

List of Publications - Ruben G. Carbonell

(Revised March 09)

1. 1969 R.G. Carbonell, E.F. Leonard and L. Theodore, *The Modelling and Simulation of a New Artificial Kidney*, Proceedings of 23rd Ann. Conf. of Engr. in Medicine and Biology, 292.
2. 1972 R.G. Carbonell and M.D. Kostin, *Enzyme Kinetics and Engineering*, AIChE Journal, **18**, 1-13.
3. 1973 R.G. Carbonell and M.D. Kostin, *Tunneling Phenomena in Three Dimensional Double-well Potentials*, International Journal of Quantum Chemistry, **7**, 319-332.
4. 1974 R.G. Carbonell and M.D. Kostin, *Quantum Mechanics of Transfer Reactions*, Journal of Chemical Physics, **60**, 2047-2049.
5. 1974 R.G. Carbonell and M.D. Kostin, *Time-Dependent Probability Density of Statistical Physics*, Journal of Statistical Physics, **11**, 379-390.
6. 1975 M.A. Paine and R.G. Carbonell, *Immobilization of β -Galactosidase in Collodion Microcapsules*, Biotechnology & Bioengineering, **17**, 617-619.
7. 1975 R.M. Morrow, R.G. Carbonell and B.J. McCoy, *Electrostatic and Hydrophobic Effects in Affinity Chromatography*, Biotechnology & Bioengineering, **17**, 895-914.
8. 1975 R.G. Carbonell, *Enzyme Engineering*, California Engineer, April/May, 28-31.
9. 1975 R.G. Carbonell and B.J. McCoy, *Moment Theory of Chromatographic Separations: Resolution and Optimization*, The Chemical Engineering Journal, **9**, 115-124.
10. 1975 D.T. Wadiak and R.G. Carbonell, *Kinetic Behavior of Microencapsulated β -Galactosidase*, Biotechnology & Bioengineering, **17**, 1157-1181.
11. 1975 R.G. Carbonell, *Mass Transfer in Coiled Tubes*, Biotechnology & Bioengineering, **17**, 1383-1385.
12. 1975 D.T. Wadiak and R.G. Carbonell, *Effectiveness Factors for Substrate and Product Inhibition*, Biotechnology & Bioengineering, **17**, 1761-1773.
13. 1975 R.G. Carbonell and M.D. Kostin, *Oscillations in Transfer Reactions*, Chem. Phys. Lett., **38**, 576-674.
14. 1976 R.G. Carbonell and B.J. McCoy, *Induction and Transient Times in Chemical Reactions: Application to O_2 Dissociation*, Phys. of Fluids, **19**, 1721-1726.
15. 1976 A.K. Wong, B.J. McCoy and R.G. Carbonell, *Theory of Capillary Chromatography: Effect of Coiling and Interphase Mass Transfer*, J. of Chromatography, **129**, 1-18.
16. 1977 B.J. McCoy and R.G. Carbonell, *Master Equation Theory for Steady State Chemical Reactions: Dissociation of Diatomic Molecules in Gases*, J. Chem. Phys., **66**, 4564-4571.
17. 1977 B.J. McCoy and R.G. Carbonell, *Equation for the Rate Constant for Dissociation of Diatomic Molecules in Gases*, Chemical Physics, **20**, 227-232.
18. 1977 R.G. Carbonell and M.D. Kostin, *Quantum Tunnelling and Activated Complex Theory*, Physics Letters, **64A**, 1-5.
19. 1977 D.N. Dean, M.J. Fuchs, J.M. Schaffer and R.G. Carbonell, *Batch Absorption of CO_2 by Free and Microencapsulated Carbonic Anhydrase*, Industrial and Engineering Chemistry Fundamentals, **16**, 452-458.

20. 1978 R.G. Carbonell and B.J. McCoy, *Axial Dispersion Models for Steady-State Laminar, Open-Tube Systems*, Chemical Engineering Communications, **2**, 189-195.
22. 1978 B.J. McCoy and R.G. Carbonell, *Letter on Moment Methods in Chromatography*, AIChE Journal, **24**, 159-160.
