

## CURRICULUM VITAE

**Name** Alkiviades C. Payatakes

**Nationality** Greek

**Birth Date** 22 August 1945, Athens

**Family** Married. Three children; (two sons and one daughter).

**Present Position**

16/7/06-present Chairman, Board of Directors, and  
Director of the Central Administration of FORTH  
(Acting Chairman FORTH, 3-6/2005, Chairman since 6/05)  
(Acting Director Central Administration FORTH 3/05-7/06)

1/1999-7/2006 Director FORTH/ICE-HT

6/1981-present Professor, Department of Chemical Engineering  
University of Patras

1991-present Director Network PRAXI (ΠΡΑΞΗ)

1995-present Director, Innovation Relay Centre HELP-FORWARD

**Office Address** Department of Chemical Engineering  
University of Patras, GR-265 00 Patras  
Tel.: (061) 997.574, Fax: (061) 990.328  
e-mail: [acp@chemeng.upatras.gr](mailto:acp@chemeng.upatras.gr)  
<http://www.chemeng.upatras.gr>

Director's Office, ICE/HT-FORTH  
P.O. Box 1414, Stadiou Street, Platani, GR-265 00 Patras  
Tel.: (061) 965.301, Fax: (061) 990.987  
e-mail: [acp@iceht.forth.gr](mailto:acp@iceht.forth.gr)  
<http://www.iceht.forth.gr>

**Previous Positions**

2000-3/05 Vice-Chairman, Board of Directors of FORTH

9/80-6/81 Professor of Chemical Engineering  
University of Houston, Houston, Texas, USA

9/77-8/80 Associate Professor of Chemical Engineering  
University of Houston, Houston, Texas, USA

9/74-8/77 Assistant Professor of Chemical Engineering  
University of Houston, Houston, Texas, USA

6/73-8/74 Research Associate

Brunswick Corp., Skokie, Illinois, USA

1/73-6/73 Postdoctoral Fellow  
Dept. of Chem. Eng. and Materials Science,  
Syracuse University, Syracuse, NY, USA

**University Studies**

9/68-1/73 Ph.D., Chemical Engineering  
Syracuse University, Syracuse, NY, USA

9/63-6/68 Dipl. Ing., Chemical Engineering  
National Technical University of Athens, Greece

**Undergraduate  
Courses Taught**

Fluid Mechanics  
Transport Phenomena  
Chemical Engineering Processes I & II  
Unit Operations I, II & III  
Chemical Engineering Laboratory I & II  
Statistics and Error Analysis  
Theoretical Models and Simulators  
Separation Processes in Porous Media  
Suspensions and Colloids

**Graduate Courses  
Taught**

Fluid Mechanics  
Transport Phenomena  
Science of Particle-Fluid Systems  
Transport Phenomena in Porous Media  
Topics in Transport Phenomena  
Physicochemical Hydrodynamics of Particle-Fluid Systems

**University Textbooks**

- Fluid Mechanics (in greek)
- Transport Phenomena (in greek)

**Areas of R & D  
Interest**

Transport Phenomena  
Physicochemical Hydrodynamics  
Characterization and Modeling of Porous Media  
Particulate Systems, Colloids and Aerosols  
Improved Oil Recovery, Filtration of Gases and Liquids  
Separation Processes, Soil Contamination by Liquid  
Organic Pollutants: Transport and Fate of Pollutants (including  
Natural Attenuation) and Containment & Control Methods.

**Graduate Students  
Supervised**

18 Ph.D. & 10 M.S (& 5 Ph.Ds in progress)  
(Appendix A)

**Publications  
in Refereed Journals**

101  
(Appendix B)

**Publications  
in Books**

14  
(Appendix C)

|   |  |
|---|--|
| <b><i>Publications in Proceedings of International Scientific Conferences</i></b> | 43<br>(Appendix D)   |
| <b><i>Presentations in Scientific Conferences</i></b>                             | 126<br>(Appendix E)  |
| <b><i>Scientific Seminars</i></b>   | 68<br>(Appendix F)   |
| <b><i>Organization of Scientific Conferences</i></b>                              | 23<br>(Appendix G)   |
| <b><i>Citation Index (Nov 2007)</i></b>   | ~2040 (h-factor 27)<br>(Without self-citations; source: Web of Science)<br>In addition, several citations in various textbooks.<br>(Appendix H)  |
| <b><i>Research Funding</i></b>  | 58 funded R&D Projects<br>(Appendix I)   |
| <b><i>Funding for TT Projects</i></b>   | 26 funded Technology Transfer projects through the Network PRAXI, and the Innovation Relay Centre HELP FORWARD.<br>( <a href="http://www.help-forward.gr">www.help-forward.gr</a> )<br>(Appendix J)  |
| <b><i>Special Contributions</i></b>   | <p>1981- Central role in the development of the Department of Chemical Engineering at the University of Patras<br/>(<a href="http://www.chemeng.upatras.gr">www.chemeng.upatras.gr</a>)</p> <p>1984- Central role in the creation and development of the Research Institute of Chemical Engineering and High Temperature Chemical Processes (ICE-HT)<br/>(<a href="http://www.iceht.forth.gr">www.iceht.forth.gr</a>)</p> <p>1991- Creation and development of the Greek R&amp;D <i>cum</i> Technology-Transfer Network PRAXI (ΠΡΑΞΗ ΚΙΤ)</p> <p>1995 Creation and development of the EU Innovation Relay Centre HELP-FORWARD<br/>(<a href="http://www.help-forward.gr">www.help-forward.gr</a>)</p> |

### ***Awards***

- 1975 *Suttle* Award (The Filtration Society, London)
- 1978 *du Pont* Young Faculty Grant
- 1979 Best Fundamental Paper Award, Amer. Inst. Chem. Engineers. (Texas)
- 1980 *Halliburton* Engineering Faculty Research Excellence Award
- 1980 Best Fundamental Paper Award, Amer. Inst. Chem. Engineers. (Texas)
- 1981 *Allan P. Colburn* Lectureship, University of Delaware
- 1982 *Robert W. Vaughan* Lectureship, California Institute of Technology

### ***Distinctions***

- 1980 NSF Representative of the USA to Japan for Aerosol Research (June 21-July 3)
- 1987-91 National Research Council (Greece)
- 1987 Member of the GSRT Committee on “Formulation of Strategy for the Development of Technology Infrastructure and Industrial Research”
- 1987-90 Member of the EC Task Group on Internal Cohesion in the Areas of Technology and Research
- 1987-91 CAN Committee, European Community Programs BRITE & BRITE-EURAM
- 1989-90 CAN Committee, European Community Programs VALUE
- 1992- Greek Representative to EFCE (European Federation of Chemical Engineering)
- 1993-02 Vice Chairman of the Association for Research, Technology and Training (ARTT)
- 1999-02 Member “Physical and Engineering Science and Technology Panel” of NATO. (*Vice Chairman* 2001; *Chairman* 2002.)
- 2000- Member, Editorial Board, *Transport in Porous Media* (Kluwer Academic Publishers)
- 2002 IRC HELP-FORWARD was given by the Commission of EU the *2002 Best Innovation Relay Centre of Europe Award*
- 2005 *JSPS* (Japan Society for the Promotion of Science) *Fellowship* 2005. (Tour of Lectures in several universities and companies in Japan, March 20 – April 9.)

### ***Consulting***

- Tech. Products. Div., Brunswick Corp.; 1974-1978
- Shell Development Co.; 1976

National Science Foundation, USA; 1977  
Marathon Oil Company; 1979  
General Motors; 1979  
The 3M Company; 1979  
Schlumberger-Doll Research Center; 1979-1984  
Intern. Fine Particle Res. Inst.; 1979-1981  
Eastman Kodak; 1980  
Du Pont; 1981  
Exxon Production Research; 1981  
Petrotec Systems; 1985  
Comm. of the European Comm., BRITE; 1987  
Comm. of the European Comm., BRITE-EURAM;  
1989-91  
Comm. of the European Comm., Strategic Planning for  
RTD; 1992  
Comm. of the European Community, PECO; 1992

### ***Patents***

Norwegian Patent No. 19985505 (1999) *and*

PCT Patent No. PCT/NO99/00341: “Controlled consolidation of and permeability loss in porous media with precipitation of inorganic salts”. (With Professors P. Koutsoukos, Terje Ostvold, and Dr. Peter Read).

### ***Management Experience***

- Chairman, Dept of Chemical Engineering, University of Patras, 1984-86.
- Director, Sector of Unit Operations and Environment  
Dept. of Chemical Engineering,  
University of Patras, 1983-95.
- Member of the Scientific Council  
of FORTH/ICE-HT, 1985-99.
- Chairman of the GSRT Council on  
RTD Programmes of the Commission of the  
European Community, 1988-90.
- Member of the BoD of the Technology Park of  
Patras, SA., 1989-2004.
- Chairman of the Network ΠΠΑΞΗ (National  
Network for the Advancement of Technology in  
Industry) under the auspices of the Federation of  
Greek Industries and FORTH.

- Director of the Innovation Relay Centre HELP FORWARD (HELlenic Project for Wider Application of R&D), 1995-present.
- Vice-Chairman of ARTT (Association for Research, Technology and Training), 1993-1999).
- Director of ARTT/Patras, 1996-1999.
- Member of the BoD of FORTHnet S.A.,1996-2001.  
Also, since May 2005.
- Member of the BoD of FORTH, since 19 Jan. 1999.
- Director of FORTH/ICE-HT, since 19 Jan.1999.
- Acting Director of the Central Administration of FORTH, since 19 March 2005.
- Chairman, Board of Directors of FORTH, since June 2005. (Acting Chairman, Board of Directors of FORTH, 3-6 June 2005.)

Updated: October 2007

## Appendix A: Graduate students supervised

### *I. PhDs completed*

1. K.M. Ng, "Oil Ganglion Dynamics in Flow Through Porous Media," Ph.D. Dissertation, Univ. of Houston, 1980.
2. M. M. Dias, "Formation and Dynamics of Oil Ganglia in Porous Media," Ph.D. Dissertation, Univ. of Houston, 1984.
3. O. Vizika, "Immiscible displacement of two fluids in porous rocks", Ph.D. Dissertation, Dept. of Chemical Engineering, Univ. of Patras, 1989. (In greek.)
4. G. Constantinides, "Coalescence of oil ganglia during immiscible microdisplacement in porous rocks", Ph.D. Dissertation, Dept. of Chemical Engineering, Univ. of Patras, 1989. (In greek.)
5. Ch. Tsakiroglou, "Improved method for the analysis of the pore structure of permeable solids. Application to Greek oil reservoirs", Ph.D. Dissertation, Dept. of Chemical Engineering, Univ. of Patras, 1990. (In greek.)
6. Ch. Paraskeva, "Theoretical and experimental study of the transient behavior of deep bed filtration", Ph.D. Dissertation, Dept. of Chemical Engineering, Univ. of Patras, 1992. (In greek.)
7. A. Michalopoulou, "Theoretical study of cross-flow microfiltration", Ph.D. Dissertation, Dept. of Chemical Engineering, Univ. of Patras, 1993. (In greek.)
8. F. Koutelieris, "Study of mass transfer from a Newtonian fluid flowing through a swarm of adsorbing spheroidal particles under creeping flow conditions", Ph.D. Dissertation, Dept. of Chemical Engineering, Univ. of Patras, 1995. (In greek.)
9. D. Avraam, "Relative permeabilities and flow regimes during two-phase immiscible flow in porous media", Ph.D. Dissertation, Dept. of Chemical Engineering, Univ. of Patras, 1996. (In greek.)
10. M. Valavanides, "Macroscopic theory of two-phase flow in porous media based on the integration of pore-scale phenomena", Ph.D. Dissertation, Dept. of Chemical Engineering, Univ. of Patras, 1998. (In greek.)
11. A. Angelopoulos, "Study of multiphase flow in porous media using the method of cellular automata", Ph.D. Dissertation, Dept. of Chemical Engineering, Univ. of Patras, 1998. (In greek.)
12. E. Skouras, "Diffusion and absorption in gas sensors composed of semiconductor nanoceramics", Ph.D. Dissertation, Department of Chemical Engineering, Univ. of Patras, 2000. (In greek.)
13. D. Diamantis, "Combustion of gaseous hydrocarbons in porous ceramics", Ph.D. Dissertation, Department of Chemical Engineering, Univ. of Patras, 2001. (In greek.)
14. A. Kalarakis, "Simulation of two-phase flow with wetting and phase-change phenomena with a new cellular-automata method", Ph.D. Dissertation, Department of Chemical Engineering, Univ. of Patras, 2003. (In greek.)

15. I.T. Hafez, “Development of composite deposits for the enhancement of the mechanical properties of granular materials”, Ph.D. Dissertation, Department of Chemical Engineering, Univ. of Patras, 2006. (In greek.)
16. M. Lioliou, “Investigation of soil consolidation using in situ precipitation of inorganic calcium salts”, Ph.D. Dissertation, Department of Chemical Engineering, Univ. of Patras, 2006. (In greek.)
17. V. Sygouni, “A new method for the measurement of the fractional wettability of porous media from two-phase displacement experiments”, Ph.D. Dissertation, Department of Chemical Engineering, Univ. of Patras, 2007. (In greek.)
18. I. Sgountzos, “Investigation of the kinetics of the growth of microorganisms during the biodegradation of toxic pollutants in porous media”, Ph.D. Dissertation, Department of Chemical Engineering, Univ. of Patras, 2007. (In greek.)

## ***II. PhDs in progress***

E. Koveos , G. Kapellos , T. Alexiou, H. Linardos, M. Psarou.



### ***III. MSc Degrees, completed***

1. M. A. Neira, "A New Model of The Constricted Unit Cell Type for Granular Porous Media and Collocation Solution of the Creeping Newtonian Flow Problem," M.S. Thesis, 1977.
2. S. K. Bhutra "Experimental and Theoretical Study in Aerosol Particle Deposition," M.S. Thesis, 1978.
3. V. Medjimorec, "Estimation of Drug Forces Exerted on Particle Dendrites in Fibrous Filters," M.S. Thesis, 1979.
4. H. Park, "Deposition Pattern and Particle Cluster Reentrainment in Deep Bed Filtration in the Presence of Polyelectrolytes," M.S. Thesis, 1979.
5. G. Woodham, "Experimental Verification of the Method Used to Determine the Stranding Coefficient and the Breakup Coefficient," M.S. Thesis, 1979.
6. S. Rapin, "Behavior of Non-Wetting Oil Ganglia Displaced by an Aqueous Phase," M.S. Thesis, Univ. of Houston, 1980.
7. J. Petrie, "Enhancement of Depth Filtration Efficiency by Polyelectrolytes", M.S. Thesis, Univ. of Houston, 1980.
8. F. Auzeais, "Dendritic Deposition of Neutral Dielectric Aerosol Particles on a Dielectric Funder in the Presence of an Electrical Field," M.S. Thesis, Univ. of Houston, 1980.
9. P. Brossard, " Influence of Electrostatic Forces on the Dendritic Deposition of Aerosol Particles for Small, Intermediate and High Stokes Numbers," M.S. Thesis, Univ. of Houston, 1981.
10. R. Hinkley, "Experimental Study of the Motion of Oil Ganglia in Model Porous Media," M.S. Thesis, Univ. of Houston, 1982.

## Appendix B: Publications in refereed scientific journals

1. Payatakes, A. C., Chi Tien, and R. M. Turian, "A New Model for Granular Porous Media. Part I. Model Formulation," *AIChE J.*, **19**, 58-67 (1973).
2. Payatakes, A. C., Chi Tien, and R. M. Turian, "A New Model for Granular Porous Media. Part II. Numerical Solution of Steady State Incompressible Newtonian Flow Through Periodically Constricted Tubes," *AIChE J.*, **19**, pp. 67-76 (1973).
3. Payatakes, A. C., Chi Tien, and R. M. Turian, "Further Work on the Flow Through Periodically Constricted Tubes - A Reply," *AIChE J.*, **19** 1036-1039 (1973)
4. Payatakes, A. C., Chi Tien, and R. M. Turian, "Trajectory Calculation of Particle Deposition in Deep Bed Filtration. Part I. Model Formulation," *AIChE J.*, **20**, 889-900 (1974).
5. Payatakes, A. C., Chi Tien, and R. M. Turian, "Trajectory Calculation of Particle Deposition in Deep Bed Filtration. Part II. Case Study of the Effect of the Dimensionless Groups, and Comparison with Experimental Data," *AIChE J.*, **20**, 900-905 (1974).
6. Payatakes, A. C., R. Rajagopalan, and Chi Tien, "On the Use of Happel's Porous Media Model in Filtration Studies," *J. Colloid Interface Sci.*, **49**, pp. 321-325 (1974).
7. Payatakes, A. C., R. Rajagopalan, and Chi Tien, "Application of Porous Media Models to the Study of Deep Filtration," *Can. J. Chem. Eng.* **52**, 722-731 (1974).
8. Payatakes, A. C., and Chi Tien, "Particle Deposition in Fibrous Media with Dendrite-like Pattern. A Preliminary Model," *J. Aerosol Sci.*, **7**, 85-100 (1976).
9. Payatakes, A. C., "Model of Aerosol Particle Deposition in Fibrous Media with Dendrite-like Pattern. Application to Pure Interception During the Period of Unhindered Growth," *Filtration Separation*, **13**, 602-607 (1976). (Winner of the 1975 Suttle Award of the Filtration Society).
10. Payatakes, A. C., "Model of the Dynamic Behavior of a Fibrous Filter. Application to Pure Interception During Period of Unhindered Growth," *Powder Technology*, **14**, 267-278 (1976).
11. Payatakes, A. C., "Model of Transient Aerosol Particle Deposition in Fibrous Media with Dendritic Pattern," *AIChE J.*, **23**, 192-202 (1977).
12. Payatakes, A. C., and M. A. Neira, "Model of the Constricted Unit Cell Type for Isotropic Granular Porous Media," *AIChE J.*, **23**, 922-930 (1977).
13. Neira, M. A., and A. C. Payatakes, "Collocation Solution of Creeping Newtonian Flow Through Periodically Constricted Tubes with Piece-wise Continuous Wall Profile," *AIChE J.*, **24**, 42-53 (1978).
14. Neira, M. A., and A. C. Payatakes, "Collocation Solution of Creeping Newtonian Flow Through Sinusoidal Tubes," *AIChE J.*, **25**, 725-730 (1979).

