

Experimental Workshop in Chemistry

R.D. National College, Mumbai

March 9-10, 2022

As a part of National Initiative on Undergraduate Science (NIUS) programme in chemistry members of Chemistry group at HBCSE conducted a 2-day workshop for undergraduate students at RD National College, Bandra, Mumbai. 40 students from BSc. course attended the workshop. The workshop included two lab experiments which were performed by students in pairs. The experiments were chosen from laboratory manuals of B.Sc. syllabus and were modified to enhance the learning of students by developing pre-lab and post-lab questions.

Each day, the experiments were divided into pre-lab, actual lab and post-lab sessions. Pre-lab and post lab were discussion sessions and lab session was where the students performed the experiments. The primary aim of pre and post lab sessions is to create opportunities for discussion on the concepts, procedural understanding and observations related to experiment.

Day 1: Investigation of the reaction between potassium permanganate and oxalic acid

- Different oxidation states of Mn^{n+} and their colour- students observed different colours corresponding to different oxidation states of Mn^{n+} by adding sodium bisulfite solution under different pH conditions.
- Investigating the effect of pH on the reaction between $KMnO_4$ and oxalic acid- explored the effect of pH on reaction between $KMnO_4$ and oxalic acid. From the observations and theoretical calculations, a comparison of the species of Mn^{n+} present, (from colors) concentration of different species in the system and the pH of the system were used to infer whether the given conditions are appropriate for titration between $KMnO_4$ and oxalic acid.

Day 2: Synthesis of Dibenzalacetone and analysis by TLC

This experiment involved synthesis of dibenzalacetone using benzaldehyde and acetone. Students were divided into 2 groups and the groups carried out the synthesis using 1:1 and 1:2 stoichiometry of benzaldehyde and acetone respectively. The synthesized products were filtered through vacuum filtration and a discussion on purity, yield of product and optimum conditions of mole ratio of the reactants was conducted using images of TLC plates developed during trials at HBCSE.

