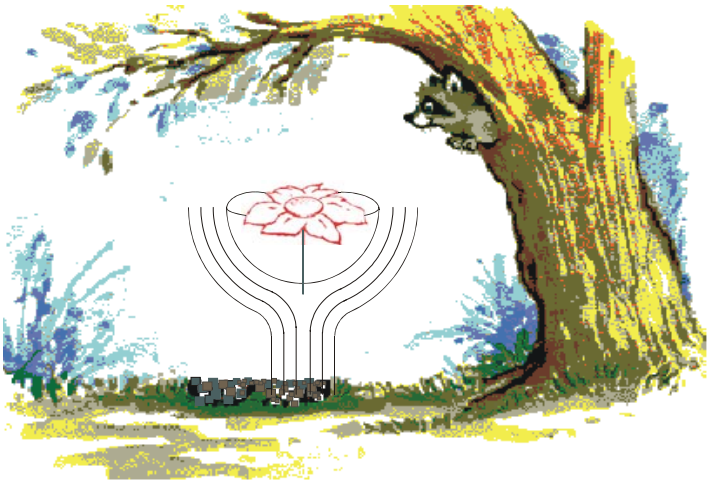
Second International Conference on Engineering Rheology
ICER 2003

Zielona Góra, Poland, August 24-27, 2003



FINAL PROGRAMME

Organized by

Department of Mechanics, University of Zielona Góra

Under the Auspices of

Polish Society of Engineering Rheology and
Committee of Chemical Engineering, Polish Academy of Science

Table of Contents

Second International Conference on Engineering Rheology ICER 2003

Zielona Góra, Poland, August 24-27, 2003

Organizing Committee *– Staff of the Department of Mechanics, University of Zielona Góra*

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Preface

Global sustainable development of the world science, technology and economy requires better understanding and utilisation of natural resources and also protection of the environment. In this endeavours rheology plays a leading role. Industry and researches need to be made more aware of the potential of rheology and related fields.

The International Conference on Engineering Rheology ICER 2003, held from August 24 to 27, 2003 in Zielona Góra, Poland, will be the second international meeting after the formal constitution of the Polish Society of Rheology (PSER) so far being only an observer of the European Society of Rheology. As such it will be a special historical event in a brief space of the existence of the PSER which was founded on 7th February 1997 by 16 founding members representing seven Polish academic centres (BSR Bulletin, April 1998).

The first national scientific meeting of the PSER took place in June 1997 at the Technical University of Zielona Gora, the second one in June 2000 at the Academy of Agriculture and Technology in Olsztyn and the third one in April 2003 at the Technical University of Poznań.

The present multidisciplinary meeting intends to bring together scientists and engineers from different fields such as rheology, material science, chemical and mechanical engineering and others. These subjects deal, in one way or another, with the rheology of materials.

This volume of the conference proceedings, published as a special issue of the International Journal of Applied Mechanics and Engineering, comprises 52 oral and poster contributions presented at this conference.

Finally, on behalf of the Organizing Committee, we wish to acknowledge contributions of those who contributed to the success of this conference.

