PRODUCT TECHNOLOGY LAB

Principal Investigator: Dr. Humayun Nadeem

Lab Scope and Nature of Work: The research areas of this lab are highly focused on materials science and chemical engineering, with a strong emphasis on developing advanced materials for various applications. Key research involves the synthesis and study of Polymers and Nanoparticles, which serve as foundational components. These materials are then applied to create specialized products. Additionally, the lab explores the practical applications of its material development in areas like functional Packaging.

LABORATORY FACILITIES

Mini Spray

Granulator Spray

Dryer Kjeldahl Apparatus

Probe Sonicator

Bath Sonicator

Heating Plates

Fume Hood

Mini Spray Granulator

- Spray drying capacity: 1500 mL/h
- Low-temperature spray drying
- Spray granulation capacity: 1000 g/batch
- Coating capacity: 1000 g/batch
- Includes innovative fluid bed drying features
- Uniform granule size, up to 6 mm
- Proper coating for granules larger than 50 microns

Lab Spray Dryer

- Evaporate water capacity: 1500 mL/h to 2000 mL/h
- Particle diameter range: 1-25 μm
- Drying time: 1.0-1.5 seconds
- Max. sample feed: 2000 mL/h
- Min. sample feed: 50 mL/h
- Applications: Pharmaceuticals, Plant and Vegetable Extracts, Milk and Egg Products

Kjeldahl Apparatus

- Digestion with infrared
- Complete system with multi-level console, fume extraction unit, sample rack and glass digestion vessels.
- Quartz infrared heaters reach a temperature of 830°C in 1 min.
- infinite regulation of air flow quantity 16 ... 40 l/min
- Various application possibilities: Rack for reaction vessels with 250 ml, 500 ml and 750 ml.

Probe Sonicator

- Frequency: 19.5 ~ 20.5 kHz
- Crushing Capacity: 500 ~ 10000 ml
- Crushing Capacity/continuously: 100L/day
- Standard Amplitude-change Pole : 40 mm
- Max Consumption : 1000 ~ 4000 W
- Applications: material processing, chemical reactions.

Bath Sonicator

- Capacity: 9 liters,
- Uniform cleaning with ultrasonic waves
- Cleans delicate items effectively
- Enhances sample dispersion
- Aids in cell disruption and reaction acceleration
- Adjustable temperature and time settings

Heating Plates

- Temperature Range: From room temperature to 500°C or higher
- RPM Range: 100 to 1500 RPM
- Heating Surface Size: 300 mm in diameter
- Heating Type: uses electric heating
- Control: Features adjustable temperature settings with precise digital controls

Fume Hood

- Protects users from exposure to harmful fumes and vapors during chemical experiments.
- Blower: Facilitates air movement for effective ventilation and cooling.
- UV Lamp: Utilized for germicidal purposes and curing processes in various settings.
- Provides a means for draining hazardous solutions and handling condensates in fume hoods.