

ELENA EVGENIEVNA DORMIDONTOVA
CURRICULUM VITAE

PERSONAL INFORMATION

Date and Place of Birth: July 15, 1968; Moscow, Russia.
Nationality: Russian
Marital Status: single.

PRESENT AFFILIATION:

Department of Macromolecular Science and Engineering
Case Western Reserve University
337 Kent Hale Smith Building
2100 Adelbert Road
Cleveland OH 44106
Phone 216 368 6373
Fax 216 368 4202
E-mail: eed@po.cwru.edu
<http://polymers.case.edu/people/faculty/dormidontova.htm>
<http://elena.case.edu/>

EDUCATION AND SCIENTIFIC DEGREES:

Graduated (B.A., M.S.) from Physics Department Moscow State University, 1991
Ph D in Physics and Mathematics, Physics Department, Moscow State University, 1994
(Supervisor Prof.A.R.Khokhlov)
The title of the thesis is "Conformational Behavior of Complex Polymer Systems"

EMPLOYMENT HISTORY

Researcher
Physics Department MSU, Department of Polymer and Crystal Physics (head Prof.
A.R.Khokhlov) April 1994- September 1996

Postdoctoral Researcher
Department of Polymer Chemistry, University of Groningen,
(lab. of Prof. Ten Brinke) September 1996- October 1999

Postdoctoral Associate
Department of Chemical Engineering and Materials Science, University of Minne-
sota, October 1999-March 2002

Visiting Assistant Professor
Department of Macromolecular Science & Engineering, Case Western Reserve
University, April-June 2002

Assistant Professor
Department of Macromolecular Science & Engineering, Case Western Reserve
University since July 2002

RESEARCH INTERESTS:

Statistical physics of macromolecules, phase behavior (phase stability and thermodynamic ordering) of complex polymer and biopolymer systems: polyelectrolytes, block copolymers, polymer/surfactant systems, hydrogen bonded and associating polymers, polymer micelles (at thermodynamic equilibrium and micellization kinetics), biocompatible and water-soluble polymers (their properties and applications for biomimetics and drug delivery), polymer systems near glass transition temperature, block copolymers of complex architecture as stars, comb, branched polymers; polymer systems under flow fields, polymers adsorbed on surfaces and near interfaces (dynamics and kinetics of self-assembly).

AWARDS/funding

National Science Foundation (NSF) CAREER Award (CHE-0348302): "CAREER: Theoretical Modeling of Head-to-Tail Reversibly Associated Polymers in Solution and at Surfaces"(\$ 510,000 per 5 years)

PUBLICATIONS (peer-reviewed):

ARTICLES:

1. E.E.Dormidontova, A.Yu.Grosberg, A.R.Khokhlov
Intramolecular Phase Separation of a Polymer Chain with Mobile Ligands
Vysokomolek. Soedin. (Polymer Science - USSR) v34, 126, 1992.
2. E.E.Dormidontova, A.Yu.Grosberg, A.R.Khokhlov
Intramolecular Phase Separation of a Polymer Chain with Mobile Primary Structure
Makromol.Chem. Theory. Simul. v.1, 375, 1992
3. E.E.Dormidontova, I.Ya.Erukhimovich, A.R.Khokhlov
Microphase Separation in Poor Solvent Polyelectrolyte Solutions: Phase Diagram
Macromol.Theory Simul. v.3, 661-675, 1994
4. E.E.Dormidontova, I.Ya.Erukhimovich, A.R.Khokhlov
Phase Diagram for Microphase Separation Transition in Poor Solvent Polymer Solutions
Colloid Polym.Sci. v.272, 1486-1497, 1994
5. E.E.Dormidontova, I.Ya.Erukhimovich, A.R.Khokhlov
Nano-Structures in Poor Solvent Polymer Solutions Near Glass Transition Temperature
Macromol. Symp. v.106, 103-117, 1996
6. E.E.Dormidontova, A.R.Khokhlov
Complex Spherical Micelles in A-B-C Block Copolymer Melts
Macromolecules v.30, 1980-1991, 1997
7. K.B.Zeldovich, E.E.Dormidontova, A.R.Khokhlov, T.A.Vilgis
Microphase Separation Transition for Polyelectrolyte Gels in Poor Solvents
J.Phys.II v.7, 627-635, 1997

