

Resume

Laurence A. Belfiore

Professor of Chemical Engineering
Department of Chemical Engineering
Polymer Physics & Engineering Laboratory
Colorado State University, Fort Collins, Colorado 80523
(970) 491-5395; FAX (970) 491-7369
e-mail: belfiore@engr.colostate.edu
Research and teaching publications webpage;
<http://www.engr.colostate.edu/cheme/programs/Fac/LAB-Fac.shtml>

Education

- B. E. Stevens Institute of Technology, Hoboken, New Jersey
1976 Major: Chemical Engineering
- Ph. D. University of Wisconsin, Madison
1982 Major: Chemical Engineering & Polymer Science
Thesis: Molecular Dynamics of Polycarbonate-Diluent Systems
Advisor: Professor Stuart L. Cooper

Professional Experience

- 1983-present Colorado State University, Fort Collins, Colorado
Professor of Chemical Engineering, beginning July 1, 1997
Associate Professor from 1989-1997
Tenure granted on July 1, 1989
Assistant Professor from 1983-1989
- 1986 (May-July) ASEE Summer Faculty Fellow, NASA, Jet Propulsion Laboratory--
California Institute of Technology, Pasadena, California
Mentor: Dr. Robert F. Landel
- 1984 (June-August) ASEE Summer Faculty Fellow, Department of Energy
Solar Energy Research Institute (i.e., NREL), Golden, Colorado
- 1982-83 AT&T Bell Laboratories, Murray Hill, New Jersey
Post-doctoral Member of Technical Staff
Mentor: Dr. Frank A. Bovey (member; National Academy of Science)
- 1981 (Jan-Sept) Eastman Kodak Research Laboratories, Rochester, New York
Professional Member of Technical Staff & Thesis Research

- 1980
(June-Nov) Shell Development, Westhollow Research Center, Houston, Texas
Professional Member of Technical Staff & Thesis Research
- 1976-80 University of Wisconsin, Madison
Department of Chemical Engineering
Graduate Research Assistant, Teaching Assistant, Industrial Fellow
- 1975
(June-Sept) Yale University, New Haven, Connecticut
Department of Engineering & Applied Science (i.e., Chemical Engineering)
Undergraduate Research; Convective Diffusion in Catalytic Reactors
Mentor: Professor Daniel E. Rosner

Professional & Scientific Societies

American Chemical Society

Research Interests

Knowledge of the interrelationships between macroscopic physical properties of polymeric materials in the solid state and their microscopic structure, conformation, and phase behaviour is extremely important to design, compatibilize, and synergistically modify multicomponent systems. Hence, an in-depth study of the molecular characteristics of bulk polymers, copolymers, binary & ternary polymer-polymer & polymer-diluent blends, ionic polymers, and polymeric coordination complexes with transition metals and lanthanides is essential to predict *a priori* the physical integrity of these materials, some of which contain plasma-CVD-functionalized nanomaterial. This problem-solving approach provides one with a fundamental understanding of the physicochemical interactions that are operative between functional groups in dissimilar components. One requirement is that the experimental probes necessary to detect site-specific interactions must be sensitive at the nanoscopic level. In this respect, high-resolution NMR, infrared, and laser spectroscopic techniques complement more traditional engineering measurements in characterizing the macromolecular solid state. At Colorado State University, my research group benefits greatly from expertise at the center for solid-state nuclear magnetic resonance spectroscopy, located in the Department of Chemistry, and the NSF-supported laser research center, located in the Department of Electrical Engineering, where visible photon emission in macromolecular complexes with europium and terbium has been measured and photon-cascade emission in praseodymium complexes is under development. The global objective of my research is to design multicomponent solid state macromolecular systems that contain chemically anchored and functionalized nanomaterials, like plasma-treated single-walled carbon nanotubes, which exhibit photo-luminescent and other interesting electro-optical behaviour.

- 1) "Bridging the gap" between macroscopic and nanoscopic probes of solid state phase behaviour in strongly interacting polymer blends and block copolymers that contain chemically anchored nanomaterial via transition metal and lanthanide coordination.
- 2) Applications of high-resolution solid-state NMR, infrared, and photoluminescence spectroscopies to detect specific interactions in polymeric complexes with transition metals and lanthanides at the molecular level.
- 3) Transition metal and lanthanide coordination in macromolecule/nanotube complexes that exhibit photoluminescent and other interesting electro-optical behaviour.
- 4) Controlled delivery of reactive species via polymer complexation and gelation
- 5) Multiple eutectic phase transformations in hydrogen-bonded polymer blends.
- 6) Phase behaviour of polymer/liquid-crystal blends subjected to external electric fields.
- 7) Applications of molecular mechanics and density functional theory to calculate metal-ligand bond energies in transition metal coordination complexes.

Summary of Research & Teaching Accomplishments

Extramural Research Support (cumulative: 26 awards, \$1,569K)

National Science Foundation (\$1,146,100)

Petroleum Research Fund of the American Chemical Society (\$69,000)

Army Research Office (\$47,500)

Exxon Chemical Company (\$46,685)

Asahi Chemical Industry, Japan (\$40,000)

Colorado Advanced Materials Institute (\$104,171)

Colorado State University's Resources for Scholarly Programs (\$110,195)

National Research Council of Brazil (\$3000)

Plastics Institute of America (\$2500)

Research Publications

54 refereed journal publications, 7 book chapters, 34 non-refereed proceedings

Polymeric Complexes with d- & f-Block Metal Ions---32 refereed publications

Scientific Presentations: 63 contributed & 29 invited

Teaching Responsibilities at Colorado State University

Courses: 4 undergraduate, 2 undergraduate laboratories, 6 graduate

Classes: 52 undergraduate (including laboratories), 36 graduate (incl. Spring 2007)

