

PUBLICATIONS (Refereed Journals):

- Sylvester, N. D. and S. L. Rosen, "Laminar Flow in the Entrance Region of a Cylindrical Tube Part I: Newtonian Fluids," *AICHE J.*, 16, 964 (1970).
- Sylvester, N. D. and S. L. Rosen, "Laminar Flow in the Entrance Region of a Cylindrical Tube Part II: Non-Newtonian Fluids," *AICHE J.*, 16, 967 (1970).
- Verhoff, F. H. and N. D. Sylvester, "Hydrodynamic Fractionation of Macromolecules Part I: A Simple Theory," *J. Macromol. Sci. Chem.*, A4, (4), 979 (1970).
- Sylvester, N. D. and J. S. Tyler, "Dilute Solution Properties of Drag Reducing Polymers," *Ind. & Engr. Chem. Prod. Res. & Devel.*, 9 (4), 548 (1970).
- Sylvester, N. D., M. A. Turk, and T. Ariman, "On the Analysis of Time-Dependent Blood Flow," *Proceedings Third Canadian Congress of Applied Mechanics*, pgs. 785-786 (1971).
- Sylvester, N. D. and W. A. Ludwico, "On Patton's Cone and Plate Stress Relaxation Technique (CPSRT)," *J. Paint Tech.*, 43, 59 (1971).
- Sylvester, N. D., J. S. Tyler, and A. H. P. Skelland, "Non-Newtonian Thin Films," in *Proceedings of the 1972 Heat Transfer and Fluid Mechanics Institute, Stanford University Press* (1972).
- Sylvester, N. D., M. A. Turk, and T. Ariman, "On the Analysis of Blood Flow," *Developments in Theoretical and Applied Mechanics*, Vol. 6, pgs. 3-24 (1972) E. G. Henneke and S. C. Krane, Editors.
- Sylvester, N. D., M. A. Turk, and T. Ariman, "Pulsatile Blood Flow," *Trans. Soc. Rheol.*, 17, 1-21 (1973).
- Sylvester, N. D., M. A. Turk, and T. Ariman, "A Microcontinuum Model of Blood," *Proc. 4th Canadian Congress, Applied Mechanics, Montreal, Canada* (May 1973).
- Sylvester, N. D. and P. Pitaygulsarn, "Effect of Transport Processes on Conversion in a Trickle Bed Reactor," *AICHE J.*, 19 (3), 640-644 (May 1973).
- Sylvester, N. D., M. A. Turk, and T. Ariman, "A Microcontinuum Model of Blood with Deformable Cells," in *1973 Biomechanics Symposium*, AMD-Vol. 2, pgs. 5-6 (1973), YC. Fung and J. A. Brighton, Editors, ASME, New York, NY.
- Kumor, S. M., and N. D. Sylvester, "The Effects of a Drag Reducing Polymer on the Turbulent Boundary Layer," in *CEP Symposium Series*, Vol. 130, Vol. 69, pgs. 1-13, *Drag Reduction in Polymer Solutions*, N. D. Sylvester, Editor.
- Sylvester, N. D. and S. M. Kumor, "Degradation of Dilute Polymer Solutions in Turbulent Flow," in *CEP Symposium Series*, Vol. 130, Vol. 69, pgs. 69-81, *Drag Reduction in Polymer Solutions*, N. D. Sylvester, Editor.
- Sylvester, N. D., Editor, *Drag Reduction in Polymer Solutions*, *AICHE Symposium Series*, Vol. 69, No. 130 (1973).
- Sylvester, N. D., M. A. Turk, and T. Ariman, "Microcontinuum Fluid Mechanics," *International J. Eng. Sci.*, 11, 905-930 (1973).
- Sylvester, N. D., J. S. Tyler, and A. H. P. Skelland, "Non-Newtonian Thin Films: Theory and Experiment," *Cand. J. ChE*, 51, 418-429 (August 1973).
- Ariman, T., M. A. Turk, and N. D. Sylvester, "On Steady and Pulsatile Flow of Blood," *J. of Appl. Mechanics*, 41, 1-7 (1974).
- Ariman, T., M. A. Turk, and N. D. Sylvester, "Applications of Microcontinuum Fluid Mechanics," *International J. Eng. Sci.*, 12, 273-293 (1974).
