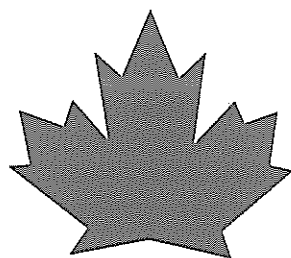
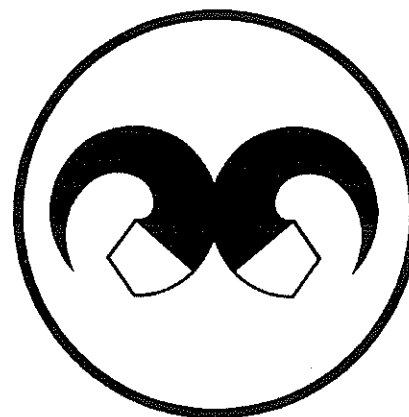


Polymer Processing Society

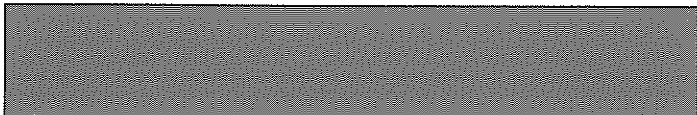


Seventh Annual Meeting

Hamilton, Ontario, Canada

April 21-24, 1991

Program and Abstracts



The Organizing Committee for the Seventh Annual Meeting of the Polymer Processing Society gratefully acknowledges the support of the following sponsors:

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THE POLYMER PROCESSING SOCIETY

SEVENTH ANNUAL MEETING

Hamilton, Ontario, Canada

April 21 - 24, 1991

Conference Committee

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The large number of contributed papers from all over the world, along with the coordinated efforts of the Symposia chairmen, have resulted in a high quality technical program for this Seventh Annual Meeting of the Polymer Processing Society. Well over 200 presentations are included in the technical program. Extended abstracts of practically all of these presentations are collected in this volume.

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The abstracts of the oral presentations are arranged according to the 14 symposium topics. In addition, abstracts for the poster presentations are also included toward the end of the volume along with an author index.

I would like to take this opportunity to thank all authors and contributors for making PPS-7 a successful forum for the exchange of technical information and research results related to the processing of polymeric systems.

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K.U. Kim
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J.F. Stevenson
H. Takahashi

Sincerely,

Michael E. Ryan

Michael E. Ryan

Technical Program Chairman

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TECHNICAL PROGRAM

Plenary Lecturer

Prof. J.L. White, The University of Akron, USA

Symposia:

- 1 Mathematical Methods
 - 2 Rheology and Rheometry
 - 3 Structure Development
 - 4 Mixing and Compounding
 - 5 Reactive Processing
 - 6 Foam Technology
 - 7 Blends and Alloys
 - 8 Composites
 - 9 Fibers and Films
 - 10 Extrusion
 - 11 Injection Molding
 - 12 Compression Molding
 - 13 Blow Molding
 - 14 Recycling of Plastics
- Poster Presentations

Organizers:

H. Mavridis, P.A. Tanguy
P.J. Carreau, H.H. Winter
J.-M Haudin, T. Kanamoto
L.A. Goettler, T. Innoue
W. Baker, M. Lambla
J.T. Lindt, K.U. Kim
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H.-G. Fritz, M. Cakmak, K.F. Wissbrun
B. Latto, A. Kabayama
C. Tzoganakis, N. Silvi

Information for Speakers

Keynote speakers will be allotted a total time of 40 minutes, including discussion. Contributed papers will be allotted a total time of 20 minutes, including discussion. Conference rooms will be equipped with projectors for 35 mm slides and overhead transparencies. Speakers may preview their slides in Room 206. Speakers are requested to obtain a slide tray from Room 206 at least 60 minutes before the start of their session. Speakers are responsible for inserting their own slides into the slide trays. The trays should be given to the projectionist in the symposium presentation room.

Poster presentations may be hung beginning at 12:30 on Monday. Velcro fastening disks will be provided, since the poster presentation boards do not allow the use of tacks or tape. The poster room will be open on Monday afternoon. The Poster session will officially begin at 17:20, on Monday evening, until 20:00. Posters must be removed from the poster boards by 21:00.

Exhibition "Computer Aided Engineering for Polymer Processing".

REGISTRATION

PPS members	\$US 300
Non-members	\$US 350
Students	\$US 100
Accompanying Person	\$US 50
One-Day Registration	\$US 150 (per day)
Banquet	\$US 50

Full registration fee covers Sunday reception, three days of meeting attendance, and book of extended abstracts. In the event of cancellation of your participation, a refund of the fees paid, less an administrative fee of 15%, will be made provided MMS receive notification before **March 31, 1991**.

Non-members are invited to join the Polymer Processing Society. If you would like to join the PPS, the difference between member and non-member registration will be applied to your membership dues for one year. Membership in the PPS includes a subscription to *International Polymer Processing*.

CONFERENCE SCHEDULE

Sunday, April 21	Registration	12:00 - 20:00
	Welcome Reception	18:00 - 20:00
Monday, April 22	Registration	8:00 - 17:00
	Opening Ceremony	8:30 - 9:00
	Plenary Lecture	9:00 - 10:00
	Morning Session	10:20 - 12:20
	Software Exhibition	12:00 - 20:00
	Afternoon Session	14:00 - 17:20
	Poster Session & Reception	17:30 - 20:00
Tuesday, April 23	Registration	8:00 - 17:00
	Morning Session	8:40 - 12:00
	Software Exhibition	9:00 - 17:30
	Afternoon Session	14:00 - 17:20
	Banquet	18:30 - 22:00
Wednesday, April 24	Registration	8:00 - 12:00
	Morning Session	8:40 - 12:00
	Software Exhibition	9:00 - 12:00
	Afternoon Session	14:00 - 17:20

PPS BUSINESS MEETING Tuesday, April 23, 12:15 - 13:30, Webster A, Third Floor.

The Polymer Processing Society - Seventh Annual Meeting, 1991 - Hamilton, Ontario, Canada

Sunday, April 21

Welcome Reception - Chedoke A, Third Floor 18:00 - 20:00

Monday, April 22

8:30	9:00	10:20	12:20	14:00	17:20	20:00
Opening Ceremony Chedoke A	Plenary Lecture	11.1 Injection Molding - Webster A	LUNCH	11.2 Injection Molding - Webster A	Poster Session and Wine & Cheese Chedoke A	
		1.1 Mathematical Methods - Webster C		1.2 Mathematical Methods - Webster C		
		10.1 Extrusion - Albion A		10.2 Extrusion - Albion A		
		7.1 Blends and Alloys - Albion C		7.2 Blends and Alloys - Albion C		

EXHIBITS in WEBSTER B

Tuesday, April 23

8:40

11.3 Injection Molding - Webster A	12:00	14:00	17:20	18:30	22:00
2.1 Rheology and Rheometry - Webster C	LUNCH	3 Structure Development - Webster A	BANQUET Chedoke A		
5.1 Reactive Processing - Albion A		13 Blow Molding - Webster C			
8.1 Composites - Albion C		5.2 Reactive Processing - Albion A			
		8.2 Composites - Albion C			

EXHIBITS in WEBSTER B

Wednesday, April 24

8:40

4.1 Mixing and Compounding - Webster A	12:00	14:00	17:20
2.2 Rheology and Rheometry - Webster C	LUNCH	4.2 Mixing - Webster A	6 Foams - Webster A
5.3 Reactive Processing - Albion A		2.3 Rheology - Webster C	14 Recycling - Webster C
9.1 Fibers and Films - Albion C		12 Compression Molding - Albion A	
		9.2 Fibers and Films - Albion C	

