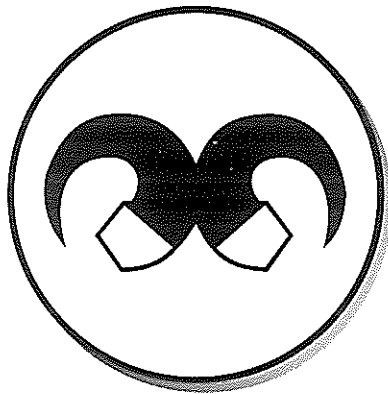

POLYMER PROCESSING SOCIETY



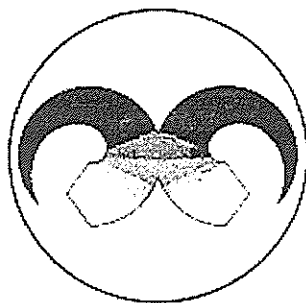
**North American Meeting
Toronto, Ontario, Canada
August 17-19, 1998**

PROGRAM AND ABSTRACTS

PPS
Polymer Processing Society
North American Meeting

August 17 - 19, 1998

Toronto, Ontario, Canada



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THE POLYMER PROCESSING SOCIETY (PPS)

The PPS was founded in March 1985, in Akron Ohio. The goal of the PPS, as embodied in its constitution, is to foster scientific understanding and technical innovation in polymer processing by providing a discussion forum for the world-wide community of engineers and scientists in this field. The range of the PPS interests covers all formulation, conversion and shaping operations needed to transform monomeric forms to commercial polymeric products. In addition to the international annual conferences, the PPS activities include the organization of regional and local meetings, publication of the journal *International Polymer Processing*, and sponsorship of educational seminars. Membership in the PPS is open to all research workers in the field, and to all individuals who feel the activities of the society advance their professional development. The benefits for members include receiving the official PPS journal free and attending the Annual Meetings at reduced rates. The current Annual Membership fee is \$US 80.

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TECHNICAL PROGRAM

Symposia:

1. Processing Challenges with Metallocene Polymers
2. Single and Twin Screw Extrusion
3. Reactive Extrusion
4. Injection Molding
5. Mixing, Blending and Compounding
6. Rheology
7. Fibers and Films
8. Thermoforming, Blow Molding and Rotomolding
9. Composites and Highly Filled Systems

Poster Presentations

Organizers:

E.E. Agur, J. Vlachopoulos
G.A. Campbell, T. Sakai
W.E. Baker, L.P.B.M. Janssen
M.R. Kamal, H.E.H. Meijer
D. Bigio, J.M.H. Janssen
P.J. Carreau, M.C. Williams
P. Saha, J. Perdikoulis
R. DiRaddo, F. Schmidt
D.M. Kalyon, U. Yilmazer
C. Bellehumeur

REGISTRATION

PPS members	\$US 280
Non-members	\$US 320
One-Day Registration	\$US 150
Students	\$US 100
Banquet	\$US 60

Full registration fee covers three days of meeting attendance, Monday night wine & cheese reception, and book of extended abstracts.

Non-members are invited to join the Polymer Processing Society. If you would like to join the PPS upon registration, the difference between member and non-member fees will be used towards the \$80.00 current annual membership fee unless you decline in writing. Membership in the PPS includes a subscription to *International Polymer Processing*.

CONFERENCE LOCATION

Holiday Inn Select Toronto Airport
970 Dixon Road
Etobicoke (Toronto), Ontario
Canada M9W 1J9
Tel: (416) 675-7611 (Switchboard)
(416) 674-4340 (Reservations)
Fax: (416) 674-4364

