The Annex

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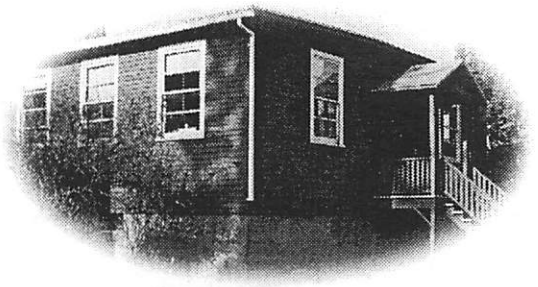

Welcome to the First Issue

It is my great pleasure to have the opportunity to greet all of our many friends, students and Alumni/ae. In this first issue of the Polymer Science and Engineering Department Newsletter, The Annex, it is our purpose to establish contact with our graduates in order to reacquaint some of you with your department.

Perhaps many of you recall the PSE Club when you attended UMass. In the past year, under student leadership, the Club has been transformed from a social club into a service-oriented organization. The students have undertaken an extensive outreach program that endeavors to interest children of all age groups in the study of science, particularly polymers. Club members maintain the PSE Website, offer tutoring assistance to PSE students, participate in the recruitment of new students, handle the logistics of our Friday seminars, provide building tours as well as a myriad of other duties too numerous to mention. These services are extremely valuable to the entire department. Additionally, they have volunteered to publish this Alumni Newsletter.

In future issues, we hope to satisfy your curiosity about fellow graduates, new and veteran faculty, our staff, and the many facets of PSE at the University of Massachusetts.

I am sure many of you are aware that two years ago, PSE moved from scattered locations on campus into our new home, the Silvio O. Conte National Center for Polymer Research. This wonderful facility has 160,000 square feet of state-of-the-art laboratory, office and conference rooms in a six-story complex. Now all aspects of Polymer Science and Engineering: the Department, the Materials Research Science and Engineering Center (MRSEC), and the Center for the University of Massachusetts-Industry Research on Polymers (CUMIRP) are housed in our new building.

Several of our founding faculty have retired in recent years. However, most remain active in the Department and maintain offices and laboratories in the Center. We have been most fortunate to retain post-retirement association with Professors Richard Stein, Robert Lenz, Otto Vogl, James Chien, Simon Kantor and Roger Porter.

We have hired several outstanding new faculty and staff, and it should be noted that Sophie and Eleanor continue to manage the affairs of the Department.

I am pleased to announce that last year we established The Polymer Science and Engineering Fellowship Endowment Fund that will be used to support first-year students. Traditionally, this money has come from our industrial partners. In today's business climate, these sources of funding are becoming more and more difficult to obtain. I am proud to say that we have had 100% participation from faculty, past and present, who have pledged $80,000 in personal funds towards the Fellowship Fund. Also, several PSE Alums have pledged an additional $20,000.

U.S. News & World Report has consistently ranked PSE as the number one Polymer Doctoral Program in the United States. The National Research Council, in their five year study of Doctoral Programs, included PSE for the first time in the Materials Science category, placing us seventh in the nation for the quality of the faculty and second in the nation for the quality of our graduates. Of course, we were not surprised by this ranking; we have always known our graduates to be the best in the country.

Finally, I would like to invite each one of you to visit PSE at any time. The value of your active interest in the future of the department is immeasurable, and our mutual involvement need not end with graduation. Please keep in touch.

Faculty Directory	2
Message from Dr. Porter	3
Dr. Porter Retires	4
Memorial Garden	4
The PSE CLub Transforms into a Service Organization	5
Profile: Jacques Penelle	6,7
David Tirrell Accepts Cal Tech Position	8
1997 PSE Graduates	9
CUMIRP	10
Departmental Awards	11
Alumni News	12,13
Klaus Schmidt Rohr Recieves Tenure	14
We Need Your Help!	15

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Message from Dr. Porter

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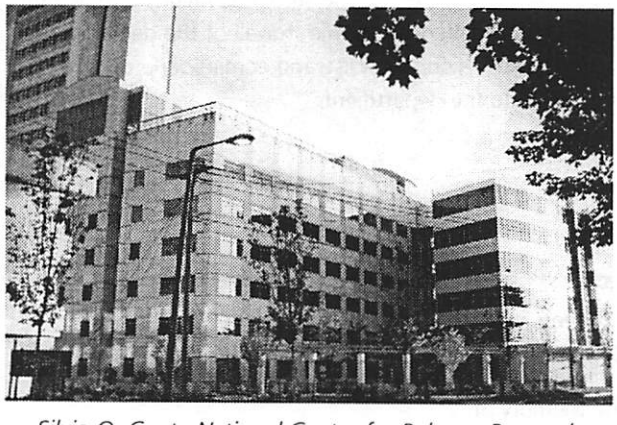
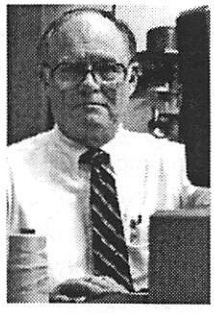


Silvio O. Conte National Center for Polymer Research



It was easy to be the first head of PSE in 1966, since I was the only one in the program! Of course, survival and growth depended on the great help of Bob Lenz coming into Chemical Engineering and the stewardship of Bill MacKnight and Dick Stein in the Chemistry Department.

However, not much came easy. For instance, our first mail went to the UMass Political Science Department, with our name looking like Poly Sci.

I performed most every function in the early days, including student recruiting, until we grew to become a Department. I met our very first recruited graduate student at the Amherst Peter Pan bus station and carried his bags into his lodgings in Prince House.

At first, companies visiting our campus were reluctant to hire our PSE students. DuPont told me that they would rather hire chemists and train them for polymer science. The tables have certainly turned now!

Draper Annex was an office palace for PSE professors compared to the basement of old Goessmann. The faculty sat on top of the desks (including that of Sophie) in Draper Annex over 25 years ago and concocted the successful proposal for the first NSF Materials Research Laboratory on Polymers, which has now become the successful MRSEC program. In Draper, I often heard "bump bump" as students slipped down the Annex's icy steps in the winter time.

My first lab was in Gunness Lab, just south-west of Conte. The outside walk from Draper Annex to Gunness in the winter was for me, a Californian, a bitter trek.

In closing let me salute all who have worked with PSE to make it the best, with special greetings to the some 100 researchers in PSE with whom I have had the pleasure of working with directly.

