

## Rheology training course

The Polymers Center, Charlotte, NC

November 6, 2024 | 9:00 AM - 5:00 PM ET

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.

Are you a **newcomer** who would like to acquire a basic understanding of rheology?

Are you a **seasoned user** and would like to expand your existing rheology knowledge?

Are you an **advanced user** and want to exploit the maximum measuring possibilities and optimize your measuring methods?

This hands-on application-oriented training will benefit users in research and development, in the production process and in quality control..

### Hands-on experience at The Polymers Center.

#### Wednesday, November 6

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.

#### Come Join Us!

- In-person training course at the Polymers Center in Charlotte, North Carolina
- Illustrative and practical presentations by application specialists
- Interactive, hands-on laboratory training
- Certification of participation
- Training includes: Course, lunch, snacks, and refreshments

Price: \$295



#### Nathan (Nate) Crawford, Ph.D.

Senior Rheology and Extrusion Applications Specialist

Nate holds a Ph.D. in Chemical Engineering from the Colorado School of Mines and is currently the senior rheology and extrusion applications specialist for Thermo Fisher Scientific in North America. Nate operates a complete extrusion and rheology applications lab based in Golden, CO. Before joining Thermo in 2016, Nate spent three years as a Postdoctoral Researcher at the National Renewable Energy Laboratory in the Bioenergy Center studying the flow behavior of biobased materials.



#### Prajakta Koparde, Ph.D.

Senior Rheology and Extrusion Sales Representative

Dr. Koparde holds a Ph.D. in Chemical Engineering from the University of Tennessee, Knoxville with a focus in experimental polymer rheology. Prajakta is the Sr. Sales Representative with the Thermo Fisher Scientific's Materials Characterization product line which includes Process Extrusion and Rheology and looks after the Mid-Atlantic region in North America. An analytical solutions expert in her career, she has a passion for customer focus and is looking forward to working with everyone at the Polymer Center, NC and sharing her knowledge about Rheology.



#### 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.

Wednesday, November 6, 2024

### Basics of rheology, rotational testing




In this module, rheological terms and principles are explained, and different measuring systems are presented.

- Introduction to rheology and rotational testing—Basic principles, definitions
- Rheological behavior—Flow behavior, yield stress, thixotropy, flow, and viscosity curves
- Thermo Scientific™ HAAKE™ RheoWin™ Software—Creation of typical measurement and evaluation routines for flow and viscosity curves, as well as yield stress and thixotropy determination

### Viscoelasticity, creep and creep recovery, and oscillatory measurements

In this module, the focus is on how viscoelastic properties can be recorded, evaluated, and interpreted.

- Viscoelasticity—Basic principles, definitions
- Creep and creep recovery testing—Zero shear viscosity, retardation time, elastic, and viscous properties
- Measurements in oscillation—Amplitude, frequency, temperature, and time sweeps

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

 **Hands-on sessions**



For more info

Further information and registration:  
[thermofisher.com/rheology-training](https://thermofisher.com/rheology-training)

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