- Sylvester, N. D. and P. Pitaygulsarn, "Effect of Catalyst Wetting on Conversion in a Trickle-Bed Reactor," *Cand. J. of ChE*, 52, 539-540 (1974).
- Ariman, T., M. A. Turk, N. D. Sylvester, "On Time-Dependent Blood Flow," *Applied and Engineering Science*, 2, 21-36 (1974).
- Sylvester, N. D. and P. Pitaygulsarn, "Effect of Mass Transport on BOD Removal in Trickling Filters," *Water Research*, 9, 447 (1975).
- Sylvester, N. D., A. Kulkarni, and J. J. Carberry, "Slurry and Trickle Bed Effectiveness," *Cand. J. ChE*, 53, 313 (1975).
- Sylvester, N. D. and P. Pitaygulsarn, "Mass Transfer for Two-Phase Cocurrent Downflow in a Packed Bed," *I & EC Process Design & Dev.*, 14 (4), 421 (1975).

- Ariman, T., M. A. Turk, and N. D. Sylvester, "Suspension Rheology-A Microcontinuum Approach," *Rheol. Acta*, *14*, 385 (1975).
- Sylvester, N. D. and P. Pitayagulsarn, "Radial Liquid Distribution for Cocurrent Two-Phase Downflow in Packed Beds," *Cand. J. ChE*, *53*, 599 (1975).
- Brill, J. P., H. D. Beggs, O. Allag, E. A. Proano, C. E. Roman-Lazo, and N. D. Sylvester, "Orifice Coefficients for Two-Phase Flow Through Velocity Controlled Subsurface Safety Valves," *Proceedings 1976 API Production Department Annual Meeting*, pgs. H1-H52 (April 1976).
- Sylvester, N. D. and J. P. Brill, "Drag Reduction in Two-Phase Annular-Mist Flow of Air and Water," *AIChE J.*, *22*, 615 (May 1976).
- Dharwadkar, A. and N. D. Sylvester, "Liquid Solid Mass Transfer in Trickle-Beds," *AIChE J.*, *23*, 376 (May 1977).
- Sylvester, N. D., R. H. Dowling and J. P. Brill, "Drag Reduction in Cocurrent Horizontal Natural Gas-Hexane Pipe Flow," *Polymer Preprints*, *19*, 412-417 (March 1978).
- Sylvester, N. D. and M. P. Toure, "Effect of Shear on Polymer Aided Flocculation of Suspensions," *Ind. Eng. Chem. Prod. Res. Dev.*, *17*, 347-351 (Dec. 1978).
- Nayar, S. and N. D. Sylvester, "Control of Phenol in Activated Sludge Reactors by Addition of Powdered Activated Carbon," *Water Research*, *13*, 201 (1979).
- Sylvester, N. D. and P. S. Smith, "The Effects of Concentration and Friction Velocity on Drag Reduction of Dowell-APE in Kerosene," *I & EC Product R/D*, *18*, 47 (1979).
- Sylvester, N. D., J. J. Byeseda and B. Yadeta, "Polyelectrolyte Flocculation of Oil-Water Emulsions," *I & EC Product R/D*, *18*, 57 (1979).
- Byeseda, J. J. and N. D. Sylvester, "High Rate Filtration in a Polymer Treated Sand Bed," *ASCE J. Environ. Engr. Div.*, *105*, 231-243 (April 1979).
- Dharwadkar, A. R. and N. D. Sylvester, "The Effects of pH, Sodium Chloride, Sodium Trichlorophenate and Fuel Oil on Chromate Capacity of Ion-Exchange Resins," *I & EC Product R/D*, *18*, 100-104 (1979).
- Sylvester, N. D., S. Laribi and D. U. von Rosenberg, "The Effects of Mass Transport and Chemical Reaction on Pollutant Removal in a Three-Phase Slurry Adsorber-Reactor," *Canad. J. ChE*, *57*, 280-287 (June 1979).
- Hottovy, J. D. and N. D. Sylvester, "Drag Coefficients for Irregularly Shaped Particles," *I & EC Process Design & Development*, *18*, 433 (July 1979).
