

PAUL G. SEARS

CURRICULUM VITAE  
(December 1980)

PERSONAL DATA

Born: September 5, 1924, Somerset, Kentucky  
Graduate: Somerset High School, 1941  
Graduate: Rogers Business School, Somerset, Kentucky, 1942  
Military Service: U.S. Army Air Force, 1942-1945  
Married: to Juanita Reed Crawford, 1951  
Children: Elizabeth, 1959  
Home address: 3548 Cornwall Drive, Lexington, Kentucky 40503  
Professional address: Department of Chemistry or Office of Academic Planning,  
University of Kentucky, Lexington, Kentucky 40506  
Telephone numbers: Home: 606-223-1487; Office, 606-258-5916

UNIVERSITY EDUCATION

B.S. in Industrial Chemistry, University of Kentucky, 1950  
Ph.D. (Physical Chemistry as major field), University of Kentucky, 1953

EXPERIENCE

Instructor and Research Associate, University of Kentucky (1953-1954)  
Assistant Professor, University of Kentucky (1954-1957)  
Research Chemist, Inorganic Chemicals Division, Monsanto Chemical Company,  
St. Louis, Missouri (1957-1959)  
Associate Professor, University of Kentucky (1959-1962)  
Professor, University of Kentucky (1962- )  
Visiting Professor, Department of Chemistry, Michigan State University  
(during a sabbatical leave of absence, 1966)  
Faculty Assistant to the President of the University (half-time, 1970- )

FIELDS OF RESEARCH INTEREST

Electrolytic conductances and viscosities of non-aqueous systems. Dielectric properties of liquids and low-conducting solutions. Use of new non-aqueous liquids in dual role of solvent and ligand. Reactions in fused systems at intermediate temperatures (100-300 C). Non-aqueous solution chemistry in general.

Fifty-nine articles in journals and several patents related to research in these fields.

PROFESSIONAL SOCIETIES AND ORGANIZATIONS

American Chemical Society (Chairman, Lexington Section, 1962)  
Electrochemical Society  
Society of the Sigma Xi (Kentucky Chapter: President, 1961; Treasurer,  
1960 and 1955)  
Kentucky Academy of Science (President, 1968; Chemistry Section--Chairman,  
1956; Secretary, 1955)

HONORARY ORGANIZATIONS

Phi Beta Kappa (Alpha of Kentucky Chapter; President, 1961)  
Omicron Delta Kappa

SPECIAL HONORS OR AWARDS

University of Kentucky Greek Community Outstanding Teacher Award (1968)  
University of Kentucky Alumni Association Great Teacher Award (1980)

COMMITTEES (DEPARTMENT OF CHEMISTRY)

Library Committee (Chairman, 1959-1964)  
Finance Committee (Chairman, 1964-1966; 1975-1976)  
Committee of Revision of Curriculum (1963)  
Building Committee (1966)  
Graduate Program Committee (1966-1969; 1973-1976; Chairman, 1968, 1973)  
Executive Committee (1968-1978)  
Computer Committee (Chairman, 1969-1970)  
Ad Hoc Excellence Committee (1970-1971)  
Academic Affairs Committee (1970-1973, 1977- ; Chairman, 1972,  
1977-1979)  
Advisory Committee on Reappointments, Promotions, and Granting of Tenure  
(Chairman, 1977)

UNIVERSITY COMMITTEES, COUNCILS, AND ACTIVITIES

Graduate Faculty (1956-1957, since 1959)  
University Research Fund Committee (1962-1964)  
Honorary Degrees Committee (1963-1964; Chairman, 1964)  
Area Academic Personnel Committee for the Physical  
and Engineering Sciences (1964)  
Advisory Committee on Long-Range Planning for Microbiology (1964)  
Technical Advisory Committee on Tobacco-Health Research (1964-1965)  
Centennial Committee on New Teachers, Experimental Teaching, and Teaching  
Technology (Chairman, 1965)  
Search Committee for Dean of College of Arts and Sciences (Chairman, 1965)  
Graduate Council (1964-1967)

