Summary of Research work

- Melt granulation proved to be a viable alternative for formulating extended release matrices of highly water soluble drugs like Metoprolol succinate where primary release retardant alone is inefficient.
- The approach of incorporating solid dispersion of a poorly soluble drug like Felodipine in a controlled release matrix provided the predictability and reproducibility of the drug release kinetics.
- A novel coprocessed excipient exhibiting synergism of physical and performance attributes as well as masking of undesirable properties of individual excipients was developed.
- Segregated delivery of RIF and INH from single FDC was attempted successfully. However, keeping industrial scalability and ease of formulation in view, enteric delivery of both the actives could be adopted since they exhibited minimal interaction at intestinal pH (pH 6.8).
- Hot melt extrusion proved to be a valuable technique for developing extended release formulations of both Rifampicin and Isoniazid. The versatility of various classes of polymers and combinations thereof could successfully tailor drug release.
Future Scope of Research

- An in depth physical and performance evaluation of developed coprocessed excipient should be undertaken using drugs with varying solubilities.
- The potential of melt extruded mini tablets further needs to be explored for controlled release/ immediate release (orally disintegrating) and enteric release purpose owing to their easy of manufacture and handling (than pellets or granules).
- Melt extrusion should be attempted with higher drug loading (>50%) of anti-TB drugs due to their high dose burden.
- The enteric coating of capsules could be further explored using various enteric polymers. The concept could be extended to various actives prone to gastric degradation/irritation.
- Extended release formulation as a fixed dose combination of first line treatment drugs (Rifampicin, Isoniazid, Pyrazinamide and Ethambutol) could be attempted using melt extrusion.
- In order to further reduce the residence time of drugs within the extruder, twin screw extruder can be worked with.
- Melt extrusion could also be applied to FDCs containing anti-TB and anti-HIV drugs (Currently being worked upon as a part of DBT-sponsored project in lab).