CONFERENCE AT A GLANCE

Monday August 17	8:30	Opening Ceremony and Welcome Trillium A & B		
	8:45	Special Symposium: Processing Challenges with Metallocene Polymers Trillium A & B		
	12:00	Lunch		
	14:00	Symposium 1 Trillium A & B	Symposium 7 Algonquin A & B	Symposium 3 Algonquin C & D
	19:00	Poster Session and Wine & Cheese Reception - Rooftop Garden (Free with registration)		
Tuesday August 18	8:30	Symposium 5 Algonquin A & B	Symposium 4 Algonquin C & D	
	12:10	Lunch		
	14:00	Symposium 5 Algonquin A & B	Symposium 9 Algonquin C & D	
	19:00	Banquet - Rooftop Garden (Ticket required)		
Wednesday August 19	8:30	Symposium 2 Algonquin A & B	Symposium 6 Algonquin C & D	
	11:50	Lunch		
	14:00	Symposium 2 Algonquin A & B	Symposium 8 Algonquin C & D	

Monday, August 17, Evening, 19:00 - 22:00

POSTER SESSION and WINE & CHEESE RECEPTION - Rooftop Garden
(Free with registration)

- P-01 **Flow Induced De-Mixing During Polymer Processing I: Migration And Morphology Changes In Polymer Blends During Flow In A Tube**, A. Karami, S.T. Balke, University of Toronto, Canada
- P-02 **Flow Induced De-Mixing During Polymer Processing II: Migration of Polymer Blend Components in Extrusion**, Y.K. Ling, R. Ng, A. Karami, S.T. Balke, University of Toronto, Canada
- P-03 **Flow Induced De-Mixing During Polymer Processing III: Particle Migration in Couette Flow**, S. Joseph, S.T. Balke, University of Toronto, Canada
- P-04 **Flow Induced De-Mixing During Polymer Processing IV: Dispersed Migration in a Glass Extruder**, L.D. Ing, S.T. Balke, University of Toronto, and R. Planeta, H. Tamber, M. Planeta, Macro Engineering and Technology Inc., Canada
- P-05 **In-line Monitoring: Color During Extrusion**, C. Gilmor, M.H. Sayad, S.T. Balke, University of Toronto, Canada and K. Clark, C. Mitchell, S. Wentworth, G.E. Plastics Inc., Cobourg, Canada
- P-06 **The Influence of Al(OH)₃ as a Reducing Flammability Agent on the Course of PE Extrusion Process**, R. Sikora, B. Samujło, Technical University of Lublin, Poland
- P-07 **Unexpected Torque Maximum During Compatibilization of an Immiscible Blend**, P. Pötschke, K. Wallheike H. Stutz, Institut für Polymerforschung Dresden, Germany
- P-08 **The Shear Viscosity of Polymer Melts in Die Extrusion Flow**, J.-Z. Liang, R.K.Y. Li, G.J. Tang, C.Y. Tang, South China University of Technology, University of Hong Kong, Hong Kong Polytechnic University, China
- P-09 **Studies on Membrane Materials of Preferential Separation of Alcohol from Aqueous Solution**, X.P. Wang, Y.F. Feng, Zhejiang Institute of Silk Technology, China
- P-10 **Studies on the Mechanism of the Decomposition of Silk by UV Irradiation**, F. Yunfang, L. Hua, Zhejiang University, G. Wendeng, Kaidi Silk Co. Ltd., China
- P-11 **Polymer Sintering and Heat Transfer in Rotational Molding**, C. Bellehumeur, University of Calgary, Canada
- P-12 **Extrusion of Hard-Metal Carbide Powder Suspension**, B. Hausnerová, P. Sáha, Technical University of Brno, Czech Republic
- P-13 **Effect of Injection Molding Cycles on Degradation of Random Polypropylene Copolymer and its Composites 1. MFI and Mechanical Properties**, C. Orlandin, S.L. Vieira, G.A. Carvalho, A.J. Zattera, M. Zeni, Universidade de Caxias do Sul, Brazil
- P-14 **The Influence of a Method and Conditions of Polymer Test Specimen Preparation on Results of Examinations**, E. Bociaga, Technical University of Czestochowa, Poland

