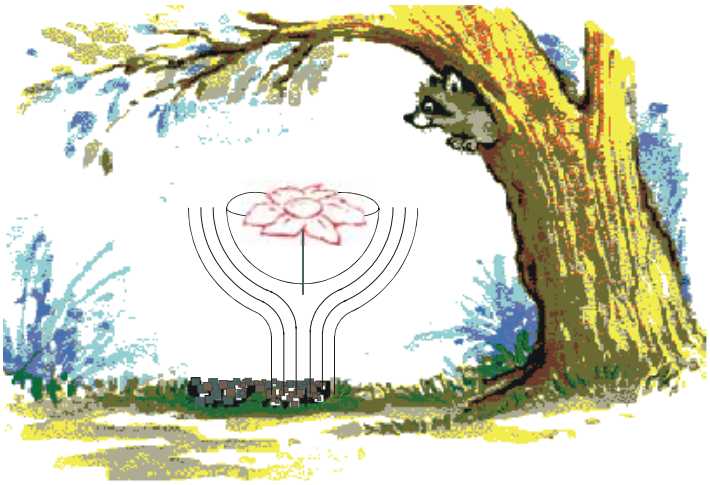
Third International Conference on Engineering Rheology
ICER 2005

Zielona Góra, Poland, August 23-26, 2005



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

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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 Third International Conference on Engineering Rheology ICER 2005, held from August 23 to 26, 2005 in Zielona Góra, Poland, will be the third 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 first international meeting named: International Conference on Engineering Rheology ICER ’99 took place in June 1999 at the Technical University of Zielona Góra. The second one: The Second International Conference on Engineering Rheology ICER 2003 olso took place at Zielona Góra on the University in August 2003.

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 50 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.

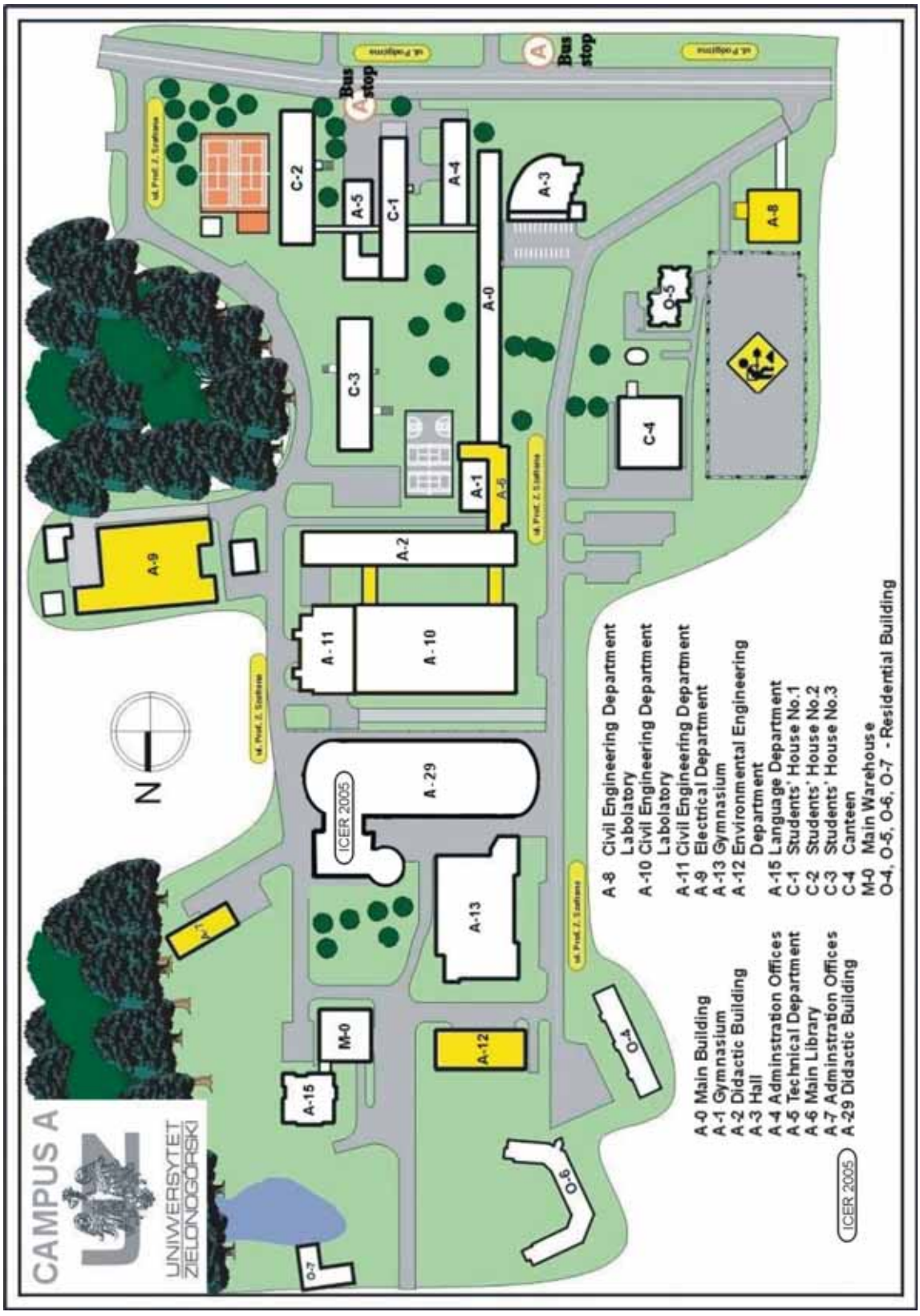
The Editors, Anna Walicka, Edward Walicki
August 23, 2005