University Senate (1960-1963; 1964-1967; since 1968)  
University Senate Council (1963-1964; 1966-1978; 1980- ); Vice Chairman,  
September 1966-June 1967; Chairman, July 1967-December 1968  
(as Chairman, presided at meetings of the University Senate)  
Academic Council (1967-1968)  
Faculty Review Committee for the Department of Mathematics (Chairman, 1967)  
Joint Trustees-Faculty Search Committee for President of University  
(1968-1969)  
Self-Study Committee on Planning for the Future of the University  
(1969-1971)  
Committee to Study the Structure of the College of Arts and Sciences  
(Chairman, 1970)  
Ad Hoc Committee on Faculty Performance Review (1970)  
Ad Hoc Committee to Hear Merit Rating Appeals in the  
University System, (Chairman, 1970)  
President's Cabinet (1970- )  
University of Kentucky Board of Trustees: Faculty Representative  
(1969-1972, 1972-1975, 1975-1978); Assistant Secretary (1973-1975);  
Secretary (1975-1978)  
Joint Trustees-Faculty Committee on Codification of the University of  
Kentucky Governing Regulations (Chairman, 1970)  
Board of Trustees Committee on Revision of Student Code (1970-1978)  
Board of Trustees Committee on Requests to Appear Before the  
Board (1976-1978)  
University Commission on Institutional Planning (1973-1975;  
Chairman, 1974-1975)  
University of Kentucky Development Council (1973- )  
Council on Public Higher Education Task Group for the Development of a  
Comprehensive Plan for Higher Education in Kentucky (1974-1975)  
Committee to Review Policies and Procedures of Community College System  
(Chairman, 1975)  
Five-Year Review Committee for Ashland Community College (1976)  
Board of Directors of University of Kentucky Credit Union (1977-1980)  
Board of Directors of University of Kentucky Athletics Association  
(1978- )  
University Senate Committee on Organization and Structure (1978-1979)  
Director of the University of Kentucky University System Institutional  
Self-Study and Chairman of the Steering Committee (1980- )

LIST OF PUBLICATIONS

1. "Conductivities and Densities of the System Ammonium Chloride--Zinc Chloride--Methanol from  $-50^{\circ}$  to  $20^{\circ}\text{C}$ "  
L. R. Dawson, P. G. Sears, G. P. Dinga, and H. K. Zimmerman, Jr.  
J. Electrochem. Soc., 99, 536-541 (1952)
2. "Densities and Viscosities of Methanol and Some Methanol--Acetone Mixtures over the Temperature Range  $20^{\circ}$  to  $-50^{\circ}\text{C}$ "  
Paul G. Sears, Francis J. Shell and Lyle R. Dawson  
Trans. Kentucky Acad. Sci., 15, 81-85 (1954)
3. "The Conductances of Some Potassium and Sodium Salts in Dimethylformamide at  $25^{\circ}\text{C}$ "  
Donald P. Ames and Paul G. Sears  
J. Phys. Chem., 59, 16-19 (1955)
4. "Conductances and Viscosities of Solutions of Potassium Thiocyanate in Methanol at Temperatures within the Range  $25^{\circ}$  to  $-50^{\circ}\text{C}$ "  
Paul G. Sears, Richard R. Holmes and Lyle R. Dawson  
J. Electrochem. Soc., 102, 145-149 (1955)
5. "Conductances of Some Quaternary Ammonium Bromides and Iodides in Dimethylformamide at  $25^{\circ}\text{C}$ "  
Paul G. Sears, Eugene D. Wilhoit and Lyle R. Dawson  
J. Phys. Chem., 59, 373-375 (1955)
6. "Solvents Having High Dielectric Constants. II. Solutions of Alkali Halides in N-Methylacetamide from  $30^{\circ}$  to  $60^{\circ}\text{C}$ "  
Lyle R. Dawson, P. G. Sears and R. H. Graves  
J. Am. Chem. Soc., 77, 1986-1989 (1955)
7. "Conductance of Lithium Bromide at Low Concentrations in Methanol within the Temperature Range  $20^{\circ}$  to  $-50^{\circ}\text{C}$ "  
Paul G. Sears, Robert L. McNeer and Lyle R. Dawson  
J. Electrochem. Soc., 102, 269-271 (1955)
8. "The Conductances of Magnesium Acetate Tetrahydrate and Magnesium Nitrate Hexahydrate in Methanol at Low Temperatures"  
Paul G. Sears, Richard K. Wolford and Lyle R. Dawson  
Trans. Kentucky Acad. Sci., 16, 40-44 (1955)
9. "Conductometric and Viscometric Behavior of Lithium Bromide in 50-50 Weight Per Cent Methanol-Acetone at Temperatures Within the Range  $20^{\circ}$  to  $-50^{\circ}\text{C}$ "  
Lyle R. Dawson, Richard A. Hagstrom and Paul G. Sears  
J. Electrochem. Soc., 102, 341-343 (1955)
10. "Conductances of Trimethylphenylammonium Chloride and Iodide in Water and in Dimethylformamide at  $25^{\circ}\text{C}$ "  
Paul G. Sears, Eugene D. Wilhoit and Lyle R. Dawson  
J. Chem. Phys., 23, 1274-1276 (1955)

