

EVANGELOS MANIAS

Associate Professor
Department of Materials Science & Engineering,
325-D Steidle Building,
Penn State University, University Park, PA 16802

phone: (814) 863-2980
fax: (814) 865-2917
<http://zeus.plmsc.psu.edu/>
e-mail: manias@psu.edu

Education:

ARISTOTLE Univ of THESSALONIKI, Greece	Physics	M.Sc.	17 Oct. 1991
University of GRONINGEN; The Netherlands	Chemistry	Ph.D.	17 Nov. 1995

Professional Experience:

Associate Professor	PENN STATE University, University Park, PA	[7/04-]
	Dept. of Materials Science & Eng. (MatSE)		
Endowed Assistant Prof.	PENN STATE University, MatSE dept.	[12/01-	6/04]
Assistant Professor	PENN STATE University, MatSE dept.	[11/98-	12/01]
Postdoctoral Associate	CORNELL University, Ithaca, NY	[11/95-	10/98]
	Dept. of Materials Science, and Cornell CMR		

Synergistic Activities:

-
- Head, Polymer Science and Engineering Program, Penn State U
 - Director, Polymer Nanostructures Lab, Consortium, Penn State MRI
 - Member of Penn State's NSF-MRSEC (IRG1), NSF-NSEC (seed), NSF-IGERT (CEMBA), co-PI in two NSF-NER and one NSF-NUE projects.
 - Diversity & Minority Programs, supervised students(2002-06): WISER [6], SROP [3], REU [3].
 - Industrial Outreach & Funding (2002-06 as PI or co-PI, 19 funded projects, *ca.* \$1.6M): Sumitomo Chemical Japan [2 projects], Kraft [4], Bayer [3], Air Products & Chemicals [2], Coca-Cola, PolySet Packaging, Carmel Olefins Israel, International Fuel Cells.

Selected Honors & Awards:

-
- Associate Professor of Materials Science & Technology, University of Crete, Greece, 2006-
 - Amer. Physical Soc. (APS), J.Polym.Sci.B: Polymer Physics Prize 2006
 - Editorial Board, "Materials Letters", Elsevier, 2005-
 - Summer Faculty Fellow (SFFP), National Academies of Science USA, 2004
 - "Virginia & Phillip Walker" Endowed Professorship, Penn State U, 2001-04
 - Fellow, Dutton e-Education Institute, (renewed 3 times) 2004-
 - Gladys Snyder Teaching Award, 2003
 - Amer. Soc. of Composites, Div. of Polymer Matrix Composites Award, 2002
 - Wilson Research Award, Penn State U, 1999
 - Invited Lecturer, Les Houches Ecole de Physique Theoretique, France, 1995
 - Highest honours (*cum laude*) for Ph.D., National Academy of Sciences, Netherlands, 1995
 - Research Fellow, Dutch Institute of Technology (NWO-STW), The Netherlands 1991-95
 - Honor Graduate, Physics Dept (M.Sc. GPA: 9.2 /10), Aristotle University, 1991
 - National Scholarships for Excellency (IKY), Aristotle University 1989, 1990 & 1991
 - Distinction, Summer School of Advanced Physics, University of Crete, 1990
 - Greek Mathematical Society awards 1985, 1987; Greek Mathematics Olympic team, 1987

Graduated Supervised Students

June W.J. Han ¹	“Mechanical characterization of nanocomposites” (M.Sc. 2000)
Yiu K. Chan	“Molecular Modeling of water in layered-silicates” (M.Sc. 2000)
Jie Chen	“Polymer mechanical properties at the nm scale: An AFM study” (M.Sc. 2000)
Emily Hackett ¹ (CU)	“MD simulations of polymer/silicate nanocomposites” (Ph.D. 2001)
Sirilak Mennakanit	“Inorganic filler development for use in nanocomposites” (M.Sc. 2002)
Kenneth Strawhecker	“AFM studies of polymer/inorganic nanocomposites” (Ph.D. 2002)
Zhiming Wang ²	“Synthesis of functional iPP and sPS and nanocomposites” (M.Sc. 2003)
Vikram Kuppa	“Molecular modeling of PEO/inorganic nanocomposites” (Ph.D. 2003)
Zijie Lu ³	“The nature of water in Nafion fuel cell H ⁺ -exchange membranes” (Ph.D. 2005)
Zhiming Wang ²	“Synthesis of functional PP and PVDF and nanocomposites” (Ph.D. 2005)
Sung-Woo Wee	“PE-based nanocomposites: Crystallization behavior & AFM” (M.Sc. 2006)
Argyrios Karatrantos	“Computer simulations of aqueous PEO solutions” (M.Sc. 2006)

Currently Supervised Ph.D. Students

Hungoo Cho ³	“Development of high-T polymer membranes for fuel cells”
Theresa Foley	“Syntheses & phase behavior of thermosensitive polymers”
Matthew Heidecker	“Synthesis & thermal degradation of nanocomposites”
Charles Hogshead	“T-responsive polymers and their combinatorial brushes”
Alexei Kisselev	“Computer simulations and theory of thermosensitive polymers”
Kiattikhun Manokruang	“pH-responsive polymers in solution and on surfaces”
Ponusa Songtipya ⁴	“Effects of polymers and nanocomposites on biological systems”
Romesh Patel	“Fundamental studies of polycarbonate/glass-fiber Interfaces”

