Polymer analysis training courses The Polymers Center, Charlotte, NC November 1-2, 2023 | 8:30 a.m. – 4:30 p.m. (EST)

When studying polymers, analytical techniques like rheology and FTIR spectroscopy can deliver specific and detailed information otherwise unavailable. These analyses can help with the identification, quality control, or real-world applications of polymers in fields as diverse as automotive lubricants, military armor, and pharmaceutical development. New training courses offer the opportunity to learn about theoretical and practical aspects of polymer analysis and provide hands-on experience in FTIR spectrometers and rheometer instrumentation operation. As a result, you can learn how to properly conduct measurements and interpret your collected data to identify materials and solve real-world problems accurately.

The Polymers Center offers two new courses

Wednesday, November 1

Introduction to polymer melt rheology

- Dr. Fabian Meyer Team Leader Rheology Applications, Thermo Fisher Scientific
- Yiro Shimabukuro
 Polymer Science Lab Manager, The Polymers Center

Discover the fundamentals of polymer melt rheology, detailing both theoretical and practical concepts. The course includes classroom presentations and hands-on operation of rheometer instrumentation. Attendees will learn how to conduct rheological measurements and properly interpret measured data correctly.

Every participant will receive a copy of *A practical approach to Rheology and Rheometry* by Gebhard Schramm.



Dr. Fabian Meyer

Fabian Meyer studied chemistry at the University of Hamburg, Germany and completed his doctorate at the Institute of Technical and Macromolecular Chemistry in 2008. His dissertation focused on the comparison of rheo-optical and rheo-mechanical material functions of diluted biopolymer solutions. From 2009 to 2013, Fabian was the Rheology Applications Specialist for North America at Thermo Scientific in Tewksbury, MA. In 2013, he became part of the applications support team at the Material Characterization headquarters in Karlsruhe, Germany. Fabian has been leading the team since 2018.



Yiro Shimabukuro

Yiro Shimabukuro is the Polymer Science lab manager at the Polymers Center (PCE). He oversees the daily operations as well as designing testing protocol for customers looking for new product development, failure analysis, quality control, etc., using physical, thermal, spectral, and rheological instrumentation. He currently holds interest in using rheometry for uncovering structure-property relationships in materials as well as for molding/extrusion simulations.

Thursday, November 2

Introduction to Fourier transform infrared spectroscopy (FTIR) for polymer analysis

Matthew Bartucci, Ph.D.
 Senior Application Scientist, Thermo Fisher Scientific

Explore the theory and applications of FTIR for polymer identification with an emphasis on quality control to ensure that the trainees have confidence in using a Thermo Scientific[™] Nicolet[™] FTIR Spectrometer. The course will have interactive presentations discussing the theory, sampling considerations and applications focusing on bulk polymer identification.



Matthew Bartucci, Ph.D.

Matt earned his B.S. in Chemistry from the University of Iowa in 2008 and his Ph.D. from Loyola University Chicago in 2013. After graduate school, Matt took on a postdoctoral research position for the United States Army Research Laboratories focused on generating novel polymers for armor composites that could perform in extreme military environments. Matt Bartucci is currently a Senior Application Scientist for the Nicolet FTIR product line at Thermo Fisher Scientific and operates an applications lab in Bannockburn, IL.



Wednesday, November 1, 2023

Introduction to polymer melt rheology Dr. Fabian Meyer • Thermo Fisher Scientific Yiro Shimabukuro • The Polymers Center

Morning	8:30 - 8:45	Welcome and introduction
	8:45 - 9:15	Introduction to rheology and basic rheology terminology
	9:15 - 9:45	Overview of polymer flow behavior and the relationship between polymer structure and viscosity
	9:45 - 10:15	Temperature and shear rate dependence of viscosity and how it relates to polymer processability
	10:15 - 10:30	Break
	10:30 - 11:00	Fundamentals of rheological testing: Capillary vs. rotational shear rheometers
	11:00 - 11:30	Introduction to viscoelasticity and its impact on polymer melt behavior
	11:30 - 12:00	Data interpretation for injection molding and process optimization
Afternoon	12:00 - 1:00	Lunch
	1:00 - 1:30	Applied case studies: how rheology was used to solve real-world problems
	1:30 - 2:30	Hands-on rotational rheometer testing
	2:30 - 2:45	Break
	2:45 - 3:45	Hands-on capillary rheometer testing
	3:45 - 4:15	Data analysis and data comparison from hands-on sessions
	4:15 - 4:30	Closing remarks

Thursday, November 2, 2023

Introduction to Fourier transform infrared spectroscopy (FTIR) for polymer analysis *Matthew Bartucci, Ph.D.* • *Thermo Fisher Scientific*

	8:3	60 - 8:45	Welcome and introduction
Morning	8:4	5 - 9:30	Introduction and theory of FTIR
			How molecular spectroscopy is well suited to identify polymers and other small molecule organics
	9:3	80 - 10:15	Sampling and accessory needs / considerations
	10:1	5 - 10:30	Break
	10:3	60 - 11:00	Spectral interpretation
			How the software database searches and quality checks act as an interpretation tool.
	(b) 11:0	0 - 12:00	Interactive live demo and presentation
noon	12:0	0 - 1:00	Lunch
	1:0	0 0.46	Llanda on accelen with FTID instruments
		10 - 2.40	Hands-on session with FTIR instruments
Dou	2:4	-5 - 3:00	Break
fternoc	2:4 3:0	-5 - 3:00 -0 - 4:00	Hands-on session with First instruments Break Advanced techniques
Afternoc	2:4 3:0	0 - 2.40 5 - 3:00 00 - 4:00	Break Advanced techniques Microscopy, TGA-IR, GC-IR, NIR, and Far-IR

The cost is \$750 to attend a single training course, or \$1000 to attend both. Use coupon code 5000FF at checkout.

Get hands-on experience to improve your ploymer analysis. Register today at **thermofisher.com/polymercourses**

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Hands-on sessions

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