Roger S. Porter

Roger S Porter

Professor Emeritus

Dr. Porter Retires after 30 Years of Service

After thirty years as a faculty member and ten years as department head, Dr. Roger S. Porter has retired from the University of Massachusetts, Polymer Science and Engineering Department. The newly appointed Professor Emeritus and inductee into the Plastics Hall of Fame maintains an active research program through collaboration in Japan and is editor of Polymer Engineering and Science, Polymer Composites and Polymer Processing and Rheology.

Despite the claim that it all "started from Draper Hall Annex", for Dr. Porter, it actually started in Windom, Minnesota, where he was born in 1928. After completing his Bachelor of Science in chemistry at the University of California, Los Angeles, Porter moved to Seattle. There he worked with George Cady at the University of Washington, receiving his Ph.D. in chemistry in 1956. After graduation, Dr. Porter joined Chevron Research Company in Richmond, CA, where he rose to Senior Research Associate.

In 1966, Dr. Porter came to UMass and became the first faculty member and chairman of the Polymer Science & Engineering Program. (On page 3 of this newsletter, Dr. Porter gives a wonderful description of the early days in PS&E.) In 1974, when the PSE Program officially became the Polymer Science & Engineering Department, Dr. Porter continued as department head and held that position until 1976. After resigning as department head, Dr. Porter continued his research in characterization and rheology of liquid crystals and other polymers and remained an important member of PSE as co-director of the National Science Foundation Materials Research Laboratory (now MRSEC) from 1973 to 1985.

Dr. Porter has held several visiting professorships at institutions such as: The Royal Institute of Technology in Stockholm, Sweden; Queen Mary College, University of London; the Federal University of Rio de Janeiro; the University of Utah; and the Science University of Tokyo.

In addition, Dr. Porter was an Extension Lecturer at the University of California, a Russian Academy of Sciences Tour Lecturer (1970, 1977, 1990) and a member of the American Chemical Society Lecture Tour (1990). He remains an Adjunct Professor in the Department of Polymer Science at the University of Southern Mississippi.

A partial listing of his awards include: the Mettler Prize from the North American Thermal Analysis Society, the Organic Coatings and Plastics Award from the American Chemical Society, the Meritorious Service Award from the Plastics Institute of America, and the Bingham Medal from the Society of Rheology. The Society of Plastics Engineers has awarded him the Polyolefin Research Award, the International Education Award, and the International Research Prize. In addition, Dr. Porter was recently presented both the Chancellor's Medal and an Honorary Doctorate of Science from the University of Massachusetts. In 1998, Dr. Porter will be awarded the Paul J. Flory Polymer Education Award from the A.C.S. Polymer Division.

The PSE Department has been privileged to enjoy a long and fruitful relationship with Dr. Porter, which includes three patents, 450 publications, two books, and numerous graduate students. The students, faculty and alumni of the department thank him for all of the dedication, leadership, vision, expertise and comaradarie that he has brought to the department.

Memorial Garden

A Memorial Garden has been planted for those PSE students who passed away during their studies here. In the garden rests a boulder with a plaque bearing the message:

Dedicated to the Memory of

Brian West
Patrick Kincaid
Heung Sup Kang
Scott Nitzsche
Raul de Vincenzi

Polymer Science and Engineering Students

The memorial is surrounded by mountain laurels, annuals, and mums, and is located at the northeast corner of the lab wing of the Conte building.

The PSE Club Transforms into a Service Organization

Since its creation, the PSE Club has been an integral part of the PSE Department here at UMass. The original club served as a social outlet for the students in the department as well as a unifying force between faculty, staff, and students. Traditionally the Club was run by the 2nd year class (or two students in that class), yet all students of the department were considered "members".

Last fall, the Club was reinvented. Taking the helm as department head, Dr. Farris began a discussion with Club leaders to encourage the PSE Club to become more than a social organizer. Under the leadership of president Heather Hayes, the Club expanded its departmental role to include service projects designed to benefit the entire department. The initial expansion was minimal (organizing Friday seminars and conducting Conte Building tours), but it began the formation of the Club as it stands today.

Throughout the fall semester, students and representatives of the faculty met to ascertain how this newly organized club would function. The result of these discussions included: a list of Club projects (see sidebar), the notion that the entire student body was invited to be actively involved as opposed to being passive members, and the decision that participation would be completely voluntary. The new purpose of this PSE Club is to serve the students, staff, alumni, department, faculty and community, thereby creating a link between all components of PSE.

Club member involvement is now high with over half of the student body participating actively in at least two projects over the past year. Departmental reception of the Club has been phenomenal. Students are willing to do more than research while here in graduate school, and a financial commitment on the part of the faculty has helped make many of these new projects possible.

Officers for the current year, as well as those faculty who serve as advisors to the new organization, are listed below.

Lee Rockford
President

Matt Dunbar
General Administrator (VP & Treasurer)

Jeff Cafmeyer
Project Coordinator

Kristi Kiick-Fischer
Project Coordinator

Prof. Alan Lesser
Faculty Advisor

Prof. Dave Tirrell
Faculty Advisor

Prof. Dick Farris
Department Head and Ex Officio Advisor

PSE Club Projects

Service to Students

- Tutoring 1st year students
- 1st Year Party
- Fall and Spring Picnics
- Social Activities—Movies, etc.
- Industry Field Trips
- Interview Postings
- Seminar Speaker Involvement
- Fundraising (yes, we still sell ornaments)
- Holiday Party
- Sports Teams

Service to Department

- Building Tour—design and give tours
- Seminar Electrical—A/V
- Seminar Reception—coffee and donuts
- WWW Page (see us at www.pse.umass.edu)
- Laboratory Safety Committee
- Alumni Newsletter
- Fall Poster Symposium
- Student Picture Board
- Memorial Garden

Service to Community

- School Outreach
- High School ASPIRE

Faculty Profile: Jacques Penelle

The PSE Department recently hired Dr. Jacques Penelle. Dr. Penelle received his undergraduate and graduate degrees from the Université Catholique de Louvain in his native Belgium. After post-doctoral work at the University of Arizona with Prof. H.K. Hall, he returned to Louvain as a faculty member. In the article that follows, Prof. Penelle gives a brief introduction to his research interests.

"Chemistry is the creative science that creates new substances and brings them into the world."