Post-Doctoral Associates

Lixin Wu	“Mechanical properties polypropylene/clay nanocomposites”, 1999-00
Mindaugas Rackaitis	“Synthesis and AFM of thermoresponsive polymer coatings”, 2001-04
Jin Young Huh	“Reactive blending of epoxy/inorganic nanocomposites”, 2001-04
Young-Kyu Chang	“Synthesis of novel polymers for H ⁺ conducting fuel cells”, 2002-03
Hiroyoshi Nakajima	“Synthesis and Properties of polyolefin/clay nanocomposites”, 2002-04
Yang Jiang	“Stretched PET/clay hybrids for bottling applications”, 2002-03
Subhendu Chowdhury	“PE and PP nanocomposite films for packaging applications”, 2005-06
George Polyzos	“Dynamics of nanoscopically confined polymers and liquids”, 2005-
Jinguo Zhang	“Polymer/clay nanocomposites for food-packaging applications”, 2006-

Also participate in Ph.D. committees of 11 more students from other Penn State departments (Chemistry, Physics, Ind. Eng., Mech. Eng., and Eng. Sci.).

co-advised student with: ¹ E.P. Giannelis; ² T.C. Chung; ³ D. Macdonald; ⁴ M.M. Jimenez-Gasco

Professional Associations

ACS	American Chemical Society	ESF	European Science Foundation
APS	American Physical Society	AIChE	American Institute of Chemical Engineers
MRS	Materials Research Society	EEΦ	Hellenic Association of Physicists
FRCA	Fire Retardant Chemicals Assoc.	ASC	American Society for Composites

Selected Publications

[Reviews & Other Prestigious Articles]

1. K. Efimenko, M. Rackaitis, E. Manias, A. Vaziri, L. Mahadevan, J. Genzer, “Nested self-similar wrinkling patterns in skins”, **Nature Materials**, 4: 293-297 (2005).
 2. E. Manias, A. Touny, L. Wu, K. Strawhecker, B. Lu, T.C. Chung “Polypropylene/Montmorillonite Nanocomposites: A Review of Synthetic Routes and Materials Properties”, **Chemistry of Materials**, 13, 3516-3523 (2001). [Review]
 3. S. H. Anastasiadis, K. Karatasos, G. Vlachos, E. P. Giannelis and E. Manias “Confinement-induced ultra-fast local dynamics in nanoscopically confined polymers”, **Phys. Rev. Lett.** 84, 915-919 (2000).
 4. J.W. Gilman, C.L. Jackson, A.B. Morgan, E. Manias, E.P. Giannelis, M. Wuthenow, D. Hilton and S.H. Phillips “Flammability Properties of Polymer/Layered-Silicate Nanocomposites. Polypropylene and Polystyrene Nanocomposites.” **Chemistry of Materials**, 12, 1866-1873 (2000).
 5. E. P. Giannelis, R. Krishnamoorti and E. Manias, “Polymer-Silicate Nanocomposites: Model Systems for Confined Polymers and Polymer Brushes,” **Advances in Polymer Science**, 138, 107- (1998). [Review]
 6. E. Manias, G. Hadziioannou, G. ten Brinke, “Inhomogeneities in sheared ultra-thin lubricating films; NEMD simulations”, **Langmuir**, 12, 4587-4593 (1996). [Review]
-
- [Synthesis & Polymer Surfaces]
7. M. Rackaitis, K. Strawhecker, E. Manias “Water Soluble Polymers with Tunable Temperature-Sensitivity: Solution Behavior” **Journal of Polymer Science B: Polymer Physics**, 40, 2339-2342 (2002.)
 8. K. Efimenko, J.A. Crowe, E. Manias, D.W. Schwark, D.A. Fischer, J. Genzer, “Rapid formation of soft hydrophilic silicone elastomer surfaces”, **Polymer**, 49: 9329-9341 (2005).
 9. M. Kanchanasopa, E. Manias, J. Runt “Solid-State Microstructure of Poly(L-lactide) and L-lactide/Meso-lactide Random Copolymers by Atomic Force Microscopy (AFM)” **Biomacromolecules**, 4, 1203-1213 (2003).
 10. Z. Liang, M. Rackaitis, K. Li, E. Manias, Q. Wang “Micropatterning of Conducting Polymer Thin Films on Reactive Self-assembled Monolayers” **Chemistry of Materials**, 15, 2699-2701 (2003).
 11. Y. Lu, Y. Hu, Z-M. Wang, E. Manias, T.C. Chung “Synthesis of new amphiphilic diblock copolymers containing poly(ethylene oxide) and poly(α -olefin)” **Journal of Polymer Science B: Polymer Chemistry** 40, 3416-3425 (2002).
 12. J.Y. Dong, E. Manias, T.C. Chung “Functionalized syndiotactic polystyrene (s-PS) polymers prepared by the combination of Metallocene catalyst and Borane chemistry” **Macromolecules**, 35, 3439-3447 (2002).
 13. K. Strawhecker, E. Manias, “AFM studies of Poly(vinyl alcohol)/Clay Nanocomposites: Crystallization Behavior”, **Macromolecules**, 34, 8475-8482 (2001).
 14. E. Manias, J. Chen, X. Zhang “AFM study of Polymeric MEMS components with tunable stiffness”, **Applied Physics Letters**, 79, 1700-1704, (2001.)

