POLYMER PROCESSING SOCIETY

EUROPEAN REGIONAL MEETING

September 21 - 24, 1992 PRAGUE, CZECHOSLOVAKIA



PROGRAM ABSTRACTS SPONSORS

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CZECHOSLOVAKIA

THE POLYMER PROCESSING SOCIETY EUROPEAN REGIONAL MEETING

PRAGUE, CZECHOSLOVAKIA SEPTEMBER 21-24,1992

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 Regional Meeting of the Polymer Processing Society. Over 80 presentations are included in the Technical program. Extended abstracts of practically all of these presentations are collected in this volume.

The abstracts of the oral presentations are arranged according to the eight symposium topics. In addition, abstracts of 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 this PPS Meeting and successful forum for exchange of technical information and results related to the processing of polymeric systems.

Petr Sáha General Secretary

PROGRAM

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POLYMER PROCESSING SOCIETY THE

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 worldwide community of engineers and scientists in this field. The thematic range of the PPS encompasses all formulation, conversion and polymeric system in the applied to operations transformation from their monomeric forms to commercial products. Membership at the PPS is open to all research workers in the field, and to all individuals who feel activities of the society advance their professional development.

REGISTRATION PLACE

The registration desk will be open during the meeting at the Convention and Culture Centre at the following hours:

Monday	21st September	12.00-19.00
Tuesday	22nd September	8.00-19.00
Wednesday	23rd September	8.30-18.30
Thursday	24th September	8.30-11.00

GENERAL SCHEDULE

Monday, September 21	Registration Welcoming Reception	12.00-19.00 19.00-22.00
Tuesday, September 22	Registration Opening Ceremony Plenary Lecture Morning Session Exhibition Afternoon Session Poster & Reception	8.00-19.00 9.30- 9.40 9.40-11.00 11.00-13.00 13.00-19.00 15.00-17.00 17.00-19.00
Wednesday, September 23	Registration Morning Session Exhibition Afternoon Session Banquet	8.30-18.30 9.00-13.00 9.00-16.00 15.00-17.00 19.00-22.00
Thursday, September 24	Registration Morning Session Exhibition	8.30-11.00 9.00-13.00 9.00-13.00

TECHNICAL PROGRAM

PLENARY LECTURER: Zehev TADMOR

Technion Israel Institute of Technology

Haifa, Israel

TITLE: Devolatilization Mechanisms of Polymeric Melts

SYMPOSIA:

ORGANIZERS

1. Reactive Processing M.Lambla, C.Tzoganakis

2. Mathematical Modelling M. Vincent, J. Vlachopoulos

3. Extrusion B. Vergnes, G. Mennig

4. Recycling C.Klason, B.Latto

5. Composite Materials T.Kitano, L.Nicolais

6. Molding Technologies H.G.Fritz, J.L.White

7. Blends I.Partridge, E.Martuscelli

8. Student Forum P.Sáha, G.Krehbiel

PRESENTATION

Forty minutes will be allowed for the key-note lecturers, and twenty minutes for each oral presentation including time for discussion. Each session room will be equiped with a both slide and an overhead projector. Slides should be in frames of 50x50mm. There will be three parallel sessions running in the morning and afternoon each day of the conference.

A poster session is scheduled on Tuesday, September 22 at 17.00 hours. All posters should be put up during the morning of September 22 and shall be removed after the poster session or the next day. Poster boards are 60cm wide and 120cm high. Poster boards will be identified by the paper number. The authors are expected to prepare their posters and to fix them to the poster boards at the scheduled time by themselves. The basic materials (papers, tapes, scissors, pins) will be available.

SOCIAL PROGRAM

Monday, 21st September	19.00-22.00 Welcoming Reception	No charge
Tuesday,22nd September	17.00-19.00 Poster & Reception	No charge
Wednesday,23rd September	19.00-22.00 Banquet	\$ 50 US

During the conference, various social activities will be arranged for the participants and accompanying people. The information desk for the social activities will be near the registration desk and will be open during the following hours:

Monday	from	12.00-19.00
Tuesday		9.00-15.00
Wednesday		9.00-15.00

Some tours are will require a minimum of 10 people.