That citation from Ronald Breslow, a professor of chemistry at Columbia University and former ACS president, best describes the main motivation that attracted me to the world of chemistry. Chemists—to quote Berthelot, another famous scientist—create the objects they want to study. And that particular approach to science—with all its creativity and craftsmanship—is still today a source of daily fascination and enjoyment for me. It brings synthetic chemists very close to engineers, architects and artists. Designing new synthetic routes, creating new objects at the molecular or supramolecular level is the work of the synthetic chemist, but it's not only a job as those involved in this creative process well know. It is also a source of artistic-like pleasure and of intellectual gratification that in my particular case is made even more interesting by the fact that the final objects can be used to create something new and useful.

From that point of view, polymer science is a remarkably fascinating field for the synthetic chemists interested in making something both intellectually stimulating and useful to the community. As you know, a macromolecule is made of thousands of atoms that can be of mostly any nature, and the exceptionally large number of possible structural combinations constitute a formidable challenge to the chemist. The requirement to make something useful introduces an additional complexity that makes the choice of synthetic targets particularly delicate and most often requires one to collaborate with scientists in other disciplines. A teamwork approach is essential, which makes Amherst a wonderful place to work.

My particular field of interest—if described in terms of structure or targets—is quite large as I am mostly interested in the development of synthetic methodologies, and the interesting challenges that can be found in any particular subfield of polymer chemistry. Most of the projects conducted in my group at present involve polymers made of a carbon backbone. We have been interested in the past few years in classical monomers like substituted dienes (allowing the introduction of a silyl enol ether into a vinyl polymer[1]) or a-substituted acrylates (wondering what kind of substituents can be introduced on the alpha position without hampering the free-radical polymerizability[2]). Even though some work in the second field is still continuing, we are now shifting our focus to the design of new substitution architectures. A very active field of investigation relates to the synthesis and characterization of polymers substituted by two carboxyl substituents on every third atom (like in (c) in the next figure) and to the comparison of their properties with the ones obtained from other kinds of substitution patterns (like in (a), (b), or (d)). We are now able to synthesize such polymers from directly available monomers, to control the molecular weights, to synthesize monodisperse samples, and to adjust the nature of the end-groups.

This new substitution allows the insertion of very large groups—including oligomeric or polymeric chains—without the simultaneous creation of the large strain that results from the repulsion between the side substituents when placed on every second carbon atom as usual. The idea is now being extended to even larger distances between the substituents (placement of malonate $C(COOR)_2$ subunits on every 9th carbon atom for example).

In a drastic extension of this idea, we are investigating what happens if we place small structural subunits at very long regular distances along the carbon chain. In other words: what kind of behavior can be induced in linear polyethylene by small structural 'defects' placed at long regular—not statistical—distances? In our present studies, the structural 'defects' are separated by 22 methylene units, but in the near future we will investigate what happens if we place them at even larger distances. In particular, we are wondering if the choice of suitable 'defects' might lead to some structural control of the lamellar thickness. We are also interested in 'grafting' polymeric chains or specially designed substituents at these long regular distances and to investigate the behavior of the macromolecules at various interfaces.

Finally, as polymer synthesis is very demanding in terms of selectivity and efficiency for each of the organic reactions involved and requires both the understanding and optimization of individual synthetic steps, we are also studying

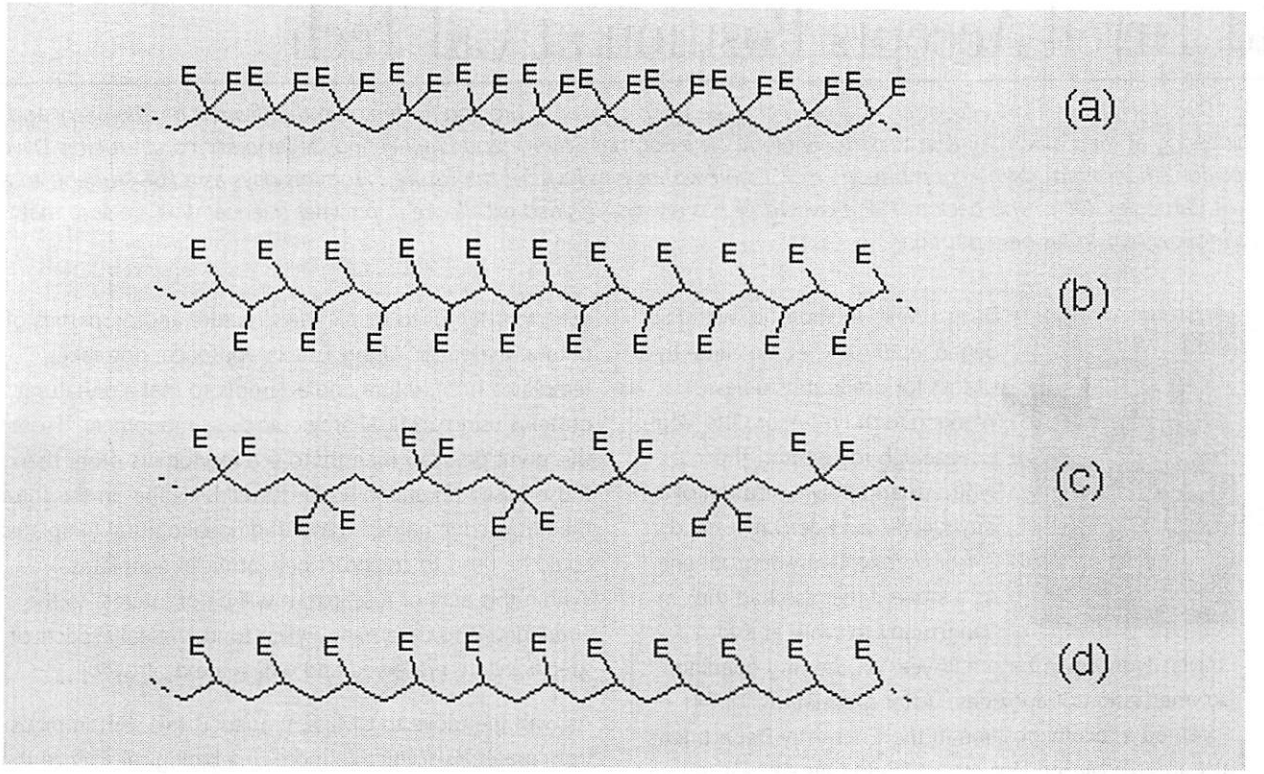


Figure 1. *Possible architectures for carbon-chain polymers densely substituted by carboxyl-type substituents*

novel spectroscopic techniques to monitor polymerization reactions, in particular in-situ Near InfraRed (NIR) and ex-situ Raman spectroscopies. I am particularly enthusiastic about the second technique, which allows us to follow reactions in real time without introducing any probe into the glassware.