EXHIBITS in WEBSTER B

MONDAY, APRIL 22, MORNING SESSIONS

8:30	OPENING CEREMONY CHEDOKE A, THIRD FLOOR	
9:00	PLENARY LECTURE - J.L. WHITE "Twin Screw Extrusion, Development of Technology, Mechanisms of Flow, and Future Perspective" CHEDOKE A, THIRD FLOOR	
10:00	COFFEE BREAK CHEDOKE FOYER	
	WEBSTER A, THIRD FLOOR	WEBSTER C, THIRD FLOOR
	11.1 INJECTION MOLDING	1.1 MATHEMATICAL METHODS
10:20	11-KN Current and Future Trends in Injection Molding Technology M.R. Kamal, McGill University, CANADA	01-KN Finite Element Simulations of Non-Newtonian Flows M. Fortin, Université Laval, CANADA
10:40		
11:00	11-01 Effects of Screw Design on Melt Homogeneity in Injection Molding O. Amano, S. Utsugi; Nippon Petrochemicals Co., JAPAN	01-01 Two-Dimensional Planar Flow of a Viscoelastic Plastic Medium Y.H. Huang, A.I. Isayev; The University of Akron, USA
11:20	11-02 Conveying and Melting During Screw Recovery in Molding Operations C. Rauwendaal; Rauwendaal Extrusion Engineering Inc., USA	01-02 Film Casting of Viscoelastic Liquid S.M. Alaie, T.C. Papanastasiou; The University of Michigan, USA
11:40	11-03 Flow Modelling of the Filling and Post Filling Stages in the Thermoplastics Injection Process (CLIP Program) I. Mallot, J.L. Willien*, M. Vincent*, J.F. Agassant*, A. Latrobe, P. Lory†; Ingenierie, *CEMEF and †Renault, FRANCE	01-03 A Convergent Finite Element Method for Modeling the Flow of Modified Maxwell Models Through Abrupt Axisymmetric Contractions P.J. Coates, R.C. Armstrong, R.A. Brown; Massachusetts Institute of Technology, USA
12:00	11-04 Real-Time, In Situ Measurement of Transient Polymer Melt Temperatures with an IR Pyrometer During the Injection Molding Process J.X. Rietveld, G.Y. Lai; University of Wisconsin-Madison, USA	01-04 Deformation Patterns in the Compression of Polypropylene Disks: Experiments and Simulation H. Mavridis, G.D. Bruce*, G.J. Vancso*, G.C. Weatherly†, J. Vlachopoulos†, Quantum, USA; *University of Toronto and †McMaster University, CANADA

MONDAY, APRIL 22, MORNING SESSIONS

8:30		
9:00		
10:00	COFFEE BREAK CHEDOKE FOYER	
	ALBION A, SECOND FLOOR	ALBION C, SECOND FLOOR
	10.1 EXTRUSION	7.1 BLENDS AND ALLOYS
10:20	10-01 Computing Possibilities for Barrier Screws with Conventional Feedzone H. Potente, H. Stenzel; Universität-GH Paderborn, GERMANY	07-KN1 Polymer Alloys and Blends; State of the Art L.A. Utracki, IGM, CANADA
10:40	10-02 The Origin of Sharkskin in the Extrusion of LLDPE R.H. Moynihan, D.G. Baird; Virginia Polytechnic Institute and State University, USA	
11:00	10-03 Influence of Process Data on the Output of Large Extruders Within the Range of 600-6000 kg/h F. Hensen, W. Imping; BARMAG AG, GERMANY	07-01 Flow Behaviour of Miscible Polymer Blends Under High Shear Rate H. Takahashi, Y. Inoue, S. Yamamoto, O. Kamigaito; Toyota Central R & D Laboratories, Inc., JAPAN
11:20	10-04 A 2D Model for the n Layer Coextrusion Flow of Molten Polymers in Flat Die Geometries S. Puissant, B. Vergnes, Y. Demay, J.F. Agassant; CEMEF, FRANCE	07-02 Formation of Fiberlike Structures in Simple Shear Flow, Transient Behaviour J. Lyngaae-Jorgensen, Technological University of Denmark, DENMARK
11:40	10-05 A Theoretical Investigation of the Drag Flow Assumption in Extruder Analysis G.A. Campbell, P.A. Sweeney, J.N. Felton ; Clarkson University, USA	07-03 Morphological Transformations of Polymer-Polymer Blends during the Mixing Process C.-K. Shih; E.I. duPont de Nemours & Company, USA
12:00	10-06 Debugging and Optimization of Extruders Using Data Collected by a CAMILE* System K.S. Hyun, M.A. Spalding, The Dow Chemical Company, USA	07-04 Control of Intrinsic Brittleness and Toughness in Polymers and Blends S. Wu; E.I. du Pont de Nemours & Company, USA

MONDAY, APRIL 22, AFTERNOON SESSIONS

	WEBSTER A, THIRD FLOOR	WEBSTER C, THIRD FLOOR
	11.2 INJECTION MOLDING	1.2 MATHEMATICAL METHODS
14:00	11-05 Experiments and Some Simulation on Cavity Pressure and Temperature Profiles for Injection Filling Process K. Kubota, Y. Oyanagi, T. Kolke*, S. Suzuki*, H. Hayashi*; Kogakulin University and *Nireco Co. Ltd., JAPAN	01-05 Numerical Solution of Eigenvalue Problems that Describe Stability of Multiphase Flows using Spectral Techniques Y.Y. Su, B. Khomami; Washington University, USA
14:20	11-06 Simulation of the Injection Molding Process. The Packing-Holding Stages for Crystalline Polymers G. Titomanlio and M. Saiu; Università degli Studii di Palermo, ITALY	01-06 Layer Distribution in Feedblock Coextrusion A. Karagiannis; Monsanto Chemical Company, USA
14:40	11-07 Experimental Study of Molding Pressure Control during Injection Molding J. Sone, N. Ouchi; Toshiba Corporation, H. Murata; Tokyo Electric Corporation, and S. Takagi; Toyohashi University of Technology, JAPAN	01-07 Mathematical Model of a Dry Spinning Process G. Frischmann; Enka AG, GERMANY
15:00	11-08 Thermal Stresses in Injection Moulded Products L.F.A. Douven; Eindhoven University of Technology, THE NETHERLANDS	01-08 A Modified Control Volume Method for Mold Filling Simulation W.B. Young, L.J. Lee, M.J. Liou; The Ohio State University, USA
15:20	COFFEE BREAK, CHEDOKE FOYER, THIRD FLOOR	
15:40	11-09 Analysis of Thermal Stress Distribution Throughout an Injected Part Thickness: Measurement and Morphological Study P. Delbarre, F. Rietsch*, J. Pablot; Ecole des Mines de DOUAI and *Université de Lille Flandres Artois, FRANCE	01-09 Two Personal Computer Software Programs for Extrusion Die Simulation P.G. Lafleur, B. Arpin; Ecole Polytechnique, CANADA
16:00	11-10 Effects of Asymmetrical Cooling on the Residual Stress Distribution Frozen in an Injection Molded Polymer Y. Kurosaki, I. Satoh, H.S. Kim; Tokyo Institute of Technology, JAPAN	01-10 Studies on the Shape of Interface Between Two Immiscible Fluids J. Lal, K. Strauss; University of Dortmund, GERMANY
16:20	11-11 The Effect of Molding Condition on Cavity Pressure and Microstructure of Injection Molded Polyacetal W. Mizuno, Z. Maekawa*, H. Hamada*, A. Yokoyama*, K. Tomari†; Toyama Industrial Technology Centre, *Kyoto Institute of Technology and †Osaka Municipal Technical Research Institute, JAPAN	01-11 Mathematical Modelling of Flow in Extrusion Dies D.J. Coyle, J. Perdikoulas*; General Electric, USA and *Brampton Engineering, CANADA
16:40	11-12 An Integrated Approach for Modeling the Plastics Injection, Compression and Resin Transfer Molding Processes H.P. Wang, E.W. Liang and E.M. Perry; GE Corporate Research and Development, USA	01-12 A Numerical Scheme for the Transient Free Surface Flow with Application in Spin Coating Y. Wang; Tunghai University, TAIWAN
17:00	11-13 Fracture Toughness of Weldline in Polycarbonate Injection Molding K. Tomari, T. Harada, Z. Maekawa*, H. Hamada*, M. Iwamoto*, A. Ukai*; Osaka Municipal Technical Research Institute and *Kyoto Institute of Technology, JAPAN	01-13 Finite Difference Schemes for Convection Dominated Flows, with Emphasis on the Injection Mold Filling Problem M.A. Garcia, C.W. Macosko; University of Minnesota, USA