15. V. Koutsos, E. Manias, G. ten Brinke and G. Hadziioannou, "Atomic force microscopy (AFM) and real atomic resolution." **Europhysics Letters**, *26*, 103 (1994).

16. M.C. Costache, D. Wang, M.J. Heidecker, E. Manias, C.A. Wilkie, "The thermal degradation of poly(methyl methacrylate) nanocomposites with montmorillonite, layered double hydroxides and carbon nanotubes", **Polymers for Advanced Technologies**, *17*, 272-280 (2006).
17. E. Bernardo, P. Colombo, E. Manias, "SiOC glass modified by montmorillonite clays", **Ceramics International**, *32*, 679-686 (2006).
18. F.M. Uhl, Q. Yao, H. Nakajima, E. Manias, C.A. Wilkie, "Expandable Graphite/ polyamide-6 nanocomposites." **Polymer Degradation and Stability**, *89*, 70-84 (2005).
19. Z.M. Wang, H. Nakajima, E. Manias, and T.C. Chung, "Exfoliated PP/Clay Nanocomposites Using Ammonium-Terminated PP as the Organic Modification for Montmorillonite." **Macromolecules** *36*, 8919-8922 (2003).
20. K. Strawhecker, E. Manias, "Crystallization Behavior of Poly(ethylene oxide) in the Presence of Na⁺ Montmorillonite Fillers" **Chemistry of Materials**, *15*, 844-849 (2003).
21. Z.M. Wang, T.C. Chung, J.W. Gilman, and E. Manias, "Melt-Processable syndiotactic-Polystyrene/montmorillonite Nanocomposites." **J. Polym.Sci. B: Polym. Phys.** *41*, 3173-3187 (2003).
22. R. Xu, E. Manias, A.J. Snyder, J. Runt, "Low permeability biomedical polyurethane nanocomposites" **J. of Biomedical Materials Research**, *64A*, 114-119 (2003).
23. H.J.M. Hanley, C.D. Muzny, D.L. Ho, C.J. Glinka, E. Manias, "A SANS study of organo-clay dispersions." **Int. Journal of Thermophysics**, *22*, 1435-1448 (2001).
24. R. Xu, E. Manias, A.J. Snyder, J. Runt, "New Biomedical Poly(urethane urea)-Layered Silicate Nanocomposites", **Macromolecules**, *34*, 337-339 (2001).
25. K.E. Strawhecker, and E. Manias, "Structure and Properties of Poly(vinyl alcohol)/Na Montmorillonite Nanocomposites.", **Chemistry of Materials**, *12*, 2943-2949 (2000).
26. E. Manias, H. Chen, R. Krishnamoorti, J. Genzer, E. J. Kramer, E. P. Giannelis, "Intercalation Kinetics of Long Polymers in 2 nm Confinements." **Macromolecules**, *33*, 7955-7966 (2000).
27. D. B. Zax, D.-K. Yang, R. A. Santos, H. Hegemann, E. P. Giannelis and E. Manias, "Dynamical Heterogeneity in Nanoconfined Poly(styrene) Chains; NMR spectroscopy", **J. Chem. Phys.** *112*, 2945-2951 (2000).

28. V. Kuppala, E. Manias, "Effect of Cation Exchange Capacity on the Structure and Dynamics of Poly(ethylene oxide) in Li⁺ Montmorillonite Nanocomposites." **J. Polym. Sci. B: Polym. Phys.**, in press, (2005).
29. V. Kuppala, S. Menakanit, R. Krishnamoorti, E. Manias "Simulation insights on the structure of nanoscopically confined poly(ethylene oxide)" **J. Polym.Sci. B: Polym. Phys.** *41*, 3285-3298 (2003).
30. V. Kuppala, T.M.D. Foley, E. Manias "Segmental dynamics of polymers in nanoscopic confinements, as probed by simulations of polymer/layered-silicate nanocomposites" **Eur. Phys. J. E** *12*, 159-165 (2003).