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. Students' House

Venue of the Conference

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



How you can get to the hotels and the University?

From Railway Station to Hotels:

HOTELS	DISTANCE (walking)
Qubus Hotel	20 min
Śródmiejski Hotel	20 min
Polan Hotel	10 min
Students' House	15 min

From Hotels to the University:

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

The approximate cost of taxi is 3US$ to 5US$ or 2,5 to 4 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 22 August, it will be open 4:00 – 9:00 p.m. The next days the registration desk will be open as follows: on August 23 from 8:00 am to 5:30 p.m., on August 24 and 25 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

One panel for one poster presentation (dimensions 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. 4.10 zl., 1 USD is app. 3.35 zl.

Electricity

In Poland the European (continental) socket-plug system is used. Voltage: 230V, 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

Tuesday, 23 August:

Banquet: 19:00-22:00 –"PALMIARNIA" Restaurant (near the Qubus Hotel).

Thursday, 25 August:

Evening picnic- Grill in the Airfield at Przylep (near Zielona Góra) 17:00-21:00.
Meeting point and departure from the University car park (next to the Hall A-29). Return to Zielona Góra at 21:15.

Friday, 26 August:

All day long excursion to Wolsztyn:

Departure from the University car park (next to the Hall A-29) at 10:00, return to Zielona Góra at 18:00.

After a drive of about 1,5 hours you will reach the roundhouse in Wolsztyn.

After the sightseeing the roundhouse you will be guided to railway station. After this guided you will go (by bus) to a restaurant in Wolsztyn for a lunch. Next, you will go to Open Air Museum. After this visit you will return to Zielona Góra and you should be back at 18:00.

Wolsztyn: The steam - house depot, Open Air Museum and Palace

Wolsztyn is situated in the western part of Wielkopolska province, half-way between Zielona Góra and Poznań. The town and commune reside altogether 29.407 inhabitants (with 14.025 living in the town). First mentions about Wolsztyn are dated back to 1424. In Wolsztyn acted (1865-1880) and executed first scientific discoveries prominent doctor and bacteriologist Robert Koch (1843-1910).

The steam - house depot in Wolsztyn is the only please in Europe, where every days trains with old, steam-run locomotives leave in their scheduled route with passengers or cargo.

Open Air Museum of western Wielkopolska folk construction was opened by the Wolszynskie lake in 1986. There are many objects of country architecture, for example still efficient windmill from 1603, old tavern, smithy and many other interesting exhibits.

The palace stands in the park, which was originally built in 1857 in the Neo-renaissance style by Apolinary Gajewski and then rebuilt for the new owner Stefan Mycielski in 1911 in the Neo-classical style by the architect Roger Slawski. The palace was burnt in 1945 and rebuilt in the years 1960-62 as a tourist hostel (without reproducing the antique interiors). The magnificent building has the projection of elongated rectangle and it is covered with the ridge roof, hidden behind the baluster attic. The front facade has been adorned with the six-column portico of pseudo - Ionic order closed with a triangular tympanum at the top. The tympanum has on its surface the shields with the coats of arms of Dolega and Korzbok families.

