

UIC

COPY

MASTER COPY

KEEP THIS COPY FOR REPRODUCTION PURPOSES

2

REPORT DOCUMENTATION PAGE

Form Approved
OASD No. 0704-0100

Public reporting burden for this collection of information is estimated to average 1 hour per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. Send comments regarding this burden estimate or any other aspect of this collection of information, including suggestions for reducing the burden, to Washington Headquarters Services, Directorate for Information Operations and Reports, 1215 Jefferson Davis Highway, Suite 1204, Arlington, VA 22202-4302 and to the Office of Management and Budget, Paperwork Reduction Project (0704-0100) Washington, DC 20503

AD-A222 826

1. AGENCY USE ONLY (Leave blank) 2. REPORT DATE April 1990 3. REPORT TYPE AND DATES COVERED Final 1/1/90 - 12/31/90

4. TITLE AND SUBTITLE
1990 Gordon Research Conference on Dynamics of Macromolecular and Polyelectrolyte Solutions

5. FUNDING NUMBERS
DAAL03-90-C-0034

AUTHOR(S)
Lee J. Magid

PERFORMING ORGANIZATION NAME(S) AND ADDRESS(ES)
Gordon Research Conferences, Inc.
Univ. of Rhode Island
Kingston, RI 02881

6. PERFORMING ORGANIZATION REPORT NUMBER

DTIC
ELECTE
JUN 15 1990
S D

SPONSORING/MONITORING AGENCY NAME(S) AND ADDRESS(ES)
U. S. Army Research Office
P. O. Box 12211
Research Triangle Park, NC 27709-2211

10. SPONSORING/MONITORING AGENCY REPORT NUMBER
ARO 27736.1-CH-CF

11. SUPPLEMENTARY NOTES
The view, opinions and/or findings contained in this report are those of the author(s) and should not be construed as an official Department of the Army position, policy, or decision, unless so designated by other documentation.

12a. DISTRIBUTION/AVAILABILITY STATEMENT
Approved for public release; distribution unlimited.

12b. DISTRIBUTION CODE

13. ABSTRACT (Maximum 200 words)
The Gordon Research Conference on "Dynamics of Macromolecular and Polyelectrolyte Solutions" was held 12-16 February, 1990, at Casa Sirena Hotel, Oxnard, CA. There were ninety-one scientists participating, including thirty-four academics from the U.S.; twenty-five academics from eight foreign countries; fourteen graduate students and postdoctoral fellows; eighteen representatives from industry (12 domestic, 6 foreign). Twenty oral presentations were given and forty posters were presented. Several themes from the posters were discussed at Thursday evening's session. During both the formal post-presentation discussions and the informal small discussion sessions held in front of posters (and elsewhere in the hotel), the quantity and quality of the discussions were excellent.

14. SUBJECT TERMS
Micelles, Physical Chemistry, Conference Symposia, Polyelectrolyte Solutions, Brownian Particles, Macromolecular Solutions, Microemulsions, Light Scattering

15. NUMBER OF PAGES
16. PRICE CODE

17. SECURITY CLASSIFICATION OF REPORT
UNCLASSIFIED

18. SECURITY CLASSIFICATION OF THIS PAGE
UNCLASSIFIED

19. SECURITY CLASSIFICATION OF ABSTRACT
UNCLASSIFIED

20. LIMITATION OF ABSTRACT
UL

1990 GORDON RESEARCH CONFERENCE ON
DYNAMICS OF MACROMOLECULAR AND POLYELECTROLYTE SOLUTIONS

FINAL REPORT
to the
ARMY RESEARCH OFFICE
DARLCS YC 6-CC 57

The Gordon Research Conference on "Dynamics of Macromolecular and Polyelectrolyte Solutions" was held 12-16 February, 1990, at Casa Sirena Hotel, Oxnard, CA. There were ninety-one scientists participating, including thirty-four academics from the U.S., twenty-five academics from eight foreign countries; fourteen graduate students and postdoctoral fellows, eighteen representatives from industry (12 domestic, 6 foreign). Twenty oral presentations were given and forty posters were presented. Several themes from the posters were discussed at Thursday evening's session. During both the formal post-presentation discussions and the informal small discussion sessions held in front of posters (and elsewhere in the hotel), the quantity and quality of the discussions were excellent.