31. V. Kuppa, E. Manias “Dynamics of PEO in nanoscale confinements: A computer simulations perspective” **J. Chem. Phys.** *118*, 3421-3429 (2003).
32. E. Manias, V. Kuppa “Computer simulations of intercalated PS: The origins of fast segmental dynamics in 2nm-thin confined polymers” **Eur. Phys. J. E**, *8*, 193-199 (2002).
33. V. Kuppa, E. Manias “Computer simulations of PEO/Layered-Silicate Nanocomposites: 2. Lithium Dynamics” **Chemistry of Materials**, *14*, 2171-2175 (2002).
34. E. Manias, V. Kuppa, D.B. Zax, D-K. Yang, “Dynamics of nano-confined Polystyrene: A Molecular modeling study” **Colloids & Surfaces A**, *187-188*, 509-521 (2001).
35. E. Manias, V. Kuppa, “Molecular Simulations of ultra-confined polymers: Polystyrene intercalated in layered silicates.” **ACS Sympos. Ser.** *804*, 193-207 (2001).
36. E. Hackett, E. Manias, E.P. Giannelis, “Computer Simulation Studies of PEO/Layered-Silicate Nanocomposites”, **Chemistry of Materials**, *12*, 2161-2167 (2000).
37. E. Hackett, E. Manias and E. P. Giannelis, “Molecular dynamics simulations of organically modified layered silicates.” **J. Chem. Phys.** *108*, 7410-7415 (1998).
38. A. Subbotin, A. Semenov, G. Hadziioannou, G. ten Brinke, E. Manias, M. Doi “Theory of nonlinear dynamics of melted polymer layers.” **Macrom.Sym.** *121*,175-186 (1997).
39. E. Manias, I. Bitsanis, G. Hadziioannou and G. ten Brinke, “On the nature of shear thinning in nanoscopically confined films.” **Europhysics Letters**, *33*, 371-376 (1996).
40. E. Manias, G. Hadziioannou, G. ten Brinke, “Nanorheology of strongly confined oligomeric lubricants.” **J of Computer Aided Materials Design**, *3*, 319-328 (1996).
41. A. Subbotin, A.N. Semenov, E. Manias, G. Hadziioannou and G. ten Brinke “Rheology of confined polymer melts under shear flow: strong adsorption limit.” **Macromolecules** *28*, 1511-1515 (1995).
42. A. Subbotin, A.N. Semenov, E. Manias, G. Hadziioannou, and G. ten Brinke “Nonlinear rheology of melts under shear flow.” **Macromolecules** *28*, 3898-3900 (1995).
43. E. Manias, A. Subbotin, G. Hadziioannou and G. ten Brinke, “Adsorption-desorption kinetics in nanoscopically confined oligomer films under shear.” **Molecular Physics**, *85*, 1017-1036 (1995).
44. E. Manias, G. Hadziioannou and G. ten Brinke, “Effect of shear on the desorption of oligomers in nanoscopically confined films.” **J. Chem. Phys.**, *101*, 1721 (1994).
45. E. Manias, G. Hadziioannou, I. Bitsanis and G. ten Brinke, “Stick and slip behaviour of confined oligomer melts under shear.” **Europhysics Letters**, *24*, 99 (1993).

Patents

1. E. Manias, M. Rackaitis, K.E. Strawhecker, “Method for control of temperature-sensitivity of polymers in solution”, **US Patent 7,011,930** (Mar. 14, 2006).
2. E. Manias, M. Rackaitis, K.E. Strawhecker, “Method for control of temperature-sensitivity of polymers in solution”, **US Patent 6,974,660** (Dec. 13, 2005).
3. T.C. Chung, E. Manias, Z.M. Wang, “Exfoliated polyolefin/clay nanocomposites using chain end functionalized polyolefin as the polymeric surfactant”, US Patent Application Serial No. 10/891,358; 2005/0014905 (2005).

Books or Parts of Books

-
1. "Polymer/Metal Interfaces and Defected Mediated Phenomena in Ordered Polymers", editors: E. Manias and G.G. Malliaras, Materials Research Society volume 734 (2003).
_____ [Editor, Book]
 2. "Polymer/Inorganic Nanocomposites", editors: E. Manias and R. Krishnamoorti, Journal of Polymer Science B: Polymer Physics, 41(12), Wiley(2003).
_____ [Editor, Journal's Special Issue]
 3. E. Manias , G. Polizos, and M.J. Heidecker, "Polymer nanocomposite technology, fundamentals", in "Polymer Nanocomposite Flammability" editors: by A.B. Morgan and C.A. Wilkie, John Wiley, Hoboken, NJ (2006).
_____ [Author, Book Chapter]
 4. E. Manias , G. Polizos, and M.J. Heidecker, "Limitations of mechanical improvement for high-stiffness polymers layered-inorganic nanocomposites", in: "Polymer Nanocomposites", editor: D. Misra, TMS editions, Warrendale, PA, (2006).
 5. K.E. Strawhecker, E. Manias, "Nanocomposites based on water soluble polymers and unmodified smectite clays", in: "Polymer nanocomposites", editors: Y Mai and Z Yu, Woodhead Publishing Ltd, Cambridge, UK, (2006).
 6. E. Manias , "Novel Organic Modifications for Silicates and Clays for Nanocomposite Formation" in: "Additives 2003" editor: A. Golovoy, 10 pages, Exec. Conf, San Francisco, CA (2003).
 7. E. Manias , A.Z. Panagiotopoulos, D.B. Zax, E.P. Giannelis, "Structure and Dynamics of Nanocomposite Polymer Electrolytes" in: "CMS Workshop Lectures" vol. 10, 185-205, editor: Allannah Fitch, CMS, W. Lafayette, IN, (2002).
 8. E. Manias , "The Role of Nanometer-Thin Layered Inorganic Fillers as Flame Retardants in Polymers" in: "Advances in Fire Retardant Chemicals" 8 pages, FRCA, Lancaster, PA, (2002).
 9. E. Manias , V. Kuppa, "Molecular Simulations of Ultra-Confined Polymers. Polystyrene Intercalated in Layered Silicates" in: "Polymer Nanocomposites: Synthesis, Characterization, and Modeling" chapter 12, pp 193-207, Oxford University Press, New York, (2001).
 10. E. Manias , "Origins of the Materials Properties Enhancements in Polymer/Clay Nanocomposites. Focus on Polypropylene/Montmorillonite Hybrids" in: "Nanocomposites 2001, Delivering New Value to Plastics" 12 pages, ECM publications, IL, (2001).
 11. E. Manias , "Concurrent Changes of Various Materials Properties in Polymer/Clay Nanocomposites" in: "Advanced Composites" 16 pages, Technomic Publishing, VA, (2001).
 12. E. Manias , D.B. Zax, A.Z. Panagiotopoulos, E.P. Giannelis, "Polymer/Silicate Nanocomposites as Novel Electrochemistry Systems" CMS shortcourse lectures, Clay Mineral Society, Chapter 6, 185-205 (2000).
 13. S.H. Anastasiadis , K. Karatasos, G. Vlachos, E.P. Giannelis, E. Manias , "Confinement Effects on the Local Motion in Nanocomposites" Dynamics in Small Confining Systems IV, pp 125-130, Materials Research Society (1999).