23. 1978 M.S. Razavi, B.J. McCoy and R.G. Carbonell, *Moment Theory of Break-through Curves for Fixed-Bed Adsorbers and Reactors*, The Chemical Engineering Journal, **16**, 211-222.
24. 1979 M. Herskowitz, R.G. Carbonell and J.M. Smith, *Effectiveness Factors and Mass Transfer in Trickle-Bed Reactors*, AIChE Journal, **25**, 272-283. **(109 citations)**
25. 1979 R.G. Carbonell and B.J. McCoy, *Tunnelling and Transport Problems for a Quantum Mechanical Brownian Particle*, Journal of Statistical Physics, **21**, 301-311.
26. 1979 R.G. Carbonell, *Dispersion in Oil Shale Retorts: Effect of Particle Size Distribution and Flow Non-Uniformities*, Proceedings of 14th Intersociety Energy Conversion Engineering Conference, Boston, August 6-10, 1979, 968-972.
27. 1979 R.G. Carbonell, *Effect of Pore Size Distribution and Flow Segregation on Dispersion in Porous Media*, Chem. Engr. Sci., **34**, 1031-1039.
28. 1979 L.A. Nguyen Ly, R.G. Carbonell and B.J. McCoy, *Diffusion of Gases Through Surfactant Films: Interfacial Resistance to Mass Transfer*, AIChE Journal, **25**, 1015-1024.
29. 1980 R.G. Carbonell, *Flow Non-Uniformities in Packed Beds: Effect on Dispersion*, Chem. Engr. Sci., **35**, 1347-1356.
30. 1980 C.T. Chang, B.J. McCoy and R.G. Carbonell, *Hydrophobic Chromatography of β -Galactosidase*, Biotechnology & Bioengineering, **22**, 377-399. **(7 citations)**
31. 1980 R.G. Carbonell, *Effect of Particle Size Distribution and Flow Non-Uniformities on Dispersion in Porous Media: Application to Oil Shale Retorts*, in T. Veziroglu, Ed., Proceedings of 2nd Multiphase Flow and Heat Transfer Symposium Miami, 1979, pp. 2379-2405.
32. 1980 D. Ryan, R.G. Carbonell, S. Whitaker, *Effective Diffusivities for Catalyst Pellets Under Reactive Conditions*, Chem. Engr. Sci., **35**, 10-16.
33. 1980 R.G. Carbonell, *An In-situ Process to Retrieve Oil from Shale*, Engineering Progress, UCD, Fall, 1980, p. 11-13.
34. 1981 D. Ryan, R.G. Carbonell and S. Whitaker, *A Theory of Diffusion and Reaction in Porous Media*, AIChE Symposium Series, No. 202, Vol. 77, Ed. by P. Stroeve and W.J. Ward, pp. 46-62.
35. 1982 R.G. Carbonell, *Transport Processes in Spatially Periodic Systems*, Proceeding of the International Symposium of Pure and Applied Chemistry, 28th Macromolecular Symposium, University of Massachusetts, Amherst, MA, July 12-16, 1982, p. 741.
36. 1983 M.A. Paine, R.G. Carbonell and S. Whitaker, *Dispersion in Pulsed Systems. Part I: Heterogeneous Reaction and Reversible Adsorption in Capillary Tubes*, Chem. Engr. Sci., **38**, 1781-1793.
37. 1983 R.G. Carbonell and S. Whitaker, *Dispersion in Pulsed Systems, Part II: Theoretical Developments for Porous Media*, Chem. Engr. Sci., **38**, 1795- 1802.

38. 1983 A. Eidsath, R.G. Carbonell, S. Whitaker and L.R. Herrmann, *Dispersion in Pulsed Systems, Part III: Comparison of Theory and Experiment for Dispersion in Packed Beds*, Chem. Engr. Sci., **38**, 1803-1816.
