Weimer Research Laboratory
Analytical Services

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Overview

• Locations:
  – JSCBB D1B80 (East Campus)
  – ECES 1B47 (Main campus)

• Instruments:
  – NETZSCH STA 449 F1 Jupiter
  – NETZSCH DIL 402 Expedis Classic
  – Micromeritics Gemini VI Surface Area Analyzer
  – Quantachrome Autosorb 1
  – LECO Elemental Analyzers
  – Malvern Mastersizer

• Contact Information (email preferred)
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Thermal Characterization

- **NETZSCH STA 449 F1 Jupiter**
  - TGA, DTA, DSC, MS
  - Measures sample mass change with temperature or time, differences in temperature or thermal properties between sample and reference, evolved gasses via mass spec
  - High temperature measurements (up to 1500°C)
  - Inert, oxidizing or reducing atmospheres
  - Example applications: Phase transitions, chemical transitions, material characterization, kinetics, stability, enthalpy changes (phase transitions, reactions, crystallization, etc.)

- **NETZSCH DIL 402 Expedis Classic**
  - Measures dimensional changes in solids, powders and pastes at a programmed temperature change with negligible sample strain
Surface Area and Porosity

- Micromeritics and Quantachrome Instruments
  - Physisorption, chemisorption, temperature programmed oxidation/reduction, vapor sorption
  - Used to determine: Specific surface area, micro and mesopore distributions, total pore volume, active site concentration, most efficient reduction/oxidation conditions, percent water uptake
Compositional Characterization

• LECO Instruments
  – C200 (Carbon) and TC600 (Oxygen/Nitrogen)
  – Determines total elemental carbon, total nitrogen and total oxygen in solid samples as a percentage of total solid mass
  – Organic and inorganic samples
Particle Size

• Malvern Mastersizer 2000
  – Measures laser light obfuscation of solid particulate samples
  – Uses diffraction data to determine particle size distribution
  – Wet (water or isopropanol) or dry dispersions
  – .01 to 3500 microns
Questions?