



RHEOLOGY BOOT CAMP

January 12 & 13, 2022

Norman Wagner, Univ. Delaware

Colburn Laboratory Rm 366

Classroom: 9:00 am – 12:30 pm

Zoom Link: <https://udel.zoom.us/j/97510576894>

50 minute modules with 10 minutes break and Q&A..

Day One

1. Rheological Concepts and Rheological Phenomena

- Overview of rheological phenomena
- Kinematics of shear flows
- Dynamics: stresses
- Extensional flows
- Basic rheological concepts
- Simple constitutive models
- Types of rheometers

2. Polymer and Polymer Solutions Rheology Basics

- Polymer science basics
- Rheological phenomena associated with elasticity
- Reptation
- Generalized Newtonian & Maxwell models
- Normal stresses
- Time-Temperature Superposition

3. Rheological Measurements

- Rheometer basics
- Rheological tooling, what, when, where and why?
- Measurement strategies
- Problems & mistakes!

Lunch Break

Afternoon Practical Rheology Training in Laboratory

Day Two

4. Colloidal Suspensions:

- Definition of a colloid
- Hydrodynamic effects
- Brownian motion
- Hard sphere suspensions
- Stable suspensions
- Non-spherical particles
- Measurement strategies

5. Colloidal Gels & Glasses

(Dr. Khushboo Suman)

- What is a colloidal gel and their types?
- Structure of gels
- Linear viscoelasticity of gels
- Advanced topics, nonlinear behavior and aging
- Measurement strategies

6. Advanced Topics:

a. Thixotropy

- Concept of thixotropy
- Experimental features
- Modelling methods

b. Interfacial Rheology

(Dr. Benjamin Thompson)

- Definitions and concepts of surface rheological properties
- Instrumentation and methods
- Example

Lunch Break

Afternoon Practical Rheology Training in Laboratory