39. 1984 R.G. Carbonell and S. Whitaker, *Heat and Mass Transfer in Porous Media*, in Fundamentals of Transport in Porous Media, Proceedings of the NATO Advanced Study Institute on the Mechanics of Fluids in Porous Media, July 18-27, 1982, J. Bear and Y. Corapcioglu, Editors, Martinus Nijhoff, BV, The Netherlands, pp. 121-198.
40. 1984 F. Zanotti and R.G. Carbonell, *Development of Transport Equations for Multi-phase Systems. Part I: General Development for Two-Phase Systems*, Chem. Engr. Sci., **39**, 263-278.
41. 1984 F. Zanotti and R.G. Carbonell, *Development of Transport Equations for Multi-phase Systems. Part II: Application to One-Dimensional Axi-Symmetric Flows of Two Phases*, Chem. Engr. Sci., **39**, 279-297.
42. 1984 F. Zannotti and R.G. Carbonell, *Development of Transport Equations for Multi-phase Systems. Part III: Application to Heat Transfer in Packed Beds*, Chem. Engr. Sci., **39**, 299-311.
43. 1984 B.J. McCoy and R. G. Carbonell, *Schrodinger-Langevin Theory for Quantum Tunneling Through a Barrier*, Phys. Rev. A., **29**, 399-400.
44. 1984 J. Levec, A.E. Sáez and R.G. Carbonell, *Holdup and Pressure Drop in Trickle Bed Reactors*, IChemE Symposium Series, No. 87, ISCRE 8, Eighth International Symposium on Chemical Reaction Engineering, Edinburgh, Scotland, Sept. 10-13, 1984, Institution of Chemical Engineers.
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47. 1985 N. Han, J. Bhakta, and R.G. Carbonell, *Longitudinal and Lateral Dispersion in Packed Beds: Effect of Column Length and Particle Size Distribution*, AIChE Journal, **31**, 277-288.
48. 1985 J. Levec and R.G. Carbonell, *Longitudinal and Lateral Thermal Dispersion in Packed Beds. Part I: Theory*, AIChE Journal, **31**, 581-590.
49. 1985 J. Levec and R.G. Carbonell, *Longitudinal and Lateral Thermal Dispersion in Packed Beds. Part II: Comparison Between Theory and Experiment*, AIChE Journal, **31**, 591-602.
50. 1985 I. Nozad, R.G. Carbonell, and S. Whitaker, *Heat Conduction in Multiphase Systems I: Theory and Experiment for Two-Phase Systems*, Chem. Engr. Sci., **40**, 843-855.
51. 1985 I. Nozad, R.G. Carbonell, and S. Whitaker, *Heat Conduction in Multiphase Systems II: Experimental Method and Results for Three-Phase Systems*, Chem. Engr. Sci., **40**, 857-863.
52. 1985 A.E. Sáez and R.G. Carbonell, *On the Performance of Quadrilateral Finite Elements in the Solution to the Stokes Equations for Periodic Structures*, Internal Journal of Numerical Methods in Fluids, **5**, 601-614.
53. 1986 A.E. Sáez, R.G. Carbonell and J. Levec, *The Hydrodynamics of Trickling Flow in Packed Beds, Part I: Conduit Models*, AIChE Journal, **32**, 353-368. (29 citations)

54. 1986 J. Levec, A.E. Sáez, and R.G. Carbonell, *The Hydrodynamics of Trickle Flow in Packed Beds, Part II: Experimental Observations*, AIChE Journal, **32**, 369-380.
55. 1986 G.C. Sarti, C. Gostoli, G. Riccioli and R.G. Carbonell, *Transport of Swelling Penetrants in Glassy Polymers: Influence of Convection*, J. Appl. Polymer Sci., **32**, 3627-3647.
56. 1986 R.Z. Guzman, R.G. Carbonell and P.K. Kilpatrick, *The Adsorption of Proteins to Gas-Liquid Interfaces*, J. Colloid and Interface Sci., **114**, 536-547.
57. 1986 R.G. Carbonell, *Plenary Lecture: Transport in Multiphase Systems*, Proceedings of 5th Yugoslavian-Austrian-Italian Chemical Engineering Conference, Portoroz, Yugoslavia, September 16-18, 1986.