15. Tien, Chi, and A. C. Payatakes, "Advances in Deep Bed Filtration," (Journal Review) *AIChE J.*, **25**, 737-759 (1979).
16. Bhutra, S., and A. C. Payatakes, "Experimental Investigation of Dendritic Deposition of Aerosol Particles," *J. Aerosol Sci.* **10**,445-464 (1979).
17. Payatakes, A. C., and L. Gradon, "Dendritic Deposition of Aerosol Particles in Fibrous Media by Inertial Impaction and Interception," *Chem. Eng. Sci.*, **35**, 1083-1096 (1980).
18. Payatakes, A. C., K. M. Ng and R. W. Flumerfelt, "Oil Ganglion Dynamics During Immiscible Displacement. Model Formulation," *AIChE J.* **26**, 430-443 (1980).
19. Ng, K. M. and A. C. Payatakes, "Stochastic Simulation of the Motion, Breakup and Stranding of Oil-Ganglia in Water-Wet Granular Porous Media During Immiscible Displacement," *AIChE J.* **26**, 419-429 (1980).
20. Payatakes, A. C., and L. Gradon, "Dendritic Deposition of Aerosols by Convective Brownian Diffusion for Small, Intermediate and High Particle Knudsen Numbers," *AIChE J.* **26**, 443-454 (1980).
21. Payatakes, A. C., "Discussion of the Note by Dahneke and Padilya," *J. Aerosol Sci.* **11**, 571-575 (1980).
22. Okuyama, K., Y. Kousaka, and A. C. Payatakes, "Evaluation of the Effect of Nonsphericity of Fine Aggregate Particles in Brownian Coagulation," *J. Colloid Interface Sci.*, **81**, 21-31 (1981).
23. Payatakes, A. C., H. Y. Park, and J. Petrie, "A Visual Study of Particle Deposition and Reentrainment During Depth Filtration of Hydrosols with a Polyelectrolyte," *Chem. Eng. Sci.* **36**, 1319-1335 (1981).
24. Okuyama, K. and A. C. Payatakes, "Comparison Between Theory and Experiment in Dendritic Aerosol Deposition. A Revision." *J. Aerosol Sci.*, **12**, 269-274 (1981).
25. Medjimorec, V., K. Okuyama, and A. C. Payatakes, "Estimation of the Drag Forces Acting on Particle Dendrites," *J. Colloid Interface Sci.*, **82**, 543-559 (1981).
26. Kousaka, Y., K. Okuyama, and A. C. Payatakes, "Physical Meaning and Evaluation of Dynamic Shape Factor of Aggregate Particles," *J. Colloid Interface Sci.*, **84**, 91- 99 (1982).
27. Payatakes, A. C., and K. Okuyama, "Effects of Aerosol Particle Deposition on the Dynamic Behavior of Uniform or Multilayer Fibrous Filters." *J. Colloid Interface Sci.*, **88**, 55-78 (1982).
28. Gradon, L. and A.C. Payatakes, "Mechanism of Dendrite Formation from a Stream of Submicron Aerosol in the Presence of an External Electric Field", *Chem. Eng. Comm.* **16**, 339-348 (1982).
29. Payatakes, A. C., "Dynamics of Oil Ganglia During Immiscible Displacement in Water-Wet Porous Media", Invited paper, *Annual Reviews of Fluid Mechanics*, **14**, 365-394, (1982).

30. Auzerais, F., A. C. Payatakes, and K. Okuyama, "Dendritic Deposition of Uncharged Aerosol Particles on an Uncharged Fiber in the Presence of an Electrical Field," *Chem. Eng. Sci.*, **38**, 447-467 (1983).
31. Payatakes, A. C. and M. M. Dias, "Immiscible Microdisplacement and Ganglion Dynamics in Porous Media," *Reviews in Chemical Engineering* **2**, 85-174 (1984).
32. Tilton, J. N. and A. C. Payatakes, "Collocation Solution of Creeping Newtonian Flow through Sinusoidal Tubes: A Correction," *AIChE J.* **30**, 1016-1021 (1984).
33. Ng, K. M. and A. C. Payatakes, "Critical Evaluation of the Flow Rate-Pressure Drop Relation Assumed in Permeability Models," *AIChE J.* **31**, 1569-71 (1985).
34. Dias, M. M. and A. C. Payatakes, "Network Models for Two-Phase Flow in Porous Media. Part I. Immiscible Microdisplacement of Non-wetting Fluids," *J. Fluid Mech.*, **164**, 305-336 (1986).
35. Dias, M. M. and A. C. Payatakes, "Network Models for Two-Phase Flow in Porous Media. Part II. Motion of Oil Ganglia," *J. Fluid Mech.* **164**, 337-358 (1986).
36. Hinkley, R. E., M. M. Dias, and A. C. Payatakes, "On the Motion of Oil Ganglia in Porous Media," *Physicochemical Hydrodynamics*, **8**, 185-211 (1987).
37. Payatakes, A. C., and G. Dassios, "Creeping Flow Around and Through a Permeable Sphere Moving with Constant Velocity Towards a Solid Wall," *Chem. Eng. Comm.* **58**, 119-138 (1987).
38. Vizika, O., and A.C. Payatakes, "Parametric experimental study of forced imbibition in porous media," *Physicochemical Hydrodyn.*, **11**, 187-204 (1989).
39. Constantinides, G.N., and A.C. Payatakes, "A Three-Dimensional Network Model for Consolidated Porous Media. Basic Studies," *Chem. Eng. Commun.*, **81**, 55-81, (1989).
40. Tsakiroglou, C.D., and A.C. Payatakes, "A new simulator of mercury porosimetry for the characterization of porous materials," *Jl. Colloid Interface Sci.*, **137**, 315-339(1990).
41. Constantinides, G.N., and A.C. Payatakes, "A Theoretical Model of Collision and Coalescence of Ganglia in Porous Media," *J. Colloid and Interface Sci.*, **141**, 486-504 (1991)
42. Ioannides, M.A., I. Chatzis, and A.C. Payatakes, "A mercury porosimeter for investigating capillary phenomena and microdisplacement mechanisms in capillary networks," *J. Colloid and Interface Sci.*, **143**, 22-36 (1991)
43. Paraskeva, C.A., V.N. Burganos and A.C. Payatakes, "Three-dimensional trajectory analysis of particle deposition in constricted tubes," *Chem. Eng. Commun.*, **108**, 23-48 (1991).
44. Tsakiroglou, C.D., and A.C. Payatakes, "Effects of pore size correlations on mercury porosimetry curves," *J. Colloid Interface Sci.*, **146**, 479-494 (1991).

45. Burganos, V.N., C.A. Paraskeva, and A.C. Payatakes, "Three-dimensional trajectory analysis and network simulation of deep bed filtration," *J. Colloid Interface Sci.*, **148**, 167-181 (1992).
46. Burganos, V.N., and A.C. Payatakes, "Knudsen diffusion in random and correlated networks of constricted pores," *Chem. Eng. Sci.*, **47**, 1383-1400 (1992).
47. Lymberopoulos, D., and A.C. Payatakes, "Derivation of topological, geometrical and correlational properties of porous media from pore-chart analysis of serial tomography data", *J. Colloid Interface Sci.*, **150**, 61-80 (1992)
48. Burganos, V.N., A.C. Michalopoulou, G. Dassios, and A.C. Payatakes, "Creeping flow around and through a permeable sphere moving with constant velocity towards a solid wall; a revision", *Chem. Eng. Comm.*, **117**, 85-88 (1992)
49. Michalopoulou, A.C., V.N. Burganos, and A.C. Payatakes, "Creeping axisymmetric flow around a solid particle near a permeable obstacle", *AIChE JI*, **38**, 1213-1228 (1992).
50. Burganos, V.N., C.A. Paraskeva and A.C. Payatakes, "Parametric study of particle deposition in sinusoidal pores of arbitrary orientation", *J. Colloid Interface Sci.*, **158**, 466-475 (1993).
51. Tsakiroglou, C.D., and A.C. Payatakes, "Pore-Wall Roughness as a Fractal Surface and Theoretical Simulation of Mercury Intrusion/Retraction in Porous Media", *J. Colloid Interface Sci.*, **159**, 287-301 (1993).
52. Michalopoulou, A.C., V.N. Burganos and A.C. Payatakes, "Hydrodynamic interactions of two permeable particles moving slowly along their centerline", *Chem. Eng. Sci.*, **48**, 2889-2900 (1993).
53. Coutelieris, F.A., V.N. Burganos and A.C. Payatakes, "On Mass Transfer from a Newtonian Fluid to a Swarm of Absorbing Spheroidal Particles for High Peclet Numbers", *J. Colloid Interface Sci.*, **161**, 43-52 (1993).
54. Burganos, V.N., C.A. Paraskeva, and A.C. Payatakes, "Motion and Deposition of non-Brownian Particles in Upflow Collectors", *Sep. Technol.*, **4**, 47-54 (1994).
55. Dassios, G., M. Hadjinicolaou, and A.C. Payatakes, "Generalized eigenfunctions and complete semiseparable solutions for Stokes flow in spheroidal coordinates", *Q. Appl. Math.*, **52**, 157-191 (1994).
56. Avraam, D.G., G.B. Kolonis, T.C. Roumeliotis, G.N. Constantinides and A.C. Payatakes, "Steady-State Two-Phase Flow through Planar and Nonplanar Model Porous Media", *Transp. Porous Media*, **16**, 75-101 (1994).
57. Vizika, O., D.G. Avraam, and A.C. Payatakes, "On the role of the viscosity ratio during low-capillary-number forced imbibition in porous media", *J. Colloid Interface Sci.*, **165**, 386-401 (1994).
58. Burganos, V.N., C.A. Paraskeva, and A.C. Payatakes, "Monte Carlo Network Simulation of Horizontal, Upflow, and Downflow Depth Filtration", *AIChE JI*, **41**, 272-285 (1995).

59. Avraam, D.G., and A.C. Payatakes, "Flow regimes and relative permeabilities during steady-state two-phase flow in porous media", *J. Fluid Mech.*, **293**, 207-236 (1995).
60. Coutelieris, F.A., V.N. Burganos, and A.C. Payatakes, "Convective diffusion and adsorption in a swarm of spheroidal particles", *AIChE J.*, **41**, 1122-1134 (1995)
61. Dassios, G., M. Hadjinicolaou, F.A. Coutelieris, and A.C. Payatakes, "Stokes flow in spheroidal particle-in-cell models with Happel and Kuwabara boundary conditions", *Inter. J. Eng. Sci.*, **33**, 1465-1490 (1995).
62. Avraam D.G., and A.C. Payatakes, "Generalized relative permeability coefficients during steady-state, two-phase flow in porous media, and correlation with the flow mechanisms", *Transp. Porous Media*, **20**, 135-168 (1995).
63. Velev, O., G.N. Constantinides, D.G. Avraam, and A.C. Payatakes, "A new cell for the investigation of thin liquid films of small diameters and high capillary pressures", *J. Colloid Interface Sci.*, **175**, 68-76 (1995).
64. Burganos, V.N., F.A. Coutelieris, G. Dassios, and A.C. Payatakes, "On the rapid convergence of the analytical solution of Stokes flow around spheroids-in-cell", *Chem. Eng. Sci.*, **50**, 3313-3317 (1995).
65. Constantinides, G.N., and A.C. Payatakes, "Network simulation of steady-state two-phase flow in consolidated porous media", *AIChE J.*, **42**, 369-382 (1996).
66. Yao, J., J.-F. Thovert, P.M. Adler, V.N. Burganos, A.C. Payatakes, J.-C. Moulou, and F. Kalaydjian, "Characterization Reconstruction and Transport Properties of Vosges Sandstones", *Revue de l' Institute Francais du Petrole*, **52**, (No 1), 3-21 (1997).
67. Tzimas, G.C., T. Matsuura, D.G. Avraam, W. Van der Bruggen, G.N. Constantinides, and A.C. Payatakes, "On the combined effect of the viscosity ratio and the wettability during forced imbibition through non-planar porous media", *J. Colloid Interface Sci.*, **189**, 27-36 (1997).
68. Tsakiroglou, C.D., G.B. Kolonis, T.C. Roumeliotis, and A.C. Payatakes, "Mercury Penetration and Snap-off in Lenticular Pores", *J. Colloid Interface Sci.*, **193**, 259-272 (1997).
69. Burganos, V.N., F.A. Coutelieris, and A.C. Payatakes, "Sherwood Number for Mass Transfer to a Swarm of Adsorbing Spheroidal Particles for any Peclet Number", *AIChE J.*, **43**, 844-846 (1997).
70. Valavanides, M.S., G.N. Constantinides, and A.C. Payatakes, "Mechanistic Model of Steady-State Two-Phase Flow in Porous Media Based on Ganglion Dynamics", *Transp. Porous Media*, **30**, 267-299 (1998).
71. Angelopoulos, A., V.N. Burganos, A.C. Payatakes and V.N. Paunov, "Lattice-Boltzmann simulation of nonideal vapor-liquid flow in porous media", *Physical Review E*, **57**, (No. 3), 1-9 (1998).
72. Tsakiroglou, C.D. and A.C. Payatakes, "Mercury intrusion and retraction in model porous media", *Adv. Colloid Interface Sci.*, **75**, 215-253 (1998).

73. Willett, M., V.N. Burganos, C.D. Tsakiroglou, and A.C. Payatakes, "Gas Sensing and Structural Properties of Various Pretreated Nanopowder Tin (IV) Oxide Samples", *Sensors and Actuators B*, **53**, 76-90 (1998).
74. Constantinides, G.N., D. Gintides, S.E. Kattis, K. Kiriaki, C.A. Paraskeva, A.C. Payatakes, D. Polyzos, S.V. Tsinopoulos, and S. Yannopoulos, "Computation of light scattering by axisymmetric non-spherical particles and comparison with experimental results", *Applied Optics*, **37**, 7310-7319 (1998).
75. Mastorakos, E., A. Massias, C.D. Tsakiroglou, D.A. Goussis, V.N. Burganos, and A.C. Payatakes, "CFD predictions for cement kilns including flame modelling, heat transfer and clinker chemistry", *Appl. Math. Modelling*, **23**, 55-76 (1999).
76. Avraam, D.G., and A.C. Payatakes, "Flow Mechanisms, Relative Permeabilities and Coupling Effects in Steady-State Two-Phase Flow through Porous Media. Case of Strong Wettability", (invited paper), *Ind. & Eng. Chem. Research*, **38**, 778-786 (1999).
77. Skouras, E., V.N. Burganos, and A.C. Payatakes, "Simulation of Gas Diffusion and Sorption in Nanoceramic Semiconductors", *J. Chem. Phys.*, **110**, 9244-9253 (1999).
78. Constantinides, G.N., and A.C. Payatakes, "Effects of Precursor Wetting Films in Immiscible Displacement through Porous Media", *Transp. Porous Media*, **38**, 291-317 (2000).
79. Tsakiroglou, C.D., and A.C. Payatakes, "Characterization of the pore structure of reservoir rocks with the aid of serial sectioning analysis, mercury porosimetry and network simulation", *Adv. Water Resources*, **23**, 773-789 (2000).
80. Paraskeva, C.A., P. Charalambous, L.-E. Stokka, P.G. Klepetsanis, P.G. Koutsoukos, P. Read, T. Ostvold, and A.C. Payatakes, "Sandbed Consolidation with Mineral Precipitation", *J. Colloid Interface Sci.*, **232**, 326-339 (2000).
81. Valavanides, M.S., and A.C. Payatakes, "True-to-Mechanism Model of Steady-State Two-Phase Flow in Porous Media, using Decomposition into Prototype Flows", *Adv. Water Resources*, **24**, 385-407 (2001).
82. Burganos, V.N., E.D. Skouras, C.A. Paraskeva, and A.C. Payatakes, "Simulation of the dynamics of depth filtration of non-Brownian particles", *AIChE J.*, **47**, 880-894 (2001).
83. Skouras, E.D., V.N. Burganos, and A.C. Payatakes, "Improved atomistic simulation of diffusion and sorption in metal oxides", *J. Chem. Phys.*, **114**, 545-552 (2001).
84. Vayenas, D.V., E. Michalopoulou, G.N. Constantinides, S. Pavlou, and A.C. Payatakes, "Visualization Experiments of Biodegradation in Porous Media and Calculation of Biodegradation Rate", *Adv. Water Resources*, **25**, 203-219 (2002).