8. A.R.Khokhlov, E.E.Dormidontova
Self-Assembly in Ion-containing Polymer Systems
Physics-Uspekhi (Uspekhi Phisicheskix Nauk) (review) v.40,109-124, 1997
9. E.E.Dormidontova, G.ten Brinke
Phase Behaviour of Hydrogen Bonding Polymer-Oligomer Mixtures
Macromolecules v.31, 2649-2660, 1998
10. F.J.Esselink, E.E.Dormidontova, G.Hadziioannou
Evolution of Block Copolymer Micellar Size and Structure Evidenced with Cryo Electron Microscopy
Macromolecules v.31, 2925-2932, 1998
11. F.J.Esselink, E.E.Dormidontova, G.Hadziioannou
Redistribution of Block Copolymer Chains between Mixed Micelles in Solution
Macromolecules v.31, 4873-4878, 1998
12. E.E.Dormidontova, G.ten Brinke
Microphase Separation in Hydrogen Bonding Polymer/Surfactant Melts
Colloids and Surfaces A. v.147, 249-262, 1999
13. E.E.Dormidontova
Micellization Kinetics in Block Copolymer Solutions: Scaling Model
Macromolecules, v.32, 7630-7644, 1999
14. E.E.Dormidontova, G.ten Brinke
The Influence of Elongational Flow on Association Rate and Phase Behaviour of Binary Polymer Blends
Macromolecular Symposia, v.149, 23-30, 2000
15. V.Grayer, E.E.Dormidontova, G.Hadziioannou, C.Tsitsilianis
A Comparative Experimental and Theoretical Study between Heteroarm Star and Diblock Copolymers in the Microphase Separated State
Macromolecules v. 33, 6330-6339, 2000
16. E.E.Dormidontova, G.ten Brinke
The Influence of Elongational Flow on Hydrogen Bond Formation and Stability of the Homogeneous Phase of Binary Hydrogen-Bonded Polymer Blends
Macromolecular Symposia v.158, 125-136, 2000
17. E.E. Dormidontova, G.ten Brinke
Association Behavior of Binary Polymer Mixtures under Elongational Flow
J Chem. Phys. v.113 (11), 4814-4826, 2000
18. E.E.Dormidontova, T.P.Lodge
The Order-Disorder Transition and the Disordered Micelle Phase in Sphere-Forming Block Copolymer Melts
Macromolecules v.34 (26), 9143-9155, 2001

19. E.E.Dormidontova
The Role of Competitive PEO-Water and Water-Water Hydrogen Bonding in Aqueous Solutions of PEO
Macromolecules v.35 (3), 987-1001, 2002
20. X.Wang, E.E.Dormidontova, T.P.Lodge The Order-Disorder Transition and the Disordered Micelle Regime for Poly(ethylene-propylene-b-dimethylsiloxane) Spheres,
Macromolecules v.35, 9687-9697, 2002
21. M.M. Feldstein, A.Roos, C. Chevallier, C. Creton, E. E. Dormidontova, Relation of Glass Transition Temperature to the Hydrogen Bonding Degree and Energy in Poly(N-Vinyl Pyrrolidone) Blends with Hydroxyl - Containing Plasticizers: 3. Analysis of Two Glass Transition Temperatures Featured for PVP Solutions in Liquid Poly(ethylene glycol)
Polymer, 44(6), 1819-1834, 2003
22. C.-C.Chen, E.E.Dormidontova, Ring-Chain Equilibrium in Reversibly Associated Polymer Solutions: Monte Carlo Simulations, *Macromolecules*, 37 (10), 3905-3917, 2004
23. E.E.Dormidontova, The Influence of Terminal Groups on Phase Behavior and Properties of PEO in Aqueous Solutions, *Macromolecules*, 37, 7747-7761, 2004
24. C.-C.Chen, E.E.Dormidontova, Supramolecular Polymer Formation by Metal-Ligand Complexation: Monte Carlo Simulations and Analytical Modeling, *JACS*, 126, 14972-14978, 2004 DOI: [10.1021/ja047521x](https://doi.org/10.1021/ja047521x)
25. C.-C.Chen, E.E.Dormidontova *Architectural and Structural Optimization of Protective Polymer Layer for Enhanced Targeting, Submitted to Langmuir in November 2004*
26. C.-C.Chen, E.E.Dormidontova *Computer Modeling of Reversible Adsorption of Head-to-Tail Associating Polymers, in preparation.*
27. E.E.Dormidontova, T.P.Lodge
The Order-Disorder Transition and the Disordered Micelle Phase in Homopolymer/Diblock Copolymer Blends
In preparation