11. "Conductances of Some Moderately Concentrated Solutions of Metallic Perchlorates in the Mixed Solvent Methanol-Acetone at Low Temperatures"  
Paul G. Sears, Walter W. Wharton and Lyle R. Dawson  
J. Electrochem. Soc., 102, 430-433 (1955)
12. "Conductances of Potassium Thiocyanate and Tetra-n-butyl-ammonium Iodide in Acetone at Several Temperatures Within the Range 25° to -50°C"  
Paul G. Sears, Eugene D. Wilhoit and Lyle R. Dawson  
J. Phys. Chem., 60, 169-171 (1956)
13. "Conductances of Some Electrolytes in l-Propanol at 25°"  
Thomas A. Gover and Paul G. Sears  
J. Phys. Chem., 60, 330-332 (1956)
14. "Solvents Having High Dielectric Constants. IV. Conductances of Ammonium and Substituted Ammonium Halides in N-Methyl-acetamide at 40°C"  
Lyle R. Dawson, Eugene D. Wilhoit and Paul G. Sears  
J. Am. Chem. Soc., 78, 1569-1572 (1956)
15. "A Study of the Conductances of Some Uni-Univalent Electrolytes in N,N-Dimethylacetamide at 25°C"  
George R. Lester, Thomas A. Gover and Paul G. Sears  
J. Phys. Chem., 60, 1076-1079 (1956)
16. "A Study of the Conductance Behavior of Some Uni-Univalent Electrolytes in Dimethyl Sulfoxide at 25°"  
Paul G. Sears, George R. Lester and Lyle R. Dawson  
J. Phys. Chem., 60, 1433-1436 (1956)
17. "Conductances of Some Acids, Bromides and Picrates in Dimethylformamide at 25°C"  
Paul G. Sears, Richard K. Wolford and Lyle R. Dawson  
J. Electrochem. Soc., 103, 633-636 (1956)
18. "Dipolar Ions in Non-Aqueous Solvents. I. Dielectric Increments as Supporting Evidence for the Dipolar Structure of Sulfamic Acid"  
Ralph A. Hovermale and Paul G. Sears  
J. Phys. Chem., 60, 1579-1580 (1956)
19. "Solvents Having High Dielectric Constants. III. Solutions of Sodium and Potassium Halides in N-Methylpropionamide and N-Methylbutyramide from 30° to 60°"  
Lyle R. Dawson, Richard H. Graves and Paul G. Sears  
J. Am. Chem. Soc., 79, 298-300 (1957)
20. "A Study of the Conductances of Some Uni-Univalent Electrolytes in N,N-Dimethylpropionamide at 25°C"  
Eugene D. Wilhoit and Paul G. Sears  
Trans. Kentucky Acad. Sci., 17, 123-130 (1956)

21. "Solvents Having High Dielectric Constants. V. Limiting Ionic Equivalent Conductances in N-Methylacetamide at 40°"  
Lyle R. Dawson, Eugene D. Wilhoit, Richard R. Holmes and Paul G. Sears  
J. Am. Chem. Soc., 79, 3004-3006 (1957)
22. "2-Propanol as an Electrolytic Solvent"  
Harry M. Smiley and Paul G. Sears  
Trans. Kentucky Acad. Sci., 18, 40-46 (1957)
23. "Dipolar Ions in Non-Aqueous Solvents. II. The Apparent Molal Volume of Sulfamic Acid in N,N-Dimethylacetamide, N,N-Dimethylpropionamide, N,N-Dimethylbutyramide, Dimethyl Sulfoxide and Water at 25°"  
Ralph A. Hovermale, William K. Plunknett and Paul G. Sears  
Trans. Kentucky Acad. Sci., 18, 45-54 (1957)
24. "A Study of the Conductimetric Behavior of Electrolytes in an Equimolar Mixture of N-Methylacetamide and Tertiary Butyl Alcohol at 40°"  
Donald D. Wilson and Paul G. Sears  
Trans. Kentucky Acad. Sci., 18, 55-62 (1957)
25. "Solvents Having High Dielectric Constants. VIII. The Conductimetric Behavior of Several Salts in Formamide at 25°"  
Lyle R. Dawson, Eugene D. Wilhoit and Paul G. Sears  
J. Am. Chem. Soc., 79, 5906-5908 (1957)
26. "Dielectric Constants and Viscosities of Several N-Substituted Amides as Functions of their Structure and of Temperature"  
Joe W. Vaughn and Paul G. Sears  
J. Phys. Chem., 62, 183-188 (1958)
27. "The Conductance Behavior of Some Lithium, Strontium and Barium Salts in N,N-Dimethylacetamide at 25°C"  
George R. Lester, J. W. Vaughn and Paul G. Sears  
Trans. Kentucky Acad. Sci., 19, 28-35 (1958)
28. "Solvents Having High Dielectric Constants. IX. Conductimetric Behavior of Some Alkaline Earth Salt in N-Methylacetamide at 40°"  
Lyle R. Dawson, George R. Lester and Paul G. Sears  
J. Am. Chem. Soc., 80, 4233-4235 (1958)
29. "A Study of the Conductances of Some Potassium and Sodium Salts in N,N-Dimethylbutyramide at 25°C"  
Harry M. Smiley and Paul G. Sears  
Trans. Kentucky Acad. Sci., 19, 62-66 (1958)
30. "Solvents Having High Dielectric Constants. XIII. Conductances of Multivalent Electrodes in N-Methylacetamide at 40°"  
L. R. Dawson, J. W. Vaughn, G. R. Lester, M. E. Pruitt and P. G. Sears  
J. Phys. Chem., 67, 278-280 (1963)

