

*SHAW LING HSU*

Professor  
Department of Polymer Science and Engineering

The University of Massachusetts  
Amherst, Massachusetts 01003

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E-mail: slhsu@polysci.umass.edu

Education: Ph. D., Physics, The University of Michigan; BS, Physics, Rutgers University

Professional Affiliations:

American Physical Society High Polymer Physics Division  
American Chemical Society Polymer Division

Honors and Awards:

Phi Beta Kappa  
Danforth Foundation Fellow  
Sigma Xi Honorary Research Society  
National Science Foundation Creativity  
Award  
American Physical Society Fellow  
University of Massachusetts Conti Faculty  
Fellow

University Outstanding Faculty Leadership  
Award  
USDA National Panel Manager Bioenergy  
Production and Byproducts  
Chair, Advanced Materials Platform Panel,  
Taiwan (2008-present)  
SPSJ (Japan) International Award

Work Experience:

Department Head, 2002-2010, Professor of Polymer Science and Engineering, University of Massachusetts, 1987- present; Associate Professor, 1982-1987; Assistant Professor, 1978-1982.

Visiting Professor at California Institute of Technology (Chemistry), University of California at Berkeley (Chemistry), University of Freiburg (Macromolecular Science), Kyoto University (Macromolecular Science), University of Pisa (Chemistry), Chengdu University of Science and Technology (Polymer Engineering), Science University of Tokyo (Applied Chemistry), Advisor to Chinese Academy of Sciences and Chair the Nanotechnology Advisory Committee of Taiwan Industrial Technology Research Institute.

1991-2006, Associate Director of the NSF Materials Research Science and Engineering Center (MRSEC)

1998-2006 Co-PI of Center for University of Massachusetts Industrial Cooperative Research Program (CUMIRP).

1984-1991, Director of the NSF Materials Research Laboratory for Polymer Research (MRL) at the University of Massachusetts

1976-1978, Research Chemist, Allied-Signal Corporation

Research Activities

Development of Environmentally Appropriate Materials, Development of new polymer morphologies for Controlled Drug Delivery, Characterization of multiphase reactive polymers, Structural characterization of polymer structure in restricted geometry (surfaces/interfaces), Deformation behavior of polymers, Aging behavior of polymers.

### ***Refereed Publications***

Shaw Ling Hsu

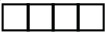
Polymer Science and Engineering Department  
University of Massachusetts (Amherst)

1. J. Appl. Phys. 46, 4185 (1975) (with W.H. Moore and S. Krimm)  
"A Vibrational Analysis of Crystalline Trans-1,4-Polybutadiene."
2. J. Polym. Sci. Phys. 14, 521 (1976) (with S. Krimm)  
"A Raman Study of the Phase Transition in Crystalline Trans-1,4-Polybutadiene."
3. J. Polym. Sci. Polym. Letters Ed. 14, 195 (1976) (with S. Krimm, S. Krause and G. Yeh)  
"Longitudinal Acoustic Mode in Polypropylene."
4. Biopolymers 15, 1513 (1976) (with W. H. Moore and S. Krimm)  
"Vibrational Spectrum of the Unordered Polypeptide Chain: A Raman Study of Feather Keratin."
5. J. Appl. Phys. 47, 4265 (1976) (with S. Krimm)  
"Longitudinal Acoustic Mode in Polymers. I."
6. J. Polym. Sci.-Phys. Ed. 15, 1769 (1977) (with G. W. Ford and S. Krimm)  
"Longitudinal Acoustic Mode in Polymers. II. Solution of the General Composite Perturbed Elastic Rod."
7. J. Appl. Phys. 48, 4013 (1977) (with S. Krimm)  
"Longitudinal Acoustic Mode in Polymers. III. Applications of the General Theory to Planar Zigzag Methylenes Chains."
8. Spectrochim. Acta 34A, 395 (1978) (with R. G. Snyder and S. Krimm)  
"Vibrational Spectra in the C-H Stretching Region and the Structure of the Polymethylene Chain."
9. J. Chem. Phys. 69, 106 (1978) (with A. J. Signorelli, G. P. Pez and R. H. Baughman)  
"Highly Conducting Iodine Derivative of Polyacetylene: Raman, XPS, and X-Ray Diffraction Studies."
10. J. Chem. Phys. 68, 5405 (1978) (with A. J. Signorelli, G. P. Pez and R. H. Baughman)  
"The Structures of cis-Polyacetylene and Highly Conducting Derivatives."
11. J. Chem. Soc.-Chem. Commun. 1066 (1978) (with L. R. Anderson and G. P. Pez)  
"A Novel Conducting Polyacetylene Derivative."
12. Mol. Cryst. and Liq. Cryst. 52, 555 (1979) (with R. H. Baughman and A. J. Signorelli)  
"Polyacetylene and Highly Conducting Charge Transfer Complexes."
13. J. Polym. Sci.-Letters Ed. 17, 185 (1979) (with R. H. Baughman)  
"Static Lattice Calculations for cis-Polyacetylene."