Tuesday, August 18, Morning Session

	MIXING, BLENDING, AND COMPOUNDING Algonquin A & B	INJECTION MOLDING Algonquin C & D
8:30	5-KN Drop Deformation and Breakup in Extensional Flow Field, L.A. Utracki, Industrial Materials Institute, Canada	4-01 3D Numerical Modelling of the Mould Filling in Gas Assisted Injection Molding, D.M. Gao, Industrial Materials Institute, Canada
8:50		4-02 Measurement of Die-pad Tilting in IC Packaging Process Using Hall Elements, M. Sato, H. Yokoi, University of Tokyo, Japan
9:10	5-01 A Boundary Element Analysis of Planar Drop Deformation in Screw Channel of a Mixing Extruder, R.E. Khayat, University of Western Ontario, and M.A. Huneault, L.A. Utracki, R. Duquette, IMI, Canada	4-03 Morphological Observations in Injection Molding of Thermoplastics, M.R. Kamal, T. Huang, McGill University, Canada
9:30	5-02 Drop Breakup in Sudden Onset Strong Flows, D. Bigio, R. Calabrese, C. Marks, University of Maryland, USA	4-04 Injection Molding Part Quality Prediction and Melt Quality Control on the Basis of Characteristic Process Values, S. Tabatabai, H.G. Fritz, IKT, University of Stuttgart, Germany
9:50	5-03 Mixing Performance of Kneading Blocks During Melt-Melt Blending in Twin Screw Extruders, G. Shearer, C. Tzoganakis, University of Waterloo, Canada	4-05 Injection Molding of Thermoplastics Reinforced with High Loadings of Melt Processable Glass, R.T. Young, D.G. Baird, Virginia Polytechnic, USA
10:10	Break	
10:30	5-04 Morphology Development Along the Metering Zone of a Twin Screw Extruder, M. Rauwolf, H-G. Fritz, IKT, University of Stuttgart, Germany	4-06 Plasticating Units in Injection Molding Requirements and Trends, V. Schöppner, University of Paderborn, Germany
10:50	5-05 Behavior of Permeable Agglomerates in Prototype Flow Fields Of Relevance to Agglomerate Dispersion, P. Levrresse, D.L. Feke, I. Manas-Zloczower, Case Western Reserve University, USA	4-07 Dynamical Properties of Polyacetale Composites with Microspheres From Fly Ash, J. Koszkuł, E. Bociaga, D. Kwiatkowski, Technical University of Czestochowa, Poland
11:10	5-06 Theoretical Predictions of Rheological Behavior for Immiscible Polymer Blends Undergoing High Deformation Flows, M. Aouiana, M. Bousmina, R. Guénette, Laval University, Canada	4-08 The Mould as the Central Part of Production Line Must be Re-Engineering, I. Čatić, University of Zagreb, Croatia
11:30	5-07 Structure Development of Characteristics of Polypropylene-Ethylene Propylene Rubber Blends and Dynamically Vulcanized TPVs, Y. Yu, J.L. White, University of Akron, USA	
11:50	5-08 Extrusion of PE/PS Blends with Supercritical Carbon Dioxide, M.Lee, C. Tzoganakis, University of Waterloo, C.B. Park, University of Toronto, Canada	