58. 1987 A.E. Sáez and R.G. Carbonell, *The Equilibrium Shape and Stability of Menisci Formed Between Two Touching Cylinders*, J. Fluid Mechanics, **176**, 357-378.
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60. 1987 S.G. Kim, R.G. Carbonell and P.K. Kilpatrick, *Calculation of Electrostatic Forces Between Charged Surfaces in Ionic Solution*, Proceedings of the 10th Korean Symposium on Science and Technology, 273-279.
61. 1987 R. Guzman, D.E. Keller, J.L. Torres, P.K. Kilpatrick and R.G. Carbonell, *Biospecific Interactions of Affinity Surfactants with Proteins*, Biological Chemistry Hoppe-Seyler, **368**, 746.
62. 1987 J.R. Hunter, R. Guzman, R.G. Carbonell and P.K. Kilpatrick, *Adsorption of Proteins at Gas-Liquid Interfaces*, Biological Chemistry Hoppe-Seyler, **368**, 749.
63. 1988 J. Levec, K. Grosser and R.G. Carbonell, *The Hysteretic Behavior of Pressure Drop and Liquid Holdup in Trickle Beds*, AIChE Journal, **34**, 1027-1030.
64. 1988 J.L. Torres, R. Guzman, R.G. Carbonell and P.K. Kilpatrick, *Affinity Surfactants as Reversibly Bound Ligands for High-Performance Affinity Chromatography*, Analytical Biochemistry, **171**, 411-418.
65. 1988 K. Grosser, R.G. Carbonell and S. Sundaresan, *The Onset of Pulsing in Two-Phase Cocurrent Downflow Through a Packed Bed*, AIChE Journal, **34**, 1850-1860.
66. 1988 F. Doghieri, G.C. Sarti and R.G. Carbonell, *Sorption of Penetrants in Rubbery Polymers: Coupled Effects of Concentration and Stress Field*, Proceedings of the Congress on Diffusion in Polymers, Reading, UK, March 22-24, **18**, 1-30.
67. 1989 B. Locke and R.G. Carbonell, *A Theoretical and Experimental Study of Counteracting Chromatographic Electrophoresis*, Separation and Purification Methods, **18**, 1-64.
68. 1989 J.D. Powers, P.K. Kilpatrick and R.G. Carbonell, *Protein Purification by Affinity Binding to Unilamellar Vesicles*, Biotechnology and Bioengineering, **33**, 173-182.
69. 1989 D.E. Keller, J.L. Torres, R.G. Carbonell and P.K. Kilpatrick, *Reversible Conversion of Octadecyl-Bonded Silica to Ion Exchange Surfaces for Protein Separations*, Analytical Biochemistry, **176**, 191-198.
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73. 1989 J.D. Powers, P.K. Kilpatrick and R.G. Carbonell, *Purification of Avidin from Egg Whites Using Affinity-Modified Unilamellar Vesicles*, in *Biological and Synthetic Membranes*, A.R. Liss, Ed., pp. 237-246.
74. 1989 R.G. Carbonell and D.J. Riley, *Direct Measurement of Particle Concentration at the Solid-Liquid Interface*, in 1989 Proceedings of the Institute of Environmental Sciences Annual Technical Meeting, Anaheim, CA, pp. 426-427.
75. 1990 R.Z. Guzman, P.K. Kilpatrick and R.G. Carbonell, *Affinity Precipitation of Avidin Using Ligand-Modified Phospholipids in Solution*, ACS Symposium Series 419, *Downstream Processing and Bioseparation: Recovery and Purification of Biomolecules*, J.F. Hamel, J. B. Hunter, and S. K. Sikdar, Eds. pp. 212-236.
76. 1990 E. Hawkins-Cwirko and R.G. Carbonell, *A Theoretical Analysis of Donnan Dialysis Across Charged Porous Membranes*, *J. of Membrane Science*, **48**, 155-179.
