

## ISPAC Short Courses

### Emerging Trends in Polymer Characterization

7:45 AM	Breakfast – <i>Linden Oak</i>	
8:00	Registration, All Day – <i>Brookside Foyer</i>	
	<b>Neutron and X-ray Techniques</b> Brookside A	<b>Advances in Polymer Characterization</b> Brookside B
9:00	<b>Elastic Scattering Methods for Characterizing Structure</b> Michael Hore, Case Western Reserve University	<b>Introduction to interaction-based separations: IC, LCCC and 2D-LC</b> Taihyun Chang, Pohang University
10:30	<i>Break</i>	
10:45	<b>Inelastic scattering methods for characterizing mobility</b> Yun Liu, NIST	<b>Introduction to size-based separations: SEC, HDC, FFF, and detection methods</b> Andre Striegel, NIST
12:15 PM	<i>Lunch (Linden Oak)</i>	
1:00	<b>Imaging Soft Materials with X-rays and Neutrons</b> Daniel Hussey, NIST	<b>Emerging Trends in Rheology</b> Anthony Kotula, NIST
2:30	<i>Break</i>	
2:45	<b>Rheology and Small Angle Scattering</b> Kathleen Weigandt, NIST	<b>Polymer Science and Advanced Solid State NMR</b> Ryan Nieuwendaal, NIST
6:00	Reception – <i>Forest Glen</i>	

7:00 AM Registration, All Day – **Grand Foyer**  
 Vendor Exhibition, All Day – **Grand Foyer**

7:00 AM Breakfast – **Salon H**

8:00 AM Opening Remarks – Dr. Ronald Jones and Prof. Wayne Reed (**Salon F/G**)

8:15 AM Materials Science at NIST – Dr. Eric Lin, Director, Material Measurement Laboratory, NIST (**Salon F/G**)

## Advances in Polymer and Soft Materials Rheology

### Plenary Lectures – Salon F/G

8:30 AM M.01 - DowDuPont Lecture  
**Polyethylene topology and rheology control for recycling applications**  
 Jaap den Doelder, DowDuPont

9:00 AM M.02 - **Predicting the Linear and Non-Linear Rheology of Polydisperse Linear Polymers**  
 Daniel Read, University of Leeds

9:30 AM M.03 - **Toward in situ morphology characterization of polymeric fluids under arbitrary processing flows**  
 Matthew Helgeson, University of California Santa Barbara

10:00 AM **Rheology Discussion Panel**

10:30 AM

*Refreshments*

**Deformation of Soft Materials  
 Salon F**

**Characterization with Chromatography  
 Salon G**

11:00 AM M.11 – **Rheo-Raman microscopy for polymer crystallization characterization** – A. Kotula

M.15 – **Comparison of fast SEC and UHP SEC for the second dimension in two-dimensional liquid chromatography of polymers** –  
 E. Uliyanchenko

11:20 AM	<b>M.12 – Effects of Orientation and Deformation Mode in Dynamic Mechanical Analysis of Engineered Materials</b> – S. Cotts	<b>M.16 – Understanding Polymer Structure by Interaction Polymer Chromatography</b> - C.J.Rasmussen
11:40 AM	<b>M.13 – Selective Cell Adhesion on Peptide-Polymer Nano-Fiber Mats</b> - G. Kaur	<b>M.17 – Light Scattering without Refractive Index Increment: A New Approach to Calibrate SEC-Light Scattering Setups</b> – D. Lohmann
12:00 PM	<b>M.14 – Viscoelastic behavior of polyelectrolyte complexes across coacervate-precipitate transition regime</b> – S. Ali	<b>M.18 – Fast Separations of Synthetic Polymers Using Advanced Polymer Chromatography (APC)</b> - Janco, M.
12:20 PM	<i>Buffet Lunch - Salon H</i>	
12:30 PM	V.1 – Waters (sponsored presentation) <b>Salon G</b>	
12:50 PM	V.2 – Tosoh Bioscience (sponsored presentation) <b>Salon G</b>	
1:10 PM	<b>Poster Setup</b>	

