Investigatory Project in Chemistry for Class 12

The investigatory project in chemistry for class 12 includes doing research in the discipline of chemistry. Designing and executing experiments, methodically evaluating the collected results, and finally presenting the findings through a detailed report or a well-structured presentation are all part of the process of completing a chemical investigatory project. The sections that follow show some popular Class 12 chemistry investigatory project ideas that students can explore in their studies.

Sterilization of Water Using Bleaching Powder

Objective: The goal of this experiment is to identify the amount of bleaching powder required for the sterilization or purification of various water samples.

Theory: With proper scientific details, bleaching powder or calcium hypochlorite [Ca(ClO)] is a relatively frequent approach to clean drinking water. The chemical is set to sit for half an hour after utilizing 5 drops of bleaching power for 2 liters of water, making it safe to drink. Bleaching powder reacts with declining levels as well and poses fewer health dangers than other chemical substances such as THMs.

Requirements: 250ml measuring flask, weight box, Burette, titration flask, 100ml graduated cylinder glazed tile, glass wool, bleaching powder, 10% KI solution, glass wool, sodium thiosulfate solution (0.1%)

Oxalate Ion Presence in Guava Fruit at Different Ripening Stages

Objective: To study the occurrence of oxalate ions in guava fruit at various stages of ripening.

Theory: Carboxylic acids, which are found largely in animals and plants, are created in our bodies through the conversion of Vitamin C to oxalate. The presence of too much oxalate in our urine might result in hyperoxaluria (kidney stones).

Requirements: Pestle and mortar, beaker, funnel,100ml. Measuring flask burette weighing machine, papers, filter, dilute H_2SO_4, L (N /10) $KMnO_4$ solution.

Paper Chromatography

Objectives: Using paper chromatology, determine the ink components in black pens and markers.

Theory: Chromatology is used to separate the components of complex combinations. Ink makers combine several hues to create new ones. Paper chromatology aids in the separation of distinct components by drawing them to water or alcohol.

Requirements: 90% isopropyl alcohol, 100 mL beaker, 500 mL beaker, various black pencils and markers Wooden splints, little binder clips (2).

Surface Chemistry Colloidal Solutions

Objective: The goal of this research is to investigate the surface chemistry of colloidal solutions.

Theory: Colloids are homogeneous solutions that contain distinct phases. The particles in the dispersed phase are evenly distributed in the continuous phase. Some colloids show the Tyndall effect, which causes them to be translucent (light scattering by colloidal particles). Gums are natural polysaccharides released by tree stems. When heated with water, this soluble material hydrolyzes and produces multiple monosaccharides, resulting in a colloidal solution.

Requirements: Two beakers (250 mL and 50 mL), funnel, wire gauze, glass rod, tripod-stand, burner, filter papers, distilled water (100 mL), and 4.5 g Arabic gum are required

Casein Presence Quality in Different Milk Samples

Objective: The goal of this study is to determine the amount of Casein present in various milk samples.

Theory: Caseins are proteins that are found in milk. Sodium caseinate is the most prevalent type. When we leave milk outside for an extended amount of time, the bacteria in it convert it to lactic acid, turning it sour. In acidic conditions, milk casein begins to precipitate.

Requirements: Filter paper, Conical flask, various milk samples, funnel, Watch glass, Glass rod, Measuring cylinder (100mL), and 1% acetic acid are required.

Analysis of Fertilizer

Objective: The goal of this experiment is to study the refractive index of water using a traveling microscope.

Theory: Refraction is a phenomenon that occurs when the direction of light changes as it travels from one clear medium to another. A refractive index is calculated by dividing the velocity of light from one medium by the velocity of light from another.

Requirements: A beaker, a piece of paper, a coin, and a traveling microscope are required.