14. J. Polym. Sci.-Phys. Ed. 16, 2105 (1978) (with S. Krimm)  
"Longitudinal Acoustic Mode in Polymers. IV. LAM-3 of the General Perturbed Rod and Applications to Paraffins and Polymers."
15. Macromolecules 11, 990 (1978) (with J. P Sibilio, K. P O'Brien and R. G. Snyder)  
"A Spectroscopic Analysis of the Structure of a Hexa-fluoroisobutylene-Vinylidene Fluoride Copolymer."
16. J. Polym. Sci.-Phys. Ed. 18, 1421 (1980) (with P. H. C. Shu and D. Burchell)  
"Structure of Polyethylene Solid Solutions by Vibrational Spectroscopic and Thermal Analysis."
17. J. Polym. Sci.-Phys. Ed. 18, 2287 (1980) (with Y. K. Wang, P. H. C. Shu and T. Kanamoto)"Longitudinal Acoustic Mode in Linear Aliphatic Polyesters".
18. J. Appl. Polym. Sci. 26, 223 (1981) (with G. Venkatesh)  
"Vibrational Spectroscopic Study of Poly(ethylene Terephthalate) Crystallized by Annealing in the Oriented State."
19. Polym. Eng. and Sci. 21, 163 (1981) (with C. Brunette, N. Schneider and W. J. MacKnight)"Structural and Mechanical Properties of Polybutadiene-Containing Polyurethanes."
20. Polymer 22, 907 (1981) (with D. Burchell)  
"Structures of Polyethylene Solid Solutions. 2. Aspects of Spectral Deconvolution."
21. J. Polym. Sci.-Phys. Ed. 19, 1475 (1981) (with G. Venkatesh and D. Y. Shen)  
"Spectroscopic Study of Rigid Rod Polymers: I. Structures of Model Compounds."
22. J. Polym. Sci.-Phys. Ed. 20, 509 (1982) (with D. Y. Shen, G. M Venkatesh and D. J. Burchell)  
"Spectroscopic Study of Rigid Rod Polymers: II. Protonation Effects."
23. Macromolecules 14, 1824 (1981) (with Y. Tsujita and W. J. MacKnight)  
"Low Frequency Raman Spectroscopic Study of Ionomers."
24. Macromolecules 15, 71 (1982) (with C. M. Brunette and W. J. MacKnight)  
"Hydrogen Bonding Properties of Model Hard Segment Compounds in Polyurethane Block Copolymers."
25. Encyclopedia of Materials Science and Engineering, M. B. Bever, ed. 4067 (1986)  
"Raman Spectroscopy of Polymers."
26. Polym. Engn. and Sci. 21, 668 (1981) (with C. M. Brunette, M. Rossman, W. J. MacKnight and N. S. Schneider)  
"Thermal and Mechanical Properties of Linear Segmented Polyurethanes with Butadiene Soft Segments."
27. Polymer 23, 969 (1982) (with D. Y. Shen)  
"Vibrational Spectroscopic Characterization of Rigid Rod Polymers: III. Microstructural Changes in Stressed Polymers."