Scientific Collaborators & Advisees at Colorado State

2 PhD graduates, 14 MS graduates, 3 visiting faculty, 4 research associates, 4 post-doctoral research associates.

Research Grants Awarded

- 1) Faculty Research Grant, Graduate School, Colorado State University
\$2495 for the 6-month period: January 1, 1984 to June 30, 1984
Mixing Effects & Thermodynamic Interactions in Multicomponent Polymeric Systems
- 2) Faculty Research Grant, Graduate School, Colorado State University
\$2000 for the 1-year period: July 1, 1984 to June 30, 1985
Compatibility Studies in Multicomponent Polymeric Systems
- 3) American Chemical Society, Petroleum Research Fund
\$19,000 for the 2-year period: September 1, 1984 to August 31, 1986
Mixing Effects & Thermodynamic Interactions in Multicomponent Polymeric Systems
Including a \$4,000 supplement to host a Summer Faculty Fellow
- 4) Colorado Advanced Materials Institute
\$5000 for the 1-year period: April 1, 1985 to March 31, 1986
Molecular Characterization of Conductive Polymeric Complexes via High-Resolution Solid State NMR Spectroscopy
- 5) Colorado Advanced Materials Institute
\$5000 for the 1-year period: October 1, 1986 to September 30, 1987
Physical Characterization of Fiber-Reinforced Composite Polymeric Materials
- 6) Equipment Grant---Department of Defense, Army Research Office
\$47,500 (plus \$37,500 matching funds from Colorado State University) for the 2-year period: February 1, 1987 to January 31, 1989
Transient Viscoelastic Response of Composite Polymeric Materials
- 7) National Science Foundation Equipment Grant, Division of Materials Research
\$14,200 for the 1-year period: July 1, 1987 to June 30, 1988
Co-Principal Investigator with J. F. Cardenas-Garcia, Mechanical Engineering
Implementation of an Automated Coherent Optical Processing Grid Technique for Strain Analysis
- 8) Electron Microscopy Center Seed Grant, Colorado State University
\$4250 for the 3.5-year period: November 15, 1987 to June 30, 1991
Interfacial Adhesion Between Functional Polymers & High-Modulus Surface-Treated Carbon Fibers

- 9) Colorado State University Supercomputing Project
\$15,050 for CYBER 205 computer time
**Interdomain Communication via Spin Diffusion in Multiphase Polymers
and
Convective Diffusion in Heterogeneous Catalytic Reactors of Non-Circular
Cross Section & Non-Uniform Catalyst Activity**
- 10) Colorado Advanced Materials Institute
\$28,750 for the 2.5-year period: July 1, 1987 to December 31, 1989
Polymer Materials Research at Colorado State University
- 11) Plastics Institute of America, Supplemental Graduate Student Fellowship
\$2500 for the 1-year period: January 1, 1988 to December 31, 1988
**Interfacial Adhesion & Viscoelastic Response in Chemically Modified Fiber-
Reinforced Thermoplastic Composites**
- 12) Colorado Advanced Materials Institute
\$5000 for the 1-year period: January 1, 1988 to December 31, 1988
**Interfacial Adhesion & Mechanical Fracture in Fiber-Reinforced Polymeric
Composites**
- 13) National Science Foundation, Engineering Research Initiation
\$66,000 for the 2-year period: July 1, 1988 to June 30, 1990
**Interfacial Adhesion & Viscoelastic Response in Chemically Modified Fiber-
Reinforced Thermoplastic Composites**
Including a \$6,000 supplement for the retention of a PRC Research Associate
- 14) Colorado Advanced Materials Institute
\$5000 for the 1-year period: January 1, 1989 to December 31, 1989
**High-Temperature Physicochemical Properties of Rigid Polymeric Foams;
Correlating Results from Solid State NMR, Electron Microscopy &
Mechanical Testing**
- 15) Colorado Advanced Materials Institute
\$16,921 (plus \$15,000 matching funds from Colorado State University) for the 1-
year period: September 1, 1989 to August 31, 1990
Polymer Physics & Engineering Laboratory at Colorado State University
- 16) Asahi Chemical Industry, Okayama, JAPAN
\$40,000 for the 3.5-year period: January 1, 1990 to June 30, 1993

Solid State NMR Investigations of Transition-Metal Coordination Complexes That Exhibit Synergistic Macroscopic Physical Properties

- 17) National Research Council of Brazil
\$3000 for the 6-month period: January 1, 1990 to June 30, 1990
Supplemental support for visiting faculty on sabbatical from the Federal University of Santa Catarina in Florianopolis, Brazil

- 18) Exxon Chemical Company, Baytown, Texas
\$46,685 for the 1-year period: December 1, 1990 to November 30, 1991
Thermodynamic Phase Behaviour of Semicrystalline Thermoplastic Oligomers

- 19) National Science Foundation, Instrumentation and Laboratory Improvement
\$33,900 (plus \$33,900 matching funds from Colorado State University) for the 1-year period: September 1, 1990 to August 31, 1991
Undergraduate Polymer Science & Engineering Program at Colorado State University

- 20) Colorado Advanced Materials Institute
\$28,500 for the 1-year period: July 1, 1990 to June 30, 1991
Polymer Physics & Engineering Laboratory at Colorado State University

- 21) National Science Foundation, Division of Materials Research---Polymers Program
\$210,000 for the 3-year period: February 1, 1993 to January 31, 1996
Transition-Metal Coordination in Polymer Blends that Exhibit Synergistic Properties (Grant#DMR-9214022)

- 22) American Chemical Society, Petroleum Research Fund
\$50,000 for the 2+ year period: May 1, 1993 to August 31, 1995
Synergistic Thermomechanical Response in Polymer Blends via Transition-Metal Coordination (ACS-PRF#26905-AC7)

- 23) Colorado Advanced Materials Institute
\$10,000 for the 1-year period: July 1, 1994 to June 30, 1995
Synthesis of Novel Macrocycles for the Formulation of Organic Double-Layered Photoconductors

- 24) National Science Foundation, Division of Materials Research---Polymers Program
\$257,994 for the 3-year period; April 1, 1996 to March 31, 1999
Reactive Blending via Metal-Ligand Coordination in Polymeric Complexes (Grant#DMR-9528555)

Including a \$17,994 supplement from NSF's eastern Europe program

- 25) National Science Foundation, Division of Materials Research---Polymers Program
\$264,000 for the 4-year period; June 1, 1999 to May 31, 2003
Transition Metal Compatibilization of Immiscible Polymer Blends
(Grant#DMR-9902657)
- 26) National Science Foundation, Division of Materials Research---Polymers Program
\$300,000 for the 4-year period: July 15, 2003 to June 30, 2007
Synergistic Physicochemical Properties of Macromolecule-Metal Complexes
(Grant#DMR-0320980)

Committees

Professional

- 1998-present Editorial Advisory Board, *Polymer Engineering & Science*
- 1985-95 Member, Technical Program Committee of the American Chemical Society's Division of Polymeric Materials; Science & Engineering
- 1986-87 Member-at-Large, Executive Committee of the American Chemical Society's Division of Polymeric Materials; Science & Engineering

