

## 6<sup>th</sup> ICPC Short Course on Polyolefin Characterization Techniques Agenda

| <b>Sunday, November 6, 2016</b>   |   |
|---|---|
| 7:30 - 8:15   | Registration.   |
| <b>Introduction to Polyolefins</b><br><i>Joao Soares</i>                      |   |
| 8:15 – 9:00   | <ul style="list-style-type: none"> <li>· Polyolefin types.</li> <li>· Olefin polymerization reactor types.</li> <li>· Olefin polymerization catalysts.</li> <li>· New polyolefins.</li> <li>· Microstructure – Properties.</li> </ul>   |
| <b>Polyolefin Microstructure</b><br><i>Benjamin Monrabal</i>                  |   |
| 9:00 - 9:30   | <ul style="list-style-type: none"> <li>· Polyolefins Microstructure.</li> <li>· IR Spectroscopy, MMD, CCD, Bivariate Distribution.</li> </ul>   |
| <b>GPC Basics</b><br><i>Wallace Yau</i>                                       |   |
| 9:30 - 10:30  | <ul style="list-style-type: none"> <li>· Basic GPC mechanism.</li> <li>· Molecular Weight average concept.</li> <li>· GPC retention.</li> <li>· Band broadening.</li> <li>· Different ways to do calibrations.</li> <li>· GPC-Light Scattering.</li> <li>· GPC-Viscometry.</li> <li>· Universal calibration.</li> <li>· Triple detector.</li> <li>· Mark Houwink Plot.</li> <li>· Quad detector.</li> </ul> |
| 10:30 - 10:50   | <i>Coffee Break</i>   |
| <b>GPC - Calculations</b><br><i>Alberto Ortín</i>                             |   |
| 10:50 – 11:40   | <ul style="list-style-type: none"> <li>· Conventional GPC.</li> <li>· Viscometer.</li> <li>· Light Scattering.</li> <li>· Chemical Composition along the MMD.</li> </ul>  |
| <b>GPC - Practical Considerations</b><br><i>David Gillespie</i>               |   |
| 11:40 – 13:00   | <ul style="list-style-type: none"> <li>· Sample and System Preparation.</li> <li>· Column Technology.</li> <li>· Detector Technology.</li> <li>· Band Broadening considerations.</li> <li>· Systematic Approach.</li> </ul>   |
| 13:00 – 14:00   | <i>Lunch</i>  |
| <b>CCD Techniques: TREF, CRYSTAF, CEF and CFC</b><br><i>Benjamin Monrabal</i> |   |
| 14:00 – 15:20   | <ul style="list-style-type: none"> <li>· Fundamentals of Crystallization techniques.</li> <li>· TREF.</li> <li>· CRYSTAF.</li> <li>· CEF</li> <li>· Calibration and Calculations.</li> <li>· Hyphenated Techniques.</li> <li>· Cross Fractionation Chrom.</li> </ul>  |
| 15:20 - 15:40   | <i>Coffee Break</i>   |
| <b>High Temperature HPLC</b><br><i>Willem Degroot</i>                         |   |
| 15:40 - 16:30   | <ul style="list-style-type: none"> <li>· Fundamentals of Liquid Chromatography.</li> <li>· Background of HT-LC Development.</li> <li>· High Temp. Solvent Gradient Interaction Chromatography.</li> <li>· High Temp. Thermal Gradient Interaction Chromatography.</li> <li>· Applications and New Developments.</li> </ul>  |
| <b>Preparative Fractionation</b><br><i>Benjamin Monrabal</i>                  |   |
| 16:30 - 17:00   | <ul style="list-style-type: none"> <li>· Preparative Fractionation techniques.</li> <li>· Molar Mass Fractionation.</li> <li>· Composition Fractionation.</li> </ul>  |
| <b>Applications</b>   |   |
| 17:00 – 18:00   | · Application examples.   |