85. Kalarakis, A.N., V.N. Burganos, and A.C. Payatakes, "Galilean invariant lattice-Boltzmann simulation of liquid-vapor interface dynamics", *Phys. Rev. E*, **65**, Art. No 056702, pp.1-13 (2002).
86. Kalarakis, A.N., V.N. Burganos, and A.C. Payatakes, "A three-dimensional lattice-Boltzmann model of van der Waals fluids", *Phys. Rev. E*, **67**, Art. No 016702, pp. 1-8 (2003).
87. Coutelieris, F., V.N. Burganos, and A.C. Payatakes, "A model of adsorption-reaction-desorption in a swarm of spheroidal particles", *AIChE J.*, **50**, 779-785 (2004).
88. Skouras, E.D., C.A. Paraskeva, V.N. Burganos, and A.C. Payatakes, "Simulation of downflow and upflow depth filtration of non-Brownian particles under constant flowrate or constant pressure drop conditions", (Invited paper for the *Chi Tien Festschrift Issue*), *J. Chinese Inst. Chem. Engrs*, **35**, No 1, 87-100 (2004).
89. Dassios, G., A.C. Payatakes and P. Vafeas, "Interrelation between Papkovitch-Neuber and Stokes General Solutions of the Stokes Equations in Spheroidal Geometry", *Quart. J. Mech. Applied Math.*, **57**, 81-203 (2004).
90. Hafez, I.T., C.A. Paraskeva, A. Toliza, P.G. Klepetsanis, P.G. Koutsoukos, O. Gustavsen, T. Ostvold, and A.C. Payatakes, "Calcium Phosphate Overgrowth on Silicate Sand", *Cryst. Growth Design*, **6**(3): 675-683 (2006).
91. Moskal, A., and A.C. Payatakes, "Estimation of the Diffusion Coefficient of Aerosol Particle Aggregates using Brownian Simulation in the Continuum Regime", *J. Aerosol Sci.*, **37**, 1081-1101 (2006).
92. Sygouni, V., C.D. Tsakiroglou, and A.C. Payatakes, "Capillary pressure spectrometry. Toward a new method for the measurement of the fractional wettability of porous media", *Phys. Fluids*, **18**(5): art. no. 053302 (2006).
93. Kovaivos, I.D., C.A. Paraskeva, P.G. Koutsoukos, and A.C. Payatakes, "Adsorption of Atrazine on Soils: Model Study", *J. Colloid Interface Sci.*, **299**, 88-94 (2006).
94. Sgountzos, I.N., S. Pavlou, C.A. Paraskeva, and A.C. Payatakes, "Growth kinetics of *Pseudomonas Fluorescens* in sand beds during biodegradation of phenol", *Biochem. Eng. J.*, **30**, 164-173 (2006).
95. Lioliou, M.G., C.A. Paraskeva, P.G. Koutsoukos, and A.C. Payatakes, "Calcium sulfate precipitation in the presence of water-soluble polymers", *J. Colloid Interface Sci.*, **303** (1), 164-170 (2006).
96. Kapellos, G.E., T.S. Alexiou and A.C. Payatakes, "Hierarchical Simulator of Biofilm Growth and Dynamics in Granular Porous Materials", *Adv. Water Resources*, **30**, 1648-1667 (2007).
97. Lioliou, M.G., C.A. Paraskeva, P.G. Koutsoukos, and A.C. Payatakes, "Heterogeneous nucleation and growth of calcium carbonate on calcite and quartz", *J. Colloid Interface Sci.*, **308** (2), 421-428 (2007).
98. Skouras, E.D., V.N. Burganos, C.A. Paraskeva, and A.C. Payatakes, "Simulation of the Dynamic Behavior of Horizontal Granular Filters", *Separ. Purific. Techn.*, **56**, 325-339 (2007).



99. Tsakiroglou, C.D., Avraam, D.G., and Payatakes, A.C., "Transient and steady-state relative permeabilities from two-phase flow experiments in planar pore networks", *Adv. Water Resources*, **30**, 1981-1992 (2007).
100. Kappellos, G.E., T.S. Alexiou, and A.C. Payatakes, "A Multiscale Theoretical Model for Diffusive Mass Transfer in Cellular Biological Media", *Mathematical Biosciences*, **210** (1), 177-237 (2007).
101. Sygouni, V., C.D. Tsakiroglou, and A.C. Payatakes, "Using wavelets to characterize the wettability of porous materials", *Phys. Rev. E*, **76**, Art. No 056304, pp. 1-18 (2007).
102. Kappellos, G.E., T.S. Alexiou, and A.C. Payatakes, "A Multiscale Theoretical Model for Flow in Cellular Biological Media: Hydraulic Permeability", in preparation, 2007.

## Appendix C: Publications in books

1. Payatakes, A. C., G. Woodham and K. M. Ng, "On the Fate of Oil Ganglia During Immiscible Displacement in Water-Wet Granular Porous Media," in D. O. Shah, Editors, "Surface Phenomena in Enhanced Oil Recovery", pp. 611-640, Plenum Press, New York, 1981.
2. Tsakiroglou, C.D., and A.C. Payatakes, "A New Mercury Intrusion-Retraction Simulator Used as a Means for the Characterization of Porous Materials", in F. Rodriguez-Reinoso (Editor): "Characterization of Porous Solids (COPS-II)", Elsevier, Amsterdam, 1991.
3. Coutelieris, F.A., V.N. Burganos, and A.C. Payatakes, "Creeping Flow and Brownian Particle Deposition around Spheroidal Objects", in A. Peters *et al* (Editors): "Computational Methods in Water Resources X", pp. 423-430, Kluwer Acad. Publishers, Dordrecht, The Netherlands, 1994.
4. Burganos, V.N., C.A. Paraskeva, and A.C. Payatakes, "Monte Carlo Simulation of Suspension Flows in Unconsolidated Porous Media", in A. Peters *et al* (Editors): "Computational Methods in Water Resources X", pp. 667-674, Kluwer Acad. Publishers, Dordrecht, The Netherlands, 1994.
5. Skouras, E.D., C.A. Paraskeva, V.N. Burganos, and A.C. Payatakes, "Simulation of particle deposition and loss of permeability during flow of aqueous suspensions in underground formations", in A.A. Aldama *et al* (Editors): "Computational Methods in Water Resources XI", Vol. 1, pp. 245-254, Computational Mechanics Publications, Boston, USA, 1996.
6. Paunov, V.N., A. Angelopoulos, V.N. Burganos, and A.C. Payatakes, "Lattice-Boltzmann simulation of ideal and nonideal immiscible two-phase flow in porous media", in A.A. Aldama *et al* (Editors): "Computational Methods in Water Resources XI", Vol. 1, pp. 457-466, Computational Mechanics Publications, Boston, USA, 1996.
7. Tsakiroglou, C.D., and A.C. Payatakes, "Analysis of the Topological and Geometrical Characteristics of the Pore Space of Permeable Solids Using Serial Tomography, Mercury Porosimetry, and Theoretical Simulation", in B. McEnaney *et al* (Editors): "Characterization of Porous Solids (COPS-IV)", pp. 205-212, Elsevier, Amsterdam, 1997.
8. Payatakes, A.C., G.N. Constantinides and M.S. Valavanides, "Hierarchical Theoretical Models: an Informal Introduction", in G. Dassios *et al* (Editors): "Mathematical Methods in Scattering Theory and Biomedical Technology", Addison Wesley Longman: *Pitman Research Notes in Mathematics Series*, No 390, pp. 158-169, 1998.
9. Constantinides, G.N., D. Gintides, S.E. Kattis, K. Kiriaki, C.A. Paraskeva, A.C. Payatakes, D. Polyzos, S.V. Tsinopoulos, and S. Yannopoulos, "Particle Shape and Size Analyzer", in G. Dassios *et al* (Editors): "Mathematical Methods in Scattering Theory and Biomedical Technology", Addison Wesley Longman: *Pitman Research Notes in Mathematics Series*, No 390, pp. 65-79, 1998.
10. Payatakes, A.C., and M.S. Valavanides, "True-to-mechanism macroscopic theory of steady-state two-phase flow in porous media", in V.N. Burganos

- et al* (Editors): “Computational Methods in Water Resources XII”, Vol. 2, pp. 3-10, Computational Mechanics Publications, Boston, USA, 1998.
11. Tsakiroglou, C.D. D.G. Avraam, and A.C. Payatakes, “Improved macroscopic equations of two-phase flow in porous media based on new models of the capillary pressure and relative permeability”, in V.N. Burganos *et al* (Editors): Computational Methods in Water Resources XII”, Vol. 2, pp. 27-34, Computational Mechanics Publications, Boston, USA, 1998.
  12. Valavanides, M.S., and A.C. Payatakes, “A true-to-mechanism model of steady-state two-phase flow in porous media, including the contribution of the motion of ganglia and droplets”, in L.R. Bentley *et al* (Editors): “Computational Methods in Water Resources XIII”, Vol. 1. pp. 239-243, A.A Balkema, Rotterdam, The Netherlands, 2000.
  13. Valavanides, M.S., and A.C. Payatakes, “Comparison of two-phase flow in 2-D and 3-D pore networks using true-to-mechanism theoretical model (DeProF)”, in S. M. Hassanizadeh *et al* (Editors): “Computational Methods in Water Resources XIV”, Vol. 2. pp. 1083-1090, Elsevier, Amsterdam, The Netherlands, 2002.
  14. Gustavsen, Ø., T. Larsen, T. Østvold, C.A. Paraskeva, I.T. Hafez, A. Toliza, P.G. Klepetsanis, P.G. Koutsoukos, and A. Payatakes, “Sand Stabilization with Mineral Precipitation”, István Lakatos (Ed.): “Advances in Incremental Petroleum Production”, Akad. Kiadó, Budapest, Hungary; *Progress in Mining and Oilfield Chemistry*, Vol. 5, pp.259-278, 2003.

## **Appendix D: Publications in the proceedings of international scientific conferences**

1. Payatakes, A. C., R. M. Turian, and Chi Tien, "Carbon Column Operation in Waste Water Treatment. Part IV. Integration of Filtration Equations and Parameter Optimization Techniques," Final Report submitted to FWQA, Syracuse University, August, 1970.
2. Payatakes, A. C., and Chi Tien, "Integration of Filtration Equations and Parameter Optimization Techniques," Proc. 2nd World Congress on Water Resources, New Delhi, India, Vol. V, pp. 241-251 (1975)
3. Payatakes, A. C., R. W. Flumerfelt and K. M. Ng, "Oil Ganglion Dynamics during Immiscible Displacement. Effects of Interfacial Properties," Proceedings 4-th DOE Symposium on Enhanced Oil and Gas Recovery, pp. B-5/1 to 25, Tulsa, Okla., August 29-31, 1978.
4. Payatakes, A. C., "Advances in Dendritic Deposition of Aerosols by Inertial Impaction and/or Interception," Proc. The Second World Filtration Congress, pp. 507-519, London, England, Sept. 18-20, 1979.
5. Payatakes, A. C., K. M. Ng, and G. Woodham, "Monte Carlo Simulation of the Fate of Oil Ganglia During Immiscible Displacement in Water Wet Granular Porous Media," Proc. 5-th DOE Symposium of Enhanced Oil and Gas Recovery, pp. C-1/1 to 26, Tulsa, Oklahoma, August 22-24, 1979.
6. Okuyama, K. and A. C. Payatakes, "On the Transient Behavior of Aerosol Filters," Proc. Fine Particle Soc. Fall Meeting, Univ. of Maryland, Sept. 16-18, 1980; Hemisphere Publ. Corp., Washington, D.C., 1981.
7. Payatakes, A. C. and K. Okuyama, "Effects of Aerosol Particle Deposition on the Dynamic Behavior of Uniform or Multilayer Fibrous Filters," Proc. Intern. Symp. on Powder Technol. 81, Kyoto, Japan, Sept. 28-Oct. 1, 1981.
8. Kousaka, Y., K. Okuyama, and A. C. Payatakes, "Evaluation of Dynamic Shape Factor of Aggregate Particles," Proc. Intern. Symp. on Powder Technol. 81, Kyoto, Japan, Sept. 28-Oct. 1, 1981.
9. Dias, M. M., and A. C. Payatakes, "Theoretical Simulations of Immiscible Microdisplacement of Oil in Water-Wet Porous Media," Proc. 3rd European Meeting on Improved Oil Recovery, Vol. I, pp. 111-122, Rome, April 16-18, 1985.
10. Constantinides, G.N., and A.C. Payatakes, "Three-Dimensional Simulation of Immiscible Displacement of Oil Ganglia in Consolidated Porous Media," Proc. 4th European Symp. Enhanced Oil Recovery, pp. 965-976 Hamburg, Oct. 27-29, 1987.
11. Vizika, O., and A.C. Payatakes, "Parametric Experimental Study of Initial Immiscible Microdisplacement in Water-wet Porous Media," Proc. 4th European Symp. Enhanced Oil Recovery, pp. 977-988. Hamburg, Oct. 27-29, 1987.
12. Payatakes, A.C., "Filtration of Liquid-Solid Suspensions in Porous Media," Proc. 4th EPS Liquid State Conference on the "Hydrodynamics of Dispersed Media," pp. 27-28, Arcachon, France, May 24-27, 1988.

13. Vizika, O., and A.C. Payatakes, "Theoretical Modelling of the Role of the Advancing Wetting Film in the Disconnection of the Non-Wetting Fluid During Immiscible Displacement," AIChE 1988 Annual Meeting, paper No 95 C, Washington, D.C., Nov. 27 - Dec. 2, 1988.
14. Tsakiroglou, C.D., and A.C. Payatakes, "An Experimental and Theoretical Study of Mercury Porosimetry in a Pore Network Model," AIChE 1988 Annual Meeting, paper No 102 L, Washington, D.C., Nov. 27 - Dec. 2, 1988.
15. Constantinides, G.N., and A.C. Payatakes, "A Theoretical Model of the Collision and Coalescence of Ganglia in Porous Media," AIChE 1988 Annual Meeting, paper 153 F, Washington, D.C., Nov. 27 - Dec. 2, 1988.
16. Paraskeva, C.A., V.N. Burganos, and A.C. Payatakes, "A Three-Dimensional Network Model of Deep Bed Filtration in Granular Porous Media," AIChE 1989 Annual Meeting, paper 168 AB, San Francisco, CA, Nov. 5-10, 1989.
17. Vizika, O., and A.C. Payatakes, "On the Role of the Viscosity Ratio in Immiscible Microdisplacement in Pore Networks, Especially for low Capillary Number Values," AIChE 1989 Annual Meeting, paper No 57a, San Francisco, CA, Nov. 5-10, 1989.
18. Paraskeva, C.A., V.N. Burganos, and A.C. Payatakes, "A Computer-aided 3-D Network Simulator of Deep Bed Filtration in Granular Porous Media," Proc. Second World Congress PARTICLE TECHNOLOGY, Kyoto, Japan, Sept. 19-22, 1990.
19. Michalopoulou, A.C., V.N. Burganos, and A.C. Payatakes, "Hydrodynamic Interaction Between a Moving Particle and a Porous Obstacle in a Creeping Flow Field", AIChE 1991 Annual Meeting, paper no 117g, Los Angeles, CA, Nov. 17-22, 1991.
20. Constantinides, G.N., and A.C. Payatakes, "An improved theoretical model of collision and coalescence of ganglia in porous media at high capillary number", 9th International Symposium on Surfactants in Solution, Varna, Bulgaria, June 10-15, 1992.
21. Burganos, V.N., C.A. Paraskeva and A.C. Payatakes, "A test particle approach for the simulation of horizontal and up-flow filtration" Proc., pp. 248-251, 6th World Filtration Congress, Nagoya, Japan, May 18-21, 1993.
22. Michalopoulou, A.C., V.N. Burganos and A.C. Payatakes, "Computer-aided simulation of cross flow filtration of particle-aggregate suspensions", Proc. pp. 593-596, 6th World Filtration Congress, Nagoya, Japan, May 18-21, 1993.
23. Burganos, V.N., C.A. Paraskeva, and A.C. Payatakes, "Monte Carlo simulation of granular filtration in regular and randomized networks of constricted pores", Invited Lecture, Amer. Filtr. Soc. Annual Techn. Confer., Nashville TN, April 23-26, 1995.
24. Payatakes, A.C., D.G. Avraam, G.N. Constantinides, and M. Valavanides, "Flow Regimes and Relative Permeabilities During Steady-State Two-Phase Flow in Porous Media", Proc. paper No 5, 7th Intern. Symp. on Oil Field Chemicals, Geilo, Norway, March 17-20, 1996.