Before closing this introduction to my research, I want of course to thank you for your attention and the PSE club for this opportunity to introduce me to you, the alumni. I also wish to invite you to interact with all the new faces who have appeared and will continue to appear in the PSE Department. As a PSE alumnus, be assured that you will always be welcome and that your help in maintaining the traditional commitment of the Department to excellence in polymer research and education will be highly appreciated.

References

[1] Penelle, J.; Collot, J.; Rufflard, G. "Kinetic and Thermodynamic Analysis of Methyl Ethacrylate Radical Polymerization", J. Polym. Sci., Polym. Chem. Ed. (1993) 31 2407-2412 ; Penelle, J.; Verraver, S.; Raucq, P.; Marchand-Brynaert, J. "Free-Radical Polymerization of Acrylates a-Substituted by Trimethylsiloxy Substituents. Dramatic Influence of the Size of the Ester Substituent on the Polymerizability", Macromol. Chem. Phys. (1995) 196 857-867.

[2] Penelle, J.; Mayné, V.; Touillaux, R. "Reactive Polymers Incorporating Silyl Enol Ether Groups. I. Synthesis by Radical Polymerization of 2-(Trimethylsiloxy)butadiene and 2-(tert-butyldimethylsiloxy)butadiene" J. Polym. Sci., Polym. Chem. Ed. (1996) 34 3369-78 ; Penelle, J.. Mayné, V. "Reactivity of Electrophilic Reagents towards Silyl Enol Ether Groups Incorporated into Vinyl Polymers " Tetrahedron, in print.

David Tirrell Accepts Position at Cal Tech

As of June 1, 1998, David Tirrell will accept an endowed chair as the McCollum-Corcoran Professor in the division of Chemistry and Chemical Engineering at the California Institute of Technology. The Polymer Science and Engineering Department congratulates Dave on his new position, thanks him for his contributions to PSE and wishes him luck for the future. From his days as a PSE student, to a professorship at Carnegie Mellon and back to PSE, Dave Tirrell has always signified excellence in polymer science. We are sure that this quality will follow him to his new position.

Dave Tirrell's relationship with PSE began in 1974 when he came to UMass for graduate studies. Working with Professor Otto Vogl, his research focused on the synthesis and polymerization of vinylsalicylic acid derivatives and 2,4-dihydroxy-4-vinylbenzophene. As a student, he also had the opportunity to work at Kyoto University in Japan for a half-year on the ring opening polymerization of epoxides. After graduation, Tirrell accepted a faculty position in the Chemistry Department at Carnegie Mellon University. During his six year tenure at Carnegie Mellon, his research focused on three primary areas of chemistry: neighboring group effects in polymer modification reactions, penultimate and charge transfer effects in radical copolymerization, and the response of bio-membranes to changes in pH.

With this interest in bio-membranes, Tirrell's research began to shift from synthetic polymer chemistry to the multidisciplinary area of polymer science. This third research topic which led to his return to UMass where he has been since 1984. The opportunity to come back to PSE was one which he said he could not turn down. As Wilmer D. Barrett Professor in the Polymer Science and Engineering Department, Tirrell has enjoyed many successes in the areas of polymer chemistry and biological sciences. In his 13 years at UMass, he has received numerous awards which most recently include: the Harrison-Howe award from ACS, and the UMass Chancellors Medal.

The focus of Tirrell's group has now evolved even further into the realm of biological science, with the current research goal of making a connection between biological and materials science. Specifically, Tirrell would like to understand the scope of cellular synthesis of materials. For example, what kinds of materials can nature make and how? Once gaining this understanding, the next step would be to apply this insight to other systems. This process represents a break from the traditional method of developing new materials in which artificial processes are used to attempt to mimic the structure and properties of natural materials. Using Tirrell's approach, one takes templates from nature and attempts to make unnatural proteins using artificial amino acids as monomers. From this point one can then try to use monomers other than those based on amino acids. Tirrell feels that in the future the knowledge gained using traditional/natural templates could be used to construct new artificial templates. Within this area of research, it will be of interest to the Tirrell group to determine which fundamental aspects of specificity are preserved and which are destroyed.

As with the move to UMass, it again is this shift in focus from materials science to more of a biological science that has drawn the Tirrell group to California. Cal Tech is an ideal match for Tirrell's research interests because this is also their focus and one of their many strengths. According to David Baltimore, Nobel-Laureate and new president of Cal Tech, improving the biological sciences will continue to be the primary focus at Cal Tech. Tirrell also notes that Cal Tech has a unique group of researchers in this area with whom he can collaborate and for whom he has great respect.

Despite the excellent opportunities that lie ahead, Tirrell says he will miss many things about PSE, from the faculty and students to the multidisciplinary environment. He recognizes that PSE has made an investment in him, and believes this opportunity to go to Cal Tech was made possible by the strength of the department which he leaves. Even from outside the department, Tirrell hopes to help continue this excellence by sending quality Cal Tech students to UMass, just as he did when he was a professor at Carnegie Mellon University. In a final statement Tirrell said that he will miss working in PSE, but will always remain an advocate of the department to which he has been so intimately linked throughout his career.

1997 PSE Graduates

The following is a list of 1997 PSE graduates, their employer, advisor, and dissertation title. We wish you luck in your new journey. Please remember that you will always have a home here at PSE.