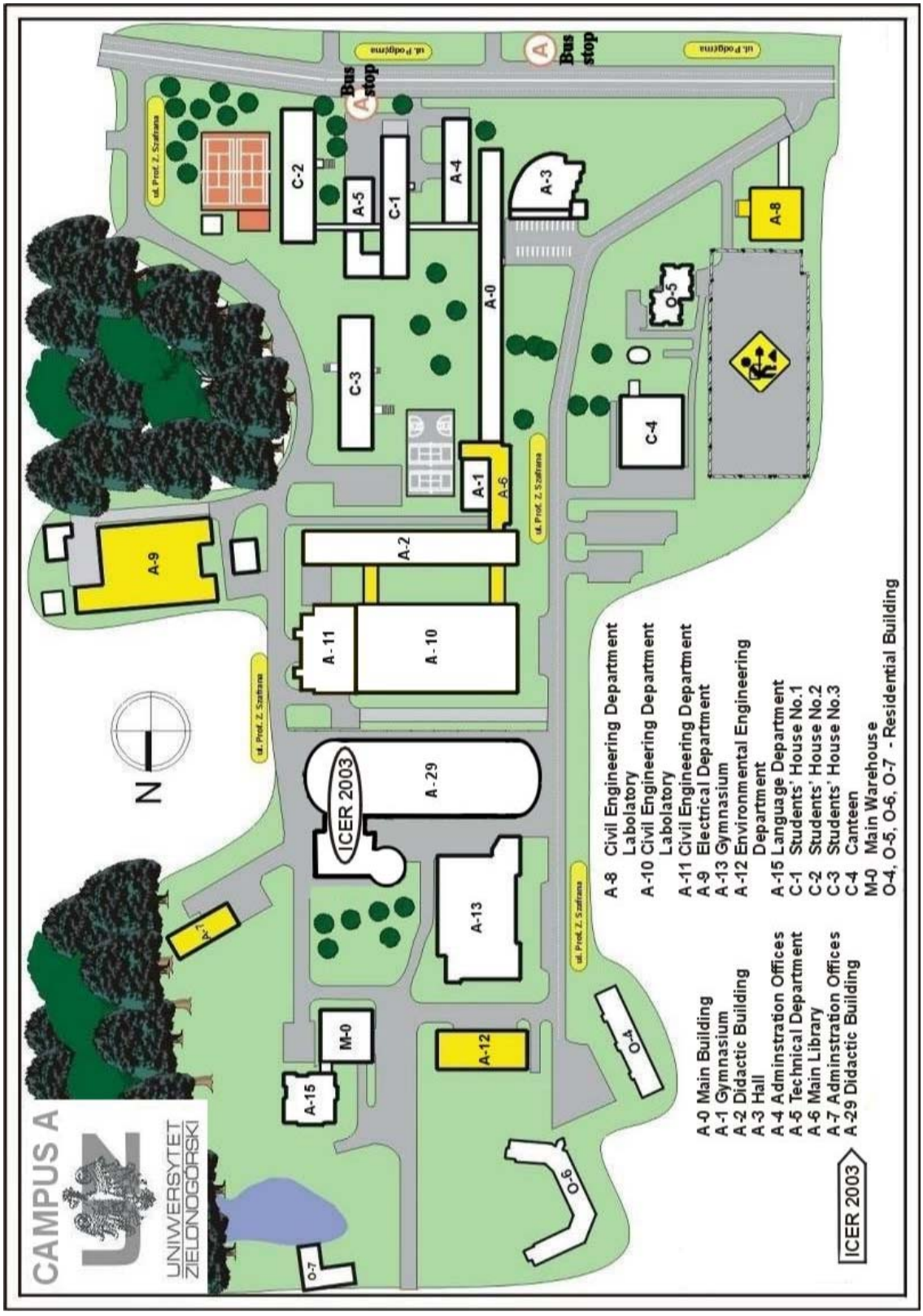
The Editors, Anna Walicka, Edward Walicki
August 23, 2003

Centre of Zielona Góra

1. University of Zielona Góra (Campus A) 2. Railway Station 3. BUS Station 4. QUBUS Hotel
5. POLAN Hotel 6. ŚRÓDMIEJSKI Hotel 7. University Academian

Venue of the Conference

University of Zielona Góra
(Uniwersytet Zielonogórski, ul. Podgórna 50)
Hall



How you can get to the hotels and the Univeristy?

From Railway Station to Hotels:

HOTELS	DISTANCE (walking)
Qubus Hotel	20 min
Śródmiejski Hotel	20 min
Polan Hotel	10 min

From Hotels to the University:

HOTELS	DISTANCE (walking)
Qubus Hotel	15 min
Śródmiejski Hotel	30 min
Polan Hotel	10 min

The approximate cost of taxi is 2USD to 4USD (about 3 to 5 Euro). Taking taxi during the night you should add about 20% to the price during a day.

Registration desk

The registration desk is located in the Hall Foyer A-29 on the ground floor. It will be open throughout the Conference. For the participants arriving on 23 August, it will be open 4:00 – 9:00 pm. The next days the registration desk will be open as follows: on August 24 from 8:00 am to 5:30 pm, on August 25 and 26 during the conference.

All participants and accompanying persons should check in at the registration desk upon arrival. The persons which are accommodated in hotels can check in during the first conference morning.

Information for speakers

The speakers should present their contributions in 20 minutes including 5 minutes for discussions. One minute is reserved for the session chairman to present the speaker (his name, affiliation and indication where the paper may be found in the published proceedings).

Audio-visual equipment

Facilities for overhead (transparency) projections and for slides (35 x 35 mm) will be provided.

Poster

Two panels for one poster presentation (dimensions of each are 95 x 95 cm) will be prepared.

Meals

The following meals are prepared and served out at the University Canteen: lunches and dinners.