## Advancing Materials Science with Big Data

### Plenary Lectures - Salon F/G

2:00 PM	<b>M.04 – Scoping the Polymer Genome: A Roadmap for Rational Polymer Dielectrics Design and Beyond</b> Rampi Ramprasad, Georgia Institute of Technology
2:30 PM	<b>M.05 – Towards Polymer Informatics: Databases, Infrastructure and Beyond</b> Debra Audus, NIST
3:00 PM	<b>M.06 – Materials-Specific Considerations for Machine Learning</b> Bryce Meredig, Citrine Informatics
3:30 PM	<b>Big Data Discussion Panel</b>
4:00 PM	<i>Refreshments</i>

	<b>Computation and Characterization</b> Salon F	<b>Molecular Control and Characterization</b> Salon G
4:30	<b>M.21 – From Data Science to Data Stories: Automating advanced analytics for R&amp;D and manufacturing</b> – G. Smits	<b>M.24 – Perfect Polystyrene Sulfonate: Synthesis, Characterization and Self Diffusion in Ternary Solutions</b> – <i>P. Balding</i>
4:50 PM	<b>M.22 – typyPRISM: A Computational Tool for Liquid-State Theory Calculations of Macromolecular Materials</b> – T. Martin	<b>M.25 – Conformational control of tethered functionalized mPEO on anatase nanocrystals surface</b> – <i>R. Simonutti</i>
5:10 PM	<b>M.23 – TBA</b> - F. Vargas Lara	<b>M.26 – Preparation and Characterization of Polyurethanes from Carbohydrates</b> – <i>H. N. Cheng</i>

## Poster Exhibition

### ***White Oak A***

Heavy hors d'oeuvres and Open Bar

6:30 – 9:00

- 7:00 AM Registration, All Day – **Grand Foyer**  
 Vendor Exhibition, All Day – **Grand Foyer**  
 7:00 AM Breakfast – **Salon H**

## Advances in Chromatography and Spectroscopy

### Plenary Lectures - Salon F/G

- 8:00 AM T.01 – **Correlated polymer characterization via SEC-IR Detection with a new QCL Laser Spectrometer and SEC-NMR with a new 60 MHz MR-NMR Spectrometer**  
 Jennifer Kubel, Karlsruhe Institute of Technology
- 8:30 AM T.02 – **Characterization of Complex Synthetic Polymers by Advanced Separations and Detection Techniques**  
 David Meunier, DowDuPont
- 9:00 AM T.03 – **HPLC Characterization of Block Copolymers**  
 Taihyun Chang, Pohang University of Science and Technology
- 9:30 AM **Chromatography and Spectroscopy Discussion Panel**
- 10:00 AM *Refreshments*

	<b>Condensed Phases Salon F</b>	<b>Macromolecular Architectures Salon G</b>
10:30 AM	T.11 – <b>Two-Dimensional Terahertz (2D THz) Raman Correlation Spectroscopy Study of the Crystallization of Bioplastics</b> – I. Noda	T.15 – <b>Synthesis and Characterization of Polyolefins with Precise Control of Branch Frequency and Branch Length</b> – S. V. Orski
10:50 AM	T.12 – <b>Imaging Orientation Angles and Order Parameters of Semicrystalline Polymers by Polarization IR and Raman</b> – Y. Lee	T.16 – <b>Functional electrospun membranes featuring grafted polymer brushes: The characterization challenge</b> – Y. Liu

11:10 AM	<b>T.13 – Multiple Order-to-Order Transitions within Ultrathin Films of Sugar-Polyolefin Amphiphilic Conjugates</b> – S. R. Nowak	<b>T.17 – Characterization of the chemical composition distribution of 1-octene based POP/POE by HPLC</b> – J. H. Arndt
11:30 PM	<b>T.14 – Liquid-solid transitions of a repulsive system with also a short-range attractive potential</b> – G. Yuan	<b>T.18 – Striving for Perfection: “Defect”-Free Polymer Networks for Improved Metrology</b> – J. Sarapas
11:50 PM		

