F.Missirlis**, “Measuring the force of single protein molecule detachment from surfaces with AFM”, Colloids and Surfaces B: Biointerfaces, 75(1): 252-259,2010.
- 74. M.G. Katsikogianni, Y.F. Missirlis**, “Bacterial adhesion onto materials with specific surface chemistries under flow conditions”, J. of Materials Science: Materials in Medicine
- 75. Stergios Dermenoudis and Yannis Missirlis**, “Design of a novel rotating wall bioreactor for the *in vitro* simulation of the mechanical environment of the endothelial function”, J.Biomechanics, 43(7):1426-1431,2010
- 76. V. Kaleridis, G. Athanassiou, D. Deligianni and Y. Missirlis**, “Slow flow of passive neutrophils and sequestered nucleus into micropipette”, Clinical Hemorheology and Microcirculation 45: 53–65, 2010.