25. Valavanides, M.S., G.N. Constantinides, and A.C. Payatakes, "Simulation of the Motion of Oil Ganglia in Consolidated Porous Media. Crowding Effects", Proc. pp. 355-364, 5th European Conference on the Mathematics of Oil Recovery, Leoben, Austria, Sept. 3-6, 1996.
26. Payatakes, A.C., E.D. Skouras, C.A. Paraskeva and V.N. Burganos, "Simulation of the Gradual Reduction of the Permeability caused by the Migration and Deposition of fine Non-Brownian Particles in Porous Media", Proc. paper No 24, 8th intern. Oil Field Chemical Symposium, Geilo, Norway, March 2-5, 1997.
27. Valavanides, M.S., and A.C. Payatakes, "Prediction of the Relative Permeabilities for Steady-State Two-Phase Flow in Porous Media using a Mechanistic Model", Proc. Paper No B-7, 6<sup>th</sup> European Conference on the Mathematics of Oil Recovery, Peebles (Edinburgh), Scotland, 8-11 Sept., 1998.
28. Payatakes, A.C., C.A. Paraskeva, P.G. Klepetsanis, P. Koutsoukos, P. Read, and T. Ostvold, "Sand Control with Mineral Precipitation", Proc. 10th Oil Field Chemicals Symposium, pp. 145-156, Fagernes, Norway, Febr.28-March 3, 1999.
29. Vayenas, D.V., G. Kapellos, I. Sgountzos, E. Michalopoulou, G.N. Constantinides, S. Pavlou, and A.C. Payatakes, "Biofilm Dynamics in Soil", Proc. 1st European Conference on Bioremediation, pp.389-392, Chania (Crete), Greece, July 2-5, 2001.
30. Constantinides, G.N., and A.C. Payatakes, "Calculation of the capillary pressure – saturation relation for forced imbibition and drainage in porous media using a pore network simulator", European Geophysical Society: XXVIth General Assembly, Nice, France, 25-30 March 2001.
31. Valavanides, M.S., and A.C. Payatakes, "Calculation of some fundamental quantities that characterize two-phase flow in porous media using a true-to-mechanism theoretical model (DeProF)", European Geophysical Society: XXVIth General Assembly, Nice, France, March 25-30, 2001.
32. Vayenas, D.V., G. Kapellos, I. Sgountzos, E. Michalopoulou, G.N. Constantinides, S. Pavlou, and A.C. Payatakes, "Biofilm Dynamics in Soil", Proc. 1st European Conference on Bioremediation, pp.389-392, Chania (Crete), Greece, July 2-5, 2001.
33. Valavanides, M.S., and A.C. Payatakes, "Effects of Pore Network Characteristics on Steady-State Two-Phase Flow Based on a True-to-Mechanism Model (DeProF)", Proc.10th Abu Dhabi International Petroleum Exhibition and Conference (ADIPEC), paper No. SPE 78516, pp. 379-387, Abu Dhabi – United Arab Emirates, October 13-16, 2002.
34. Constantinides, G.N., and A.C. Payatakes, "Determination of the effects of capillary number, viscosity and wettability on the capillary pressure – saturation relation using an advanced pore network simulator", Proc.10<sup>th</sup> Abu Dhabi International Petroleum Exhibition and Conference (ADIPEC), paper No. SPE 78518, pp. 388-398, Abu Dhabi – United Arab Emirates, October 13-16, 2002.

35. Sygouni, V., C.D. Tsakiroglou, and A.C. Payatakes, "Correlation of the Dynamic Immiscible Displacement Patterns with the Fractional Wettability of Porous Media", Society of Core Analysts Symposium, paper No. SCA 2003-07, Pau, France, September 21-24, 2003.
36. Valavanides, M.S., and A.C. Payatakes, "Prediction of Optimum Operating Conditions for Steady-State Two-Phase Flow in Pore Network Systems Using the DeProF True-to-Mechanism Theoretical Model", Society of Core Analysts Symposium, paper No. SCA 2003-18, Pau, France, September 21-24, 2003.
37. Tsakiroglou, C.D., D.G. Avraam, and A.C. Payatakes, "Simulation of immiscible displacement in porous media using capillary pressure and relative permeability curves from transient and steady-state experiments", Proc. Intern Conf. of the Society of Core Analysts, paper No: SCA 2004-12, Abu Dhabi, UAE, Oct. 5-9, 2004
38. Valavanides, M.S., and A.C. Payatakes, "Wetting Film Effects on Steady-State Two-Phase Flow in Pore Networks using the DeProF theoretical Model", Soc. Petr. Engrs., SPE No. 88713, Proc. 11th ADIPEC, Abu Dhabi Intern. Petrol. Exhib. and Conference, Abu Dhabi, UAE, Oct. 10-13, 2004.
39. Kapellos, G.E., T.S. Alexiou, S. Pavlou, and A.C. Payatakes, "Hierarchical modelling approach for the prediction of effective hydraulic permeability and diffusion coefficient in biofilms", Proc. Intern. Conf. Biofilms 2004: Structure and Activity of Biofilms, pp. 255-260, Las Vegas, NV, USA, Oct. 24-26, 2004.
40. Kapellos, G.E., T.S. Alexiou, S. Pavlou, A.C. Payatakes, "Hierarchical Simulation of Biofilm Dynamics during Biodegradation of Organic Pollutants in Porous Media", Proc. 3rd European Bioremediation Conference, Techn. Univ. of Crete, Chania, Greece, July 4-7, 2005.
41. Sygouni, V., C. D. Tsakiroglou, and A. C. Payatakes, "Capillary pressure spectrometry: a new method for the quantification of the fractional wettability of porous media", Proc. 7th World Congress of Chemical Engineering, Glasgow, Scotland, July 10-14, 2005.
42. Sygouni, V., C.D. Tsakiroglou, A.C. Payatakes, "Effects of fractional wettability and its spatial heterogeneity on the capillary pressure and relative permeability functions", Proc. Intern Conf. of the Society of Core Analysts, paper No: SCA2005-X, Toronto, Ontario, Canada, Aug. 21-25, 2005.
43. Kapellos, G.E., T.S. Alexiou, S. Pavlou, and A.C. Payatakes, "Hierarchical simulation of biofilm growth dynamics in porous media", Intern. Conf. on Environmental Science and Technology, American Academy of Sciences, paper No 806, Houston, TX, USA, Aug. 5-10, 2007. (Excellent Paper Award.)

## Appendix E: Presentations in scientific conferences

1. Payatakes, A. C., and Chi Tien, "Application of the P-T-T Porous Media Model in Deep Bed Filtration," invited paper, Particulate Matter Systems Conference, New Henniker, N. H., August 18-23, 1974.
2. Payatakes, A. C., "Model of the Dynamic Behavior of a Fibrous Filter of Differential Thickness," Fine Particle Society Conference, Philadelphia, August 19-20, 1975.
3. Payatakes, A. C., "Improved Model of Aerosol Particle Deposition in Fibrous Media with Dendritic Pattern," 8th Annual Meeting of the Fine Particle Society, Chicago, August, 1976.
4. Payatakes, A. C., "Advances in the Modeling of Aerosol Particle Deposition in Fibrous Media with Dendritic Pattern," AIChE 82nd Conference, Atlantic City, August 28-September 1, 1976.
5. Payatakes, A. C., and S. K. Bhutra, "Aerosol Particle Deposition in Fibrous Media with Dendritic Pattern. Comparison Between Theory and Experiment," AIChE 69th Annual Meeting, Chicago, Ill., Nov. 28-Dec 2, 1976.
6. Payatakes, A. C., D. H. Brown and Chi Tien, "On the Transient Behavior of Deep Deep Bed Filtration," AIChE 83rd National Meeting, Houston, March 20-24, 1977.
7. Payatakes, A. C., and M. Neira, "A New Model of the Constricted Unit Cell Type for Granular Porous Media," AIChE 83rd National Meeting, Houston, March 20-24, 1977.
8. Neira, M., and A. C. Payatakes, "Collocation Solution of Creeping Newtonian Flow Through Periodically Constricted Tubes," AIChE 83rd National Meeting, Houston, March 20-24, 1977.
9. Payatakes, A. C., "Deep Bed Filtration. Theory and Practice," INVITED LECTURE, ASEE Summer School for Chemical Engineering Faculty, Snowmass, Colorado, August 1-5, 1977.
10. Payatakes, A. C., R. W. Flumerfelt, and K. M. Ng, "Model of Isotropic Granular Porous Media for the Simulation of Oil Ganglia Motion, Partition and Coalescence During Immiscible Displacement," AIChE 70th Annual Meeting, New York, November 13-17, 1977.
11. Payatakes, A. C., R. W. Flumerfelt, and K. M. Ng, "On the Dynamics of Oil-Ganglia Populations During Immiscible Displacement," AIChE 84th National Meeting, Atlanta, Georgia, February 26-March 1, 1978.
12. Bhutra, S. K., and A. C. Payatakes, "Experimental and Theoretical Investigation of Aerosol Particle Deposition on a Single Fiber," AIChE84th National Meeting, Atlanta, Georgia, February 26-March 1, 1978.
13. Payatakes, A. C., and S. K. Bhutra, "Transient Aerosol Particle Deposition on Fine Fibers," invited paper; Fine Particle Society and Powder Show 78, Rosemont, Illinois, May 16-18, 1978.



14. Ng, K. M., and A. C. Payatakes, "On the Mobilization and Fate of Oil Ganglia during Immiscible Displacement," 49th Annual Meeting Soc. of Rheology, Houston, Texas, Oct. 22-26, 1978.
15. Payatakes, A. C., "Ganglia Population Movement, Bank Formation," Gordon Research Conference on "Fluids in Permeable Media" at Kimball Union Academy, Meriden, New Hampshire, August 13-17, 1979.
16. Payatakes, A. C., K. M. Ng, and G. Woodham, "Monte Carlo Simulation of the Fate of Oil Ganglia During Immiscible Displacement in Water Wet Granular Porous Media," 5-th Department of Energy Symposium on Enhanced Oil and Gas Recovery, Tulsa, Oklahoma, August 22-24, 1979.
17. Payatakes, A. C., G. Woodham, and K. M. Ng, "On the Fate of Oil Ganglia During Immiscible Displacement in Water Wet Granular Porous Media," Third, International Conference on Surface and Colloid Science, Stockholm, Sweden, August 20-25, 1979.
18. Payatakes, A. C., "Advances in Dendritic Deposition of Aerosols by Inertial Impaction and/or Interception," The Second World Filtration Congress, London, England, Sept. 18-20, 1979.
19. Payatakes, A. C. and L. Gradon, "Dendritic Deposition of Aerosols by Convective Brownian Diffusion for Small, Intermediate and High Particle Knudsen Numbers," 72nd AIChE Annual Meeting, San Francisco, Nov. 25-29, 1979.
20. Payatakes, A. C., and K. Okuyama, "On the Transient Behavior of Aerosol Filters," Fine Particle Soc. Fall Meeting, Univ. of Maryland, Sept. 16-18, 1980.
21. Payatakes, A. C., "The Dynamics of Displacement of a Non-Wetting Liquid by a Wetting One in a Granular Porous Medium," 17th Annual Meeting of the Soc. of Engineering Science, Georgia Inst. Techn., Atlanta, Ga., Dec. 15-17, 1980.
22. Payatakes, A. C., and K. M. Ng, "Oil Ganglion Dynamics During Immiscible Displacement in Water-Wet Porous Media," 90th AIChE National Meeting, Houston, Texas, April 5-9, 1981.
23. Kousaka, Y., K. Okuyama, and A. C. Payatakes, "Evaluation of Dynamic Shape Factor of Aggregate Particles," Intern. Symp. Powder Technol. 81, Kyoto, Japan, Sept. 27-Oct. 1, 1981.
24. Payatakes, A. C., and K. Okuyama, "Effects of Aerosol Particle Deposition on the Dynamic Behavior of Uniform or Multilayer Fibrous Filters," Intern. Symp. Powder Technol. 81, Kyoto, Japan, Sept. 27-Oct. 1, 1981.
25. Payatakes, A. C., K. M. Ng, M. Dias, and R. Hinkley, "On the Motion and Velocity of Oil Ganglia in Water-Wet Porous Media," Gordon Research Conferences on "Fluids in Permeable Media," at Tilton Academy, Tilton, New Hampshire, August 2-7, 1981.
26. Auzerais, F., A. C. Payatakes, and K. Okuyama, "Dendritic Deposition of Uncharged Aerosol Particles on an Uncharged Fiber in the Presence of an Electrical Field," AIChE 74<sup>th</sup> Annual Meeting, New Orleans, Nov. 8-12, 1981.

27. Payatakes, A.C., "Dendritic Deposition of Aerosol Particles in Fibrous Filters", Conference on *Gaseous Effluents and the Quality of Atmospheric Air*, Institute of Chemical Engineers (national), National Technical Univ. of Athens, Feb. 28 – Apr. 1, 1983. (In greek.)
28. Payatakes, A. C., and M. M. Dias, "A Theoretical Model of Immiscible Microdisplacement of Oil in Water-Wet Porous Media," EUROTECH 179; The Mathematics of Oil Recovery", held at INCREST, Department of Mathematics, Bucharest, Romania, April 10-13, 1984.
29. Dias, M. M., and A. C. Payatakes, "Theoretical Simulations of Immiscible Microdisplacement of Oil in Water-Wet Porous Media," 3rd European Meeting on Improved Oil Recovery, Rome, Italy, April 16-18, 1985.
30. Constantinides, G.N. and A.C. Payatakes, "Three-Dimensional Simulation of Immiscible Displacement of Oil Ganglia in Consolidated Porous Media," Poster Session, 4th European Symp. on Enhanced Oil Recovery, Hamburg, Oct. 27-29, 1987.
31. Vizika, O. and A.C. Payatakes, "Parametric Experimental Study of Initial Immiscible Microdisplacement in Water-wet Porous Media," Poster Session, 4th European Symposium on Enhanced Oil Recovery, Hamburg, Oct. 27-29, 1987.
32. Payatakes, A.C., "Filtration of Liquid-Solid Suspensions in Porous Media," 4th EPS Liquid State Conference on the "Hydrodynamics of Dispersed Media," Arcachon, France, May 24-27 1988.
33. Vizika, O., and A.C. Payatakes, "Theoretical Modeling of the Role of the Advancing Wetting Film in the Disconnection of the Non-Wetting Fluid During Immiscible Displacement," AIChE 1988 Annual Meeting, Paper No 95C, Washington, D.C., Nov. 27 - Dec. 2, 1988.
34. Tsakiroglou, C.D., and A.C. Payatakes, "An Experimental and Theoretical Study of Mercury Porosimetry in a Pore Network Model," AIChE 1988 Annual Meeting, Paper No 102L, Washington, D.C., Nov. 27 - Dec. 2, 1988.
35. Constantinides, G.N., and A.C. Payatakes, "A Theoretical Model of the Collision and Coalescence of Ganglia in Porous Media," AIChE 1988 Annual Meeting, Paper No 153F, Washington, D.C., Nov. 27 - Dec. 2, 1988.
36. Vizika, O. and A.C. Payatakes, "Theoretical Modelling of the Role of the Advancing Wetting Film in the Disconnection of the Non-Wetting Fluid During Immiscible Displacement," AIChE 1988 Annual Meeting, paper No 95 C, Washington, D.C., Nov. 27 - Dec. 2, 1988.
37. Tsakiroglou, C.D. and A.C. Payatakes, "An Experimental and Theoretical Study of Mercury Porosimetry in a Pore Network Model," AIChE 1988 Annual Meeting, paper No 102 L, Washington, D.C., Nov. 27 - Dec. 2, 1988.
38. Constantinides, G.N. and A.C. Payatakes, "A Theoretical Model of the Collision and Coalescence of Ganglia in Porous Media," AIChE 1988 Annual Meeting, paper 153 F, Washington, D.C., Nov. 27 - Dec. 2, 1988.
39. Payatakes, A.C., "Two-Phase Flow in Porous Media" (Plenary Lecture), 5-th IFP Research Conference on Exploration/Production, Arles, France, May 14-18, 1990.

