THE SOCIETY OF RHEOLOGY

70TH ANNUAL MEETING
PROGRAM

Monterey Marriott
Monterey, California
October 4-8, 1998

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University of Minnesota
Eric S. G. Shaqfeh
Stanford University
Norman J. Wagner
University of Delaware
Lynn Walker
Carnegie-Mellon University
Shi-Qing Wang
Case Western Reserve University

Local Arrangements:

Gerald G. Fuller
Stanford University

Abstract Book Editor and Webmaster:

Albert Co, University of Maine
# Meeting Schedule

### Monday, October 5, 1998

<table>
<thead>
<tr>
<th>Time</th>
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<td>G. Marrucci (PL1)</td>
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### Tuesday, October 6, 1998

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### Session Codes

- **AN** = Analytical and Numerical Solutions to Flow Problems
- **CF** = Coupling Flow and Order in Fluids
- **EE** = Extensional and Elongational Flow
- **EM** = Rheology and Microstructure of Electro and Magneto-Rheological Fluids
- **EX** = New Experimental Methods
- **FS** = Polymer Friction, Slippage, and Dynamics Near Surfaces
- **GN** = General Session
- **IR** = Interfacial Rheology and Rheological Modifiers
- **JA** = Jet Breakup, Atomization, and Spraying of Non-Newtonian Liquids
- **NP** = Polymers with Novel Architectures
- **PL** = Plenary Lectures
- **SC** = Solutions and Coating Rheology
- **SE** = Suspensions and Emulsions
- **SL** = Rheology of Solids
- **VP** = Viscoelastic Processing Flows: Theory and Experiment
Contents

Plenary Lectures ........................................................................................................ 2
Social Program ........................................................................................................... 2
Updates of Abstract Book ......................................................................................... 3
Technical Program ..................................................................................................... 4
   Monday .................................................................................................................... 4
   Tuesday ................................................................................................................... 6
   Wednesday ............................................................................................................... 8
   Thursday ................................................................................................................ 10
Poster Session .......................................................................................................... 12

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Plenary Lectures

8:30 AM    Steinbeck Forum

Monday, October 5
Recent Progress In The Theory Of Entangled Polymers In Fast Flows
Giuseppe Marrucci
Chemical Engineering, University of Naples

Tuesday, October 6
Bingham Lecture
Nonlinearities And Instabilities In The Flow Of Molten Polymers
John M. Dealy
Chemical Engineering, McGill University

Wednesday, October 7
Interfacial Rheology Of Simple Liquids And Polymers
Steve Granick
Materials Sci. and Engineering, University of Illinois

Social Program

Sunday, October 4
Welcoming Reception
6:00 PM - 8:00 PM    Ferrante's, Monterey Marriott
Sponsored by T. A. Instruments

Monday, October 5
Society Reception
7:00 PM - 8:30 PM    Memory Gardens, Fisherman's Wharf
Sponsored by Rheometrics, Inc.

Tuesday, October 6
Business Meeting
5:30 PM    San Carlos I Ballroom

Awards Reception
7:00 PM    North Foyer outside of San Carlos III
Sponsored by Haake, Inc.

Awards Banquet
8:00 PM    San Carlos III Ballroom

Wednesday, October 7
Poster Session Refreshments
5:30 PM    Main Foyer
Sponsored by PAAR Physica USA
Updates of Abstract Book

• **Paper AN15** (Thursday, 8:30, Los Angeles) is replaced with:

SIMULATION OF THE DOI-EDWARDS MODEL IN COMPLEX FLOW  
Antoon P.G. van Heel, Martien A. Hulsen, and Ben H. A. A. van den Brule  
Department of Mechanical Engineering and Marine Technology, Delft University of Technology, Delft 2628 AL, Netherlands

Two methods to simulate the Doi-Edwards model in a complex flow field are compared. The first method is based on a configuration field approach (JNNFM 70 (1997), 79-101), combined with a stochastic algorithm that mimics the reptation process.

In the second method a new (isotropic) ensemble of tube segments (unit vectors) is created every time step. The actual distribution of every ensemble is calculated using the deformation gradient that maps the distribution at the moment of creation to the distribution at the current time. The relative weight of a particular tube ensemble to the stress is decreased, as the ensemble becomes older in the course of the simulation. The weight function follows from the probability for a segment to survive for a certain period of time.