During the coffee breaks some drinks will be served out.

Liability and insurance

The Organizers cannot accept responsibility for any personal accidents or loss and damage of private property of participants. Participants are kindly requested to make their own insurance arrangements.

Currency

Polish currency is *zloty* (zl. or PLN). 1 Euro is app. 4.45 zl., 1 USD is app. 3.85 zl.

Electricity

In Poland the European (continental) socket-plug system is used. Voltage: 220V, 50Hz.

Guidelines for Session Chairman

Dear Colleague, the Organizers would like to thank you for accepting the role of Session Chairman. To ensure the smooth running of the Session, could we ask you to note the following guidelines:

- Please attend at the location of your session 10 minutes before the starting time. Presenting authors have been asked to make themselves known to you at this time. Please check with them that their slides/overheads are in order and remind them that their presentation will be of 15 minutes duration, plus 3 or 4 minutes questions/discussion.
- Start the session promptly at the advertised time. Introduce each speaker in turn by name and affiliation and indicate where the paper may be found in the published proceedings.
- Have a question to initiate discussion if no comments are forthcoming from the floor.
- Summary: the authors should not therefore speak for more than 20 minutes including 5 minutes for discussion.

Thank you again for your help in this important role, vital to the smooth running of your session and the whole Conference.

Social programme for delegate

Sunday, 24 August:

Banquet: 19:00-23:00 –"PALMIARNIA" Restaurant (near the Qubus Hotel).

Tuesday, 26 August:

Evening picnic- Camp-fire and grill in the Sports Center at Drzonków (near Zielona Góra) 16:00-20:30.
Meeting point and departure from the University car park (next to the Hall A-29). Return to Zielona Góra at 21:00.

Wednesday, 27 August:

All day long excursion to Rogalin: sightseeing the National Museum in Rogalin.
Departure from the Qubus Hotel at 8:30, return to Zielona Góra at 17:30.

After a drive of about 2,5 hours you will reach the National Museum in Rogalin.

After the sightseeing the National Museum you will be guided to a restaurant for a lunch. Next, you will return to Zielona Góra and you should be back at the University Canteen at 18:00.

Rogalin: Palace and park:

Former nobleman's residence, now a branch of the National Museum in Poznań. The imposing Rococo-Neo-Classical palace in which there is an exhibition of 18th and 19th century interiors. In the palace rooms you will find lovely furniture, tapestries, pictures, porcelain, and products of artistic handwork including a splendid collection of clocks. There are also ceramics, maps and ethnographic materials. In a separate building is a gallery of Polish and foreign painting from the 19th and 20th centuries.

In the park there are some 800-years old oaks, the largest is up to 9 meters in circumference.

Social programme for accompanying persons

Sunday, 24 August:

In the morning (after Opening Ceremony): **walk at the centre of Zielona Góra** (10:15-12:30)
In the evening: **Banquet: 19:00-23:00** –"PALMIARNIA" Restaurant (near the Qubus Hotel).

Tuesday, 26 August:

Evening picnic: Camp-fire and grill in the Sports Center at Drzonków (near Zielona Góra) 16:00-20:30.
Meeting point and departure from the University car park at 15.45 (next to the Hall A-29). Return to Zielona Góra at 21.00.

Wednesday, 27 August:

All day long excursion to Rogalin: sightseeing the National Museum in Rogalin.
Departure from the Qubus Hotel at 8:30, return to Zielona Góra at 17:30.

After a drive of about 2,5 hours you will be at the National Museum in Rogalin.

After the sightseeing the National Museum you will be guided to a restaurant for a lunch. Next, you will return to Zielona Góra and you should be at the University Canteen at 18:00.

Zielona Góra: the city and its vicinity

The city of Zielona Góra is distinguished by its interesting geographical location. Although the town and its vicinity are localised in the centre of the Central European Plain, they are characterised by diverse landscapes typical for the postglacial moraine together with the nearby Wolsztyn and Łagów lake districts, and the highest afforestation in Poland. The town is conveniently located between Berlin, Wrocław, Prague, Poznań, Szczecin and Dresden. Very important communication routes - both rail and road - cross Zielona Góra and connect Scandinavia with the South of Europe (A3), and the nearby A2 between Warsaw and Berlin. Soon, three new lines of trans-European motorways of about 220 km will also go through the region.