31. "Polarizations and Refractions of Some N-Methylacetamide--n-Alcohol Systems"  
R. A. Hovermale, P. G. Sears and W. K. Plucknett  
J. Chem. Eng. Data, 8, 490-493 (1963)
32. "Optical Rotations of Some Sugars in Dimethyl Sulfoxide Solutions"  
G. Everett Long and P. G. Sears  
Trans. Kentucky Acad. Sci., 24, 85-90 (1964)
33. "Viscosities, Densities, and Related Properties of Solutions of Some Sugars in Dimethyl Sulfoxide"  
Paul G. Sears, Wayne D. Siegfried and Donald E. Sands  
J. Chem. Eng. Data, 9, 261-263 (1964)
34. "Several Properties of the 2-Pyrrolidone--Water System as Functions of Composition and Temperature"  
Roger L. Blumenshine and Paul G. Sears  
J. Chem. Eng. Data, 11, 141-143 (1966)
35. "Dipole Moment of Sulfamic Acid and Viscosities of its Solutions in Selected Nonaqueous Media"  
Paul G. Sears, William H. Fortune and Roger L. Blumenshine  
J. Chem. Eng. Data, 11, 406-409 (1966)
36. "Conductances of Some Uni-Univalent Electrolytes in Adiponitrile at 25°C"  
Paul G. Sears, Joseph A. Caruso, and Alexander I. Popov  
J. Phys. Chem., 71, 905-909 (1967)
37. "Conductances and Dissociation of Some 5-Substituted Tetrazoles in 1,1,3,3-Tetramethylguanidine at 25°C"  
Joseph A. Caruso, Paul G. Sears, and Alexander I. Popov  
J. Phys. Chem. 71, 1756-1760 (1967)
38. "Dipole Moments and Apparent Molal Volumes of N-Cyclohexyl-sulfamic acid and Nitrobenzene in N,N-Dimethylacetamide and N-Methyl-2-pyrrolidone at 25°C"  
Terrell W. Holt and Paul G. Sears  
Trans. Kentucky Acad. Sci., 28, 1-9 (1967)
39. "Activation Energies of Viscous Flow and Other Physical-Chemical Data for the Dimethyl Sulfoxide--Water System"  
Paul G. Sears, George R. Jurch, Jr., and Donald E. Sands  
Trans. Kentucky Acad. Sci., 28, 10-19 (1967)
40. "Conductances of Some Uni-Univalent Electrolytes in N-Methyl-2-pyrrolidone at 25°C"  
Michael D. Dyke, Paul G. Sears, and Alexander I. Popov  
J. Phys. Chem., 71, 4140-4141 (1967)