THE BASIC SOCIAL PROGRAM

A

PRAGUE - The Heart of Europe

- a sightseeing tour by a special little train from Staroměstské náměstí with a tour guide

- a visit to the baroque castle in Troja, lunch in the Troja castle wine restaurant, a visit to the Gallery of Prague, the Picture Gallery and the Convent of St.Agnes of Bohemia

- price \$ 50 US

B EVENING CONCERTS

- Jazz - Jazz Club Parnas Classical Music - Slovan House, Valdstein Garden, Museum of B. Smetana

- Pop Music - concert of a Czech group Organ Music - concerts of old masters in the St.Jacob's or St.Nicholas's Cathedrals. The concerts will be held throughout the whole congress.

- price \$ 15 US

A MEETING WITH THE MORAVIAN FOLKLORE

- tasting of Moravian wines in wine vaults, a visit to the Perštýn castle

- lunch in a restaurant with folk songs

- a visit to the Bohemia glass-works in Světlá n./Sázavou art of the Czech glass-workers

- price \$ 60 US

 Γ

THE BEST KNOWN CZECH SPAS

 a visit to the world-famous spa Karlovy Vary, founded by Charles IV. in the 14th century and the tasting of mineral springs

- lunch in the Grandhotel Pupp

- Karlovy Vary's porcelain a visit to the plants "Stará" and "Nová Role"
- a visit to the spas Františkovy Lázně and Mariánské Lázně founded in the 18th century, with a tour guide

- price \$ 60 US

4

THE CZECH CASTLES - Karlštejn

- lunch in the restaurant Myslivna, a visit to the Karlštejn castle
- the show of historical fencing in typical costumes in the courtyard, guests will be driven in veteran cars from the Prague Veteran Car Club

- price \$ 60 US

F

THE CASTLE - Konopiště

- a visit to the Konopiště castle (previous castle of the emperor Ferdinand de Este)
- lunch in the picturesque restaurant Koliba

- price \$ 50 US

G

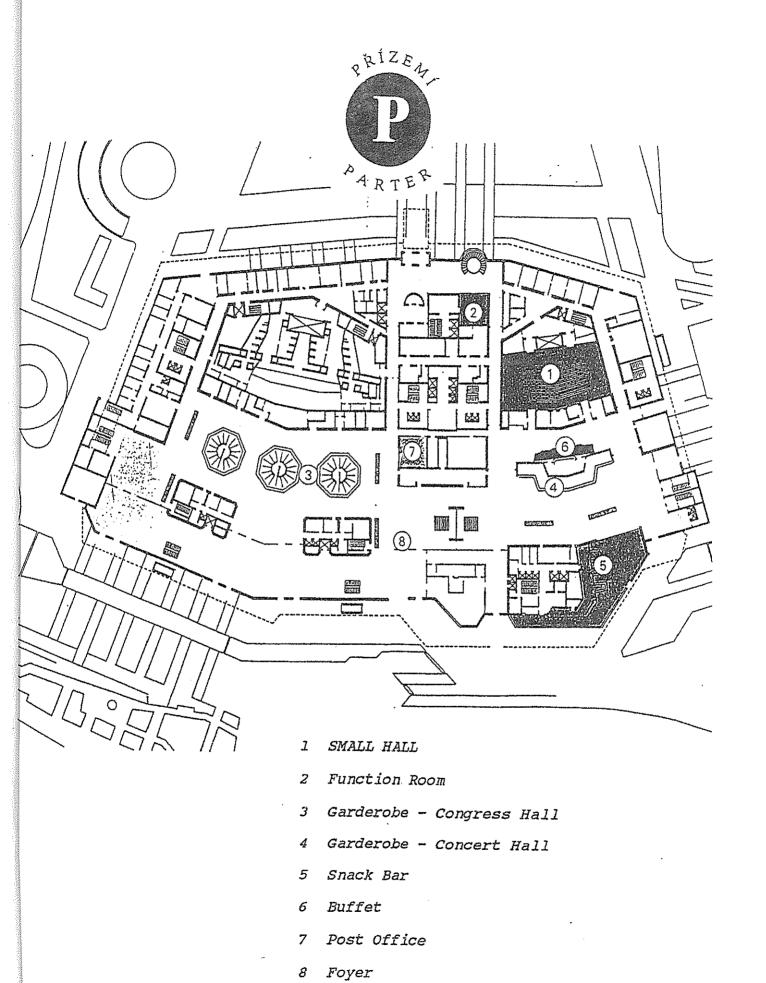
THE OLD PRAGUE JEWISH TOWN

- lunch in the wine restaurant "U Golema" famous for its Jewish cuisine
- a visit to the Old Jewish town the Synagogue, the Jewish cemetery, an exposition of rare Hebrew manuscripts
- the Variety show: ALFRED STORY about the old Prague with Jewish songs and stories in the theater "U Italů" located in the Malá Strana district, held in English