Social programme for accompanying persons

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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.

Schematic programme of the ICER 2005

Tuesday, 23 August 2005	
$10^{00} – 10^{15}$	Opening Ceremony
$10^{15} – 10^{45}$	Opening Lecture
$10^{45} – 11^{15}$	Coffee break
$11^{15} – 12^{30}$	Session 1: Industrial Rheology I
$13^{00} – 14^{00}$	Lunch – University Canteen
$14^{15} – 15^{05}$	Session 2: Industrial Rheology II
$15^{05} – 15^{30}$	Coffee break
$15^{30} – 17^{00}$	Poster Session I
$19^{00} – 22^{00}$	Banquet – Restaurant PALMIARNIA (near the QUBUS Hotel)
Wednesday, 24 August 2005	
$10^{00} – 10^{50}$	Session 3: Biorheology and Biomimetics
$10^{50} – 11^{20}$	Coffee break
$11^{20} – 12^{15}$	Session 4: Suspensions, Emulsions, Dispersions, Gels
$12^{40} – 14^{00}$	Lunch – University Canteen
$14^{30} – 17^{00}$	Poster Session II
$18^{00} – 19^{00}$	Dinner – University Centeen
Thursday, 25 August 2005	
$10^{00} – 12^{30}$	Poster Session III
$12^{30} – 21^{15}$	**Travelling Session – Przylep near Zielona Góra**
$12^{30} – 12^{45}$	Meeting point and departure from the University car park (next to the Building A-29)
$12^{45} – 13^{00}$	Passage to Przylep
$13^{00} – 14^{30}$	Lunch

$15^{00} – 16^{15}$	Session 5: Polymer Melts and Polymer Processing and Industrial Rheology III
$16^{15} – 16^{25}$	Closing Ceremony
$17^{00} – 21^{00}$	Evening picnic: Grill
$21^{00} – 21^{15}$	Return passage to Zielona Góra
Friday, 26 August 2005 – all day excursion to Wolsztyn	
$9^{45} – 10^{00}$	Meeting point and departure from University car park (next to the Hall A-29)
$10^{00} – 11^{30}$	Passage to Wolsztyn
$11^{30} – 13^{00}$	Sightseeing steam-house depot in Wolsztyn
$13^{15} – 14^{30}$	Lunch in Palace
$14^{45} – 16^{15}$	Sightseeing Open Air Museum in Wolsztyn
$16^{15} – 17^{45}$	Return passage to Zielona Góra

Full programme of the ICER 2005

Tuesday, 23 August 2005

$10^{00} – 10^{15}$	**Opening Ceremony – University Hall (Building A-29, Room 106)**	
$10^{15} – 10^{45}$	**Opening Lecture** L. BRONIARZ – PRESS	
$10^{45} – 11^{15}$	Coffee break – Hall's Foyer	
$11^{15} – 12^{30}$	**Session 1: Industrial Rheology I** **Chairman: S. Raadnui**	*Oral Number*
$11^{15} – 11^{40}$	*Theoretical analysis of journal bearings lubricated with non-Newtonian fluid based on Carreau viscosity model* M. MONGKOLWONGROJN and CH. AIUMPORNSIN	*O-1*
$11^{40} – 12^{05}$	*On the implementation of viscoelastic models in commercial CDF programs* M. GRUBER	*O-2*
$12^{05} – 12^{30}$	*Distributions of the local shear rate values in boundary layer of the agitataed vessel* L. BRONIARZ – PRESS and S. RÓŻAŃSKA	*O-3*
$13^{00} – 14^{00}$	Lunch – University Canteen	
$14^{15} – 15^{05}$	**Session 2: Industrial Rheology II** **Chairman: S.V. Kotomin**	*O.N.*
$14^{15} – 14^{40}$	*Thermal behaviour analysis of plain journal bearing influence of oil film viscosity on the journal characteristics* P. MICHAUD and D. SOUCHET	*O-4*
$14^{40} – 15^{05}$	*Effective shear modulus of an oil flim under elastohydrodynamic conditions* M. MURAKI and R. KAWABATA	*O-5*
$15^{05} – 15^{30}$	Coffee break	
$15^{30} – 17^{00}$	**Poster Session I** – Main Building Foyer	
$19^{00} – 22^{00}$	Banquet – Restaurant PALMIARNIA (near the QUBUS Hotel)	