Tuesday, August 18, Afternoon Session

	MIXING, BLENDING, AND COMPOUNDING Algonquin A & B	COMPOSITES AND HIGHLY FILLED SYSTEMS Algonquin C & D
14:00	5-09 PPS/LCP Block Copolymers as Compatibilizers in High Performance Polymer Blends , F. Böhme, D. Pospiech, D. Kappler, L. Häußler, Institut für Polymerforschung Dresden, Germany	9-01 Modelling Young's Modulus of Injection Molded Short Fiber Reinforced Composites Using the Elementary Volume Concept , B. Möglinger, Ch. Ludwig, A. Kech, IKP, University of Stuttgart, Germany
14:20	5-10 Reactive Blending of Polystyrene and Polyamides Using Polystyrene-g-Acrylic Acid as Compatibilizer , S. Subramanian, S. Lee, University of Missouri-Columbia, USA	9-02 Generation of Long Fiber Filled Polymer Melts for Reprocessing Through Compression Molding , K.-P. Sigl, H.-G. Fritz, IKT, University of Stuttgart, Germany
14:40	5-11 Transesterification in Polybutylene Terephthalate/Polybutylene Adipate Blends , B.T.J.M. Woutersen, DSM Research, Netherlands	9-03 Viscous Heating in Non-Isothermal Die Flows of Viscoplastic Fluids with Wall Slip , A. Lawal, D.M. Kalyon, Stevens Institute of Technology, USA
15:00	5-12 A Statistical Study of the Mechanical and Morphological Properties of Polypropylene/Nylon Blends Compatibilized with PP-g-MA and SEBS-g-MA , J.D. Tucker, S. Lee, University of Missouri-Columbia, USA	9-04 Effect of Surface Treatment on the Dynamic Mechanical Properties of Glass Bead Filled Polypropylene Composites , J.Z. Liang, R.K.Y. Li, University of Hong Kong, China.
15:20	Break	
15:40	5-13 Filler Distribution and Morphology in an Immiscible Polymer Blend , A.L. Persson, H. Bertilsson, Chalmers University of Technology, Sweden	9-05 A Method to Determine In-Plane Permeability of Fiber Preforms , M.K. Um and T. W. Kim, Korea Institute of Machinery and Materials, South Korea
16:00	5-14 On-Line Crystallization Measurements by Laser Raman Spectroscopy , T.F. Serhatkulu, M. Cakmak, M. Graves, J. Galay, University of Akron, USA	9-06 Electrical Conductivity and Mechanical Properties of Carbon Fibre Reinforced PP/PANI Complex Blends , R. Taipalus, T. Harmia, K. Friedrich, Institut für Verbundwerkstoffe, Germany
16:20	5-15 Mechanical Recycling of Post-Used HDPE Crates Using the Remelting - Restabilization Technique , C.D. Papaspyrides, C.N. Kartalis, NTU, Greece, R. Pfaendner, H. Herbst, K. Hoffmann, Ciba, Germany	

Tuesday, August 18, Evening, 19:00 - 22:00

BANQUET - Rooftop Garden (Ticket required)

Wednesday, August 19, Morning Session

	EXTRUSION Algonquin A & B	RHEOLOGY Algonquin C & D
8:30	2-KN Opportunities, Innovations and Twin Screw Extruders, W. Thiele, American Leistritz Extruder Corp., USA	6-01 Parallel Plate Rheometry and Slit Viscometry of a Highly Filled Polyester Molding Compound, J.J. Garcia, C. Cohen, Cornell University, USA
8:50		6-02 Elongational Properties of Polymer Melts and Solutions, J.R. Collier, O. Romanoschi, S. Petrovan, Louisiana State University, USA
9:10	2-01 Transient Startup Flow in a Modular Co-Rotating Twin Screw Extruder, E.K. Kim, J.L. White, University of Akron, USA	6-03 Elongational Flow Induced Structure Development in Some Supercooled Semicrystalline Polymer Liquids, T. Kotaka, H. Kubo, M. Okamoto, Toyota Technological Institute, Japan
9:30	2-02 Simplified ZSK Modeling, J. Curry, A. Kiani, Krupp Werner & Pfleiderer Corp., USA	6-04 Biaxial Characterization of Softened Polymers, F. Erchiqui, A. Derdouri, D. Laroche, Industrial Materials Institute, Canada
9:50	2-03 Analysis of Flow of Polymer Blends in a Modular Co-Rotating Twin Screw Extruder, J.L. White, S.H. Lee, J.W. Cho, University of Akron, USA	6-05 Analysis of Stress Transients in Shear Flows with Distribution and Approximation Models for Nematic Polymer Molecular Orientation, J.S. Cintra, Universidade Federal de São Carlos, Brazil
10:10	Break	
10:30	2-04 The Development of Laminar Morphology in a Co-Rotating Twin Screw Extruder, O.A. Rodriguez-Veloz, M.R. Kamal, McGill University, Canada	6-06 Rheological Characterization of Unmodified and Chemically Modified Poly(Ethylene Terephthalate) Resins, J. Quintans, M. Xanthos, U. Yilmazer, New Jersey Institute of Technology, USA
10:50	2-05 Comparative Study of Fiber Breakage in Compounding Glass Fiber Reinforced Thermoplastics in a Buss Kneader, Modular Co-rotating and Counter-rotating Twin Screw Extruders, K. Shon, J.L. White, University of Akron, USA	6-07 Rheology-Diffusion Investigation at Polymer-Polymer Interfaces, H. Qiu, M. Bousmina, Laval University, Canada
11:10	2-06 Devolatilizing Performance of Several Types of Screw Elements for an Intermeshing Co-Rotating Twin-Screw Extruder, N.H. Wang, Japan Steel Works, Japan	6-08 Experimental Study of Post-Shear Crystallization of Polypropylene Melts, O. Lee, M.R. Kamal, McGill University, Canada
11:30	2-07 3-D Numerical Simulation on Flow in Two Kinds of Screw Elements Assembly in Twin Screw Extruders, S. Kihara, S. Katsuki, M. Yoshinaga, K. Funatsu, Kyushu University, Japan	6-09 Rheological Properties of Concentrated Solutions of Cellulose in N-methylmorpholine-n-oxide (NMMO), V.E. Dreval, N.V. Bleishmidt, L.K. Golova, V.G. Kulichikhin, Russian Academy of Sciences, Russia
11:50	Lunch	