- Sylvester, N. D. and S. Dianat, "Oxygen Absorption and Adsorption in Aqueous Slurries of Powdered Activated Carbon," *Ind. Eng. Chem. Process Des. Dev.*, *19*, 199-201 (1980).
- Sylvester, N. D., R. H. Dowling and J. P. Brill, "Drag Reduction in Cocurrent Horizontal Natural Gas-Hexane Pipe Flow," *Polymer Engineering and Science*, *20* (7), 485-492 (Mid-May 1980).
- Sylvester, N. D., "Engineering Education Must Improve the Communication Skills of its Graduates," *Engineering Education*, 739 (April 1980).
- Sublette, K. L., E. H. Snider, and N. D. Sylvester, "Powdered Activated Carbon Enhancement of the Activated Sludge Process: A Study of the Mechanisms," *Proceedings of the 8th Annual WWEMA Industrial Pollution Conference*, 351-369 (June 1980).
- Sylvester, N. D. and J. J. Byeseda, "Oil Water Separation by Induced Air Flotation," *SPE J.*, 579-590 (Dec. 1980).
- Zigrang, D. and N. D. Sylvester, "An Explicit Equation for Solid Settling Velocities in Liquids," *AIChE J.*, *27*, 1043 (1981).
- Sakornwimon, W. and N. D. Sylvester, "Effectiveness Factors for Partially Wetted Catalysts in Trickle-Bed Reactors," *Ind. Eng. Chem. Process Des. Dev.*, *21*, 16-25 (1982).
- Zigrang, D. and N. D. Sylvester, "Explicit Approximations to the Solution of Colebrook's Friction Factor Equation," *AIChE J.*, *28* (3), 514 (May 1982).
- Mansour, A., D. U. von Rosenberg and N. D. Sylvester, "Numerical Solution of Liquid Phase Multicomponent Adsorption in Fixed Beds," *AIChE Journal*, *28* (5), 765-772 (Sept. 1982).
- Sublette, K. L., E. H. Snider and N. D. Sylvester, "A Review of the Mechanism of Powdered Activated Carbon Enhancement of Activated Sludge Treatment," *Water Research*, *16*, 1075-1082 (1982).
- Shaughnessy, R. J., J. J. Byeseda and N. D. Sylvester, "Cationic Polyelectrolyte Flocculation of

- Oil-Water Emulsions: Effects of Mixing Intensity and Oil Concentration," I & EC Product R/D, 22, 473-478 (Sept.1983).
- Sylvester, N. D., "Letter to the Editor: Trickle Bed Reactors," AIChE J., 29, 702 (July 1983).
 - Sylvester, N. D., "Letter to the Editor: Transition to Annular Flow in Vertical Upward Gas-Liquid Flow," AIChE J., 30, 700 (July 1984).
 - Mansour, A. R., A. B. Shahalam, D. U. von Rosenberg and N. D. Sylvester, "A General Nonequilibrium Multicomponent Adsorption Model: Numerical Solution," Separation Science and Technology, 19, 479-496 (1984).
 - Zigrang, D. and N. D. Sylvester, "Equations for Orifice-Meter Sizing," Chemical Engineering, 92, 91 (Feb. 4, 1985); reprinted pg. 94 (Jan. 6, 1986).
 - Zigrang, D. and N. D. Sylvester, "Comments On: A Simple Explicit Formula for Estimation of Pipe Friction Factor," Proc. Instn. Civ. Engrs., 79, 215-221 (March 1985).
 - Sylvester, N. D., "Letter to the Editor: Trickle-Bed Effectiveness Factors for Liquid-Phase Reactants," AIChE J., 31, 703 (April 1985).
 - Zigrang, D. and N. D. Sylvester, "Turbulent Flow Friction Factor Equations," Chemical Engineering, 92, 86-88 (April 29, 1985).
 - Zigrang, D. and N. D. Sylvester, "A Review of Explicit Friction Factor Equations," J. of Energy Resources Technology, 107, 280-283 (June 1985).
 - Sylvester, N. D., "Letter to the Editor: Flow/Friction Equations," Chemical Engineering, 92, 5 (July 8, 1985)
 - Zigrang, D. and N. D. Sylvester, "Minimum Cost Pressure Vessels," Machine Design, pg. 139 (Dec. 12, 1985)
 - Sylvester, N. D. and Hung-Lung Chem, "Excess Pressure Losses in a Sudden Contraction," J. of Rheology, 29, 1027-1033 (1985).