77. 1990 J.R. Hunter, P.K. Kilpatrick and R.G. Carbonell, *Lysozyme Adsorption at the Air-Water Interface*, *J. Colloid and Interface Science*, **137**, 462-482.
78. 1990 R. Molinari, J.L. Torres, A.S. Michaels, P.K. Kilpatrick and R.G. Carbonell, *Simultaneous Ultrafiltration and Affinity Sorptive Separation of Proteins in a Hollow Fiber Membrane Module*, *Biotechnology and Bioengineering*, **36**, 572-580.
79. 1990 J.D. Powers, P.K. Kilpatrick and R.G. Carbonell, *Trypsin Purification by Affinity Binding to Small Unilamellar Liposomes*, *Biotechnology and Bioengineering*, **36**, 506-519.
80. 1990 D.J. Riley and R.G. Carbonell, *The Deposition of Liquid-Based Contaminants onto Silicon Surfaces*, 1990 Proceedings of the Institute of Environmental Sciences 36th Annual Meeting, New Orleans, LA, April 23-27, pp. 224-228.
81. 1990 R.G. Carbonell and G.C. Sarti, *Coupled Deformation and Mass-Transport Processes in Solid Polymers*, *I. and E.C. Research*, **29**, 1194-1204.
82. 1990 R. Donovan, A.C. Clayton, D. J. Riley and R.G. Carbonell, V.B. Menon, *Investigating Particle Deposition Mechanisms on Wafers Exposed to Aqueous Baths*, *Microcontamination*, August, **8**(8), 25-29.
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84. 1990 A.E. Sáez and R.G. Carbonell, *The Equilibrium and Stability of Menisci between Touching Spheres under the Effect of Gravity*, *J. Colloid and Interface Science*, **140**, 408-418.
85. 1991 J.R. Hunter, P.K. Kilpatrick and R.G. Carbonell, *β -Casein Adsorption at the Air/Water Interface*, *J. Colloid and Interface Science*, **142**, 429-447.

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89. 1991 E.J. Dougherty, M.R. Overcash and R.G. Carbonell, *Diffusivity of 2,3,7,8-Tetrachlorodibenzo-p-dioxin in Organic Solvents*, Hazardous Wastes and Hazardous Materials, **8**, 43-53.
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94. 1992 D. D. Powers, B. L. Willard, R.G. Carbonell and P.K. Kilpatrick, *Affinity Precipitation of Proteins by Surfactant-Solubilized, Ligand-Modified Phospholipids*, Biotechnology Progress, **8**, 436-453.
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99. 1993 R. Hariharan, B.D. Freeman, R.G. Carbonell and G.C. Sarti, *Equation of State Predictions of Sorption Isotherms in Polymeric Materials*, Fluid Phase Equilibria, **83**, 407-414.
100. 1993 Deborah J. Riley and Ruben G. Carbonell, *Mechanisms of Particle Deposition from Ultrapure Chemicals onto Semiconductor Wafers: Deposition from Bulk*

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102. 1993 M.A. Jones, Peter K. Kilpatrick and R.G. Carbonell, *Preparation and Characterization of Bifunctional Unilamellar Vesicles for Immunoassay*, Biotechnology Progress, **9**, 242-258.
103. 1993 D.J. Riley and R.G. Carbonell, *The Influence of Solution Properties on the Deposition of Particles from Liquid Media onto Silicon Wafer Surfaces*, in Particles in Gases and Liquids: Detection, Characterization and Control, Volume 3, K.L. Mittal, Ed., Plenum Press, New York, pp. 51-76.
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109. 1994 E.J. Dougherty, A.L. McPeters, M.R. Overcash and R.G. Carbonell, *Sorption Processes of 2,3,7,8 -Tetrachlorodibenzo-p-dioxin on Soil in the Presence of Organic Liquids*, J. of Hazardous Materials, **38**, 405-421.
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124. 1996 S.P. Beaudoin, R.G. Carbonell and C.S. Grant, *Phase Behavior, Contacting and Detergency in the C12E5-Abietic Acid-H2O System*, *J. Colloid and Interface Science*, **182**, 465-472.
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