Wednesday, August 19, Afternoon Session

	EXTRUSION Algonquin A & B	THERMOFORMING, BLOW MOLDING, AND ROTOMOLDING Algonquin C & D
14:00	2-08 Drag and Pressure Flow with Special Twin Screw Mixing Elements , T. Brouwer, D.B. Todd, L.P.B.M. Janssen, PPI, Stevens Institute of Technology, USA	8-01 Optimization of Mechanical, Permeability and Cooling Performance for Blow Moulded and Thermoformed Parts , R.W. DiRaddo, R. Aubert, Industrial Materials Institute, Canada
14:20	2-09 Crossflow in the Extruder , C. Shaji, D.L. Powers, R. Taylor, G.A. Campbell, Clarkson University, USA	8-02 Profiled Infra-Red Radiative Heating in Blow Molding and Thermoforming , S. Monteix, F. Schmidt, Y. Lemaout, Ecole des Mines - Albi, France, and R.W. DiRaddo, D. Laroche, Industrial Materials Institute, Canada
14:40	2-10 A Concept for the Optimization of Single Screw Extruders , H. Potente, M. Zelleröhr, University of Paderborn, Germany	8-03 Modelling of the Plug Assisted Pressure Thermoforming Process , J.F. Lappin, P.J. Martin, E. Harkin-Jones, Queen's University of Belfast, Northern Ireland
15:00	2-11 Numerical Simulation and Fundamental Experiments on Polyolefin Foaming , M. Ohshima, K. Inamori, M. Takada, M. Tanigaki, Kyoto University, Japan.	8-04 Use of Impact Test Data for the Plug Assisted Thermoforming Process , J.F. Lappin, P.J. Martin, E. Harkin-Jones, Queen's University of Belfast, Northern Ireland
15:20	Break	
15:40	2-12 Three-Dimensional Viscoelastic Numerical Analysis of the Encapsulation Phenomena in Coextrusion , M. Takase, S. Kihara, K. Funatsu, Kyushu University, Japan	8-05 Rotomolding of Low-Density, Fine Cell LLDPE Foams , C.B. Park, G. Liu, F. Liu, University of Toronto, J.A. Lefas, Wedtech Inc., Canada
16:00	2-13 Design of Some Barrier Flight Zones , V.V. Jinescu, I. Poștoacă, C.V. Jinescu, Politechnia University, Romania, Tetra Pack Converting, Sweden	8-06 Bubble Dissolution in Rotomolding , M. Kontopolou, J. Vlachopoulos, McMaster University, Canada