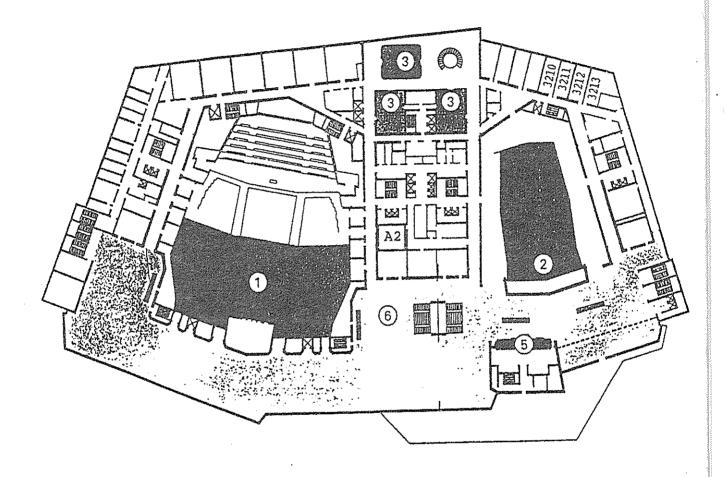
- price \$ 50 US

GENERAL SCHEDULE

MONDAY, SEPTEMBER	PTEMBER 21	Registration		12.00-19.00		Welcoming Reception - Pand	Panorama Restau 19.00-22.00	Restaurant -22.00
TUESDAY, S	SEPTEMBER 22	2 Registration	n 8.00-19.00	00.	Exh	Exhibition 13.00-19.00		
i .	9.40 11	11.00	13.00	00 15.00	00		17.00	19.00
		Composite Materials-Smal	11 Hall		Mathematical Model	Modelling-Chamber Hall	<u>م</u>	ህ ት የ
Opening	Plenary Lecture	Reactive Processing-Chamber Hall	mber Hall	Lunch	Student Forum - Room	om 81	Re f	Reception
Small Hail	Small Hall	Recycling - Room A4			Recycling-Room A4	Molding Technologies-Room A4		DET HOTT
WEDNESDAY,	SEPTEMBER	. 23 Registration	n 8.30-18.30	.30	Exh	Exhibition 9.00-16.00		
9,00		11.00 13.00	00 15.00	:		17.00	19.00	22.00
Mathematical	.l Modelling-	Modelling-Chamber Hall	, and the second	nocite 1	commosite Materials - Room Bl		······································	
Reactive Processing	1	Room B1	40 d	no isomboa	7.4		Ba	Banquet Panorama
Molding Tec	Technologies-Room	om A4 Extrusion-Room A4		Blends +) 8		Res	Restaurant
Blends - Ro	Room A3		1					
THURSDAY,	SEPTEMBER	24 Registration		8.30-11.00		Exhibition 9.00-13.00	0	
9.00		13.	13.00			,		
Composite M	Materials - F	Room B1				,		
Extrusion	- Room A4							
Student For	Forum - Room	A3						

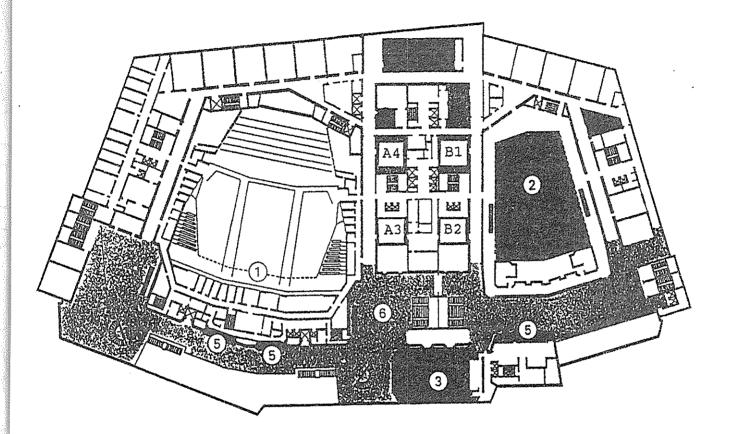






- 1 Congress Hall
- 2 Concert Hall
- 3 Casino
- A2 FUNCTION HALL
 - 5 Buffet
 - 6 Foyer
- 3210 SECRETARIAT
- 3211 SECRETARIAT
- 3212 SECRETARIAT
- 3213 SECRETARIAT