Michael Chen DuPont	Farris	PVT and Wave Propagation Studies of Polyimide Films
Wei Chen W.L. Gore	McCarthy	Polymer Surface Modification: Chemical Surface Modification, Layer-by-Layer Adsorption, Surface Reconstruction
Bert Chen 3M	Hsu	Spectroscopic Studies of Short/Long Range Ordering in Polymers
Christopher Comeaux Chemfab	Lesser	Masters Degree
Laurie Gower University of Florida	Tirrell	The Influence of Polyaspartate Additive on the Growth and Morphology of Calcium Carbonate Crystals
Derrick McKie Hoechst Celanese	Tirrell	Synthesis and Characterization of Poly(3,3,3-trifluorolactic acid)
Alyssa Panitch Zurich ETH, Switzerland	Tirrell	Design, Synthesis and Characterization of Artificial Extra-Cellular Matrix Proteins for Tissue Engineering
Wendy Petka 3M	Tirrell	Reversible Gelation of Genetically Engineered Macromolecules
Vipavee Phuvanartnuruks Rutgers University	McCarthy	Polymer Surface Chemistry: Surface Mixtures, Supported Polyelectrolyte Multilayers, and Heterogeneous Chemical Modification
Darrin Pochan NIST	Gido	Effects of Molecular Architecture and Conformational Asymmetry on Block Copolymer Morphology
Ekaterina Ponomarenko Max Planck Inst., Germany	MacKnight/Tirrell	Self-Assembled Polypeptide-Surfactant Complexes in Organic Solvents and in the Solid State: A New Class of Comb-Shaped Polypeptides
Zhaohui Su G.E.	Hsu/McCarthy	Chemical Modification of Polymers and the Properties of Functionalized Polymers
Shalabh Tandon Intel	Farris	Modeling and Stresses in Cylindrically-Wound Capacitors: Characterization and the Influence of Stress on Dielectric Breakdown of Polymeric Film
Meredith White DuPont	Farris	Characterization and Optimization of Solution-Processed Fluoropolymer Coatings
Dong Wu 3M	Tirrell	Design, Synthesis and Assembly of Genetically Engineered Proteins: Simple Routes to Biocatalytic Surfaces

The Center for UMass/Industry Research on Polymers: an Academic/Industrial Crossroads

In 1980 the Center for UMass/Industry Research on Polymers (CUMIRP) was established under the National Science Foundation (NSF) Industry-University Cooperative Research Center (I/UCRC) program. The objective of CUMIRP is to stimulate innovative research and promote technology transfer in polymer science and engineering by facilitating research partnerships between the University of Massachusetts and Industry.

In order to achieve its goals, the Center conducts research to identify and develop new concepts and ideas in polymer science, and to advance basic and fundamental research in areas of common interest to the University and its industrial collaborators. The Center's strategy is to promote links between University expertise and industrial needs and to develop those key areas into sound research programs. These interactions form the foundation of a partnership whereby Industry can expand its research base and incorporate new technical knowledge into its in-house R&D programs. In this way, the Center functions as an information gateway for the advancement of science and the exchange of polymer technology.

In its many years of operation, the Center has interacted with over seventy companies and government laboratories. In 1994, the Center adopted a new, three-part operating structure which offers Industry an accommodating, customized approach to research investments. Factors such as a sponsor's size, budget and research needs are incorporated when building a tailored, cost-effective research program.

The Center offers three distinct research formats. The first, modeled after the National Science Foundation Industry/University Cooperative Research Center structure, allows sponsors with mutual interests to support research focused on a common theme in a collaborative environment. Topics center on core areas of polymer science and engineering and allow for close team dynamics between researchers and sponsors. In the second type of research program, a single sponsor may elect to support the research of a faculty member (or team of faculty) in a one-on-one format. A third option is for sponsors to fund research through unrestricted grants. This type of funding lends itself to creative and exploratory research by the faculty, and can accommodate internships, arrangements for visiting scientists and industrial lecture series. The three research formats available through CUMIRP offer the sponsor tremendous flexibility and leveraging of funds, and result in the formation of a sponsor-specific research program.

The Center makes the research expertise of the University available to Industry in an interactive, multi-disciplinary approach. Industrial/government personnel, faculty, and student/post-doctoral researchers meet at bi-annual symposia to discuss the technical results and research directions of the projects supported through CUMIRP.

CUMIRP is managed by a full-time director, James D. Capistran, with oversight from a University Steering Committee and assistance from an Industrial Advisory Board. The CUMIRP Office may be contacted by telephone at (413) 545-2236, by fax at (413) 577-1517, and by E-mail at "cumirp@polysci.umass.edu."

1997-1998 CUMIRP Membership

3M	CIBA Specialty Chemical	Hoechst-Celanese	Rexam Graphics
Advanced Elastomer Systems	Degussa	Inex Pharmaceuticals	Rohm & Haas
Aerovox	Dow	Loctite	Shell
Allied Signal	DuPont	Main Tape	Solutia
Alza	Eastman Kodak	Markem	Spalding Sports
Amoco	Exxon	Nalco	TopoGen
AMP	FAA	Osram Sylvania	Titeflex Corporation
BASF	GelTex Pharmaceuticals	Presstek	United States Army
BFGoodrich	General Electric	Procter & Gamble	
Boeing CAG	Hewlett-Packard	Raychem	

Departmental Awards

*The Santos Go Memorial Merit Scholarship is presented each year to the most outstanding second year PS&E student. The award winners from 1996 are **Heather Hayes** and **Gustavo Carri.** The criteria for selection is based on academic achievements involving cumulative exam performance, grades, and research. The award is given in memory of Santos Go, who was the first doctoral student to enroll in the PS&E program in 1967. He died tragically in 1983 from leukemia. In addition, a number of faculty have been presented with awards and recognition. They are listed below.*

Samuel Gido
NSF Faculty Career Award

Frank Karasz
Member of Croatian Academy of Sciences and Arts

Robert Lenz
Eminent Scientist Award—Institute of Chemical & Physical Research, Tokyo, Japan

William MacKnight:
ACS Award in Polymer Chemistry

M. Muthukumar
UMASS Faculty Fellowship Award, 1997
UMASS Distinguished Faculty Lecturer, 1997
Ford Prize of the American Physical Society, spring 1998

Bruce Novak
1997 Carl S. Marvel Creative Polymer Chemistry Award

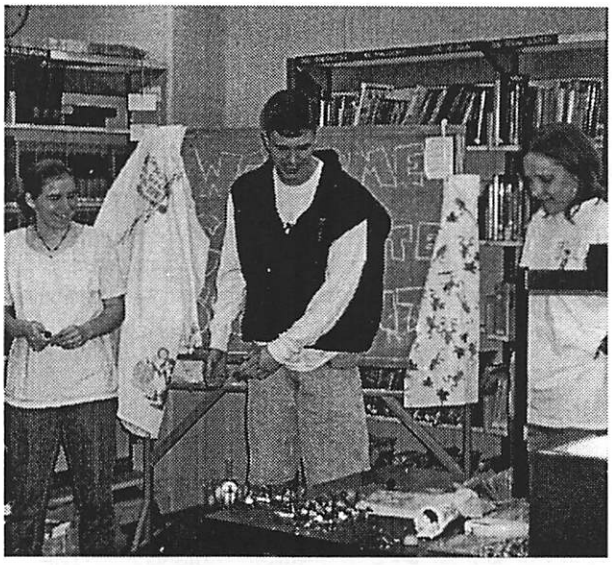
Roger Porter
ACS Polymer Division Paul J. Flory Polymer Education Award, spring 1998

Klaus Schmidt-Rohr
Rudolf Kaiser Prize—German Physical Society
Beckman Young Investigator Award

David Tirrell
Harrison-Howe Award of the Rochester Section of the ACS
UMASS Chancellors Medal, homecoming 1997

Otto Vogl
Honorary Degree—Osaka University, Japan

School Outreach Program



A group of PSE students has organized and presented seven separate programs to a variety of school children in grades 6-11 over the past eight months. The audience ranged from 5 to 50 and the presentations focused on a discussion of "what is a polymer" which was explained primarily through demonstrations. The demos included synthesis (slime and the nylon rope trick), physical properties (Tg, elasticity, crystallinity, absorbency, and polymer fiber strength), and characterization (SEM of a housefly and impact testing of a crosslinked epoxy).

