

**DEVELOPMENT OF A LOW COST  
FLOW INJECTION  
ANALYSIS SYSTEM**

THESIS

ON THE

RESEARCH PROJECT

SUBMITTED AS A PARTIAL FULFILMENT  
FOR THE

MASTER OF SCIENCE DEGREE  
IN ANALYTICAL CHEMISTRY  
UNIVERSITY OF COLOMBO  
SRI LANKA

PRESENTED BY

**Mr. K. S. P. G. ABERATNE, B.Sc. (SRI LANKA)**

Department of Chemistry,  
University of Colombo,  
Sri Lanka.

March 1998.

#15098

2000



## ABSTRACT

Many chemical laboratories are facing problems of analysing chemical components, since the conventional methods for chemical analysis are inefficient and less accurate and also the instruments for chemical analysis are fairly expensive with limited facilities. Therefore there is tremendous effort to explore possibilities of automated methods for chemical analysis.

One of the common methods used for the determination of concentrations is Flow injection analysis for which expensive and sophisticated instruments are essential. If such an instrument is constructed at our affordable price, it is helpful to be used in common laboratories, especially in third world countries like Sri Lanka. With this view in mind I have taken ideas published in the literature in several places and combined them to develop an efficient Flow Injection Analyser that can be constructed for a reasonable price. It should be noted that all parts of this *FIA* are available in the local market.

Main parts of this instrument are reagent reservoir, injection port, mixing coil and the detector. This detector consists of log converter, power supply unit, cell compartment, digital readout device and the detector compartment. To avoid variation of digital output, it was needed to connect a simple chart recorder to the instrument. This construction can be applied in cases where concentrations in solution are determined in trace levels especially in relation to environmental pollution.