 - Sublette, K. L. and N. D. Sylvester, "Microbial Desulfurization of Gases," Proceedings of the 8th Symposium on Biotechnology for Fuels and Chemicals, Symposium Series No. 17 (1986) pgs. 543-564.
 - Sublette, K. L. and N. D. Sylvester, "Oxidation of Hydrogen Sulfide by Thiobacillus Denitrificans: Desulfurization of Natural Gas," Biotechnology and Bioengineering, 26, 249-257 (1987).
 - Sublette, K. L. and N. D. Sylvester, "Oxidation of Hydrogen Sulfide by Continuous Cultures of Thiobacillus Denitrificans," Biotechnology and Bioengineering, 26, 753-758 (1987).
 - Sublette, K. L. and N. D. Sylvester, "Oxidation of Hydrogen Sulfide by Mixed Cultures of Thiobacillus Denitrificans and Heterotrophs," Biotechnology and Bioengineering, 26, 759-761 (1987).
 - Yao, S. C. and N. D. Sylvester, "A Mechanistic Model for Two-Phase Annular-Mist Flow in Vertical Pipes," AIChE J., 33, 1008-1012 (June 1987).
 - Sublette, K. L. and N. D. Sylvester, "An Experiment in Autotrophic Fermentation: Microbial Oxidation of Hydrogen Sulfide," accepted for publication: CEP Symposium Series.
 - Sylvester, N. D., "A Mechanistic Model for Two-Phase Vertical Slug Flow in Pipes," J. of Energy Resources Technology, 206-213 (Dec. 1987).
 - Sylvester, N. D. and Sam Yao, "An Improved Model for Predicting Heat Losses and Pressure Changes in Steam Injection Wells, Part I: Model Development," J. of Energy Resources Technology, 218-114 (Dec. 1987).
 - Sylvester, N. D. and Sam Yao, "An Improved Model for Predicting Heat Losses and Pressure Changes in Steam Injection Wells, Part II: Model Evaluation," J. of Energy Resources Technology, 225-229 (Dec. 1987).
 - Chen, H. L. and N. D. Sylvester, "An Improved Cyclic Steam Stimulation Model for Pressure-Depleted Reservoirs," SPE No. 17420 presented March 24, 1988, at California Regional SPE Meeting, Long Beach, CA.
 - Ansari, A. and N. D. Sylvester, "Formulation and Evaluation of a Mechanistic Model for Two-Phase Bubble Flow in Vertical Pipes," AIChE J., 34, 1392-1394 (1988).
 - Mansour, A. R., A. Nusayr, D. V. von Rosenberg and N. D. Sylvester, "Computer Prediction of Multicomponent Sorption with Variable Initial Concentrations Using a Complex Model," Sep. Sci. Tech. 24, 697-708 (1989).

- Chen, H. L. and N. D. Sylvester, "An Appraisal of Analytical Steamflood Models," SPE No. 20023 presented April 5, 1990, at California Regional SPE Meeting, Ventura, CA.
- Ansari, A. M., S. Shoham, J. P. Brill, and N. D. Sylvester, "A Comprehensive Mechanistic Model for Upward Two-Phase Flow in Wellbores," SPE No. 20630, presented September 24, 1990, at the SPE Annual Meeting, New Orleans, LA. SPE Production and Facilities 143-152 (May 1994)
- "Effect of Heterogeneous Drag Reducing Surfactants in Drag Reduction in Crude Oil Systems" Chemical Engineering Communications Vol. 168 pp 229-242, 1998
- "Drag and Heat Transfer Reduction Caused by Heterogeneous Drag Reducing Surfactant Additives" Trans. of Canadian Society of Mechanical Engineering, Vol. 12 (1) pp 59-69, 1998

PAPERS PRESENTED:

- "Viscoelastic Fluid Flow in the Entrance Region of a Cylindrical Tube," West Virginia Section AIChE (1969).
- "Dilute Solution Properties of Drag Reducing Polymers," 2nd Annual Joint Themis Symposium on Engineering for the Deep Ocean, University of Massachusetts, Amherst, Massachusetts, April 13-14 (1970).