40. Payatakes, A.C. and C.D. Tsakiroglou, "Experimental Study and Network Simulation of Mercury Intrusion-Retraction and of Immiscible Displacement in Porous Media," 5-th IFP Research Conference on Exploration/Production, Arles, France, May 14-18, 1990.
41. Payatakes, A.C., "Development of a general computed aided technique for the characterization of the micropore structure of industrial porous media and development of simulators for prediction of multiphase flow and transport phenomena," BRITE-EURAM 3rd Technological Days, Brussels, May 21-22, 1990.
42. Payatakes, A.C., "Two-Phase Flow Phenomena in Pore Networks," SPE Forum Series in Europe: Advances in the Field of Fluid Flow and Phase Behavior in Hydrocarbon Recovery Processes, Grindelwald, Switzerland, Sept. 16-21, 1990.
43. Tsakiroglou, C.D., and A.C. Payatakes, "A New Mercury Intrusion-Retraction Simulator Used as a Means for the Characterization of Porous Materials," IUPAC-Symposium on Characterization of Porous Solids (COPS II), Alicante, Spain, May 6-9, 1990.
44. Paraskeva, C.A., V.N. Burganos, and A.C. Payatakes, "A Computer-aided 3-D Network Simulator of Deep Bed Filtration in Granular Porous Media," 2nd World Congress "Particle Technology", Kyoto, Japan, Sept. 19-22, 1990.
45. Michalopoulou, A.C., V.N. Burganos, and A.C. Payatakes, "Hydrodynamic Interaction Between a Moving Particle and a Porous Obstacle in a Creeping Flow Field", AIChE 1991 Annual Meeting, paper no 117g, Los Angeles, CA, Nov. 17-22, 1991.
46. Constantinides, G.N., and A.C. Payatakes, "An improved theoretical model of collision and coalescence of ganglia in porous media at high capillary number", 9th International Symposium on Surfactants in Solution, Varna, Bulgaria, June 10-15, 1992.
47. Payatakes, A.C., D. Avraam, M. Valavanides, and C.D. Constantinides, "Pore-scale mechanisms of transient and steady-state two-phase flow", Gordon Research Conference on "Modeling of Flow in Permeable Media", Plymouth State College, New Hampshire, USA, August 10-14, 1992.
48. Burganos, V.N., C.A. Paraskeva and A.C. Payatakes, "A test particle approach for the simulation of horizontal and upflow filtration", 6th World Filtration Congress, Nagoya, Japan, May 18-21, 1993.
49. Michalopoulou, A.C., V.N. Burganos and A.C. Payatakes, "Computer-aided simulation of cross flow filtration of particle-aggregate suspensions", 6th World Filtration Congress, Nagoya, Japan, May 18-21, 1993.
50. Coutelieres, F.A., V.N. Burganos, and A.C. Payatakes, "Creeping flow and Brownian particle deposition around spheroidal objects", X International Conference on Computational Methods in Water Resources, Heidelberg, Germany, July, 1994.
51. Burganos, V.N., C.A. Paraskeva, and A.C. Payatakes, "Monte Carlo simulation of suspension flows in unconsolidated porous media", X International Conference on Computational Methods in Water Resources, Heidelberg, Germany, July, 1994.

52. Burganos, V.N., C.A. Paraskeva, and A.C. Payatakes, “Monte Carlo simulation of granular filtration in regular and randomized networks of constricted pores”, (Invited Lecture), Amer. Filtr. Soc. Annual Techn. Confer., Nashville TN, April 23-26, 1995.
53. Payatakes, A.C., D.G. Avraam, G.N. Constantinides, and M. Valavanides, “Flow Regimes and Relative Permeabilities During Steady-State Two-Phase Flow in Porous Media”, 7th Intern. Symp. on Oil Field Chemicals, Geilo, Norway, March 17-20, 1996.
54. Skouras, E.D., C.A. Paraskeva, V.N. Burganos, and A.C. Payatakes, “Simulation of Particle Deposition and Loss of Permeability During Flow of Aqueous Suspensions in Underground Formations”, XI Intern. Conf. on Computational Methods in Water Resources, Cancun, Mexico, July 22-26, 1996.
55. Paunov, V.N., A. Angelopoulos, V.N. Burganos, and A.C. Payatakes, “Lattice-Boltzmann Simulation of Ideal, and Nonideal, Immiscible Two-Phase Flow in Porous Media”, XI Intern. Conf. on Computational Methods in Water Resources, Cancun, Mexico, July 22-26, 1996.
56. Valavanides, M.S., G.N. Constantinides, and A.C. Payatakes, “Simulation of the Motion of Oil Ganglia in Consolidated Porous Media. Crowding Effects”, 5th European Conference on the Mathematics of Oil Recovery, Leoben, Austria, Sept. 3-6, 1996.
57. Tsakiroglou, C.D. and A.C. Payatakes, “Analysis of the Topological and Geometrical Characteristics of the Pore Space of Permeable Solids Using Serial Tomography, Mercury Porosimetry, and Theoretical Simulation”, 4th International Symposium on the Characterisation of Porous Solids, University of Bath, UK, Sept. 15-18, 1996.
58. Payatakes, A.C., E.D. Skouras, C.A. Paraskeva and V.N. Burganos, “Simulation of the Gradual Reduction of the Permeability caused by the Migration and Deposition of fine Non-Brownian Particles in Porous Media”, 8th Intern. Oil Field Chemical Symposium, Geilo, Norway, March 2-5, 1997.
59. Constantinides, G.N., D. Gintides, S.E. Kattis, K. Kiriaki, C.A. Paraskeva, A.C. Payatakes, D. Polyzos, S. Tsinopoulos, and S.N. Yannopoulos, “Particle Shape and Size Analyzer”, Workshop on Applied Mathematics in Science and Modern Technology, Metsovo Conf. Center, Greece, June 30 – July 1, 1997.
60. Payatakes, A.C., G.N. Constantinides, and M. Valavanides, “Hierarchical Theoretical Models: an Informal Introduction”, Workshop on Applied Mathematics in Science and Modern Technology, Metsovo Conf. Center, Greece, June 30 – July 1, 1997.
61. Skouras, E.D., C.A. Paraskeva, V.N. Burganos, and A.C. Payatakes, “Simulation of the dynamic behavior of depth filters”, 1st Panhellenic Conference in Chemical Engineering, Patras, May 29-31, 1997.
62. Tsakiroglou, C.D., and A.C. Payatakes, “Characterization of the pore microstructure of permeable solids using serial tomography, mercury porosimetry, and theoretical simulation”, 1st Panhellenic Conference in Chemical Engineering, Patras, May 29-31, 1997.

63. Yannopoulos, S.N., D. Gintides, S. Kattis, K. Kiriaki, G.N. Constantinides, A.C. Payatakes, C.A. Paraskeva, D. Polyzos, and S. Tsinopoulos, “Non-spherical particle size and shape analyzer”, 1<sup>st</sup> Panhellenic Conference in Chemical Engineering, Patras, May 29-31, 1997.
64. Avraam, D.G. and A.C. Payatakes, “Experimental study of the effect of the contact angle on the relative permeabilities of two immiscible fluids during concurrent flow in porous media”, 1<sup>st</sup> Panhellenic Conference in Chemical Engineering, Patras, May 29-31, 1997.
65. Angelopoulos, A.D., V.N. Burganos, and A.C. Payatakes, “Study of two-phase flow in porous media with a cellular automata method”, 1<sup>st</sup> Panhellenic Conference in Chemical Engineering, Patras, May 29-31, 1997.
66. Constantinides, G.N. and A.C. Payatakes, “Theoretical study of the role of the wetting film during immiscible microdisplacement in porous rocks”, 1<sup>st</sup> Panhellenic Conference in Chemical Engineering, Patras, May 29-31, 1997.
67. Payatakes, A.C., and M.S. Valavanides, “True-to-mechanism macroscopic theory of steady-state two phase flow in porous media”, (Plenary Lecture), XIIth International Conference on Computational Methods in Water Resources (CMWR XII), Iraklion, Crete, Greece, June 15-19, 1998.
68. Tsakiroglou, C.D., D.G. Avraam, and A.C. Payatakes, “Improved macroscopic equations of two-phase flow in porous media based on new models of the capillary pressure and relative permeability”, XIIth International Conference on Computational Methods in Water Resources (CMWR XII), Iraklion, Crete, Greece, June 15-19, 1998.
69. Payatakes, A.C., and M.S. Valavanides, “True-to-Mechanism Macroscopic Theoretical Model of Two Phase Flow in Porous Media”, Gordon Research Conference: Modeling Flow in Permeable Media, Proctor Academy, Andover N.H., USA, Aug. 2-7, 1998.
70. Angelopoulos, A.D., V.N. Burganos, and A.C. Payatakes, “Novel Lattice-Boltzmann Simulator of Two-Phase Flow with Phase Charge”, 5<sup>th</sup> Hellenic Congress on Mechanics, Ioannina, 27-30 August 1998.
71. Valavanides, M.S., and A.C. Payatakes, “New Macroscopic Theory of Two-Phase Flow in Porous Media based on the Actual Pore-Scale Mechanisms (Decomposition into Prototype Flows: DeProF)”, 2<sup>nd</sup> Hellenic Society of Rheology Congress, and International Conference, Iraklion, Crete, Aug. 30 – Sept. 3, 1998.
72. Valavanides, M.S., and A.C. Payatakes, “Prediction of the Relative Permeabilities for Steady-State Two-Phase Flow in Porous Media, using a Mechanistic Model”, Proc. Paper No B-7, 6<sup>th</sup> European Conference on the Mathematics of Oil Recovery, Peebles (Edinburgh), Scotland, 8-11 Sept., 1998.
73. Payatakes, A.C., and M.S. Valavanides, “A New Macroscopic Theory of Two-Phase Flow in Porous Media; Decomposition into Prototype Flows (DeProF)”, (Invited Lecture), The International Terje Østwald Symposium, Røros – Norway, November 2-3, 1998.
74. Payatakes, A.C., and M.S. Valavanides, “True-to-Mechanism Macroscopic Theory of Two-Phase Flow in Porous Media; Decomposition into Prototype

- Flows (DeProF)", (Invited Lecture), Workshop on Nonlinear Flow and Transport Processes in Porous Media, Techn. University of Delft, November 2-6, 1998.
75. Payatakes, A.C., C.A. Paraskeva, P.G. Koutsoukos, P. Read, and T. Østvold, "Sand Control with Mineral Precipitation", 10<sup>th</sup> Oil Field Chemicals Symposium, Fagernes, Norway, Feb. 28- March 3, 1999.
  76. Skouras E.D., V.N. Burganos, and A.C. Payatakes, "Simulation of diffusion and adsorption in nanoceramic semiconductor gas sensors", 2<sup>nd</sup> Panhellenic Conference in Chemical Engineering, Thessaloniki, May 27-29, 1999.
  77. Tsakiroglou, C.D., V.N. Burganos, and A.C. Payatakes, "Analysis of the micropore structure of catalyst supports using nitrogen adsorption isotherms and mercury porosimetry curves", 2<sup>nd</sup> Panhellenic Conference in Chemical Engineering, Thessaloniki, May 27-29, 1999.
  78. Valavanides, M.S. and A.C. Payatakes, "Theoretical model of steady-state two-phase flow in porous media based on true pore-scale mechanisms and decomposition into prototype flows", 2<sup>nd</sup> Panhellenic Conference in Chemical Engineering, Thessaloniki, May 27-29, 1999.
  79. Evangelou, D.K., D.P. Lazos, E.Th. Fountoukis, C.A. Paraskeva, and A.C. Payatakes, "Hydrodynamic separation of white and red blood cells for clinical applications", 2<sup>nd</sup> Panhellenic Conference in Chemical Engineering, Thessaloniki, May 27-29, 1999.
  80. Skouras, E.D., C.A. Paraskeva, V.N. Burganos, and A.C. Payatakes, "Simulation of the transient behavior of depth filters under horizontal-flow, upflow and downflow conditions", 2<sup>nd</sup> Panhellenic Conference in Chemical Engineering, Thessaloniki, May 27-29, 1999.
  81. Avraam, D.G. and A.C. Payatakes, "Solubilization and mobilization of dispersed NAPL by a surfactant solution flood", 2<sup>nd</sup> Panhellenic Conference in Chemical Engineering, Thessaloniki, May 27-29, 1999.
  82. Constantinides, G.N. and A.C. Payatakes, "Determination of the relation between capillary pressure and saturation in forced imbibition and drainage in porous rocks, using a simulator of the pore-network type", 2<sup>nd</sup> Panhellenic Conference in Chemical Engineering, Thessaloniki, May 27-29, 1999.
  83. Valavanides, M.S., and A.C. Payatakes, "A true-to-mechanism model of steady-state two-phase flow in porous media, including the contribution of the motion of ganglia and droplets", *Invited Talk*, XIIIth International Conference on Computational Methods in Water Resources (CMWR XIII), Univ. of Calgary, Calgary, Alberta, Canada, June 25-29, 2000.
  84. Payatakes, A.C., "A critical overview of models and simulators of two-phase flow in porous media", *Invited Talk*, Minisymposium on "Two Phase Flow Modelling" during the 2nd Intern. Conf. on Computer Methods for Engineering in Porous Media, Univ. de France-Compte, Besançon, France, July 10-13, 2000.
  85. Valavanides, M.S., and A.C. Payatakes, "True-to-Mechanism Model of Two-Phase Flow in Porous Media using Decomposition into Prototype Flows", AIChE 2000 Annual Meeting, Los Angeles, CA, USA, November 12-17, 2000.

86. Vayenas, D.V., G. Kapellos, I. Sgountzos, E. Michalopoulou, G.N. Constantinides, S. Pavlou, and A.C. Payatakes, “Biofilm dynamics during biodegradation of organic pollutants in porous media”, European Geophysical Society: XXVI General Assembly, Nice, France, 25-30 March, 2001.
87. Constantinides, G.N., and A.C. Payatakes, “Calculation of the capillary pressure – saturation relation for forced imbibition and drainage in porous media using a pore network simulator”, European Geophysical Society: XXVI General Assembly, Nice, France, 25-30 March, 2001.
88. Valavanides, M.S., and A.C. Payatakes, “Calculation of some fundamental quantities that characterize two-phase flow in porous media using a true-to-mechanism theoretical model (DeProF)”, European Geophysical Society: XXVIth General Assembly, Nice, France, March 25-30, 2001.
89. Toliza, A., C.A. Paraskeva, P. Klepetsanis, P. Koutsoukos, and A.C. Payatakes, “Experimental investigation of the consolidation of silica sand through precipitation of inorganic salts”, 3rd Panhellenic Conference in Chemical Engineering, Athens, May 31 – June 2, 2001.
90. Tsihlias, S., C.A. Paraskeva, S. Pavlou, and A.C. Payatakes, “Relative permeabilities and stochastic behavior of the pressure during steady-state flow of two immiscible fluids in porous media”, 3<sup>rd</sup> Panhellenic Conference in Chemical Engineering, Athens, May 31 – June 2, 2001.
91. Tsarouhi, E., C.A. Paraskeva, and A.C. Payatakes, “Preparation of stable monodispersed microemulsions”, 3<sup>rd</sup> Panhellenic Conference in Chemical Engineering, Athens, May 31 – June 2, 2001.
92. Vayenas, D., G. Kapellos, I. Sgountzos, E. Michalopoulou, G.N. Constantinides, S. Pavlou, and A.C. Payatakes, “Dynamic behavior of biofilms during biodegradation of organic pollutants in the soil”, 3<sup>rd</sup> Panhellenic Conference in Chemical Engineering, Athens, May 31 – June 2, 2001.
93. Vayenas, D.V., G. Kapellos, I. Sgountzos, E. Michalopoulou, G.N. Constantinides, S. Pavlou, and A.C. Payatakes, “Biofilm Dynamics in Soil”, 1st European Conference on Bioremediation, Chania (Crete), Greece, July 2-5, 2001.
94. Valavanides, M.S., and A.C. Payatakes, “Comparison of two-phase flow in 2-D and 3-D pore networks using true-to-mechanism theoretical model (DeProF)”, XIVth International Conference on “Computational Methods in Water Resources (CMWR XIV)”, Delft, The Netherlands, June 24-28, 2002.
95. Valavanides, M.S., and A.C. Payatakes, “Effects of Pore Network Characteristics on Steady-State Two-Phase Flow Based on a True-to-Mechanism Model (DeProF)”, Invited, Proc.10th Abu Dhabi International Petroleum Exhibition and Conference (ADIPEC), paper No. SPE 78516, Abu Dhabi – United Arab Emirates, October 13-16, 2002.
96. Constantinides, G.N., and A.C. Payatakes, “Determination of the effects of capillary number, viscosity and wettability on the capillary pressure – saturation relation using an advanced pore network simulator”, Proc.10th Abu Dhabi International Petroleum Exhibition and Conference (ADIPEC), paper

