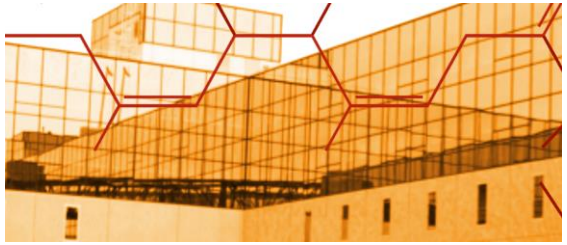


GENERAL INFORMATION

All sessions will include case studies from a variety of polymerization systems (free radical and catalytic), reactors and monomers. Participants can discuss their own examples and interact with the lecturers. The lecturers have organized courses for more than 30 years involving more than 1000 industrial participants representing more than 60 companies worldwide. The examples used represent state-of-the-art.

COURSE FEES

The cost per person is US$1,500. The course fee includes registration, course notes, coffee/beverage breaks, a reception on Monday, June 22nd, and dinner on Tuesday, June 23rd at the University Club. Special discounts exist if two or more participants from the same company register for the course. Upon receipt of intent to register, further Information will be sent regarding payment options.

COURSE NOTES

The course notes have recently been updated and expanded and are included in the cost of registration. Copies are available for purchase by non-participants for US$500. Notes will be given to participants just before lectures start.

LOCATION

The course will be held at:
University of Waterloo

FURTHER INFORMATION

YOU MUST MAKE YOUR OWN HOTEL RESERVATIONS

A block of rooms at special rates has been set aside (until May 13, 2015) for course participants. When contacting the Delta Hotel, in order to obtain the special rate, please indicate that you are reserving for the Institute for Polymer Research (IPR) course.

TRANSPORTATION/OTHER DETAILS

For ground transportation or any other details regarding your visit to Waterloo, please contact the Conference Coordinator:
Colleen Mechler, Tel: 519/888-4789
Email: ipr@uwaterloo.ca

IN-HOUSE COURSES

The Institute for Polymer Research at the University of Waterloo has more than 30 years' experience in conducting in-house courses specifically tailored to your needs and requirements. Secrecy agreements could be signed permitting the consideration of highly relevant material.

Further information on this course or other courses may be obtained from:
Professor J. Duhamel Director of:
Institute for Polymer Research (IPR)
Department of Chemistry
University of Waterloo
Waterloo, Ontario, Canada N2L 3G1
Tel: 519/888-4767, ext. 35916
Email: jduhamel@uwaterloo.ca
WEB: uwaterloo.ca/institute-polymer-research

34th North American Intensive Short Course

TROUBLESHOOTING POLYMERIZATIONS

Tools for Polymerization Troubleshooting: A case study and problem-solving approach

June 22-24, 2015

Hosted and Directed by:
Professor Jean Duhamel, PEng
Director of
Institute for Polymer Research (IPR)
University of Waterloo
Waterloo, Ontario
Canada

Delivered by:

Professor Alex Penlidis, FCAE, FCIC, PEng
Canada Research Chair in Polymer Engineering
Department of Chemical Engineering
University of Waterloo

Professor Costas Tzoganakis, FCIC, PEng
Professor
Department of Chemical Engineering
University of Waterloo

To be held at:
University of Waterloo
Waterloo, Ontario
CANADA

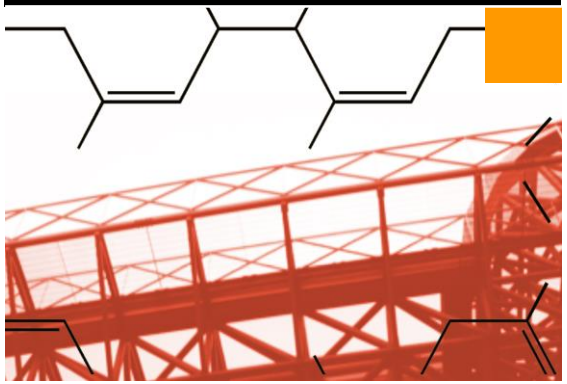
REGISTRATION INFORMATION

Registration will take place electronically at https://uwaterloo.ca/institute-polymer-research/events

For further information, see also our website (check under "Events" section) at: uwaterloo.ca/institute-polymer-research

WHO SHOULD ATTEND?

Engineers and chemists involved with polymerization, polymer production technology, polymerization kinetics, process engineering, product development and characterization, modeling, polymer reactor design and optimization, product/process improvement, design of polymerization experiments, data analysis and handling. Everyone will benefit from learning problem-solving techniques and tips for troubleshooting polymerization behaviour. The lecturers have more than 55 years of accumulated experience in polymer process/product development and polymerization technology.
All topics are highly practical and have been tested and re-evaluated repeatedly over the last 30 years and during numerous industrial in-house courses.



TROUBLESHOOTING POLYMERIZATIONS PROGRAMME

Session 1 Monday, June 22 (8:30 am - 12:30 pm) (AP)

Introduction to chain growth polymerization mechanisms and kinetics (radical/ionic); linear, branched, and crosslinked chains; rate expressions; molecular weight and long-chain branching expressions; instantaneous property methods.

Session 2 Monday, June 22 (2:00 - 5:00 pm) (AP)

Extensions to copolymerizations and multicomponent polymerizations; examples of troubleshooting with typical polymerization data; analysis of data and learning from process observations; examples from copolymerization; reactivity ratio estimation techniques; single and multiple responses; examples from terpolymerization; uses of mathematical models.

Session 3 Tuesday, June 23 (9:00 am - 12:30pm) (CT)

Reactive extrusion of polymers (REX); overview of fundamental concepts; examples of industrial REX processes; extruder types and mixing characteristics; basic concepts on functionalization and grafting reactions of polyolefins.

Session 4 Tuesday, June 23 (2:00 - 5:00pm) (CT)

Controlled-rheology polypropylene; peroxide and UV initiated reactions; modeling of kinetics and molecular weight development; Modification of polypropylene and polyethylene; functionalization and branching reactions

Session 5 Wednesday, June 24 (9:00 am - 12:00 pm)

The final session will cover any 'overflow' from the topics of the previous sessions. In addition, Alex and Costas will address questions from participants from the list of special topics below or other specific cases from the participants (special topics can be decided upon during the first two days of the course).

List of Potential Special Topics:

Emulsion/suspension processes; copolymer composition control policies; energy balances; effect of impurities in emulsion polymerization; troubleshooting with particle size and molecular weight distributions; diffusional limitations (from low to high conversions); high temperature polymerizations; gelation criteria and crosslinking systems. Discriminating between different models; examples from copolymerization; optimal sensor location and selection. Polymer property characterization techniques; off-line and on-line/in-line sensors; GC, GPC, particle size, density, spectroscopic techniques, DSC, DMA; branching level detection; rheological measurements; case studies and examples with application properties.
Chemical modification of polymers through reactive extrusion.reactions); case studies/industrial applications; recent advances.