LECTURER:
Dr. John Vlachopoulos is Professor of Chemical Engineering and Director of Centre for Advanced Polymer Processing and Design (CAPPA-D) at McMaster University in Hamilton, Ontario, Canada. He is the author of more than 200 publications and frequent lecturer in conferences and seminars. He has served as consultant and/or supplier of simulation software to several hundred corporations around the world through his company POLYDYNAMICS, Inc. He received the 2001 Education Award of SPE (in Dallas) and the 2004 Distinguished Achievement Award of the Extrusion Division of SPE (in Chicago). He is co-editor of “The SPE Guide on Extrusion Technology and Troubleshooting”, published in 2001.

WHO SHOULD ATTEND:
Engineers, chemists, physicist and managerial personnel involved with plastics extrusion, applied rheology, blow molding, mixing and compounding, reactive processing, production of synthetic polymers, recycling and process equipment design and manufacturing will find this course beneficial. Engineers will gain an increased understanding of rheological behaviour including the role of molecular structure and will learn some of the unique engineering problems associated with polymer extrusion. Chemists will learn about fluid flow and heat transfer involving polymers and troubleshooting of extrusion equipment. Managers will obtain an overview of the technical problems associated with plastics extrusion.

Everyone will benefit from learning problem solving techniques based on rheological characterization and polymer flow considerations.

PROGRAM:
Thursday, April 10

9:00 - 9:30 -- Welcome & Registration

9:30 - 12:30 -- Introduction to Rheology
Unusual rheological phenomena exhibited by polymer solutions and melts. The importance of rheology in polymer processing. Viscosity, melt flow index and melt strength, and their relation to molecular structure. The role of temperature, pressure, additives, and fillers. The Dow Rheology Index for Insite technology polyolefins. Rheology of metallocene polymers.

12:30 - 14:00 -- Lunch

14:00 - 17:30 -- Rheology for Process Optimization
Shear and normal stresses. Viscoelasticity. Stress relaxation. Extensional viscosity. G' and G" measurement and significance in polymer characterization. The role of rheology in mixing and blending. Rheological modifications by blending certain polymers, such as LLDPE and LDPE. Determination of MWD from rheological measurements. Predicting processability from rheology. Problem solving using rheology.

Friday, April 11

9:00 - 12:30 -- Melt Flow Through Dies, Extrudate Swell, Die Lip Build-up, Sharkskin and Melt Fracture
Unidirectional and multidimensional flows. Pressure drops and frictional heating (viscous dissipation). The mechanisms responsible for extrudate swell. Die Lip build-up (drool) causes and remedies. Relation to molecular structure. Causes for the onset of sharkskin and gross melt fracture. The effects of adhesion and slip. The role of additives and processing aids. Recent theories and their application to process improvement.

12:30 - 14:00 -- Lunch
14:00 - 17:30 – **Extrusion and Troubleshooting**


**LECTURE NOTES:**

Each participant will receive a copy of the annually updated book of lecture notes on *Polymer Rheology and Extrusion*. This fact-filled book includes copies of the presentation slides, theory, detailed derivations of several important equations and numerous worked-out problems. It is highly recommended for follow-up reading either as a quick information sourcebook or for in-depth study. It is easy to follow with the mathematical level kept to a minimum. Several key references are also given for persons wishing to continue upgrading their knowledge and understanding. It shows how to do simple calculations of shear rate, shear stress, pressure drop, temperature rise due to viscous dissipation, Rabinowitsch and Bagley corrections in capillary viscometry, wall slip velocity, flow throughput in extruders and much more. Whether you want practical problem solving information and troubleshooting tips or you want to understand the importance of recent developments, you will find this book indispensable.

**Note:** English will be used in all lectures and course notes. However, questions may be asked in German, French, Spanish, or Greek. Dr. Vlachopoulos will translate the questions and will give the answers in English for the benefit of everyone.

---

**REGISTRATION FORM: Polymer Rheology & Extrusion Short Course**

April 10-11, 2008

Name: ____________________________________________________________

Company: ___________________________________________________________________________________

Address: _____________________________________________________________________________________

Zip: __________________ City: _____________________________________________

Country: _____________________________________________________________________________________

Tel: ___________________ Fax: ___________________

E-mail: ____________________________________________________________

Highest Degree Earned: _____________________________________________

(B.Sc., M.Sc., Ph.D. and year earned)

Number of years experience in polymer processing: ___________________________

**Registration Fees**

<table>
<thead>
<tr>
<th></th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>Non SPE Member</td>
<td>1,045 Euro (incl. 1 year SPE membership)</td>
</tr>
<tr>
<td>SPE Member</td>
<td>945 Euro</td>
</tr>
</tbody>
</table>

**Payment by:**

- [ ] Cheque enclosed
- [ ] Visa  ~  [ ] Mastercard  ~  [ ] American Express

Card n°: ___________________ Exp. Date: ___________  
Name Cardholder: ___________________  
Signature: ___________________

Credit Card Charges will be made by Meeting Management Services Inc.

Mail or fax the registration form to:

**MEETING MANAGEMENT SERVICES INC.**

4380 South Service Road, Unit 25  
Burlington, ON L7L 5Y6  
CANADA

Tel: +1 905 335 7993 ~ Fax: +1 905 332 1587 ~ E-mail: office@mmsonline.ca

For info contact: SPE Europe  
Tel: +32 3 541 77 55 ~ Fax: +32 3 541 84 25 ~ E-mail: spe.europe@skynet.be