This program has been a huge success allowing us to share our demonstration ideas with the National Plastics Museum and the Summer Chemistry Outreach Program at Smith College. The group is open to suggestions for other demos. Please contact Jenny David with any comments or questions (jenny@swifty.pse.umass.edu).

Alumni News

Thank you for all the responses to the questionnaire and for sharing your triumphs and achievements with us. Keep the updates and news coming.

Charles Beatty '71 (University of Florida) "My graduate studies and the relationships developed with other students and faculty has been a major asset to the development of my career in plastics engineering."

Saleh Jabarin '71 (University of Toledo) "Received the University of Toledo Outstanding Faculty Research Award for 1995, has been designated 'University College Fellow' at the University of Toledo for recognition of outstanding cooperation and solid teaching in 1997 and Director of the SPE Blow Molding Division."

Bill Prest '72 (Xerox)- "A new polymer person in the family. My daughter, PJ Prest, is finishing up her Ph.D. degree in Organic Chemistry at Illinois and is starting to make polymers too!"

Beata Abbs '74 (Critikon) "No big event in my life. Enjoying family life with my husband, Ted, and children (Drew age 9 and Blair age 7). Just completed 21 years with Johnson & Johnson."

Ananda Chatterjee '74 (Union Carbide) "Member of the editorial board, Journal of Plastic Film & Sheeting. Granted twenty (20) US patents."

Gerald Dever '74 (Schering-Plough Health Care) "The youngest of my three children, Sean, just graduated from Auburn University with a B.S. in Accounting."

Ashok Misra '74 (Indian Institute of Technology) "Actively involved in teaching, research and consultancy in polymers. Responsible for the formation of Centre for Polymers Science and Engineering at I.I.T., Delhi. My wife, Rashini, is the chairperson of a social work organization for education and empowerment of underprivileged children and women."

Stanley Baczek '77 (Pennsylvania College of Technology) "After serving for three years as the Director of the Plastics Manufacturing Center at Penn College, I had the opportunity to become full-time plastics faculty. I enjoy the students and teaching hands-on courses in the plastics analysis, extrusion, quality and mold filling analysis. The position gives me the opportunity to consult for local plastics and polymer companies and entrepreneurs."

John Starr '77 (Ticona) "Recently received J.D. from Rutgers Law School."

Lothar Kleiner '78 (Alza Corporation) "Working at Alza Corp. since 1991. Currently, I am the Director of Materials Science. Promoted to senior research fellow late last year. Member of CUMIRP."

William Perkins '78 (Shell Chemical) "Associate editor of the Journal of Applied Polymer Science. Have taken up golf God help me! Daughter Lisa is a freshman at the College of Wooster this fall."

Surendra Agarwal '80 (Kraft Foods) "I enjoyed my years at UMass and I have a lot of great memories about UMass campus. The PSE program is excellent and I owe my success to that. I wish everyone in the PSE department good luck."

Steven Grossman '80 (University of Lowell) "Currently full professor of Plastics Engineering at UMass-Lowell. Also attended law school and practice patent law with a focus on polymers and also some expert witness activities. Currently living in Amherst, New Hampshire."

Ronald Grossman '81 (PolyChem Corporation) "Seven years ago I started PolyChem Corporation as a Polyurethane/Specialty Coatings product development and consulting company. My largest client is called "BULLHIDE Liner" which is a polyurethane lining developed primarily for truck bed linings. I have also developed a hybrid Polyurethane/Acrylic coating for the single-ply roofing market and a company called Ply-Coat."

Donald Bansleben '82 (W.R. Grace) "Currently, responsibilities include managing a $2 million award from the Advanced Technology Program (ATP) to develop new catalysts and polar substituted polyolefins. Also responsible for the technology platform activities in metallocene polymers for packaging applications."

John Minter '82 (Kodak) "Current position: Technical group leader for Analytical Imaging at Kodak. Research interests: cryoTEM, image analysis, electron crystallography."

Nicole Whiteman (Fritts) '82 (Dow Chemical) "I'll take the opportunity to introduce my professional interests. I design products and study the relationship between polyolefin product design and performance especially for high performance food packaging applications. This year a product I designed for fresh cut produce packaging will be launched and I am working on several FDA petitions for new product families."

Dale Handlin '83 (Shell Development) "I will be on an industrial sabbatical in Amsterdam for one year starting July 1, 1997."

Wade Adams '84 (Air Force Research Laboratory) "Kicked out of the lab, upstairs to Chief Scientist in January 1996! Still keep a research office, and doing some work on ultimate polymer properties and polymer dispersed liquid crystals. Daughters Julie (age 29 a professional cellist) and Keri (age 25 a business finance manager) live nearby and still keep me hopping."

Gary Jaycox '84 (DuPont CR&D) "Received Ph.D. in synthetic chemistry at Dartmouth in 1988, NIH Postdoc. Fellow at Columbia University from 1988-1990 and is currently an Associate Editor of Progress in Polymer Science (since 1994)."

John Warakomski '84 (Dow Chemical) "This summer I celebrate my 13th year at Dow and 15th wedding anniversary. I am

cub scout leader and soccer coach for my sons, ages 7 and 9. I enjoy tennis, singing in the church choir and brewing beer (35 batches so far, including some award winners!)"

Hoe Hin Chuah '85 (Shell Chemical) "Developing Poly(trimethylene terephthalate) from laboratory scouting project to commercialization is the most satisfying reward of my PSE training."

Michael Schen '85 (NIST) "Over the last three years, I've been responsible for building and coordinating NIST's program in electronic packaging and interconnection materials which includes a strong polymer science component. Later in 1997, I'll be taking a long overdue extended leave from NIST, touring the Western USA and Canada on my BMW K1100RS motorcycle. Yeeha!"