- 1 Congress Hall
- 2 Concert Hall
- 3 CHAMBER HALL
- A3, A4 FUNCTION ROOMS
- B1, B2 FUNCTION ROOMS
 - 5 Buffet
 - 6 Foyer

TUESDAY, SEPTEMBER 22

9.30				OPENING Plenary Lecture					
10.40	Professor Avraam I.Isayev								
10.40									
11.00	BREAK								
		Room A3		Chamber Hall		Room A4			
		SESSION 5 L.Nicolais T.Kitano		SESSION 1 N.Lambla C.Tzoganakis		SESSION 4 C.Klason B.Latto			
3		Viscoelastic Behaviour of Crystallizable Thermoplastic Matrix Composites During Processing J.M.Kenny, University of Naples, Italy	01-KN1 p.1	Mixing Phenomena in Extruders <u>D.Bigio</u> , University of Maryland, USA	04-KN1 p.88	General Aspects and Future Trends of Plastics Recovery <u>R.Wogrolly</u> , TGM-Kunststofftech., Wien, Austria			
		Crystallization Kinetics of New TPI <u>L.Torre</u> , University of Naples, Italy	01-01 p.4	Free Radical Grafting of Activated Monomers onto Polypropylene in the Extruder J.J.Flat, ATOCHEM, Serquigny, France		Processing Effects on PET from Bottle Scraps G.Giannotta, Instituto Guido Donegani S.p.A., Novara, Italy			
		Effects of Resin - Rich Interply Zones on Fatigue of Unidirectional and Cross-Ply Laminates I.K.Partridge, Cranfield Institute of Technology, U.K.	01-02 p.6	Some Industrial Application of Products Produced by Reactive Processing A.M.Adur, BP Chemicals, Hackettstown, USA	04-02 p.102	Recycling of Polyethylene Terephthalate (PET) W.DE Winter, Agfa-Gevaert N.V., Belgium			
	05-03 p.132	Mechanics of Cycling Destruction of Elastomeric Composites V.I.Dyrda, Dniepropetrovsk, Ukraine	01-03 p.7	Modelling of Reactive Extrusion in a Model Twin Screw Extruder T.Fukuoka, University of Akron, USA	04-03 p.104	The Effects of Multiple Extrusions on the Recyclability of Polyolefins A.T.P.Zahavich, McMaster University, Canada			
	05-04 p.134	Energy Absorption in Impacted Composite Sandwich Structures P.E.Reed, University of London, U.K.	p.8	Continuous Crosslinking of EVA/ EMA Copolymer Blends by On-Line Microwave Heating P.Cassagnau, CNRS Vernaison, France	04-04 p.105	Recycling of PVC Hose: Separation of PVC Particles and Polyester Pibre B.Latto, MIXIS Corporation, Dundas, Canada			
13.00 15.00				LUNCH					



		Chamber Hall		Room B1		Room A4
		SESSION 2 M.Vincent I.Vlachopoulos		SESSION 8 P.Sáha G.Krehbiel		SESSION 4 C.Klason B.Latto
15.00 15.20	p.26			Radiation Modification of Polyethylene <u>O.Krtilová</u> , Institute of Chemical Technology, Prague, Czechoslovakia		Utilization of Recycled Polyolefins as Asphalt Binder Modifiers E.Wogrolly, TGM-Kunststofftech., Wien, Austria
15.20 15.40	2	,		Methods of Volatiles Determination in Polymers J.Pokorný, Institute of Chemical Technology, Prague, Czechoslovakia	04-06 p.116	
15.40 16.00	02-01 p.34	Modelling of Blow Molding K.Kouba, McMaster University, Canada	08-04 p.208			SESSION 6 H.G.Fritz J.L.White
16.00 16.20	p.36	On the Modelling of Post Filling Stages in the Injection Molding Process of Crystalline Polymers <u>G.Titomanlio</u> , Universita di Salerno, Italy	08-05 p.210	Some Aspects of Polyolefine Stabilization - Reactive Modification D.Q.Tuan, STU Bratislava, Czechoslovakia	06-KN1 p.162	New Ways in Process Control <u>H.Potente</u> , University of Paderborn, Germany
8 1	0 02-03 0 p.37	A Configurable Mathematical Model for the Analysis of Temperature Transients During Extrusion K.Panreck, University of Paderborn, Germany	08-06 p.211	High Loaded Composite Haterials <u>Z.Brunovská</u> , STU Bratislava, Czechoslovakia		
6	0 02-04 0 p.39	Residence Time Distributions in Spiral Mandrel Dies <u>J.Perdikoulias</u> , Brampton Engineering, Canada			06-01 p.170	Residual Stress and Birefringence in Injection Molded Optical Disk <u>A.I.Isayev</u> , University of Akron, USA