- "Stress Relaxation of Non-Newtonian Fluids," 20th Annual North Central AIChE Convention, Wayne State University, Detroit, Michigan, April 18 (1970).
- "Hydrodynamic Fractionation of Macromolecules," 160th National ACS Meeting, Chicago, Illinois, September 13-18 (1970).
- "Non-Newtonian Boundary Layer on a Flat Plate," Office of Naval Research Drag Reduction Workshop, M.I.T., Cambridge, Massachusetts, October 7-8 (1970).
- "Pulsatile Blood Flow," Winter Meeting, Society of Rheology, University of Utah, Salt Lake City, Utah, February 1-3 (1971).
- "On the Analysis of Time-Dependent Blood Flow," Third Canadian Congress of Applied Mechanics, University of Calgary, May 17-21 (1971).
- "On the Analysis of Blood Flow," 6th Southeastern Conference on Theor. and Appl. Mech., University of South Florida, Tampa, Florida, March 23-24 (1972).
- "A Degradation of Dilute Polymer Solutions in Turbulent Tube Flow," 72nd National Meeting of AIChE, St. Louis, Missouri, May 21-24 (1972).
- "Non-Newtonian Thin Films," 23rd HTFMI, San Fernando Valley State College, June 12-14 (1972).
- "Drag Reduction Degradation of Dilute Polymer Solutions," 8th Annual Marine Technology Society, Washington, D.C., September (1972).
- "Blood Flow-Theory and Experiment," 25th ACEMB, Bal Harbour, Florida, October (1972).
- "Effectiveness Factors in Three Phase Reactors," Paper 48 B, 65th Annual AIChE Meeting, New York City, November (1972).
- "A Microcontinuum Model of Blood," 4th Cand. Congr. Applied Mechanics, Montreal, Canada, May (1973).
- "A Microcontinuum Model of Blood with Deformable Cells," ASME Biomechanics Symposium, Atlanta, Georgia, June (1973).
- "A Microcontinuum Approach to Blood Rheology," AXCE 1973 National Transportation Engineering Meeting, Tulsa, Oklahoma, July (1973).
- "On Steady and Pulsatile Flow of Blood," ASME Winter Annual Meeting, Detroit, Michigan, Nov 11-15 (1973).
- "Suspension Rheology-A Microcontinuum Approach," Winter Annual Meeting, ASME, New York City, Nov 17-22 (1974).
- "Mass Transfer for Cocurrent Two-Phase Flow Through a Packed Bed," 79th National AIChE Meeting, Houston, Texas, March 16-20 (1975).
- "Orifice Coefficients for Two-Phase Flow Through Velocity Controlled Subsurface Safety Valves," API Production Dept. Meeting, Los Angeles, California, April 6-7 (1976).
- "Drag Reduction in Cocurrent Horizontal Natural Gas-Hexane Pipe Flow," 175th ACS National Meeting, Anaheim, California, March 16 (1978).

- "Removal of Toxic Chemicals from Wastewaters," Symposium on Management of Refining and Petrochemical Wastewaters," Tulsa, Oklahoma, June 29 (1978).
- "Oxygen Absorption and Adsorption in Aqueous Slurries of Powdered Activated Carbon," 85th National AIChE Meeting, Philadelphia, Pennsylvania, June 4-8 (1978).
- "Oil-Water Separation by Induced Air Flotation," 1979 SPE Intern. Sym. on Oilfield and Geothermal Chemistry, Houston, Texas, January 22-24 (1979).
- "Engineering Education Must Improve the Communication Skills of its Graduates," 44th Annual OSPE Meeting, Stillwater, Oklahoma, April 7 (1979).
- "Research at the University of Tulsa," AIChE Meeting, Tulsa Section, May 17 (1979).
- "Activated Sludge Enhancement with Powdered Activated Carbon," at the Management of Refining and Petrochemical Wastewaters Conference, Tulsa, Oklahoma, June 14 (1979).
- "Research at the University of Tulsa," Lawrence Livermore Laboratory, June 29 (1979).
- "Drag Reduction," Lubrizol Corp., Cleveland, Ohio, December 11 (1979).
- "University of Tulsa Enhanced Recovery Projects," 15th Annual Midwest ASEE Meeting, Bartlesville, Oklahoma, March 20 (1980).