- No. ADIPEC 10-42, Abu Dhabi – United Arab Emirates, October 13-16, 2002.
97. Payatakes, A.C., “Transport Phenomena in Porous Media” (Plenary Talk), 1<sup>st</sup> CPERI Scientific Conference, Themi (Thessaloniki), Dec. 6, 2002.
  98. Skouras, E.D., V.N. Burganos, C.A. Paraskeva, and A.C. Payatakes, “Simulation of the Dynamic Behavior of depth Filtration of non-Brownian Particles” (Invited Lecture), EMCC-3, Thessaloniki, May 13-15, 2003.
  99. C.A. Paraskeva, I.T. Hafez, A. Toliza, P.G. Klepetsanis, P.G. Koutsoukos, and A.C. Payatakes, “Consolidation of Unconsolidated Oil Formations with Mineral Precipitation” (Poster 8), EMCC-3, Thessaloniki, May 13-15, 2003.
  100. Sygouni, C.D. Tsakiroglou, and A.C. Payatakes, “Effects of Fractional Wettability on the Dynamic Patterns of Immiscible two-Phase Flow in Porous Media” (Poster 10), EMCC-3, Thessaloniki, May 13-15, 2003.
  101. Payatakes, A.C., “Mathematical Modeling and Simulation of Multiphase Transport Phenomena: Examples and Applications” (Distinguished Speaker Invited Lecture), Interdisciplinary Symposium: Mathematical Models in Modern Technologies and Economics, National Technical Univ. of Athens, May 16-18, 2003
  102. Sygouni, V., C.D. Tsakiroglou, and A.C. Payatakes, “Effect of fractal-mixed wettability on the transient modes of immiscible displacement in porous media” (Paper TP-022), 4<sup>th</sup> Panhellenic Conference in Chemical Engineering, Patras, May 29-31, 2003.
  103. Kalarakis, A.N., V.N. Burganos, and A.C. Payatakes, “Simulation of two-phase systems using a new lattice-Boltzmann model” (Paper TP-034), 4<sup>th</sup> Panhellenic Conference in Chemical Engineering, Patras, May 29-31, 2003.
  104. Hafez, I.T., A. Toliza, C.A. Paraskeva, P.G. Klepetsanis, P.G. Koutsoukos, and A.C. Payatakes, “Consolidation of loose soils with precipitation of insoluble inorganic salts” (Paper PT-018), 4<sup>th</sup> Panhellenic Conference in Chemical Engineering, Patras, May 29-31, 2003.
  105. Kapellos, G.E., S. Pavlou, and A.C. Payatakes, “Theoretical modeling of the dynamic behavior of biodegradation of organic pollutants in planar porous media” (Paper PE-017), 4<sup>th</sup> Panhellenic Conference in Chemical Engineering, Patras, May 29-31, 2003.
  106. Kapellos, G.E., T.S. Alexiou, S. Pavlou, and A.C. Payatakes, “Theoretical and experimental study of the effect of biofilm growth on the permeability of pore networks” (Paper PE-018), 4<sup>th</sup> Panhellenic Conference in Chemical Engineering, Patras, May 29-31, 2003.
  107. Sygouni, V., C.D. Tsakiroglou, and A.C. Payatakes, “Correlation of the Dynamic Immiscible Displacement Patterns with the Fractional Wettability of Porous Media”, Society of Core Analysts Symposium, paper No. SCA 2003-07, Pau, France, September 21-24, 2003.
  108. Valavanides, M.S., and A.C. Payatakes, “Prediction of Optimum Operating Conditions for Steady-State Two-Phase Flow in Pore Network Systems Using the DeProF True-to-Mechanism Theoretical Model”, Society of Core



- Analysts Symposium, paper No. SCA 2003-18, Pau, France, September 21-24, 2003.
109. Tsakiroglou, C.D., V. Sygouni, and A.C. Payatakes, "Quantification of the fractional wettability of porous media from rate-controlled displacement experiments", Gordon Research Conference on "Flow & Transport in Permeable Media", The Queens College, Oxford, U.K., July 11-16, 2004.
  110. Tsakiroglou, C.D., D.G. Avraam, and A.C. Payatakes, "Simulation of the transient immiscible displacement in porous media using dynamic capillary pressure and relative permeability curves from steady-state experiments", Intern. Symp. of the Society of Core Analysts, paper No: SCA2004-12, Abu Dhabi, UAE, Oct. 5-9, 2004.
  111. Valavanides, M.S., and A.C. Payatakes, "Wetting Film Effects on Steady-State Two-Phase Flow in Pore Networks using the DeProF Theoretical Model", 11-th ADIPEC, Abu Dhabi, UAE, Oct. 10-13, 2004.
  112. Kapellos, G.E., T.S. Alexiou, S. Pavlou, and A.C. Payatakes, "Hierarchical modelling approach for the prediction of effective hydraulic permeability and diffusion coefficient in biofilms", Intern. Conf. Biofilms 2004: Structure and Activity of Biofilms, Las Vegas, NV, USA, Oct. 24-26, 2004.
  113. Kapellos, G.E., and A.C. Payatakes, "Network of grains-in-cell model for swarms and beds of grains. Formulation and application to creeping flow and convective mass transfer processes", paper 199f, Amer. Inst. of Chem. Engrns Annual Meeting, Austin Texas, USA, Nov. 7-12, 2004.
  114. Moskal, A., and A.C. Payatakes, "Simulation of the Brownian Dynamics of Aerosol Particle Aggregates", paper 275e, Amer. Inst. of Chem. Engrns Annual Meeting, Austin Texas, USA, Nov. 7-12, 2004.
  115. Sgountzos, J.N., S. Pavlou, and A.C. Payatakes, "Study of the kinetics of development of the microorganism *Pseudomonas Fluorescens* in liquid cultures and in porous media", 5th Panhellenic Conference in Chemical Engineering, Thessaloniki, May 26-28, 2005.
  116. Lioliou, M., C.A. Paraskeva, P. Klepetsanis, T. Larsen, L.O. Jøsang, A.C. Payatakes, P.G. Koutsoukos, and T. Østvold, "Precipitation of sparingly soluble salts with enzymatic methods for consolidation of loose soils", 5th Panhellenic Conference in Chemical Engineering, Thessaloniki, May 26-28, 2005.
  117. Skouras, E.D., C.A. Paraskeva, and A.C. Payatakes, "Simulation of the dynamic behavior of horizontal flow depth filters", 5th Panhellenic Conference in Chemical Engineering, Thessaloniki, May 26-28, 2005.
  118. Sygouni, V., C.D. Tsakiroglou, and A.C. Payatakes, "Capillary Pressure Spectroscopy: a new method for the quantification of fractional wettability in porous media", 5th Panhellenic Conference in Chemical Engineering, Thessaloniki, May 26-28, 2005.
  119. Kapellos, G.E., T.S. Alexiou, S. Pavlou, and A.C. Payatakes, "Hierarchical simulation of the dynamic behavior of biodegradation of organic pollutants in porous media: 1. From bacterial cell to pore." 5th Panhellenic Conference in Chemical Engineering, Thessaloniki, May 26-28, 2005.

120. Alexiou, T.S., G.E. Kapellos, and A.C. Payatakes, “Numerical simulation of flow of a Newtonian fluid in rigid porous media containing deformable porous deposits”, 5th Panhellenic Conference in Chemical Engineering, Thessaloniki, May 26-28, 2005.
121. Hafez, I.T., C.A. Paraskeva, P.G. Koutsoukos, and A.C. Payatakes, “Nanocrystalline calcium phosphate characterization and deposition on grain surfaces of a non-consolidated porous medium”, European Science Foundation Research Conference on Molecular Crystal Engineering, Helsinki, Finland, June 17-22, 2005.
122. Lioliou, M.G., S. Rokidi, P.G. Klepetsanis, C.A. Paraskeva, P.G. Koutsoukos, and A.C. Payatakes, “Enzyme mediated calcium phosphate precipitation”, European Science Foundation Research Conference on Molecular Crystal Engineering, Helsinki, Finland, June 17-22, 2005.
123. Kapellos, G.E., T.S. Alexiou, S. Pavlou, and A.C. Payatakes, “Hierarchical simulation of biofilm dynamics during biodegradation of organic pollutants in porous media”, 3rd European Bioremediation Conference, Techn. Univ. of Crete, Chania, Greece, July 4-7, 2005.
124. Sygouni, V., C. D. Tsakiroglou, and A. C. Payatakes, “Capillary pressure spectrometry: a new method for the quantification of the fractional wettability of porous media”, 7th World Congress of Chemical Engineering, Glasgow, Scotland, July 10-14, 2005.
125. Sygouni, V., C.D. Tsakiroglou, A.C. Payatakes, “Effects of fractional wettability and its spatial heterogeneity on the capillary pressure and relative permeability functions”, Intern Conf. of the Society of Core Analysts, paper No: SCA2005-X, Toronto, Ontario, Canada, Aug. 21-25, 2005.
126. Kapellos, G.E., T.S. Alexiou, S. Pavlou, and A.C. Payatakes, “Hierarchical simulation of biofilm growth dynamics in porous media”, Intern. Conf. on Environmental Science and Technology, American Academy of Sciences, paper No 806, Houston, TX, USA, Aug. 5-10, 2007. (Excellent Paper Award.)

## Appendix F: Invited Seminars

1. "Advances in Deep Bed Filtration Theory", Department of Environmental Engineering, Rice University, Houston, March, 1976.
2. "Deep Bed Filtration. Theory and Practice", Shell Development Co., Westhollow Center, Houston, December 15, 1976.
3. "Simulation of Oil-Ganglia Motion, Breakup and Coalescence in Immiscible Displacement During Tertiary Oil Recovery," Department of Chemical Engineering and Materials Science, University of Minnesota, Minneapolis, November 18, 1977.
4. "Aerosol Particle Deposition with Dendritic Pattern," Department of Chemical Engineering, Virginia Polytechnic Institute and State University, Blacksburg, Virginia, November 28, 1977.
5. "Dynamics of Oil Ganglia During Immiscible Displacement in Enhanced Oil Recovery," University of Houston, November, 1978.
6. "Dynamics of Oil Ganglia During Immiscible Displacement," Marathon Oil Company, March 12, 1979.
7. "Dynamic Behavior of Aerosol Particle Deposition in Fibrous Filters," General Motors Research Laboratories, Warren, Michigan, July, 1979.
8. "Dynamics of Immiscible Displacement of Non-Wetting Liquid by a Wetting Phase in Granular Porous Media," Schlumberger-Doll Research Center, Ridgefield, Conn. July, 1979.
9. "Aerosol Particle Deposition with Dendritic Pattern," The 3M Company, St. Paul, Minn. October, 1979.
10. "Modeling of Flow in Porous Media," Eastman-Kodak Research Laboratories, Rochester, N.Y., January 7, 1980.
11. "Dynamics of Oil Ganglia During Immiscible Displacement in Porous Media," Massachusetts Institute of Technology, February 15, 1980.
12. "Dynamics of Oil Ganglia During Immiscible Displacement in Porous Media," Illinois Institute of Technology, February 20, 1980.
13. "Dynamics of Oil Ganglia During Immiscible Displacement in Porous Media," University of New Mexico, February 25, 1980.
14. "Dynamics of Oil Ganglia During Immiscible Displacement in Porous Media," University of Calgary, March 7, 1980.
15. "Dynamics of Immiscible Displacement of Oil Ganglia During Chemical Flooding," Institut Français du Pétrole, Paris, France, June 13, 1980.
16. "Dynamics of Immiscible Displacement of Oil Ganglia During Chemical Flooding," University of Patras, Patras, Greece, June 17, 1980.
17. "Dendritic Aerosol Deposition," Kanazawa University, Kanazawa, Japan, June 26, 1980.

18. "The Dynamic Behavior of Aerosol Filtration in Fibrous Filters," Fine Particle Society of Japan Meeting at Kyoto University, Kyoto, Japan, June 28, 1980.
19. "The State of the Art of Deep Bed Filtration of Hydrosols," Kyoto University, Kyoto, Japan, July 1, 1980.
20. "On Dynamics of Oil Ganglia During Immiscible Displacement," Exxon Production Research, Houston, January 13, 1981.
21. "Modeling of Porous Media and Applications to Solid-Fluid Separations," DuPont Engineering Center, Newark, Delaware, January 28, 1981.
22. "Motion and Dynamics of Oil Ganglia During Immiscible Displacement in Permeable Media," Rice University, January 29, 1981.
23. "Dendritic Deposition of Fine Particles," DuPont Engineering Center, Newark, Delaware, March 3, 1981.
24. "Dynamics of Oil Ganglia Undergoing Displacement," ALLAN P. COLBURN, LECTURE, University of Delaware, April 23, 1981.
25. "On the Dynamic Displacement of Oil Ganglia in Porous Media," Schlumberger-Doll Research Center, Ridgefield, Conn., June 11-12, 1981.
26. "Dynamics of Oil Ganglion Populations. Applications to Enhanced Oil Recovery", ROBERT W. VAUGHAN LECTURE, California Institute of Technology, April 22, 1982.
27. "Oil Ganglion Dynamics during Immiscible Displacement in Porous Rocks", Dept. of Chemical Engineering, National Technical University of Athens, March, 1982.
28. "Dendritic Deposition of Aerosol Particles in Fibrous Media", Department of Chemical Engineering, University of Patras, Feb. 7, 1983.
29. "Basic Research for Improved Secondary and Tertiary Oil Recovery," Department of Chemical Engineering, University of Bologna, Bologna, Italy, January 24, 1984.
30. "Oil Ganglion Dynamics", TEMA/ENIDATA, Bologna, Italy, January 25, 1984.
31. "Immiscible Microdisplacement in Porous Media," Physical-Chemical Institute, Technical University of Denmark, Lyngby, Denmark, June 28, 1984.
32. "Theoretical Simulation of Microdisplacement in Porous Media. The Combined Effects of the Capillary Number and the Viscosity Ratio," Department of Chemical Engineering, University of Bologna, Bologna, Italy, July 25, 1985.
33. "Two-Phase Flow in Porous Media," University of Nancy, Department of Chemical Engineering, Nancy, France, July 7, 1986.
34. "Immiscible Displacement and Ganglion Dynamics in Porous Media", Dowell-Schlumberger R&D Center, Saint Etienne, France, July 8, 1986.
35. "Particle Deposition and Reentrainment in Depth Filters," Institut de la Filtration et de Technique Separatives, Agen, France, July 9, 1986.

36. "Flow around and through a permeable sphere approaching a solid wall", Dept. of Chemical Engineering, University of Patras, Dec. 8, 1986.
37. "Two-phase flow in porous media", National Research Center for Natural Sciences "DEMOCRITOS", Dec. 9, 1986.
38. "A Theoretical Model of the Collision and Coalescence of Ganglia in Porous Media," Dept. of Chemical Engineering, Princeton University, Dec. 5, 1988.
39. "Steady State two Phase Flow Through Porous Media", University of Oslo, Oslo, Norway, June 21, 1991.
40. "Two-Phase Flow in Porous Media", Department of Chemistry, University of Sofia, Bulgaria, March 13, 1993.
41. "Depth Filtration", Department of Chemistry, University of Sofia, Bulgaria, March 16, 1993.
42. "Technology Parks", Inst. of Metal Science and Technology, Bulgarian Academy of Sciences, Sofia, Bulgaria, March 17, 1993.
43. "Emulsion stability phenomena in two-phase flow through porous media", University of Kyoto, Japan, May 21, 1993.
44. "Flow regimes and relative permeabilities during steady-state two-phase flow in porous media", KSEPL, SHELL RESEARCH BV., Rijswijk, Netherlands, October 26 & 27, 1994.
45. "Information Technology & Networking as a tool for training personnel and changing the perspectives of SME's: Greece 1994", Conference on Training in the Information Society, Organised by DG XIII of EC, Brussels, December 6 & 7, 1994.
46. "Bridging Entrepreneurial Productivity with Research and Technological Development", 1995 Conference on the Entrepreneurial Mobilization of Epirus, Industrial Dept. of the Chamber of Commerce of Ioannina, May 5-6, 1995.
47. "Flow Regimes and Relative Permeabilities during Steady-State Two-Phase Flow in Porous Media", Department of Physics (Group: Jens Feder and Torstein Jossang), University of Oslo, Norway, March 21, 1996.
48. "Flow Regimes and Relative Permeabilities during Steady-State Two-Phase Flow in Porous Media", Institut Francais du Petrole, Rueil Malmaison (Paris), France, May 20, 1996.
49. "Flow of two immiscible fluids through porous media. Experiment and theory.", Dept. of Physics, University of Crete, Iraklion, Crete, Dec. 5, 1997.
50. "True-to-mechanism macroscopic theory of two-phase flow in porous media", Institut für Verfahrenstechnik, ETH-Zentrum, Zürich, May 19, 1998.
51. "New macroscopic theory of steady-state two-phase flow in porous media based on the real pore-scale mechanisms", Dept. of Chemical Engineering, University of Patras, June 1, 1998.
52. "True-to-mechanism macroscopic theory of two phase flow in porous media", Faculty of Chemistry, University of Sofia, September 24, 1998.