Most attendees were either chemists, physicists or biologists, with a small representation from chemical engineering or materials science departments. Almost all of the experimentalists in attendance employ scattering techniques in their own research programs, but other techniques such as transient electric birefringence, direct imaging of colloidal dispersions, direct measurement of intermolecular forces by the osmotic stress method, and rheological measurements were well-represented among both attendees and speakers. In addition, there was a good balance between experimentalists and theoreticians.

Two sessions on Monday, 12 Feb., were devoted to the study of organized assemblies (micelles, microemulsions) by small-angle neutron scattering (SANS) measurements on shear-aligned samples, by neutron spin-echo spectroscopy (dynamic SANS) and freeze-fracture electron microscopy. Characterization of the first reverse micellar solution to show polymerlike behavior was announced (Schurtenberger/Magid), and a self-consistent theory to fit static and dynamic SANS data from microemulsion droplet systems was discussed (Farago/Safran). The study of polymer dynamics by neutron spin-echo was the topic of Tuesday evening's session, with an elegant comparison of linear and star-branched polymers being presented by Huang.

In Wednesday evening's session, Maret and Weitz presented an elegant pair of lectures on the theory and applications of dynamic multiple light scattering from Brownian particles. On Friday morning, Pusey considered dynamic light scattering by nonergodic media, in which the scattering elements undergo restricted motions about fixed average positions. Examples are polymer gels and colloidal glasses.

Overall, the Conference was highly successful. The Chairman received several compliments on the scientific program. Furthermore, it was gratifying to observe a number of new collaborations being established.

Vertical administrative form with checkboxes and lines.



A-1

11 of 12

1990 GORDON RESEARCH CONFERENCE
DYNAMICS OF MACROMOLECULAR AND POLYELECTROLYTE SOLUTIONS

Casa Sirena, Oxnard, CA
Lee Magid - Chairman
Peter Pusey - Vice-Chairman

Monday, February 12

S.J. Candau - Discussion Leader
9:00 am

P. Cummins "The Study of Nonionic and Mixed
Nonionic/Cationic Micelles Aligned by A
Shear Flow by Small Angle Neutron
Scattering"

H. Hoffmann "Shear-Induced Micellar Structures"

P. Schurtenberger "Novel Properties of Polymerlike Reverse
Micelles - A Light and Neutron
Scattering Study"

S.H. Chen - Discussion Leader
7:30 pm

B. Farago "Microemulsion Droplet Fluctuations Seen
by Neutron Spin Echo"

R. Strey "Structural Aspects of Microemulsions"

Tuesday, February 13

J. Huang - Discussion Leader
9:00 am

C. Murray Comparison Between 2D and 3D Melting in
Colloids

S.J. Candau "Dynamic and Elastic Properties of
Poly(acrylic acid) Gels"