PUBLICATIONS (non-peer-reviewed):

1. Computer modeling of reversible association in metallo-supramolecular polymers (with Chun-Chung Chen), *Polymer Preprints* 45(1), 391, 2004
2. Monte Carlo Simulations of Polymer Brushes Formed by Reversible Head-to-Tail Associating Polymers (with Chun-Chung Chen), *Polymeric Materials: Science and Engineering* 90, 370, 2004

INVITED LECTURES

1. Hydrogen Bonding in Aqueous Solutions of PEO: Theoretical Insights, presented at the APS meeting, Montreal, Canada, March 22-26, 2004
2. Computer Modeling of Targeting Enhancement for Gene/Drug Delivery, presented at the Rolduc Polymer Meeting, Kerkrade, The Netherlands, June 27-30, 2004.
3. Reversibly Associated Polymers: Theoretical Insights, presented at the University of Akron (Physics Department) September 25, 2003.
4. Theoretical and Computer Modeling of Complex Polymer Systems: Associating Polymers and Ligand-Receptor Interactions, presented at John Carroll University (Chemistry Department), December 2004.
5. Theoretical and Computer Modeling of Reversibly Associated Polymers, to be presented at Georgia Institute of Technology (School of Polymer, Textile and Fiber Engineering) fall 2005

ORAL PRESENTATIONS:

1. Microphase Separation as a Result of Hydrogen Bonding Formation in Polymer Surfactant Mixture
Presented at 213 ACS National Meeting, San Francisco, CA, USA, April 13-17 1997
2. Phase Separations in Homopolymer/End-Functionalized Oligomer Mixture
Presented at 8th meeting of "European Macromolecular Club" Leiden, The Netherlands June 1997.
3. Self-Assembly in Complex Polymer System
Presented at Dept. of Physical Chemistry and Colloid Science of Wageningen Agricultural University, The Netherlands, June 20, 1997
4. Theory of Microphase Separation in Complex Polymer Systems: weakly charged polyelectrolyte solutions and gels (weak segregation limit) complex spherical triblock copolymer micelles (strong segregation limit).
Presented at University of Freiburg, (Theoretische Polymerphysik) Germany, June 23, 1997
5. Self-Assembly in Complex Polymer System
Presented at Institute Charles Sadron (CRM-EAHP) CNRS-ULP Strasbourg, France, June 24, 1997
6. Microphase separation as a result of hydrogen bonds formation in polymer-oligomer mixture
Presented at Max-Planck-Institut fuer Polymerforschung, Germany, July 9, 1997