MONDAY, APRIL 22, AFTERNOON SESSIONS

	ALBION A, SECOND FLOOR	ALBION C, SECOND FLOOR
	10.2 EXTRUSION	7.2 BLENDS AND ALLOYS
14:00	10-07 Extruder Control Via On-Line Product Characteristics Monitoring <u>R. Gendron</u> , L.A. Utracki, A. Hamel; IGM, Canada	07-KN2 Influence of Compatibilizing Agents on Polymer Blending: Interfacial Tension, Phase Morphology, Rate of Mixing, Mechanical Properties <u>J.L. White</u> , C.C. Chen, D.K. Setua; University of Akron, USA
14:20	10-08 Temperature Studies within a Co-Rotating Fully Intermeshing Twin Screw Extruder M.E. Rowland; Dow Chemical Co., USA	
14:40	10-09 Extrusion of Self-Reinforced Polyethylene <u>B. Pörnmlit</u> , G.W. Ehrenstein; Lehrstuhl für Kunststofftechnik, GERMANY	07-05 Tensile and Tear Failure of Polyvinylchloride (PVC) and Nitrile Rubber (NBR) Blends N. Nakajima, J.L. Liu; The University of Akron, USA
15:00	10-10 Effect of Temperature Settings on the Performance of an Instrumented Rubber Screw Extruder J. L. LeBlanc, C. Pottler, B. Defendini; ENIMONT, BELGIUM	07-06 In-Situ Compatibilization of Polystyrene/Polyethylene Blends Using New Amino Methacrylate Grafted Copolymers Z. Song, <u>W.E. Baker</u> ; Queen's University, CANADA
15:20	COFFEE BREAK, CHEDOKE FOYER, THIRD FLOOR	
15:40	10-11 Hydrostatic Extrusion of a Cross-linked Silicon Rubber A. Cohen, A.F. Burmester, The Dow Chemical Company, USA	07-07 Morphological Analysis of Block Copolymer and Homo Polymer Blends T. Kawamura, K. Yokoyama, Y. Fujita, S. Toki; Corporate Research & Development Laboratory, JAPAN
16:00	10-12 Elimination of Sag in Plastic Pipe Extrusion D. Githuku, A.J. Giacomini; Texas A&M University, USA	07-08 Use of Rubber Modified Polystyrene as a Model System for HIPS <u>D.G. Cook</u> , A. Rudin, A. Plumtree; University of Waterloo, CANADA
16:20	10-13 Extrusion of Corners W.H. Miller, C.C. Lee, J.F. Stevenson; GenCorp Research, USA	07-09 Melt Viscoelasticity as a Way to Determine Interfacial Tension in Polymer Blends D. Greabing, <u>R. Muller</u> ; EAHP, FRANCE
16:40	10-14 Mechanism of Shear Modification M. van Prooyen, T. Bremner, A. Rudin; University of Waterloo, CANADA	07-10 Studies on Blends of PVC and Non-polar Rubber Y. Zhang, S. Han, Y. Zhang, X. Zhang; Shanghai Jiao Tong University, CHINA
17:00	10-15 Dynamic Coefficient of Friction Measurement <u>M.A. Spalding</u> , D.E. Kirkpatrick, W.A. Kirksey, K.S. Hyun, C.I. Chung*; The Dow Chemical Company and *Rensselaer Polytechnic Institute, USA	07-11 Hydrogen Bonding Interaction Between Copolymer PHFA and Dimethyl Methyl Phosphonate C.J. You, J.W. Barlow*; South China University of Technology, CHINA and *The University of Texas at Austin, USA

MONDAY, APRIL 22, EVENING, 17:20 - 20:00

POSTER PRESENTATIONS / WINE & CHEESE RECEPTION - CHEDOKE A, THIRD FLOOR

- P-01 **Heat Exchange in Moulds for Expanded Polystyrene Processing**
I. Jagodic, I. Catic, M. Serčer; University of Zagreb, YUGOSLAVIA
- P-02 **Molecular Orientation in Compressed Polypropylene Disks**
G.D. Bruce, G.J. Vancso; University of Toronto, CANADA and G.C. Weatherly; McMaster University, CANADA
- P-03 **Degradation Study of HDPE using Residence Time Distribution Analyses**
N. Dontula, G.A. Campbell, R. Connelly*, J. Wenskus*; Clarkson University and *Eastman Kodak Company, USA
- P-04 **Use of Maleic Anhydride-Modified ABS in PA6/ABS Alloys**
C. Carrot, J. Guillet, J.F. May; Université Jean Monnet Saint-Etienne, FRANCE
- P-05 **Simulation and Verification of Average Cavity Pressure in Injection Molding**
M. Cheng, J. Jiang, D. Li; Jiangsu Institute of Chemical Technology, CHINA
- P-06 **Temperature Distribution in Thick PET Plates under Infrared Heating. Scattering Influence on the Radiative Heat Transfer**
Ph. Lebaudy, J. Grenet, J.M. Saiter; Université de Rouen, FRANCE
- P-07 **Measurement of On-Line Filament Temperature Profiles**
N. Hajji, J.E. Spruiell; The University of Tennessee, USA
- P-08 **Role of the Aftermixer in Reaction Injection Molding**
A.N. Hrymak, P.E. Wood, P. Wong; McMaster University, CANADA
- P-09 **Detailed Investigations of Structural Layering Phenomena in Injection Molded Thermotropic Liquid Crystalline Polymers by Micro Beam X-ray Diffraction and Color Image Analysis Techniques**
C.M. Hsiung, M. Cakmak; University of Akron, USA
- P-10 **A Study on the Morphology and Properties of NMW-PE/UHMW-PE Blends**
P. Hu, R. Lu, H. Liao; Tsinghua University, CHINA
- P-11 **Draw of Ultra High Molecular Polyethylene (UHMWPE) Gel Fiber in Hot Water**
Z. Hu, Z. Liu, B. Huang; China Textile University, CHINA
- P-12 **Thermo-mechanical History Effects on Rigid Polyvinyl Chloride**
M.A. Huneault, P.G. Lafleur, P.J. Carreau, B. Vergnes*; Ecole Polytechnique, CANADA and *CEMEF, FRANCE
- P-13 **A Model for the Diaphragm Forming Process**
S.-J. Hwang, C.L. Tucker III; University of Illinois, USA
- P-14 **Mixing Quality Visualization Techniques for Jet Impingement Mixheads**
D.A. Johnson, P.E. Wood, A.N. Hrymak; McMaster University, CANADA
- P-15 **Rheology of Fumed Silica Dispersions for Fiber Optic Cables**
S.A. Khan, M.A. Maruca*, I.M. Plitz; Bellcore and *Princeton University, USA
- P-16 **Dynamic Properties of Liquid Crystal Polymers**
V.G. Kulichikhin, V.S. Volkov; U.S.S.R. Academy of Sciences, U.S.S.R.
- P-17 **Crystalline PET Foams: CO₂-Induced Changes in PET Morphology**
V. Kumar, O.S. Gebizlioglu*; University of Washington, *Bellcore, USA