The flow problem we selected is the flow past a cylinder confined between two flat plates. It is shown that the second method is very efficient and has clear advantages over the first, more traditional, method.

• **Paper AN17** (Thursday, 9:20, Los Angeles) is replaced with “Modeling the Rheology of Suspensions of Spherical Particles with Adsorbed Polymers,” by K. Zhang and C. W. Manke (previously AN18).

• **Paper AN18** (Thursday, 10:10, Los Angeles) is replaced with:

THE VISCOPLASTIC FLOW ANALYSIS OF COLD EXTRUDED CHOCOLATE  
Nita C. Mulji and Malcolm R. Mackley  
Department of Chemical Engineering, University of Cambridge, Cambridge CB2 3RA, United Kingdom

The cold extrusion processing of chocolate, where solid chocolate is isothermally extruded below its normal melting range, was first reported by Beckett et al. (1994). The material deformed plastically, as it was forced through an area reduction in a die, and a time dependent post extrusion plasticity was observed where the product hardened over time to its normal brittle state. A key benefit of this process is the ability to produce a diverse range of extrudate shapes. This paper presents some experimental, theoretical and numerical results obtained for the axisymmetric cold extrusion of chocolate. Chocolate can be usefully modelled as a rigid-plastic solid because of the existence of yield behaviour. The constitutive model used requires only one material parameter, the uni-axial yield stress for which a value has been obtained from the experimental data. In general, this is a function of temperature and chocolate composition. ABAQUS v5.5, a commercial finite element package, has been used to estimate the extrusion pressure for a variety of die geometries. The numerical simulation results have been shown to lie between lower and upper bound theorem predictions for dies with no die land. In particular, the effect of area reduction, die land length and flowrate on the extrusion pressure has been studied. Experiments showed that the wall boundary condition varied as the area reduction was increased. A closer examination of the results showed that the wall shear stress was constant for large area reductions and varied for the smaller area reductions.

• **Paper EE22:**  
In the middle of the abstract, the sentence that reads:  

However, if the Reynolds number ... velocity field does not satisfy momentum conservation, and hence is not attainable.

should be replaced with:

However, large values of the Reynolds number may cause undesirable effects, such as non-negligible viscous heating.
# Monday, October 5

## Morning

### 8:30

**PL1.** Recent progress in the theory of entangled polymers in fast flows. *G. Marrucci*  
Steinbeck Forum

### 9:20

**COFFEE**

### 9:45

**NP1.** Characterization of dendrimers as model polymers with unique properties. *E. J. Amis, B. J. Bauer, T. J. Prosa and A. Topp*

**GN1.** Examination of a new molecular model for polydisperse systems of linear flexible polymer in steady and transient shear flows. *J. J. Driscoll, D. W. Mead, R. G. Larson, M. Doi and A. Berker*

### 9:45

**NP2.** Structure and dynamics of multifunctional star polymers. *D. Vlassopoulos, G. Fytas, T. Pakula, A. N. Semenov and J. Roovers*

**GN2.** Stress plateau behavior in fast flow of monodisperse polymeric fluids. *X. Yang and S.-Q. Wang*

### 10:10

**NP3.** The influence of dendrimers and hyperbranched polymers on the thermodynamics and rheology of linear polymers. *I. Bodnar, Y. H. Kim and N. J. Wagner*

**GN3.** Rheology of perfluoropolyether/poly1h,1h-pentadecafluorooctyl methacrylate blends. *T. E. Karris*

**EE1.** Issues in extensional rheometry. *T. Sridhar*

### 10:35

**NP4.** The effect of long chain branching on the rheological behavior of metalloocene polyethylenes. *P. M. Wood-Adams and J. M. Dealy*

**GN4.** Effects of wax crystallization on the flow of mineral oils. *R. M. Webber*

**EE2.** The transient extensional viscosity of dilute and semi-dilute polymer solutions measured with a filament stretching rheometer. *K. W. Koelling and D. S. Shackleford*

### 11:00

**NP5.** Predicting the linear viscoelastic behavior of star polymers utilizing an extension of the double reptation theory with no adjustable parameters. *T. J. Van Dyke, D. W. Mead and R. G. Larson*