14. J.W. Gilman , T. Kashiwagi, S. Lomakin, P. Jones, J. Lichtenham, E.P. Giannelis, E. Manias , “Polymer Layered-Silicate Nanocomposites: Polyamide-6, Polypropylene and Polystyrene” in “New Advances in Flame Retardant Technologies” pp 9-22, Fire Retardants Chemical Association, Lancaster, PA (1999).
15. J.W. Gilman , T. Kashiwagi, M. Nyden, J. Brown, C. Jackson, S. Lomakin, E.P. Giannelis, E. Manias , “Flammability studies of Polymer/Layered Silicate Nanocomposites: Polyolefins, Epoxy and Vinyl-Ester Resins”, in: “Chemistry and Technology of Polymer Additives” S. Al-Malaika, C.A. Wilkie (editors) Blackwell Science, ISBN 0-632-05338-0, Chapter 14, pp 249-265, Oxford (1999).
16. E. Manias , E.P. Giannelis, “The Nature of Nanometer-Thick Lubricating Films” in “Fundamentals of Nanoindentation and Nanotribology” Materials Research Society volume 522, 165-169, MRS. (1999).
17. J.W. Gilman , T. Kashiwagi, S. Lomakin, E. Manias , J. Lichtenham, P. Jones, “Nanocomposites: Radiative Gasification and Vinyl Polymer Flammability” in: “Fire retardancy of Polymers” M. Le Bras, G. Camino, S. Bourbigot, R. Delobel (editors) Royal Society of Chemistry, ISBN 0-85404-738-7, London, pp 203-221 (1998).