- P-18 **Numerical Study on Extrudate Swell of Polymer Melts Issuing from Calming Section Flow through Converging Dies**
Y. Kuwano, T. Kajiwara, N. Satoh*, K. Funatsu; Kyushu University and *Tosoh Corp., JAPAN
- P-19 **Prediction of Entry Pressure Loss in Capillary Rheometry**
C. Kwag, J. Vlachopoulos; McMaster University, CANADA
- P-20 **Graft Polymerization Under Electron Beam Pre-Radiation on the PE Fibers**
Zhang Lin, Liu Zhaofeng, Yang Nianci, Zhang Anqiu; China Textile University, CHINA
- P-21 **Effect of 1-Phenyl 2,4-Dithiobutiret/CBS Binary Acceleration System in the Vulcanization of Natural Rubber**
G. Mathew; St. Berchmans' College, INDIA
- P-22 **A Unified Molecular Theory of Viscoelasticity with Constraints of Entanglement for Polymer Melts**
M.S. Song, S.Z. Wu; Beijing Institute of Chemical Technology, CHINA
- P-23 **Introduction of a Programming System for the Design and Processing Optimisation of Extruder-Screws**
H. Potente, W. Hanhart; Universität-GH Paderborn, GERMANY
- P-24 **The Study on Extracting Mechanism of UHW-PE Gel Fibers**
Yang Nianci, Gu Bai, Huang Jing Hong, Zhang Anqiu, Wu Zongquan; China Textile University, CHINA
- P-25 **The Effect of Injection Molding on the Short-term Creep and Physical Aging of a Filled PC/ABS Blend**
K. Nichols, T. Doonan, J. Maher; Dow Chemical, USA
- P-26 **Rheological Behaviour of Poly(Phenylene Sulfide)/Polyamide Blends**
L. Pan, J. Ma, B. Liang; China Textile University, CHINA
- P-27 **Studies on the Technicity of Silk Like CDPET Filaments of Blended Denier**
Wei Ran, Cheng Jiaqi*; Jiangsu Planning and Economic Commission and *Suzhou Institute of Silk Textile Technology, CHINA
- P-28 **Effects of Material Variation and Processing Conditions on Injection Molded Polypropylene-Wood Flour Composites**
J.X. Rietveld, M.J. Simon; University of Wisconsin-Madison, USA
- P-29 **Entrance Pressure Losses and Wall-Slip Velocities of a Thermotropic Copolyester Measured on an Extruder-Based Capillary Viscometer**
J.X. Rietveld, P. Tangyuenyong; University of Wisconsin-Madison, USA
- P-30 **A Flow Model for Concentrated Fiber Suspensions from Fiber-Fiber Interaction**
C.R. Sandstrom, C.L. Tucker III; University of Illinois, USA
- P-31 **Characterization of Rheological Properties of Commercial Thermoplastic Elastomers by Capillary Rheometry**
J.J. Sendorek, S.K. Goyal; Nova, CANADA
- P-32 **Structure Formation and Properties of Injection-moulded Polypropylene with Predominantly Beta-Crystalline Form**
G. Shi, F. Chu*, G. Zhou*; Shanghai Institute of Organic Chemistry and *University of Science and Technology of China, CHINA
- P-33 **Influence of Processing Conditions on Fracture Behavior in Extruded Polybutene-1 Pipe**
K. Kitao and N. Misaka; NKK Corporation, JAPAN
- P-34 **Modelling of Thermoforming Without the Thin Membrane Approximation**
W.N. Song, F.A. Mirza, J. Vlachopoulos; McMaster University, CANADA

- P-35 **Extrusion Processing of Blends Containing a Liquid Crystalline Polymer: The Effect of Draw Ratio on Morphology and Properties**
K.G. Blizzard; Foster-Miller, USA and C. Federici, O. Federico, L.L. Chapoy; Himont, ITALY
- P-36 **Thermomechanical Model of Stamping G.M.T. Polypropylene Sheets**
J. Thomasset, R. Jacquemet*, B. Monasse; Ecole des Mines de Paris and *CERDATO-Atochem, FRANCE
- P-37 **Study on Molten Polymer Flow in a Circular Tube**
T. Uwaji, Y. Tamura, K. Sonoda, O. Ukal; Mitsubishi Heavy Industries Ltd., JAPAN
- P-38 **Influence of a New Styrenic Thermoplastic Elastomer on Properties and Rheological Behaviour of GPPS/Clear SBS Blends**
R.F. Venneman; FINA Research S.A., BELGIUM
- P-39 **Volume-Conserving Finite Elements for Mold Filling Simulation**
P. Viriouviet, C.L. Tucker III; University of Illinois, USA
- P-40 **Antihydrolysis of Poly(ethylene-terephthalate) Fiber**
Yimin Wang, Ningyan Liu, Jianhua Ni; China Textile University, CHINA
- P-41 **Preliminary Studies on Melt-Spinning of Water Plasticized Polyacrylonitrile (PAN)**
Weijun Wang, Mingyuan Yang, Pingjun Mao, Lianjun Shi; China Textile University, CHINA
- P-42 **Twin Screw Extruder and Applications in Polymers**
H.W. Wei, Y. Feng; P.R. China Shanghai Jiatong University, CHINA
- P-43 **The Influence of Friction Heat in the Solid Conveying Zone of Single Screw Extruders**
J. Xu; Jiangsu Institute of Chemical Technology, CHINA
- P-44 **A Study on Ultra-Drawing of Polyvinyl Alcohol Gel Fibers**
Pingyu Yang, Zuming Hu, Yiming Wang, Zhaofeng Liu; China Textile University, CHINA
- P-45 **The Study on the Alkali Treatment of Modified PET Fibers**
Yimin Wang, Chaojian Liang, Xiangqin Pan; China Textile University, CHINA
- P-46 **The Study on High Strength, High Modulus Polyvinyl Alcohol (PVA) Fibers**
Jie Xu, Yimin Wang, Hua Xu, Guozong Qian; China Textile University, CHINA
- P-47 **Visualization of Melt Plastic Flow along the Cavity Thickness by Laser Light Sheet**
H. Yokoi, Y. Inagaki; University of Tokyo, JAPAN
- P-48 **Modelling of Compression Molding**
W. Zhang, N. Silvi, J. Vlachopoulos; McMaster University, CANADA
- P-49 **Study on the Ultra-Drawing Mechanism of Gel-Spun UHMW-PE Fibers**
Liu Zhaofen, Chen Zili, Hu Zhumin, Yu Cuihua; China Textile University, CHINA
- P-50 **Vapor Phase Photografting of Acrylic Acid on PE Fibers**
Liu Zhaofeng, Zhang Lin, Yang Nianci, Zhang Anqiu; China Textile University, CHINA
- P-51 **Mechanical Properties of Asbestos Fibre Polyethylene Composites**
L. Campagna, D. De Kee, P.J. Carreau*; University of Sherbrooke and *Ecole Polytechnique de Montreal, CANADA
- P-52 **Processing of Engineering Thermoplastics for Optical Fibre Cable Applications**
P.S. Viswanathan, N. Vasudevan, L. Vidyasagar; Hindustan Cables Ltd., INDIA
- P-53 **A Study on Morphology and Properties of IPP/Zinc-Neutralized Sulfonated EPDM Blends**
X. Xu, S. Guo, H. Li; Chengdu University of Science and Technology, CHINA