28. Polymer 23, 965 (1982) (with D. J. Burchell, J. E. Lasch and R. J. Farris)  
"Deformation Studies of Polymers by Time Resolved Fourier Transform Infrared Spectroscopy. 1. Development of Technique."
29. J. Polym. Sci.-Phys. Ed. 21, 389 (1983) (with M. Ito, J. R. C. Pereira and R. S. Porter)  
"Fourier Transform Infrared Study of Coextrusion - Drawn Poly(ethylene terephthalate)."
30. J. Appl. Phys. 53, 6591 (1982) (with Y. K. Wang, D. A. Waldman R. S. Stein)  
"Raman Spectroscopic Study of Ultra-Oriented Solid State Extruded Polyethylene."
31. Macromolecules 15, 1452 (1982) (with Y. K. Wang, D. Waldman and R. S. Stein)  
"Raman Spectroscopic Study of Highly Deformed Polyethylene."
32. Polym. Eng. and Sci. 23, 543 (1983) (with D. Y. Shen and S. E. Molis)  
"Vibrational Spectroscopic Characterization of Rigid Rod Polymers: IV. Crystalline Modifications of Poly(p-phenylene terephthalamide)."
33. Polymer Bulletin 10, 51 (1983) (with J. E. Lasch, T. Masaoka and D. J. Burchell)  
"Polymer Deformation Studies by Time Resolved Fourier Transform Infrared Spectroscopy."
34. Macromolecules 16, 1525 (1983) (with F. J. Lu and E. Benedetti)  
"Spectroscopic Study of Poly(styrene and Poly(vinyl methyl ether) Blends."
35. Polym. Eng. and Sci. 23, 861 (1983) (with F. J. Lu, D. J. Burchell and X. Li)  
"Deformation Studies of Poly(styrene)/Poly(vinyl methyl ether) Blends by Mechanical-Vibrational Spectroscopy."
36. J. Polym. Sci. Polym. Phys. Ed. 22, 827 (1984) (with F. J. Lu and D. A. Waldman)  
"A Spectroscopic Study to Interpret the Increased Piezo-electric Effect at High Temperature in Poly(vinylidene Fluoride)."
37. Applied Spectroscopy 38, 343 (1984) (with D. J. Burchell, J. E. Lasch, E. Dobrovolny, N. Page, J. Domain and R. J. Farris)  
"Deformation Studies of Polymers by Fourier Transform Infrared Spectroscopy. II. Mechanical Stretcher and its Interface to the Spectrometer."
38. Applied Spectroscopy 38, 351 (1984) (with J. E. Lasch, D. J. Burchell and T. Masoaka)"Deformation Studies of Polymers by Time Resolved Fourier Transform Infrared Spectroscopy. III. A New Approach."
39. J. Polym. Sci. Polym. Phys. Ed. 22, 1331 (1984) (with X. Li)  
"An Analysis of the Crystallization Behavior of Poly(ethylene oxide)/Poly(methyl methacrylate) Blends by Spectroscopic and Calorimetric Techniques."
40. Appl. Spectroscopy 38, 529 (1984) (with S. E. Molis and W. J. MacKnight)  
"Deformation Studies of Polymers by Time-Resolved Infrared Spectroscopy IV. A Modified Approach."
41. Macromolecules 17, 1830 (1984) (with C. Feger, S. Molis and W. J. MacKnight)  
"Properties of Partially Cured Networks. 1. Curing Kinetics of a Model Network."

42. Biopolymers 23m 1565 (1984) (with P. K. Sengupta and S. Krimm)  
"Vibrational Analysis of peptides, Polypeptides, and Proteins. XXI. B-Calcium-Poly-(L-Glutamate)."
43. J. Polym. Sci., Polym. Phys. Ed. 22, 2185 (1984) (with Chih Chang, Y. K. Wang and D. A. Waldman)  
"Analysis of the Longitudinal Acoustic Mode in Linear Aliphatic Polyesters."
44. Polymer 25, 1247 (1984) (with F. Lu)  
"Spectroscopic Study of the Electric Field Induced Microstructural Changes in Poly(vinylidene Fluoride)."
45. Macromolecules 17, 2749 (1984) (with G. N. Babu, A. Narula and J. C. W. Chien)  
"Radiolysis of Resist Polymers. 1. Poly(methyl a-halo-acrylates) and Copolymers with Methyl Methacrylate."
46. Macromolecules 17, 2756 (1984) (with G. N. Babu, A. Narula P. H. Lu, X. Li and J. C. W. Chien)  
"Radiolysis of Resist Polymers. 2. Poly(haloalkyl methacrylates) and Copolymers with Methyl Methacrylate."
47. J. Polym. Sci., Polym. Chem. Ed. 22, 213 (1984) (with G. N. Babu, P. H. Lu and J. C. W. Chien)  
"Radiolysis of Resist Polymers. III. Copolymers of Methyl-a-Chloroacrylate and Trihaloethylmethacrylates."
48. J. Polym. Sci., Polym. Chem. Ed. 22, 213 (1984) (with G. N. Babu, P. H. Lu and J. C. W. Chien)  
"Radiolysis of Resist Polymers. IV. Poly(p-substituted-a-Methylstyrene)s."
49. Macromolecules 18, 1905 (1985) (with P. K. Kim and H. Ishida)  
"Normal Vibrational Analysis of Poly(p-phenylene terephthalamide)."
50. Makromol. Chem. 186, 2557 (1985) (with C. Chang)  
"An Infrared Spectroscopic Investigation of the Phase Behavior of a Polydiacetylene: The Case of 4-BCMU."
51. J. Polym. Sci., Polym. Phys. Ed. 23, 2307 (1985) (with C. Chang)  
"Spectroscopic Analysis of Poly(p-phenylene benzobisthiazole) Films."
52. Macromolecules 18, 2583 (1985) (with F. J. Lu, D. A. Waldman and M. Muthukumar)  
"Analysis of the Crystalline Phase Transformation of Poly-(vinylidene fluoride)."
53. Macromolecules 19, 326 (1986) (with F. J. Lu)  
"A Study of the Crystallization Behavior of Poly(vinylidene fluoride) from the Melt under the Effect of an Electric Field."
54. Polymer 27, 34 (1986) (with P. K. Kim and C. Chang)  
"Normal Vibrational Analysis of a Rigid Rod Polymer: Poly(p-phenylene terephthalamide)."