-
- [Author, Selected Peer-Reviewed Conference Proceedings]
18. B.L. Farmer, K.L. Anderson, R.A. Vaia, and E. Manias, "Deformation and failure of polymer-layered silicate nanocomposites: Course grained computer simulations", PMSE Preprints 229, 832064 Mar., 2 pages (2005).
 19. E. Manias, V. Kuppa, G. Polizos, "Segmental dynamics of polymers in extreme (1-2nm slit-pore) confinements", PMSE Preprints 229, 824069 Mar., 2 pages (2005).
 20. D. Macdonald, Z. Lu, H. Cho, and E. Manias, "State of Water in Nafion 117 Membranes Studied by Microwave Dielectric Relaxation Spectroscopy", Proceeding of the Electrochemical Society, 207th National Meeting, 6 pages (2005).
 21. K.L. Anderson, E. Manias, R.A. Vaia, and B.L. Farmer, "Dispersion of Single Walled Carbon Nanotubes by Sodium Dodecyl Sulfonate Surfactants in Aqueous Solution: Molecular Dynamics Simulations:", PMSE Preprints 230, 889396, Aug., 2 pages (2005).
 22. E. Manias, M. Rackaitis, T.M.D. Foley, K. Efimenko, and J. Genzer, "Combinatorial polymer brushes formed by temperature-responsive polymers with tunable onset of response", Polymer Preprints 230, (057) 891777 Aug., 2 pages (2005).
 23. H. Nakajima, E. Manias, "Effect of nm-Thin Inorganic Layered Fillers on the Crystallization of Polymer Nanocomposites" PMSE Preprints Aug. 22-24, 2 pages (2004).
 24. M. Rackaitis, E. Manias, "Temperature-Responsive Polymers with Tailored onset of Response" MRS Symp. Proc., 785, D8.3, 6 pages (2003).
 25. V. Kuppa, E. Manias, "Local Dynamics of Polymers in 1 and 2nm Slit-Pores", MRS Symp. Proc., 790, P9.9, 6 pages (2003).
 26. H. Nakajima, Z-M. Wang, K. Strawhecker, E. Manias, "Effect of nm-Thin Inorganic Layered Fillers on the Crystallization of Polymer Nanocomposites" MRS Symp. Proc., 791, Q4.10, 6 pages (2003).
 27. H. Cho, Z. Lu, Y. Chang, E. Manias, and D.G. Macdonald, "Poly(ether sulfone) - Proton Conducting Polymers for High Temperature Fuel Cells" Electrochemical Society, 204th National Meeting, (2003).
 28. Z. Lu, E. Manias, and D.G. Macdonald, "Dielectric Relaxation Spectroscopy Studies on Water-Saturated Nafion 117 Membranes" Electrochemical Society, 204th National Meeting, (2003).
 29. E. Manias, "AFM Investigations of Polymer Crystallization next to Inorganic Fillers" 46th Annual Report on Research, ACS/Petroleum Research Fund, volume 46, 2 pages (2002).
 30. R. Xu, E. Manias, A.J. Snyder, J. Runt, "Low Permeability Biomedical Polyurethane Nanocomposites for Cardiac Assist Devices" Society for Biomaterials 28th Annual Meeting Transactions, 12(2), 11 (2002).
 31. V. Kuppa, E. Manias, "Local Dynamics of Poly(ethylene oxide) Confined in 1nm Slits" MRS Symp. Proc., vol.738, pp. G7-34 (2002).
 32. V. Kuppa, E. Manias, "Computer Simulation of Li/Poly(ethylene-oxide) in Nanometer Confinements" PMSE Preprints, 85, 556 (2001).
 33. J. Runt, D.M. Weisberg, R. Xu, J.T. Garret, E. Manias, A. Benesi, B. Gordon III, A.J. Snyder, "Biomedical Poly(urethane) Block-Copolymers: Nanocomposites and Polyisobutylene Comb Polymers" Polymer Preprints, 42, 99 (2001).
 34. E. Manias, D.B. Zax, and S.H. Anastasiadis, "Polymer/Silicate Intercalated Nanocomposites: Confinement Induced Segmental Dynamics in 2nm Slits" PMSE Preprints 82, 259 (2000).
 35. E. Manias, A. Touny, L. Wu, B. Lu, K. Strawhecker, J.W. Gilman, T.C. Chung, "Polypropylene/Silicate Nanocomposites, Synthetic Routes and Materials Properties" PMSE Preprints, 82, 282 (2000).

36. S.H. Anastasiadis , K. Karatasos, G. Vlachos , E.P. Giannelis, and E. Manias , “Local Dynamics under Severe Confinement in Nanocomposites” PMSE Preprints. 82, 211, (2000).
37. C. A. Fonesca , K. E. Strawhecker, E. Manias , I. R. Harrison , “Poly(vinyl alcohol)/Sodium Montmorillonite Nanocomposites” ANTEC Proceedings, Orlando, Florida, pp. 2416-2422 (2000).
38. E.P. Giannelis , H Chen , J Demeter, E Manias , N Hadjichristidis, A Karim, “Mobility of Polymers in Nanometer Slits: Kinetics of Polymer Melt Intercalation in Layered Silicates” Polymer Preprints. 48(2), 91 (1999).
39. A.B. Morgan ; Giannelis, E. P.; Gilman, J. W. ; Wuthenow, M., Manias E. , “Flammability and Thermal Stability Studies of Polymer Layered-Silicate (Clay) Nanocomposites. Part 2.” Flame Retardancy BCC Conf. Proceed. 10, 1-11, (1999).
40. T. Kashiwagi ; Nyden, M. R.; Brown, J. E.; Gilman , J. W.; Jackson, C. L.; Lomakin, S. M., Manias E. , “Flammability Studies of Polymer/Layered Silicate Nanocomposites” Annual Conference on Fire Research [editor K.A. Beall], pp 37ff , (1999).
41. E.P. Giannelis; Gilman, J. W.; M., Manias E. , “Nanocomposites: Radiative Gasification And Vinyl Polymer Flammability” Proc. Int. Wire Cable Symp. 46, 761-774 (1998).
42. E.P. Giannelis , Gilman , J. W.; Manias E. , “Flammability studies of Polymer Layered Silicate Nanocomposites” Int. SAMPE Symp. Exhib. 43, 1053-1066 (1998).
43. E. Manias , “Polymer wetting in 2nm wide pores: The Effect of Polymer-Surface Interactions” American Chemical Society Colloids, 216(1), 76-79 (1998).
44. E. Manias , Subbotin A, Belder GF, Hadziioannou G , ten Brinke G , “Shear Enhanced Desorption In Nanoscopically Confined Films” Polymer Preprints 209(2), 17-19 (1995).
45. RK Ballamudi, Koopman DC, Manias E , Bitsanis IA , “Crystallization At Solid-Liquid Interfaces” Polymer Preprints 207(2), 192-194 (1994).
46. E. Manias, Belder GF, Hadziioannou G , ten Brinke G , “Molecularly Thin Oligomer Films Under Shear - MD Simulations” Polymer Preprints 207(2): 213-215 (1994).
47. H. Cho, Z. Lu, Y. Chang, E. Manias , and D.G. Macdonald, “High-Temperature PEMFC: I. Poly(vinyl alcohol)(PVA)” Hydrogen Day, University Park, PA; 2 pages (2003).
48. H. Cho, Z. Lu, Y. Chang, E. Manias , and D.G. Macdonald, “High-Temperature PEMFC: II. Poly(ether sulfone)(PES)” Hydrogen Day, University Park, PA; 2 pages (2003) .
49. M. Rackaitis, E. Manias , “Application of Stimuli Responsive Polymers in Biology and Medicine” XII World Lith. Sci. Conference Chicago, IL, 5 pages (2003).
50. E. Manias , J.Y. Huh, Z-M. Wang, L. Wu, V. Kuppaa, “Multifunctional Polymer/ Inorganic Nanocomposites” Proceedings of the 5th ICIM, 8 pages (2003).
51. M. Rackaitis, E. Manias , “Temperature-Responsive Polymers for Biological Applications” Intern. Conf. for Intelligent Materials, 7 pages (2003).
52. V. Kuppaa, E. Manias , “Computer Simulation of Li/Poly(ethylene-oxide) in Nanometer Confinements” Polymeric Materials: Science & Engineering, 85, 556-558, (2001).
53. E. Manias , D.B. Zax, and S.H. Anastasiadis “Polymer/Silicate Intercalated Nanocomposites: Confinement Induced Segmental Dynamics in 2nm Slits” Polymeric Materials: Science & Engineering, 82, 259-260 (2000).
54. E. Manias , A. Touny, L. Wu, B. Lu, K. Strawhecker, J.W. Gilman, T.C. Chung “Polypropylene/Silicate Nanocomposites, Synthetic Routes and Materials Properties” Polymeric Materials: Science & Engineering, 82, 282-283 (2000).
55. S.H. Anastasiadis , K. Karatasos, G. Vlachos , E.P. Giannelis, E. Manias , “Local Dynamics under Severe Confinement in Nanocomposites” Polymeric Materials: Science & Engineering, 82, 211-212 (2000).

