

# WMEL EQUIPMENT & FACILITIES

## Composite Manufacturing

- complete WPC commercial line with industry production rate capabilities (Milacron, Inc.; Conair, Inc.)\*
- 35mm, 55mm, and 86mm conical twin screw extruders
- 25mm single screw extruder (Weyerhaeuser)\*
- 18mm parallel twin screw extruder
- 3 profile cooling units
- pultrusion system (30 kip pulling load)
- 50-ton injection molding machine
- HPL/LPL resin impregnator and development system (Lam-Tech)\*
- computer-controlled hydraulic presses with oil heated platens (4- by 8-ft., 3- by 3-ft.) (Celotex)\*

## Sorting, Drying, Blending, and Forming

- strand, particle, and fiber dryers
- mechanical and aerodynamic particle sorters
- air atomized blender; adhesive roll coater
- electrostatic and mechanical formers
- steam tube dryer
- rotary dryer

## Furnish Generation

- chipper; hammermill
- ring, drum, and disc flakers (Pallmann)\*
- dual disc refiner (with steam conditioner)

## Thermal and Surface Analyses

- simultaneous differential scanning calorimeter and thermal gravimetric analyzer with attached FTIR gas stream analysis
- dynamic mechanical analyzer
- submersion dynamic mechanical analyzer
- frequency modulated differential scanning calorimeter
- dynamic contact angle analyzer
- parallel plate rheometer
- capillary rheometer
- torque rheometers
- extrudate swell and temperature monitoring system



## WMEL EQUIPMENT & FACILITIES *(continued)*

### Spectroscopic and Microscopic Analysis

- FTIR spectroscopy with mid- and near-IR capability
- FTIR microscope and ATR
- transmission light microscopes with cross polarizers and heating/freezing stage
- NMR spectroscopy (solution and solid-state)
- SEM with energy dispersive x-ray spectroscopy
- x-ray photoelectron spectroscopy
- x-ray vertical density profiler
- stereoscope with color ccd camera and image analysis
- high resolution monochrome digital camera

### Materials and Structural Testing

- servo-hydraulic actuators with 10, 22, 56, 100, and 220 kip capacities
- servo-hydraulic axial test frames with 22 and 56 kip capacities with computer control and data acquisition
- 2 and 30 kip electromechanical universal test machines with computer control and data acquisition
- 200 kip tension-testing machine
- 500 kip reaction floor with two 7.5-ton overhead cranes
- shake table (to simulate seismic loading)
- 120 constant-load test frames (for time dependent creep behavior) (Weyerhaeuser)\*
- 2 weathering chambers: Xenon arc and fluorescent UV with water spray
- 5 controlled environment conditioning chambers

### Nondestructive Evaluation

- ultrasonic pulser-receiver and piezoelectric transducers
- stress wave timers
- transverse vibration E-computer
- infrared thermal imaging system

### Adhesion Chemistry Laboratory

*\* Equipment donations/consignments from these companies is very much appreciated*