55. Macromolecules 19, 616 (1986) (with M. Kardan, B. B. Reinhold, R. Thakur and C. P. Lillya)  
"Spectroscopic Characterization of the Microstructures in Disklike Liquid Crystalline Molecules: Model Compound for Polymers."
56. J. Polym. Sci., Polym. Phys. Ed. 24, 827-837 (1986) (with P. P. Wu, O. Thomas and A. Blumenstein)  
"Fourier Transform Infrared Study of the Nematic Order in Thermotropic Main-Chain Polyesters."
57. Polymer 27, 1547-1552 (1986) (with P. K. Kim, Y. Y. Xu and C. Chang)  
"Spectroscopic-Mechanical Analysis of Stress Distribution in Composites."
58. Analytical Chimica Acta 189, 27-40 (1986) (with A. Kaito and Y. K. Wang)  
"Liquid Crystal Orientation Studies I: Time Resolved Infrared Spectroscopic Study of the Orientation Behavior of Liquid Crystalline Molecules in the Presence of an Electric Field."
59. J. Phys. Chem. 91, 1809-1814 (1987) (with M. Kardan, A. Kaito, R. Thakur and C. P. Lillya)  
"Infrared Spectroscopic Characterization of Ultrathin Films of Disklike Molecules on Metallic Substrates."
60. Macromolecules 20, 1022-1029 (1987) (with Eva Dobrovolny-Marand)  
"Spectroscopic Characterization of the  Poly(butylene terephthalate) and its Copolymers with Poly(tetramethylene oxide)." Crystalline Phase T
61. Polymer 28, 889-896 (1987) (with H.-S. Lee and G. Wegner)  
"Vibrational Spectroscopic Studies of Linear and Cyclic Phase  $C_nH_{2n}$  with  $24 < n < 288$ : Chain Folding, Chain Packing and Conformations."
62. Macromolecules 20, 2089 (1987) (with H. S. Lee and Y. K. Wang)  
"Spectroscopic Analysis of Phase Separation Behavior of Model Polyurethanes."
63. Makromol. Chem. 188, 2311-2316 (1987) (with L. Coyne and C. Chang)  
"Spectroscopic Characterization of the Chromic Transition Observed for Polydiacetylenes."
64. Rubber Chemistry and Technology, 60, 4 (1987) (with F. J. Lu)  
"A Vibrational Spectroscopic Analysis of the Structure of Natural Rubber."
65. Makromol. Chem. 188, 2679-2686 (1987) (with C. Chang and L. D. Coyne)  
"Spectroscopic Characterization of Chromic Transition in Polydiacetylenes, III."
66. Macromolecules 21, 270-273 (1988) (with H. S. Lee, Y. K. Wang and W. J. MacKnight)  
"Spectroscopic Analysis of Phase-Separation Kinetics in Model Polyurethanes."
67. J. Phys. Chem. 92, 196 (1988) (with X. Yang, M. Kardan, D. Collard, R. B. Heath and C. P. Lillya)  
"Spectroscopic Characterization of Side-Chain Disordering Processes in Disklike Liquid Crystals."