Invited Presentation in Major International Conferences

[Invited Only, Selected Conferences]

1. E. Manias, "Molecular Dynamics simulations of PS and PEO in 1nm slit pores" Symposium on "Polymers in Confined Environments", ACS National Meeting, San Diego; CA, 2005.
2. E. Manias, (**Keynote** for the: "Mechanical Properties" session) "Limitations on the Possible Mechanical Improvements for Polymer/Clay Nanocomposites", Symposium on "Polymer/Inorganic nanocomposites", ACS National Meeting, San Diego; CA, 2005.
3. E. Manias, "Dielectric Spectroscopy and Computer Simulations studies of Polymers in nanoscopic Confinements", Div. of Non-Metallic materials, MLBP/AFRL, WPAFB, OH, 2005.
4. E. Manias, "Design & Realization of Temperature Responsive Water-Soluble Polymers with tunable onset of Response", Dillon Medal Symposium (Organizer: Composto) APS National Meeting (Dillon Medal session), Los Angeles; CA 2005.
5. E. Manias, "State of the Art of Polymer/Clay and Polymer/Inorganic Nanocomposites," 32nd International Conference of the Israel Polymers and Plastics Society, **Keynote-Plenary** Tel-Aviv, ISRAEL, 2004.
6. E. Manias, "Segmental Dynamics of Polymers in Extreme (1-2nm Slit Pore) Confinements", 56th SE Regional ACS Meeting, Research Triangle Park, NC, 2004.
7. E. Manias, "Polymer/Inorganic Nanocomposites for Biomedical Applications," TMS National Meeting, Charlotte, 2004.
8. E. Manias, M. Rackaitis, "Temperature-Responsive Polymers for Smart-Drug-Delivery Systems and Devices," TMS National Meeting, Charlotte, 2004.
9. E. Manias, "An Overview of the Polymer/Clay Nanocomposites, Challenges and Opportunities for Industrial Applications," National Starch & Co., Bridgewater, NJ, 2004.
10. E. Manias, "Temperature-Responsive Polymers in Aqueous Solutions," Invited Lectures on Nanotechnology, Materials & Manufacturing Dir., AFRL, WPAFB, OH, 2004.
11. E. Manias, H. Nakajima, "Effect of Inorganic Nanoparticles on the Crystallization of Polymers, An Overview," Hoffman Memorial Symposium, ACS National Meeting, Philadelphia, 2004.
12. E. Manias, "Novel Functionalizations for Inorganic Particles as Fillers in Polymer Nanocomposites," Polymer Additives 2003, San Francisco, 2003.
13. E. Manias et al, "Effect of nm-Thin Inorganic Layered Fillers on the Crystallization of Polymers," MRS National Meeting, Boston, 2003.
14. E. Manias et al, "Multifunctional Polymer/Inorganic Nanocomposites," 5th International Conference on Intelligent Materials University Park, 2003.
15. E. Manias, "Crystallization Behavior of Polymers in Presence of Inorganic Nanofillers," American Chemical Society National Meeting, New Orleans, 2003.
16. E. Manias, "New Perspectives of the Nature of Polymers in Nanoscopic Confinements," 2nd Intern.Workshop on Dynamics in Confinements, **Plenary**, Grenoble, FRANCE, 2003.
17. E. Manias, "An Overview of New AFM Techniques for Polymer Interface Evaluation," Materials Research Society National Meeting, Boston, 2002.
18. E. Manias, "Advances in Polymer/Silicate Nanocomposites," American Society for Composites Nat. Meeting, RESEARCH AWARD LECTURE, West Lafayette, IN, 2002.
19. E. Manias, "Novel Functionalizations of Inorganic Fillers for Nanocomposite Formation," Clay Mineral Society South. Section, Gonzales, TX, 2002.
20. E. Manias, "The Role of nm-Sized Inorganic Fillers as Flame Retardants in Polymers," Fire Retardant Chemicals Assoc. National Meeting, San Antonio, TX, 2002.
21. E. Manias, "Concurrent Change of Materials Properties in Polymer/Clay Nanocomposites," American Society for Composites, NanoTechnology Symposium, Blacksburg, VA, 2001.