**GN5.** Blends of linear and branched polyethylenes. *H. S. Lee and M. M. Denn*

**EE3.** Necking and breakup of viscoelastic fluid filaments in filament stretching devices during stretching and subsequent stress relaxation. *S. L. Anna, M. Yao and G. H. McKinley*

**EE4.** Flow light scattering studies of polymer coil conformation in solutions in extensional flow. *E. C. Lee and S. J. Muller*

### 11:25

**SC1.** Rheo-mechanical and rheo-optical characterization of viscoelastic polymer solutions. *W.-M. Kulicke and O. Arendt*

**SC2.** Nonlinear viscoelasticity of polymer solutions: torque and normal force measurements in polystyrene/orthoterpheyl mixtures. *V. Soulivong and G. B. McKenna*

**SC3.** The dynamics of entangled polymer solutions subject to abrupt changes of shear rate. *J. P. Oberhauser and G. Leal*


**SC5.** Scaling theory of hydrophobically modified polyelectrolytes. *M. Rubinstein and A. V. Dobrynin*

### 11:50 LUNCH
1:30 NP6. Effects of microscopic and macroscopic architecture on the gelation and vitrification of thermoset resins. J. Lange, P. J. Halley, C. T. Kelly and N. Altmann


3:10 COFFEE

3:35 NP10. A novel processing aid for polymer extrusion: rheology and processing of polyethylene and hyperbranched blends. Y. Hong, J. J. Cooper-White, M. E. Mackay, C. J. Hawker, E. Malinsstrom and N. Rehnberg

4:00 NP11. The rheology of gel phases of associating polymers in the phase separation regime. J. Tae, J. A. Kornfield and J. A. Hubbell


5:15 END

7:00 SOCIETY RECEPTION Memory Gardens
Tuesday, October 6

Morning

8:30

PL2. Nonlinearities and instabilities in the flow of molten polymers. J. M. Dealy

Steinbeck Forum

COFFEE

9:20

San Carlos I

Viscoelastic Processing Flows

9:45 VP1. Studies of high Deborah number flows of a polyisobutylene in a long die with square cross section. V. B. Birman, A. I. Leonov and J. Padovan

San Carlos III

General Session

GN14. Polypropylene crystallization as physical gelation process. N. V. Pogodina, S. Siddique, J. van Egmond and H. H. Winter

San Carlos II

Extensional & Elongational Flow


Los Angeles

Interfacial Rheology & Modifiers

IR5. Development of sharkskin melt fracture at the die exit in polybutadiene extrusion. Y. W. Inn, R. J. Fisher and M. T. Shaw

10:10 COFFEE

San Carlos I

Viscoelastic Processing Flows

VP2. Experimental investigation of viscoelastic lid driven cavity flows. A. M. Grillet, E. Shaqfeh and B. Khomami

San Carlos III

General Session


San Carlos II

Extensional & Elongational Flow

EE15. Extensional viscosity measurements on slightly branched polyethylenes. S. Bin Wadad and D. G. Baird

Los Angeles

Interfacial Rheology & Modifiers


10:35 COFFEE

San Carlos I

Viscoelastic Processing Flows

VP3. Numerical simulation of flows of polymer solutions and melts through contractions. E. Mitsoulis

San Carlos III

General Session

GN16. Polar association in polyethylacrylate observed at small shear and large elongation: effect of concentration of polar solvent. N. Nakajima and J. Varkey

San Carlos II

Extensional & Elongational Flow

EE16. Extensional rheology and failure of an ABS polymer melt. C. E. Scott, S. E. Solovyov and T. L. Virkler

Los Angeles

Interfacial Rheology & Modifiers

IR7. Rheological modification of HDPE by addition of very low concentrations of tlc. C. K. Chan, C. Whitehouse and P. Gao

11:00 COFFEE

San Carlos I

Viscoelastic Processing Flows

VP4. Experimental observations and 3-D numerical simulations on the development of secondary flows induced by the second normal stress difference in straight channels. B. Debbaut and J. Dooley

San Carlos III

General Session

GN17. Viscoelastic properties of polyurethane elastomers. S. Velankar and S. Cooper

