

The Center for Innovative Sintered Products at University Park offers extensive laboratory services for routine analysis or materials processing.

The 20,000-square-foot state-of-the-art center has expanded from supporting internal testing and analysis to offering these services to private industry and other academic institutions.

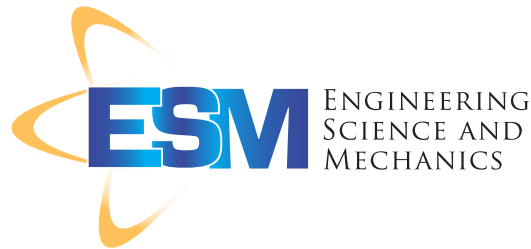
Our cooperative alliance with other laboratories across the University provides expanded access to high-tech equipment for all testing needs.

FULL RANGE OF TESTING, SERVICES, AND RESEARCH

Center for Innovative Sintered Products

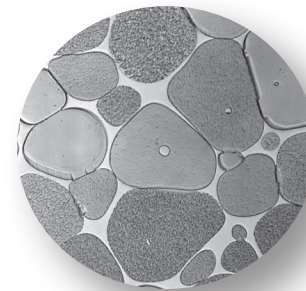
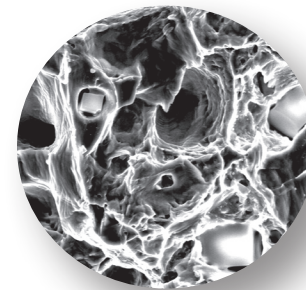
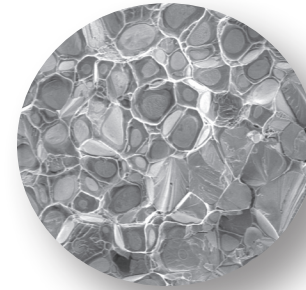
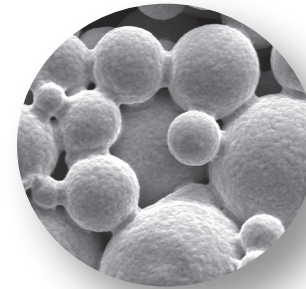
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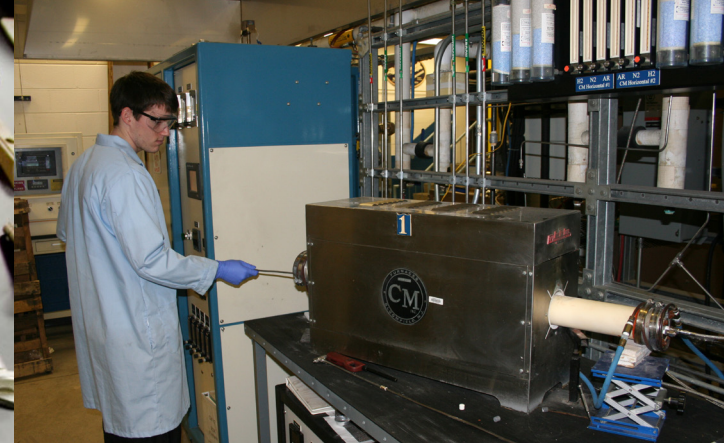


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**Center for Innovative
Sintered Products**



Center for Innovative Sintered Products

A comprehensive research center focused on sintered materials, devices, and systems

AREAS OF SERVICE

Powder Characterization

- Particle Sizing
- Surface Area
- Density
- X-ray Diffraction

Thermal Analysis & Sintering

Processing & Quantitative Analysis

- Shape Forming
- Microscopy—SEM and EDS
- Mechanical Testing
- Metallography

Other services are available upon request. Some samples may be subject to an additional specimen preparation or handling cost. Prices are determined based on project or research requests.

Testing and Services

THERMAL ANALYSIS

- DSC/DTA/TGA (H_2 , Ar, N_2 , air, vacuum, max 1500°C)
- Dilatometry (H_2 , Ar, N_2 , air, max 1500°C)
- Heat Treatment

PARTICLE SIZE MEASUREMENTS

- Laser Scattering-Wet or Dry Dispersion (0.01-3000 μm)
- Sedimentation (centrifugal or gravitational, 0.01-300 μm)

MICROSCOPY

- Scanning Electron Microscopy: secondary or backscatter
- EDS-Energy Dispersive Spectroscopy: EDAX
- Quantitative Image Analysis: grain size, porosity, etc.

X-RAY DIFFRACTION

- Identifies Compounds Present

DENSITY MEASUREMENTS

- Pycnometer Density (theoretical density using helium)
- Envelope Density
- Apparent Density
- Tap Density
- Archimedes Density

METALLOGRAPHY

- Metallographic Mounting, Polishing
- Cut-Off Saws, water cooled
- Light Microscope (50x to 1000x)
- Optical Binocular (4x to 70x)

FURNACE USE

- Retort (H_2 , Ar, max 1000°C); 0.4 cu ft.
- Tube Furnace (H_2 , N_2 , Ar, max 1500°C)
- Tungsten Element Furnace (vacuum, N_2 , Ar); 0.8 cu ft.
- Graphite Element Furnace (vacuum, max 2000°C)
- Rapid Heat Box Furnace (max 1700°C); 0.7 cu ft.
- Hydrogen Box Furnace (50% or higher H_2 , balance N_2)
- Spark Plasma Sintering (SPS); Ar, N_2 , H_2 , 2200°C, 80 mm die, 175 kN

SHAPE FORMING AND FEEDSTOCK PREPARATION

- Compaction
- Cold Isostatic Pressing
- Compounding

EXPERIMENTAL MILLING OF POWDERS

- Rod or Ball Milling, Attritor, Vibratory, Double Planetary

MECHANICAL TESTING

- Rockwell Hardness
- Microhardness: Vickers, Knoop
- Tensile Testing
- Three-Point and Four-Point Bend
- Fatigue Testing, Uniaxial
- Wear Testing

Pricing available upon request.