22. E. Manias, "Computer Simulations of Nanoscopically Confined Polymer Electrolytes" American Chemical Society National Meeting, PMSE division, Chicago, 2001.
23. E. Manias, "Mobility of Long Polymers in 2-nm Slit-Pores," American Chemical Society National Meeting of the Colloids Division, Pittsburgh, PA, 2001.
24. E. Manias, "The State of the Art Science of Polymer/Clay Nanocomposites," "Nanocomposites 2001" **Plenary**, Chicago, 2001.
25. E. Manias, V. Kuppa "Molecular Simulations of Nanoscopically Confined Polystyrene TRI International Symposium on Confined Systems, Princeton, NJ, 2000.
26. E. Manias, "Polypropylene/Silicate Nanocomposites, Synthetic Routes and Materials Properties" American Chemical Society National meeting **Plenary**, Div. of Polymers, San Francisco, CA, 2000.
27. E. Manias, "Confinement-Induced Segmental Dynamics of Polymers in 2nm Slits" American Chemical Society National Meeting, Div. of PMSE, San Francisco, CA, 2000.
28. E. Manias, H. Chen, E. Giannelis, "Polymer Wetting in 2nm-Wide Slit Pores" American Chemical Society National Meeting, Div. of Phys. Chem, Boston, MA, 1999.
29. E. Manias, D. Zax, A.Z. Panagiotopoulos, E.P. Giannelis, "Polymer Electrolytes in nm Confinements," Clay Mineral Society National Meeting, West Lafayette, IN, 1999.
30. E. Manias, "The Nature of Nanometer-Thick Lubricating Films," Materials Research Society(MRS) National Meeting, San Francisco, CA, 1999.
31. E. Manias, E.P. Giannelis, "Segmental Dynamics of Polystyrene in 2nm Thin Slit-Pores; NMR and Molecular Modeling," American Physical Society National Meeting, Los Angeles; CA, 1998.
32. E. Manias, E.P. Giannelis, "Diffusion of High Molecular Weight Polymers in nm-Thin Slit-Pores, American Chemical Society National Meeting (PHYS), Boston; MA, 1998.
33. E. Manias, E.P. Giannelis, "PEO/Na Montmorillonite as a Novel Solid-State Polymer Electrolyte," Materials Research Society National Meeting, Boston; MA, 1997.
34. E. Manias, "Molecular Modeling of Nanoscopically Confined Polymer Films under Shear Flow," Computer Modeling for Industry, Santa Barbara; CA, 1996.
35. E. Manias, "Interfacial and Internal Slippage in Nanoscopically Confined Polymers under High Shear Flow," American Chemical Society National Meeting (RHEO), Anaheim; CA, 1995.
36. E. Manias, "Inhomogeneities in Nanoscopically Confined Polymers under Flow," Dutch Physics Society (FOM) Statistical Physics, Lunteren Conference Centre; NETHERLANDS, 1995.
37. E. Manias, "NEMD Computer Simulations of Boundary Lubrication: The origin of Shear-Thinning under Extreme Confinements," Dutch Chemical Society (SON) Macromolecules, Lunteren Conference Centre; NETHERLANDS, 1995.
38. E. Manias, "Slip and Stick in Nanoscopically Confined Films under Shear," Ecole de Physique Theoretique, on "Molecular confined liquids" Les Houches; FRANCE, 1994.
39. E. Manias, "Structure and Dynamics of Ultra-Confined Oligomers under Flow," Dutch Chemical Society (SON) Macromolecules, Lunteren Conference Centre; NETHERLANDS, 1994.
40. E. Manias, "True Atomic Resolution in Contact AFM," German Physical Society National Meeting, Munster; GERMANY, 1994.
41. E. Manias, "Overview of Boundary Lubrication Polymers," Materials Science Society (MSC) Biannual Meeting, Vlieland; NETHERLANDS, 1993.
42. E. Manias, "NEMD Simulation of Polymer under Shear in Extreme Confinements," 3rd Euroconference on Polymers, Thessaloniki; GREECE, 1993.