- "Powdered Activated Carbon Enhancement of the Activated Sludge Process: A Study of the Mechanisms," WWEMA Industrial Pollution Conference, Houston, Texas, June (1980).
- "Engineering Research at the University of Tulsa," 45th Annual OSPE Meeting, Shangri-la, Oklahoma, April 12 (1980).
- "Research in the College of Engineering and Physical Sciences," Industry/University Technology Transfer Conference, Tulsa, Oklahoma, July 14-15 (1982).
- "Engineering Education: High School Preparation and College Curriculum," 10th Annual OETGC Meeting, Oklahoma City, Oklahoma, May 12 (1983).
- "Oil Water Separation," presented at the Energy Update Symposium, Tulsa, Oklahoma, June 6 (1983);
- Oklahoma City, Oklahoma, June 20 (1983); and New York, New York, June 22 (1983).
- "Cationic Polyelectrolyte Flocculation of Oil-Water Emulsions: Effects of Mixing Intensity and Oil Concentration, Pacific Region Meeting, Fine Particle Society, Honolulu, Hawaii, August 2 (1983).
- "College of Engineering and Applied Sciences," Oklahoma Council on Science and Technology Meeting, Oklahoma City, Oklahoma, November 4 (1983).
- "Engineering Education," OSPE Meeting, Tulsa, Oklahoma, November 11 (1983).
- "The Inadequacies of, and the Remedies for, Secondary Education in the Sciences and Mathematics," Presentation, Governor's Task Force on Secondary Education, Tulsa, Oklahoma, February 7 (1984).
- "Engineering Education and High Technology at the University of Tulsa," presented at the 49th Annual OSPE Meeting, Oklahoma City, Oklahoma, April 6 (1984).
- "Advanced Technology and the University of Tulsa," presented to the Tulsa Rotary Club Meeting, Tulsa, Oklahoma, January 9 (1985).
- "Microbial Desulfurization of Natural Gas," presented at the 8th Symposium on Biotechnology for Fuels and Chemicals, Gatlinburg, Tennessee, May 15 (1986).
- "Educating Engineers for the 21st Century," presented at the Joint Oklahoma-Kansas Society of Professional Engineers Meeting, Shangri-La, Oklahoma, May 29 (1986).
- "Engineering Education Can Meet Today's Challenges," presented at Midcontinent SPE Meeting, September 25 (1986).
- "An Experiment in Autotrophic Fermentation: Microbial Oxidation of Hydrogen Sulfide," presented at the Winter Annual AIChE Meeting, Miami Beach, Florida, November 5 (1986).
- "Microbial Desulfurization of Natural Gas," presented at the Summer National Meeting of the AIChE, August 19 (1987).
- "An Improved Cyclic Steam Stimulation Model for Pressure-Depleted Reservoirs," presented at the California Regional SPE Meeting, Long Beach, California, March 24 (1988).
- "Mechanistic Modeling of Two-Phase Flow," invited presentation at the University of Oklahoma (Apr., 1988); Ohio University (Oct., 1988); University of Notre Dame (Feb., 1990).
- "An Appraisal of Analytical Steamflood Models," presented at the SPE California Regional

- Meeting, Ventura, California, April 5 (1990).
- "A Comprehensive Mechanistic Model for Upward Two-Phase Flow in Wellbores," presented at the SPE Annual Meeting, New Orleans, Louisiana, September 24 (1990).
 - "Economic Competitiveness and the Education Crisis," presented at the Mideast Ohio Regional Association of Consulting Engineers Conference, Cleveland, Ohio, November 14 (1990).
 - "The Engineering Curriculum: If It Ain't Broke, Don't Fix It," presented at the Annual Ohio Society of Professional Engineers Meeting, Columbus, Ohio, September 13 (1991).
 - "University of Akron Science and Technology Strengths and Priorities," presented to Ohio Science and Technology Council, Columbus, Ohio, June 8, 1993.
 - "Water Height Prediction in Mobile Bay using Wavelet-Based Multiscale Model", presented at AIChE Annual Meeting, November 12-17, 2006.
 - "Autothermal Reformer Design for Fuel Cell Applications", presented at AIChE Annual Meeting, November 16-21, 2008.