

Research Areas and Active Projects

- Controlled release dosage forms
- Formulation and development studies of solid and liquid dosage forms
- Material Characterization
- Granulation and mechanism of granule growth
- Drug dissolution from various drug-polymer systems, In-Vitro and In-Vivo correlations
- Physico-chemical properties and compaction characteristics of excipient and different systems
- Systems development and evaluation for drug- protein binding and drug-drug interactions
- Enhancing dissolution and concepts of dissolution
- Complexation, solubilization, and stability of different types of drugs
- Drug delivery (microspheres, liposomes), nanoparticles and transdermal systems
- Mucoadhesion
- Granulations compaction characteristics and processing
- Drug Protein Binding
- Physico-chemical studies of different drug-polymer systems
- Bioavailability studies (in-vitro and in-vivo)
- Technology of bead manufacturing and formulations
- Coating technology
- Use of HPLC, NMR, DSC, X-ray diffraction for analytical methodology, assay development and physico-chemical study of materials
- Use of Computer in research
- Quality by Design
- Optimization of manufacturing process
- Prototype formulations and validation
- Troubleshooting, problem solving, product development and scale up
- Quality control and development of methods of analysis using novel instruments such as a differential scanning calorimetry, thermomechanical analyzer, thermogravimetric analyzer; HPLC; X-ray diffraction, scanning electron microscope and near-infrared technique for pharmaceutical application.
- Validation and Near-Infrared Spectroscopy (PAT).