- P-54 **Study of the Viscoelastic Properties of Crosslinkable Polyethylenes**
J.W. Gonzalez, C.M. Rosales, M.E. Matos, L. Carmona; Universidad Simon Bolivar, VENEZUELA
- P-55 **Influence of Fillers on Melt Flow Instabilities**
J. Becker, C. Klason^{*}, J. Kubat, P. Saha[†], Chalmers University of Technology, SWEDEN, ^{*}University of Lund, SWEDEN and [†]University of Brno, CZECHOSLOVAKIA
- P-56 **Mathematical Simulation of Thermomechanical Behaviour of Composites in the Course of Preparation**
V.P. Beghishev, A.Ya. Malkin, I.N. Shardakov, N.A. Trufanov; Ural Branch of USSR Academy of Sciences, USSR
- P-57 **A Study on the Crystalline Property of Isotactic Polypropylene with Different β -nucleating Agents**
X. Huang, X. Chen, Z. Wu; China Textile University, CHINA
- P-58 **Mixing in Single Screw Extruders: The Effect of Mixing Pins**
C. Miaw, G. Balch, A. Vlosky; General Electric Company, USA
- P-59 **Study of Polymer Structures Formed in Electric Field**
T. Sterzynski, J. Garbarczyk^{*}, D. Paukszt^{*}, Ecole d'Application des Hauts Polymères, FRANCE and ^{*}Technical University of Poznan, POLAND
- P-60 **Optimization of Drawing Variables for Poorly Ductile Poly(butene-1)**
T. Anyashiki, N. Fujii, T. Kanamoto; Science University of Tokyo, JAPAN
- P-61 **Calorimetric, Mechanical and Rheological Study of Low Density and Linear Low Density Polyethylene Blends**
A.J. Muller, C.M. Rosales, V. Balsamo, J.V. Marin, C. Diaz; Universidad Simon Bolivar, VENEZUELA
- P-62 **Conventional Molecular Weight Linear Polyethylene and Ultra-High Molecular Weight Polyethylene**
A.J. Muller, M.A. Grima, C.M. Rosales, L. Kiang, A. Roche; Universidad Simon Bolivar, VENEZUELA
- P-63 **Analysis of Axisymmetric Converging Flow of Polymer Melts**
A. Schepens; DSM Research, NETHERLANDS, B. Debbaut; POLYFLOW, BELGIUM
- P-64 **Visco-elastic Modelling of Injection Molding**
J.J.M. Slot, H.G. Vlogman^{*}, H.A.J. Schepens; DSM Research, NETHERLANDS, ^{*}TNO Rijswijk, NETHERLANDS

TUESDAY, APRIL 23, MORNING SESSIONS

	WEBSTER A, THIRD FLOOR	WEBSTER C, THIRD FLOOR
	11.3 INJECTION MOLDING	2.1 RHEOLOGY AND RHEOMETRY
8:40	11-14 Mechanical Strength of Parallel and Perpendicular Re-Joined Flow Fronts for an Injection Molded Thermotropic Copolyester J.X. Rietveld, A.F.W. Schneider; University of Wisconsin-Madison, USA	02-KN Rheology of Polymer Blends L. Choplin, Université Laval, CANADA
9:00	11-15 Shrinkage Analysis of Short Fiber Reinforced Injection Moldings M. Okubo; Idemitsu Petrochemical Co., Ltd., JAPAN	
9:20	11-16 Fiber Orientation in Simple Injection Moldings: Theoretical and Experimental Results R.S. Bay, C.L. Tucker III; University of Illinois, USA	02-01 Flow Birefringence in Polymer Rheology J.J.C. Picot, R. Subramanian; University of New Brunswick, CANADA
9:40	11-17 Injection Molding of Long Fiber Reinforced Engineering Plastics. A Comparison of Pultruded and Extruded Materials with Direct Addition of Roving Strands H.-G. Fritz, B. Belermeister, B. Schmid, F. Truckenmüller; University of Stuttgart, GERMANY	02-02 A Rheo-optic Analysis of Solutions of Rigid Macromolecules with Dipole Moments in Hydrodynamic and Electric Fields O Ok Park, M.H. Kwon; KAIST, KOREA
10:00	COFFEE BREAK, CHEDOKE FOYER, THIRD FLOOR	
10:20	11-18 Transfer Molding with Application to IC Packaging G.W.M. Peters; Eindhoven University of Technology, THE NETHERLANDS	02-03 A Novel Rotational In-Line Rheometer: Viscosity Measurement and Sampling Delay T.O. Broadhead, J.M. Dealy, W.I. Patterson; McGill University, CANADA
10:40	11-19 Comparison Between the Predictions of a Simulation Software and the Injection Moulding Behaviour of Rubber Compounds as Measured with an Instrumented Machine J.L. Leblanc, R. Polet, S. Andrietti*, M. Vincent*, J.F. Agassant*; ENIMONT and *Ecole des Mines de Paris, FRANCE	02-04 On-Line Rheological Characterization of Polymers: Comparison Between Slit Die and Oscillatory Concentric Cylinders On-Line Rheometers D. Lefebvre, L. Leblanc; Rhône-Poulenc, FRANCE
11:00	11-20 Trend Regulation of Injection Moulding Process M. Serce, I. Catic; University of Zagreb, YUGOSLAVIA	02-05 Recent Computer Aided Methods for Rheometry H. Henning Winter, M. Baumgaertel, P. Soskey*; University of Massachusetts and *Enimont Americas Inc., USA
11:20	11-21 Model-Based Quality Assurance of the Injection Molding Process M. Gierth, W. Michaeli; Institut für Kunststoffverarbeitung, GERMANY	02-06 Biaxial Elongational Flow Behaviour of Polypropylene Melts T. Isaki, T. Takigawa*, T. Masuda*; Mitsui Toatsu Chemicals and *Kyoto University, JAPAN
11:40	11-22 Multilayer Injection Molding: The Piston Driven Flow H.E.H. Meljer; Eindhoven University of Technology, THE NETHERLANDS	02-07 Laser Doppler Velocimetry Measurements of Viscoelastic Flow Past a Confined Circular Cylinder G.H. McKinley, L.M. Quinzani, R.A. Brown, R.C. Armstrong; Massachusetts Institute of Technology, USA