University

- 1995-97 Tenure & Reappointment Committee in the Department of Chemical Engineering
- 2002-04
- 1993-95 Professional Development Committee in the College of Engineering
- 1996-98
- 1986-90 Member, Steering Committee of the NSF Regional NMR Center at Colorado State University
- 1986-89 Member, Engineering Science Advisory Committee, College of Engineering, Colorado State University
- 1986-89 Member, Graduate & Undergraduate Engineering Curriculum Committee, College of Engineering, Colorado State University
- 1983-89 Faculty Advisor, Omega Chi Epsilon, Chemical Engineering Honor Society at Colorado State University
- 1984 Member, PhD Program Development in Chemical Engineering @ CSU

Refereed Journal Publications

(the total number of times that all of these publications are cited exceeds 555; the number of citations for each publication is indicated separately after the date)

- 1) LA Belfiore, PM Henrichs, DJ Massa, N Zumbulyadis, WP Rothwell & SL Cooper, **Molecular Dynamics of Polycarbonate-Diluent Systems: Applications of High Resolution Carbon-13 Solid State NMR**, *Macromolecules*, **16** (11), 1744-1753 (1983); cited 29 times.
- 2) LA Belfiore & SL Cooper, **Bisphenol-A Polycarbonate-Diluent Interactions** *Journal of Polymer Science; Polymer Physics Edition*, **21** (10), 2135-2157 (1983); cited 13 times.
- 3) AE Tonelli & LA Belfiore, **Solution Dipole Moments of Atactic Poly(p-chlorostyrene) and Poly(p-bromostyrene) and their Dependence on Temperature and Solvent**, *Macromolecules*, **16** (11), 1740-1743 (1983); cited 8 times.
- 4) LA Belfiore, PM Henrichs & SL Cooper, **Diluent Effects on Carbonate Mobility in Bisphenol-A Polycarbonate in the Solid State**, *Polymer*, **25** (4), 452-458 (1984); cited 5 times.
- 5) LA Belfiore & SL Cooper, **Mixing Effects on the Mid-Kilohertz Mobility of Polystyrene in Glassy Polystyrene-Diluent Blends**, *Polymer*, **25** (5), 645-649 (1984); cited 5 times.
- 6) LA Belfiore, FC Schilling, AE Tonelli, AJ Lovinger & FA Bovey, **Magic-Angle-Spinning Carbon-13 NMR Spectroscopy of Three Crystalline Forms of Isotactic Poly(1-butene)**, *Macromolecules*, **17** (12), 2561-2565 (1984); cited 40 times.
- 7) AJ Lovinger, LA Belfiore & TN Bowmer, **Crystallographic Changes in Cryogenically Pulverized Polymers**, *Journal of Polymer Science; Polymer Physics Edition*, **23** (7), 1449-1466 (1985); cited 7 times.
- 8) LA Belfiore, **Miscibility Studies in Polymer-Diluent Blends & Segmented Block Copolymers via High Resolution Solid State NMR**, *Polymer*, **27** (1), 80-90 (1986); cited 17 times.
- 9) AA Patwardhan & LA Belfiore, **Prediction of Thermodynamic Properties of Polymer Solutions by a Group Contribution Method**, *Journal of Polymer Science; Polymer Physics Edition*, **24** (11), 2473-2486 (1986); cited 11 times.

- 10) LA Belfiore, **Solid State Dynamics of Glassy Polycarbonate-Diluent Systems**, *Journal of Elastomers & Plastics*, **19** (4), 238-251 (1987).
- 11) LA Belfiore, AA Patwardhan & TG Lenz, **Shortcomings of UNIFAC-FV to Characterize the Phase Behaviour of Polymer-Polymer Blends**, *Industrial & Engineering Chemistry Research*, **27** (2), 284-294 (1988); cited 11 times.
- 12) AA Patwardhan & LA Belfiore, **Thermodynamic Miscibility in Polymer-Liquid Crystal Blends**, *Polymer Engineering & Science*, **28** (14), 916-925 (1988); cited 15 times.
- 13) LA Belfiore, RJ Shah & CM Cheng, **Interfacial Adhesion Between Ionic Copolymers & High-Modulus Surface-Treated Carbon Fibers**, *Polymer Composites*, **10** (2), 122-133 (1989); cited 10 times.
- 14) LA Belfiore, RJ Shah & CM Cheng, **Solid State NMR Investigations of Random Copolymers & Ionomers Containing Ethylene & Methacrylic Acid**, *Contemporary Topics in Polymer Science, Volume 6, Multiphase Macromolecular Systems*, BM Culbertson, editor, Plenum, **6**, 619-638 (1989).
- 15) CM Cheng & LA Belfiore, **Solid State Phase Behaviour of Strongly Interacting Polymer Blends**, *Polymer News*, **15** (2), 39-49 (1990).
- 16) LA Belfiore, TJ Lutz, CM Cheng & CE Bronnimann, **Solid State Phase Behaviour & Molecular-Level Mixing Phenomena in a Strongly Interacting Polymer Blend**, *Journal of Polymer Science; Polymer Physics Edition*, **28** (8), 1261-1274 (1990); cited 20 times.
- 17) C Qin, ATN Pires & LA Belfiore, **Morphological & Physicochemical Interactions in Semicrystalline Polymer-Polymer Blends**, *Polymer Communications*, **31** (5), 177-182 (1990); cited 50 times, largest number of citations for an individual publication.
- 18) LA Belfiore, TJ Lutz & CM Cheng, **Solid State NMR Detection of Molecular-Level Mixing Phenomena in Strongly Interacting Polymer Blends & Phase-Separated Copolymers**, *Solid State NMR of Polymers*, LJ Mathias, editor, Plenum: New York, Chapter 8, pp. 145-165 (1991).
- 19) C Qin, ATN Pires & LA Belfiore, **Spectroscopic Investigations of Specific Interactions in Amorphous Polymer-Polymer Blends: Poly(vinylphenol) & Poly(vinylmethyleketone)**, *Macromolecules*, **24** (3), 666-670 (1991); cited 39 times.