41. "Dielectric Constants and Viscosities of Some Mono-N-Substituted Amides and Cyclic Esters"  
Paul G. Sears and William C. O'Brien  
J. Chem. Eng. Data, 13, 112-115 (1968)
42. "Temperature Dependence of Conductances and Viscosities for Some Moderately Concentrated Non-Aqueous Solutions of Electrolytes"  
Paul G. Sears and Lyle R. Dawson  
J. Chem. Eng. Data, 13, 124-129 (1968)
43. "Dielectric Constants, Viscosities, Fusion Point Curves, and Other Properties of Three Nonaqueous Binary Systems"  
Paul G. Sears, Thomas M. Stoeckinger, and Lyle R. Dawson  
J. Chem. Eng. Data, 16, 220-222 (1971)
44. "Liquid 2-Oxazolidones. I. Dielectric Constants, Viscosities, and Other Physical Properties of Several Liquid 2-Oxazolidones"  
Hugh L. Huffman, Jr., and Paul G. Sears  
J. Solution Chem., 1, 187-196 (1972)
45. "Dinitriles as Ligands-I. Studies on Complexes of Cobalt(II) with Adiponitrile"  
D. L. Greene and P. G. Sears  
J. Inorg. Nucl. Chem., 35, 1471-1480 (1973)
46. "Dipolar Ionic Nature of Sulfamic Acid in 3-Methyl-2-oxazolidone, Hexamethylphosphoramide and Tetramethylurea"  
E. M. Turner and P. G. Sears  
J. Inorg. Nucl. Chem., 35, 2087-2090 (1973)
47. "Dielectric Constants, Viscosities, and Related Physical Properties of 10 Liquid Sulfoxides and Sulfones at Several Temperatures"  
Jerry F. Casteel and Paul G. Sears  
J. Chem. Eng. Data, 19, 196-200 (1974)
48. "Conductance-Viscosity Studies on Some Moderately Concentrated Nonaqueous Electrolyte Solutions from -50° to 125°C. I. Solutions of Bu<sub>4</sub>NI, KSCN, and NH<sub>4</sub>Br in N,N-Dimethylformamide"  
T. V. Rebagay, J. F. Casteel and P. G. Sears  
J. Electrochem. Soc., 121, 977-982 (1974)
49. "Dinitriles as Ligands. II. Derivatives of Cobalt and Nickel Perchlorates"  
David L. Greene, Paul G. Sears, and Jane Krippendorf  
Inorg. Nucl. Chem. Letters, 10, 895-898 (1974)
50. "Dielectric Constants, Viscosities, and Related Physical Properties of Four Liquid Pyridine-N-Oxides at Several Temperatures"  
Jerry F. Casteel and Paul G. Sears  
J. Chem. Eng. Data, 19, 303-306 (1974)



51. "Conductance Behavior of Some Ammonium and Partially Substituted Ammonium Tetraphenylborates in 3-Methyl-2-oxazolidone and 3-tert-Butyl-2-oxazolidone at 25°"  
Barbara J. Barker and Paul G. Sears  
J. Phy. Chem., 78, 2687-2688 (1974)
52. "Conductance Behavior of Tetraalkylammonium Salts in 3-tert-Butyl-2-oxazolidone at 25°"  
Barbara J. Barker, Hugh L. Huffman, Jr., and Paul G. Sears  
J. Phys. Chem., 78, 2689-2693 (1974)
53. "Dielectric Constants, Viscosities, and Related Physical Properties of Five Cyano- and Halopyridines at Several Temperatures"  
Jerry F. Casteel and Paul G. Sears  
J. Chem. Eng. Data, 20, 10-13 (1975)
54. "Conductance-Viscosity Studies on Some Moderately Concentrated Nonaqueous Electrolyte Solutions from -50° to 125°C. II. Solutions of Pr<sub>4</sub>NBr, Bu<sub>4</sub>NBr, and Bu<sub>4</sub>NI in Propylene Carbonate"  
J. F. Casteel, J. R. Angel, H. B. McNeeley and P. G. Sears  
J. Electrochem. Soc., 122, 319-324 (1975)
55. "Dielectric Constants, Viscosities, Densities, and Refractive Indices of Some Alkylsyndones at Several Temperatures"  
Robert J. Lemire and Paul G. Sears  
J. Chem. Eng. Data, 22, 376-379 (1977)
56. "N-Methylacetamide as a Solvent"  
Robert J. Lemire and Paul G. Sears  
Topics in Curr. Chem., 74, 45-91 (1978)
57. "Dielectric Constants, Viscosities, and Related Physical Properties of Some Liquid Carbamates at Several Temperatures"  
Michael D. Jackson and Paul G. Sears  
J. Chem. Eng. Data, 24, 85-87 (1979)
58. "Several Properties of the Dimethyl Sulfoxide--3-Methyl-2-oxazolidone System as Functions of Composition and Temperature"  
Michael D. Jackson and Paul G. Sears  
J. Chem. Eng. Data, 24, 199-202 (1979)
59. "Some Solvent Properties of 3-Methylsydnone"  
Robert J. Lemire and Paul G. Sears  
J. Solution Chem., 9, 553-561 (1980)