TUESDAY, APRIL 23, MORNING SESSIONS

	ALBION A, SECOND FLOOR	ALBION C, SECOND FLOOR
	5.1 REACTIVE PROCESSING	8.1 COMPOSITES
8:40	05-KN Morphology Development During Reactive Polymer Blending C.S. Scott, C.W. Macosko*; Tennessee Eastman and *University of Minnesota, USA	08-KN Modeling of the Processing Behaviour of Polymer Matrix Composites J.M. Kenny, University of Naples, ITALY
9:00		
9:20	05-01 Reactive Extrusion of PET-Maleated EP Rubber Blends M.K. Akkapeddi, A.C. Brown; Allied-Signal Inc., USA	08-01 Processing Characteristics of Thermoplastic Sheet Composites D.M. Bigg, Battelle, USA
9:40	05-02 Direct Extrusion and Molding Process for Toughness Improvement of Thermosetting Materials T. Sakai, K. Nakamura, S. Inoue; The Japan Steel Works, JAPAN	08-02 Finite Element Simulation of the Deep Drawing of Fabric-Reinforced Thermoplastic Prepregs J. Mitscherling, W. Michaeli; Institute für Kunststoffverarbeitung, GERMANY
10:00	COFFEE BREAK, CHEDOKE FOYER, THIRD FLOOR	
10:20	05-03 Modification of Polystyrene with Ethylene Propylene Rubber by Reactive Blending E.E. Agur, S. Drappel, P.J. Gerroir, G.R. Allison, M.S. Hawkins, H.K. Mahabadi; Xerox Research Centre of Canada, CANADA	08-03 On the Use of the Capillary Model for Creeping Flow Through Fiber Beds M.V. Bruschke, S.G. Advani; University of Delaware, USA
10:40	05-04 Controlling the Crosslink Density of Co-Reactive Polymers in an Extruder Reactor by Multivariant On-Line Feedback Systems J. Curry, P. Anderson, A. van der Veen*; Werner & Pfleiderer Corporation and *Stevens Institute of Technology, USA	08-04 Pipe Die Extrusion of Reinforced Thermoplastic: Flow and Fiber Orientation G. Ausias, M. Vincent, J.F. Agassant; Ecole des Mines de Paris, FRANCE
11:00	05-05 Compounding of Thermoplastic Elastomers: Interrelationship Between Structure Development and Material Properties R. Anderlik, H.G. Fritz; University of Stuttgart, GERMANY	08-05 The Relationship Between Processing Conditions and Physical Properties of Thermotropic Polymer Composites E. Suokas; Technical Research Centre of Finland, FINLAND
11:20	05-06 A Kinetic Study of Imidazole Catalysis on Dow Epoxy DER 383 with an Amine Terminated Modifier S.E. Campbell, G.A. Campbell; Clarkson University, USA	08-06 Influence of Fiber Aspect Ratio on the Mechanical Properties of Wood Fiber - Polystyrene Composites D. Maldas, B.V. Kokta, S.T. Sean*, B. Sanschagrin*; Université du Québec à Trois-Rivières, and *Ecole Polytechnique de Montreal, CANADA
11:40	05-07 Reactive Extrusion in A Single Screw Extruder: Compatibilization of Nylon 6 and Polypropylene Blends S.S. Dagli, J.A. Biesenberger, D.B. Todd; Stevens Institute of Technology, U.S.A.	08-07 Development of Advanced Stampable Reinforced Thermoplastic Sheet Y. Yamana, T. Ishii, A. Muto, K. Nishiguchi; Kuraray Co., JAPAN

TUESDAY, APRIL 23, AFTERNOON SESSIONS

	WEBSTER A, THIRD FLOOR	WEBSTER C, THIRD FLOOR
	3 STRUCTURE DEVELOPMENT	13 BLOW MOLDING
14:00	03-KN Rolling and Roll-Drawing of Ultra-High Molecular Weight Polyethylene Reactor Powders L.H. Wang, R.S. Porter; University of Massachusetts, USA	13-KN An Experimental/Numerical Investigation of the Extrusion Blow Molding Process H.G. deLorenzi, C.A. Taylor, H.F. Nied; General Electric Corporate Research and Development, USA
14:20		
14:40	03-01 Porous Biaxially Drawn UHMW-PE Films H. Fortuin; DSM Research, NETHERLANDS	13-01 Iso- and Non-Isothermal Parison Swelling for Extrusion Blow Moulding Dies R.J. Koopmans; Dow Benelux N.V., THE NETHERLANDS
15:00	03-02 Progress in the Understanding of Crystallization Kinetics Under Polymer Processing Conditions H. Janeschitz-Kriegl, G. Eder; Linz University, AUSTRIA	13-02 Numerical Prediction of Die Swell for Annular Dies with a Viscoelastic Fluid Model K. Sugiyama; Mitsubishi Kasei Corp., JAPAN
15:20	COFFEE BREAK, CHEDOKE FOYER, THIRD FLOOR	
15:40	03-03 Crystallization Kinetics During Polymer Processing - Analysis of Available Approaches for Process Modelling R.M. Patel, J.E. Spruiell; University of Tennessee, USA	13-03 Numerical Study on Annular Extrudate Swell of Polymer Melts T. Kajiwara, T. Hashimoto, K. Funatsu; Kyushu University, JAPAN
16:00	03-04 Orientation and Coiling Phenomena in Sheared Polymer Melts J.F. Jansson, M-L Skjelt; The Royal Institute of Technology, SWEDEN	13-04 Deformation and Heat Transfer Considerations in Relation to Blow Molding M.E. Ryan; State University of New York at Buffalo, USA, W.P. Haessly; Eastman Kodak, USA and A. Garcia-Rejon, A. Derdouri, R. Khayat; National Research Council, CANADA
16:20	03-05 Persistence of Order in Polyethylene Melts T. Bremner, A. Rudin; University of Waterloo, CANADA	13-05 Blow Molding Simulation in Manufacturing Automobile Fuel Tanks K. Terada, M. Yamabe; Nissan Motor Co. Ltd., JAPAN
16:40	03-06 Influence of Spinning Conditions on Physical Properties of Polypropylene Fibers A. Paris, J.M. Haudin, P. Navard; Ecole des Mines de Paris, FRANCE	13-06 Rotational Molding of Polyethylene: Influence of Nitrogen Atmosphere and The Regrind Problem S.S. Song, T. Nagy, J.L. White; University of Akron, USA
17:00	03-07 Experiments on Shear-Induced Crystallisation Under Isothermal Boundary Conditions A. Larsen*, O. Hande*, U. Gedde [†] ; CEMEF, FRANCE, *Senter for Industriforskning and [†] Royal Institute of Technology, NORWAY	13-07 Simulation of Parison Formation Process M. Shinohara; Idemitsu Petrochemical Co. Ltd., JAPAN

TUESDAY, APRIL 23, AFTERNOON SESSIONS

	ALBION A, SECOND FLOOR	ALBION C, SECOND FLOOR
	5.2 REACTIVE PROCESSING	8.2 COMPOSITES
14:00	05-08 Twin Screw Reactive Maleation of EPDM J. Greci, M. Xanthos, <u>D.B. Todd</u> ; Stevens Institute of Technology, USA	08-08 Constitutive Equations for Glass Fiber Networks and Consequences on Resin Flow During Processing <u>J.C. Gelln</u> , H. Sabhi; Université de Franche-Comté, FRANCE
14:20	05-09 The Reactive Compatibilization of Polypropylene-Polyethylene Blends and Near Infrared In-Line Monitoring <u>R. Lew</u> , S.T. Balke; University of Toronto, CANADA	08-09 Thermal Stress Induced Damage in Polymer Composites M.E. Adams, G.A. Campbell; Clarkson University, USA and A. Cohen; Dow Chemical, USA
14:40	05-10 Reactive Extrusion in a Single Screw Extruder: Maleation of Polyethylene J. Greci, J.A. Blesenberger, D.B. Todd; Stevens Institute of Technology, U.S.A.	08-10 Short Fibre Reinforced PBT/Polyolefin Alloys: Mechanical Properties and Rheological Studies M. Joshi, S.N. Maiti, A. Misra; Indian Institute of Technology, INDIA
15:00	05-11 Experiments and Analysis of Polymerization of Methyl-methacrylate in a Model Twin Screw Extruder K. Min, L.L. Chu; University of Akron, USA	08-11 A Study of Rheological and Electrical Conductivity of Carbon Black Composites K. Uesugi, H. Suzuki, Z. Iwata, T. Amari*; The Furukawa Electric Co. Ltd. and *Chiba University, JAPAN
15:20	COFFEE BREAK, CHEDOKE FOYER, THIRD FLOOR	
15:40	05-12 New Crosslinking Method for PVC R. Dahl; Norsk Hydro Plast AB, SWEDEN	08-12 Fabrication of High Performance 0-3 Ceramic/Polymer Piezoelectric Composites T.E. Petroff, M. Sayer, W.E. Baker; Queen's University, CANADA
16:00	05-13 Analysis of Resin Transfer Molding and Structural Reaction Injection Molding <u>R. Lin</u> , L.J. Lee, and M.J. Liou; The Ohio State University, USA	08-13 Causes of Fibre Attrition in Processing of Discontinuous Fibre Filled Thermoplastics H. Juergen Wolf; Deutsches Kunststoff-Institut, GERMANY
16:20	05-14 Bulk Polymerization Kinetics of Telene® Liquid Resins M.A. Shmorhun, I. Manas-Zloczower*, H. Ng*; The BF Goodrich Company and *Case Western Reserve University, USA	08-14 Solvent Mixture Interactions with PEEK Matrices G. Mensitieri, M.A. Del Nobile, A. Apicella, L. Nicolais, University of Naples, ITALY
16:40	05-15 The Competition Between Polymerisation and Structure Development During Reaction Injection Molding of Copolyurethanes <u>A.J. Ryan</u> ; UMIST, UK, J.T. Koberstein, C.C. Yu; University of Connecticut, USA, C.W. Macosko, W.P. Yang, University of Minnesota, USA	08-15 Polypropylene Nucleation on a Glass Fibre After Melt Shearing B. Monasse; Ecole des Mines de Paris, FRANCE
17:00	05-16 Modeling and Simulation of High Reynolds' Number Flows During Reaction Injection Mold Filling W. Cohnen, Y.-S. Jin and <u>T.A. Osswald</u> ; University of Wisconsin-Madison, USA	08-16 Flax Fibers - A New Possibility of Reinforcing Plastics Th. Fölster, W. Michaeli; IKV, GERMANY
17:20		08-17 A Knitted Reinforcing Fabric and its Applications in Thermoset Composites J. Sarlin, Tampere University of Technology, FINLAND