For hundreds of years the Piast princes of the Głogów-Żagań line ruled over that territory, later from 1506 for a short time – the Czech Piasts. From 1526 the land together with the Głogów Duchy was incorporated into the Habsburg Monarchy, and after 1740 became a part of Prussia. In 1816 an Englishman O'Brien ran the first mechanical wool factory, and a German Beuchelt in 1876 opened the Steel Construction Factory. After World War II the city came back to Poland and was populated by the local people and settlers from the Eastern territories, which used to belong to Poland before World War II, as well as from

other areas of the country.

The history of this cross-border area with constantly shifting borders and the multicultural heritage of the region prompts the people of the area to seek cultural unity and close ties with other European countries.

Rogalin: Palace and park:

Former nobleman's residence, now a branch of the National Museum in Poznań. The imposing Rococo-Neo-Classical palace in which there is an exhibition of 18th and 19th century interiors. In the palace rooms you will find lovely furniture, tapestries, pictures, porcelain, and products of artistic handwork including a splendid collection of clocks. There are also ceramics, maps and ethnographic materials. In a separate building is a gallery of Polish and foreign painting from the 19th and 20th centuries.

In the park there are some 800-years old oaks, the largest is up to 9 meters in circumference.

Schematic programme of the ICER 2003

Sunday, 24 August 2003	
$10^{00} – 10^{15}$	Opening Ceremony
$10^{15} – 10^{45}$	Opening Lecture: *Polish Society of Engineering Rheology – historical sketch* – M. Dziubinski – president of the PSER
$10^{45} – 11^{15}$	Coffee break
$11^{15} – 12^{55}$	Session 1: Industrial Rheology I
$13^{00} – 14^{00}$	Lunch – University Canteen
$14^{30} – 17^{30}$	Poster Session I
$19^{00} – 23^{00}$	Banquet – Restaurant PALMIARNIA (near the QUBUS Hotel)
Monday, 25 August 2003	
$9^{00} – 10^{15}$	Session 2: Industrial Rheology II
$10^{15} – 10^{45}$	Coffee break
$10^{45} – 12^{00}$	Session 3: Analytical Methods
$12^{30} – 14^{00}$	Lunch – University Canteen
$14^{30} – 17^{30}$	Poster Session II
$18^{00} – 19^{00}$	Dinner – University Centeen

Tuesday, 26 August 2003	
$9^{00} – 10^{40}$	Session 4: Rheometry and Experimental Methods I
$10^{40} – 11^{10}$	Coffee break
$11^{10} – 12^{50}$	Session 5: Rheometry and Experimental Methods II
$12^{50} – 13^{00}$	Closing Ceremony
$13^{15} – 14^{15}$	Lunch – University Canteen
$16^{00} – 20^{30}$	Evening picnic – Camp-fire and grill

Wednesday, 27 August 2003 – all day excursion to Rogalin	
$8^{30} – 11^{00}$	Passage to Rogalin
$11^{00} – 13^{30}$	Visiting the National Museum in Rogalin
$13^{30} – 14^{30}$	Lunch in Rogalin
$15^{00} – 17^{30}$	Return passage to Zielona Góra
$18^{00} – 19^{00}$	Dinner – University Canteen

Full programme of the ICER 2003

Sunday, 24 August 2003

$10^{00} – 10^{15}$	**Opening Ceremony – University Hall**	
$10^{15} – 10^{45}$	**Opening Lecture:** *Polish Society of Engineering Rheology – historical sketch* M. Dziubinski – president of the PSER	
$10^{45} – 11^{15}$	Coffee break – Hall's Foyer	
$11^{15} – 12^{55}$	**Session 1: Industrial Rheology I** **Chairman: K. Ikegami**	*Oral Number*
$11^{15} – 11^{40}$	*Time-dependent rheology of crude oils and effect of wax and asphaltene constituents* I. M. El-Gamal, R. Schnabel and W. Anton	*O-1*
$11^{40} – 12^{05}$	*Shear-induced structures in a commercial surfactant-based system: effect of various salts* M.S. Liaw and G.D. Moggridge	*O-2*
$12^{05} – 12^{30}$	*Fatigue testing and equipment for tests of steel cords* M. Kopecky, V. Cuth, I. Letko and J. Vavro	*O-3*
$12^{30} – 12^{55}$	*The dynamics of mechanical resistance in 'polyacrylamide-formaldehyde-water' system* L.M. Trufakina, L.A. Streletz, A.V. Bogoslovsky and L.K. Altunina	*O-4*
$13^{00} – 14^{00}$	Lunch – University Canteen	
$14^{30} – 17^{30}$	**Poster Session I** – Main Building Foyer	
$19^{00} – 23^{00}$	Banquet – Restaurant PALMIARNIA (near the QUBUS Hotel)	