David Gagnon '86 (3M) "I'm on a 3-5 year international assignment in Canada which began in September 1996 and will be returning to 3M St. Paul at the end of the assignment."

Eric George '86 (G.E. Plastics) "Jerome F. Parmer, another UMass alumnus, has just joined the CYCOCOY Technology Team in Selkirk, NY, as a new product introduction leader for the automotive industry."

Raymond Lo '86 (Proctor & Gamble) "Ray continues to recruit for P&G at UMass PSE. In 1998, he will be chairing the 26th Analytical Symposium. This annual meeting is held in Cincinnati with over 450 P&G analytical chemists attending to discuss new techniques of instrumentation. Ray is married to Suzanne and they have three children: Heather (9), Christopher (6) and Nicholas (3). As a family they enjoy swimming, horseback riding, biking, and chess. Ray currently works on phase chemistry of antiperspirants/deodorants and has supported the polymer technology development in all major haircare brands."

Jean Brady '87 (Rohm & Haas) "The most significant changes which have occurred since grad school were the arrival of my two children: Andrew, age 6, and Jennifer, age 4. I have been working at Rohm and Haas since 1989 and came out with my first product, KM377, a core/shell impact modifier. I've received two patents and have filed for a third. In recent years, I've focused a lot on polymer melt processing and mechanical properties, as well as leading cross-functional stage/gate product development teams."

Eva Dobrovolny-Marand '87 (Virginia Polytechnic Institute) "Eva and Herve' Marand have three children: Alena (age 9), Alex (age 6) and Anika (age 3)."

Tracey Wilbourn (Margraf) '87 "After working for six years, I currently stay home with our two children and plan to return to work when they are older."

Thomas Yokoyama '87 (C.P. Hall) "I started a new job with C.P. Hall in January 1997 after 8 1/2 years at Sherwin Williams."

Joseph Mallon '88 (Cytec Industries) "I got married in 1991 and have a 4-year old daughter. I am now working in the Patent Law Department of Cytec Industries and I am attending law school at night at Pace University Law School. I expect to graduate in May 1999. I expect my area of law practice to be intellectual property law."

Mark Dadmun '91 (University of Tennessee) "Since graduation, we have had two children, Ryan born in 1994 and Catherine born in 1996. Professionally, my lab is going strong with four grad students working on Interfacial and Shear Effects of Polymer Blends. Progress will be expedited with an NSF Career Grant which was recently funded."

Susana Steppan '91 (PPG Industries) "Dave and I had a baby girl three years ago. Her name is Carla."

Dhamodharan Iyengar '92 (Indian Institute of Technology) "Damo and Rama had a baby boy in April 95 named Rishyasringan (Rish for short). Rish is two years old and is very naughty. With three research grants and four Ph.D. students he has realized that good science can be done in India. He enjoys Beavis and Butthead in India thanks to MTV via cable."

Michele Maden-Mansfield '92 (Proctor & Gamble) "Todd and I have two wonderful boys, Joshua (3 1/2) and Benjamin (9 months). We spend most of our "free" time doing things with them and working in our 75 year old house."

Peter Stenhouse '92 (U.S. Army Natick) "I got married 6/10/95 to Joelle Cesarsuolo. We had a daughter 1/14/97, Katherine Maria Stenhouse."

Elliot Douglas '93 (University of Florida) "Our first child, a boy named Spencer Patrick, was born April 26, 1997."

Fotios Papadimitrakopoulos '93 (University of Connecticut) "NSF Career Award 1997-2000, Division of Materials Research. American Association of University Professors, Excellence Award for Teaching Promise, 5/2/97."

Karla Shaw (Gagnon) '93 (Advanced Elastomer Systems) "Kendra Devin Shaw born November 26, 1996 to Eric and Karla. She was 8 lbs. 13 oz., 22 inches. Husband Eric Shaw (Ph.D. Chemistry 1993) is a chemistry instructor at the Agriculture Technical Institute (branch of the Ohio State University) in Wooster, OH."

Hsin-Lung Chen '94 (National Tsing Hua University) "Will be joining the faculty of the Chemical Engineering Department at National Tsing Hua University/Taiwan."

Mario Perez '94 (3M) "Received the prestigious Corporate Circle of Technical Excellence award for outstanding technical contributions to the company after only 1 1/2 years. Promoted from senior research engineer to research specialist in 2 1/2 years. Active in recruitment and sponsoring of UMass PSE research activity."

Cynthia Athanasiou '95 (National Starch) "I have recently started in a new Development position at National Starch, responsible for adhesives development for the non-wovens industry. Will, my husband, and I also recently celebrated our 10th anniversary, bought a new home and are expecting our 1st child in early December."

Joanne Curly '95 (Inhale Therapeutic Systems) "I think this is a great idea."

Klaus Schmidt-Rohr Receives Tenure

In September of 1997, Professor Klaus Schmidt-Rohr received tenure in the Department of Polymer Science and Engineering, having worked at UMass for a little over two and a half years. Schmidt-Rohr, who is just 30 years old, already has an astonishing record of publications. He is co-author on 55 papers and has published a book on multidimensional NMR of polymers. In addition, he has received numerous accolades including the Rudolf-Kaiser Prize for experimental physics (1996) and the Beckman Young Investigator Award (1996). He is a member of the American Physical Society, the American Chemical Society, and the German Physical Society.

Klaus Schmidt-Rohr was born in Heidelberg, Germany. His father is a physicist, so science became a part of his life at an early age. In 1984, Schmidt-Rohr began studying physics at the University of Heidelberg where he had a fellowship from the German National Scholarship Foundation that continued until he finished his Diplome at the University of Mainz in 1989. Immediately afterwards, he entered into military service. During that time, he worked part-time at the Max-Planck Institute for Polymer Research. After his 15 month military duty, Schmidt-Rohr focused on his graduate studies at Mainz where he was a Max-Planck Society Graduate Research Fellow. In December 1991 he completed his Ph.D. dissertation entitled Multidimensional NMR Methods for the Investigation of Dynamics, Structure, and Order in Solid Polymers under the direction of Hans W. Spiess. He graduated "summa cum laude" and received several additional honors such as the Otto Hahn Medal and the Dieter Rampacher Award for the youngest Ph.D. in the Max Planck Society. He remained at the Institute as a staff scientist and project manager for one year. In January 1993, he was granted a postdoctoral research fellowship from BASF AG and the German National Scholarship Foundation to work with Professor Alexander Pines at the University of California, Berkeley. While there, he met his future wife, Mei Hong. In January of 1995 he started his present faculty position here at UMass.