WEDNESDAY, APRIL 24, MORNING SESSIONS

	WEBSTER A, THIRD FLOOR	WEBSTER C, THIRD FLOOR
	4.1 MIXING AND COMPOUNDING	2.2 RHEOLOGY AND RHEOMETRY
8:40	04-KN Selected Aspects of the Blend Formation in Screw Extruders J.T. Lindt, A.K. Ghosh, S. Ranganathan, S. Lorek*; University of Pittsburgh, USA and *ATOCHEM, FRANCE	02-08 Estimating Absolute Viscosity for Melt Flow Calculations G.P. Colbert; George Colbert & Associates, USA
9:00		02-09 Rheological Analysis of Compatibilized PP/PA6 Blends Y. Germain, O. Genetot; Cerdato-Atochem, FRANCE
9:20	04-01 Fundamentals of Extrusion Compounding K.S. Shen; Advanced Elastomer Systems, USA	02-10 Rheology of a Block Copolymer, Polyethylene Blend in Mineral Oil S. Khan, O.S. Gebiziloglu, E.E. Hershkowitz; Bellcore, USA
9:40	04-02 Advances in Blend and Alloy Compounding with Twin Screw Extruders S. Jackson, E. Beecher; Werner & Pfleiderer Corporation, USA	02-11 Time Dependent Viscoelasticity Following Shear Deformation of PHB-Based Copolyesters P. Driscoll, S. Hayase, T. Masuda; Kyoto University, JAPAN
10:00	COFFEE BREAK, CHEDOKE FOYER, THIRD FLOOR	
10:20	04-03 Simulation and Scale up of Modular Intermeshing Corotating Twin Screw Extruders for Non-Newtonian Fluids X. Chen, J.L. White; University of Akron, USA	02-12 Rheology of LCP-Polycarbonate Blends N. Chapleau, P.A. Lavole, P.J. Carreau, T. Malik; Ecole Polytechnique, CANADA
10:40	04-04 A Study of the Mixing Abilities of the NITSE Using a Shear-Thinning Fluid D. Biglo, W. Baim; University of Maryland, USA	02-13 Rheological Properties of Liquid Crystalline Polymer and Its Filled Systems T. Kitano, C. Klason*, J. Kubat**; Research Institute for Polymers and Textiles, JAPAN, * University of Lund, SWEDEN and ** Chalmers University of Technology, SWEDEN
11:00	04-05 Experimental Evaluation of a New Viscous Mixing Device P.A. Sweeney, J.N. Felton, G.A. Campbell; Clarkson University, USA	02-14 Rheology of Short Fiber GMTs W.F. Haverty, C.L. Tucker III; University of Illinois, USA
11:20	04-06 The Effect of Viscosity Ratio on Laminar Mixing in the Twisted Tape Motionless Mixture D. Biglo, B. MacLaren; University of Maryland, USA	02-15 The Rheological Behaviour of Cellulosic Doughs A.A. Collyer, D.W. Clegg, C.N. Tsang, R. Abram; Sheffield City Polytechnic, UK
11:40	04-07 The Influence of Structural Heterogeneities on the Cohesive Strength of Self-Similar Agglomerates S. W. Horwatt, D.L. Feke, I. Manas-Zloczower; Case Western Reserve University, USA	02-16 The Dynamics of Sharkskin Melt Fracture in LLDPE S.J. Kurtz; Union Carbide Chemicals and Plastics Company, USA

WEDNESDAY, APRIL 24, MORNING SESSIONS

	ALBION A, SECOND FLOOR	ALBION C, SECOND FLOOR
	5.3 REACTIVE PROCESSING	9.1 FIBERS AND FILMS
8:40	05-17 Analysis on Reactive Processing of Two-phase Polymer Blends M. Okamoto, <u>T. Inoue</u> ; Tokyo Institute of Technology, JAPAN	09-K1 Electrothermomechanical Film. The Film as a Generator <u>H. Kontinen</u> , A. Savolainen, K. Kirjavainen, J. Raukola; Tampere University of Technology, FINLAND
9:00	05-18 Comparison of the Transesterification Reaction of EVA Copolymer in Solution and in the Melt <u>G.-H. Hu</u> , J.T. Lindt, M. Lamba*; University of Pittsburgh, U.S.A. and *CRM-EAHP, FRANCE	
9:20	05-19 A Model Apparatus for Reactive Mixing Studies R. Polance, <u>K. Jayaraman</u> ; Michigan State University, USA	09-01 Stationary and Dynamic Analysis of Film Casting Process. A Viscoelastic Approach Ph. Bara*, P. Bourgin, J.M. Haudin*, J.F. Agassant*; Rhône-Poulenc-Films and *Ecole Nationale Supérieure des Mines de Paris, FRANCE
9:40	05-20 Rheo-Kinetic Study of Unsaturated Polyester Resins Using ESR, DSC and Rheometry F.R. Tollens, K.R. Cromack, L.J. Lee; The Ohio State University, USA	09-02 Two-Phase Simulation of Tubular Film Blowing of Crystalline Polymers B.K. Ashok, G.A. Campbell; Clarkson University, USA
10:00	COFFEE BREAK, CHEDOKE FOYER, THIRD FLOOR	
10:20	05-21 Radiation Effects on Polypropylene R. Rolando, D.L. Krueger; 3M, USA	09-03 Coextrusion in Blown- and Cast Film <u>K. Schafer</u> , H. Bongaerts, R. Hessenbruch; BARMAG AG, GERMANY
10:40	05-22 Morphology Control of Polyamide Alloys by Reactive Processing T. Nishio; Sumitomo Chemical Co., JAPAN	09-04 Single and Double Bubble Tubular Film Extrusion of Poly(vinylidene Fluoride) - Poly(methyl Methacrylate) Blends <u>T. Nie</u> , J.L. White; University of Akron, USA
11:00	05-23 Kinetic Regularities of Stress Evolution in Non-Isothermal Conditions of Reactive Processing A. Ya. Malkin, V.P. Beghishev, I.N. Shardaikov, N.A. Trufanov; U.S.S.R. Academy of Sciences, U.S.S.R.	09-05 Coextruded Infrared Reflecting Film W.J. Schrenk, R.A. Lewis, J.A. Wheatley, C.B. Arends; Dow Chemical, U.S.A.
11:20	05-24 Frozen Stresses in Reactive Processing A. Ya. Malkin; USSR Academy of Sciences, U.S.S.R.	09-06 Effect of Torsional Deformation in Melt Spinning of Thermotropic Liquid Crystalline Polymer <u>T. Kikutani</u> , Y. Wang, A. Takaku; Tokyo Institute of Technology, JAPAN
11:40		09-07 Fiber Structure and Mechanical Properties of PEEK Filaments Drawn at -115 to +300°C <u>Y. Ohkoshi</u> , A. Konda; Shinshu University, JAPAN