Poster Session I

Industrial Rheology	
P-1	*The effect of green clay addition and torsian polarizer on rheological properties of moisturizing cosmetic cream* L. BRONIARZ-PRESS, J. SADOWSKA, J. RÓŻAŃSKI and W. SZAFERSKI
P-2	*Rheology of dispersions of plasma-processed fine alumina in epoxy resin* E. JAKOBSONS and E. PALCEVSKIS
P-3	*Palm oil based coolant for metalworking* S. RAADNUI and S. MAHATHANABODEE
P-4	*The development of coolant recycling unit* S. RAADNUI and P. TIMLERK
P-5	*Minimum quantity lubrication of cast iron turning process* S. RAADNUI
P-6	*Palm based oil anti-oxidation behaviour improvement: utilization of epoxidation process* S. RAADNUI and M.H. NARASINGHA
P-7	*Analysis of tilting pads thrust bearings behaviour lubricated by power law fluid* D. SOUCHET, F. BOUYAHIA, M. HAJJAM and M. EL KHLIFI
P-8	*Effect of model parameters on elastohydrodynamic lubrication line contact with non-Newtonian Carreau viscosity model* M. MONGKOLWONGROJN, K. WONGSEEDAKEAW, S. YAWONG, P. JEENKOUR, and C. AIUMPORNSIN
Suspensions, Emulsions, Dispersions, Gels	
P-9	*Properties of chitosan and microcrystalline cellulose composite gels* M. LAKA, S. CHERNYAVSKAYA and E. JAKOBSONS
P-10	*Study of suspension stability. Models for describing shear dependent behavior* M. DZIUBIŃSKI, A. WITCZAK-STAWICKA and M. ORCZYKOWSKA
P-11	*Viscosity equation for polydisperse concentrated emulsions* J. SĘK and K. KRYNKE
P-12	*Effect of choose oil additive on rheological properties of engine oils* J. FALICKI and A. WALICKA

Wednesday, 24 August 2005

$10^{00} – 10^{50}$	**Session 3: Biorheology and Biomimetics** **Chairman: M. Dziubiński**	*O.N.*
$10^{00} – 10^{25}$	*Rheological impact in cartilage engineering problems* K.Ch. WIERZCHOLSKI	*O-6*
$10^{25} – 10^{50}$	*Random hieght of thin layer of rheological liquids* K.Ch. WIERZCHOLSKI	*O-7*
$10^{50} – 11^{20}$	Coffee break	
$11^{20} – 12^{15}$	**Session 4: Suspensions, Emulsions, Dispersions, Gels** **Chairman: M. Muraki**	*O.N.*
$11^{20} – 11^{45}$	*Thin layer of electrorheological liquids in bioreactors* K.Ch. WIERZCHOLSKI	*O-8*
$11^{45} – 12^{15}$	*AR-G2 - New rheometer from TA Instruments* M. KAFLIK – Spectro Lab	*O-9*
$12^{40} – 14^{00}$	Lunch – University Canteen	
$14^{30} – 17^{00}$	**Poster Session II –** Main Building Foyer	
$18^{00} – 19^{00}$	Dinner – University Canteen	

Poster Session II

Food Rheology	
P-13	*Analysis of the effect of the special food additives on rheological properties of aqueous and milk solutions* L. BRONIARZ-PRESS, J. RÓŻAŃSKI and S. RÓŻAŃSKA
P-14	*Mechanical model of commercial mustards* M. WITCZAK, L. JUSZCZAK and M. GRZESIK
P-15	*Rheological and AFM characteristic of hydrolysates produced by limited enzymic hydrolysis of extruded soy protein concentrate* M. WITCZAK, A. PTASZEK, K. SURÓWKA and D. ŻMUDZIŃSKI
P-16	*Effect of concentration on viscoelastic properties of potato starch gel* M. WITCZAK, L. JUSZCZAK and T. FORTUNA
P-17	*Concentration effect on density and viscosity of natural coffee concentrates* P. WESOŁOWSKI and J. GAWAŁEK
Biorheology and Biomimetics	
P-18	*Study on the rheological properties of Baker's yeast suspension* M. SOLECKI, A. HEIM, P. OWCZARZ, G. KILBEY, M.-L. DÉLIA and C. FRANCES
P-19	*Rheological behaviour of aqueous solutions of xanthan gum* M. DZIUBIŃSKI, M. ORCZYKOWSKA and P. BUDZYŃSKI
P-20	*The effect of solvent type on rheological properties of chitosan salts* Z. MODRZEJEWSKA and P. OWCZARZ
P-21	*Rheological properties of synovial fluids* M. ORCZYKOWSKA, M. DZIUBIŃSKI, P. OWCZARZ and E. SZWAJCZAK
P-22	*Assessment of physical properties of macromolecules used in pharmacy using genetic algorithm* A.ZALEWSKA and M. GÓRECKI