7. Phase Separations in Hydrogen Bonding Polymer/Surfactant Melts
Presented at the meeting “Polymers and Surfactants: association, segregation and competition at interfaces”, North East Wales Institute (NEWI), Wrexham, UK, September 8-10, 1997
8. Micro- and Macrophase Separation in Mixtures of Annealed Comb Copolymers and Oligomers
Presented at Spring APS Meeting, Los Angeles, CA, USA, March 16-20 1998
9. Micro- and Macrophase Separation in Hydrogen Bonding Polymer/Surfactant Melts
Presented at University of Texas at Austin, Texas, March 24, 1998
10. Phase Behaviour of Hydrogen Bonded Polymer Mixtures in Elongational Flow
Presented at FOM (Wetenschappelijke Vergadering Werkgemeenschap Statistische Fysica)-meeting, Lunteren, The Netherlands, January 21-22, 1999
11. Phase Behavior of Hydrogen Bonded Binary Polymer Mixtures Under Elongational Flow
Presented at Centennial APS Meeting, Atlanta, USA, March 20-26, 1999
12. Micellization Kinetics in Diblock Copolymer Solutions
Presented at Centennial APS Meeting, Atlanta, USA, March 20-26, 1999
13. Phase Behavior of Hydrogen Bonded Binary Polymer Mixtures Under Elongational Flow
Presented at Clemson University (School of Textiles, Fibers and Polymer Science), USA, April 1, 1999
14. Phase Behavior of Hydrogen Bonded Binary Blends
Presented at AMOLF (FOM-Institute for Atomic and Molecular Physics) Amsterdam, The Netherlands, April 20, 1999
15. Phase Behavior of Hydrogen Bonded Polymer Mixtures Under Elongational Flow Presented at “EURORHEO99” Conference “Rheology, Rheo-Physics and Flow-Induced Structures of Liquid Crystal Polymers, Surfactants and Block Copolymers”., Sophia Antipolis, France, May 3 - 7, 1999
16. Hydrogen Bonding and Phase Transitions in Binary Polymer Blends: The Influence of Elongational Flow
Presented at the Sixth European Symposium on Polymer Blends, Mainz, Germany, May 16-19, 1999
17. The Influence of Elongational Flow on Hydrogen Bond Formation and Stability of the Homogeneous Phase in Hydrogen-Bonded Polymer Systems
Presented at 58th Prague Meetings on Macromolecules “Rheology of Polymer Systems”, Prague, July 19-22, 1999.

18. Anomalous Aqueous Solution Behavior of PEO: Theoretical Consideration of Hydrogen Bonding
Presented at Polymer Series Seminar at Department of Chemical Engineering and Materials Science, University of Minnesota, April 19, 2000.
19. Experimental and Theoretical Analysis of Heteroarm Star Copolymers vs Diblock Copolymers in the Microphase Separated State (with Valerie Grayer, Georges Hadziioannou, Constantin Tsitsilianis)
Presented at APS Meeting, Seattle, USA, March 12-16, 2001
20. Micelle Disorder Transition in Strongly Asymmetric Diblock Copolymer Melts (with Timothy P. Lodge)
Presented at APS Meeting, Seattle, USA, March 12-16, 2001
21. Theoretical Analysis of Hydrogen Bonding and Behavior of PEO in Aqueous Solutions
Presented at APS Meeting, Seattle, USA, March 12-16, 2001
22. Micelle Disorder Transition in Strongly Asymmetric Diblock Copolymer Melts (with Timothy P. Lodge)
Presented at I' (Industrial Partnership for Research in Interfacial and Materials Engineering) meeting, University of Minnesota, May 14-16, 2001
23. Order-Disorder Transition (ODT) in Micelle-Forming A-B/A and A-B/B Diblock/Homopolymer Blends (with Timothy P. Lodge)
Presented at APS Meeting, Indianapolis, USA, March 18-22, 2002
24. Phase and Association Behavior of Poly(ethylene oxide) (PEO) and its Blends with Polyvinylpyrrolidone (PVP) in Water (with M.M.Feldstein and R.A.Siegel)
Presented at APS Meeting, Indianapolis, USA, March 18-22, 2002
25. The Effect of Terminal Hydroxyl Groups on the Self-Assembly of PEO in Water.
Presented at the APS meeting, Austin, Texas, March 3-8, 2003
26. Theoretical insights on the behavior of reversibly associated polymers, Presented at Department of Chemical Engineering, K.U.Leuven University, Leuven, Belgium, May 21, 2003
27. Theoretical insights on reversibly associating polymers: the example of poly (ethylene oxide/glycol) in aqueous solutions and blends with PVP, Presented at ESPCI, Paris, France, May 22, 2003
28. Theoretical insight on reversibly associating polymers as a source of smart (and bio-compatible) materials, Presented at Rolduc Polymer Meeting, Kerkrade, The Netherlands, May 25-27, 2003
29. Theoretical and computer modeling of reversibly associated polymers: new insight, Presented at Eindhoven University of Technology, The Netherlands, June 2, 2003.