- 20) LA Belfiore & E Ueda, **Carbon-13 Solid State NMR Detection of Molecular Mixing in Polymer Blends That Exhibit Multiple Eutectic Phase Transformations**, *Polymer*, **33** (18), 3833-3840 (1992); cited 18 times.
- 21) LA Belfiore, ATN Pires, Y Wang, HRJ Graham & E Ueda, **Transition Metal Coordination in Polymer Blends & Model Systems**, *Macromolecules*, **25** (5), 1411-1419 (1992); cited 39 times.
- 22) LA Belfiore, HRJ Graham, E Ueda & Y Wang, **Solid State NMR Detection of Molecular Mixing in Bieutectic Blends, d-Metal Complexes & Phase-Separated Copolymers**, *Polymer International*, **28** (1), 81-94 (1992); cited 10 times.
- 23) LA Belfiore, HRJ Graham & E Ueda, **Ligand Field Stabilization in Nickel Complexes that Exhibit Extraordinary Glass Transition Temperature Enhancement**, *Macromolecules*, **25** (11), 2935-2939 (1992); cited 19 times.
- 24) LA Belfiore, **Interdomain Communication via Magnetic Spin Diffusion in a Microphase-Separated Polyurethane Elastomer**, *Progress in Pacific Polymer Science---Volume 2*, Y. Imanishi, editor, Springer-Verlag: Heidelberg, pp. 113-129 (1992).
- 25) LA Belfiore, C Qin, E Ueda & ATN Pires, **Carbon-13 Solid State NMR Detection of the Isotropic Carbonyl Lineshape in Blends of Poly(vinylphenol) with Main-Chain Polyesters**, *Journal of Polymer Science; Polymer Physics Edition*, **31** (4), 409-418 (1993); cited 30 times.
- 26) LA Belfiore, MP McCurdie & E Ueda, **Polymeric Coordination Complexes based on Cobalt, Nickel & Ruthenium that Exhibit Synergistic Thermal Properties**, *Macromolecules*, **26** (25), 6908-6917 (1993); cited 29 times.
- 27) LA Belfiore & MP McCurdie, **Reactive Blending via Metal-Ligand Coordination**, *Journal of Polymer Science; Polymer Physics Edition*, **33** (1), 105-124 (1995); cited 18 times.
- 28) F Bossé, PK Das & LA Belfiore, **Thermo-Irreversible Gelation & Percolation-Based Mechanical Response via Metal-Olefin Coordination in Diene Polymers**, *ACS Symposium Series on Hybrid Organic-Inorganic Composites*, edited by JE Mark, CYC Lee & PA Bianconi, **585**, 192-208 (1995); cited 6 times.

- 29) LA Belfiore, F Bossé & PK Das, **Reactive Blending via Coordination Chemistry; Extraordinary Mechanical Response for Atactic 1,2-Polybutadiene Complexed with Palladium Chloride**, *Polymer International*, **36** (2), 165-176 (1995); cited 14 times.
- 30) F Bossé, PK Das & LA Belfiore, **Reactive Blending via Metal-Olefin Coordination in Diene Polymers; Solid State Properties that Support the Concept of a Network Structure**, *Macromolecules*, **28** (20), 6993-7004 (1995); cited 13 times.
- 31) AL Rakow & LA Belfiore, **Extrusion Effects on the Mechanical Properties of Agar**, *Journal of Applied Polymer Science*, **57** (2), 139-143 (1995).
- 32) F Bossé, PK Das & LA Belfiore, **Annealing Effects on the Solid State Properties of Transition Metal Coordination Complexes & Networks based on Diene Polymers with Palladium Chloride**, *Journal of Polymer Science; Polymer Physics Edition*, **34** (5), 909-924 (1996); cited 6 times.
- 33) LA Belfiore, PK Das & F Bossé, **Synergistic Mechanical Response in Blends of Diene Polymers and their Complexes with Palladium Chloride**, *Journal of Polymer Science; Polymer Physics Edition*, **34** (16), 2675-2687 (1996); cited 8 times
- 34) JY Lee & LA Belfiore, **Chemical Reactions in Solid State Complexes of 1,2-Polybutadiene and Palladium Chloride; High Temperature Infrared Study**, *Bulletin of the Korean Chemical Society*, **17** (9), 826-830 (1996); cited 2 times.
- 35) JY Lee, PK Das & LA Belfiore, **Compatibilization of 1,2-Polybutadiene/3,4-Polyisoprene Blends via Transition Metal Catalyzed Chemical Reactions**, *Polymer-Korea*, **21** (4), 614-620 (1997).
- 36) LA Belfiore, EM Indra & PK Das, **Multi-functional Coordination Crosslinks in Poly(vinylamine) Complexes with Cobalt Chloride**, *Macromolecular Symposia--- Polymer-Solvent Complexes*, **114**, 35-50 (1997); cited 8 times.
- 37) PK Das, EM Indra & LA Belfiore, **Palladium(II) Complexes with Polyphosphazene**, *Polymer Engineering & Science*, **37** (12), 1909-1916 (1997); cited 1 time.
- 38) EM Indra, MP McCurdie, X Sun & LA Belfiore, **Transition Metal Compatibilization of Polymer Blends**, in *Interfacial Aspects of Multicomponent Polymer Materials*, DJ Lohse, TP Russell & LH Sperling, editors, Plenum: New York, p. 241-264 (1997).

- 39) F Bossé, PK Das & LA Belfiore, **Aggregation Behaviour Below the Gelation Threshold for Metal-Olefin Coordination in Diene Polymers**, *Polymer Gels & Networks*, **5** (5), 387-413 (1997); cited 5 times.
- 40) MP McCurdie & LA Belfiore, **Spectroscopic Analysis of Transition Metal Coordination Complexes based on Poly(4-vinylpyridine) and Dichlorotricarbonylruthenium(II)**, *Polymer*, **40** (11), 2889-2902 (1999); cited 9 times.
- 41) MP McCurdie & LA Belfiore, **Solid State Complexes of Poly(L-histidine) with Metal Chlorides from the 1st-Row of the d-Block**, *Journal of Polymer Science; Polymer Physics Edition*, **37** (4), 301-309 (1999); cited 6 times.
- 42) LA Belfiore, X Sun, PK Das & JY Lee, **High-Temperature Infrared Kinetics of Transition-Metal-Catalyzed Chemical Reactions in Solid State Complexes of Polybutadienes with Palladium Chloride**, *Polymer*, **40** (20), 5583-5599 (1999); cited 3 times.
- 43) LA Belfiore & EM Indra, **Transition Metal Compatibilization of Poly(vinylamine) and Poly(ethylene imine)**, *Journal of Polymer Science; Polymer Physics Edition*, **38** (4), 552-561 (2000); cited 4 times.
- 44) LA Belfiore & MP McCurdie, **Solid State Complexes of Poly(L-lysine) with Metal Chlorides from the 1st-Row of the d-Block**, *Polymer Engineering & Science*, **40** (3), 738-746 (2000); cited 1 time.
- 45) PK Das, IY Ruzmaikina & LA Belfiore, **Poly(vinylamine) Complexes with f-Block Salts from the Lanthanide Series that Exhibit Significant Glass Transition Temperature Enhancement**, *Journal of Polymer Science; Polymer Physics Edition*, **38** (14), 1931-1938 (2000); cited 7 times.
- 46) PK Das, JK Lee & LA Belfiore, **Transition Metal Compatibilization of Poly(4-bromostyrene) and Polybutadiene via Palladium(0) Catalyzed Reactions**, *Journal of Polymer Science; Polymer Physics Edition*, **39** (6), 677-688 (2001); cited 2 times.
- 47) RM Alcântara, ATN Pires, LA Belfiore & GG de Barros, **Morphology and Properties of Pseudo-Interpenetrating Polymer Networks based on Epoxy Resins and Polystyrene**, *Journal of Polymer Engineering*, **21** (4), 319-339 (2001); cited 1 time.
- 48) LA Belfiore, IY Ruzmaikina & PK Das, **Thermophysical Property Modifications in Functional Polymers via Lanthanide Trichloride Hydrates**, *Polymer Engineering & Science*, **41** (7), 1196-1205 (2001); cited 3 times.