E. Amis "Dilute Solution Viscoelasticity of
Polyelectrolytes"

P. Pusey - Discussion Leader
7:30 pm

J. Huang "Study of Dynamics of Star-Branched
Polymers by Neutron Spin Echo
Spectroscopy"

J. Higgins "Dynamics of Associating Polymers in
Solution: Neutron and Light Scattering
Results"

Wednesday, February 14

J. Hayter - Discussion Leader

9:00 am

W. van Megen "Measurement of Particle Motions in Concentrated Dispersions by Dynamic Light Scattering"

W. Russel "Dynamics of Disorder-Order Transitions -- Comparison of Hard and Soft Spheres"

J. Wilcoxon "Structure and Dynamics of Colloids Formed in Complex Media"

E. Amis - Discussion Leader

7:30 pm

G. Maret "Multiple Light Scattering: Coherent Backscattering and QELS From Interacting Brownian Spheres"

D. Weitz "Diffusing Wave Spectroscopy"

Thursday, February 15

C. Knobler - Discussion Leader

9:00 am

A. Parsegian "Directly Measured Coupling Between Intermolecular Forces and Molecular Disorders in Polymer Arrays"

R. Pecora "Studies of the Dynamics of Oligonucleotides and DNA Restriction Fragments"

H. Möhwald "Transition of Domain Pattern and Structure in Lipid Monolayers"

H. Yu - Discussion Leader

7:30 pm

Themes from the Posters

Friday, February 16

B. Ackerson - Discussion Leader

9:00 am

V. Degiorgio "Stretched-exponential relaxation of electric birefringence in micellar and polyelectrolyte solutions"

P. Pusey "Dynamic Light Scattering by Nonergodic Media"

Poster Presentations at the
1990 Gordon Research Conference on
Dynamics of Macromolecular and Polyelectrolyte Solutions
12-16 February 1990
Casa Sirena, Oxnard, CA

1. B. D'Aguzzo and R. Klein, Fakultät für Physik, Universität Konstanz
"A polydisperse model for the microscopic structure of charged colloidal suspensions"
2. H. Ruiz Estrada and M. Medina-Noyola, Centro de Investigación y de Estudios Avanzados del I P N , Mexico
"Rescaled mean spherical approximation for colloidal mixtures"
3. P. Gonzalez Mozuelos and M. Medina-Noyola, Centro de Investigación y de Estudios Avanzados del I P N , Mexico
"Concentration profile of a colloidal suspension near a charged wall"
4. W. Hess, G. Nagele and A.Z. Akcasu, Department of Nuclear Engineering, University of Michigan
"Theoretical foundations of interdiffusion"
5. A.Z. Akcasu and M. Tombakoglu, Department of Nuclear Engineering, University of Michigan
"Dynamics of copolymer and homopolymer mixtures in bulk and in solution via the random phase approximation"
6. S. Allison, Georgia State University
"Brownian dynamics simulation of polymers"
7. L. Luo and S. R. Aragon, Department of Chemistry & Biochemistry, San Francisco State University
"Brownian dynamics simulations of semi-rigid polymers: comparison with theory"
8. A.G. Yodh, P.D. Kaplan, and D.J. Pine, Department's of Physics, University of Pennsylvania and Haverford College
"Pulsed diffusing-wave spectroscopy: high resolution through nonlinear optical gating"
9. J. Ahrens, M. Drewel, K. Schatzel, Institut für Angewandte Physik der Universität Kiel
"Suppression of multiple scattering by cross-correlation applied to dynamic and static light scattering"
10. A. MacGregor, GE Canada Inc. Electroptics, Montreal
"Photon counting modules using solid-state detectors"
11. D.S. Horne, Hannah Research Institute, Ayr, Scotland
"Light scattering studies in concentrated polydisperse systems and gels"

page two
Poster Presentations
1990 Gordon Research Conference

12. S. Fujishige, Research Institute for Polymers and Textiles
"Coil-globule transition of polymer in aqueous dilute solution"
13. D. F. Hodgson and E. J. Aals, Department of Chemistry, University of Southern California
"Dynamic moduli during a sol-gel transition"
14. C.C. Han, Polymers Division, United States Department of Commerce, National Institute of Standards and Technology
"Shear dependence of critical fluctuations in binary polymer mixtures studied by small angle neutron scattering"
15. B.J. Oliver, D.W. Schaefer, B. Frick and D. Richter, Sandia National Labs
"Comparison of neutron scattering data from cab-o-all, grades M-5 and EH-5, and aerogel"
16. B.J. Oliver and C.M. Sorensen, Sandia National Labs
"Coagulation rate as a function of the aggregant concentration"
17. A.R. Ellis, J.K. Schaller, M.L. McKiernan and J.C. Selser, Department of Chemistry, University of Nevada, Las Vegas
"Studying macromolecular coil internal dynamic behavior using PCS"
18. K. Devanand and J.C. Selser, Department of Chemistry, University of Nevada, Las Vegas
"A test of the aggregation hypothesis of polyethylene oxide in water"
19. K.A. Cogan, J.E. Raeder, and A.P. Gast, Department of Chemical Engineering, Stanford University
"Shape transitions in block copolymer micelles"
20. B. Chu and R. Hilfiker, Department of Chemistry, State University of New York at Stony Brook
"The solution behavior of polystyrene/polyisoprene AB block copolymers in Aniline"
21. W. Richtering, R. Loffler, and W. Burchard, Institut fur makromolekulare Chemie der Universitat Freiburg
"Dynamic light scattering from aqueous polysurfactant solutions"
22. R. Hjelm, P. Thiyagarajan, D. Sivia, P. Lindner, H. Alkan and D. Schwahn, Physics Division, Los Alamos National Laboratory
"Morphology and transitions in the isotropic phases of bile salt-lecithin mixed aqueous colloids"