*Buffet Lunch – Salon H*

## ISPAC Leaders of R&D Panel Discussion

*“The Next Generation of Characterization Needs in Polymer Science”*

Salon F/G

- 1:15 PM Pat Brant (ExxonMobil), Naryan Ramesh (DowDuPont), Raj Krishnaswamy (Braskem North America), Peter Maziarz (Pfizer Consumer Health)  
**Discussion Leader:** Kate Beers, NIST

## Macromolecular Architectures

Plenary Lectures - Salon F/G

- 2:30 PM T.04 – ExxonMobil Lecture  
**Molecular Engineering with Anionic Polymerization**  
Lian Hutchings, Durham University
- 3:00 PM T.05 – **New Opportunities for Precision Polyolefins: Design, Characterization and Dynamic Behavior of Nanostructured Polyolefin Block Copolymers**  
Lawrence Sita, University of Maryland
- 3:30 PM T.06 - **Polyhomologation: A Powerful Tool Towards Well-Defined Polyethylene-Based Polymeric Materials**  
Nikos Hadjichristidis, KAUST
- 4:00 PM **Architectures Discussion Panel**

4:30 PM

*Break*

**Condensed Phase Spectroscopy  
Salon F**

**Advances in Chromatography  
Salon G**

5:00 PM

**T.21 – Bulk heterojunction  
interfacial structure from  
REDOR NMR – R. Nieuwendaal**

**T.25 – Characterization of branched  
polycarbonate by comprehensive two-  
dimensional liquid chromatography with multi-  
detector setup and correlation with Monte-  
Carlo simulations – N. Appel**

5:20 PM

**T.22 – Characterization of  
modified silicas with industrial  
interest – A. M. Netto**

**T.26 – Valorisation of multi-dimensional  
analytical approaches to unlock complex  
products characterization. The particular case  
of apolar commercial synthetic polymers – J.  
Desport**

5:40 PM

**T.23 – Relating Post Yield  
Mechanical Behavior in  
Polyethylenes to Spatially-  
varying Molecular Deformation  
Using Infrared Spectroscopic  
Imaging: Homopolymers – P.  
Mukherjee**

**T.27 – Size Exclusion Chromatography  
Characterization of Poly(Ester Urethane)  
Degradation Products – D. Yang**

6:00 PM

**T.24 - Influencing liquid  
crystalline gel formation in  
cellulose ionic liquid solutions  
by adding water and  
nanoparticles – A. Rajeev**

**T.28 – Polymer separation beyond SEC –  
expanding the range from molecules to  
particles – R. Reed**

6:30 PM

**ISPAC Social Hour**  
**Grand Ballroom Veranda**  
Hors d'Ouevres and Open Bar

7:30 PM

**2018 ISPAC Banquet**  
**Ballroom E**

7:00 AM Registration, All Day

7:00 AM Breakfast

## Emerging Methods in Scattering

Plenary Lectures - Salon F/G

8:00 AM W.01 - Wyatt Technology Lecture

**Structure and Dynamics in Polymer Grafted Nanoparticle Systems**

Michael Hore, Case Western Reserve University

8:30 AM W.02 – Recent Advances in X-ray Scattering Methods for Soft Materials

Kevin Yager, Brookhaven National Laboratory

9:00 AM W.03 – Pfizer Consumer Healthcare Lecture

**Soft matter structure measurement by Polarized Resonant Soft X-ray Scattering**

Dean DeLongchamp, NIST

9:30 AM **Scattering Discussion Panel**

10:00 AM

*Refreshment Pause/Lunch Pickup*

## Tour of the National Institute of Standards and Technology (NIST)

Participants must register for tour through ISPAC website to meet security requirements.

10:30 AM Bus pickup at Marriot Main Lobby

11:15 AM NIST Integrating Sphere Laboratory

12:00 PM Lunch at NIST Cafeteria (not included in registration)

Walk thru NIST Museum

1:15 PM Trace Contraband Detection Laboratory

2:00 PM NIST Center for Neutron Research

3:00 PM Arrive at Marriot

End of 2018 ISPAC meeting, see you in Japan!!



