

The Department of Coatings and Polymeric Materials at North Dakota State University is equipped with state-of-the-art spectrometric, microscopic, testing, and application equipment utilized in coatings and polymeric materials science. This equipment is included in our service center and is available for use on a fee basis. A majority of the instrumentation has attachments or modules for advanced measuring techniques. For further information regarding our specific capabilities and/or a price list, please contact Chunju Gu, Laboratory Manager, at (701) 231-8017 or [chunju.gu@ndsu.edu](mailto:chunju.gu@ndsu.edu).

### Categories of Materials Characterization

#### Spectroscopy

Fourier Transform Infrared Spectrometer (FTIR)

Ultraviolet-Visible-Near Infrared Spectrometer (UV-VIS-NIR)

Fluorescence Spectrometer

Color Spectrometer

Thermo Scientific Nicolet 8700: many tech. avail. please inquire

Varian Cary 5000: specular and diffuse reflectance accessories

Jobin Yvon Horiba Fluoromax-3

MacBeth Color Eye 7000

#### Electrochemical

Electrochemical Impedance Spectroscopy (EIS) and

Electrochemical Noise Monitoring (ENM)

Scanning Vibrating Electrode Technique (SVET)

Scanning Electrochemical Microscope (SECM)

Gamry Femtostats and PC4 Potentiostats

Applicable Electronics, Inc.

CH Instruments

#### Accelerated Weathering

Xenon Arc

Ultraviolet

Salt Spray

Q-Lab Corporation Q-Sun 1000 chamber (2); Atlas MTS Ci4000 Weather-Ometer

Q-Lab Corporation Q-UV SE chamber (2): one UV-A, one UV-B

Q-Lab Corporation Q-Fog CCT chamber (2): one ASTM B117, one Prohesion®

#### Surface Characterization

Contact Angle/Surface Tension Analyzer

Atomic Force Microscope (AFM) and

Scanning Probe Microscope (SPM)

First Ten Angstroms: FTÅ 125

Veeco DI-3100 AFM: tapping, contact, nanoindentation, conductive, magnetic

Veeco Nanoscope IIIa MultiMode

#### Mechanical

Tensile Analysis

Instron 5545 Tensile Tester: 100N load cell, environmental chamber

#### Chromatographic/Separation Methods

Gel Permeation Chromatography (GPC)

Waters Corporation: Module system with Refractive Index detector

#### Particle Characterization

Dynamic Light Scattering - submicron sizing

Single Particle Optical sizing

Zeta Potential

Particle Sizing Systems Nicomp 380: 3 nm to 5  $\mu$ m

Particle Sizing Systems SPOS 780: 0.5  $\mu$ m to 2500  $\mu$ m

Agilent Technologies, Colloidal Dynamics AcoustoSizer IIs

#### Other Property Techniques

Minimum Film Formation Temperature

Hardness

Gloss

Gardco Rhopoint MFFT-90

BYK König Pendulum Hardness Tester

Gardco Statistical Novogloss Glossmeter

Thermal Analysis techniques (glass transition, crosslink density, etc.), Nuclear Magnetic Resonance, and many other techniques are available from the Materials Characterization Analysis Lab in the Center for Nanoscale Science and Engineering (CNSE) at NDSU. Please contact Chunju Gu (info above) or Bret Mayo, at (701)231-5315 or [bret.mayo@ndsu.edu](mailto:bret.mayo@ndsu.edu) for more information regarding their capabilities.