page three
Poster Presentations
1990 Gordon Research Conference

23. S. Ghosh, C. Reed, X. Li, and W. Reed, Department of Physics, Tulane University
"Effect of salt on light scattering behavior of bacterial hyaluronate"
24. W. Reed, J. Francois, G. Medjahdi, and M. Rawiso, Department of Physics, Tulane University
"Light scattering properties of polyelectrolytes with varying degrees of ionization in salt free and low ionic strength aqueous solutions"
25. M. Schmidt, Max Planck Institut fur Polymerforschung, Mainz
"Structure and dynamics of polyelectrolyte solutions"
26. M. Tracey and R. Pecora, Department of Chemistry, Stanford University
"Dynamic light scattering study of a rod/sphere composite liquid"
27. J.M. Schurr, L. Song, and U.S. Kim, Department of Chemistry, University of Washington
"Dynamic bending rigidity of weakly bending rods"
28. T. Maeda, Mitsubishi Kasei Institute of Life Sciences, Tokyo
"The static and dynamical structure factor of rodlike polymers in the isotropic phase at finite concentrations"
29. G.C. Berry and C. Wei-Berk, Department of Chemistry, Carnegie-Mellon University
"Thermochromism induced by intermolecular association in a multiply broken rodlike polymer"
30. N. Ookubo, Fundamental Research Labs., NEC Corporation, Japan
"Counterion polarization and electrical persistence length of polyion in aqueous solution as studied by highly sensitive electric birefringence relaxation spectroscopy"
31. F.C. MacKintosh and S.A. Safran, Exxon Research and Engineering Corporate Research
"Equilibrium size distribution of charged "living" polymers"
32. T. Ito, Department of Biophysics, Faculty of Science, Kyoto University
"A comprehensive thermodynamic analysis of the osmotic response of phospholipid vesicles and a reevaluation of the hydration repulsive force theory"
33. M. Taniguchi, Department of Physics, Faculty of Science, Nagoya University
"Luminescence microspectroscopy and imaging of muscle fibers using UVSOR"

page four
Poster Presentations
1990 Gordon Research Conference

34. D. Stellwagen and N.C. Stellwagen, Department of Biochemistry, University of Iowa
"Orientation of agarose solutions in pulsed electric fields"
35. S. Kobayasi, Department of Molecular Biology, Nagoya University
"Characterization of behavior of scattering probes in gels by laser light scattering"
36. G. Phillies, Department of Physics, Worcester Polytechnic Institute
"New results on probe and polymer diffusion"
37. E. Luddecke, W. Schrof, and C. Wu, Department of Polymer and Solid State Physics, Polymer Research Division, BASF - Ludwigshafen
"Studies of dynamics and structure of gelatin gels"
38. J. Newman, K. L. Schick, R. Arnold, P. Lambert, and M. Migliozzi, Department of Physics, Union College
"Probe diffusion in f-actin solutions"
39. S. Kidokoro, Department of Physics, Faculty of Science, University of Tokyo
"Control of thermodynamic stability of human lysozyme by protein engineering"
40. K. Tsuji, Shimadzu Europa GmbH, Duisburg
"Electrooptical studies on proton-binding and release of bacteriorhodopsin"