San Carlos II

Extensional & Elongational Flow

EE17. Transient viscosity and molecular order in a thermotropic polyester LCP in uniaxial elongational flow. W. A. Kernick and N. J. Wagner

Los Angeles

Interfacial Rheology & Modifiers


11:25 COFFEE

San Carlos I

Viscoelastic Processing Flows

VP5. Three dimensional viscoelastic analysis of polymer melt flow: modeling and verification. F. P. Baaijens, J. F. Schoonen, W. M. Verbeeten, A. Bogaers, G. W. Peters and H. E. Meijer

San Carlos III

General Session


San Carlos II

Extensional & Elongational Flow

EE18. Squeezing flow with partial slip at the walls. P. V. Patil and L. A. Archer

Los Angeles

New Experimental Methods


11:50 LUNCH

Afternoon

San Carlos I

Viscoelastic Processing Flows


San Carlos III

Coupling Flow and Order


San Carlos II

Extensional & Elongational Flow


Los Angeles

New Experimental Methods

1:55 VP7. The flow of polymer melts through a model porous medium. W. H. Hartt and D. G. Baird


1:55 EX2. NMRI investigation of sedimentation of concentrated suspensions in non-Newtonian fluids. S. Bobroff and R. J. Phillips

2:20 VP8. Multilayer film casting of polyethylene melts: modeling and experiments. B. Bian and A. Co


2:45 VP9. Impact of viscoelasticity on gage variations in film casting. D. Rajagopalan

2:45 CF4. Effect of shear induced phase transitions on the rheology of a thermotropic copolyester HBA/HQ/SA. P. Gao and H. Lei

2:45 EE22. Some design criteria for the convergent channel as an extensional rheometer. P. R. Souza Mendes, R. L. Thompson and A. O. Nieckele


3:10 COFFEE


3:35 CF5. Evidence of liquid crystalline rheology in polyethylene melts. I. A. Hussein and M. C. Williams

3:35 SL1. On the finite elasticity and hypoeelasticity. A. I. Leonov

3:35 EX5. A compressional rheometer for viscoelastic fluids. P. R. Whittingstall and W. E. VanArsdale

4:00 VP11. Flow analysis and experimental verification of gas-assisted injection moulding. R.-F. Liang, D.-Y. Wang, X.-Z. Qu and R. Chen

4:00 CF6. X-ray scattering measurements of molecular orientation in channel flows of a thermotropic liquid crystalline polymer. D. K. Cinader, Jr. and W. R. Burghardt

4:00 SL2. Investigations of nonlinear material behavior using simultaneous measurements of volume recovery and physical aging. C. R. Schultheisz and G. B. McKenna


4:50 CF8. Manipulating LCP orientation in channel flows. J. Feng, G. Sgalari and G. Leal


5:15 END

5:15 BUSINESS MEETING       San Carlos I

5:30 AWARDS RECEPTION       Main Foyer

6:00 AWARDS BANQUET         San Carlos III

7:00 AWARDS BANQUET         San Carlos III

8:00
Wednesday, October 7

**Morning**

8:30

**San Carlos I**
Situations & Emulsions

9:45 **SE1.** Deformation of a viscoelastic drop in the flow induced by a potential vortex.
K. Sarkar and W. R. Schowalter

10:10 **SE2.** Rheological probing of the morphology development in immiscible blends during flow reversal.
P. Moldenaers, M. Minale and J. Mewis

10:35 **SE3.** Deformation of a single fluid drop immersed in a second moving fluid: exact mathematical results for slow flows.
E. Greco

11:00 **SE4.** Relationship between morphology and elastic recovery in immiscible blends.
I. Vinckier, P. Moldenaers and J. Mewis

11:25 **SE5.** Evolution of rheological properties during the formation of an emulsion of ink and fountain solution.
S. Mani, J. Jensen and W. Lim

11:50 **SE6.** Droplet coalescence in the shear flow of model emulsions.
A. Al-Mulla and R. K. Gupta

**San Carlos III**
Coupling Flow and Order

9:20 COFFEE

9:45 **CF9.** Direct numerical dynamic simulation of nematic defect structures in rectilinear shear flow.
T. Tsuji, A. D. Rey and S. Chono

