Process Capabilities for Industrial Pilot Scale Applications

Ambient and Heated Mixing
Coating
Blow Molding
Calendaring
Compression Molding
Cutting / Stamping
Emulsification
Extrusion Compounding (single & twin screw)
Fibers / Filaments (variable diameter) Injection Molding
Lamination
Puffing/Foaming
Particle Sizing (screen / mesh)
Reactive extrusion (chemistry within the melt)
Ribbons / Sheets (variable width/thickness)
Roll milling
Size Reduction
Spray and Freeze Drying

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Create your future with the Ag Lab
We are eager to explore new partnerships that would make use of the NCAUR Pilot Plant to develop new products from agricultural products, co-products, and waste; new packaging materials to improve food quality and safety; and new energy-efficient methods for processing plastics and bioplastics. Partnerships may take the form of Cooperative Research and Development Agreements (CRADAs) and Material Transfer Research Agreements (MTRAs).

Extrusion
- Werner-Pfleiderer ZSK 30mm twin-screw 3 dry feeders & 4 liquid pumps rod & sheet dies foam/puff cutter
- Brabender Intelli-Torque single screw rod, ribbon, sheet & blown film dies
- Leistritz Micro18 twin-screw 2 dry feeders & 2 liquid pump slit and filament dies

Injection Molding
- Engel Victory 125 Injection Molder ASTM sample & specialty molds

Compression Molding
- Carver hydraulic presses - water cooled Various molds

Mixing
- Brabender Rheometer
- Heated roll mill

3-D printing (resins)
- Flashforge Creator - Dual Nozzle

Post-processing
- Film, Sheet, & Ribbon Calendaring
- Fiber/Filament Drawing
- Brabender Granu-grinder (1.0 mm)
- Thomas Wiley Mill (1.0-3.0 mm)
- Vibratory Sieves (18-200 Mesh size)
- SPEX Freeze Mill (0.1-100 g)
- ASTM D638 Tensile Bars

Characterization
- Instron Materials Testing System ASTM 638 Tensile Properties Peel, Puncture, 3-Point Bend, Impact
- Controlled Environment
- Melt flow properties: rheometry, viscosity
- Thermal analysis: DSC, TGA, DMA
- Spectral analysis: UV-VIS, FT-IR
- Microscopic Analysis: SEM, AFM, Digital
- Elemental analysis: NMR, CHN Analyzer
- HPLC-SEC Molecular weight (20K-10M)
- Film Adhesion and Abrasion
- Thin Film Thicknesses (0-500um, 0-2mm)
- Permeability

History
Past collaborations have led to groundbreaking products and advances. The Utilization Research centers were authorized and built in 1939. NCAUR has been designated an International Historic Chemical Landmark by the American Chemical Society and the Royal Society of Chemistry (UK).