Name – Noufal Komby Abdulla Chemistry

Removal of pollutants from water by using modified green adsorbents

Keywords: Adsorption; Pollutant; Langmuir; Nano composite; Guava leaf; Methylene Blue

ABSTRACT

Water is the elixir of life but its sources are continuously being polluted day by day. The water pollution makes hurdle to human and aquatic life.

Preparation of plant based adsorptive materials can make advancement in water treatment technology because of cost-effectiveness, high functionality, and nontoxic nature.

This attempt has been made to develop novel 'organic-inorganic' nanocomposite materials which were used as adsorbents and antimicrobial agents.

The thesis comprises following six chapters which deal with the synthesis, characterization and application of newly synthesized nanohybrid composites.

Chapter 1 entitled **"Introduction and** Literature **review"** deals with the brief introduction of water pollutions, dye contaminations, water treatment technologies etc.

Chapter 2 entitled **"Material and** methods" comprises the preparation of adsorbents, detailed methodology and instrumentation involved in the analysis of physio-chemical properties of the composites.

Chapter 3 entitled **"Synthesis, characterization, and application of Fe_2O_3/GL"** describes the synthesis, structure, morphology, surface area and magnetic properties of Fe_2O_3/GL. Various isotherms and kinetics models alsobeen discussed.

Chapter 4 entitled **"Synthesis, characterization, and application of $Ag/Ag_2O/ZrO_2$/GL"** describes the synthesis and characterization of $Ag/Ag_2O/ZrO_2$/GL for methylene blue adsorbent.

Chapter 5 entitled **"Synthesis, characterization, and application of $MnFe_2O_4$/GL"** comprises the preparation, characterization, and application of $MnFe_2O_4$/GL, for the removal of methylene blue from water.

Chapter 6 entitled **"Studies on the biofilm resistance activities of prepared composites"** deals with the biofilm resistance activities and antibacterial properties of prepared composites.