10:00 **CF10.** Elongation-induced biaxial patterns and instabilities.
G. Forest and Q. Wang

10:15 **CF11.** Simulations of textured liquid crystalline polymers in shear flows.
M. N. Kawaguchi, R. Kapferman and M. M. Denn

10:30 **CF12.** A continuum model for flow-induced crystallization of polymer melts.
A. J. McHugh, A. K. Doufas and I. S. Dairaniah

10:45 **CF13.** Motion of kink boundaries in layered liquids.
D. C. Morse

11:15 LUNCH

**San Carlos II**
Rheology of Solids

9:50 **SL5.** A modified TNM-KAHR model for hygrothermal effects on physical aging and structural recovery of an epoxy thermoset.
W. H. Han and G. B. McKenna

10:10 **SL6.** Small-strain creep and aging of thermoplastic elastomers (TPE-E).
R. Winberger-Friedl and H. de Bruin

10:30 **SL7.** Modeling of materials showing viscoplastic behavior with nonlinear fractional-order differential equations.
A. D. Freed and K. Diethelm

10:50 **SL8.** Comparison of the volume and temperature dependence of various log a shift models with experimental data.
S. J. Lee, G. Medvedev and J. M. Caruthers

11:15 **SL9.** Viscoelastic responses of nano-cluster reinforced polymers.
A. Lee

11:45 **SE7.** Shear modulus of a dry soap froth with random structure.
A. M. Kraynik and D. A. Reinelt

**San Carlos I**
Situations & Emulsions

1:30 **CF14.** Visualization of flow-induced order and dynamics by NMR.
P. T. Callaghan, M. M. Britton and M. L. Kilfoil

1:45 **CF15.** Shear-induced phase changes in blends of poly(styrene-co-maleic anhydride) and poly(methyl methacrylate).
D. Chopra, D. Vlassopoulos and S. G. Hatziiriakos

**San Carlos III**
Coupling Flow and Order

1:45 **SL10.** Shape memory effect in inorganic-organic hybrid polymers.
H. G. Jeon, P. T. Mather and T. S. Haddad

2:00 **SL11.** Study on the polystyrene/high density polyethylene blends from an extrusion process.
B. Xu, J. Simonsen and W. E. S. Rochefort

**San Carlos II**
Rheology of Solids

2:00 **AN1.** Stability and nonlinear dynamics of viscoelastic shear flows subjected to secondary flow.
V. V. Ramanan, K. A. Kumar and M. D. Graham

2:15 **AN2.** Stability of viscoelastic Taylor-Couette flow: influence of relaxation spectrum and energetics.
U. A. Al-Mubaiyedh, R. Sureshkumar and B. Khomami

2:30 **AN3.** Stability analysis of the eccentric dean flow of an upper convected Maxwell fluid.
R. Sureshkumar and M. Avgousti

2:45 **AN4.** Swirling flow of viscoelastic fluids: interaction between inertia and elasticity.

3:00 **AN5.** Stability analysis of complex viscoelastic flows using time dependent simulations.
B. Yang and B. Khomami

**Los Angeles**
Analytical & Numerical Solutions

1:30 **AN6.** Structure of the spectrum in zero Reynolds number shear flow of the UCM and Oldroyd-B liquids.
H. J. Wilson, M. Renardy and Y. Renardy

1:45 **AN7.** Instability due to second normal stress stratification in two-layer channel flow of the Giesekus fluid.
Y. Renardy and M. Renardy

2:45 SE9. Rheology and microstructure of sheared arrays of colloidal particles. J. J. Gray and R. T. Bonnecaze

2:45 CF16. Shear rheology and microstructure of concentrated shear thickening colloidal dispersions. J. Amante, R. J. Butera and N. J. Wagner

3:00 CF17. A simple model for shear-thickening. J. L. Goveas and G. H. Fredrickson

3:10 COFFEE


4:00 CF19. Coupling between structure and macroscopic behavior of flow-induced structures in dilute solutions of cationic surfactants exposed to different types of flow fields. L. M. Walker, B. G. Thebaud and J.-F. Berret


4:25 CF20. Shear induced structures in micellar surfactant solutions (MISS) investigated by doppler ultrasound method. P. Fischer, B. Ouriev and E. Windhab