- 49) PK Das, JK Lee, IY Ruzmaikina & LA Belfiore, **Thermomechanical Property Modifications via Reactive Blending in Polymeric Complexes with Palladium(II)**, *Polymer*, **42** (21), 8873-8881 (2001).
- 50) LA Belfiore, MP McCurdie & PK Das, **Macromolecule-Metal Complexes: Ligand Field Stabilization and Thermophysical Property Modification**, *Polymer*, **42** (25), 9995-10006 (2001); cited 3 times.
- 51) RM Alcântara, ATN Pires, GG de Barros & LA Belfiore, **Pseudo-Interpenetrating Polymer Networks based on Tetrafunctional Epoxy Resins and Poly(methylmethacrylate)**, *Journal of Applied Polymer Science*, **89** (7), 1858-1868 (2003); cited 1 time.
- 52) LA Belfiore, CKS Lee & JG Tang, **The Influence of Competitive Interactions on Multiple Eutectic Phase Behaviour in Poly(ethylene oxide) Molecular Complexes**, *Polymer*, **44** (11), 3333-3346 (2003); cited 1 time.
- 53) JG Tang, CKS Lee & LA Belfiore, **Effects of Several Lanthanide Trichloride Hydrates on the Melting Behaviour and Spherulitic Superstructure of Poly(ethylene oxide)**, *Journal of Polymer Science; Polymer Physics Edition*, **41** (18), 2200-2213 (2003); cited 2 times.
- 54) JG Tang, Y Wang, H Liu & LA Belfiore, **Effects of Organic Nucleating Agents and Zinc Oxide Nanoparticles on Isotactic Polypropylene Crystallization**, *Polymer*, **45** (7), 2081-2091 (2004); cited 7 times.
- 55) LA Belfiore & PK Das, **1,2-Polybutadiene Complexes with d⁸ Pseudo-Square-Planar Transition Metal Salts Based on Nickel(II), Palladium(II), and Platinum(II)**, *Journal of Polymer Science, Polymer Physics Edition*, **42** (12), 2270-2285 (2004).
- 56) PK Das & LA Belfiore, **Nonlinear Stress Relaxation in Palladium(II) Complexes with Triblock Copolymers of Styrene and Butadiene**, *Journal of Applied Polymer Science*, **93** (3), 1329-1336 (2004).
- 57) JG Tang, Y Wang, XY Huang & LA Belfiore, **The Influence of PEO-Lanthanide (Ln³⁺) Complexation on the Morphology of Poly(ethylene oxide)**, *Acta Polymerica Sinica*, **3**, 350-356 (2005).

- 58) LA Belfiore, SY Lee & L Zhang, **Convective Diffusion in Heterogeneous Catalytic Duct Reactors with Noncircular Cross Section and Nonuniform Catalyst Activity**, *Chemical Engineering Communications*, **193** (1), 77-99 (2006).
- 59) LA Belfiore & SE Fenton, **Nanocluster Assemblies and Molecular Orbital Interactions in Macromolecule-Metal Complexes**, in *Macromolecules Containing Metal & Metal-Like Elements, Volume 7, Nanoscale Interactions of Metal-Containing Polymers, Chapter 1*; edited by AS Abd-El-Aziz; CE Carraher, Jr; CU Pittman, Jr; & M Zeldin; Wiley-Interscience: New York (2006), pp. 1-53, ISBN# 0-471-68440-6.
- 60) LA Belfiore, JJ Way & L Zhang, **Transport Phenomena for Chemical Reactor Design**, *Kirk-Othmer Encyclopedia of Chemical Technology, 5th edition, Volume 25*; Wiley: New York, (2006), pp. 269-322.
- 61) LA Belfiore, **Effects of the Collision Integral, Thermal Diffusion, and the Prater Number on Maximum Temperature in Macroporous Catalysts with Exothermic Chemical Reaction in the Diffusion-Controlled Regime**, *Chemical Engineering Science*, **62** (3), 655-665 (2007).
- 62) LA Belfiore, **Soret Diffusion and Nonideal Dufour Conduction in Macroporous Catalysts with Exothermic Chemical Reaction at Large Intrapellet Damköhler Numbers**, *Canadian Journal of Chemical Engineering*, revised manuscript submitted for publication, February (2007).
- 63) LA Belfiore, **DC Electric Field Effects on Ehrenfest-like Relations at the Glass Transition**, *Polymer*, submitted for publication, February (2007).
- 64) LA Belfiore, **Molecular Dynamics via Magnetic Resonance, Viscoelastic, and Dielectric Relaxation Phenomena**, *Polymer International*, to be submitted for publication, February (2007).
- 65) LA Belfiore, **Strongly Exothermic Chemical Reactions in Heterogeneous Catalytic Ducts with Thermally Modified Radiation Boundary Conditions**, *Chemical Engineering Science*, to be submitted for publication, May (2007).
- 66) LA Belfiore, SE Fenton, and ER Fisher, **Visible Photon Emission in Terbium Complexes with Poly(vinylamine) that contain Pulsed-Plasma-Modified Single-Walled Carbon Nanotubes**, *Macromolecules*, to be submitted for publication, March (2007).
- 67) LA Belfiore, **Magnetic Spin Diffusion at the NanoScale in Multiphase Polymers**, *Polymer International*, to be submitted for publication, April (2007).

- 68) LA Belfiore & F Bossé, **Effect of Transition Metal Complexation on the Oxidative Degradation Kinetics of Unsaturated Elastomers**, *Polymer Degradation and Stability*, to be submitted for publication, May (2007).
- 69) LA Belfiore & JG Tang, **Effects of Lanthanide and Transition Metal Complexation on Crystallization and Melting in Semicrystalline Polyesters and Polyamides**, *Polymer*, to be submitted for publication, June (2007).