68. J. Chem. Phys. 89, 5950 (1988) (with X. Yang, D. A. Waldman, S. A. Nitzsche, R. Thakur, D. M. Collard, C. P. Lillya, H. D. Stidham)  
"Spectroscopic characterization of mesogen order in discotic liquid crystal."
69. Macromolecules, 22, 551-557 (1989) (with S. K. Pollack, D. Y. Shen, Q. Wang and H. D. Stidham)  
"Infrared and X-ray Diffraction Studies of a Semi-rigid Polyurethane."
70. J. of Catalysis 111, 286 (1988) (with S. L. Soled, G. B. McVicker, L. L. Murrell, L. G. Sherman, N. C. Dispenziere and D. Waldman)  
"Comparison of the Acidities of WO<sub>3</sub>/Al<sub>2</sub>O<sub>3</sub> and ultrastable Faujasite Catalysts."
71. J. Polym. Sci.-Phys. Ed. 27, 337-353 (1989) (with C.F. Fan)  
"Spectroscopic Study of a Model Composite: Compressive Behavior of the Reinforcement Fiber and the Buildup of Thermal Residual Stress."
72. Macromolecules 22, 1474-1479, (1989) (with C.F. Fan)  
"A Spectroscopic Analysis of the Stress Distribution Along the Reinforcement Fibers in Model Composites: End Effects."
73. Macromolecules 22, 1092-1100 (1989) (with N. M. Reynolds, K. J. Kim and C. Chang)  
"Spectroscopic Analysis of the Electric Field Induced Structural Changes in Vinylidene Fluoride/Trifluoroethylene."
74. Macromolecules 22, 1100-1105 (1989) (with H. S. Lee)  
"An Analysis of Phase Separation Kinetics of Model Polyurethanes."
75. Macromolecules 22, 2611-2617 (1989) (with W. Yang, S. A. Nitzsche, D. Collard, R. Thakur, C. P. Lillya and H. D. Stidham)  
"Spectroscopic Analysis of Discotic Liquid-Crystalline Molecules and Polymers on External Surfaces."
76. Macromolecules 22, 2564-2569 (1989) (with D. Y. Shen and S. K. Pollack)  
"Far-Infrared Study of Hydrogen Bonding in a Semicrystalline Polyurethane."
77. Advances in Chemistry Series, Polymer Blends and Composites in Multiphase Systems, Vol. 206, C.D. Han, ed.(with F. J. Lu and E. Benedetti) (1989)  
"Structure-Property Relationship of Poly(styrene)/Poly-vinyl methyl ether) Blends."
78. Macromolecules 22, 2867-2869 (1989) (with N. Reynolds and J. Savage)  
"A Spectroscopic Study of Syndiotactic Polystyrene"
79. Polymer 30, 1596-1602 (1989) (with D. Dorset)  
"Polymethylene chain packing in epitaxially crystallized cycloalkanes: an electron diffraction study."
80. Macromolecules, 22, 4395-4401 (1989) (with K. J. Kim and N. Reynolds)  
"A Spectroscopic Analysis of the Crystalline and Amorphous phases in a Vinylidene Fluoride/Trifluoroethylene Copolymer."
81. J. Polym. Sci.: Part B: Polymer Physics, 27, 2605-2619 (1989) (with C.F. Fan)  
"Effects of Fiber Orientation on the Stress Distribution in Model Composites."