Thursday, 25 August 2005

$10^{00} – 12^{30}$	**Poster Session III –** Main Building Foyer	
$12^{30} – 21^{15}$	**Travelling Session – Przylep near Zielona Góra**	
$12^{30} – 12^{45}$	Meeting point and departure from the University car park (next to the Building A-29)	
$12^{45} – 13^{00}$	Passage to Przylep	
$13^{00} – 14^{30}$	Lunch	
$15^{00} – 16^{15}$	**Session 5: Polymer Melts and Polymer Processing and Industrial Rheology III** **Chairman: L. Broniarz - Press**	*O.N.*
$15^{00} – 15^{25}$	*Activation model for polymer and nanocomposite melts flow in fibrous bed* S.V. KOTOMIN and V.G.KULICHIKHIN	*O-10*
$15^{25} – 15^{50}$	*Effects of a Rayleigh step aspect ratio on the thermohydrodynamic behaviour of power law lubricant flows* L. JEDDI, M. EL KHLIFI and D. BONNEAU	*O-11*
$15^{50} – 16^{15}$	*Viscoelasticity of polydimethylsiloxane at the sol-gel threshold: structural effects* J. GASPAROUX, T. TIXIER and Ph. TORDJEMAN	*O-12*
$16^{15} – 16^{25}$	Closing Ceremony	
$17^{00} – 21^{00}$	Evening picnic: Grill	
$21^{00} – 21^{15}$	Return passage to Zielona Góra	

Poster Session III

Analytical and Numerical Methods	
P-23	*Characteristics of falling liquid films of surfactants and polymers solutions* L. BRONIARZ-PRESS and D. DULSKA
P-24	*Effect of elbows and sudden contraction of cross-section on drag reduction effect in surfactant solution flowing in pipe system* L. BRONIARZ-PRESS, J. RÓŻAŃSKI and T. SZCZECINA
P-25	*Drag reducing polymer solutions: pumping effect* L. BRONIARZ-PRESS, J. RÓŻAŃSKI, S. RÓŻAŃSKA and A. JUR
P-26	*Mass transfer enhancement in Newtonian and non-Newtonian liquids flowing in channels of the sinusoidal shape* L. BRONIARZ-PRESS, J. BEDNARZ and J. RÓŻAŃSKI
P-27	*The bulk temperature in free convection flow of Carreau fluid* A. UŚCIŁOWSKA
P-28	*Ferrofluid channel flow under the influence of magnetic dipole* T. STRĘK
P-29	*Stress – strain curves of confined columns* Z. ABDESSELAM
Polymer Melts and Polymer Processing	
P-30	*The influence of soft segments content and chemical structure of poly(ESTER-block-AMIDE)s on melt flow index* A. KOZŁOWSKA
P-31	*The synthesis and selected properties of poly(ESTER-block-AMIDE)s and poly(AMIDE-block-AMIDE)s* A. KOZŁOWSKA, M. PIĄTEK and R. UKIELSKI
P-32	*The comparison of properties of terpoly(ESTER-b-ETHER-b-AMIDE)s with aromatic/aliphatic and aliphatic ester blocks* A. KOZŁOWSKA, M. PIĄTEK and R. UKIELSKI
P-33	*Influence of inertia and viscoelasticity on the flow of a generalized second grade fluid of a power-law type between two fixed surfaces of revolution* P. RATAJCZAK, E. WALICKI and A. WALICKA
P-34	*Flow of an Ellis fluid in a clearance between fix surfaces of revolution* M. RATAJCZAK and A. WALICKA
P-35	*Flow a couple-stress fluid through an annular curvilinear channel with one semi-porous wall* P. JURCZAK, A. WALICKA, E. WALICKI and D. MICHALSKI
P-36	*Pressure drops in the flow through an annular die of a polymer modelled by a Herschel-Bulkley fluid* D. MICHALSKI, E. WALICKI, A. WALICKA and P. JURCZAK

Friday, 26 August 2005 – all day excursion to Wolsztyn

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