4:50 SE13. Colloid growth model for viscoelastic gels. T. S. Chow


5:15 END

5:30 POSTER SESSION & REFRESHMENTS Main Foyer

AN8. Studies on fiber spinning - solvability and spectral analysis in the nonisothermal viscous case. T. Hagen and M. Renardy


AN10. Investigation of the influence of rheological parameters on drag reduction, reynolds stress and vorticity budgets through direct numerical simulations. C. D. Dimitropoulos, R. Sureshkumar and A. N. Beris

AN11. A model of turbulent drag reduction for dilute polymer solutions. V. A. Gorodtsov and A. I. Leonov


Thursday, October 8

Morning

San Carlos I
Suspensions & Emulsions


9:45  COFFEE

San Carlos III
Friction, Slippage & Dynamics


8:30  FS2. Molecular origin of wall slip and polymer surface instabilities. V. R. Mhetar, T. Dao and L. A. Archer


San Carlos II
Electro & Magneto-Rheological Fluids

8:05  EM5. Flow of multicomponent suspensions under high electric field. S. W. Henley

8:30  EM6. Studies of elastomers featuring high electrorheological response. B. Liu and M. T. Shaw

8:55  EM7. The rheology and morphology of electrorheological dispersions using an ER active polymer solution matrix. G. P. Quist and F. E. Filisko


San Carlos IV
Los Angeles
Analytical & Numerical Solutions

8:05  AN14. Computation of transient flows of dilute polymer solutions through an abrupt contraction using the adaptive Lagrangian particle method. X. Gallez, P. Halin, R. Keunings and V. Legat


8:55  AN16. Experimental observation and numerical simulation of planar flow within a confined slit for molten polyethylene. R.-F. Liang, J. Wang and M. R. Mackley

9:20  AN17. Modeling the rheology of suspensions of spherical particles with adsorbed polymers. K. Zhang and C. W. Manke

9:45  COFFEE

Jet Breakup, Atomization & Spraying


10:35  JA2. Taylor-mode breakup of a polymeric liquid jet. S. C. Tsai, P. Lau, S. Tsai and G. Roski

11:00  JA3. The effect of viscoelastic polymers on drop production in agricultural sprays. V. Romagnoli, P. Felton and R. K. Prud‘homme

11:00  COFFEE


11:00  SE20. NMR imaging of batch flotation and sedimentation. S. A. Altobelli, J. D. Seymour and L. A. Mondy
| 11:50 | **SE22.** Shear-induced particle migration in concentrated suspensions of noncolloidal particles. *M. Allende and D. M. Kalyon* |
| 12:15 | **FS8.** A brownian dynamics study of solvent quality effects on polymer brushes. *T. Kwan, E. Shaqfeh, P. Schorr and M. Tirrell* |
|       | **FS9.** Friction and nanoindentation of crosslink polyamide surfaces. *S. K. Ahuja and K. R. Yoder* |
|       | **JA4.** Atomization of self-associating polymer and polymer-surfactant solutions and emulsions. *S. M. Yurgelevic, Z. Ergunogor, E. Gulari and C. W. Manke* |
|       | **JA5.** Drop impact on solid surfaces. *R. C. Crooks and D. V. Boger* |
|       | **AN21.** Mixing of two-phase fluids. *P. D. Anderson, G. W. Peters, F. P. Baaijens and H. E. Meijer* |
|       | **AN22.** An objective rotation tensor used in constitutive equations for viscoelastic fluids. *L. E. Wedgewood* |