Non-Refereed Proceedings---cited by Chemical Abstracts

- 1) LA Belfiore & SL Cooper, **Thermodynamic Interactions in Glassy Polycarbonate-Diluent Blends**, *ACS Proceedings; Division of Polymeric Materials Science & Engineering*, **49**, 650 (1983).
- 2) LA Belfiore, FC Schilling, AE Tonelli, AJ Lovinger & FA Bovey, **Magic-Angle-Spinning Carbon-13 NMR Spectroscopy of Three Crystalline Forms of Polybutene-1**, *Polymer Preprints*, **25** (1), 351 (1984).
- 3) LA Belfiore, AJ Lovinger & TN Bowmer, **Amorphism in Semicrystalline Polymers via Cryogenic Pulverization**, *Polymer Preprints*, **25** (1), 93 (1984).
- 4) LA Belfiore, **Compatibility Studies of Polymer-Diluent Blends & Segmented Block Copolymers Using ^1H - ^{13}C Intermolecular Cross-Polarization Magic-Angle-Spinning NMR**, *ACS Proceedings; Division of Polymeric Materials Science & Engineering*, **51**, 223 (1984).
- 5) LA Belfiore, **Free-Volume in the Glassy State--Are the WLF & Doolittle Equations Applicable?**, *ACS Proceedings; Division of Polymeric Materials Science & Engineering*, **53**, 302 (1985).
- 6) AA Patwardhan & LA Belfiore, **Prediction of Thermodynamic Properties of Polymer Solutions by a Group-Contribution Method**, *Polymer Preprints*, **26** (2), 70 (1985).
- 7) LA Belfiore & RJ Shah, **Ionomer Morphology via Magnetic Resonance & Thermal Analysis**, *ACS Proceedings; Division of Polymeric Materials Science & Engineering*, **54**, 490 (1986).
- 8) LA Belfiore & AA Patwardhan, **Interdomain Communication via Spin Diffusion in Multiphase Polymers**, *ACS Proceedings; Division of Polymeric Materials Science & Engineering*, **54**, 638 (1986).

- 9) LA Belfiore, **Transient Viscoelastic Response in Multiphase Thermoplastic Elastomers**, *ACS Proceedings; Division of Polymeric Materials Science & Engineering*, **56**, 817 (1987).
- 10) LA Belfiore, **Thermodynamic Miscibility in Polymer-Liquid Crystal Blends**, *Polymer Preprints*, **28** (1), 158 (1987).
- 11) LA Belfiore, **Solid State Dynamics of Glassy Polycarbonate-Diluent Systems**, *Transactions of the Metallurgical Society of AIME, Industry-University Advanced Materials Conference*, p. 383, February 1987.
- 12) RJ Shah & LA Belfiore, **Interfacial Adhesion Between Ionomers & Carbon Fibers**, *ACS Proceedings; Division of Polymeric Materials Science & Engineering*, **56**, 68 (1987).
- 13) LA Belfiore, **Thermodynamic Miscibility in Polymer-Polymer & Polymer-Diluent Blends**, *Polymer Preprints*, **28** (2), 114 (1987).
- 14) LA Belfiore, **Thermodynamic Phase Behaviour of Polymer Blends in the Solid & Molten States**, *Polymer Preprints*, **29** (1), 430 (1988).
- 15) LA Belfiore, **Solid State Miscibility Studies in Strongly Interacting Polymer Blends via High-Resolution Proton & Carbon-13 NMR**, *Polymer Preprints*, **29** (1), 17 (1988).
- 16) ATN Pires, CM Cheng & LA Belfiore, **Transition-Metal Complexation in Polymer Blends & Model Systems**, *ACS Proceedings; Division of Polymeric Materials Science & Engineering*, **61**, 466 (1989).
- 17) C Qin, CM Cheng, ATN Pires & LA Belfiore, **Morphological & Physicochemical Interactions in Semicrystalline Polymer-Polymer Blends**, *ACS Proceedings; Division of Polymeric Materials Science & Engineering*, **61**, 945 (1989).
- 18) CM Cheng & LA Belfiore, **Multi-Eutectic Crystallization in Strongly Interacting Polymer Blends**, *Polymer Preprints*, **30** (2), 325 (1989).
- 19) CM Cheng & LA Belfiore, **Solid State Phase Behaviour of Hydrogen-Bonded Polymer Blends**, *Proceedings of the Industry-University Advanced Materials Conference*, **2**, 622, March (1989).

- 20) LA Belfiore, C Qin, ATN Pires & E Ueda, **Macromolecular Phase Behaviour via Carbon-13 Solid State NMR**, *Polymer Preprints*, **31** (1), 170 (1990).
- 21) C Qin & LA Belfiore, **Thermal Investigation of Hydrogen-Bonding Interactions & Their Effect on the Melting/Crystallization Phenomena in Polymer-Polymer Blends**, *Polymer Preprints*, **31** (1), 263 (1990).
- 22) C Qin & LA Belfiore, **Miscibility, Crystallization & Melting Phenomena in Blends of Poly(vinylidene fluoride) with Poly(vinylmethylketone)**, *Polymer Preprints*, **31** (1), 369 (1990).
- 23) E Ueda, HRJ Graham, C Qin & LA Belfiore, **Designing Polymer Blends Which Exhibit Synergistic Properties**, *ACS Proceedings; Division of Polymeric Materials Science & Engineering*, **65**, 206 (1991).
- 24) LA Belfiore, **Direct Evidence for Transition-Metal Coordination in Polymer Blends**, *Preprints of the Second Pacific Polymer Conference*, **2**, 115 (1991).
- 25) LA Belfiore, **Ligand Field Stabilization in Coordination Complexes that Exhibit Extraordinary Glass Transition Temperature Enhancement**, *Polymer Preprints*, **33** (1), 925 (1992).
- 26) LA Belfiore, **Polymeric Coordination Complexes based on Cobalt, Nickel & Ruthenium that Exhibit Synergistic Thermal Properties**, *ACS Proceedings; Division of Polymeric Materials Science & Engineering*, **68**, 310 (1993).
- 27) LA Belfiore, **Solid State Carbon-13 NMR Detection of Coordination Interactions in Polymeric Ruthenium Complexes that Exhibit Synergistic Thermal Properties**, *Polymer Preprints*, **34** (2), 482 (1993).
- 28) MP McCurdie & LA Belfiore, **Transition-Metal Coordination in 4-Vinylpyridine-Containing Polymers**, *Proceedings of the 22nd Conference of the North American Thermal Analysis Society (NATAS)*, pages 611-616, September (1993).
- 29) LA Belfiore & MP McCurdie, **Coordination Complexes based on 1,2-Polybutadiene with Palladium Chloride**, *ACS Proceedings; Division of Polymeric Materials Science & Engineering*, **70**, 433 (1994).
- 30) LA Belfiore, PK Das & F Bossé, **Synergistic Mechanical Response in Cis-Polybutadiene & SBS Triblock Copolymers via Transition-Metal Coordination**, *Polymer Preprints*, **37** (1), 402 (1996).

