CHAPTER 3

AIMS AND OBJECTIVES
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Water is one of the most important natural resources upon which all life process depends. Indiscriminate use and misuse of water is making it unfit for human consumption. A recent survey reveals that, 90 % of water available contains many pollutants which cause number of health problems. The purification of water is a major challenge in future years to come. Hence an attempt has been made in the present work to prepare low cost technology which can be utilized for the removal of fluoride from water. To achieve the desired result, this work has been started with the following objectives:

- To screen out the best absorbent from easily available low cost household materials, industrial wastes, natural environment for effective removal of fluoride from aqueous solution and fluoride contaminated water.
- To study the physicochemical characterization of adsorbents (pH, conductivity, surface area, pore volume, bulk density, particle density, porosity, particle size, moisture content, pHZPC etc.).
- To screen out the best combination of pH of solution, absorbent dose, particle size, contact time, agitation speed, initial fluoride concentration and temperature in fluoride contaminated water.
- To find out the potentialities of the naturally available low-cost adsorbents for fluoride removal from drinking water.
- To find out the best possibilities of desorption of human discarded household materials, industrial wastes, natural substance as low cost absorbent for removal of fluoride in fluoride contaminated water.
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❖ To find out capability of an absorbent for adsorption after the desorption process.

❖ To compare the adsorption performance of different low-cost adsorbents by isotherm, kinetic models and thermodynamic study.

❖ To compare the adsorption performance of different adsorbents with different computerized simulated model

❖ To collect water from fluoride contaminated area and test the viability of the low-cost adsorbent.