WEDNESDAY, APRIL 24, AFTERNOON SESSIONS

	WEBSTER A, THIRD FLOOR	WEBSTER C, THIRD FLOOR
	4.2 MIXING	2.3 RHEOLOGY AND RHEOMETRY
14:00	04-08 <u>Mixing in the Thick of Things</u> C.G. Gogos; Stevens Institute of Technology, U.S.A.	02-17 <u>The Effect of Molecular Structure on Wall Slip and Melt Fracture in Capillary Die Flow at Constant Piston Speed</u> S. Hatzikiriakos, J.M. Dealy; McGill University, CANADA
14:20	04-09 <u>The Recirculating Screw Mixer: A New Small-Volume Mixer for the Polymer Laboratory</u> C. Scott, C.W. Macosko*; Eastman Chemical Company and *University of Minnesota, U.S.A.	02-18 <u>Predicting the Influence of Processing Aids on Extrudate Flow</u> S. Abrahami, B. Wolf; Israel Institute of Plastics, ISRAEL
14:40	04-10 <u>Flow Field Analysis of the Kneading Discs Region in a Corotating Twin Screw Extruder</u> H.-H. Yang, I. Manas-Zloczower; Case-Western Reserve University, U.S.A.	02-19 <u>A Comprehensive Study of Wall Slip Phenomena in the Flow of Rubber Compounds</u> P. Mourniac, B. Vergnes, J.F. Agassant; Ecole des Mines de Paris, FRANCE
15:00	04-11 <u>Mixing Improvements Using Additives in Highly Compounded Polymer Systems</u> R. Carmany, D. Hall; Struktol Company, USA	02-20 <u>Analogy Between the Modelling of Pullout in Solution Spinning and the Prediction of the Vortex Size in Contraction Flows</u> M.J.H. Bulters, H.E.H. Meijer*; DSM Research and *Eindhoven University of Technology, NETHERLANDS
15:20	COFFEE BREAK, CHEDOKE FOYER, THIRD FLOOR	
	6 FOAMS	14 RECYCLING
15:40	06-KN <u>Micromechanical Models of Foam Rheology</u> A.M. Kraynik, Sandra Laboratories, USA and D.A. Reinelt, Southern Methodist University, USA	14-01 <u>Recycling of Ground Rubber Tires in Polymer Blends Using Reactive Compatibilization</u> K. Olliphant, W.E. Baker; Queen's University, CANADA
16:00		14-02 <u>Reactive Extrusion of Polystyrene/Poly(ethylene terephthalate) Blends for Polymer Waste Recovery</u> L. Martin, S.T. Balke; University of Toronto, CANADA
16:20	06-01 <u>Bubble Nucleation</u> D.H. Rasmussen, M.T. Liang, G.A. Campbell; Clarkson University, USA	14-03 <u>Rheological Studies on Blends and Waste Plastics</u> J. Cabak, O. Bartos, J. Visek*, VUGPT, *Compuplast, CZECHOSLOVAKIA
16:40	06-02 <u>Bubble Nucleation in Microcellular Polycarbonate Foam</u> V. Kumar; University of Washington, USA	14-04 <u>Recycling of Post-Consumer Scrap Rubber</u> M.E. Ryan, B. Swiatkiewicz; SUNY-Buffalo, USA, N. Bakos; Plasticase, USA and R. Bauer, Dunlop Tire, USA
17:00	06-03 <u>Some Studies of the Dynamics of Foam Growth in the Non-Newtonian Fluid</u> Y. Seo; KIST, KOREA	14-05 <u>Recycling of Polyurethane Elastomers</u> V. Rek, M. Bravar; University of Zagreb, YUGOSLAVIA

WEDNESDAY, APRIL 24, AFTERNOON SESSIONS

	ALBION A, SECOND FLOOR	ALBION C, SECOND FLOOR
	12 COMPRESSION MOLDING	9.2 FIBERS AND FILMS
14:00	12-KN Compression Molding of Long Fiber Reinforced Thermoplastics - An Overview R. Ducloux, M. Vincent, <u>J.F. Agassant</u> ; Ecole des Mines de Paris, FRANCE	09-K2 Theoretical Analysis of Non-Woven Fiber Process and Its Application for Various Polymers T. Kanai; Idemitsu Petrochemical Co. Ltd., JAPAN
14:20		
14:40	12-01 Simultaneous Rheological and Kinetic Analysis of Reactive Composites P. Allen, J. Collister; Premix, Inc., USA	09-08 Analysis of Crimp in Bilaterally Oriented Fibres of Polypropylene A. Paris, J.M. Haudin, P. Navard; Ecole de Mines de Paris, FRANCE
15:00	12-02 Flow Regimes for Fiber Suspensions in Narrow Gaps C.L. Tucker III; University of Illinois at Urbana-Champaign, USA	09-09 A Study on the Neck-Like Deformation in the Melt-Spinning of Polyethylene X. Kimu, N. Okui, T. Sakai*; Tokyo Institute of Technology and *Kyoritsu Women's University, JAPAN
15:20	COFFEE BREAK, CHEDOKE FOYER, THIRD FLOOR	
15:40	12-03 Correlation Between Separation and Orientation of Fibers during Compression Molding of Polymeric Composites <u>E.G. Kim</u> , D.G. Lee, H. Hojo*; Kookmin University, KOREA and *Tokyo Denki University, JAPAN	09-10 Physical Properties of Melt Spun Polyimide Filaments K. Tanaka, M. Kobayashi, N. Ishizuka, K. Koyama; Yamagata University, JAPAN
16:00	12-04 Analysis of Compression Molding and Curing of Sheet Molding Compounds by the Finite Element Method J. Kim, <u>Y.C. Shiao*</u> , J.Y. Xu, L.J. Lee; The Ohio State University, * Oklahoma State University, USA	09-11 Analysis and Control of Variability in the Fibre-Making Process S.F. Bush, C.G.A. Clayton; UMIST, U.K.
16:20	12-05 Compression Mold Filling Simulation For Thick Parts <u>E. Wen-ti Liang</u> , C.L. Tucker III; University of Illinois at Urbana-Champaign, USA	09-12 Effect of Spin Speed on the PET Fiber Properties and Structure in Heat Tube Process <u>Z. Yu</u> , H. Xuechao, L. Yinjun, Z. Jlemin; China Textile University, CHINA
16:40	12-06 Heat Transfer During Compression Mold Filling <u>H.U. Akay</u> , F. Ladelinde; Technalysis, USA	
17:00	12-07 Study of the Thermomechanical Behaviour of Fiber Reinforced Composite Parts S.C. Tseng, <u>T.A. Osswald</u> ; University of Wisconsin-Madison, USA	