- 31) LA Belfiore, F Bossé & JY Lee, **Transition-Metal Compatibilization of Diene Polymers via Reactive Blending with Palladium Chloride**, *ACS Proceedings; Division of Polymeric Materials Science & Engineering*, **75**, 48 (1996).
- 32) LA Belfiore, EM Indra & PK Das, **Multi-functional Coordination Crosslinks in Poly(vinylamine) Complexes with Cobalt Chloride**, *ACS Proceedings; Division of Polymeric Materials Science & Engineering*, **76**, 97 (1997).
- 33) PK Das, JK Lee, IY Ruzmaikina & LA Belfiore, **Organometallic Strategies to Compatibilize Polymer-Polymer & Polymer-Ionomer Blends**, *Polymer Preprints*, **41** (1), 492 (2000).
- 34) PK Das, IY Ruzmaikina & LA Belfiore, **Polymeric Complexes with f-Block Salts from the Lanthanide Series that Exhibit Extraordinary Glass Transition Temperature Enhancement**, *Polymer Preprints*, **41** (1), 407 (2000).

Peer Reviews Provided by LA Belfiore

Manuscripts submitted for publication in technical journals---68 (through 02/15/2007)
 Proposals submitted for research funding---31 (through 11/07/2005)

Technical Presentations (92)

(asterisks * indicate 29 invited presentations)

| Date | Conference/Industrial visit | Location |
|--------|---------------------------------------|--|
| 8/75 | Yale University | New Haven, CT |
| *6/79 | Owens-Corning Fiberglass | Granville, OH |
| 10/80 | Shell Development | Houston, TX |
| 5/81 | Tennessee Eastman Company | Kingsport, TN |
| 8/81 | Kodak Research Laboratories | Rochester, NY |
| *12/84 | Dow Chemical | Freeport, TX (2 presentations) |
| *4/86 | Goodyear Tire & Rubber Company | Akron, OH |
| *12/86 | Exxon---Baytown Polymer Center | Baytown, TX |
| 1/87 | IBM---Almaden Research Center | San Jose, CA |
| *12/87 | Dow Chemical | Midland, MI |
| *8/90 | Tennessee Eastman Company | Kingsport, TN |
| 3/80 | American Physical Society | New York, NY APS Bull. <u>25</u> (3),285 |
| 3/82 | American Physical Society | Dallas, TX APS Bull. <u>27</u> (3),329 |
| 7/87 | Calorimetry Conference | Boulder, CO (2 presentations) |
| *6/88 | Akron Polymer Conference | Akron, OH |
| 8/83- | Rocky Mountain Conference on | Denver, CO (5 presentations) |
| 8/89 | Solid State NMR Spectroscopy | 1983,'84,'86,'87,'89 |
| 3/85 | American Institute of Chemical Engrs. | Houston, TX |

| | | |
|--------|---|-------------------------------------|
| 11/87 | American Institute of Chemical Engrs. | New York, NY |
| 11/89 | American Institute of Chemical Engrs. | San Francisco, CA (2 presentations) |
| 12/89 | Pacific Polymer Federation | Maui, Hawaii |
| 12/89 | Inter. Chem. Congress---Pacific Basin | Honolulu, Hawaii |
| *8/91 | Gordon Conference on Ionomers | New London, New Hampshire |
| *9/91 | 1 st N. Am. Conf. Polym. Blends & Alloys | Hilton Head Island, South Carolina |
| *11/91 | Pacific Polymer Federation | Otsu, Japan |
| 11/91 | University of Tokyo | Tokyo, Japan |
| *11/91 | Asahi Chemical Industry | Kawasaki & Mizushima, Japan |
| *4/92 | Exxon Research & Engineering | Annandale, NJ (2 presentations) |
| *4/92 | Hoechst Celanese Research Division | Summit, NJ |
| *4/92 | Goodyear Tire & Rubber Company | Akron, OH |
| *4/92 | Kodak Research Laboratories | Rochester, NY |
| 7/94 | IUPAC-Symposium on Macromolecules | Akron, OH |
| 11/94 | American Institute of Chemical Engrs. | San Francisco, CA |
| *2/95 | Goodyear Tire & Rubber Company | Akron, OH |
| *2/95 | Exxon Research & Engineering | Annandale, NJ |
| *2/95 | Polytechnic University---Polymer Science | Brooklyn, NY |
| 12/95 | Pacific Polymer Federation | Kauai, Hawaii |
| *12/95 | Inter. Chem. Congress---Pacific Basin | Honolulu, Hawaii |
| *7/96 | Polymer-Solvent Complexes | Meyrueis (Lozère), France |
| *4/98 | Goodyear Tire & Rubber Company | Akron, OH |
| *4/98 | Lehigh University | Bethlehem, PA |
| 6/01 | United Engr. Foundation, Chem Rx. Engr. | Barga, Italy |
| 10/03 | NSF Materials Chemistry Workshop | Tempe, AZ |
| *08/04 | Engr. Foundation, Applied Nanoparticles | Davos, Switzerland |
| 10/06 | CNRS; Institut Charles Sadron | Strasbourg, France |

| Date | American Chemical Society | Location |
|-------------|---|-----------------------------------|
| 10/81 | Regional Meeting | Rochester, NY |
| 8/83 | National Meeting | Washington, DC |
| 4/84 | National Meeting | St. Louis, MO (2 presentations) |
| 8/84 | National Meeting | Philadelphia, PA |
| 9/85 | National Meeting | Chicago, IL (2 presentations) |
| 4/86 | National Meeting | New York, NY (2 presentations) |
| *6/86 | Regional Meeting | Denver, CO (3 presentations) |
| 4/87 | National Meeting | Denver, CO (3 presentations) |
| 9/87 | National Meeting | New Orleans, LA |
| 3/88 | Composites Workshop | Jackson, WY |
| 6/88 | National Meeting | Toronto, CANADA (2 presentations) |
| 11/88 | 14 th Biennial-International Symposium | San Diego, CA |
| 9/89 | National Meeting | Miami Beach, FL (3 presentations) |