53. "New macroscopic theory of steady-state two-phase flow in porous media based on the real pore-scale mechanisms", National Research Center for Natural Sciences "DEMOCRITOS", Oct. 8, 1998.
54. "True-to-Mechanism Macroscopic Theory of Steady-State Two-Phase Flow in Porous Media; Decomposition into Prototype Flows (DeProF)", IFP, Rueil Malmaison, Paris, France, November 26, 1998.
55. "True-to-Mechanism Macroscopic Theory of Steady-State Two-Phase Flow in Porous Media; Decomposition into Prototype Flows (DeProF)", RF Rogaland Research, Stavanger, Norway, Jan. 18, 2000.
56. "True-to-Mechanism Model of Two-Phase Flow in Porous Media using Decomposition into Prototype Flows", Division of Engineering and Applied Sciences, Department of Physics, Harvard University, Cambridge MA, Nov.17, 2000.
57. "True-to-Mechanism Model of Two-Phase Flow in Porous Media using Decomposition into Prototype Flows", Dept. of Geology and Geotechnical Engineering, Technical University of Denmark, Lyngby, March 23, 2001.
58. "True-to-Mechanism Model of Two-Phase Flow in Porous Media using Decomposition into Prototype Flows", Institute of Polymers, ETH-Zentrum, Zürich, March 6, 2002.
59. "Novel actions and priorities for cooperation: trends in basic science essential for development" (Round Table Discussion), NATO SCIENCE Programme – "Grand Gathering", NATO Headquarters, Brussels, Belgium, 24 October 2002.
60. "Flow of two immiscible fluids in porous media", Dept. of Mechanical and Industrial Engineers, University of Thessaly, Volos, June 12, 2003.
61. "Simulation of the growth of biofilms", Dept of Chemical and Biomolecular Engineering", Rice University, Nov. 4, 2004.
62. "Modeling of flow and convective mass transfer in granular porous media using the novel "network of grains-in-cell" model", Dept of Chemical and Biomolecular Engineering", Rice University, Nov. 5, 2004.
63. "Immiscible two-phase flow in porous media. Experimental results and theoretical simulations", Dept. of Chemical Engineering, Univ. of Hiroshima, Japan (JSPS Lecture), March 22, 2005.
64. "Simulation of the Brownian Dynamics of aerosol particle aggregates" Dept. of Chemical Engineering, Univ. of Hiroshima, Japan (JSPS Lecture), March 23, 2005.
65. "Simulation of the Brownian Dynamics of aerosol particle aggregates" Dept. of Chemical Engineering, Univ. of Kanazawa, Japan (JSPS Lecture), March 30, 2005.
66. "Simulation of the Brownian Dynamics of aerosol particle aggregates" Dept. of Chemical Engineering, Univ. of Kyoto, Japan (JSPS Lecture), Apr. 1, 2005.
67. "Hierarchical simulator of biofilm growth and calculation of the local and effective transport coefficients", R&D Headquarters, SEIKO EPSON Corp., Kamisuwa, Japan (JSPS Lecture), Apr. 5, 2005.

68. "Immiscible two-phase flow in porous media. Experimental results and theoretical simulations", R&D Headquarters, SEIKO EPSON Corp., Kamisuwa, Japan (JSPS Lecture), Apr. 5, 2005.

## Appendix G: Organization of scientific conferences

- 1976 «Novel Concepts and Methods in Particle-Gas Separation», 82<sup>nd</sup> AIChE Conference, Atlantic City, August 29-September 1. Session Co-Chairman.
- 1976 “Advances in Fine Particulate-Gas Separation. Theory and Practice”, AIChE 69<sup>th</sup> Annual Meeting, Chicago, November 28-December 2. Session Chairman.
- 1977 “Particle-Fluid Separation. Part I”, and “Particle-Fluid Separation. Part II”. AIChE 83<sup>rd</sup> National Meeting, Houston, March 20-24. Chairman of two sessions.
- 1978 1978 “Fluid-Particle Interactions”, 1977 Fine Particle Society Meeting, Stanford Research Institute, Menlo Park, California, August 25-26. Session Chairman.
- 1979 “Enhanced Oil Recovery. Part I; Part II; Part III”, AIChE 84<sup>th</sup> National Meeting, Atlanta, February 26-March 1, Chairman of 3 Sessions.
- 1981 “Interfacial Phenomena in Enhanced Oil Recover”, 90<sup>th</sup> AIChE National Meeting, Houston, April 5-9. Chairman and Co-chairman in 2 Sessions.
- 1990 “BRITE-EURAM 3<sup>rd</sup> Technological Days”, Session 5C: Manufacturing Techniques. Chairperson. Also, member of the 9-member Technical Committee for the whole Program.
- 1990 5<sup>th</sup> IFP Research Conference on Exploration/Production., “Fundamentals of Fluid Transport in Porous Media”, Arles, France, May 14-18, 1990. Member of the Scientific Committee.
- 1993 “6<sup>th</sup> World Filtration Congress”, Program & Scientific Committee, Chairman of one Session, Nagoya, Japan, May 18-21, 1993.
- 1997 “1st Panhellenic Scientific Conference in Chemical Engineering”. Member of the Scientific Committee. Patras, Greece, May 29-31.
- 1998 «XII-th International Conference on COMPUTATIONAL METHODS IN WATER RESOURCES (CMWR XII)”. Heraklion, Crete, Greece, June 15-19. Member Organizing Committee and co-Editor of Proceedings.
- 1998 “Chalk-Talk” at the “Gordon Research Conference” on “Flow in Permeable Media”, Proctor Academy, Andover, NH, USA, Aug. 2-7. Co-organizer.
- 1998 “EnviroMEET ‘98”. Univ. of California, Irvine, CA, July 20-23. Member of the Scientific Committee.
- 1998 “5th National Congress on Mechanics”. Ioannina, Aug. 27-30. Session Chairman.
- 1998 “2<sup>nd</sup> Meeting of the Hellenic Society of Rheology and International Symposium (HSR 98)”. Heraklion, Crete, Greece, Aug. 31-Sept. 2. Session Chairman.
- 2000 “Investing in Europe’s Human Research Potential”. The European Commission, Research Directorate General. Heraklion, Crete, Greece, October 4-7. Member of the Organizing Committee.



- 2001 “International Meeting of the Hellenic Society of Rheology (Dedicated to Professor Andreas Acrivos on the Occasion of his Retirement, Patras, Greece, June 10-14. )”. Member of the Organizing Committee, Member of the Scientific Committee, and Session Co-Chairman.
- 2001 “5<sup>th</sup> International Workshop on Mathematical Methods in Scattering Theory and Biomedical Technology”. Corfu, Greece, Oct. 18-19. Member of the Organizing Committee.
- 2003 “3<sup>rd</sup> Eastern Mediterranean Chemical Engineering Conference (EMCC-3)”. Thessaloniki, Greece, May 13-15. Member of the Organizing Committee.
- 2003 “4th Panhellenic Scientific Conference in Chemical Engineering”. Patras, Greece, May 29-31. Chairman of two Sessions.
- 2003 “6<sup>th</sup> International Workshop on Mathematical Methods in Scattering Theory and Biomedical Technology”. Monastery of Rogovos, Tselepovo, Greece, Sept. 18-21. Member of the Organizing Committee.
- 2004 “*Stratis V. Sotirchos* Memorial Session: Part I and Part II” at the AIChE 2004 Annual Meeting, Austin, TX, Nov. 7-12 Co-organizer with Professor T.J. Mountziaris.
- 2005 “4<sup>th</sup> Eastern Mediterranean Chemical Engineering Conference”, Le Meridien Hotel, Dead Sea, Israel, Jan. 9-11, 2006. Member of the Organizing Committee.

## Appendix H: Citations in scientific books and textbooks

Bibliographical citations are made in several books, such as:

1. F. A. L. Dullien, "Porous Media. Fluid Transport and Pore Structure", Academic Press, New York, 1979, *and* 2nd edition 1992.
2. T. G. M. van de Ven, "Colloidal Hydrodynamics", Academic Press, London, 1989.
3. C. Tien, "Granular Filtration of Aerosols and Hydrosols", Butterworth, London, 1989.
4. G.I. Barenblatt, V.M. Entov & V.M. Ryzhik, "Theory of Fluid Flows Through Natural Rocks", Kluwer Academic Publishers, Dordrecht, 1990.
5. P. M. Adler, "Porous Media. Geometry and Transports", Butterworth-Heinemann, London, 1992.
6. M. Kaviany, "Principles of Heat Transfer in Porous Media", Springer-Verlag, New York, 1992.
7. M. Elimelech, J. Gregory, X. Jia, and R. Williams, "Particle Deposition and Aggregation", Butterworth and Heinemann, Oxford UK, 1995.
8. M. Sahimi, "Flow and Transport in Porous Media and Fractured Rock", VCH Verlagsgesellschaft, Weinheim, Germany, 1995.

## **Appendix I: Funded R&D projects**

### **58 funded R&D projects**

**(Please, see the following Table)**

| FUNDING ORGANIZATION       | DURATION  | TITLE   | PI              | OTHER RESEARCHERS | PARTNERS | TOTAL BUDGET | OWN BUDGET  |
|----------------------------|-----------|---|-----------------|-------------------|----------|--------------|-------------|
| NSF                        | 1975-1977 | Experimental and theoretical study of the growth of chain-like particle deposits during aerosol filtration in fibrous media and of their effects on filtration efficiency and pressure drop | A. C. Payatakes |                   |          | 74.200 USD   | 74.200 USD  |
| University of Houston      | 1975      | Study of reentrainment of aerosol particle clusters   | A. C. Payatakes |                   |          | 3.933 USD    | 3.933 USD   |
| Energy Institute/UH        | 1976      | Fundamental aspects of oil production by chemical and polymer flooding  | A. C. Payatakes | R. W. Flumerfelt  |          | 11.100 USD   | 11.100 USD  |
| University of Houston/NROP | 1976      | Experimental and theoretical investigation of colloidal particle deposition   | A. C. Payatakes |                   |          | 6.000 USD    | 6.000 USD   |
| Energy Institute/UH        | 1977      | Improvement of performance of solid-gas separation in energy production and energy consuming processes through particle agglomeration   | A. C. Payatakes |                   |          | 12.500 USD   | 12.500 USD  |
| NSF                        | 1977-1979 | Fundamental experimental studies and theoretical modeling of the transient behavior of deep bed filtration  | A. C. Payatakes |                   |          | 59.700 USD   | 59.700 USD  |
| ERDA                       | 1977-1979 | Basic studies in the displacement of residual oil by chemical flooding  | A. C. Payatakes | R. W. Flumerfelt  |          | 147.300 USD  | 147.300 USD |
| NSF                        | 1977-1979 | Experimental and theoretical study of transient aerosol particle deposition in fibrous media with dendritic pattern   | A. C. Payatakes |                   |          | 70.200 USD   | 70.200 USD  |
| NSF                        | 1978-1979 | Undergraduate Research Participation  | A. C. Payatakes |                   |          | 10.800 USD   | 10.800 USD  |

|                                     |           |  |  |                  |  |             |             |
|-------------------------------------|-----------|--|--|------------------|--|-------------|-------------|
| DuPont                              | 1978      | duPont Young Faculty Grant   | A. C. Payatakes  |                  |  | 20.000 USD  | 20.000 USD  |
| Marathon Oil Co.                    | 1978-1980 | Unrestricted research grant  | A. C. Payatakes  | R. W. Flumerfelt |  | 16.000 USD  | 16.000 USD  |
| Shell Development Co.               | 1978-1979 | Unrestricted research grant  | A. C. Payatakes  | R. W. Flumerfelt |  | 20.000 USD  | 20.000 USD  |
| NSF                                 | 1978      | An image-analysis system for experimental studies of chemical and biochemical processes involving dispersed particles and microorganisms | A. C. Payatakes  | J. E. Bailey     |  | 25.000 USD  | 25.000 USD  |
| Energy Institute/UHCC               | 1978      | Enhanced Oil Recovery and Improved Coal Utilization Research Aided by an Image Analysis System   | A. C. Payatakes  |                  |  | 16.000 USD  | 16.000 USD  |
| DOE                                 | 1979-1981 | Basic studies in the displacement of residual oil  | A. C. Payatakes  | R. W. Flumerfelt |  | 229.370 USD | 229.370 USD |
| NSF                                 | 1980-1982 | Fundamental experimental studies and theoretical modeling of the transient behavior of deep bed filtration                               | A. C. Payatakes  |                  |  | 75.000 USD  | 75.000 USD  |
| NSF                                 | 1980-1982 | Experimental and theoretical study of transient aerosol particle deposition in fibrous media with dendritic pattern                      | A. C. Payatakes  |                  |  | 72.000 USD  | 72.000 USD  |
| Schlumberger - Doll Research Center | 1982      | Unrestricted research grant  | A. C. Payatakes  |                  |  | 25.000 USD  | 25.000 USD  |
| Ministry of Research and Technology | 1983      | Proposal for the creation and development of a Research Center for Chemical and Metallurgical Industries                                 | A.C. Payatakes,<br>G. Papatheodorou,<br>G. Stephanopoulos,<br>C. Vayenas |                  |  |             |             |

|   |           |   |                 |                            |   |                |               |
|---|-----------|---|-----------------|----------------------------|---|----------------|---------------|
| CEC (GUEST SCIENTISTS)                            | 1985-1986 | Polymer rheology: stress induced migration of polymers, polymer precipitation and microdisplacement of oil in porous media; dynamic displacement of oil ganglia and dependence on system parameters of relative permeability to oil and water | G. Dassios      | A.C. Payatakes<br>G. Sarti |   | 45.637 ECU     | 45.637 ECU    |
| CEC (SCIENTIFIC CO-OPERATION)                     | 1985-1987 | Polymer Behaviour in Flow through Porous Media  | A. C. Payatakes |                            | FORTH/ICE-HT (GR)<br>Universita degli studi di Bologna (IT) | 36.652.000 Drs | 3.322.000 Drs |
| DEP S.A. (Public Petroleum Corporation of Greece) | 1985-1988 | Studies for the development of improved secondary and tertiary oil recovery   | A. C. Payatakes |                            |   | 1.925.000 Drs  | 1.925.000 Drs |
| GREEK OIL REFINERIES AT ASPROPYRGOS S.A.          | 1985-1988 | Design and technicoeconomical optimization of depth filtration systems for the treatment of process water and liquid wastes   | A. C. Payatakes |                            |   | 20.000 ECU     | 20.000 ECU    |
| ICE/HT  | 1985-1991 | Basic research in enhanced oil recovery   | A. C. Payatakes |                            |   | 274.000 ECU    | 274.000 ECU   |
| ICE/HT  | 1985-1991 | Design and optimization of depth filtration systems for the treatment of industrial wastes  |                 |                            |   | 60.000 ECU     | 60.000 ECU    |
| CEC (Community Projects in the Hydrocarbons)      | 1987-1991 | Improved method of measurement and characterization of the porous microstructure of oil reservoir rocks; application to core samples from Greek reservoirs  | A. C. Payatakes |                            | Public Petroleum Corporation of Greece S.A. (DEP),          | 262.115 ECU    | 262.115 ECU   |

|  |           |  |                 |                        |  |                 |                |
|--|-----------|--|-----------------|------------------------|--|-----------------|----------------|
| CEC<br>(BRITE)   | 1988-1992 | Development of a general computer aided technique for the characterization of the micropore structure of industrial porous media and development of general network simulators for the prediction of multiphase flow and transport phenomena in such porous structures | A. C. Payatakes | V. Burganos            | Groupement Europeen de Recherches Technologiques sur les Hydrocarbures, Institut Francais du Petrole- (GERTH), Geological Survey of Denmark (GSDK), HALDOR TOPSOE A/S (GSDK), FORTH/ICE-HT (GR), Technical Univesrity of Denmark-Physical Chem. Inst. (TUDK) | 2.270.000 ECU   | 180.000 ECU    |
| GSRT<br>(EPET/SPA)                                       | 1990-1993 | Filtration of particulate pollutants from process water and liquid wastes of oil refineries and other industrial plants  | A. C. Payatakes |                        |  | 30.000.000 Drs  | 30.000.000 Drs |
| Regional<br>Development<br>Program for<br>Western Greece | 1990-1993 | Development of Energy Resources and Protection of the Environment  | A.C. Payatakes  | G.Dassios,<br>S.Pavlou |  | 23.500.000 Drs  | 23.500.000 Drs |
| SHELL<br>RESEARCH BV<br>(The Hague)                      | 1991-1994 | Experimental and theoretical investigation of two-phase flow in porous media. (MULTI PHASE FLOW)   | A. C. Payatakes |                        | SHELL RESEARCH B.V   | 190.000 NLG     | 190.000 NLG    |
| GSRT<br>(STRIDE-<br>HELLAS)                              | 1993-1994 | WIND, Wind Energy Production Systems in Combination with Sea Water Desalination Systems  | A. C. Payatakes |                        | ERGON S.A., SPP S.A., Greek Technologies, Pyramis S.A., KAPE   | 831.600.000 Drs | 24.814.196 Drs |