WEDNESDAY, SEPTEMBER 23

			<u> </u>	
		Chamber Hall		Room B1
i .	02-05 p.41	Numerical Analysis of Polymer Rotational Extrusion A.Karagiannis, Monsanto Chemical Co., USA	01-KN2	Chemical Modification in Extruder A.Michel, CNRS Lyon, France
	02-06 p.43	Helical Flow in Annular Spaces with a Rotating Inner Wall P.Filip, ČSAV, Institute of Hydrodynamics, Prague, Czechoslovakia		
9.40 10.00	02-07 p.45	Birefringence Modelling of HDPE Melts through Dies E.Mitsoulis, University of Ottawa, Canada	01-06 p.10	Solubility Aspects of Peroxides in the Modification of Polypropylene with Maleic Anhydride A.H.Hogt, Akzo Chemical B.V., Deventer, Netherland
10.00 10.20	02-08 p.47	Flow of EPDM Compounds in Capillary Dies: Experiments and Computations with Sticking and Slipping Contact M.F.Boube, Hutchinson Centre de Recherches, France	01-07 p.12	Visbreaking of Polypropylene in Different Processing Machines K.Ebner, University of Akron, USA
10.20 10.40	02-09 p.49	Flow Field Analysis of the Cavity Transfer Mixer I.Manas-Zloczower, University of Cleveland, USA	01-08 p.16	Cure Monitoring of Epoxy Based Composites by Dielectric Spectroscopy A.Trivisano, University of Naples, Italy
10.40		B R I	E A K	
11.00 11.20	02-10 p.51	The Fundamental Requirements for Good Mixing J.H.Conner, University of Maryland, USA	01-09 p.18	The Twin-Screw Extruder for Condensation Reactions in Homo- and Heterogeneous Media Ch.Maier, EAHP, Strasbourg, France
11.20 11.40	02-11 p.53	Empirical Models of Adhesion of Polyethylene Film to Epoxy Adhesive M.Zenkiewicz, Torun, Poland	01-10 p.19	Synthesis of Multimethacrylic Epoxy - Amine Prepolymers by Reactive Extrusion M.Taha, INSA-Bat.403, France

- 3	*			
		Room A4		Room A3
	06-02 p.171	Determination of the Hollow Space Cross - Section in Gas - Assisted Injection Molded Parts H.Potente, University of Paderborn, Germany	07-KN1 p.181	Thoughening of Highly Cross - Linked Epoxy Resin by Blending with Engineering Thermoplastics G.Ragosta, Institute of Polymer Technology and Rheology, Arco Felice, Italy
. 959	06-03 p.173	How to Avoid Blister Formation During Compression Molding of Sheet Molding Compound S.Halvarsson, Swedish Institute of Composites, Pitea, Sweden		
1000000	06-04 p.175	Computer Simulation of Plastication Process in Screw Injection Molding Machines R.Steller, Technical University of Wroclaw, Poland	07-KN2 p.187	Reactive Blending of Poly (ethylene terephthalate) with Ethylene-Propylene Rubber T.Inoue, Tokyo Institute of Technology, Japan
1.1948	06-05 p.176	Shaft Seal Manufacturer - Alternate Molding Techniques R.Bond, CR Industries, Illinois, USA		
CONTROL CONTRO	06-06 p.178	Factors Affecting the Strength of Long-Fibre Reinforced Thermoplastic Composites S.F.Bush, University of Manchester, U.K.	07-02 p.195	Morphological Changes of a Polymer Blend into a Twin-Screw Extruder B.Vergnes, CEMEF, Valbonne, France
		SESSION 3 B.Vergnes G.Mennig		BREAK
	03-KN1 p.65	Phase Morphology Development in Modular Co-Rotating and Modular Counter-Rotating Twin Screw Extruder J.L.White, University of Akron, USA		