END
Poster Session

Wednesday 5:30 PM Main Foyer

PO1. Squeezing flow testing. D. A. Becker, C. W. Macosko and C. L. Rohn
PO2. Sliding plate micro-rheometry of polymer melts. G. J. Braithwaite and G. H. McKinley
PO3. The controlled needle viscometer - a new rheological property measurement system. N. A. Park
PO4. Thermal expansion of the force rebalance transducer in a Rheometric Scientific ARES rotary rheometer. G. B. McKenna and C. R. Schultheisz
PO5. A nonlinear fluid standard reference material: progress report. C. R. Schultheisz and G. B. McKenna
PO7. Rheo-optical FTIR spectroscopy of polymer dynamics. R. M. Kaman
PO12. Rheological behavior of chemically modified polyethylenes. R. Perera, C. M. Rosales and H. A. Rojas
PO13. Pressure characteristic for non-isothermal flow of the thermoplastic polymers melts in circular confuser. L. M. Uliev
PO14. A new model for the amorphous phase of polymers. J. P. Ibar
PO15. Birefringence and viscoelasticity of low molecular weight polystyrenes around the glass transition zone. T. Inoue and K. Osaki
PO16. Characterization of slip mechanisms between crosslinked polydimethylsiloxane and silica surfaces. L. H. Genieser and F. P. Baaijens
PO17. Elimination of sharkskin and stress reduction using a brass die. V. G. Ghanta, B. L. Riise and M. M. Denn
PO18. The spurt phenomenon for single integral constitutive equations. R. W. Kolkka and D. S. Malkus
PO19. Surface instabilities in compressed or bent rubber blocks. A. N. Gent
PO20. Surface roughness of dough during extrusion. S. Chakrabarti, D. Kittleson and A. Oppenheimer
PO22. Rheology in daily life – the new ORBITZ drink. W. E. S. Rochefort and J. Hower
PO23. Dynamics of structure formation in highly-filled organo-ceramic composites. J. A. Walberer and A. J. McHugh
PO25. Rheological and morphological aspects of phase transition in a polymer blend. D. B. Hess and S. J. Muller
PO26. Nonequilibrium thermodynamics modeling of constitutive equations for polymer blends and colloids by GENERIC. N. J. Wagner
PO27. Short-time dynamics of concentrated charge stabilized polymer dispersions. F. M. Horn, J. Bergenholtz, W. Richtering, N. Willenbacher and N. J. Wagner
PO30. Effect of tube diameter on viscosity measurements for surfactant solutions. *G. Aguilar, K. Gastjevic and E. F. Matthys*

PO31. Dynamics of micellar structure formation and break-up in turbulent flow of surfactant solutions. *K. Gastjevic, K. Hoyer and E. F. Matthys*

PO32. Turbulent pipe flow drag reduction with narrow distribution polystyrene materials - a test of drag reduction theories. *D-W. D. Yu and W. E. S. Rochefort*

PO33. Rheo-optical study of associative polymer solutions. *J. F. Le Meins and J.-F. Tassin*

PO34. Rheo-optical behavior of poly-l-lysine. *A. T. Lee and A. J. McHugh*

PO35. The rheology of dendrimeric and hyper branched polymers. *I. Sendijarevic and A. J. McHugh*

PO36. Viscoelasticity of narrowly-entangled solutions of semi-flexible polymers. *D. C. Morse*

PO37. Rheological behavior of electromechanical fluids: effect of the dielectric properties of liquid phase. *L. Rejón-García, I. Castañeda-Aranda, O. Manero and V. M. Castaño*

PO38. Macroscopic approaches to ER and MR via electro- and magnetostriction. *Y. M. Shkel, V. A. Naletova and D. J. Klingenberg*

PO39. Polarimetry and SALS experiments to characterize ferrofluids subject to an external magnetic field. *S. Melle, G. G. Fuller and M. A. Rubio*

PO40. Rheological properties of physical networks formed in lipopolymer monolayers. *C. F. Brooks, C. A. Naumann, G. G. Fuller, C. W. Frank and W. Knoll*

PO41. Viscoelastic behavior of polymers tethered to the air/water interface. *C. Luap and W. A. Goedel*

PO42. DNA micro-hydrodynamics: a tool in optical gene mapping. *M. Chopra and R. G. Larson*

PO43. Fluid mechanical studies of the effects of polymer concentration in the Boger fluid regime. *G. Leal, J. P. Oberhauser, G. M. Harrison, J. Remmelgas and D. H. Kim*

PO44. A Brownian dynamics study of solvent quality effects on polymer in exponential shear flow. *T. Kwan, E. Shaqfeh, J. S. Hur and A. P. Gast*

PO45. Onset and evolution of elastic instabilities in flow through periodic arrays of cylinders. *J. L. Piper, R. Sureshkumar and B. Khomami*

PO46. Computational simulations for protein structure predictions. *A. Rojnuckarin, S. Kim and S. Subramaniam*