GORDON RESEARCH CONFERENCES

Macromolecular & Polyelectrolyte Solutions
 February 12-16, 1990
 Casa Sirena Marina Hotel
 Oxnard, California

REGISTRATION LIST

Bruce J. Ackerson Oklahoma State University Department of Physics Stillwater, OK 74078	149	Sauver Candau Université Louis Pasteur Laboratoire de Spectrometrie et D'Imagerie Ultrasonores 4 Rue Blaise Pascal Strasbourg Cedex, 67070 FRANCE	136
A. Ziya Akcasu University of Michigan Dept. of Nuclear Engineering Ann Arbor, MI 48109	222	Bruno D'Aguanno Universitat Konstanz Fakultat fur Physik Postfach 5560 Konstanz, D-7750 WEST GERMANY	267
Stuart Allison Georgia State University Dept. of Chemistry Atlanta, GA 30303	370	Vittorio Degiorgio Universita de Pavia Dipartimento de Elettronica Via Abbiategrosso 209 Pavia, 27100 ITALY	242
Eric Amis University of Southern California Dept. of Chemistry Los Angeles, CA 90089	258	Krishna Devanand University of Nevada, Las Vegas 4505 Maryland Parkway Las Vegas, NV 89154	361
Sergio Aragon San Francisco State University Dept. of Chemistry & Biochemistry 1600 Holloway Ave. San Francisco, CA 94132	368	Richard B. Dorshow BP Research 4440 Warrensville Center Rd. Cleveland, OH 44128	277
S. H. Chem MIT Nuclear Engineering Dept. 24-211, MIT Cambridge, MA 02139	278	Ronald L. Dougherty Oklahoma State University EN218, Mech. & Aersp. Eng. Stillwater, OK 74078-0545	149
Ben Chu State Univ. of NY at Stony Brook Dept. of Chemistry/Stony Brook Nicolls Rd. Stony Brook, NY 11794-3400	147	Douglas J. Durian Exxon Research & Engineering RT. 22 East Clinton Township Annandale, NJ 08876	224
Kathleen Cogan Stanford University Dept. of Chemical Engineering Stanford, CA 94305-5025	223	Bela Farago Institute laue Langevin 156X Ledex Grenoble, 38042 FRANCE	123
Phillip G. Cummins Unilever Research Port Sunlight Laboratory Quarry Road, East Bebington Wirral Meseyside, UK	376	M. Fixman Colorado State University Dept. of Chemistry Fort collins, CO 80523	129

Macromolecular & Polyelectrolyte Solutions
Registration List - Page 3

Fred Mackintosh Exxon Research and Engineering Corporate Research Route 22 East Annandale, NJ 08801	224	Ulf Nobbmann Oklahoma State University Department of Physics Stillwater, OK 74078	225
Tadakazu Maeda Mitsubishi Kasei Institute of Life Science 11 Minamiooya Michida-Shi 194, JAPAN	134	Bernard J. Oliver Sandia National Laboratories 1812 P.O. Box 5800 Albuquerque, NM 87185	225
Lee Magid University of Tennessee Dept. of Chemistry Knoxville, TN 37996-1600	230	Norio Ookubo Fundamental Res. Labs. NEC Corporation Miyukigaoka 34, Tukubashi Ibaragi 305 JAPAN	237
Georg Maret Max Planck Institut HML 25 Ave des Martyrs C.N.R.S. Grenoble, F 38042 FRANCE	227	Robert Pecora Stanford University Department of Chemistry Stanford, CA 94305-5080	137
M. Medina-Noyola Cinvestav-IPN Departamento de Fisica A.P. 14-740 Mexico D.F. 07000 MEXICO	130	George D. Phillies WPI Physics/WPI Worcester, MA 01609	247
Helmuth Mohwald University Mainz Institute Physical Chemistry Welder-Weg 11 Mainz 6500 FRG	269	David Pine Exxon Reserch & Engineering Route 22 East Annandale, NJ 08801	144
Partick C. Mowery American Cyanamid P.O. Box 400 Princeton, NJ 08540	233	P. N. Pusey Royal Signals & Radar Establishment St. Andrews Rd. Malvern, Worcs. WR14 3PS ENGLAND	236
Cherry A. Murray AT&T Bell Labs 600 Mountain Ave. Room 10-334 Murray Hill, NJ 07974	135	Roger Pynn Los Alamos National Lab. MS H805 Los Alamos, NM 87545	235
Gerhard Naegele University of Michigan Dept. of Nuclear Engineering, Cooley Lab Ann Arbor, MI 48109	222	Yitzhak Rabin Weizmann Institute Dept. of Chemical Physics Rehovot 76100 ISRAEL	
Jay Newman Union College Physics Department Schenectady, NY 12308	142	Jennifer Raeder Stanford University Dept. of Chemical Engineering Stanford, CA 94305	223
		Raj Rajagopalan University of Houston Dept. of Chemical Engineering Houston, TX 77204-4792	124