Poster Session I

Industrial Rheology	
P-1	*Palm oil based grease tribological characteristics* S. Raadnui
P-2	*Palm oil based grease rheological properties* S. Raadnui

P-3	*Palm oil based grease blending: utilization of the statistical desing of experiments (DOE)* S. Raadnui
P-4	*The contact problem on a metal indenter penetration into a strongly rough polymer surface* M.I. Ihnatouski and A.I. Sviridenok
P-5	*Lost circulation problem analysis and evaluation of the types of lost circulation materials and their placement techniques* N. Kherfellah, K. Bekkour and S. Benhadid
P-6	*Rheological behavior of oil base drilling mud at high pressure and high temperature* N. Kherfellah, K. Bekkour and S. Benhadid
P-7	*Rheological behavior of polymers used in drilling fluid* A. Daimallah, N. Kherfellah and S. Benhadid
P-8	*Effective elastic constants of unidirectional fiber-reinforced composites with the concept of interphase* S. Rucevskis, A. Chate, J. Reichhold and A.K. Bledzki
P-9	*Static and dynamic characteristics of journal bearings with non-Newtonian palm-based oils* M. Mongkolwongrojn and Ch. Aiumpornsin
P-10	*Effect of traditional and new generation superplastuicizers on the rheological properties of cement pastes* S. Grzeszczyk and E. Janowska-Renkas
P-11	*The infuence of mineral fillers on rheological properities cement pastes* S. Grzeszczyk and G. Lipowski
Analytical and Numerical Methods	
P-12	*Numerical simulation of pulsating blood flow through stenosed vessel* K.Kohge and K. Minemura
P-13	*Application of arrhenius equation for evaluation of flavoured cheese viscosity* J. Limanowski and E. Haponiuk
P-14	*Characteristics of the flow of the surfactants solutions in curved pipes* L. Broniarz-Press, J. Różański, S. Dryjer and S. Woziwodzki
P-15	*A new description of "diameter effect" in pipe flow of surfactant solutions* L. Broniarz-Press and J. Różański
P-16	*Flow of the viscoelastic fluid of Rivlin-Ericksen between rotating surfaces of revolution* A. Walicka
P-17	*Inertia effect in a flow of a generalized second grade fluid of a power-law type between two fixed surfaces of revolution* A. Walicka and E. Walicki

Monday, 25 August 2003

$9^{00} – 10^{15}$	**Session 2: Industrial Rheology II** **Chairman: I.M. El-Gamal**	*O.N.*
$9^{00} – 9^{25}$	*Rheological properties of mineral base oils and polymer solutions for engine lubricants* M. Muraki, I. Kurihara and J. Igarashi	*O-5*
$9^{25} – 9^{50}$	*Convective micropolar boundary layer flows over a wedge with constant surface heat flux* Youn J. Kim and T.-A. Kim	*O-6*
$9^{50} – 10^{15}$	*Wear and friction behavior of metal powders filled epoxy coatings* M.A. Abdel-Rahman, W.W. Marzouk and A.M. Magdy	*O-7*
$10^{15} – 10^{45}$	Coffee break	
$10^{45} – 12^{00}$	**Session 3: Analytical Methods** **Chairman: M. Muraki**	*O.N.*
$10^{45} – 11^{10}$	*The rheology and thermohydrodynamic analysis of non-Newtonian lubricant flows in a Rayleigh step* L. Jeddi, M. El Khlifi and D. Bonneau	*O-8*
$11^{10} – 11^{35}$	*Non-Newtonian behavior analysis in lubrication flows* F. Bouyahia, M. El Khlifi, D. Souchet and M. Hajjam	*O-9*
$11^{35} – 12^{00}$	*Investigation and analysis of periodic problem for layered composite structure on periodic foundation by means of non-smooth argument transformation method* G. Starushenko, N. Krulik and S. Tokarzewski	*O-10*
$12^{30} – 14^{00}$	Lunch – University Canteen	
$14^{30} – 17^{30}$	**Poster Session II –** Main Building Foyer	
$18^{00} – 19^{00}$	Dinner – University Canteen	