	Chamber Hall		 	Room B1	Room A4		
11.40 12.00	p.55	Correlations between Molar Mass Distribution and Rheological Behaviour of Polymer Melts M.Gahleitner, Johannes Kepler University, Linz, Austria	01-11 p.21	Silane-Grafting and Holding Steps of Polyethylenes, Realized as Improved Single Stage Processes <u>H.G.Fritz</u> , University of Stuttgart, Germany	03-01 p.68	The Effects of Screw Geometry on the Changes in the Particle Structure of Rigid PVC J.Stasiek, METALCHEM, Torun, Poland	
12.00 12.20	p.57		p.23	High molecular weights in poly (ethylene terephthalate-co-oxybenzoate)-LCP by short-time coupling in a melt kneader M.Stephan, Institute of Polymer Research, Dresden, Germany	03-02 p.69	Normalization of Distributive Mixing in Partially-Filled Twin Screw Extruders Distributive Mixing and Energy Distribution in Twin Screw Extruder D.Bigio, Univ.of Maryland, USA	
12.20 12.40		Analysis of Operating Characteristics of a Single Roll Extruder for Polymer Recycling S.Fang,University of Stuttgart, Germany			03~03 p.71	Distributive Mixing of Non - Newtonian Fluids in Partially - Filled Non - Intermeshing Twin Screw Extruder W.Baim, University of Maryland, USA	
12.40 13.00	02-15 p.61	Plasticizer Transport from Insulating PVC Foils into Water <u>K.Kolomazník</u> , Zlín, Faculty of Technology, Czechoslovakia					
13.00 15.00				L U N C H			
		Room B1		Room A4		Room A3	
	05-05 p.136		p.73	Flow in a Hodular Co - Rotating Twin Screw Extruder Scale - up and Non - Isothermal Effects J.L.White, University of Akron, USA		Control of the Size of Ethylene Vinyl Acetate/Ethylene Methyl Acrylate Domains by Interfacial Chemical Modification in PVC/ (EVA/EMA) Blends A.Michel, CNRS, BP 24,France	
	05-06 p.138	The Chemical Polypropylene Modification <u>W.Slezyngier</u> , Politechnika Rzeszowska, Poland	03-05 p.74	The Single Screw Extruder Feeding Zone Design <u>V.V.Jinescu</u> , Polytechnic Institute, Bucharest, Romania	07-03 p.197		
		Processing of Glass Mat Reinforced Thermoplastics L.A.Berglund, Lulea University, Sweden	03-06 p.76	Optimal Extruder Control using Economical Criteria F.Dorrscheidt, University of Paderborn, Germany	07-04 p.199	Crystallization Kinetics of PCL Blended with SAN <u>P.Svoboda</u> , Tokyo Institute of Technology, Japan	

16.00 16.20			03-07 p.78	**	07-05 p.201	A Possibility of Blasticity Improvement in NBR/PVC and Copoly (ester-ether) Elastomers V.Ducháček, Prague Institute of Chem.Technology, Czechoslovakia
16.20 16.40	05-07 p.147	Method for Production of Reinforcing Fibre/Thermoplastic Fibre Mixed Mats and Mechanical Properties of Their Composites T.Kitano, MITI, Tsukuba, Japan				
		Simulation of Deformation Process for Long Fibre Reinforced Thermoplastics During Compression Molding Z.I.Maekawa, Kyoto Institute of Technology, Japan				

THURSDAY, SEPTEMBER 24

	Room Bl		Room A4		Room A3
 05-09 p.151		03-08 p.80	Potential Applications for the Computer-Aided Design Extruders <u>H.Potente</u> , University of Paderborn, Germany	08-07 p.212	Recycling of Plastics from Motor Vehicles <u>A.Anzenhofer</u> , Wien, TGM - VA Kunststofftechnik, Austria
 05-10 p.153		03-09 p.82	The Advantage of Hele Shaw Elements in Simulation of Extrusion Flow H.J.Pitz, BASF Aktiengesellschaft Ludwigshafen, Germany	08-08 p.213	
	Influence on the Curing Process from the Thermal Properties of RTM Moulds L.A.Strömbeck, Swedish Instit. of Composites, Sweden	03-10 p.83	Reduction of Extrusion Instabilities Using a Lubricated Die - Head J.Becker, Chalmers University of Technology, Sweden	08-09 p.214	
05-12 p.157		03-11 p.85	An Experimental and Theoretical Study of the Maddock Dispersive Shear Mixer in Plasticating Extrusion I.Postoaca, University of Lund, Sweden	08-10 p.215	Effect of Minor Constituents in Polyolefins on Pyrolysis Products G.Steininger, Wien, TGM - VA Kunststofftechnik, Austria
 05-14 p.159				.,	

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

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