

## **CHAPTER 4**

### **PLAN OF WORK**

1. Selection of drug and excipient (Tofacitinib Citrate and Methotrexate)
2. Synthesis of mesoporous silica i.e. SBA-15
3. Characterization of synthesized SBA-15
  - a) FTIR spectroscopy
  - b) Particle size
  - c) Transmission Electron Microscopy
  - d) Scanning Electron Microscopy
  - e) Differential Scanning Calorimetry
  - f) Brunauer-Emmett-Teller (BET) Analysis
4. Amine functionalization of SBA-15
5. Characterization of surface modified Mesoporous Silica
  - a) FTIR spectroscopy
  - b) pXRD
6. Loading of antiarthritic drugs in Surface Modified MSNs
7. Characterization of antiarthritic drugs loaded MSNs
  - a) Entrapment Efficiency & Drug Loading efficiency
8. Incorporation of MSN's in to gel base to prepare Nanogel

### 9. Characterization of the MSN-Loaded Nanogel

- a) Viscosity
- b) Spreadability
- c) Texture analysis
- d) Particle size and Particle size distribution
- e) Zeta potential
- f) Drug release profile

### 11. Stability study

### 12. Dermatokinetic evaluation of Antiarthritic gel