Poster Session II

Rheometry and Experimental Methods	
P-18	*Role of biodestruction by microscopic fungi in change of elastic-strength properties of polymers* V.F. Smirnov, D.N. Yemelyanov and Z.G. Chernorukova
P-19	*Prediction of rheological behaviour of wood during its compression* Dornyak O.
P-20	*Effect of electrolytes on the rheological properties of microcrystalline cellulose gels* M. Laka, S. Chernyavskaya, L. Faitelson and E. Jakobsons
P-21	*Rheometric properties of non-newtonian systems* M. Górecki and A. Zalewska
P-22	*Time-dependent slurry viscosity of fine-grained silicon dioxide particles* B. Kawalec-Pietrenko and D. Konopacka-Łyskawa
P-23	*Experimental research of the distortions of the molecular shape of flexible polymers under wall-adjacent turbulent and laminar flows conditions* V. Pogrebnyak and O. Shubin
P-24	*Rheology of concentrated suspensions of plasma-processed fine alumina* E. Jakobsons, L. Faitelson and E. Palcevskis
P-25	*Modelling and simulation of biaxial stretching of PVC-films* K. Zgardzinski, F. Oelschlägel and R. Schnabel
P-26	*Rheological changes in rat blood as a result of photodynamic treatnient* Z.P.Shulman, A.A.Makhaniok, S.V.Vilanskaya, E.A.Zhavrid, Y.P.Istomin and S.V.Sheleg
P-27	*Relaxation phenomena at the air-water interface with surfactants* M.K. Pawelec and T.R. Sosnowski
P-28	*The simulation of the annular flow of ERF with the inhomogeneity of electrical field strength* V.A. Bilyk and A.A. Makhaniok
P-29	*Isochronous creep curves for a low alloy steel* C. Comandar, N. Amariei and D. Leon
P-30	*pH effect on rheological properties of surfactant solutions in hard water* L. Broniarz-Press, J. Różański and J. Bednarz
P-31	*Effect of the strong electrolyte addition on rheological properties of aqueous solutions of sodium carboxymethyl cellulose* L. Broniarz-Press, J. Różański, S. Dryjer and J. Bednarz

Intelligent Processing of Materials	
P-32	*The local order and mobility in polymer films generated by orientation extracting* A.V. Maximov, S.S. Shevchenko and O.G. Maximova
P-33	*Rheology and extrusion properTies of α -aluminium oxide pastes* J. Graczyk, H. Buggisch and H. Essawy
P-34	*Some features of the composition effect on the rheology and characteristic of ERF spreading* E.V. Korobko, R.G. Gorodkin, N.A. Goncharova and V.I. Baikow

Tuesday, 26 August 2002

$9^{00} - 10^{40}$	**Session 4: Rheometry and Experimental Methods I** **Chairman: Y.S. Luo**	*O.N.*
$9^{00} - 9^{25}$	*Experimental investigation of viscoelastic properties of epoxy resin during curing process* K. Ikegami	*O-11*
$9^{25} - 9^{50}$	*The flow of viscoelastic fluids in an opposed jets rheometer and a fano flow rheometer* C. Wilkes and B. Gampert	*O-12*
$9^{50} - 10^{15}$	*Laser-Doppler velocimetry - a powerful tool to investigate the flow behavior of polymers melts* A. Merten, M. Schwetz, H. Münstedt	*O-13*
$10^{15} - 10^{40}$	*Rheo-optical characterisation of linear low density polyethylene crystallization under shear* F. Chaari, M. Chaouche, L. Benyahia and J. F. Tassin	*O-14*
$10^{40} - 11^{10}$	Coffee break	
$11^{10} - 12^{50}$	**Session 5: Rheometry and Experimental Methods II** **Chairman: W. Marzouk**	*O.N.*
$11^{10} - 11^{35}$	*Squeeze flow of a concentrated suspension of spheres in a Newtonian or shear-thinning fluids* J. Collomb, F. Chaari and M. Chaouche	*O-15*
$11^{35} - 12^{00}$	*Experimental solution for viscosity coefficient of solid alloy materials* Y.S. Luo, K. Dohda and Z. Wang	*O-16*
$12^{00} - 12^{25}$	*Exploitation and applicating research on surveying system of pyromagnetic effect during rupture process of PVC sheet with defects* Y.S.Luo, J.X.Su, X.H.Deng and W.Chen	*O-17*
$12^{25} - 12^{50}$	*Extrusion process optimization using Non-Newtonian extrusion model* A. Mesec, Z. Šušterič and M. Žumer	*O-18*

$12^{50} – 13^{00}$	Closing Ceremony
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Author Index