

DEVELOPMENT OF LOW COST TEACHING AIDS :
CHEMICAL INSTRUMENTATION FOR TERTIARY
EDUCATION

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ABSTRACT

Chemical Instrumentation is an integral part in Analytical Chemistry. In order to introduce Chemical Instrumentation for tertiary Education Colorimetry has been selected as one of the basic approaches.

Colorimetry is based on the interaction of matter with light and it is a useful technique to estimate the concentration of Coloured or Colourless Components. Colourless Components could be converted to coloured species and use the same techniques. At present only theory, related to colorimetry is taught in Sri Lankan Universities and it is expected to introduce the development of the colorimetry unit in the practical class prior to apply the principles.

In laboratories there are very expensive colorimeters. The main aim of this study was to make a colorimeter as a low cost teaching aid in tertiary education level. The other objective was to develop the colorimeter as a combination of several modules so that student can get an idea about the function of each component. This is very helpful to understand the designing and the working principles of the colorimeter. Here the power supply, cell compartment, radiation source and detector holder, logarithmic converter and read device were made and assembled together.

The colorimeter was used to analyse an unknown sample and the results were tested. The sensitivity of the colorimeter is dependent on selection of suitable wave length(s), effect of pH, the order of adding reagents, determination of Stability of coloured species, effect of ligand concentration, interference of foreign species and choice of solvent. By plotting the calibration curve of absorbance vs concentration, the concentration of unknown sample was determined.