82. "Infrared Spectroscopy", Comprehensive Polymer Science, Pergamon Press, C. Booth and C. Price Eds., 1989 (Vol. 1, 429-468).
83. Macromolecules 23, 1484-1486 (1990) (with Chih Chang)  
"An Analysis of Strain Induced Frequency Changes in Poly(p-phenylene terephthalamide) Single Fibers "
84. Polymer 30, 2147-2152(1990) (with W. Kaufmann and J. Petermann, N. Reynolds and E. L. Thomas)  
"Morphological and Infrared Studies on Highly Oriented PVDF/PMMA Blends."
85. Macromolecules 23, 3463 (1990) (with Nicholas M. Reynolds)  
"A Normal Vibrational Analysis of Syndiotactic Polystyrene"
86. Macromolecules 23, 3389 (1990) (with G. Smyth, E. M. Valles, S. K. Pollack, J. Grebowicz, P. J. Stenhouse, and W. J. MacKnight)  
"Development of Crystallinity in a Semirigid Thermotropic Polyurethane: 1. Morphology and Mechanism."
87. Liquid Crystals 7, 839(1990) (with G. Smyth, S. K. Pollack and W. J. MacKnight)  
"Microstructure and dynamics of a mesogenic diol"
88. Journal of Polymer Science, Part B: Physics Ed., 29, 235(1991) (with C.F. Fan and D. Waldman)  
"Interfacial Effects on Stress Distribution in Model Composites"
89. Macromolecules, 23, 4565(1990) (with N. M. Reynolds, R. G. Snyder and H. L. Strauss)"Structure, crystallization, and infrared spectra of amorphous perfluoro-n-alkane films prepared by vapor condensation"
90. Macromolecules, 24, 3662(1991) ( with Nicholas M. Reynolds, Howard D. Stidham)  
"A Spectroscopic Study of Phase Transformation Kinetics in Syndiotactic Polystyrene"
91. Macromolecules, 24, 5535(1991) ( with Li Hui Wang, Roger S. Porter, H. D. Stidham)  
" Raman Spectroscopic Characterization of Morphology of Polyethylene Reactor Powder "
92. Macromolecules, 24, 6244(1991) ( with Cun Feng Fan )  
"Application of the Molecular Simulation Technique to Generate the Structure of An Aromatic Polysulfone System"
93. Macromolecules, 24, 6680 (1991) (with Xiaozhen Yang)  
"Application of the molecular simulation technique to calculate structural and define deformation mechanisms of high performance polymers"
94. Macromolecules, 25, 266(1992) ( with Cun Feng Fan )  
"Application of the Molecular Simulation Technique to Characterize the Structure and Properties of An Aromatic Polysulfone System II. Mechanical and Thermal Properties"



95. Macromolecules, 25, 1801(1992) (with T. Tashiro and R. S. Stein)  
"Characterization of phase separation behavior in polyethylene mixtures. I. spectroscopic studies"
96. Macromolecules, 25, 1809(1992) (with T. Tashiro, M. Stakowski, Y. Li, B. Chu, and R. S. Stein)  
"Characterization of phase separation behavior in polyethylene mixtures. I. Scattering studies"
97. Macromolecules, 25, 3659(1992) (with J. D. Savage, Y. K. Wang, D. K. Yang)  
"A morphological study of phase transition behavior in syndiotactic polystyrene"
98. Macromolecules, 25, 3667(1992) ( with C, F. Fan, B. D. Olafson, and M. Blanco )  
"Application of molecular simulation to derive phase diagrams of binary mixtures"
99. Macromolecules, 25, 3667(1992) (with F. Papadimitrakopoulos and W. J. MacKnight)  
"Investigation of a monotropic liquid crystal polyurethane based on bisphenyl, 2,6-TDI and six methylene containing flexible spacer"
100. Macromolecules, 25, 3164(1992) (with J. D. Savage, Y. K. Wang, Max Corbett, and H. d. Stidham)  
"An Analysis of Raman Active Low Frequency Bands Observed for Syndiotactic Polystyrene"
101. Macromolecules, 25, 2381(1992) (with S. K. Pollack, G. Smyth, P. J. Stenhouse, F. Papadimitrakopoulos, and W. J. MacKnight)  
"Development of Crystallinity in semiflexible thermotropic polyurethane: 2. structure and dynamics."
102. Macromolecules, 25, 2391(1992) ( with S. A. Nitzsche, P. T. Hammond, and Michael F. Rubner)  
"Spectroscopic Study of Domain Ordering in Diacetylene Containing Model Polyurethanes"
103. Macromolecules, 25, 2397(1992) (with S. A. Nitzsche and Y. K. Wang)  
"Application of the Molecular Simulation Technique for Clarification of the  $\alpha$  to  $\beta$  Phase Transformation in Poly(butylene terephthalate)"
104. Macromolecules, 25, 925(1992) (with Curtis W. Meuse, Xiaozhen Yang, Howard D. Stidham, Decai Yang)  
"A Spectroscopic Analysis of Ordering and Phase Separation Behavior of Model Polyurethanes in A Restricted Geometry"
105. Journal of Polymer Science-Physics Ed., 30, 603(1992) ( with Cun Feng Fan )  
"A Study of Stress Distribution in Model Composites By Using Finite Element Analysis. I. End Effects."
106. Journal of Polymer Science-Physic Ed., 30, 619(1992) ( with Cun Feng Fan )  
"A Study of Stress Distribution in Model Composites By Finite Element Analysis. II. Fiber/Matrix Interfacial Effects."
107. Exploration of Nature, 2, 11(1992)  
" Application of Molecular Simulation Techniques in Polymer Science "