The pursuit of knowledge and understanding of molecular structure led Schmidt-Rohr to academia; our international reputation and NMR facilities drew him here. The NMR facility at UMass boasts six NMR spectrometers, three of which are solid-state NMRs. The solid state NMRs all have the same field strength with interchangeable probe heads, making multiple experiments possible with a minimum amount of effort. Perhaps the biggest asset to the NMR facility is its efficient operation under the guidance of its director, Charlie Dickinson, who handles maintenance of the equipment, scheduling, training, and is a co-worker with Schmidt-Rohr on several research projects. UMass offers Schmidt-Rohr the opportunity for collaboration with other professors in the Departments of Polymer Science and Engineering, Chemistry, and Chemical Engineering. This unique chance, as well as the balance of polymer engineering, chemistry, physics, and theory, are very important to him and were instrumental in his decision to remain at UMass when offered a professorship and directorship at the National Research Center at Jülich, Germany.

Schmidt-Rohr's research focuses on applying multidimensional NMR to polymer systems. The thrust of his work involves studying the conformational structure of synthetic polymers and biomacromolecules as well as segmental dynamics of polymers in the solid state. He is funded by the Beckman Foundation, NSF, 3M, and Alza. His group comprises five graduate students and one postdoc. In the future, Schmidt-Rohr intends to continue his work on applying advanced NMR techniques to study classical and novel polymers in unprecedented detail. Moreover, he would like to expand his teaching to include not only the advanced NMR course but also a general spectroscopy class.

We Need Your Help!

During the course of our questionnaire drive, we were unable to contact all the PSE alumni. Here is a list of alumni for whom we do not have an address or lead of any kind to their whereabouts. If you recognize a fellow alum with whom you are in contact, have them reach us (alumni@mail.pse.umass.edu or through the department office). Also, if you have received this newsletter and did not return your questionnaire, please contact us so that we can insure that you will continue to receive the newsletter.

Kenichi Baba
Eileen M. Bailey
Katherine Bakeev
Henry Bartony
Walt Bassett
Dean Behm
John R. Bric
Na Chai
Chinho Chen
Shih-May Chou
Frederick L. Cummings
Joseph Daly
Ronny Glenn Deere
Walter Deits
Heidi Dickstein
Frederick A. Emerson
Sherry Fang
Jorge N. Farber
Ta-Min Feng
Joseph Fink
Daniella J. Fisher (Gula)
Ortelio Foyo-Carbonell
Donald Gaylord
Nancy Goldberg
Joseph Grabon
Roberto Gregorius
Paula E. Hahn
J.-S. Ho
Su-Don Hong
Joyce L. Illinger
Alan Ingall
Ann Jacob
Sushant Jain
Sharon Jones
Rong-Hwei Juang
Thomas Juska
Peter K. Kim
Shaohua Li
Sarah Lien
Christian Lietzau
Dhei-Jhai Lin
Signe Lund
Louis Manrique
Kevin McGrath
Shel McGuire
Donald Meltzer
Steven E. Molis
Warren Nachlis
Hiroaki Namba
Ramon Neira-Lemos
Richard Norton
Su-Min Oon
Bernd Oster
Daniel Pauk
Craig Pehlert
Claudia Poser
Margo Raate
Moonher Ree
Yuan Steve Ren
Daniel A. Roberts
Robert Ross
Mark Rossman
James T. Sampson
George Sheldrick
Premal Shukla
Choo Joon Soon
Carl J. Sullivan
Judith E. Sutherland
Paul D. Swanson
Karen Sy
Lawrence C. Vaniseghem
Roland R. Wallis, Jr.
Jeou-Shong Wang
Jing Wang
Cherng-Chiou Wu
Min Ye
Qi-Feng Zhou

A Penny for Your Thoughts

We're interested in hearing from you! Promotions, job changes, awards, publications, patents, family information? Let us know and we will print it in next year's issue of The Annex.

Name _____

Degree/Year Graduate _____

Advisor(s) _____

Address change

_____

_____

Suggestions, news, comments?

_____

_____

_____

_____

Fall 1997 PS&E Seminar Schedule

Seminars held at 3:35 P.M. Fridays, A111 Conte Polymer Research Center

September 12
Prof. Coleen Pugh; Chemistry, Univ. of Michigan
"The Effect of Amphiphilic Components and Unusual Molecular Architectures on the Ordering of Liquid Crystals"

September 19
Prof. T.C. (Mike) Chung; Polymer Science Program, Penn State Univ.
"Synthesis of Functional Polyolefins with Block/Graft Microstructures: Transformation Reaction from Metallocene Catalysis to Living Radical Polymerization"

September 26
Prof. Pablo Debenedetti; Chemical Engineering, Princeton Univ.
"Thermodynamics of Supercooled and Glassy Water"

October 3
Prof. Thomas E. Mallouk; Chemistry, Penn State Univ.
"Molecular Recognition in Inorganic Solids and Thin Films"

October 17
Prof. Paul Russo; Chemistry, Louisana State Univ.
"Diffusion in Complex Solutions: Of Course It is Important, But Could It Also be Useful?"

October 21-25
MRSEC Meeting (Oct. 21), Poster Symposium (Oct. 22), and CUMIRP Meeting (Oct. 23); No Friday Seminar

October 31
Prof. Stuart Rice; Chemistry, Univ. of Chicago
"Melting and Diffusion in Quasi-Two-Dimensional Colloid Assemblies"

November 7
Prof. Georges Belfort; Chemical Engineering, Rensselaer Polytech. Inst.
"Modification of Synthetic Polymeric Membranes: Connecting Intermolecular Force Measurements with Filtration Performance"

November 14
Dr. Craig Hawker; IBM Almaden Research Laboratory
"Manipulation of Structure on the Nonoscale: Studies at the Interface of Organic & Polymer Chemistry:"

November 21
Prof. Yuri Lvov; Chemistry, Univ. of Connecticut
"Assembly of Multilayer Films by Alternate Adsorption of Oppositely Charged Macroions (Linear Polyions, Dyes, Proteins, Silica, and Clay"

December 5
Dr. Gregory McKenna; Polymers Division, NIST
"Kinetic and Viscoelastic Behaviors of Glass Forming Systems"

The Annex

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