Macromolecular & Polyelectrolyte Solutions
 Registration List - Page 4

Wayne F. Reed Tulane University Physics Department New Orleans, LA 70118	238	J. Michael Schurr University of Washington Dept. of Chemistry BG-10 Seattle, WA 98195	122
Walter Richtering Institut fur Makromolekulare Chemie Stefan-Meier-Str. 31 Freiburg D-7800 GERMANY	227	Peter Schurtenberger Polymer Institute ETH Zurich, CH-8092 Switzerland	125
William B. Russel Princeton University Dept. of Chemical Engineering Olden Street Princeton, NJ 08544-1863	124	Jim Selser University of Nevada, Las Vegas 4505 Maryland Parkway Las Vegas, NV 89154	361
Akhtar Saeed Case Western Reserve University Macromolecular Science Dept. Cleveland, OH 44106	133	John H. Shibata University of Tennessee Dept. of Chemistry 321 Buehler Hall Knoxville, TN 37996-1600	371
Pier L. San Biagio University of Palermo Physics Department Via Archirafi, 36 Palermo I-90123 ITALY	142	Ian Snook R.M.I.T. Applied Physics Department RMIT GPO Box 2476V Melbourne, Victoria 3001 AUSTRALIA	271
Klaus Schatzel University of Kiel Institut fur Angewandte Physik Olshausenstr.40 D-2300 Kiel, FRG	Off-Site	Edwin John Staples Unilever Research Port Sunlight Laboratory Quarry Road East Bebington Wirral Merserside UK	372
Kenneth Schick Union College Physics Department Schenectady, NY 12308	416	Nancy Stellwagen University of Iowa Dept. of Biochemistry Iowa City, IA 52242	374
Elaine Schick (guest of Kenneth Schick)	416	Reinhard Strey Max Planck Institut fur Biophys. Chemie. Postfach.2841 Gottingen 3400 FRG	375
Manfred Schmidt Max Planck Institut for Polymerforschung Post Fast 3148 Mainz D-6500 GERMANY	276	Meiko Taniguchi Nogoya University Dept. of Physics, Faculty of Science Chikusa-Ku Nagoya, 464-01 JAPAN	135
Gabriela Schmidt (guest of Manfred Schmidt)	276		
Kenneth S. Schmitz University of Missouri Dept. of Chemistry Kansas City, MO 64110	122	John C. Thomas Brookhaven Instruments Corp. 750 Blue Point Rd. Holtsville, NY 11742	269