| | | |
|--------|------------------------------------|------------------------------------|
| 4/90 | National Meeting | Boston, MA (4 presentations) |
| 8/91 | National Meeting | New York, NY |
| *4/92 | National Meeting | San Francisco, CA |
| 3/93 | National Meeting | Denver, CO |
| 3/94 | National Meeting | San Diego, CA |
| 6/94 | Regional Meeting | Anchorage, Alaska |
| 2/95 | Organic/Inorganic Polymer Workshop | Napa Valley, CA (2 posters) |
| 3/96 | National Meeting | New Orleans, LA |
| *8/96 | National Meeting | Orlando, FL |
| 4/97 | National Meeting | San Francisco, CA |
| 3/2000 | National Meeting | San Francisco, CA (2 presentation) |

Courses Taught (number of times in parenthesis, thru Spring 2007)

@ Colorado State University, Department of Chemical Engineering

| | | | |
|-----|-------------|--|-----------------|
| 1) | Ch 331 (7) | Fluid Mechanics & Momentum Transfer | Juniors |
| 2) | Ch 333 (11) | Momentum & Heat Transfer Laboratory | Juniors |
| 3) | Ch 443 (10) | Mass Transfer Laboratory | Seniors |
| 4) | Ch 406 (14) | Introduction to Transport Phenomena | Senior/Graduate |
| 5) | Ch 420 (9) | Chemical Reactor Design | Juniors/Seniors |
| 6) | Ch 480 (1) | Introduction to Applied Polymer Science | Juniors/Seniors |
| 7) | Ch 501 (2) | Classical & Statistical Thermodynamics | Graduate |
| 8) | Ch 502 (8) | Chemical Kinetics & Reactor Design | Graduate |
| 9) | Ch 503 (6) | Fundamentals of Transport Phenomena | Graduate |
| 10) | Ch 514 (9) | Solid State Properties of Macromolecules | Senior/Graduate |
| 11) | Ch 523 (4) | Thermodynamic Separation Processes | Graduate |
| 12) | Ch 603 (7) | Graduate Topics in Mass Transfer | Graduate |

Textbook Development

Transport Phenomena for Chemical Reactor Design (2003, ISBN 0-471-20275-4)

884 pages, John Wiley & Sons Publishing Co., Hoboken NJ

Copies sold (as of 08/31/2006): 838 hard cover, 532 electronic

plus 132 pages of corrections, problem solutions, and new ideas (Errata & Corrigenda)

also; 180 pages of *Introductory Concepts in Transport Phenomena*

Physical Properties of Macromolecules (779 pages, 02/11/2007)

PhD Theses Directed

@ Colorado State University, Department of Chemical Engineering

| | | | |
|----|--|----------------|-----------|
| 1) | Pronab K. Das | September 1996 | 274 pages |
| | Reactive Blending in Polymeric Systems via Metal-Ligand Coordination Chemistry | | |

- 2) Mary Pat McCurdie November 1997 244 pages
Solid State Complexes of Poly(α -amino acids) with Transition Metal Chlorides

MS Theses Directed

@ Colorado State University, Department of Chemical Engineering

- 1) Ashutosh A. Patwardhan August 1986 83 pages
Predicting Miscibility in Polymer Systems---A Group Contribution Approach
- 2) Rakesh J. Shah June 1987 149 pages
Ionomer Morphology and Their Composites
- 3) Seong-Young Lee March 1988 118 pages
Convective Diffusion in Heterogeneous Catalytic Reactors with Rectangular Cross-Section & Non-Uniform Catalyst Activity
- 4) Chih-Min Cheng August 1989 115 pages
Solid State Phase Behaviour of Hydrogen-Bonded Polymer Blends
- 5) Yinghua Wang October 1991 91 pages
Metal-Ligand Coordination in Multicomponent Polymer Blends
- 6) Hugh R. J. Graham November 1992 101 pages
Unusual Polymer Blends that Exhibit Synergistic Physical Properties
- 7) Mary Pat McCurdie October 1994 120 pages
Enhancement of Thermal and Mechanical Properties of Several Polymeric Systems via Coordination with Transition Metals
- 8) Erik M. Indra August 1997 112 pages
Transition Metal Compatibilization of Immiscible Polymer Blends
- 9) Kurt Goncher November 1997 50 pages
Physicochemical Properties of Interpenetrating Polymer Networks
- 10) Jin-Koo Lee January 2000 103 pages
Compatibilization of Polymer-Polymer and Polymer-Ionomer Blends via Palladium Complexation
- 11) Jeremiah James Way May 2003 105 pages

Interpellet Axial Dispersion and External Mass Transfer Resistance in Heterogeneous Packed Catalytic Tubular Reactors: A Simulation-Based Study

- 12) Li Zhang April 2004 77 pages
Design of Heterogeneous Packed Catalytic Tubular Reactors with External Resistances to Heat and Mass Transfer
- 13) Cynthia KS Lee June 2004 135 pages
Interactions Between Water-Soluble Polymers and Inorganic Complexes from the Transition Metal and Lanthanide Series
- 14) Sarah Elizabeth Fenton May 2006 150 pages
Synergistic Physicochemical Properties of Chemically Anchored and Plasma-Functionalized Carbon Nanotubes in Macromolecule-Metal Complexes

Scientific Collaborators & Advisees

@ Colorado State University, Department of Chemical Engineering
(cumulative)

- 2 PhD Graduates (PK Das & MP McCurdie)
- 14 MS Graduates (tabulated above)
- 3 Visiting Faculty
 ATN Pires, Federal University of Santa Catarina, Brazil (sabbatical)
 JY Lee, Kyunghee University, Seoul, South Korea (sabbatical)
 D Grow, Chemical Engineering, Univ. of North Dakota (summer fellow)
- 4 Research Associates
 X Wang, PRC
 E Ueda, Asahi Chemical Industry, Japan
 RM Alcântara, Federal University of Santa Catarina, Brazil
 IY Ruzmaikina, Institute of Macromolecular Compounds, St. Petersburg
- 4 Post-Doctoral Research Associates
 C Qin, Chinese Academy of Sciences, Changchun, PRC
 F Bossé, McGill University, Montreal
 PK Das, Colorado State University, Bangladesh
 JG Tang, Shanghai Jiao Tong Univ., PRC & Universität Bayreuth, Germany