30. Theoretical insights on reversible associations of polyethylene oxide in aqueous solutions and blends, Presented at Max-Planck-Institute for Polymer Research, Mainz, Germany, June 4, 2004.
31. Monte Carlo Simulations of Polymer Brushes Formed by Reversible Head-to-Tail Associating Polymers (with Chun-Chang Chen), presented at the APS meeting, Montreal, Canada, March 22-26, 2004
32. Computer modeling of reversible association in metallo-supramolecular polymers (with Chun-Chung Chen), presented at the ACS meeting, Anaheim, March 28-April 1, 2004
33. Computer modeling of reversible adsorption of head-to-tail associating polymers (with Chun-Chung Chen), presented at the ACS meeting, Anaheim, March 28-April 1, 2004
34. Elena E. Dormidontova, Micellization Kinetics in Diblock Copolymer Solutions, University of Juelich, Germany, July 4, 2004
35. Chun-Chung Chen, Elena E. Dormidontova, Theoretical and Computer Modeling of Supramolecular Polymers, MACRO 2004, 40th IUPAC International Symposium on Macromolecules, Paris 4-9, France, 2004
36. Chun-Chung Chen*, Elena E. Dormidontova, Towards Improving the Targeting Efficiency of End-Functionalized Polymer Brushes, APS meeting, March 21-25, 2005; Los Angeles, CA

POSTERS

1. E.E.Dormidontova, A.Yu.Grosberg, A.R.Khokhlov
Intramolecular Phase Separation in Annealed Heteropolymer Chain with Mobile Primary Structure - Abstracts of International School-Seminar "Modern problems of physical chemistry of macromolecules", Puschino, 95, 1991.
2. E.E.Dormidontova, I.Ya.Eruekhimovich, A.R.Khokhlov Microdomain Structures in Polymer Solutions (Blends) Near Glass Transition Temperature. - Abstracts of International Conference "Nano-Structures and Self-Assemblies in Polymer Systems., St.Peterburg-Moscow, 1995.
3. E.E.Dormidontova, I.Ya.Eruekhimovich, A.R.Khokhlov New Microphase Separations in Complex Polymer Systems. - Abstracts of 145 WE-Heraeus-Seminar "Polymers, Membranes, Soft Matter", Bad Honnef, 1995.
4. E.E.Dormidontova, I.Ya.Eruekhimovich, A.R.Khokhlov Microphase Separation in Weakly Charged Polyelectrolyte Solutions - Abstracts of the First International Symposium on Polyelectrolytes and International Bunsen-Discussion-Meeting "Polyelectrolytes in solution and at interfaces", Potsdam, 1995
5. E.E.Dormidontova, A.R.Khokhlov Cherry- and Raspberry-Type Micelles in Block-Copolymer Melts - Abstracts of The 2nd International Symposium "Molecular Order and Mobility in Polymer Systems" St.Petersburg 1996

6. E.E.Dormidontova, A.R.Khokhlov Polymer Micelle Structures in A-B-C Block Copolymer Melts. - Abstracts of The 6th European Polymer Federation Symposium on Polymeric Materials, Crete, Greece 1996.
7. E.E.Dormidontova,T.P.Lodge Micelle Disordering Transition in Strongly Asymmetric Diblock Copolymer Melts , Gordon Research Conference on Polymer Physics, Connecticut, USA, 2000
8. C.-C.Chen, E.E.Dormidontova, Theoretical Modeling of Reversibly Associated Polymers, Presented at Research Show Case, CWRU, Cleveland, Ohio, April 4, 2003.
9. Chun-Chung Chen, Elena E. Dormidontova, Optimization of targeting for gene delivery: computer modeling, MACRO 2004, 40th IUPAC International Symposium on Macromolecules, Paris 4-9, France, 2004.
10. Chun-Chung Chen, Elena E. Dormidontova, Monte Carlo study of reversibly associated polymers, APS meeting, March 21–25, 2005; Los Angeles, CA