Macromolecular & Polyelectrolyte Solutions
Registration List - Page 2

A. K. Gaigalas NIST Bldg. 230, Room 105 Gaithersburg, MD 20899	244	John S. Huang Exxon Research and Engineering Co. Route 22 East Annandale, NJ 08801	234
Alice Gast Stanford University Dept. of Chemistry Stanford, CA 94305	273	Tadanao Ito Kyoto University Department of Biophysics Faculty of Science Kyoto, 606 JAPAN	229
Charles C. Han National Institute of Standards & Tech. Polymers Division B210/224 Gaithersberg, MD 20899	148	Hiroyasu Itoh Tsukuba Res. Lab., HPK 5-9-2 Tokodai, Tsukuba Ibaraki 300-26 JAPAN	245
William G. Haseltine American Cyanamid Co. 1937 West Main Street P.O. Box 60 Stamford, CT 06904-0060	246	Jacques G. H. Joosten D S M Research Dept. FA P.O. Box 18 Geleen, 6160 MD THE NETHERLANDS	268
John B. Hayter Oak Ridge National Laboratory Bldg. 7962/MS-6393 P.O. Box 2008 Oak Ridge, TN 37831-6393	231	S. Kidokoro University of Tokyo Dept. of Physics, Faculty of Science Hongo 7-3-1, Bunkyo-Ku Tokyo, 113 JAPAN	145
J. S. Higgins Dept. of Engineering Imperial College Prince Colbott Rd. London, SW7 2BY ENGLAND	275	Charles M. Knobler University of California Dept. of Chemistry 405 Hilgard Ave. Los Angeles, CA 90024	123
Rex P. Hjelm Los Alamos national Lab. H805 LANSCE/Physics Division Los Alamos, NM 87545	127	Syoyu Kobayashi Nagoya University Dept. of Molecular Biology School of Science Chikusa-Ku 464-01 JAPAN	272
Donald Hodgeson University of Southern California Dept. of Chemistry University Park Los Angeles, CA 90089-0482	258	Jing Liu Exxon Research & Engineering Co. room #LG332 Route 22 East Annandale, NJ 08801	128
Heinz Hoffman Universitat Bayreuth Physikallische Chemie I Universitätsstr. 30, P.O. 101251 Bayreuth, D-8580 WEST GERMANY	369	Erik Luddecke BASF Aktiengesellschaft ZKM/D - 89 Ludwigshafen 6700 WEST GERMANY	146
David S. Horne Hannah Research Institute AYR, Scotland KA6-5HL UK	138	Vincenzo Martorana C.N.R. I.A.I.F. Via Archirafi 36 Palermo, I-90123 ITALY	

Macromolecular & Polyelectrolyte Solutions
 Registration List - Page 5

Mehmet Tombakoglu The University of Michigan 256 Mortimer E. Cooley Bldg. Nuclear Eng. Dept. Ann Arbor, MI 48105	249	Hyuk Yu University of Wisconsin Dept. of Chemistry 1101 University Ave. Madison, WI 53706	148
Mark A. Tracy Dept. of Chemistry Stanford University Stanford, CA 94305	125	Guy C. Berry Carnegie Mellon University 4400 Fifth Ave.. Pittsburgh, PA 15213	
Anthony Trozzolo University of Notre Dame Huisking Professor of Chemistry Notre Dame, IN 46556	Off Site	Alan Cowley University of Texas Dept. of Chemistry Austin, TX 78712	255
Dolly Trozzolo (guest of Anthony Trozzolo)	Off Site	V. A. Parsegian National Institute of Health 12A 12007 Bethesda, MD 20892	254
Kinko Tsuji Shimadzu Europa Albert-Hahn-Str.6-10 Duisberg 29, D-4100 WEST GERMANY	377		
W. Van Megen Royal Melbourne Institute of Tech. Applied Physics Department 124 La Trobe st. Melbourne 3000 AUSTRALIA	143		
Calvin J. Verbrugge S.C. Johnson & Son, Inc. Polymer Research Dept. 1525 Howe Street Racine, WI 53403	266		
Pauline Verbrugge (guest of Calvin J. Verbrugge)	266		
David Weitz Exxon Research & Engineering Co. Route 22 E. Annandale, NJ 08801	144		
Jess Wilcoxun Sandia National Labs. Albuquerque, NM 87185	127		
Chi-San Wu GAF Chemical Corporation 1361 Alps Rd. Wayne, NJ 07470	270		