108. Macromolecules, 25, 7317(1992) ( with Wanda J. Walczak and David A. Hoagland)"An Analysis of Polyelectrolyte Chain Conformation by Polarized Raman Spectroscopy"
109. Macromolecules, 26, 1465(1993) ( with Xiaozhen Yang )  
" Application of Molecular Simulation Techniques to Simulate Vibrational Spectroscopic Features Associated with Hydrogen Bonds in Crystalline Polymers "
110. Polymer, 34, 43(1993) ( with Xiaozhen Yang, Zaiqing Weng, and Renyuan Qian )  
" Normal Vibration of Polybenzamide "
111. Macromolecules, 27, 287(1994) ( with Zhaozhui Su )  
" Spectroscopic and Thermal Studies of Sulfonated Syndiotactic Polystyrene "
112. Macromolecules, 27, 1720(1994) ( with Hun-Jan Tao, William J. MacKnight)  
" Application of the Molecular Simulation Technique for Prediction of Phase Separated Structures of Model Polyurethanes "
113. J. Phys. Chem., 98,8424(1994) ( with Y. Ren, C. W. Meuse, and H. D. Stidham )  
"Reflectance infrared spectroscopic analysis of monolayer films at the air-water interface"
114. New J. Chem. 18, 407(1994) ( with Jim Thomas and David A. Tirrell )  
" Polyelectrolyte-phospholipid micelle structure "
115. Macromolecules, 27,7146(1994) ( with H. J. Tao, C. W. Meuse, X. Yang, W. J. MacKnight)  
" A Spectroscopic Analysis of Phase Separation Behavior of Polyurethane in Restricted Geometry: Chain Rigidity Effects "
116. Macromolecules, 27, 6740 (1994) ( with M. A. Perez, Y. Ren, R. J. Farris )  
" Characterization of PMDA-ODA Polyimide Films by External Reflectance Infrared Spectroscopy "
117. J. Polym. Sci.-Phys, Ed. 32, 2085(1994) ( with H. S. Lee )  
" Structural Changes and Chain Orientational Behavior During Tensile Deformation of Segmented Polyurethanes "
118. Macromolecules, 28, 358(1995) ( Y. Ren, M. S. Shoichet, T. J. McCarthy )  
"Spectroscopic characterization of polymer adsorption at the air solution interface "
119. Macromolecules, 28, 4036 (1995) ( with H. J. Tao, D. M. Rice, and W. J. MacKnight )  
"Investigation on the Phase Separation Behavior of Polyurethane Elastomers by Two-Dimensional Wide-line-Separation Nuclear Magnetic Resonance Spectroscopy "
120. Polymer, 35, 3613 (1994) (with K. J. Kim)  
" An infrared spectroscopic study of structural reorganization of a uniaxially drawn VDF/TrFE copolymer in an electric field "
121. J. Polym. Sci.-Phys. Ed. 31, 1555 (1993) (with K. J. Kim, N. M. Reynolds)  
" Spectroscopic studies on the effect of field strength upon the Curie transition of a vinylidene fluoride/trifluoroethylene copolymer "

122. Macromolecules, 28, 4284(1995) (with W. M. Tang and W. J. MacKnight)  
 "Segmented polyurethane elastomers with liquid crystalline hard segments. 3. infrared spectroscopic study. "
123. Macromolecules, 28, 2016(1995) (with H. J. Tao, W. J. MacKnight, K. D. Gagnon, R. w. Lenz)  
 "A Spectroscopic analysis of chain conformation distribution in a biodegradable polyester elastomer, poly(  $\epsilon$ -hydroxyoctanoate)"
124. Macromolecules, 28, 1464 (1995) (C. C. Chen, M. T. Krejchi, D. A. Tirrell, and S. L. Hsu)  
 "Effect of Water on The Structure of A Model Polypeptide"
125. Macromolecules, 28, 4278 (1995) (Sunghoe Yoon, Kimio Ichikawa, William J. MacKnight)  
 " Spectroscopic Analysis of Chain Conformation of Poly(propylene Oxide) Based Polymeric Electrolytes "
126. Macromolecules, 28, 5063 (1995) (Sunghoe Yoon, Kimio Ichikawa, William J. MacKnight)  
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