|                      |           |   |                                 |  |  |                |                |
|----------------------|-----------|---|---------------------------------|--|--|----------------|----------------|
| CEU<br>(BRITE-EURAM) | 1993-1996 | A novel approach for the modeling of three-phase flow in porous media. Applic. to enhanced oil recovery and environmental processes.                            | A. C. Payatakes                 |  | IFP (F), BP (UK), TNO (NL), AEA (UK), CNRS (F)   | 3.679.000 ECU  | 325.000 ECU    |
| 175.642.400 Drs      | 1995-1998 | EARLY DIAGNOSIS, New instruments for early diagnosis and biotechnological applications  | G. Dassios                      | A.C. Payatakes,<br>G. Constantinides,<br>V. Kostopoulos,<br>Ch. Paraskeva,<br>D. Polyzos | ECON Optics-Mechanics,<br>EVANGELISMOS Hospital, NTUA,<br>Univ. of Ioannina  | 3.679.000 ECU  | 180.000 ECU    |
| 300.000 ECU          | 1995-1998 | CLEAN COMBUSTION of organic wastes in kilns of the cement industry, and development of new technology for the measurement of the environment-related parameters | V. Burganos,<br>A. C. Payatakes |  | FORTH/ICE-HT (Contractor)<br>TITAN,<br>ECON Optics-Mechanics,<br>Environmental Protection Engineering,<br>IESL/FORTH,<br>NCSR-Demokritos         | 1.753.000 ECU  | 300.000 ECU    |
| 12.000.000 Drs       | 1995-1997 | New foodstuffs in the form of stable emulsions utilising greek olive oil  | A. C. Payatakes                 |  | ELAIS S.A.   | 33.200.000 Drs | 33.200.000 Drs |
| 130.000 ECU          | 1995-1999 | SMOGLISS, Surface Modification and Optimization of Gas Nanoelectroceramics-Based Sensor Systems   | V. Burganos                     | A. C. Payatakes  | U. de Limoges, T.U. Clausthal,<br>Fraunhofer Inst. für Biomedizinische Technik, U. of Wales Swansea,<br>OLDHAM FRANCE S.A., CITY TECHNOLOGY Ltd. | 1.497.000 ECU  |                |
| 897.000 NOK          | 1997-2000 | Experimental study of the consolidation of silicate sand through precipitation of inorganic salt  | A. C. Payatakes                 | P. Koutsoukos<br>C.A. Paraskeva  |  | 897.000 NOK    | 897.000 NOK    |



|  |           |   |                               |                                 |   |                 |                 |
|--|-----------|---|-------------------------------|---------------------------------|---|-----------------|-----------------|
| 8.000.000 Drs  | 1997-1999 | Soil and aquifer remediation from organic pollutants using aqueous surfactant floods  | A. C. Payatakes               | G. Constantinides               |   | 8.000.000 Drs   | 8.000.000 Drs   |
| SEIKO EPSON Corp.: Base Technology Research Center (Japan) | 1997-1999 | Ink-Jet Printer project   | V.N. Burganos, A.C. Payatakes |                                 |   | 9.000.000 YEN   | 9.000.000 YEN   |
| CEU (ENVIRONMENT & CLIMATE)                                | 1997-2000 | PORE-TO-CORE, scale-up studies of the transport properties of organic pollutants with Natural Attenuation                         | A. C. Payatakes               |                                 | FORTH/ICE-HT (Contractor) U. Stuttgart, IMBB-FORTH, Delft U. of Technology, GEUS  | 1.150.600 ECU   | 324.000 ECU     |
| GSRT, (PAVE)   | 1998-2000 | New coating systems for painting and protecting modern construction materials   | A. C. Payatakes               | C.A. Paraskeva G.Constantinides | N. Lokovitis Color Hellas   | 65.200.000 Drs  | 15.000.000 Drs  |
| GSRT (EPET II)   | 1998-2001 | MHKKYNEΣ, Non-destructive wave-based testing of materials and composition analysis  | A. C. Payatakes               | D. Polyzos                      | FORTH/ICE-HT (Contractor) EKET Ltd, SPIDER S.A., U. of Ioannina, ENVIROCOUSTICS S.A   | 210.000.000 Drs | 109.496.000 Drs |
| CEU (INCO-COPERNICUS)                                      | 1999-2001 | Emulsions in Food Industry and as Contaminant in the Environment: Hydrodynamics of Filtration and Turbulence Enhanced Coalescence | A. C. Payatakes               | C.A. Paraskeva G.Constantinides | U. of Sofia (BG), U. Erlangen-Nurnberg (D), Moscow State U. (RU), Kraft Jacobs Suchard R&D (D), Kalla Cosmetics Ltd (BG), Caritex Production Co. (BG) | 240.000 ECU     | 48.000 ECU      |
| GSRT (ISTOS)   | 1999-2000 | Upgrading of the Research Infrastructure of FORTH/ICE-HT  | A. C. Payatakes               |                                 |   | 100.000.000 Drs | 100.000.000 Drs |

|                            |           |   |                                  |                                     |   |                |                |
|----------------------------|-----------|---|----------------------------------|-------------------------------------|---|----------------|----------------|
| HALDOR<br>TOPSOE S/A       | 1999-2001 | A novel method of characterization of the pore structure of catalyst carriers | C. Tsakiroglou                   | A.C.Payatakes,<br>V. Burganos       |   | 50.000 USD     | 50.000 USD     |
| SEIKO EPSON<br>Corporation | 1999-2001 | Simulation of Ink-Jet hydrodynamics   | V.N. Burganos,<br>A.C. Payatakes |                                     |   | 15.000.000 YEN | 15.000.000 YEN |
| GSRT<br>(PENED)            | 1999-2001 | Hydrodynamic separation of blood cells  | A. C. Payatakes                  | C.A. Paraskeva                      | ICE/HT-FORTH<br>(Contractor);<br>University of Patras<br>(Medical School), G.<br>Genimatas Hospital   | 40.000.000 Drs | 40.000.000 Drs |
| CEU<br>(IST)               | 2000-2001 | INTAIRNET, Intelligent Air Monitoring Network                                 | V. Burganos                      | C. Tsakiroglou,<br>A.C.Payatakes    | ICE/HT-FORTH<br>(Contractor);CERA<br>MEC (FR), TU-<br>Clausthal (DE),<br>University of South<br>Wales (UK),<br>Fraunhofer Institute<br>EhG-IBMT (DE),<br>OLDHAM (FR),<br>COMSYS (DE),<br>Patras Municipal<br>Enterprise for Local<br>Development<br>(ADEP) (GR) | 2.995.332 €    | 381.421 €      |
| CEU<br>(ENERGY)            | 2000-2003 | GRACOS, Groundwater Risk Assessment at Contaminated Sites                     | V. Burganos                      | G. Constantinides,<br>A.C.Payatakes | FORTH/ICE-HT<br>(Contractor),<br>University of<br>Tübingen (DE),<br>Netherlands Energy<br>Reserach<br>Foundation (NL),<br>Technical University<br>of Denmark (DK),<br>Ecole Polytechnique<br>Federale de<br>Lausanne (CH),<br>Fundacion LABEIN                  | 2.482.600 €    | 350.000 €      |

|  |           |   |                 |   |   |             |           |
|--|-----------|---|-----------------|---|---|-------------|-----------|
|  |           |   |                 |   | (ESP), Fundacion GAIKER (ESP)   |             |           |
| CEU (ENERGY)                                   | 2001-2003 | QNC-UNIFORM, Quasi-Natural Consolidation of UNconsolidated or poorly consolidated oil FORMations                    | A. C. Payatakes | C.A. Paraskeva<br>P. Koutsoukos                   | SCHLUMBERGER SA (NO) / Coordinator, SAGA Petroleum SA (NO), NTNU (NO),NORSK and TR Oil Servises SA (NO)   | 1.648.320 € | 351.398 € |
| CEU (ENERGY)                                   | 2000-2003 | TRACE-FRACTURE, Toward an Improved Risk Assessment of the Contaminant Spreading in Fractured Underground Reservoirs | C. Tsakiroglou  | P. Klepetsanis,<br>V. Burganos,<br>A.C. Payatakes | FORTH/ICE-HT (Contractor);, Institut Francais du Petrole(FR), Geological Survey of Denmark and Greenland (DK), CH2M-Hill / Environment Transport and Planning (ESP) | 2.380.200 € | 567.760 € |
| GSRT (Competitiveness)                         | 2002-2004 | Enhancement of the Excellence of the R&D Infrastructure of ICE/HT-FORTH   | A. C. Payatakes |   |   | 500.000 €   | 500.000 € |
| Regional Authority of Western Greece, (INNACT) | 2002-2004 | Monitoring of underground water pollution, prediction of plume spreading, and recommendation of mitigation actions  | A. C. Payatakes | G.N. Constantinides                               |   | 495.000 €   | 495.000 € |

|                                       |           |   |                 |                                   |  |             |             |
|---------------------------------------|-----------|---|-----------------|-----------------------------------|--|-------------|-------------|
| Regional Authority of Western Greece  | 2002-2003 | Completion of the Structural Infrastructure of FORTH/ICE-HT   | A. C. Payatakes |                                   |  | 680.809 €   | 680.809 €   |
| GSRT (EPAN)                           | 2004-2006 | Basic studies on the removal of nanoparticles from combustion gases in filters with nanostructure and microstructure                    | A. C. Payatakes | G.N. Constantinides               |  | 10.395 €    | 10.395 €    |
| Norges Teknisk Naturvitenskaps (NTNU) | 2005-2007 | Experimental investigations and theoretical modelling of CaCO <sub>3</sub> , deposition, dissolution and inhibition during oil recovery | A. C. Payatakes | P.G. Koutsoukos<br>C.A. Paraskeva |  | 600.000 NOK | 600.000 NOK |
| GSRT                                  | 2005-2008 | Fundamental study of the water-permeability of cement and concrete  | P.G. Koutsoukos | A.C. Payatakes<br>C.A. Paraskeva  |  | 43.800 €    | 43.800 €    |
| GSRT                                  | 2005-2005 | Development of a process for in-depth consolidation of loose soils  | C.A. Paraskeva  | A.C. Payatakes<br>P.G. Koutsoukos |  | 43.800 €    | 43.800 €    |

## **Appendix J: Funded Technology-Transfer projects**

### **26 funded Technology-Transfer projects**

- **through the  
Network PRAXI (ΠΡΑΞΗ)**
- **and through the  
Innovation Relay Centre HELP FORWARD**

**(Please, see the following Table)**

|   | Project Name            | Project Title   | Programme               | HELP FORWARD Role | Contract No           | Starting Date | Completion Date | HELP FORWARD Budget | HELP FORWARD Funding |
|---|-------------------------|---|-------------------------|-------------------|-----------------------|---------------|-----------------|---------------------|----------------------|
| 1 | HELP FORWARD (ΠΡΑΞΗ ΚΠ) | Initiative for the Utilization of European Community R&D Programmes   | STRIDE-HELLAS           | CO                | STRIDE-HELLAS 56/1991 | 1/6/1991      | 31/12/1994      | 1.206.000 ECU       | 1.206.000 ECU        |
| 2 | IRC 2.22                | Creation and Development of a Relay Centre in Greece  | FP4 / Innovation        | CO                | NRC 2.22              | 1/12/1995     | 31/12/1996      | 426.667 ECU         | 197.648 ECU          |
| 3 | FEMIRC BULGARIA         | Creation and Development of a Fellow Member to the Innovation Relay Centres in Bulgaria   | FP4 / Innovation-INCO   | PA                | 20600                 | 1/1/1997      | 30/6/2000       | 86.400 ECU          | 56.400 ECU           |
| 4 | IRC 3.22                | Operation of an Innovation Relay Centre in Greece   | FP4 / Innovation        | CO                | NRC 3.22              | 1/12/1997     | 31/3/2000       | 514.650 ECU         | 257.325 ECU          |
| 5 | FEMIRC ROMANIA          | Creation and Development of a Fellow Member to the Innovation Relay Centres in Romania  | FP4 / Innovation-INCO   | PA                | 20702                 | 15/12/1997    | 14/12/1999      | 49.800 ECU          | 36.600 ECU           |
| 6 | IRC 4.22                | Operation and expansion of Activities of the Innovation Relay Centre HELP-FORWARD in Greece   | FP5 / Innovation & SMEs | CO                | IRC 4.22              | 1/4/2000      | 31/3/2004       | 2.132.777 €         | 1.066.388 €          |
| 7 | MINATECH                | Micro and Nano Technologies and Markets   | FP5 / Innovation & SMEs | PA                | IPS-1999-950015       | 11/5/2000     | 10/2/2003       | 117.581 €           | 88.186 €             |
| 8 | DILEMMA                 | Digital Design and Life-Cycle Management for Distributed Information Supply Services in Innovation Exploitation and Technology Transfer | FP5 / IST               | PA                | IST-1999-10092        | 1/6/2000      | 31/12/2001      | 162.038 €           | 81.019 €             |

|    |  |   |                                 |    |                         |            |            |           |             |
|----|--|---|---------------------------------|----|-------------------------|------------|------------|-----------|-------------|
| 9  | BRIDGES  | Business Route for Investors to determine Gifted Entrepreneurs and Start-Ups                                | E-content                       | PA | EDC-1134 BRIDGES /26918 | 1/1/2001   | 31/12/2001 | 51.845 €  | 36.810 €    |
| 10 | FORETECH   | Technology and Innovation Foresight for Bulgaria and Romania  | FP5 / Improving Human Potential | PA | HPV1-CT-2002-60046      | 1/10/2002  | 31/8/2004  | 15.000 €  | 15.000 €    |
| 11 | RURAL ETINET   | Economic and Technological Intelligence Project to Facilitate SMEs in Rural Areas to participate in the FP6 | FP6 / Research & Innovation     | PA | ETIS-CT-2003-508500     | 15/12/2003 | 14/12/2006 | 46.572 €  | 34.480,77 € |
| 12 | MISMEC   | New Methods for Involving SMEs in the Mechatronics sector in FP6  | FP6 / Research & Innovation     | PA | ETIS-CT-2004-508507     | 1/1/2004   | 31/12/2006 | 93.806 €  | 75.678 €    |
| 13 | TALENT SCOUT   | Talented SMEs for EU competitiveness in biotech diagnostic applications                                     | FP6 / Research & Innovation     | PA | ETIS-CT-2004-508510     | 1/1/2004   | 31/12/2006 | 80.880 €  | 61.260 €    |
| 14 | NANO2LIFE  | A network for bringing Nanotechnologies to Life   | FP6 / NMP                       | PA | NMP4-CT-2003-500057     | 1/2/2004   | 31/1/2008  | 114.500 € | 114.500 €   |
| 15 | INTAS ININ NIP CONTINUING ADVICE                         | NIP Continuing Advice: Armenia, Azabaijan, Georgia  | INTAS                           | CO | 03-61-211               | 1/2/2004   | 31/1/2005  | 22.900 €  | 22.900 €    |
| 16 | INTAS ININ Training Information Dissemination Techniques | TIDE - Techniques for information dissemination Efficiency  | INTAS                           | CO | 03-65-212               | 1/2/2004   | 30/4/2004  | 16.020 €  | 16.020 €    |

|    |  |   |  |    |                         |           |            |             |             |
|----|--|---|--|----|-------------------------|-----------|------------|-------------|-------------|
| 17 | INTAS ININ<br>Training<br>Introduction to<br>FP6 | GIFT-General Introduction to<br>Framework Tasks   | INTAS                                    | CO | 03-63-84                | 1/2/2004  | 30/4/2004  | 19.560 €    | 19.560 €    |
| 18 | FORTH ILO<br>(ΓΑΜ ITE)                           | FORTH Industrial Liaison<br>Office  | GSRT<br>Industrial<br>Liaison<br>Offices | CO | 03-ΓΔ                   | 1/1/2004  | 31/12/2006 | 300.000 €   | 300.000 €   |
| 19 | INTEGRATING-<br>ACC                              | Integrating the Associated<br>Candidate Countries into the<br>FP6 through networking<br>activities and improved NCP<br>services     | FP6 / INCO                               | PA | INCO-CT-<br>2004-510433 | 1/4/2004  | 31/3/2007  | 7.461 €     | 5.596 €     |
| 20 | IRC 510.517                                      | Operation and consolidation of<br>Activities of the Innovation<br>Relay Centre HELP-<br>FORWARD in Greece                           | FP6 /<br>Research &<br>Innovation        | CO | 510517 (IRC 6)          | 1/4/2004  | 31/3/2008  | 2.861.000 € | 1.298.450 € |
| 21 | INNOFIRE   | Interregional co-operation for<br>Development og Innovative<br>Regional Economic Clusters   | INTERREG<br>IIIC                         | PA | 3E0015I-B               | 1/7/2004  | 30/6/2007  | 76.148,93 € | 57.111,70 € |
| 22 | NAOMITEC   | Nano and Micro-TEC SMEs in<br>Integrated Projects and<br>Networks of Excellence   | FP6 /<br>Research &<br>Innovation        | PA | ETIS-CT-2004-<br>508505 | 1/7/2004  | 30/6/2007  | 61.455,00 € | 46.466,25 € |
| 23 | COOREERS   | Co-ordination by Best Practice<br>exchange and Knowledge<br>building by the NMP-NCPs in<br>an Enlarged European<br>Research Society | FP6 / NMP                                | PA | NMP1-CT-<br>2004-011800 | 1/12/2004 | 30/11/2007 | 14.642 €    | 14.642 €    |
| 24 | EUROPEAN<br>IST                                  | Enhancing the participation of<br>research organisations from<br>Associated Candidate<br>Countries to the 6th FP                    | FP6 / IST                                | PA | 511328                  | 1/1/2005  | 31/12/2006 | 115.276 €   | 105.160 €   |



|    |            |  |          |    |        |        |         |           |           |
|----|------------|--|----------|----|--------|--------|---------|-----------|-----------|
| 25 | ISOPTT     | Increasing the small and micro enterprises own potential for transnational technology transfer | FP6/INN7 | CO | 030628 | 1/6/06 | 31/5/08 | 215.240 € | 171.205 € |
| 26 | NEWTICKETT | New tools to improve clusters key European technology transfer                                 | FP6/INN7 | PA | 030582 | 1/6/06 | 31/5/08 | 154.051 € | 116.800 € |